HP Pavilion dv3 Entertainment PC

Maintenance and Service Guide

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April 2009

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

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Safety warning notice

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

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Product description

Category	Description	Discrete graphics subsystem memory	UMA graphics subsystem memory
Product Name	**HP Pavilion dv3 Entertainment PC**	✓	✓
Processors	**Intel® Core™2 Duo processors:** ■ T9900 3.06-GHz processor, 6-MB L2 cache, 1066-MHz front side bus (FSB) ■ T9800 2.93-GHz processor, 6-MB L2 cache, 1066-MHz front side bus (FSB) ■ T9600 2.80-GHz processor, 6-MB L2 cache, 1066-MHz FSB ■ T9550 2.66-GHz processor, 6-MB L2 cache, 1066-MHz FSB ■ P8800 2.66-GHz processor, 3-MB L2 cache, 1066-MHz FSB ■ P8700 2.53-GHz processor, 3-MB L2 cache, 1066-MHz FSB ■ P8600 2.40-GHz processor, 3-MB L2 cache, 1066-MHz FSB ■ P7550 2.26-GHz processor, 3-MB L2 cache, 1066-MHz FSB ■ P7450 2.13-GHz processor, 3-MB L2 cache, 1066-MHz FSB ■ P7350 2.00-GHz processor, 3-MB L2 cache, 1066-MHz FSB ■ T6600 2.20-GHz processor, 6-MB L2 cache, 1066-MHz FSB ■ T6500 2.10-GHz processor, 6-MB L2 cache, 1066-MHz FSB ■ T6400 2.00-GHz processor, 6-MB L2 cache, 1066-MHz FSB	✓	✓
	Intel Pentium® processors: ■ T4300 2.10-GHz processor, 1-MB L2 cache, 800-MHz FSB ■ T4200 2.00-GHz processor, 1-MB L2 cache, 800-MHz FSB ■ T3000 1.80-GHz processor, 1-MB L2 cache, 800-MHz FSB	✓	✓
	Intel Celeron® T1600 1.66-GHz processor, 1-MB L2 cache, 667-MHz FSB		✓
Chipset	Intel PM45	✓	
	Intel GM45		✓
	Southbridge: ICH9m	✓	✓

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Category	Description	Discrete graphics subsystem memory	UMA graphics subsystem memory
Graphics	nVidia GeForce G 105M with 512 MB of dedicated video memory	✓	
	Mobile Intel GMA 4500 MHD universal memory architecture (UMA, integrated) with shared video memory: ■ Up to 157 MB when system memory ≥ 1024 MB ■ Up to 669 MB when system memory ≥ 2048 MB ■ Up to 1181 MB when system memory ≥ 3072 MB ■ Up to 1181 MB when system memory ≥ 4096 MB on computer models with 32-bit operating systems ■ Up to 1631 MB when system memory ≥ 4096 MB on computer models with 64-bit operating systems		✓
Panel	■ 13.4-inch, flush glass AntiGlare (1366 × 768), high-definition (HD), LED display assembly ■ 16:9 wide aspect ratio ■ Typical brightness: 200 nits ■ Lighted logo on display enclosure ■ All display assemblies include 2 WLAN antennas	✓	✓
	■ 13.4-inch, BrightView (1366 × 768), high-definition (HD), LED display assembly ■ 16:9 wide aspect ratio ■ Typical brightness: 200 nits ■ Lighted logo on display enclosure ■ All display assemblies include 2 WLAN antennas	✓	✓
Memory	2 customer-accessible/upgradable memory module slots Supports dual-channel memory Supports up to 8 GB of system RAM PC2-6400, 800-MHz, DDR2 Supports the following configurations: ■ 8192-MB total system memory (4096 × 2, dual-channel) ■ 4096-MB total system memory (2048 × 2, dual-channel) ■ 3072-MB total system memory (2048 + 1024) ■ 2048-MB total system memory (1024 × 2, dual-channel) ■ 2048-MB total system memory (2048 × 1) ■ 1024-MB total system memory (1024 × 1)	✓	✓

Continued

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Category	Description	Discrete graphics subsystem memory	UMA graphics subsystem memory
Hard drives	Supports 9.50-mm, 6.35-cm (2.50-inch) hard drives Supports HP ProtectSmart Hard Drive Protection Customer-accessible Serial ATA Supports the following hard drives: ■ 500-GB, 7200- and 5400-rpm ■ 320-GB, 7200- and 5400-rpm ■ 250-GB, 7200- and 5400-rpm ■ 160-GB, 5400-rpm	✓	✓
Optical drives	12.7-mm tray load Serial ATA (SATA) Fixed (removal of 1 screw required) Customer-accessible Parallel ATA Supports no-optical-drive option Supports the following drives: ■ Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe ■ Blu-ray ROM DVD±R/RW SuperMulti DL Drive ■ DVD±RW and CD-RW SuperMulti Double-Layer Drive with LightScribe	✓	✓
Microphone	2 omni-directional, digital microphones	✓	✓
Audio	High-definition audio SRS logo requirement Integrated subwoofer Supports Microsoft® premium requirements 2 Altec Lansing Pavilion-branded speakers	✓	✓
Webcam	VGA camera Fixed (no tilt) Activity LED 640 × 480 by 24 frames per second	✓	✓
Ethernet	Intel Realtek 8111C 10/100/1000 network interface card (NIC)	✓	
	Intel Realtek 8102E 10/100 NIC		✓
	Ethernet cable included	✓	✓

Continued

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Category	Description	Discrete graphics subsystem memory	UMA graphics subsystem memory
Wireless	Integrated WLAN options by way of wireless module 2 wireless antennas built into display assembly Supports no-WLAN option Support for the following WLAN formats: ■ Broadcom 4322AGN 802.11a/b/g/n WLAN module ■ Broadcom 4322AGN 802.11a/b/g/n WLAN module with Bluetooth ■ Atheros 9285G 802.11a/b/g/n ■ Atheros 9285G 802.11a/b/g/n with Bluetooth ■ Intel WiFi Link 5100 802.11a/b/g/n ■ Intel WiFi Link 5100 802.11a/b/g/n with Bluetooth ■ Broadcom 4312G 802.11a/b/g WLAN module ■ Broadcom 4312G 802.11a/b/g WLAN module with Bluetooth	✓	✓
	Integrated WWAN options by way of wireless module 2 wireless antennas built into display assembly Supports no-WLAN option 5-band antenna support: 2100/1800/1900/800/900 SIM card option for UMTS module Mini Card slot with USB support Supports High-Speed Packet Access (HSPA), Evolution Data Optimized (EVDO) WWAN module	✓	✓
External media cards	One ExpressCard slot, supporting optional ExpressCard/34 cards Digital Media Slot supporting Memory Stick (MS), Memory Stick Pro (MSP), MultiMediaCard (MMC), Secure Digital (SD) Memory Card, and xD-Picture Card (XD). Adapter (not included) provides support for mini versions of SD, MMC, and MS Duo	✓	✓

Continued

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Category	Description	Discrete graphics subsystem memory	UMA graphics subsystem memory
Ports	Audio-in (mono microphone) Audio-out (stereo headphone) Consumer infrared eSATA HDMI v. 1.3b supporting 1080p with HDCP key HP Smart Adapter power Multi-pin AC power RJ-45 (Ethernet, includes link and activity lights) USB v. 2.0 (3) VGA (Dsub 15-pin) supporting: ■ 1920 × 1200 external resolution at 60 GHz ■ 1600 × 1200 external resolution at 75 GHz hot plug/unplug with auto-detect	✓	✓
Keyboard/pointing devices	13-inch keyboard Available in: ■ Black with painted finish ■ White with molded finish (Canada, Denmark, Finland, Japan, Norway, South Korea, and Thailand) Backlight keyboard (Africa, Europe, Latin America, the Middle East, and North America) TouchPad with 2 TouchPad buttons Supports 2-way scroll Taps enabled as default	✓	✓
Power requirements	90-W HP Smart Adapter with localized cable plug support (3-wire plug with ground pin, supports 3-pin DC connector)	✓	
	65-W HP Smart Adapter with localized cable plug support (3-wire plug with ground pin, supports 3-pin DC connector)		✓
	Battery options: 9-cell, 2.55-Ah (83-Wh) Li-ion battery 6-cell, 2.55-Ah (55-Wh) Li-ion battery 6-cell, 2.20-Ah (47-Wh) Li-ion battery	✓	✓

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Category	Description	Discrete graphics subsystem memory	UMA graphics subsystem memory
Security	Security cable slot Fingerprint reader with Digital Persona software support	✓	✓
Operating system	**Preinstalled:** Windows Vista® Business (32 bit) Windows Vista Home Basic (32 bit) Windows Vista Premium (64 and 32 bit) Windows Vista Ultimate (64 bit)	✓	✓
Serviceability	**End-user replaceable parts:** AC adapter Battery (system) Hard drive Memory modules RTC battery Optical drive WLAN module WWAN module	✓	✓

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2

External component identification

Top components

Display components

Item	Component	Description
(1)	Internal display switch	Turns off the display and initiates Sleep if the display is closed while the power is on.
(2)	Wireless antennas	On select computer models, at least 2 antennas send and receive signals from one or more wireless devices. These antennas are not visible from the outside of the computer. ✎ For optimal transmission, keep the areas immediately around the antennas free from obstructions.
(3)	Internal microphones (2)	Record sound.
(4)	Webcam light	On: The webcam is in use.
(5)	Webcam	Records audio and video and captures still photographs.

✎ 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.

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Buttons and fingerprint reader (select models only)

Item	Component	Description
(1)	Power button*	■ When the computer is off, press the button to turn on the computer. ■ When the computer is on, press the button briefly to initiate Sleep. ■ When the computer is in the Sleep state, press the button briefly to exit Sleep. ■ When the computer is in Hibernation, press the button briefly to exit Hibernation. 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. To learn more about your power settings, select **Start > Control Panel > System and Maintenance > Power Options**.
(2)	Volume mute button	Mutes and restores speaker sound.
(3)	Volume scroll zone	To decrease the volume, slide your finger to the left on the scroll zone or tap the minus sign. To increase the volume, slide your finger to the right on the scroll zone or tap the plus sign.
(4)	Wireless button	Turns the wireless feature on or off but does not create a wireless connection. ✎ To establish a wireless connection, a wireless network must already be set up.
(5)	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.

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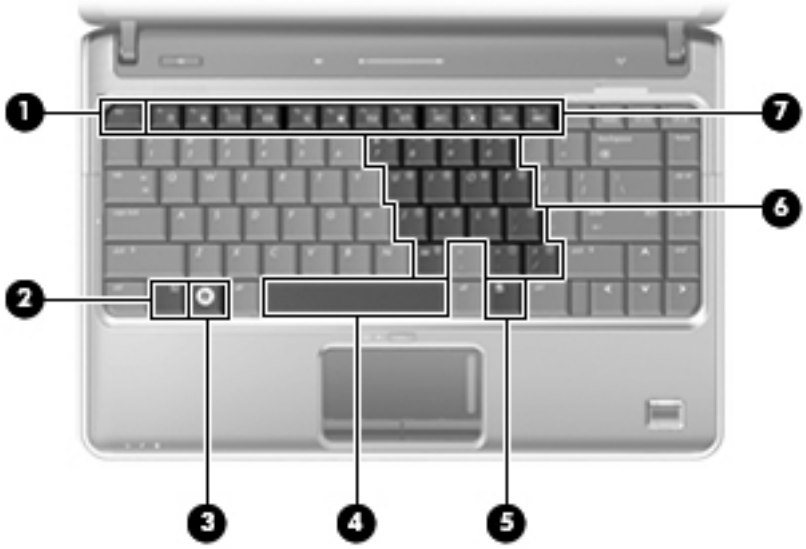
Keys



Item	Component	Description
(1)	**esc** key	Displays system information when pressed in combination with the **fn** key.
(2)	**fn** key	Executes frequently used system functions when pressed in combination with a function key or the **esc** key.
(3)	Windows logo key	Displays the Windows Start menu.
(4)	Spacebar	Turns the keyboard lights on and off when pressed in combination with the **fn** key (select models only).
(5)	Windows applications key	Displays a shortcut menu for items beneath the pointer.
(6)	Embedded numeric keypad keys	Can be used like the keys on an external numeric keypad.
(7)	Function keys	Execute frequently used system functions when pressed in combination with the **fn** key.

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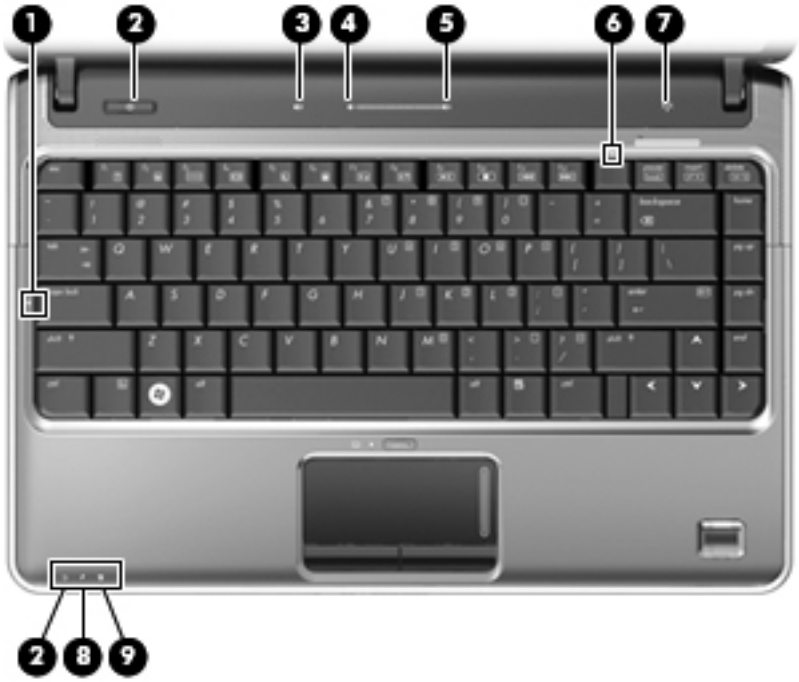
Lights



Item	Component	Description
(1)	Caps lock light	On: Caps lock is on.
(2)	Power lights (2)*	■ On: The computer is on. ■ Blinking: The computer is in the Sleep state. ■ Off: The computer is off or in Hibernation.
(3)	Volume mute light	■ White: Computer sound is on. ■ Amber: Computer sound is off.
(4)	Volume down light	On: The volume scroll zone is being used to decrease speaker volume.
(5)	Volume up light	On: The volume scroll zone is being used to increase speaker volume.
(6)	Num lock light	On: Num lock is on or the embedded numeric keypad is enabled.
(7)	Wireless light	■ On: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. ■ Off: All wireless devices are off.
(8)	Battery light	■ On: A battery is charging. ■ Blinking: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical low-battery level, the battery light begins blinking more rapidly. ■ Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
(9)	Drive light	Blinking: The hard drive or optical drive is being accessed.

*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.

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Pointing devices

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

*This table describes factory settings. To view or change pointing device references, select **Start > Control Panel > Hardware and Sound > Mouse**.

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Front components

Item	Component	Description
(1)	Power light	■ On: The computer is on. ■ Blinking: The computer is in the Sleep state. ■ Off: The computer is off or in Hibernation.
(2)	Battery light	■ 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	Blinking: The hard drive or optical drive is being accessed.
(4)	Consumer infrared lens	Receives a signal from the remote control (provided with 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.

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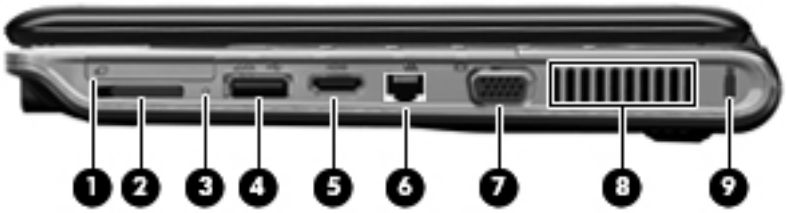
Right-side components



Item	Component	Description
(1)	ExpressCard slot	Supports an optional ExpressCard/34 module.
(2)	Digital Media Slot	Supports the following optional digital card formats: Secure Digital (SD) Memory Card, Secure Digital Input/Output (SD I/O), MultiMediaCard (MMC), Memory Stick (MS), Memory Stick Pro (MSP), xD-Picture Card (XD).
(3)	Digital Media Slot light	Blinking: The media card is being accessed.
(4)	eSATA/USB port	Connects a high-performance eSATA component, such as an eSATA external hard drive, or connects an optional USB device.
(5)	HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component. ✎ Depending on your computer model, the computer may include an HDMI port or a USB port at this location.
(6)	RJ-45 (network) jack	Connects a network cable.
(7)	External monitor port	Connects an external VGA monitor or projector.
(8)	Vent	Enables airflow to cool internal components. ✎ The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(9)	Security cable slot	Attaches an optional security cable to the computer. ✎ The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.

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Left-side components

Item	Component	Description
(1)	Power connector	Connects an AC adapter.
(2)	AC adapter light	■ On: The computer is connected to external power. ■ Off: The computer is not connected to external power.
(3)	USB ports (2)	Connect optional USB devices.
(4)	Optical drive	Reads optical discs and, on select models, also writes to optical discs.
(5)	Optical drive light	Blinking: The drive is being accessed.

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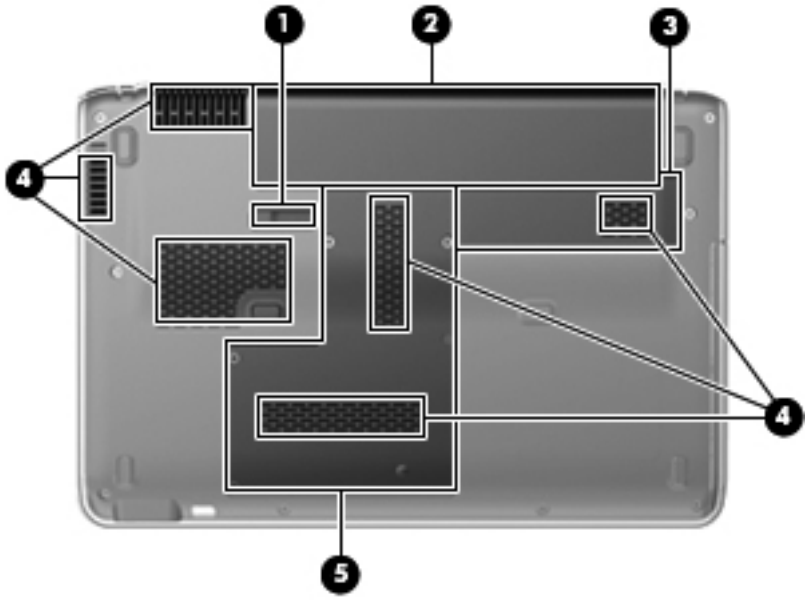
Bottom components



Item	Component	Description
(1)	Battery release latch	Releases the battery from the battery bay.
(2)	Battery bay	Holds the battery.
(3)	Wireless module compartment	Holds a wireless LAN module, wireless WAN module (select models only), and the RTC battery. ✎ 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.
(4)	Vents (6)	Enable airflow to cool internal components. ✎ The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(5)	Hard drive bay	Holds the hard drive and the memory module slots.

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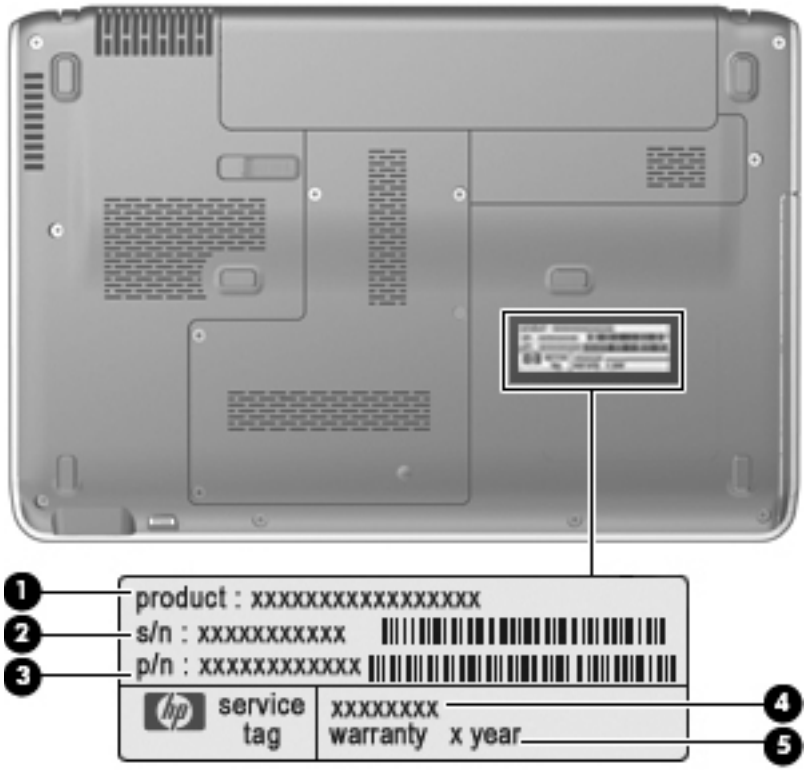
3

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.



Item	Component	Description
❶	Product name	This is the product name affixed to the front of your computer.
❷	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.
❸	Part number/Product number (p/n)	This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.
❹	Model description	This is the alphanumeric identifier you use to locate documents, drivers, and support for your computer.
❺	Warranty period	This number describes the duration (in years) of the warranty period for this computer.

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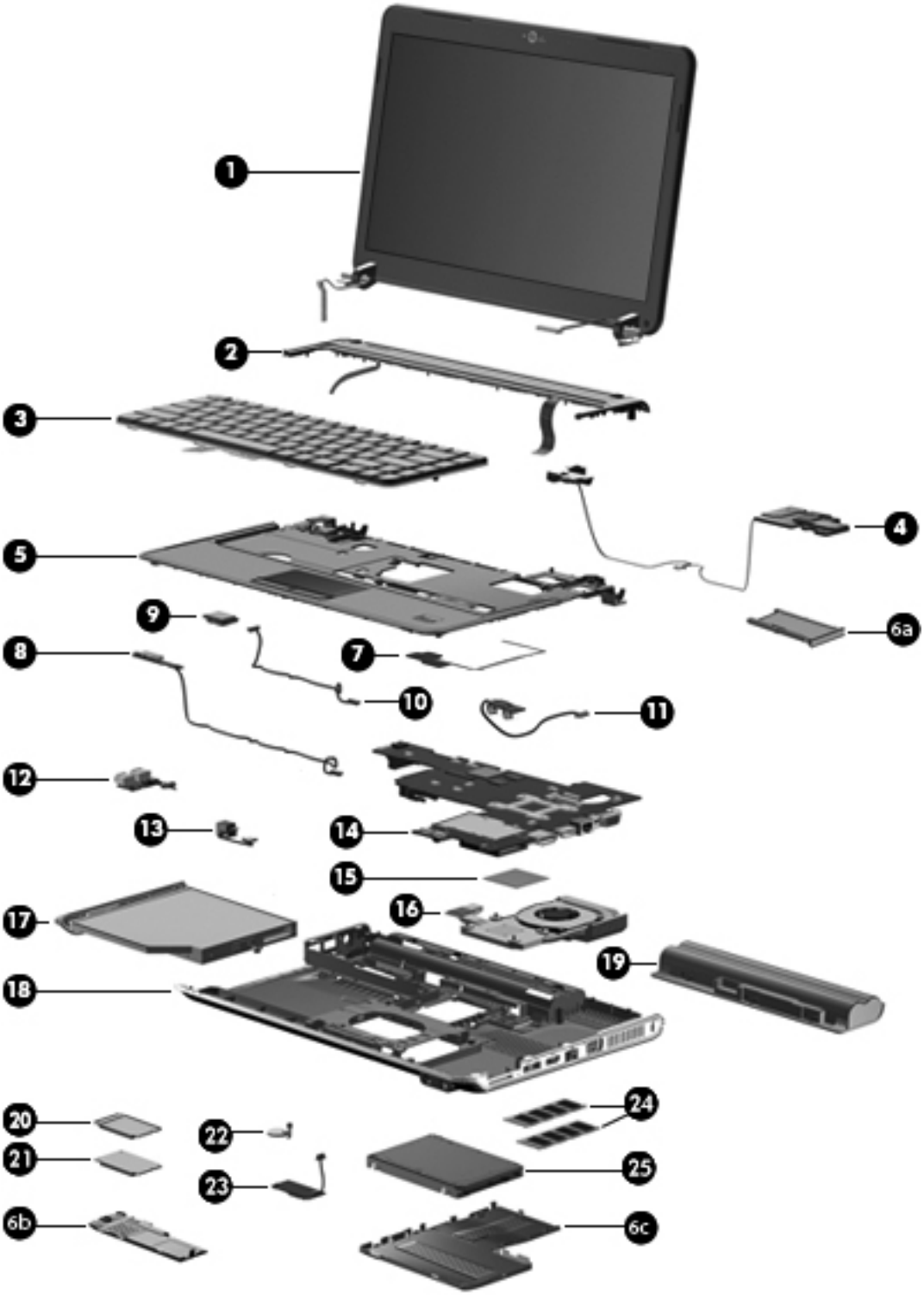
Computer major components



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Item	Description	Spare Part Number
(1)	**Display assemblies** (include 2 WLAN antenna transceivers and cables, 2 WWAN antenna transceivers and cables, webcam, microphone, nameplate, and logo):	
	AntiGlare display assemblies:	
	■ 13.4-inch display assembly for use only with computer models with black trim	530785-001
	■ 13.4-inch display assembly for use only with computer models with blue trim	538657-001
	■ 13.4-inch display assembly for use only with computer models with white trim	530787-001
	BrightView display assemblies:	
	■ 13.4-inch display assembly for use only with computer models with black trim	531787-001
	■ 13.4-inch display assembly for use only with computer models with blue trim	538659-001
	■ 13.4-inch display assembly for use only with computer models with white trim	531793-001
	■ 13.3-inch display assembly for use only with computer models with black trim	531786-001
	■ 13.3-inch display assembly for use only with computer models with blue trim	538658-001
	■ 13.3-inch display assembly in for use only with computer models with white trim	531792-001
(2)	**Switch cover** (includes power button board and cable):	
	Switch cover for use only with computer models with black trim	531817-001
	Switch cover for use only with computer models with blue trim	538662-001
	Switch cover for use only with computer models with white trim	531818-001
(3)	**Keyboards** (include keyboard cable):	
	Keyboard with backlight (includes backlight cable; available only in black trim):	
	■ For use in Belgium	530646-A41
	■ For use in the Czech Republic	530646-221
	■ For use in Denmark, Finland, and Norway	530646-DH1
	■ For use in Europe, the Middle East, and Africa	530646-B31
	■ For use in France	530646-051
	■ For use in French Canada	530646-121
	■ For use in Germany	530646-041
	■ For use in Greece	530646-DJ1
	■ For use in Israel	530646-BB1
	■ For use in Italy	530646-061
	■ For use in Latin America	530646-161
	■ For use in Portugal	530646-131
	■ For use in Russia	530646-251
	■ For use in Saudi Arabia	530646-171
	■ For use in Spain	530646-071
	■ For use in Switzerland	530646-BG1
	■ For use in Turkey	530646-141
	■ For use in the United Kingdom	530646-031
	■ For use in the United States	530646-001

Continued

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Item	Description	Spare Part Number
	Keyboards *(Continued):*	
	Keyboards without backlight with molded finish for use only with computer models with black trim:	
	■ For use in Belgium	530643-A41
	■ For use in Brazil	530643-201
	■ For use in the Czech Republic	530643-221
	■ For use in Europe, the Middle East, and Africa	530643-B31
	■ For use in France	530643-051
	■ For use in French Canada	530643-121
	■ For use in Germany	530643-041
	■ For use in Greece	530643-DJ1
	■ For use in Israel	530643-BB1
	■ For use in Italy	530643-061
	■ For use in Latin America	530643-161
	■ For use in Russia	530643-251
	■ For use in Spain	530643-071
	■ For use in Switzerland	530643-BG1
	■ For use in Taiwan	530643-AB1
	■ For use in Turkey	530643-141
	■ For use in the United Kingdom	530643-031
	■ For use in the United States	530643-001
	Keyboards without backlight with painted finish for use only with computer models with black trim:	
	■ For use in Denmark, Finland, and Norway	530644-DH1
	■ For use in French Canada	530644-121
	■ For use in Japan	530644-291
	■ For use in Saudi Arabia	530644-171
	■ For use in South Korea	530644-AD1
	■ For use in Thailand	530644-281
	Keyboards without backlight with molded finish for use only with computer models with blue trim:	
	■ For use in French Canada	538665-121
	■ For use in Japan	538665-291
	■ For use in South Korea	538665-AD1
	■ For use in Taiwan	538665-AB1
	■ For use in Thailand	538665-281
	■ For use in the United States	538665-001

Continued

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Item	Description	Spare Part Number
	Keyboards *(Continued):*	
	Keyboards without backlight with molded finish for use only with computer models with white trim:	
	■ For use in Belgium	539044-A41
	■ For use in Brazil	539044-201
	■ For use in the Czech Republic	539044-221
	■ For use in Europe, the Middle East, and Africa	539044-DH1
	■ For use in France	539044-051
	■ For use in Germany	539044-041
	■ For use in Greece	539044-DJ1
	■ For use in Israel	539044-BB1
	■ For use in Italy	539044-061
	■ For use in Latin America	539044-161
	■ For use in Portugal	539044-131
	■ For use in Russia	539044-251
	■ For use in Spain	539044-071
	■ For use in Switzerland	539044-BG1
	■ For use in Taiwan	539044-AB1
	■ For use in Turkey	539044-141
	■ For use in the United Kingdom	539044-031
	■ For use in the United States	539044-001

Continued

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Item	Description	Spare Part Number
	Keyboards *(Continued):*	
	Keyboards without backlight with painted finish for use only with computer models with white trim:	
	■ For use in Belgium	530645-A41
	■ For use in Brazil	530645-201
	■ For use in the Czech Republic	530645-221
	■ For use in Denmark, Finland, and Norway	530645-DH1
	■ For use in Europe, the Middle East, and Africa	530645-B31
	■ For use in France	530645-051
	■ For use in French Canada	530645-121
	■ For use in Germany	530645-041
	■ For use in Greece	530645-DJ1
	■ For use in Israel	530645-BB1
	■ For use in Italy	530645-061
	■ For use in Japan	530645-291
	■ For use in Latin America	530645-161
	■ For use in Portugal	530645-131
	■ For use in Russia	530645-251
	■ For use in Saudi Arabia	530645-171
	■ For use in South Korea	530645-AD1
	■ For use in Spain	530645-071
	■ For use in Switzerland	530645-BG1
	■ For use in Taiwan	530645-AB1
	■ For use in Thailand	530645-281
	■ For use in Turkey	530645-141
	■ For use in the United Kingdom	530645-031
	■ For use in the United States	530645-001
(4)	**Speaker assembly** (includes speaker assembly cable)	531816-001
(5)	**Top covers** (include TouchPad on/off board and cable, TouchPad button board and cable, and TouchPad board and cable):	
	Top covers with fingerprint reader board (include fingerprint reader board cable):	
	For use only with computer models with black trim	531820-001
	For use only with computer models with white trim	531822-001
	Top covers without fingerprint reader board:	
	For use only with computer models with black trim	531821-001
	For use only with computer models with blue trim	538663-001
	For use only with computer models with white trim	531823-001

Continued

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Item	Description	Spare Part Number
	Plastics Kit, includes:	531808-001
(6a)	ExpressCard slot bezel	
(6b)	Wireless module compartment cover	
(6c)	Hard drive cover	
	✎ See "Plastics Kit" on page 12 for more Plastics Kit spare part information.	
(7)	**Fingerprint reader board** (includes cable)	531828-001
(8)	**LED board** (includes cable)	531826-001
(9)	**Bluetooth module**	483113-001
	✎ The Bluetooth module spare part kit does not include a Bluetooth module cable. The Bluetooth module cable is available using spare part number 531811-001.	
(10)	**Bluetooth module cable**	531811-001
(11)	**Audio board** (includes cable)	531812-001
(12)	**USB board** (includes cable)	531809-001
(13)	**Power connector and cable**	531810-001
(14)	**System board** (includes replacement thermal material):	
	■ For use only with computer models equipped with graphics subsystems with discrete memory	530780-001
	■ For use only with computer models equipped with graphics subsystems with UMA memory	530781-001
(15)	**Processors** (include replacement thermal material):	
	Intel Core 2 Duo processors:	
	■ T9900 3.06-GHz processor (6-MB L2 cache, 1066-MHz FSB)	570434-001
	■ T9800 2.93-GHz processor (6-MB L2 cache, 1066-MHz FSB)	507951-001
	■ T9600 2.80-GHz processor (6-MB L2 cache, 1066-MHz FSB)	507952-001
	■ T9550 2.66-GHz processor (6-MB L2 cache, 1066-MHz FSB)	507953-001
	■ P8800 2.66-GHz processor (3-MB L2 cache, 1066-MHz FSB)	570036-001
	■ P8700 2.53-GHz processor (3-MB L2 cache, 1066-MHz FSB)	507960-001
	■ P8600 2.40-GHz processor (3-MB L2 cache, 1066-MHz FSB)	507963-001
	■ P7550 2.26-GHz processor (3-MB L2 cache, 1066-MHz FSB)	573076-001
	■ T6600 2.20-GHz processor (6-MB L2 cache, 1066-MHz FSB)	513593-001
	■ P7450 2.13-GHz processor (3-MB L2 cache, 1066-MHz FSB)	507965-001
	■ T6500 2.10-GHz processor (6-MB L2 cache, 1066-MHz FSB)	572928-001
	■ T6400 2.06-GHz processor (6-MB L2 cache, 1066-MHz FSB)	513592-001
	■ P7350 2.00-GHz processor (3-MB L2 cache, 1066-MHz FSB)	507967-001
	Intel Pentium processors:	
	■ T4300 2.10-GHz processor (1-MB L2 cache, 800-MHz FSB)	572929-001
	■ T4200 2.00-GHz processor (1-MB L2 cache, 800-MHz FSB)	513599-001
	■ T3000 1.80-GHz processor (1-MB L2 cache, 800-MHz FSB)	572926-001
	Intel Celeron T1600 1.66-GHz processor (1-MB L2 cache, 667-MHz FSB)	532324-001

Continued

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Item	Description	Spare Part Number
(16)	**Fan/heat sink assembly** (includes replacement thermal material):	
	■ For use only with computer models equipped with graphics subsystems with discrete memory	531814-001
	■ For use only with computer models equipped with graphics subsystems with UMA memory	531813-001
(17)	**Optical drives** (include bezel and bracket):	
	■ Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe	530800-001
	■ Blu-ray ROM DVD±R/RW SuperMulti DL Drive	530799-001
	■ DVD±RW and CD-RW SuperMulti Double-Layer Drive with LightScribe	530798-001
(18)	**Base enclosure** (includes six rubber feet)	531807-001
	Rubber Feet Kit (not illustrated, includes six rubber feet)	534989-001
(19)	**Batteries**:	
	■ 9-cell, 83-Wh	530803-001
	■ 6-cell, 55-Wh	530802-001
	■ 6-cell, 47-Wh	530801-001
(20)	**HSPA EVDO WWAN module**	483377-002
(21)	**WLAN modules:**	
	802.11a/b/g/n WLAN modules:	
	■ Broadcom 4322AGN 802.11a/b/g/n WLAN module for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands	504664-001
	■ Broadcom 4322AGN 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, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	504664-002
	■ Atheros 9285G 802.11a/b/g/n WLAN module for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands	518436-001

Continued

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Item	Description	Spare Part Number
	802.11a/b/g WLAN modules *(Continued):*	
	■ Intel WiFi Link 5100 802.11a/b/g/n WLAN module for use in all countries and regions except Pakistan, Russia, and the Ukraine	480985-001
	■ Broadcom 4312G 802.11a/b/g WLAN module for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands	504593-001
	■ Broadcom 4312G 802.11a/b/g WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	504593-002
	■ Intel WiFi Link 5100 802.11a/b/g WLAN module for use only in Pakistan, Russia, and the Ukraine	482957-001
(22)	**RTC battery** (includes cable and double-sided tape)	531829-001
(23)	**SIM slot board** (includes cable)	531827-001
(24)	**Memory module** (800-MHz, DDR2):	
	■ 4-GB	530792-001
	■ 2-GB	530790-001
	■ 1-GB	530788-001
(25)	**Hard drive** (includes hard drive connector and hard drive bracket):	
	■ 500-GB, 7200-rpm	573738-001
	■ 500-GB, 5400-rpm	530797-001
	■ 320-GB, 7200-rpm	572085-001
	■ 320-GB, 5400-rpm	530796-001
	■ 250-GB, 7200-rpm	572084-001
	■ 250-GB, 5400-rpm	530795-001
	■ 160-GB, 5400-rpm	530794-001
	Hard Drive Hardware Kit (not illustrated, includes hard drive connector, hard drive bracket, and screws)	534990-001

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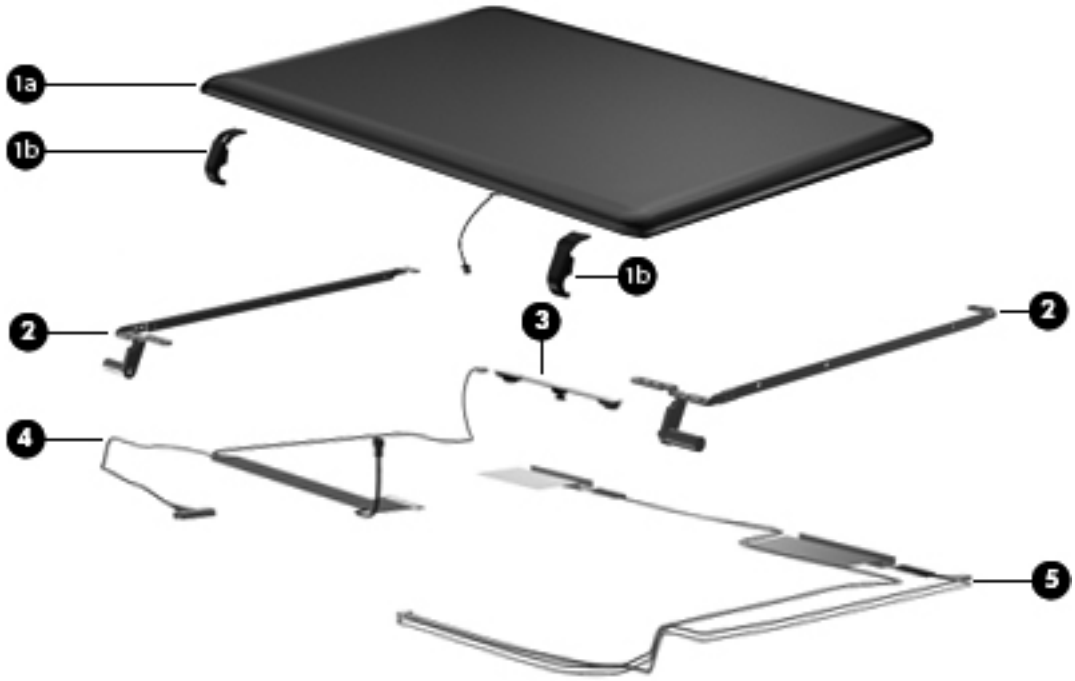
AntiGlare display assembly subcomponents



Item	Description	Spare part number
(1a)	**Display enclosure:**	
	For use only with computer models with black trim	531791-001
	For use only with computer models with blue trim	538661-001
	For use only with computer models with white trim	531797-001
(1b)	**Display hinge covers** (included with display enclosure spare part kit)	
(2)	**Display hinges**	531780-001
(3)	**Webcam/microphone module**	531785-001
(4)	**Display panel cable** (includes webcam/microphone module cable)	531782-001
(5)	**Wireless antenna set**	537205-001

✎ Spare part kits are not available for the display bezel and display panel. If these components must be replaced, the entire display assembly must be replaced.

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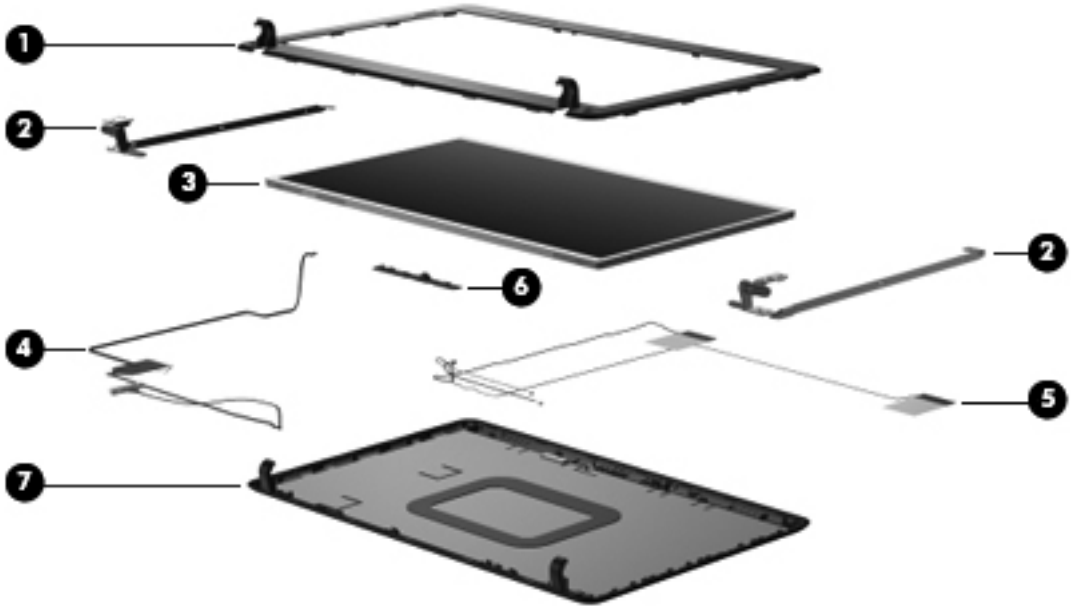
BrightView display assembly subcomponents



Item	Description	Spare part number
(1)	**Display bezel**	
	For use only with computer models equipped with a 13.4-inch display assembly	531794-001
	For use only with computer models equipped with a 13.3-inch display assembly	531788-001
(2)	**Display hinges**	
	For use only with computer models equipped with a 13.4-inch display assembly	530783-001
	For use only with computer models equipped with a 13.3-inch display assembly	530782-001
(3)	**BrightView display panel**	
	For use only with computer models equipped with a 13.4-inch display assembly	531779-001
	For use only with computer models equipped with a 13.3-inch display assembly	531778-001
(4)	**Display panel cable** (includes webcam/microphone module cable)	531782-001
(5)	**Wireless antenna set**	531781-001
(6)	**Webcam/microphone module**	531785-001
(7)	**Display enclosure**	
	For use only with computer models with black trim	531790-001
	For use only with computer models with blue trim	538660-001
	For use only with computer models with white trim	531796-001

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Plastics Kit

Item	Description	Spare part number
	Plastics Kit:	531808-001
(1)	ExpressCard slot bezel	
(2)	Hard drive cover (includes three captive screws, secured by C-clips)	
(3)	Wireless module compartment cover	

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Mass storage devices

Item	Description	Spare part number
(1)	**Hard drives** (include hard drive connector and hard drive bracket)	
	■ 500-GB, 7200-rpm	573738-001
	■ 500-GB, 5400-rpm	530797-001
	■ 320-GB, 7200-rpm	572085-001
	■ 320-GB, 5400-rpm	530796-001
	■ 250-GB, 7200-rpm	572084-001
	■ 250-GB, 5400-rpm	530795-001
	■ 160-GB, 5400-rpm	530794-001
	Hard Drive Hardware Kit (includes hard drive connector, hard drive bracket, and screws)	534990-001
(2)	**Optical drives** (include bezel and bracket):	
	■ Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe	530800-001
	■ Blu-ray ROM DVD±R/RW SuperMulti DL Drive	530799-001
	■ DVD±RW and CD-RW SuperMulti Double-Layer Drive with LightScribe	530798-001

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Miscellaneous parts

Description	Spare part number
AC adapters	
90-W PFC HP Smart Adapter	463955-001
65-W PFC HP Smart Adapter	463958-001
Power cords:	
■ For use in Argentina	490371-D01
■ For use in Australia	490371-011
■ For use in Brazil	490371-201
■ For use in Denmark	490371-081
■ For use in Europe, the Middle East, and Africa	490371-021
■ For use in India	490371-D61
■ For use in Israel	490371-BB1
■ For use in Italy	490371-061
■ For use in Japan	490371-291
■ For use in the People's Republic China	490371-AA1
■ For use in South Africa	490371-AR1
■ For use in South Korea	490371-AD1
■ For use in Switzerland	490371-111
■ For use in Taiwan	490371-AB1
■ For use in the United Kingdom and Singapore	490371-031
■ For use in the United States	490371-001
Screw Kit ■ Phillips PM3.0 × 4.0 screws ■ Phillips PM2.5 × 6.0 screws ■ Phillips PM2.5 × 4.0 screws ■ Phillips PM2.5 × 3.0 screws ■ Phillips PM2.0 × 8.0 screws ■ Phillips PM2.0 × 7.0 captive screws ■ Phillips PM2.0 × 6.0 captive screws ■ Phillips PM2.0 × 6.0 screws ■ Phillips PM2.0 × 4.0 screws ■ Phillips PM2.0 × 3.0 screws	531815-001

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Sequential part number listing

Spare part number	Description
463955-001	90-W PFC HP Smart Adapter
463958-001	65-W PFC HP Smart Adapter
480985-001	Intel WiFi Link 5100 802.11a/b/g/n WLAN module for use in all countries and regions except Pakistan, Russia, and the Ukraine
482957-001	Intel WiFi Link 5100 802.11a/b/g WLAN module for use only in Pakistan, Russia, and the Ukraine
483113-001	Bluetooth module ✎ The Bluetooth module spare part kit does not include a Bluetooth module cable. The Bluetooth module cable is available using spare part number 531811-001.
483377-002	HSPA EVDO WWAN module
490371-001	Power cord for use in the United States
490371-011	Power cord for use in Australia
490371-021	Power cord for use in Europe, the Middle East, and Africa
490371-031	Power cord for use in the United Kingdom
490371-061	Power cord for use in Italy
490371-081	Power cord for use in Denmark
490371-111	Power cord for use in Switzerland
490371-201	Power cord for use in Brazil
490371-291	Power cord for use in Japan
490371-AA1	Power cord for use in the People's Republic of China
490371-AB1	Power cord for use in Taiwan
490371-AD1	Power cord for use in South Korea
490371-AR1	Power cord for use in South Africa
490371-BB1	Power cord for use in Israel
490371-D01	Power cord for use in Argentina
490371-D61	Power cord for use in India
504593-001	Broadcom 4312G 802.11a/b/g WLAN module for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands

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Spare part number	Description
504593-002	Broadcom 4312G 802.11a/b/g WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
504664-001	Broadcom 4322AGN 802.11a/b/g/n WLAN module for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands
504664-002	Broadcom 4322AGN 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, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
507951-001	Intel Core T9800 2.93-GHz processor (6-MB L2 cache, 1066-MHz FSB, includes replacement thermal material)
507952-001	Intel Core T9600 2.80-GHz processor (6-MB L2 cache, 1066-MHz FSB, includes replacement thermal material)
507953-001	Intel Core T9550 2.66-GHz processor (6-MB L2 cache, 1066-MHz FSB, includes replacement thermal material)

Continued

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Spare part number	Description
507960-001	Intel Core P8700 2.53-GHz processor (3-MB L2 cache, 1066-MHz FSB, includes replacement thermal material)
507963-001	Intel Core P8600 2.40-GHz processor (3-MB L2 cache, 1066-MHz FSB, includes replacement thermal material)
507965-001	Intel Core P7450 2.13-GHz processor (3-MB L2 cache, 1066-MHz FSB, includes replacement thermal material)
507967-001	Intel Core P7350 2.00-GHz processor (3-MB L2 cache, 1066-MHz FSB, includes replacement thermal material)
513592-001	Intel Core T6400 2.06-GHz processor (6-MB L2 cache, 1066-MHz FSB, includes replacement thermal material)
513593-001	Intel Core T6600 2.20-GHz processor (6-MB L2 cache, 1066-MHz FSB, includes replacement thermal material)
513599-001	Intel Core T4200 2.00-GHz processor (1-MB L2 cache, 800-MHz FSB, includes replacement thermal material)
518436-001	Atheros 9285G 802.11a/b/g/n WLAN module for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands
530643-001	Keyboard without backlight with molded finish for use only with computer models with black trim in the United States (includes keyboard cable)
530643-031	Keyboard without backlight with molded finish for use only with computer models with black trim in the United Kingdom (includes keyboard cable)
530643-041	Keyboard without backlight with molded finish for use only with computer models with black trim in Germany (includes keyboard cable)
530643-051	Keyboard without backlight with molded finish for use only with computer models with black trim in France (includes keyboard cable)
530643-061	Keyboard without backlight with molded finish for use only with computer models with black trim in Italy (includes keyboard cable)
530643-071	Keyboard without backlight with molded finish for use only with computer models with black trim in Spain (includes keyboard cable)
530643-141	Keyboard without backlight with molded finish for use only with computer models with black trim in Turkey (includes keyboard cable)
530643-161	Keyboard without backlight with molded finish for use only with computer models with black trim in Latin America (includes keyboard cable)
530643-201	Keyboard without backlight with molded finish for use only with computer models with black trim in Brazil (includes keyboard cable)
530643-221	Keyboard without backlight with molded finish for use only with computer models with black trim in the Czech Republic (includes keyboard cable)
530643-251	Keyboard without backlight with molded finish for use only with computer models with black trim in Russia (includes keyboard cable)
530643-A41	Keyboard without backlight with molded finish for use only with computer models with black trim in Belgium (includes keyboard cable)
530643-AB1	Keyboard without backlight with molded finish for use only with computer models with black trim in Taiwan (includes keyboard cable)
530643-B31	Keyboard without backlight with molded finish for use only with computer models with black trim in Europe, the Middle East, and Africa (includes keyboard cable)
530643-BB1	Keyboard without backlight with molded finish for use only with computer models with black trim in Israel (includes keyboard cable)

Continued

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Spare part number	Description
530643-BG1	Keyboard without backlight with molded finish for use only with computer models with black trim in Switzerland (includes keyboard cable)
530643-DJ1	Keyboard without backlight with molded finish for use only with computer models with black trim in Greece (includes keyboard cable)
530644-121	Keyboard without backlight with painted finish for use only with computer models with black trim in French Canada (includes keyboard cable)
530644-171	Keyboard without backlight with painted finish for use only with computer models with black trim in Saudi Arabia (includes keyboard cable)
530644-281	Keyboard without backlight with painted finish for use only with computer models with black trim in Thailand (includes keyboard cable)
530644-291	Keyboard without backlight with painted finish for use only with computer models with black trim in Japan (includes keyboard cable)
530644-AD1	Keyboard without backlight with painted finish for use only with computer models with black trim in South Korea (includes keyboard cable)
530644-DH1	Keyboard without backlight with painted finish for use only with computer models with black trim in Denmark, Finland, and Norway (includes keyboard cable)
530645-001	Keyboard without backlight with painted finish for use only with computer models with white trim in the United States (includes keyboard cable)
530645-031	Keyboard without backlight with painted finish for use only with computer models with white trim in the United Kingdom (includes keyboard cable)
530645-041	Keyboard without backlight with painted finish for use only with computer models with white trim in Germany (includes keyboard cable)
530645-051	Keyboard without backlight with painted finish for use only with computer models with white trim in France (includes keyboard cable)
530645-061	Keyboard without backlight with painted finish for use only with computer models with white trim in Italy (includes keyboard cable)
530645-071	Keyboard without backlight with painted finish for use only with computer models with white trim in Spain (includes keyboard cable)
530645-121	Keyboard without backlight with painted finish for use only with computer models with white trim in French Canada (includes keyboard cable)
530645-131	Keyboard without backlight with painted finish for use only with computer models with white trim in Portugal (includes keyboard cable)
530645-141	Keyboard without backlight with painted finish for use only with computer models with white trim in Turkey (includes keyboard cable)
530645-161	Keyboard without backlight with painted finish for use only with computer models with white trim in Latin America (includes keyboard cable)
530645-171	Keyboard without backlight with painted finish for use only with computer models with white trim in Saudi Arabia (includes keyboard cable)
530645-201	Keyboard without backlight with painted finish for use only with computer models with white trim in Brazil (includes keyboard cable)
530645-221	Keyboard without backlight with painted finish for use only with computer models with white trim in the Czech Republic (includes keyboard cable)
530645-251	Keyboard without backlight with painted finish for use only with computer models with white trim in Russia (includes keyboard cable)
530645-281	Keyboard without backlight with painted finish for use only with computer models with white trim in Thailand (includes keyboard cable)

Continued

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Spare part number	Description
530645-291	Keyboard without backlight with painted finish for use only with computer models with white trim in Japan (includes keyboard cable)
530645-A41	Keyboard without backlight with painted finish for use only with computer models with white trim in Belgium (includes keyboard cable)
530645-AB1	Keyboard without backlight with painted finish for use only with computer models with white trim in Taiwan (includes keyboard cable)
530645-AD1	Keyboard without backlight with painted finish for use only with computer models with white trim in South Korea (includes keyboard cable)
530645-B31	Keyboard without backlight with painted finish for use only with computer models with white trim in Europe, the Middle East, and Africa (includes keyboard cable)
530645-BB1	Keyboard without backlight with painted finish for use only with computer models with white trim in Israel (includes keyboard cable)
530645-BG1	Keyboard without backlight with painted finish for use only with computer models with white trim in Switzerland (includes keyboard cable)
530645-DH1	Keyboard without backlight with painted finish for use only with computer models with white trim in Denmark, Finland, and Norway (includes keyboard cable)
530645-DJ1	Keyboard without backlight with painted finish for use only with computer models with white trim in India (includes keyboard cable)
530646-001	Keyboard with backlight and painted finish for use only with computer models with black trim in the United States (includes keyboard cable and backlight cable)
530646-031	Keyboard with backlight and painted finish for use only with computer models with black trim in the United Kingdom (includes keyboard cable and backlight cable)
530646-041	Keyboard with backlight and painted finish for use only with computer models with black trim in Germany (includes keyboard cable and backlight cable)
530646-051	Keyboard with backlight and painted finish for use only with computer models with black trim in France (includes keyboard cable and backlight cable)
530646-061	Keyboard with backlight and painted finish for use only with computer models with black trim in Italy (includes keyboard cable and backlight cable)
530646-071	Keyboard with backlight and painted finish for use only with computer models with black trim in Spain (includes keyboard cable and backlight cable)
530646-121	Keyboard with backlight and painted finish for use only with computer models with black trim in French Canada (includes keyboard cable and backlight cable)
530646-131	Keyboard with backlight and painted finish for use only with computer models with black trim in Portugal (includes keyboard cable and backlight cable)
530646-141	Keyboard with backlight and painted finish for use only with computer models with black trim in Turkey (includes keyboard cable and backlight cable)
530646-161	Keyboard with backlight and painted finish for use only with computer models with black trim in Latin America (includes keyboard cable and backlight cable)
530646-171	Keyboard with backlight and painted finish for use only with computer models with black trim in Saudi Arabia (includes keyboard cable and backlight cable)
530646-221	Keyboard with backlight and painted finish for use only with computer models with black trim in the Czech Republic (includes keyboard cable and backlight cable)
530646-251	Keyboard with backlight and painted finish for use only with computer models with black trim in Russia (includes keyboard cable and backlight cable)
530646-A41	Keyboard with backlight and painted finish for use only with computer models with black trim in Belgium (includes keyboard cable and backlight cable)

Continued

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Spare part number	Description
530646-B31	Keyboard with backlight and painted finish for use only with computer models with black trim in Europe, the Middle East, and Africa (includes keyboard cable and backlight cable)
530646-BB1	Keyboard with backlight and painted finish for use only with computer models with black trim in Israel (includes keyboard cable and backlight cable)
530646-BG1	Keyboard with backlight and painted finish for use only with computer models with black trim in Switzerland (includes keyboard cable and backlight cable)
530646-DH1	Keyboard with backlight and painted finish for use only with computer models with black trim in Denmark, Finland, and Norway (includes keyboard cable and backlight cable)
530646-DJ1	Keyboard with backlight and painted finish for use only with computer models with black trim in Greece (includes keyboard cable and backlight cable)
530780-001	System board for use only with computer models equipped with graphics subsystems with discrete memory (includes replacement thermal material)
530781-001	System board for use only with computer models equipped with graphics subsystems with UMA memory (includes replacement thermal material)
530782-001	Display hinges for use only with computer models equipped with a 13.3-inch display assembly
530783-001	Display hinges for use only with computer models equipped with a 13.4-inch display assembly
530785-001	13.4-inch AntiGlare display assembly for use only with computer models with black trim (includes 2 LAN antenna transceivers and cables, 2 WWAN antenna transceivers and cables, webcam, microphone, nameplate, and logo)
530787-001	13.4-inch AntiGlare display assembly for use only with computer models with white trim (includes 2 WLAN antenna transceivers and cables, 2 WWAN antenna transceivers and cables, webcam, microphone, nameplate, and logo)
530788-001	1-GB memory module (800-MHz, DDR2)
530790-001	2-GB memory module (800-MHz, DDR2)
530792-001	4-GB memory module (800-MHz, DDR2)
530794-001	160-GB, 5400-rpm hard drive (includes hard drive connector and hard drive bracket)
530795-001	250-GB, 5400-rpm hard drive (includes hard drive connector and hard drive bracket)
530796-001	320-GB, 5400-rpm hard drive (includes hard drive connector and hard drive bracket)
530797-001	500-GB, 5400-rpm hard drive (includes hard drive connector and hard drive bracket)
530798-001	DVD±RW and CD-RW SuperMulti Double-Layer Drive with LightScribe
530799-001	Blu-ray ROM DVD±R/RW SuperMulti DL Drive
530800-001	Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe
530801-001	6-cell, 47-Wh battery
530802-001	6-cell, 55-Wh battery
530803-001	9-cell, 83-Wh battery
531778-001	13.4-inch BrightView display panel
531779-001	13.3-inch BrightView display panel
531780-001	Display hinges for use only with AntiGlare display assemblies
531781-001	Wireless antenna set for use only with BrightView display assemblies
531782-001	Display panel cable (includes webcam/microphone module cable)
531785-001	Webcam/microphone module

Continued

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Spare part number	Description
531786-001	13.3-inch BrightView display assembly for use only computer models with black trim (includes 2 WLAN antenna transceivers and cables, 2 WWAN antenna transceivers and cables, webcam, microphone, nameplate, and logo)
531787-001	13.4-inch BrightView display assembly for use only computer models with black trim (includes 2 WLAN antenna transceivers and cables, 2 WWAN antenna transceivers and cables, webcam, microphone, nameplate, and logo)
531788-001	Display bezel for use only with computer models equipped with a BrightView 13.3-inch display assembly
531790-001	Display enclosure for use only with computer models equipped with a BrightView display assembly with black trim
531791-001	Display enclosure for use only with computer models equipped with an AntiGlare display assembly with black trim
531792-001	13.3-inch BrightView display assembly for use only with computer models with white trim (includes 2 WLAN antenna transceivers and cables, 2 WWAN antenna transceivers and cables, webcam, microphone, nameplate, and logo)
531793-001	13.4-inch BrightView display assembly for use only with computer models with white trim (includes 2 WLAN antenna transceivers and cables, 2 WWAN antenna transceivers and cables, webcam, microphone, nameplate, and logo)
531794-001	Display bezel for use only with computer models equipped with a 13.4-inch BrightView display assembly
531796-001	Display enclosure for use only with computer models equipped with a BrightView display assembly and white trim
531797-001	Display enclosure for use only with computer models equipped with an AntiGlare display assembly and white trim
531807-001	Base enclosure (includes six rubber feet)
531808-001	Plastics Kit ✎ See “Plastics Kit” on page 12 for more Plastics Kit spare part information.
531809-001	USB board (includes USB board cable)
531810-001	Power connector and cable
531811-001	Bluetooth module cable
531812-001	Audio board (includes audio board cable)
531813-001	Fan/heat sink assembly for use only with computer models equipped with graphics subsystems with UMA memory (includes replacement thermal material)
531814-001	Fan/heat sink assembly for use only with computer models equipped with graphics subsystems with Discrete memory (includes replacement thermal material)
531815-001	Screw Kit
531816-001	Speaker assembly (includes speaker assembly cable)
531817-001	Switch cover for use only with computer models with black trim (includes power button board and cable)
531818-001	Switch cover for use only with computer models with white trim (includes power button board and cable)
531820-001	Top cover with fingerprint reader board with molded finish for use only with computer models with white trim (includes TouchPad on/off board and cable, TouchPad button board and cable, TouchPad board and cable, and fingerprint reader board cable)
531821-001	Top cover without fingerprint reader board with molded finish for use only with computer models with white trim (includes fingerprint reader board cable)

Continued

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Spare part number	Description
531822-001	Top cover with fingerprint reader board molded finish for use only with computer models with white trim (includes TouchPad on/off board and cable, TouchPad button board and cable, TouchPad board and cable, and fingerprint reader board cable)
531823-001	Top cover without fingerprint reader board molded finish for use only with computer models with white trim (includes fingerprint reader board cable)
531826-001	LED board (includes LED board cable)
531827-001	SIM slot board (includes SIM slot board cable)
531828-001	Fingerprint reader board (includes fingerprint reader board cable)
531829-001	RTC battery (includes RTC battery cable and double-sided tape)
532324-001	Intel Celeron T1600 1.66-GHz processor (1-MB L2 cache, 667-MHz FSB, includes replacement thermal material)
534989-001	Rubber Feet Kit (includes six rubber feet)
534990-001	Hard Drive Hardware Kit (includes hard drive connector, hard drive bracket, and screws)
537205-001	Wireless antenna set for use only with computer models equipped with an AntiGlare display assembly
538657-001	13.4-inch AntiGlare display assembly for use only with computer models with blue trim (includes 2 WLAN antenna transceivers and cables, 2 WWAN antenna transceivers and cables, webcam, microphone, nameplate, and logo)
538658-001	13.3-inch BrightView display assembly for use only with computer models with blue trim (includes 2 WLAN antenna transceivers and cables, 2 WWAN antenna transceivers and cables, webcam, microphone, nameplate, and logo)
538659-001	13.4-inch BrightView display assembly for use only with computer models with blue trim (includes 2 WLAN antenna transceivers and cables, 2 WWAN antenna transceivers and cables, webcam, microphone, nameplate, and logo)
538660-001	Display enclosure for use only with computer models equipped with a BrightView display assembly and blue trim
538661-001	Display enclosure for use only with computer models equipped with a AntiGlare display assembly and blue trim
538662-001	Switch cover for use only with computer models with black trim (includes power button board and cable)
538663-001	Top cover without fingerprint reader board with molded finish for use only with computer models with blue trim (includes TouchPad on/off board and cable, TouchPad button board and cable, and TouchPad board and cable)
538665-001	Keyboard without backlight with molded finish for use only with computer models with blue trim in the United States (includes keyboard cable)
538665-121	Keyboard without backlight with molded finish for use only with computer models with blue trim in French Canada (includes keyboard cable)
538665-281	Keyboard without backlight with molded finish for use only with computer models with blue trim in Thailand (includes keyboard cable)
538665-291	Keyboard without backlight with molded finish for use only with computer models with blue trim in Japan (includes keyboard cable)
538665-AB1	Keyboard without backlight with molded finish for use only with computer models with blue trim in Taiwan (includes keyboard cable)
538665-AD1	Keyboard without backlight with molded finish for use only with computer models with blue trim in South Korea (includes keyboard cable)
539044-001	Keyboard without backlight with molded finish for use only with computer models with white trim in the United States (includes keyboard cable)

Continued

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Spare part number	Description
539044-031	Keyboard without backlight with molded finish for use only with computer models with white trim in the United Kingdom (includes keyboard cable)
539044-041	Keyboard without backlight with molded finish for use only with computer models with white trim in Germany (includes keyboard cable)
539044-051	Keyboard without backlight with molded finish for use only with computer models with white trim in France (includes keyboard cable)
539044-061	Keyboard without backlight with molded finish for use only with computer models with white trim in Italy (includes keyboard cable)
539044-071	Keyboard without backlight with molded finish for use only with computer models with white trim in Spain (includes keyboard cable)
539044-131	Keyboard without backlight with molded finish for use only with computer models with white trim in Portugal (includes keyboard cable)
539044-141	Keyboard without backlight with molded finish for use only with computer models with white trim in Turkey (includes keyboard cable)
539044-161	Keyboard without backlight with molded finish for use only with computer models with white trim in Latin America (includes keyboard cable)
539044-201	Keyboard without backlight with molded finish for use only with computer models with white trim in Brazil (includes keyboard cable)
539044-221	Keyboard without backlight with molded finish for use only with computer models with white trim in the Czech Republic (includes keyboard cable)
539044-251	Keyboard without backlight with molded finish for use only with computer models with white trim in Russia (includes keyboard cable)
539044-A41	Keyboard without backlight with molded finish for use only with computer models with white trim in Belgium (includes keyboard cable)
539044-AB1	Keyboard without backlight with molded finish for use only with computer models with white trim in Taiwan (includes keyboard cable)
539044-B31	Keyboard without backlight with molded finish for use only with computer models with white trim in Europe, the Middle East, and Africa (includes keyboard cable)
539044-BB1	Keyboard without backlight with molded finish for use only with computer models with white trim in Israel (includes keyboard cable)
539044-BG1	Keyboard without backlight with molded finish for use only with computer models with white trim in Switzerland (includes keyboard cable)
539044-DJ1	Keyboard without backlight with molded finish for use only with computer models with white trim in Greece (includes keyboard cable)
570036-001	Intel Core P8700 2.53-GHz processor (3-MB L2 cache, 1066-MHz FSB, includes replacement thermal material)
570434-001	Intel Core T9900 3.06-GHz processor (6-MB L2 cache, 1066-MHz FSB, includes replacement thermal material)
572084-001	250-GB, 7200-rpm hard drive (includes hard drive connector and hard drive bracket)
572085-001	320-GB, 7200-rpm hard drive (includes hard drive connector and hard drive bracket)
572926-001	Intel Pentium T3000 1.80-GHz processor (1-MB L2 cache, 800-MHz FSB, includes replacement thermal material)
572928-001	Intel Core T6500 2.10-GHz processor (6-MB L2 cache, 1066-MHz FSB, includes replacement thermal material)

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Spare part number	Description
572929-001	Intel Pentium T4300 2.10-GHz processor (1-MB L2 cache, 800-MHz FSB, includes replacement thermal material)
573076-001	Intel Core P7550 2.26-GHz processor (3-MB L2 cache, 1066-MHz FSB, includes replacement thermal material)
573738-001	5000-GB, 7200-rpm hard drive (includes hard drive connector and hard drive bracket)

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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.

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.

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Drive handling

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

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

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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

	Relative humidity		
Event	**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.

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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 ±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

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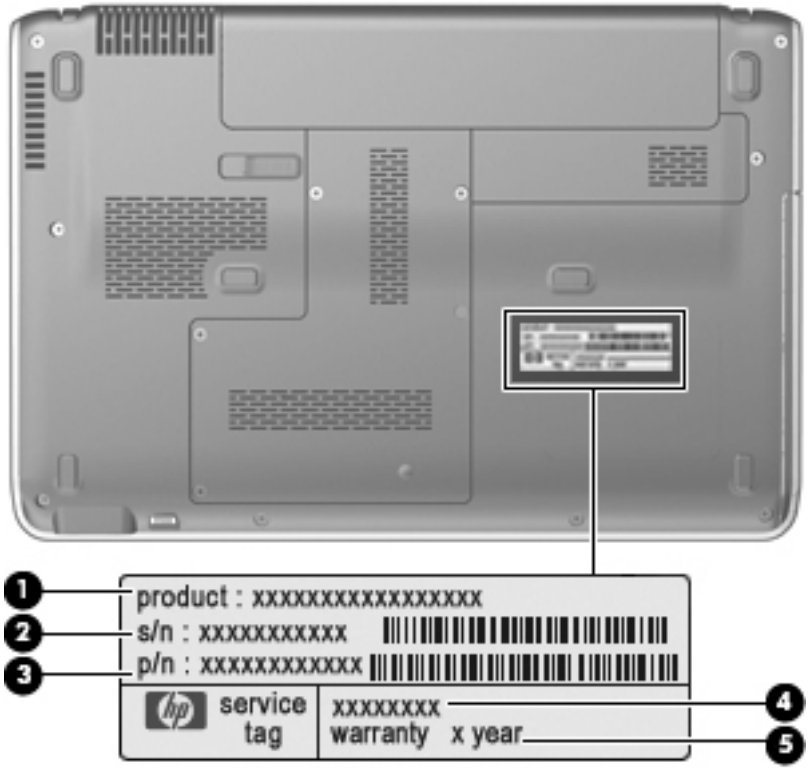
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 67 screws, in 10 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.



Item	Component	Description
❶	Product name	This is the product name affixed to the front of your computer.
❷	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.
❸	Part number/Product number (p/n)	This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.
❹	Model description	This is the alphanumeric identifier you use to locate documents, drivers, and support for your computer.
❺	Warranty period	This number describes the duration (in years) of the warranty period for this computer.

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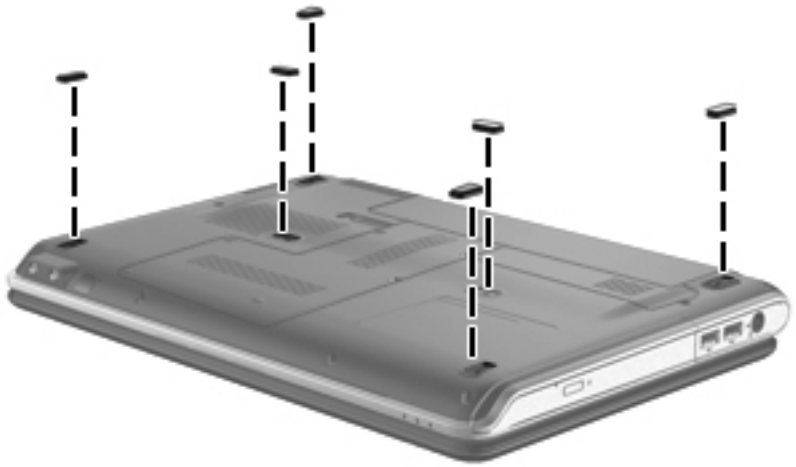
Computer feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Rubber Kit, spare part number 534989-001. There are 6 rubber feet that attach to the base enclosure in the locations illustrated below.



Battery

Description	Spare part number
9-cell, 83-Wh battery	530803-001
6-cell, 55-Wh battery	530802-001
6-cell, 47-Wh battery	530801-001

Before disassembling the computer, follow these steps:

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

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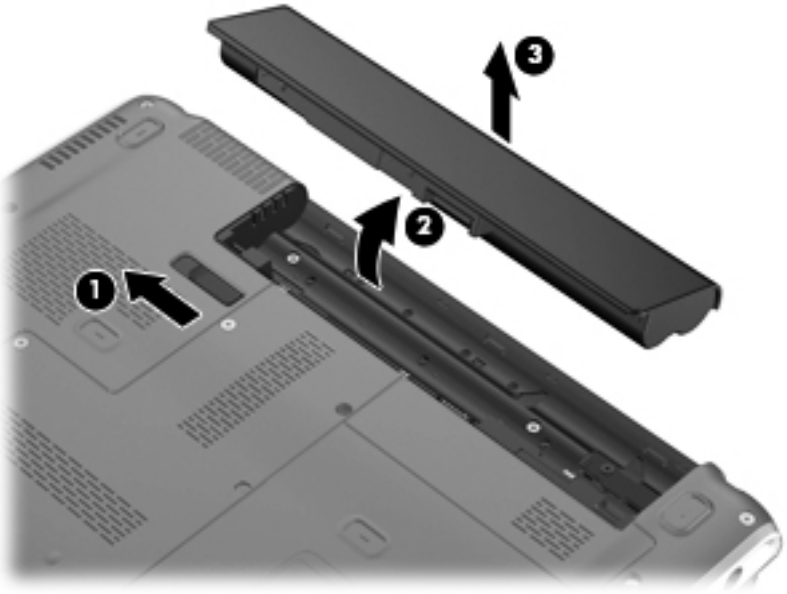
Remove the battery:

1. Turn the computer upside down on a flat surface, with the battery bay toward you.
2. Slide the battery release latch ❶ to release the battery.
3. Lift the front edge of the battery pack ❷ until it rests at an angle.
4. Remove the battery ❸ from the computer.



Install the battery by inserting it into the battery bay until you hear a click.

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Hard drive

The hard drive spare part kit includes a hard drive connector and hard drive bracket.

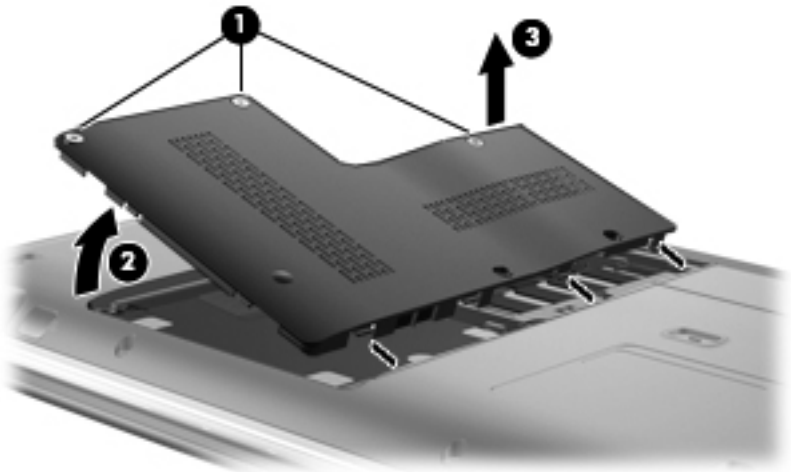
Description	Spare part number
500-GB, 7200-rpm hard drive	573738-001
500-GB, 5400-rpm hard drive	530797-001
320-GB, 7200-rpm hard drive	572085-001
320-GB, 5400-rpm hard drive	530796-001
250-GB, 7200-rpm hard drive	572084-001
250-GB, 5400-rpm hard drive	530795-001
160-GB, 5400-rpm hard drive	530794-001
Hard Drive Hardware Kit (includes hard drive connector, hard drive bracket, and screws)	534990-001

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 6).

Remove the hard drive:

1. Position the computer with the front toward you.
2. Loosen the three Phillips PM2.5×6.0 captive screws ❶ that secure the hard drive cover to the computer.
3. Lift the left side of the hard drive cover ❷ to detach it from the computer.
4. Remove the hard drive cover ❸. The hard drive cover is included in the Plastics Kit, spare part number 531808-001.



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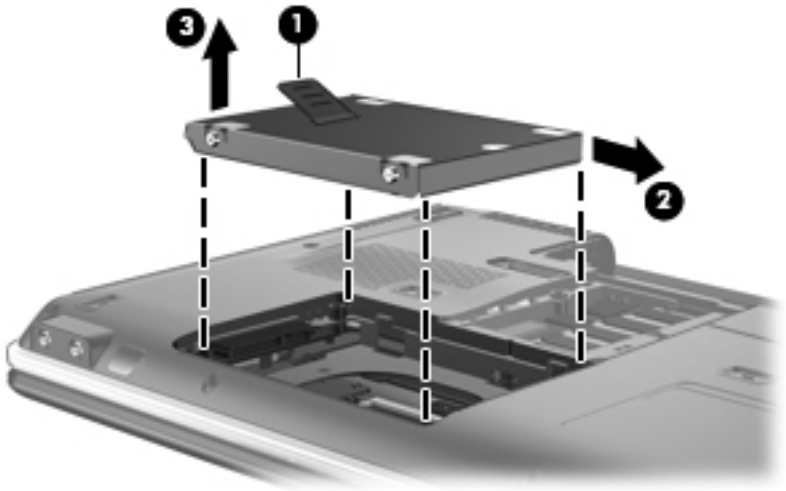
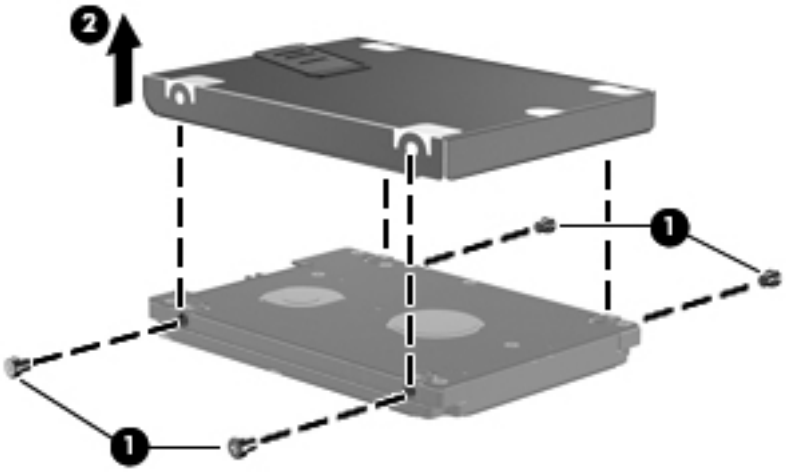
5. Grasp the Mylar tab ❶ on the hard drive and slide the hard drive ❷ to the right.
6. Remove the hard drive ❸ from the hard drive bay.



7. If it is necessary to replace the hard drive bracket, follow these steps:
   a. Remove the two Phillips PM3.0×4.0 screws ❶ from each side of the hard drive.
   b. Lift the bracket ❷ straight up to remove it from the hard drive.



Reverse this procedure to reassemble and install the hard drive.

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Memory module

Description	Spare part number
4-GB memory module (800-MHz, DDR2)	530792-001
2-GB memory module (800-MHz, DDR2)	530790-001
1-GB memory module (800-MHz, DDR2	530788-001

Before removing the memory module, follow these steps:

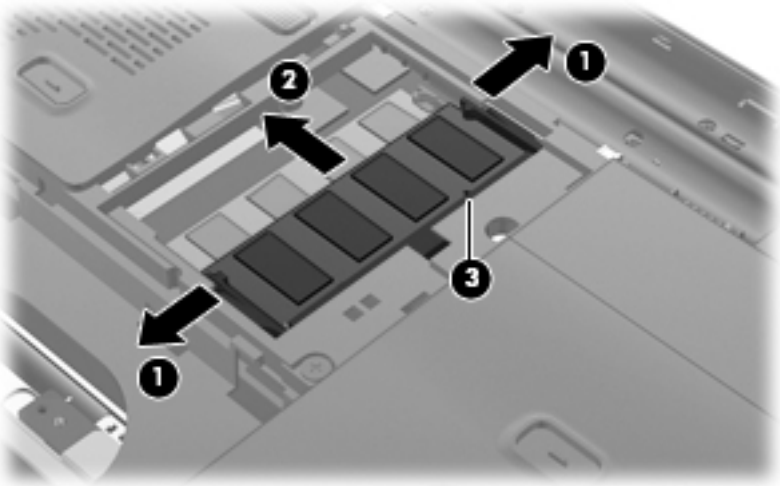
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see "Battery" on page 6).
5. Remove the hard drive cover (see "Hard drive" on page 8).

Remove the memory module:

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

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

   Memory modules are designed with a notch ❸ to prevent incorrect insertion into the memory module slot.



Reverse this procedure to install a memory module.

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WLAN module

CAUTION: The WLAN module and the WWAN module are not interchangeable.

Description	Spare part number
Broadcom 4322AGN 802.11a/b/g/n WLAN module for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands	504664-001
Broadcom 4322AGN 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, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	504664-002
Atheros 9285G 802.11a/b/g/n WLAN module for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands	518436-001
Intel WiFi Link 5100 802.11a/b/g/n WLAN module for use in all countries and regions except Pakistan, Russia, and the Ukraine	480985-001

Continued

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Description	Spare part number
Broadcom 4312G 802.11a/b/g WLAN module for use in Canada, the Cayman Islands, Guam, Puerto Rico, the United States, and the U.S. Virgin Islands	504593-001
Broadcom 4312G 802.11a/b/g WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	504593-002
Intel WiFi Link 5100 802.11a/b/g WLAN module for use only in Pakistan, Russia, and the Ukraine	482957-001

Before removing the WLAN module, follow these steps:

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

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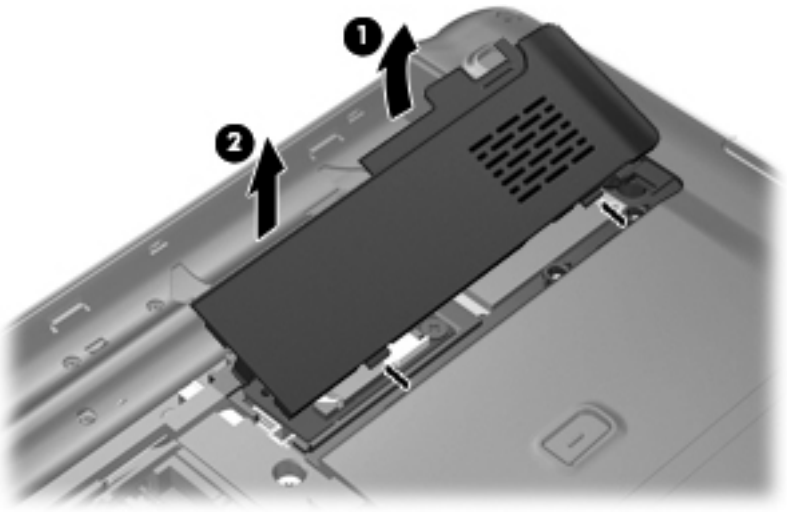
Remove the WLAN module:

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

1. Lift the rear edge of the wireless module compartment cover ❶ to detach the cover from the computer.
2. Remove the wireless module compartment cover ❷. The wireless module compartment cover is included in the Plastics Kit, spare part number 531808-001.



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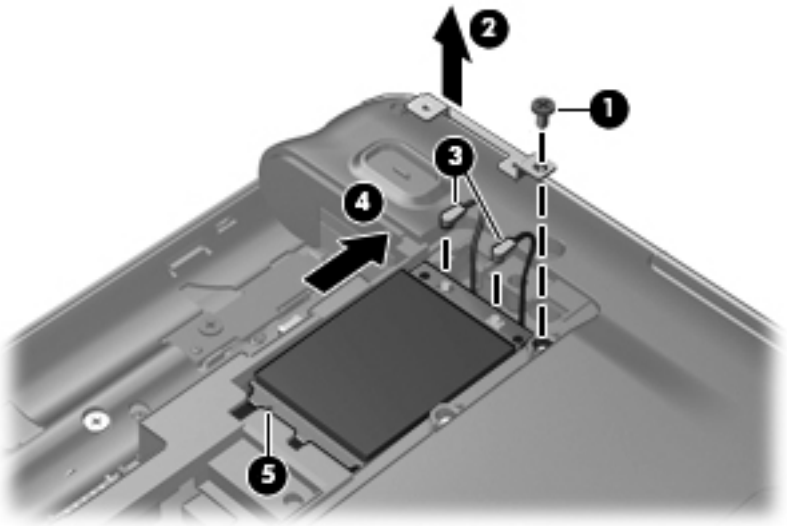
3. Remove the Phillips PM2.5×3.0 screw ❶ that secures the WLAN module bracket to the computer.
4. Remove the WLAN module bracket ❷. (The edge of the module opposite the slot rises away from the computer.)
5. Disconnect the WLAN antenna cables ❸ from the terminals on the WLAN module.

   ✎ The black WLAN antenna cable is connected to the WLAN module "Main" terminal. The white WLAN antenna cable is connected to the WLAN module "Aux" terminal.

6. Remove the WLAN module ❹ by pulling the module away from the slot at an angle.

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



Reverse this procedure to install the WLAN module.

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WWAN module

CAUTION: The WLAN module and the WWAN module are not interchangeable.

Description	Spare part number
HSPA EVDO WWAN module	483377-002

Before removing the WWAN module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see "Battery" on page 6).
5. Remove the wireless module compartment cover and WLAN module (see "WLAN module" on page 11).

Remove the WWAN module:

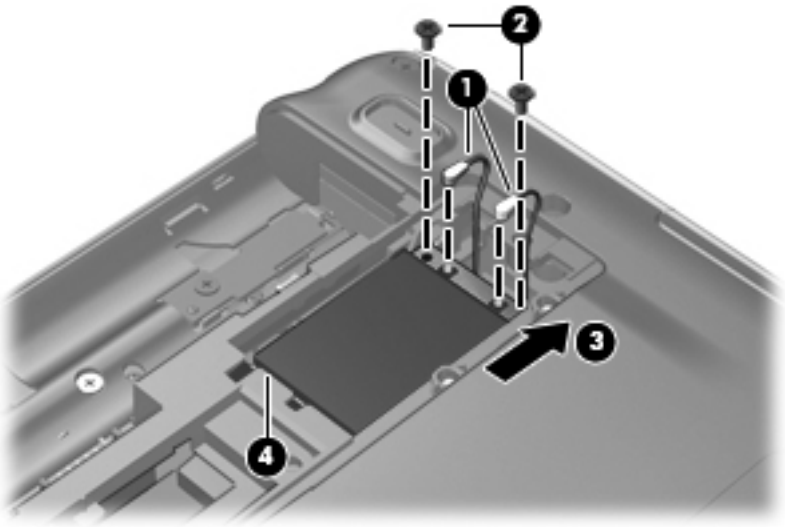
CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module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

1. Disconnect the WWAN antenna cables ❶ from the terminals on the WWAN module.

   ✎ The red WWAN antenna cable is connected to the WWAN module "Main" terminal. The blue WWAN antenna cable is connected to the WWAN module "Aux" terminal.

2. Remove the two Phillips PM2.0×3.0 screws ❷ that secure the WWAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)
3. Remove the WWAN module ❸ by pulling the module away from the slot at an angle.

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



Reverse this procedure to install the WWAN module.

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SIM slot board

Description	Spare part number
SIM slot board (includes cable)	531827-001

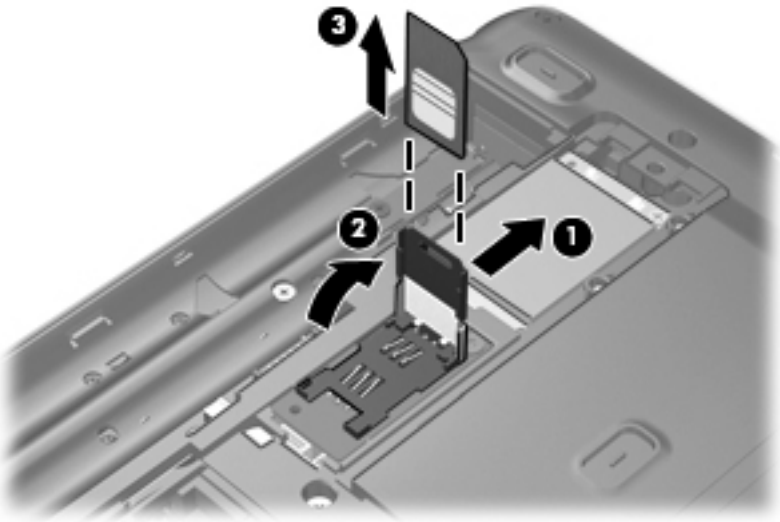
Before removing the SIM slot board, follow these steps:

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 6).
5. Remove the wireless module compartment cover (see "WLAN module" on page 11).

Remove the SIM slot board:

1. Slide the SIM cover ❶ to the right to release the cover.
2. Lift the left side of the cover ❷ and swing it up and to the right.
3. Remove the SIM ❸.

Store the SIM in a safe place. It will be necessary to reinstall the SIM when reassembling the computer.



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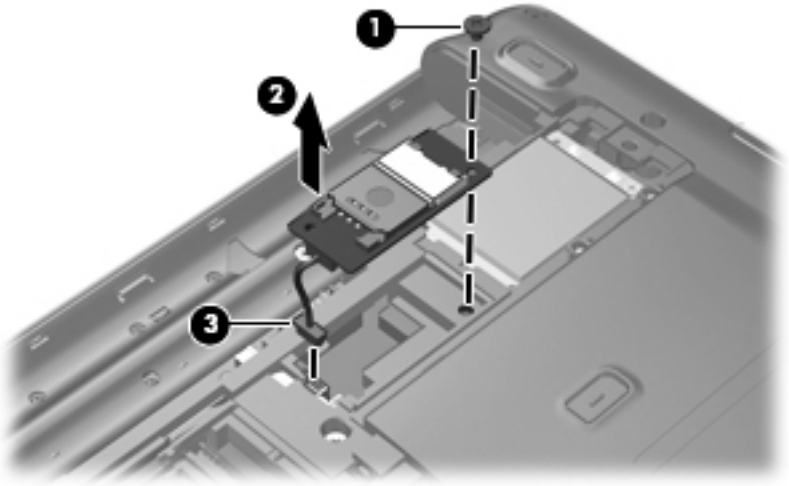
4. Remove the Phillips PM2.5×3.0 screw ❶ that secures the SIM slot board to the computer.
5. Lift the SIM slot board ❷ as far as the SIM slot board cable allows.
6. Disconnect the SIM slot board cable ❸ from the system board.



Reverse this procedure to install the SIM slot board.

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RTC battery

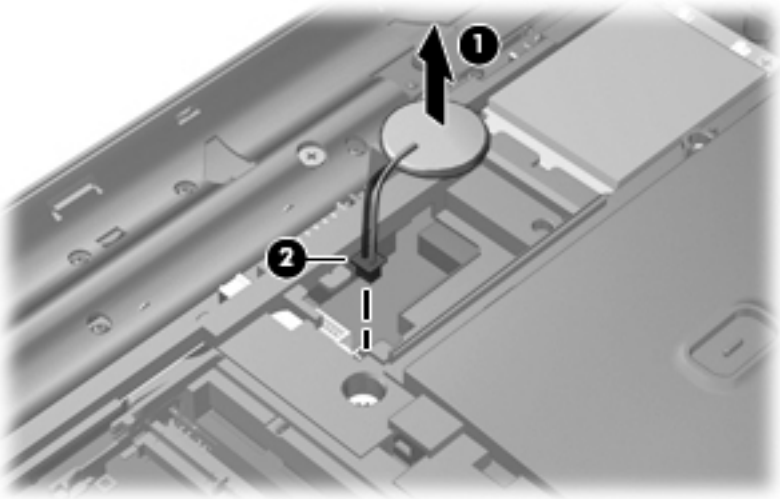
Description	Spare part number
RTC battery (includes cable and double-sided tape)	531829-001

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 6).
5. Remove the wireless module compartment cover (see "WLAN module" on page 11).
6. Remove the SIM slot board (see "SIM slot board" on page 16).

Remove the RTC battery:

1. Detach the RTC battery ❶ from the base enclosure and release the RTC battery as far as the RTC battery cable allows. (The RTC battery is attached to the base enclosure with double-sided tape.)
2. Disconnect the RTC battery cable ❷ from the system board.



3. Remove the RTC battery.

Reverse this procedure to install the RTC battery.

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Optical drive

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

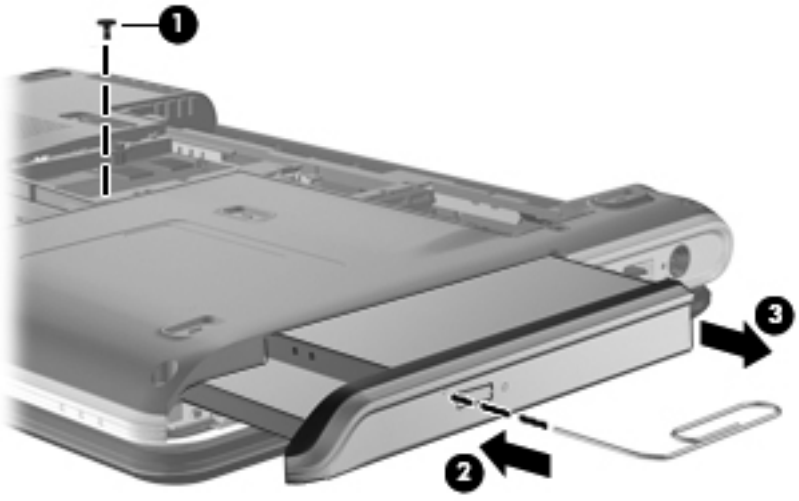
Description	Spare part number
Blu-ray ROM DVD±R/RW SuperMulti DL Drive with LightScribe	530800-001
Blu-ray ROM DVD±R/RW SuperMulti DL Drive	530799-001
DVD±RW and CD-RW SuperMulti Double-Layer Drive with LightScribe	530798-001

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 6).

Remove the optical drive:

1. Position the computer with the right side toward you.
2. Remove the Phillips PM2.0×8.0 screw ❶ that secures the optical drive to the computer.
3. Insert a thin tool, such as a paper clip ❷, into the release access. (The optical drive disc tray is partially ejected from the optical drive.)
4. Use the disc tray frame to slide the optical drive ❸ out of the computer.



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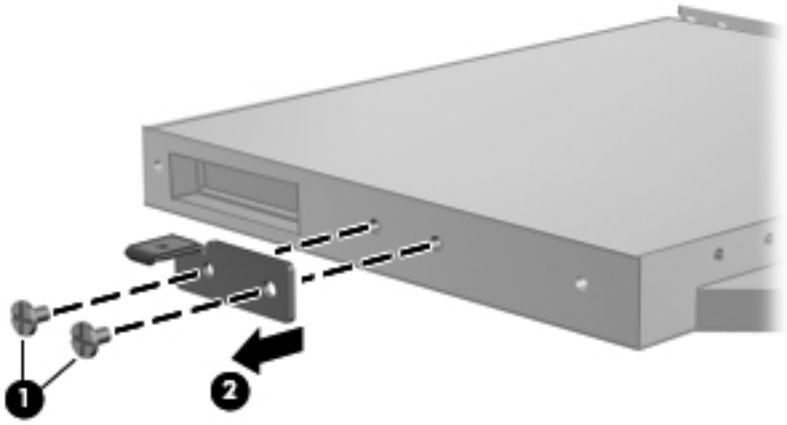
5. If it is necessary to replace the optical drive bracket, follow these steps:
   a. Position the optical drive with the rear toward you.
   b. Remove the two Phillips PM2.0×3.0 screws ❶ that secure the optical drive bracket to the optical drive.
   c. Remove the optical drive bracket ❷.



Reverse this procedure to reassemble and install an optical drive.

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Keyboard

For use in country or region:	Spare part number	For use in country or region:	Spare part number
Keyboard with backlight (includes keyboard cable and backlight cable; available only in black with painted finish):			
■ For use in Belgium	530646-A41	■ For use in Latin America	530646-161
■ For use in the Czech Republic	530646-221	■ For use in Portugal	530646-131
■ For use in Denmark, Finland, and Norway	530646-DH1	■ For use in Russia	530646-251
■ For use in Europe, the Middle East, and Africa	530646-B31	■ For use in Saudi Arabia	530646-171
■ For use in France	530646-051	■ For use in Spain	530646-071
■ For use in French Canada	530646-121	■ For use in Switzerland	530646-BG1
■ For use in Germany	530646-041	■ For use in Turkey	530646-141
■ For use in Greece	530646-DJ1	■ For use in the United Kingdom	530646-031
■ For use in Israel	530646-BB1	■ For use in the United States	530646-001
■ For use in Italy	530646-061		
Keyboards without backlight in white with molded finish (includes keyboard cable):			
■ For use in Belgium	530643-A41	■ For use in Italy	530643-
■ For use in Brazil	530643-201	■ For use in Latin America	530643-161
■ For use in the Czech Republic	530643-221	■ For use in Russia	530643-251
■ For use in Europe, the Middle East, and Africa	530643-B31	■ For use in Spain	530643-071
■ For use in France	530643-051	■ For use in Switzerland	530643-BG1
■ For use in French Canada	530643-121	■ For use in Taiwan	530643-AB1
■ For use in Germany	530643-041	■ For use in Turkey	530643-141
■ For use in Greece	530643-DJ1	■ For use in the United Kingdom	530643-031
■ For use in Israel	530643-BB1	■ For use in the United States	530643-001
■ For use in Italy	530643-061		
Keyboards without backlight in white with painted finish:			
■ For use in Denmark, Finland, and Norway	530644-DH1	■ For use in Saudi Arabia	530644-171
■ For use in French Canada	530644-121	■ For use in South Korea	530644-AD1
■ For use in Japan	530644-291	■ For use in Thailand	530644-281

Continued

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For use in country or region:	Spare part number	For use in country or region:	Spare part number
Keyboards without backlight in blue color and molded finish:			
■ For use in French Canada	538665-121	■ For use in Taiwan	538665-AB1
■ For use in Japan	538665-291	■ For use in Thailand	538665-281
■ For use in South Korea	538665-AD1	■ For use in the United States	538665-001
Keyboards without backlight with molded finish for use only with computer models with white trim:			
■ For use in Belgium	539044-A41	■ For use in Latin America	539044-161
■ For use in Brazil	539044-201	■ For use in Portugal	539044-131
■ For use in the Czech Republic	539044-221	■ For use in Russia	539044-251
■ For use in Europe, the Middle East, and Africa	539044-DH1	■ For use in Spain	539044-071
■ For use in France	539044-051	■ For use in Switzerland	539044-BG1
■ For use in Germany	539044-041	■ For use in Taiwan	539044-AB1
■ For use in Greece	539044-DJ1	■ For use in Turkey	539044-141
■ For use in Israel	539044-BB1	■ For use in the United Kingdom	539044-031
■ For use in Italy	539044-061	■ For use in the United States	539044-001
Keyboards without backlight with painted finish for use only with computer models with white trim:			
■ For use in Belgium	530645-A41	■ For use in Latin America	530645-161
■ For use in Brazil	530645-201	■ For use in Portugal	530645-131
■ For use in the Czech Republic	530645-221	■ For use in Russia	530645-251
■ For use in Denmark, Finland, and Norway	530645-DH1	■ For use in Saudi Arabia	530645-171
■ For use in Europe, the Middle East, and Africa	530645-B31	■ For use in South Korea	530645-AD1
■ For use in France	530645-051	■ For use in Spain	530645-071
■ For use in French Canada	530645-121	■ For use in Switzerland	530645-BG1
■ For use in Germany	530645-041	■ For use in Taiwan	530645-AB1
■ For use in Greece	530645-DJ1	■ For use in Thailand	530645-281
■ For use in Israel	530645-BB1	■ For use in Turkey	530645-141
■ For use in Italy	530645-061	■ For use in the United Kingdom	530645-031
■ For use in Japan	530645-291	■ For use in the United States	530645-001

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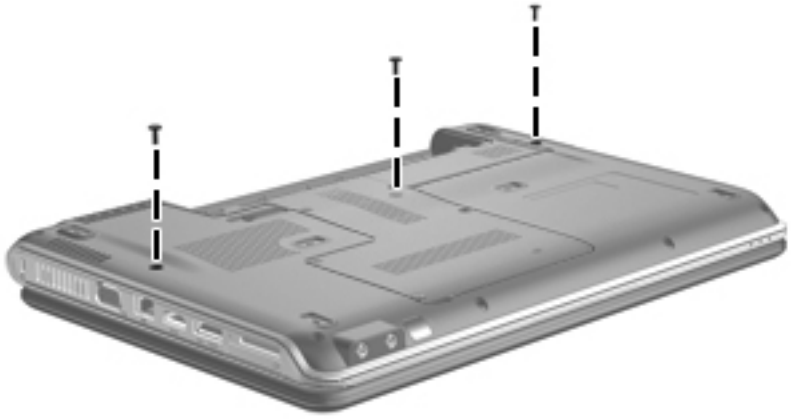
Before removing the keyboard, follow these steps:

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 6).
5. Remove the hard drive cover (see "Hard drive" on page 8).

Remove the keyboard:

1. Remove the three Phillips PM2.0×8.0 screws that secure the keyboard to the computer.



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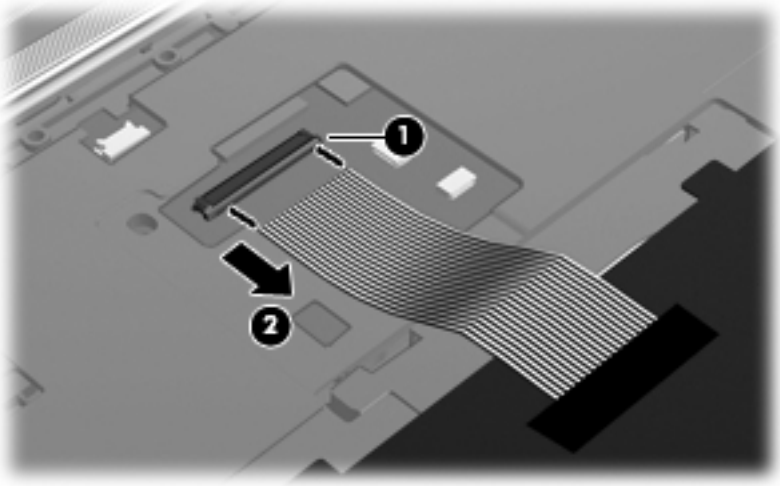
2. Turn the computer display-side up with the front toward you.
3. Open the computer as far as possible.
4. Lift the rear edge of the keyboard ❶ until it rests at an angle.
5. Slide the keyboard ❷ toward the display until the tabs on the front edge of the keyboard are clear of the openings in the top cover.
6. Swing the rear edge of the keyboard ❸ up and forward until it rests upside down on the top cover.

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



8. Remove the keyboard.

Reverse this procedure to install the keyboard.

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Switch cover

The switch cover spare part kit includes the power button board and cable.

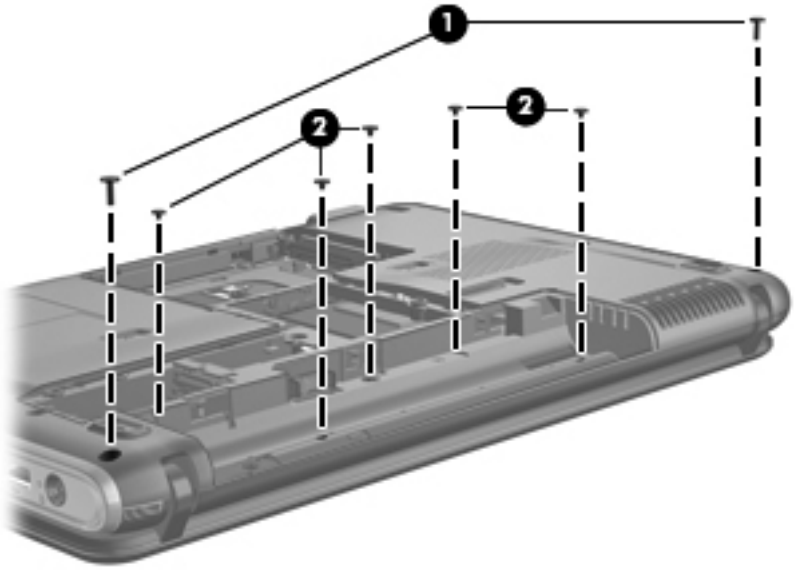
Description	Spare part number
Switch cover for use only with computer models with black trim	531817-001
Switch cover for use only with computer models with blue black trim	538662-001
Switch cover for use only with computer models with white trim	531818-001

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 battery (see "Battery" on page 6).
5. Remove the hard drive cover (see "Hard drive" on page 8).
6. Remove the keyboard (see "Keyboard" on page 21).

Remove the switch cover:

1. Remove the two Phillips PM2.0×8.0 screws ❶ and the five Phillips PM2.0×3.0 screws ❷ that secure the switch cover to the computer.



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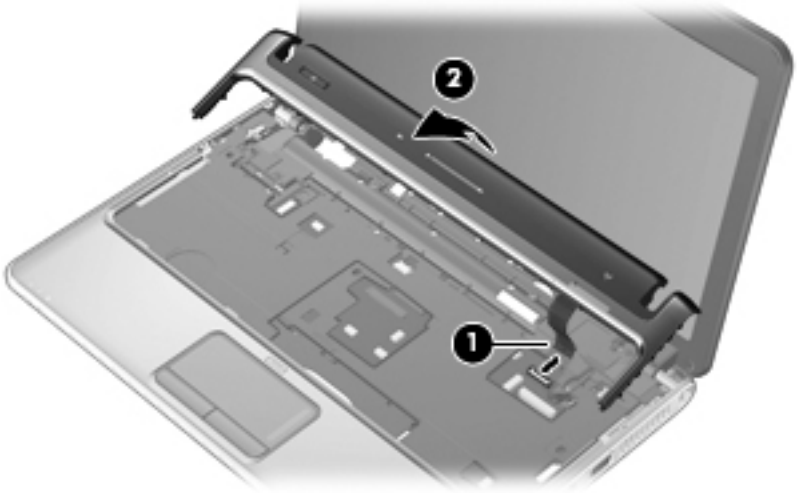
2. Turn the computer display-side up with the front toward you.
3. Open the computer as far as possible.
4. Disconnect the LED board cable ❶ from the low insertion force (LIF) connector on the system board.
5. Lift the rear edge of the switch cover ❷ and swing it up and forward until it detaches from the computer.



6. Remove the switch cover.

Reverse this procedure to install the switch cover.

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Speaker assembly

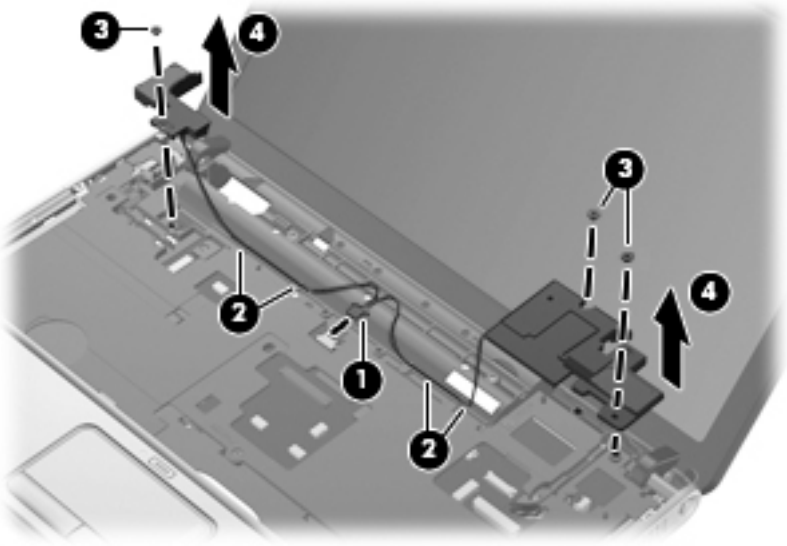
Description	Spare part number
Speaker assembly	531816-001

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 6).
5. Remove the following components:
   a. Hard drive cover (see "Hard drive" on page 8)
   b. Keyboard (see "Keyboard" on page 21)
   c. Switch cover (see "Switch cover" on page 25).

Remove the speaker assembly:

1. Disconnect the speaker assembly cable ❶ from the system board.
2. Release the speaker cables from the clips ❷ and routing channels built into the top cover.
3. Remove the three Phillips PM2.0×3.0 screws ❸ that secure the speaker assembly to the top cover.
4. Remove the speaker assembly ❹.



Reverse this procedure to install the speaker assembly.

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Display assembly

The display assembly spare part kit includes 2 WLAN antenna transceivers and cables, 2 WWAN antenna transceivers and cables, webcam, microphone, nameplate, and logo.

Description	Spare part number
AntiGlare display assemblies:	
■ 13.4-inch display assembly for use only with computer models with black trim	530785-001
■ 13.4-inch display assembly for use only with computer models with blue trim	538657-001
■ 13.4-inch display assembly for use only with computer models with white trim	530787-001
BrightView display assemblies:	
■ 13.4-inch display assembly for use only with computer models with black trim	531787-001
■ 13.4-inch display assembly for use only with computer models with blue trim	538659-001
■ 13.4-inch display assembly for use only with computer models with white trim	531793-001
■ 13.3-inch display assembly for use only with computer models with black trim	531786-001
■ 13.3-inch display assembly for use only with computer models with blue trim	538658-001
■ 13.3-inch display assembly for use only with computer models with white trim	531792-001

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 6).
5. Disconnect the wireless antenna cables from the WLAN module (see "WLAN module" on page 11) and the WWAN module (see "WWAN module" on page 15).
6. Remove the following components:
   a. Hard drive cover (see "Hard drive" on page 8)
   b. Keyboard (see "Keyboard" on page 21)
   c. Switch cover (see "Switch cover" on page 25)
   d. Speaker assembly (see "Speaker assembly" on page 27).

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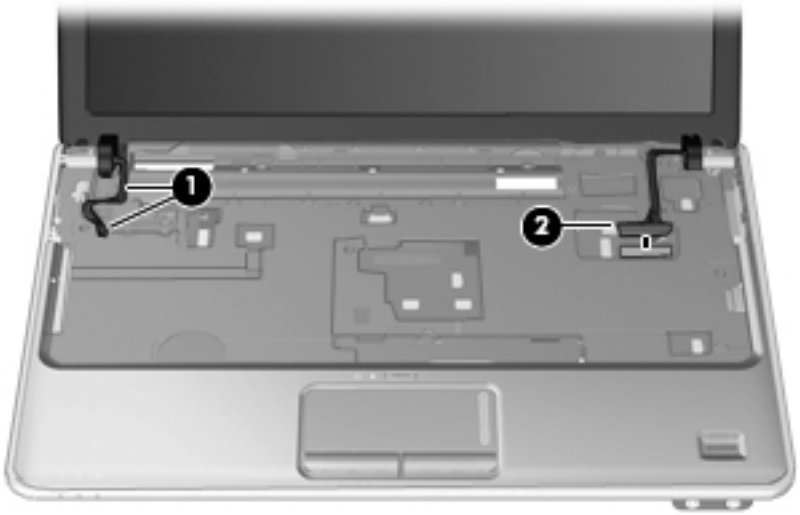
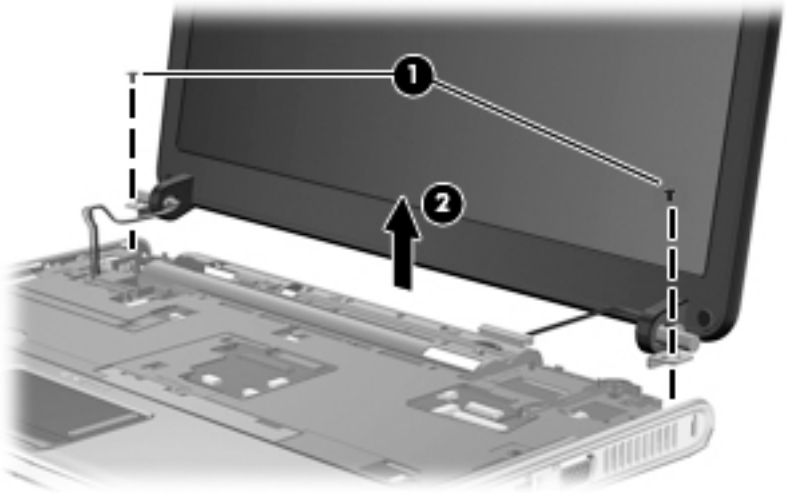
Remove the display assembly:

1. Remove the WLAN antenna cables ❶ from the opening in the base enclosure.
2. Disconnect the display panel cable ❷ from the system board.



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

3. Remove the two Phillips PM2.5×6.0 screws ❶ that secure the display assembly to the computer.
4. Lift the display assembly ❷ straight up and remove it.



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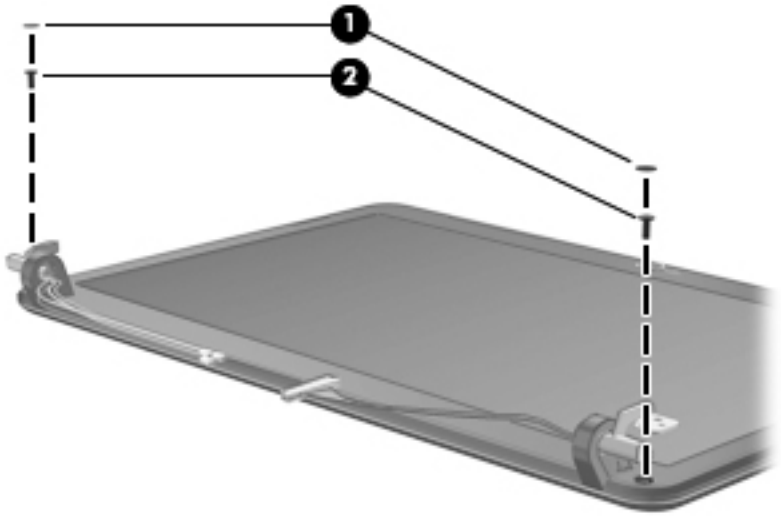
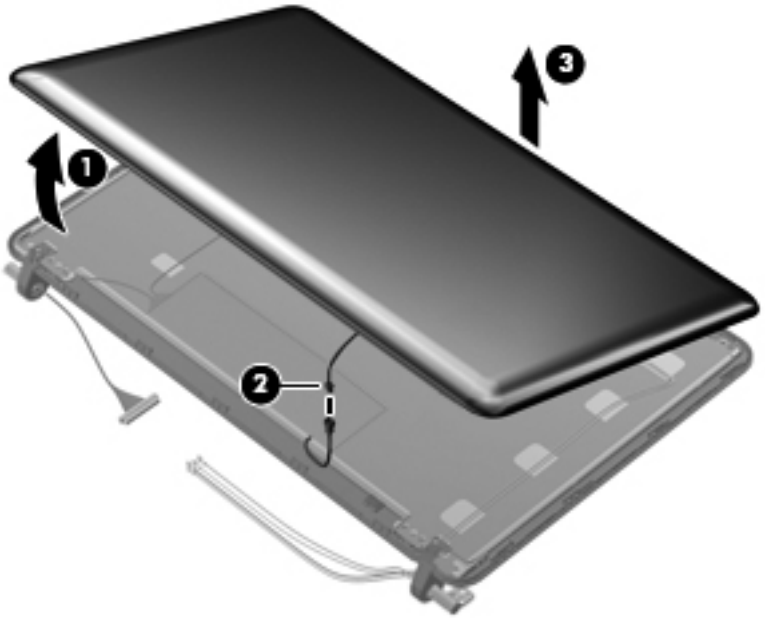
Steps 5 through 21 provide display assembly internal component removal information for computer models equipped with AntiGlare display assemblies. See steps 22 through 38 for display assembly internal component removal information for computer models equipped with BrightView display assemblies.

5. If it is necessary to replace the display enclosure or any of the display assembly internal components, remove the Mylar screw covers ❶ and the two Phillips PM2.5×6.0 screws ❷ on the display bezel lower edge.



6. Turn the display assembly upside down with the bottom edge toward you.
7. Detach the bottom edge of the display enclosure ❶ and lift it up as far as the display LED cable allows.
8. Disconnect the display LED cable ❷.
9. Remove the display enclosure ❸. Display enclosures are available using the following spare part numbers:
   - ❏ 531791-001—For use only with computer models with black trim
   - ❏ 538661-001—For use only with computer models with blue trim
   - ❏ 531797-001—For use only with computer models with white trim



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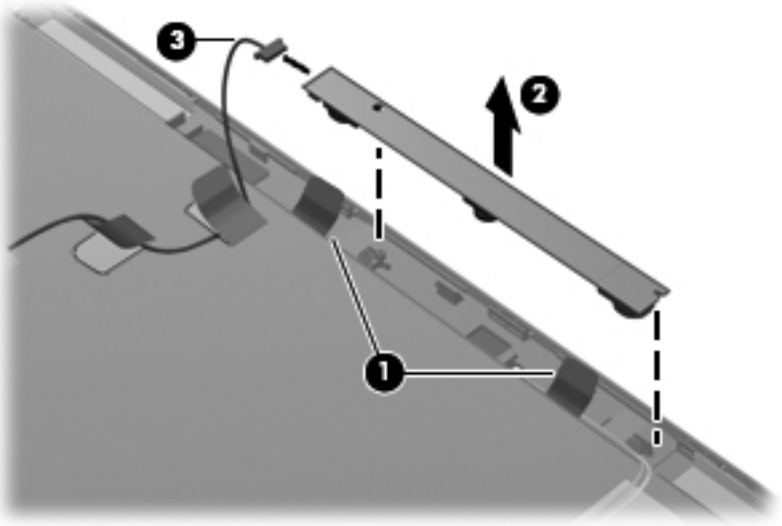
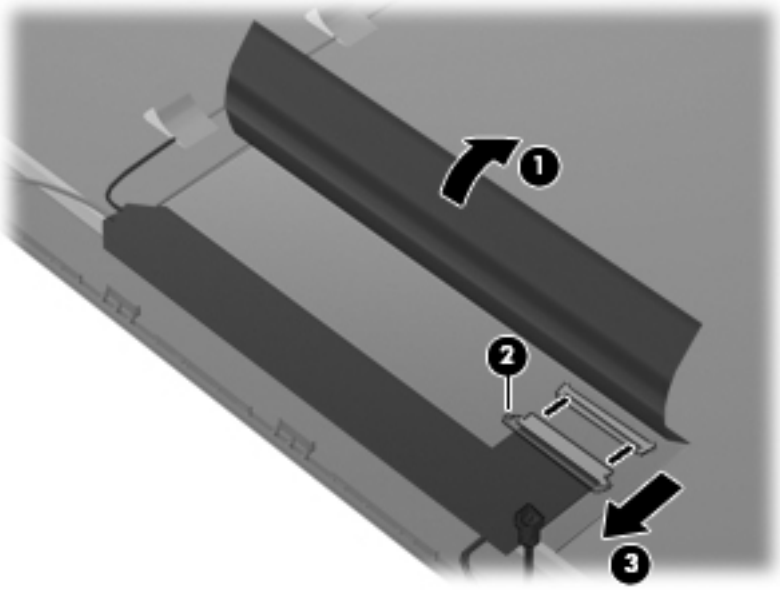
10. If it is necessary to replace the webcam/microphone module, release the two metal tabs ❶ built into the display panel shielding.
11. Lift the webcam/microphone module ❷ as far from the display bezel as the webcam/microphone cable allows.
12. Disconnect the webcam/microphone module ❸ from the webcam/microphone module.



13. Remove the webcam/microphone module. The webcam/microphone module is available using spare part number 531785-001.
14. If it is necessary to replace the display panel cable, fold back the flap built into the display panel shielding ❶.
15. Lift the top edge of the display panel cable bracket ❷ and swing it toward you and down.
16. Disconnect the display panel cable from the display panel ❸.



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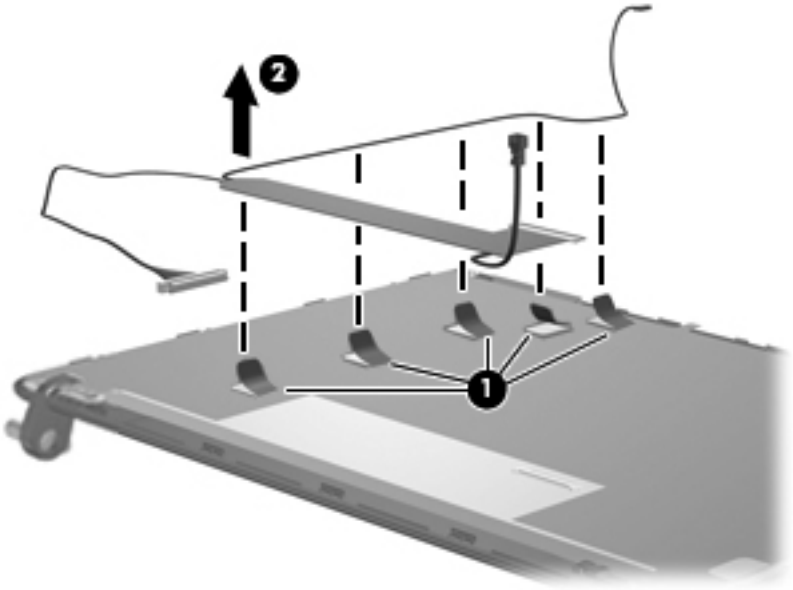
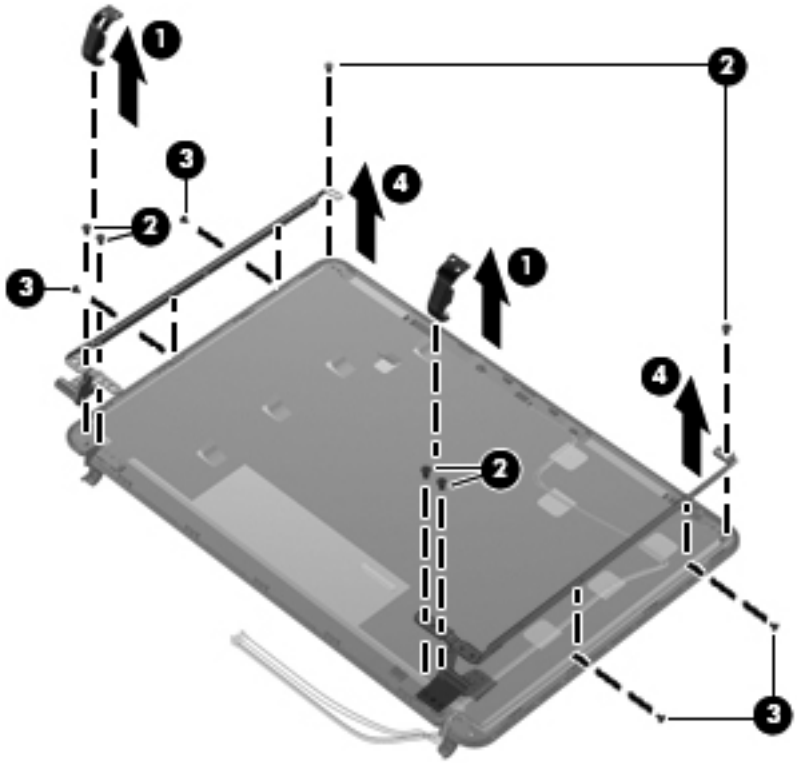
17. Release the tabs ❶ built into the display panel shielding.
18. Remove the display panel cable ❷. The display panel cable is available using spare part number 531782-001.



19. If it is necessary to replace the display hinges, remove the hinge covers ❶ from the hinges.
20. Remove the six Phillips PM2.5×4.0 screws ❷ and the four Phillips PM2.0×3.0 screws ❸ that secure the hinges to the display panel.
21. Remove the display hinges ❹. The display hinges are available using spare part number 531780-001.



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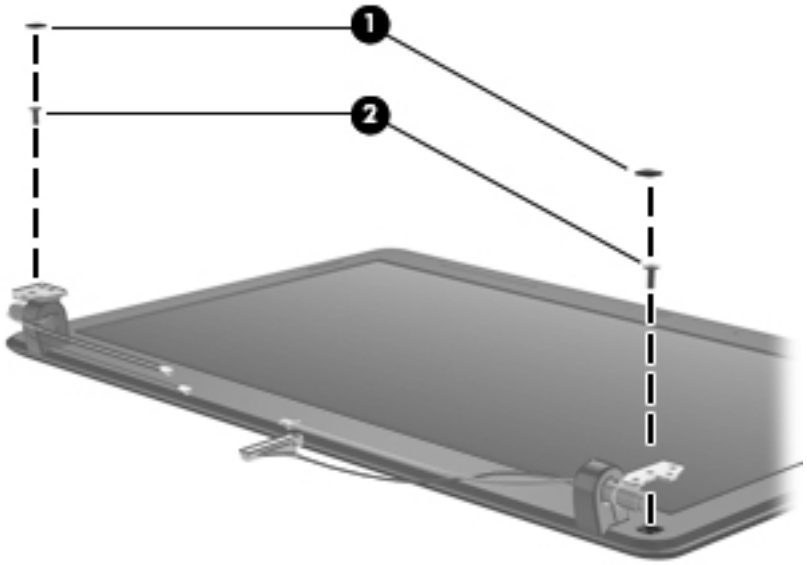
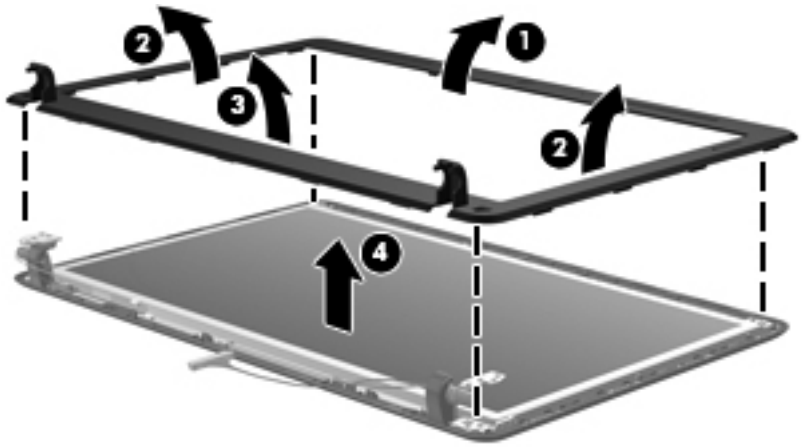
Steps 22 through 38 provide display assembly internal component removal information for computer models equipped with BrightView display assemblies. See steps 5 through 21 for display assembly internal component removal information for computer models equipped with AntiGlare display assemblies.

22. If it is necessary to replace the display bezel or any of the display assembly internal components, remove the Mylar screw covers ❶ and the two Phillips PM2.5×6.0 screws ❷ on the display bezel lower edge.



23. Flex the inside edges of the top edge ❶, the left and right sides ❷, and the bottom edge of the display bezel ❸ until the bezel disengages from the display enclosure.
24. Remove the display bezel ❹. The display bezel is available using the following spare part numbers:
    - ❏ 531794-001—for use only with computer models equipped with a 13.4-inch display assembly
    - ❏ 531788-001—for use only with computer models equipped with a 13.3-inch display assembly.



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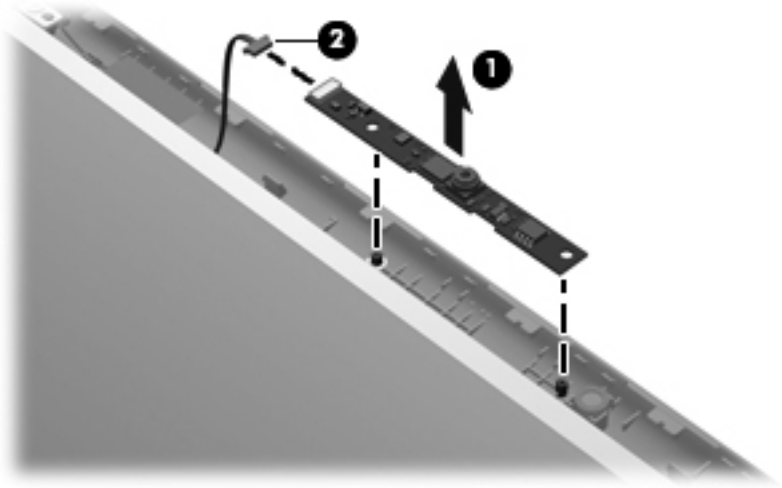
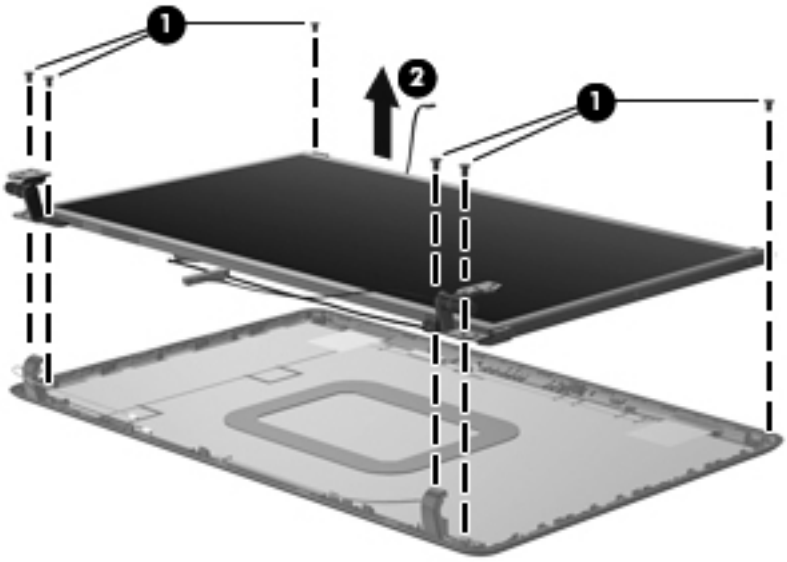
25. If it is necessary to replace the webcam/microphone module, lift the webcam/microphone module ❶ as far from the display enclosure as the webcam/microphone module allows.
26. Disconnect the webcam/microphone module cable ❷ from the webcam/microphone module.



27. Remove the webcam/microphone module. The webcam/microphone module is available using spare part number 531785-001.
28. If it is necessary to replace the display panel, remove the six Phillips PM2.5×4.0 screws ❶ that secure the display panel to the display enclosure.
29. Remove the display panel ❷. The display panel is available using the following spare part numbers:
    - ❏ 531779-001—for use only with computer models equipped with a 13.4-inch display assembly
    - ❏ 531778-001—for use only with computer models equipped with a 13.3-inch display assembly.



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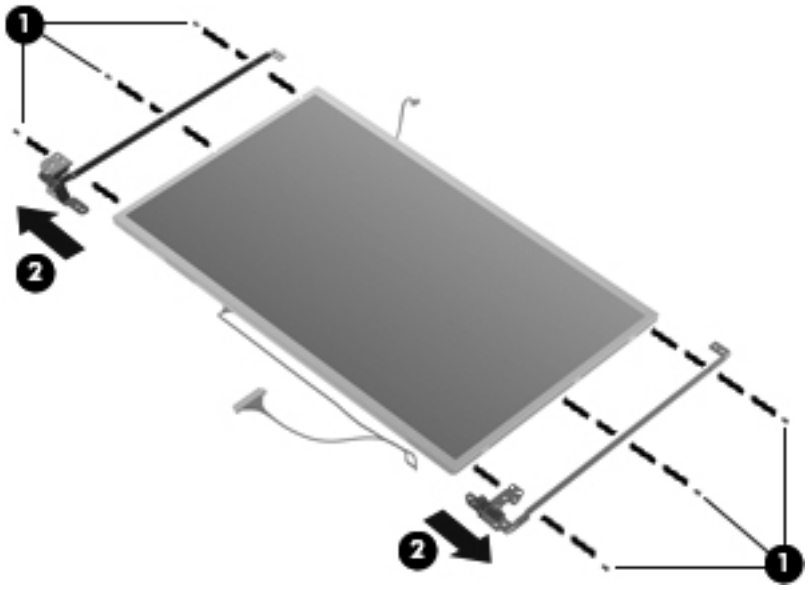
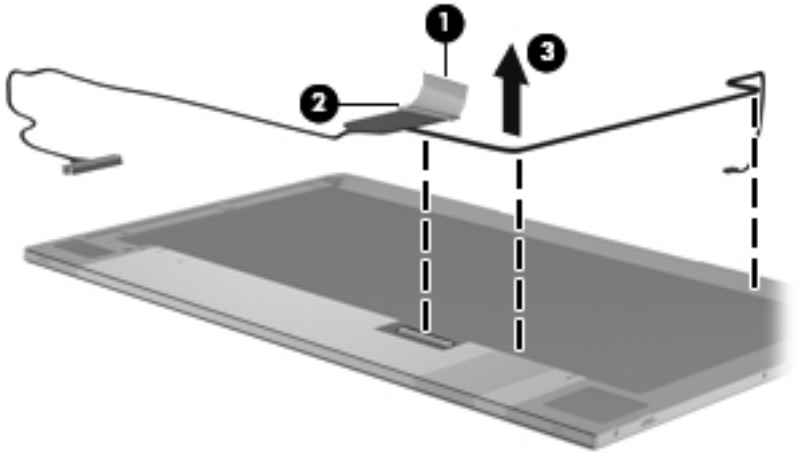
30. If it is necessary to replace the display hinges, remove the six Phillips PM2.0×30 screws ❶ that secure the hinges to the display panel.
31. Remove the display hinges ❷. The display hinges are available using the following spare part numbers:
    - ❏ 530783-001—for use only with computer models equipped with a 13.4-inch display assembly
    - ❏ 530782-001—for use only with computer models equipped with a 13.3-inch display assembly



32. If it is necessary to replace the display panel cable, turn the display panel upside down with the bottom edge toward you.
33. Detach the support strip ❶ that secures the display panel cable to the display panel.
34. Disconnect the display panel cable ❷ from the connector on the back of the display panel.
35. Remove the display panel cable ❸. The display panel cable is available using spare part number 531782-001.



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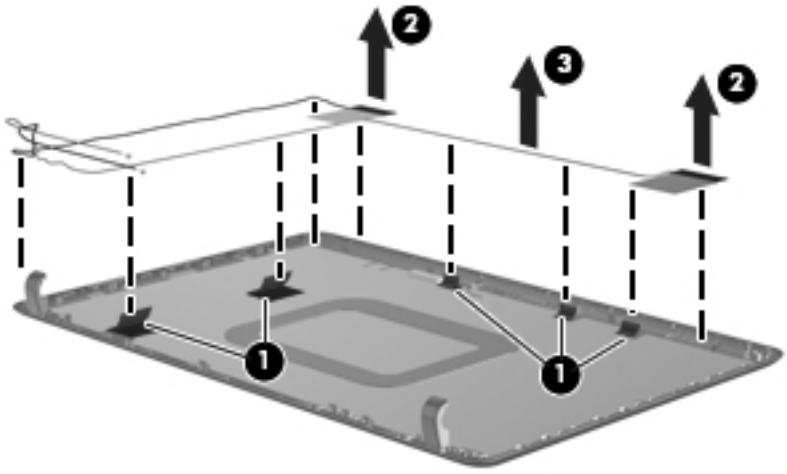
36. If it is necessary to replace the wireless antenna transceivers and cables, release the tabs ❶ built into the display enclosure shielding.
37. Release the wireless antenna transceivers ❷ from the display enclosure. The transceivers are attached to the enclosure with double-sided tape.
38. Remove the wireless antenna transceivers and cables ❸. The wireless antenna transceivers and cables are available using spare part number 531781-001.



Reverse this procedure to reassemble and install the display assembly.

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Top cover

The top cover spare part kit includes the TouchPad on/off board and cable, TouchPad button board and cable, and TouchPad board and cable.

Description	Spare part number
Top covers with fingerprint reader board (include fingerprint reader board cable):	
For use only with computer models with black trim	531820-001
For use only with computer models with white trim	531822-001
Top covers without fingerprint reader board:	
For use only with computer models with black trim	531821-001
For use only with computer models with blue trim	538663-001
For use only with computer models with white trim	531823-001

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 6).
5. Remove the following components:
   a. Hard drive (see "Hard drive" on page 8)
   b. Optical drive (see "Optical drive" on page 19)
   c. Keyboard (see "Keyboard" on page 21)
   d. Switch cover (see "Switch cover" on page 25)
   e. Speaker assembly (see "Speaker assembly" on page 27)
   f. Display assembly (see "Display assembly" on page 28).

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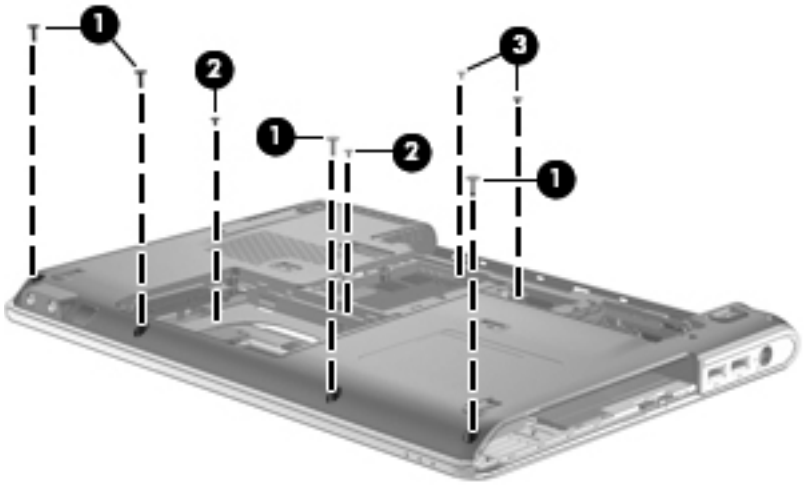
Remove the top cover:

1. Turn the computer upside down with the front toward you.
2. Remove the following screws that secure the top cover to the base enclosure:
   - ❶ Four Phillips PM2.0×8.0 screws on the front edge of the base enclosure
   - ❷ Two Phillips PM2.0×4.0 screws in the hard drive bay
   - ❸ Two Phillips PM2.0×3.0 screws on the front edge of the battery bay



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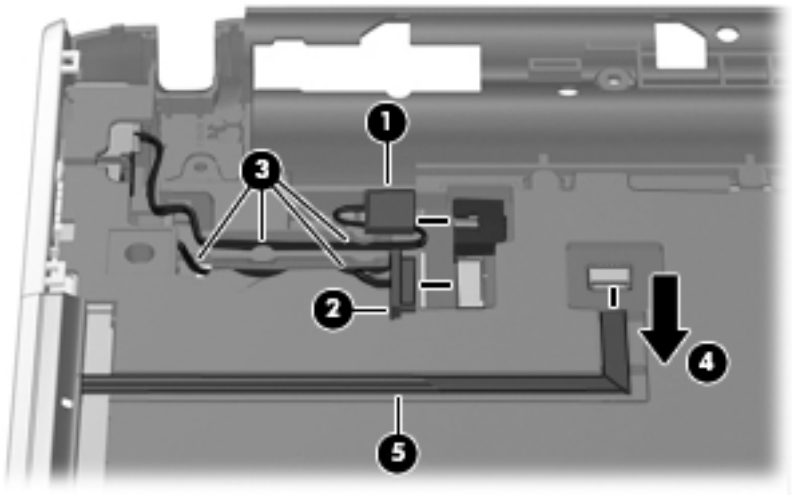
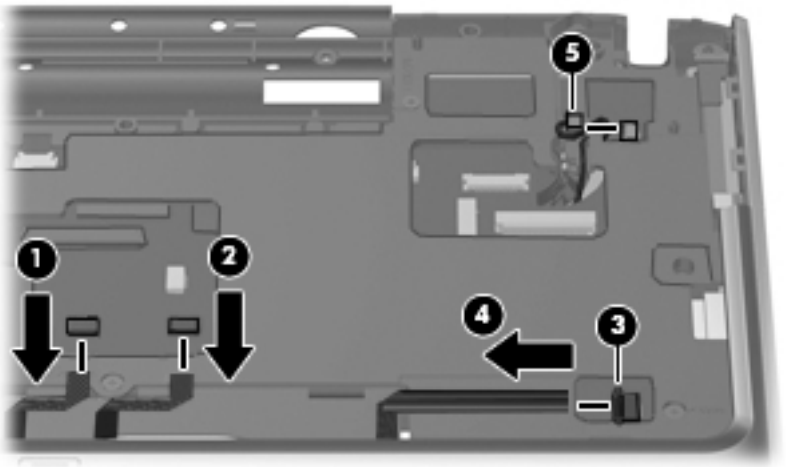
3. Disconnect the power connector cable ❶ from the system board.
4. Disconnect the USB board cable ❷ from the system board.
5. Remove the power connector cable and USB board cable from the clips ❸ built into the top cover.
6. Disconnect the caps lock LED cable ❹ from the LIF connector on the system board.
7. Detach the caps lock LED cable ❺ from the top cover. The caps lock LED cable is attached to the top cover with double-sided tape.



8. Disconnect the TouchPad cable ❶ from the LIF connector on the system board.
9. Disconnect the TouchPad on/off button board cable ❷ from the LIF connector on the system board.
10. Release the ZIF connector ❸ to which the fingerprint reader board cable is attached and disconnect the fingerprint reader board cable ❹ from the system board.
11. Disconnect the fan cable ❺ from the system board.



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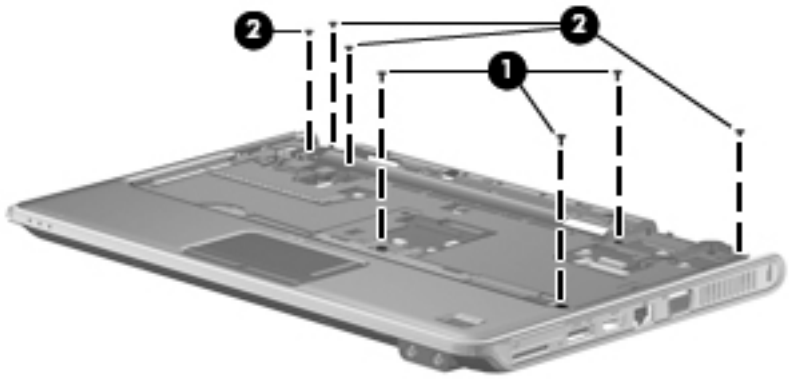
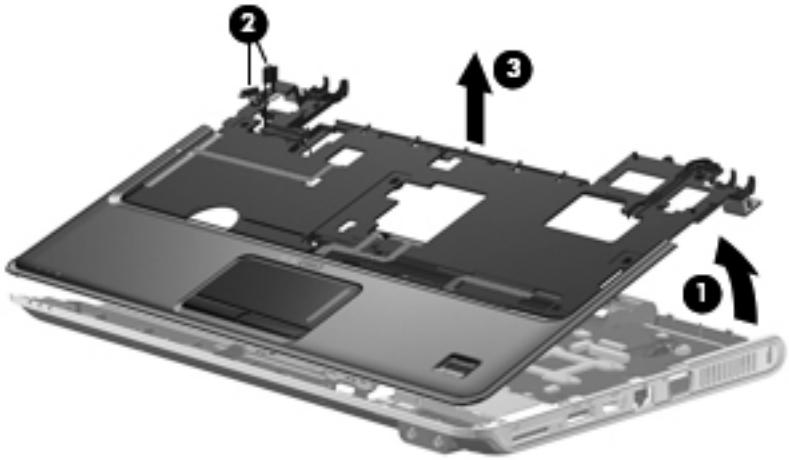
12. Remove the three Phillips PM2.0×6.0 screws ❶ and the two Phillips PM2.0×3.0 screws ❷ that secure the top cover to the base enclosure.



13. Lift the rear edge of the top cover ❶ until it rests at an angle.
14. Route the power connector cable and the USB board cable ❷ through the openings in the top cover.
15. Remove the top cover ❸ by lifting it straight up.



Reverse this procedure to install the top cover.

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Fingerprint reader board

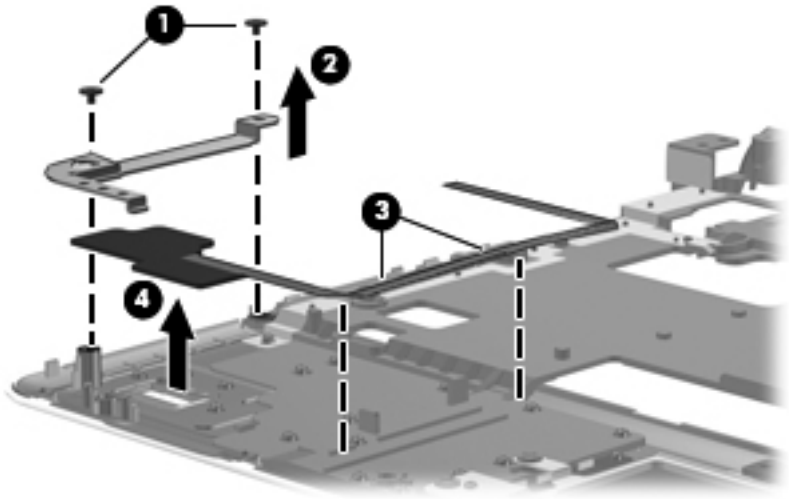
Description	Spare part number
Fingerprint reader board (includes cable)	531828-001

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 6).
5. Remove the following components:
   a. Hard drive (see "Hard drive" on page 8)
   b. Optical drive (see "Optical drive" on page 19)
   c. Keyboard (see "Keyboard" on page 21)
   d. Switch cover (see "Switch cover" on page 25)
   e. Speaker assembly (see "Speaker assembly" on page 27)
   f. Display assembly (see "Display assembly" on page 28).
   g. Top cover (see "Top cover" on page 37).

Remove the fingerprint reader board:

1. Turn the top cover upside down with the front edge toward you.
2. Remove the two Phillips PM2.0×3.0 screws ❶ that secure the fingerprint reader board and bracket to the top cover.
3. Remove the fingerprint reader board bracket ❷.
4. Detach the fingerprint reader board cable ❸ from the top cover. The fingerprint reader board cable is attached to the top cover with double-sided tape.
5. Remove the fingerprint reader board ❹.



Reverse this procedure to install the fingerprint reader board.

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LED board

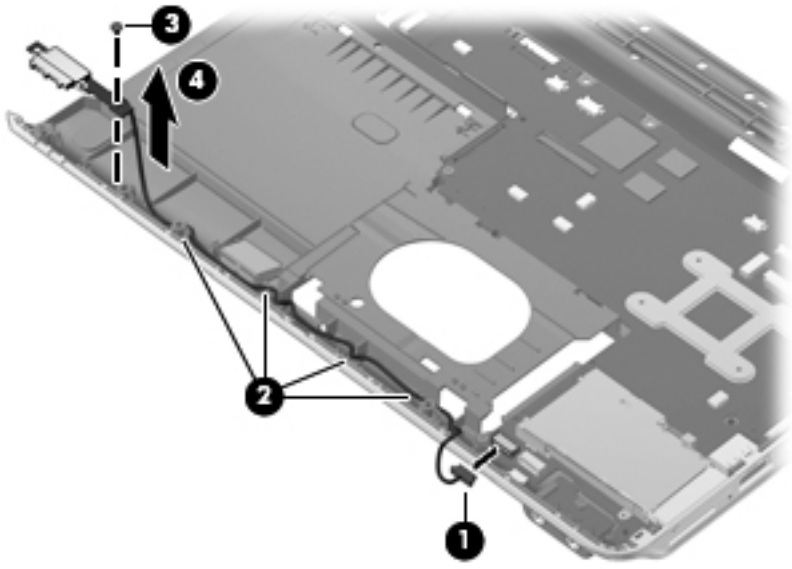
Description	Spare part number
LED board (includes cable)	531826-001

Before removing the LED 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 6).
5. Remove the following components:
   a. Hard drive (see "Hard drive" on page 8)
   b. Optical drive (see "Optical drive" on page 19)
   c. Keyboard (see "Keyboard" on page 21)
   d. Switch cover (see "Switch cover" on page 25)
   e. Speaker assembly (see "Speaker assembly" on page 27)
   f. Display assembly (see "Display assembly" on page 28).
   g. Top cover (see "Top cover" on page 37).

Remove the LED board and cable:

1. Disconnect the LED board cable ❶ from the system board.
2. Remove the LED board cable from the clips ❷ built into the base enclosure.
3. Remove the Phillips PM2.0×3.0 screw ❸ that secures the LED board to the base enclosure.
4. Remove the LED board and cable ❹.



Reverse this procedure to install the LED board.

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Bluetooth module

The Bluetooth module spare part kit does not include a Bluetooth module cable. The Bluetooth module cable is available using spare part number 531811-001.

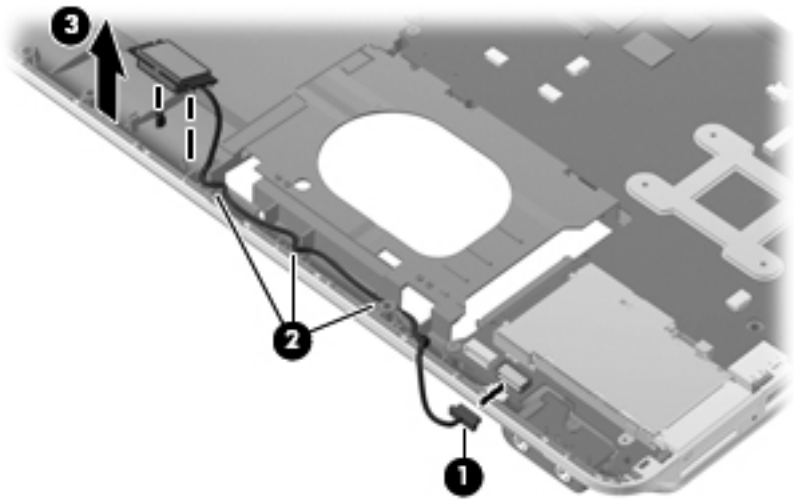
Description	Spare part number
Bluetooth module	483113-001

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 6).
5. Remove the following components:
   a. Hard drive (see "Hard drive" on page 8)
   b. Optical drive (see "Optical drive" on page 19)
   c. Keyboard (see "Keyboard" on page 21)
   d. Switch cover (see "Switch cover" on page 25)
   e. Speaker assembly (see "Speaker assembly" on page 27)
   f. Display assembly (see "Display assembly" on page 28).
   g. Top cover (see "Top cover" on page 37).

Remove the Bluetooth module and cable:

1. Disconnect the Bluetooth module cable ❶ from the system board.
2. Remove the Bluetooth module cable from the clips ❷ built into the base enclosure.
3. Remove Bluetooth module and cable ❸.



Reverse this procedure to install the Bluetooth module.

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Audio board

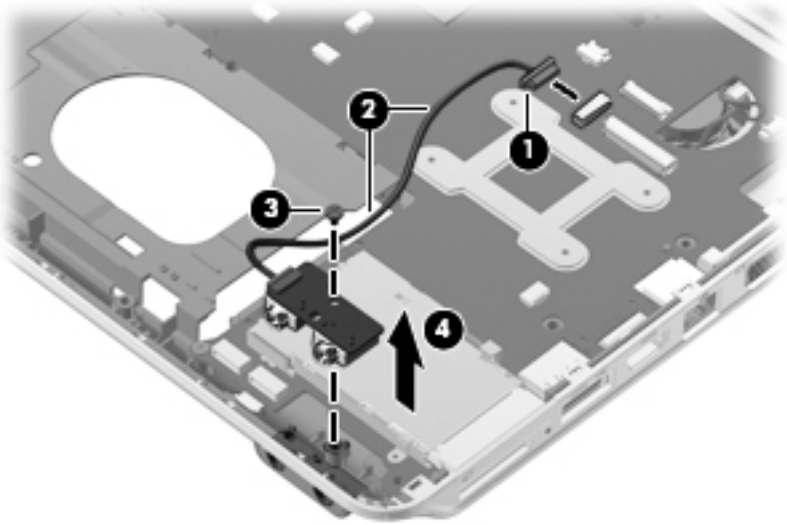
Description	Spare part number
Audio board (includes cable)	531812-001

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 6).
5. Remove the following components:
   a. Hard drive (see "Hard drive" on page 8)
   b. Optical drive (see "Optical drive" on page 19)
   c. Keyboard (see "Keyboard" on page 21)
   d. Switch cover (see "Switch cover" on page 25)
   e. Speaker assembly (see "Speaker assembly" on page 27)
   f. Display assembly (see "Display assembly" on page 28).
   g. Top cover (see "Top cover" on page 37).

Remove the audio board and cable:

1. Disconnect the audio board cable ❶ from the system board.
2. Detach the audio board cable ❷ from the system board. The audio board cable is attached to the system board with double-sided tape.
3. Remove the Phillips PM2.0×3.0 screw ❸ that secures the audio board to the system board.
4. Lift the rear edge of the audio board ❹ so that the audio connectors slide out of the openings in the base enclosure and remove the audio board and cable.



Reverse this procedure to install the audio board.

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USB board

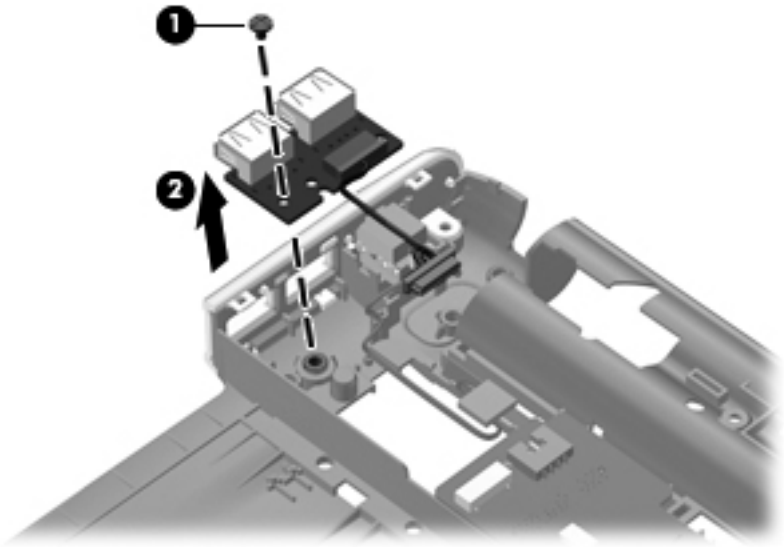
Description	Spare part number
USB board (includes cable)	531809-001

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 6).
5. Remove the following components:
   a. Hard drive (see "Hard drive" on page 8)
   b. Optical drive (see "Optical drive" on page 19)
   c. Keyboard (see "Keyboard" on page 21)
   d. Switch cover (see "Switch cover" on page 25)
   e. Speaker assembly (see "Speaker assembly" on page 27)
   f. Display assembly (see "Display assembly" on page 28).
   g. Top cover (see "Top cover" on page 37).

Remove the USB board and cable:

1. Remove the Phillips PM2.0×3.0 screw ❶ that secures the USB board to the system board.
2. Remove the USB board and cable ❷.



Reverse this procedure to install the USB board.

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Power connector and cable

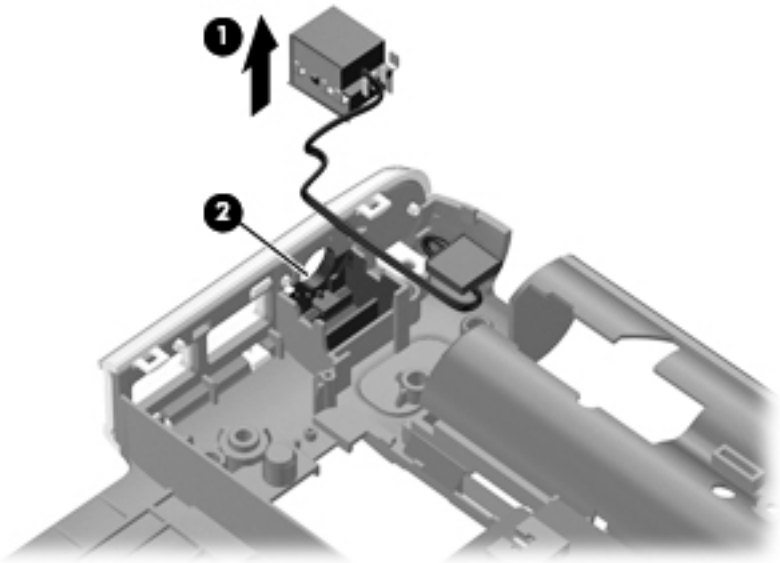
Description	Spare part number
Power connector and cable	531810-001

Before removing the power connector and 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 6).
5. Remove the following components:
   a. Hard drive (see "Hard drive" on page 8)
   b. Optical drive (see "Optical drive" on page 19)
   c. Keyboard (see "Keyboard" on page 21)
   d. Switch cover (see "Switch cover" on page 25)
   e. Speaker assembly (see "Speaker assembly" on page 27)
   f. Display assembly (see "Display assembly" on page 28).
   g. Top cover (see "Top cover" on page 37).

Remove the power connector and cable:

1. Remove the power connector ❶ from the clip ❷ built into the base enclosure.



2. Remove the power connector and cable.

Reverse this procedure to install the power connector and cable.

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System board

The system board spare part kit includes replacement thermal material.

Description	Spare part number
For use only with computer models equipped with graphics subsystems with discrete memory	530780-001
For use only with computer models equipped with graphics subsystems with UMA memory	530781-001

Before removing the system board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see "Battery" on page 6).
5. Remove the following components:
   a. Hard drive (see "Hard drive" on page 8)
   b. Memory module (see "Memory module" on page 10)
   c. WLAN module (see "WLAN module" on page 11)
   d. WWAN module (see "WWAN module" on page 15)
   e. SIM slot board (see "SIM slot board" on page 16)
   f. RTC battery (see "RTC battery" on page 18)
   g. Optical drive (see "Optical drive" on page 19)
   h. Keyboard (see "Keyboard" on page 21)
   i. Switch cover (see "Switch cover" on page 25)
   j. Speaker assembly (see "Speaker assembly" on page 27)
   k. Display assembly (see "Display assembly" on page 28).
   l. Top cover (see "Top cover" on page 37).

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

- Heat sink (see "Fan/heat sink assembly" on page 50)
- Processor (see "Processor" on page 55)

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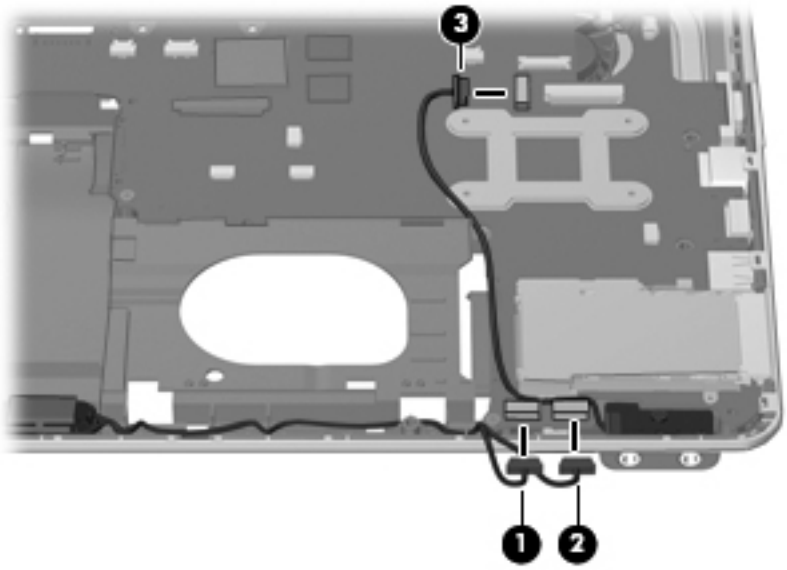
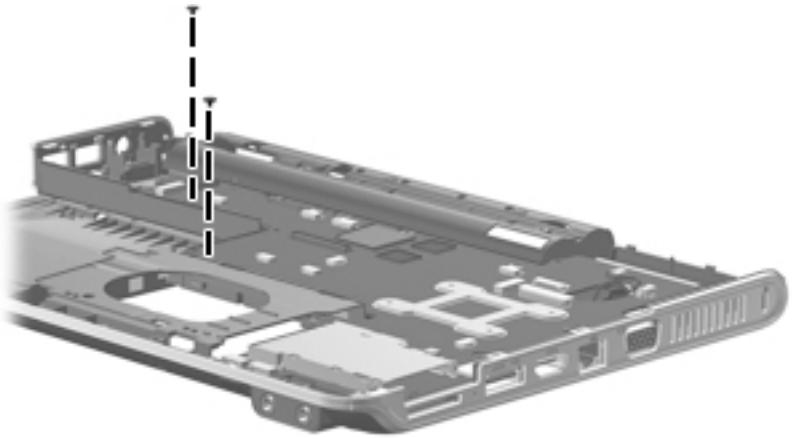
Remove the system board:

1. Disconnect the following cables from the system board:
   - ❶ LED board cable
   - ❷ Bluetooth module cable
   - ❸ Audio board cable



2. Remove the two Phillips PM2.0×4.0 screws that secure the system board to the base enclosure.



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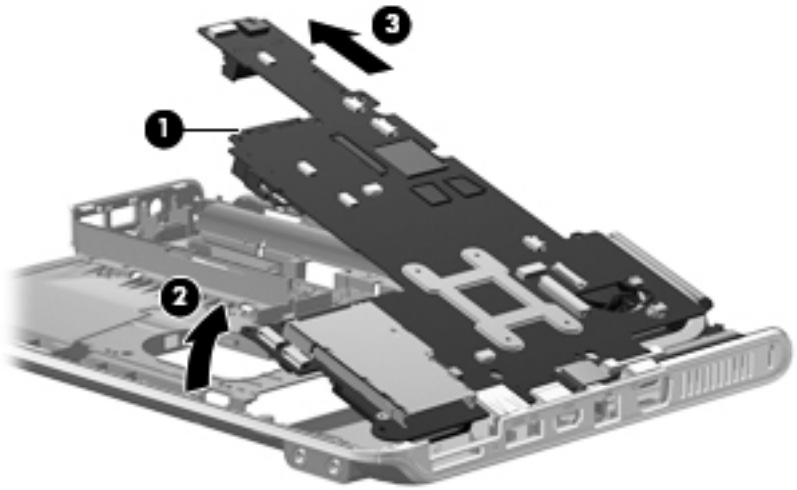
3. Use the optical drive connector ❶ to lift the left side of the system board ❷ until it rests at an angle.
4. Remove the system board from the base enclosure by pulling it away at an angle ❸.



Reverse this procedure to install the system board.

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Fan/heat sink assembly

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

Description	Spare part number
For use only with computer models equipped with graphics subsystems with discrete memory	531814-001
For use only with computer models equipped with graphics subsystems with UMA memory	531813-001

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

Before removing the fan/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 6).
5. Remove the following components:
   a. Hard drive (see "Hard drive" on page 8)
   b. Memory module (see "Memory module" on page 10)
   c. WLAN module (see "WLAN module" on page 11)
   d. WWAN module (see "WWAN module" on page 15)
   e. SIM slot board (see "SIM slot board" on page 16)
   f. RTC battery (see "RTC battery" on page 18)
   g. Optical drive (see "Optical drive" on page 19)
   h. Keyboard (see "Keyboard" on page 21)
   i. Switch cover (see "Switch cover" on page 25)
   j. Speaker assembly (see "Speaker assembly" on page 27)
   k. Display assembly (see "Display assembly" on page 28).
   l. Top cover (see "Top cover" on page 37).
   m. System board (see "System board" on page 47).

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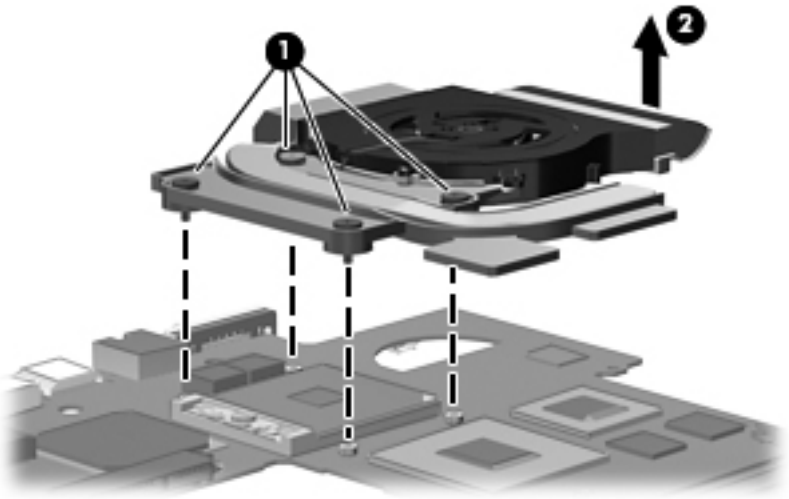
Remove the fan/heat sink assembly:

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

Steps 2 and 3 apply to computer models equipped with graphics subsystems with discrete memory. See steps 4 and 5 for instructions on removing the fan/heat sink assembly on computer models equipped with graphics subsystems with UMA memory.

2. Loosen the four captive Phillips PM2.0×7.0 screws ❶ that secure the fan/heat sink assembly to the system board.
3. Remove the fan/heat sink assembly ❷.

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.



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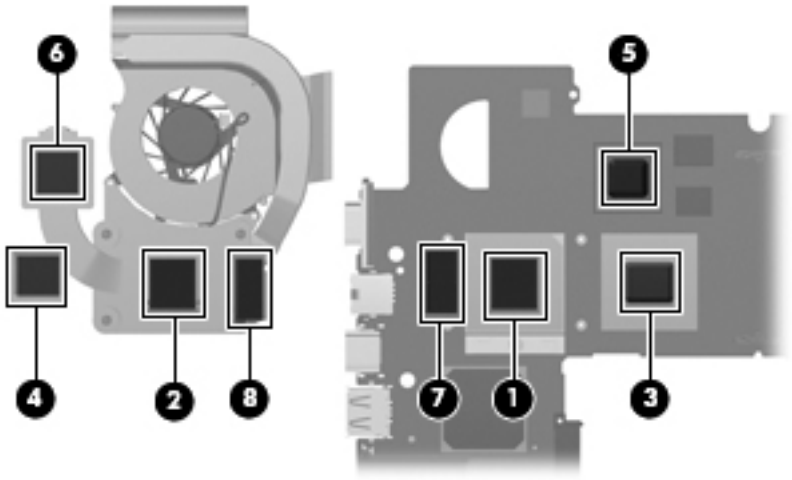
The thermal material must be thoroughly cleaned from the surfaces of the fan/heat sink assembly and the system board each time the fan/heat sink assembly is removed:

- Thermal paste is used on the processor ❶ and the heat sink section ❷ that services it.
- Thermal pads are used on the Northbridge chip ❸ and the heat sink section ❹ that services it.
- Thermal pads are used on the graphics subsystem memory module ❺ and the heat sink section ❻ that services it.
- Thermal pads are used on the other system board components ❼ and heat sink sections ❽ that service them.

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



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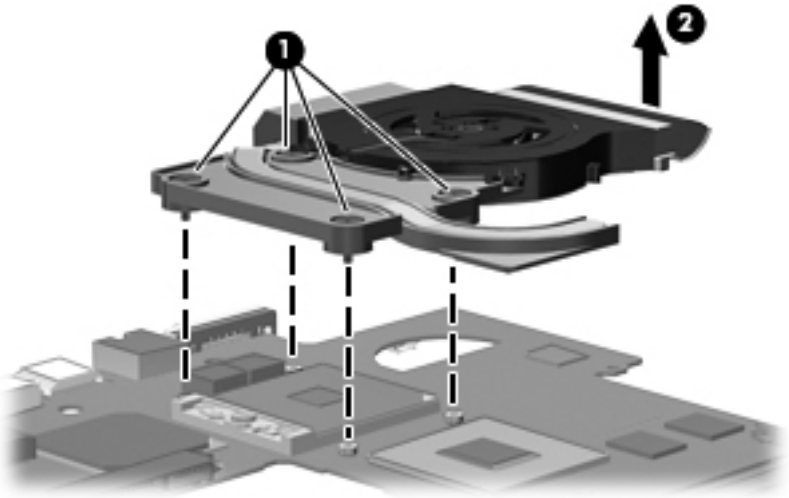
Steps 4 and 5 apply to computer models equipped with graphics subsystems with UMA memory. See steps 2 and 3 for instructions on removing the fan/heat sink assembly on computer models equipped with graphics subsystems with discrete memory.

4. Loosen the four captive Phillips PM2.0×7.0 screws ❶ that secure the fan/heat sink assembly to the system board.
5. Remove the fan/heat sink assembly ❷.

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.



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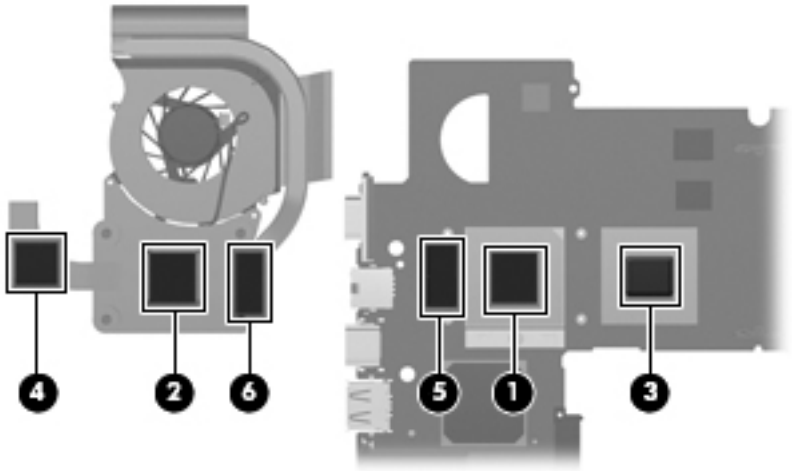
The thermal material must be thoroughly cleaned from the surfaces of the fan/heat sink assembly and the system board each time the fan/heat sink assembly is removed:

- Thermal paste is used on the processor ❶ and the heat sink section ❷ that services it.
- Thermal pads are used on the Northbridge chip ❸ and the heat sink section ❹ that services it.
- Thermal pads are used on the other system board components ❺ and sections of the heat sink ❻ that service them.

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



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

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Processor

The processor spare part kit includes replacement thermal material.

Description	Spare part number
Intel Core 2 processors:	
■ T9900 2.93-GHz processor (6-MB L2 cache, 1066-MHz FSB)	570434-001
■ T9800 2.93-GHz processor (6-MB L2 cache, 1066-MHz FSB)	507951-001
■ T9600 2.80-GHz processor (6-MB L2 cache, 1066-MHz FSB)	507952-001
■ T9550 2.66-GHz processor (6-MB L2 cache, 1066-MHz FSB)	507953-001
■ P8800 2.66-GHz processor (3-MB L2 cache, 1066-MHz FSB)	570036-001
■ P8700 2.53-GHz processor (3-MB L2 cache, 1066-MHz FSB)	507960-001
■ P8600 2.40-GHz processor (3-MB L2 cache, 1066-MHz FSB)	507963-001
■ P7550 2.26-GHz processor (3-MB L2 cache, 1066-MHz FSB)	573076-001
■ T6600 2.20-GHz processor (3-MB L2 cache, 1066-MHz FSB)	513593-001
■ P7450 2.13-GHz processor (3-MB L2 cache, 1066-MHz FSB)	507965-001
■ T6500 2.10-GHz processor (3-MB L2 cache, 1066-MHz FSB)	572928-001
■ T6400 2.06-GHz processor (6-MB L2 cache, 1066-MHz FSB)	513592-001
■ P7350 2.00-GHz processor (3-MB L2 cache, 1066-MHz FSB)	507967-001
Intel Pentium processors:	
■ T4300 2.10-GHz processor (1-MB L2 cache, 800-MHz FSB)	572929-001
■ T4200 2.00-GHz processor (1-MB L2 cache, 800-MHz FSB)	513599-001
■ T3000 1.80-GHz processor (1-MB L2 cache, 800-MHz FSB)	572926-001
Intel Celeron T1600 1.66-GHz processor (1-MB L2 cache, 667-MHz FSB)	532324-001

Before removing the processor, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see "Battery" on page 6).
5. Remove the following components:
   a. Hard drive (see "Hard drive" on page 8)
   b. Memory module (see "Memory module" on page 10)
   c. WLAN module (see "WLAN module" on page 11)
   d. WWAN module (see "WWAN module" on page 15)
   e. SIM slot board (see "SIM slot board" on page 16)
   f. RTC battery (see "RTC battery" on page 18)
   g. Optical drive (see "Optical drive" on page 19)

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h. Keyboard (see "Keyboard" on page 21)

i. Switch cover(see "Switch cover" on page 25)

j. Speaker assembly (see "Speaker assembly" on page 27)

k. Display assembly (see "Display assembly" on page 28).

l. Top cover (see "Top cover" on page 37).

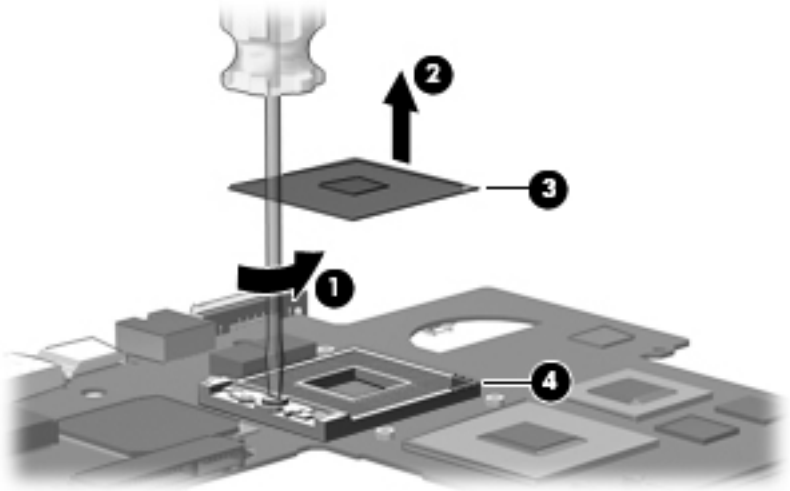
m. System board (see "System board" on page 47).

n. Fan/heat sink assembly (see "Fan/heat sink assembly" on page 50).

Remove the processor:

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

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



Reverse this procedure to install the processor.

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5

Setup Utility

Starting the Setup Utility

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

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

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

To start the Setup Utility:

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

– or –

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

Using the Setup Utility

Changing the language of the Setup Utility

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

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

   – or –

   Open the Setup Utility by turning on or restarting the computer. While the "Press the ESC key for Startup Menu" message is displayed in the lower-left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f10**.
2. Use the arrow keys to select **System Configuration > Language**, and then press **enter**.
3. Use the arrow keys to select a language, and then press **enter**.
4. When a confirmation prompt with your language selected is displayed, press **enter**.
5. To save your change and exit the Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press **enter**.

Your change goes into effect immediately.

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Navigating and selecting in the Setup Utility

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

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

Displaying system information

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

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

   – or –

   Open the Setup Utility by turning on or restarting the computer. While the "Press the ESC key for Startup Menu" message is displayed in the lower-left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f10**.
2. Select the **Main** menu. System information such as the system time and date, and identification information about the computer is displayed.
3. To exit the Setup Utility without changing any settings, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.

Restoring default settings in the Setup Utility

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

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

   – or –

   Open the Setup Utility by turning on or restarting the computer. While the "Press the ESC key for Startup Menu" message is displayed in the lower-left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f10**.
2. Use the arrow keys to select **Exit > Load Setup Defaults**, and then press **enter**.
3. When the Setup Confirmation is displayed, press **enter**.
4. To save your change and exit the Setup Utility, use the arrow keys to select Exit > Exit Saving Changes, and then press **enter**.

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

Your password, security, and language settings are not changed when you restore the factory default settings.

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Exiting the Setup Utility

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

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

  If the Setup Utility menus are not visible, press **esc** to return to the menu display. Then use the arrow keys to select **Exit > Exit Saving Changes**, and then press **enter**.
- To exit the Setup Utility without saving your changes from the current session:

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

After either choice, the computer restarts in Windows.

Setup Utility menus

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

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

Main menu

Select	To Do This
System information	■ 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.

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System Configuration menu

Select	To Do This
Language Support	Change the Setup Utility language.
Button Sound (select models only)	Enable/disable the capacitative button tapping sound.
Virtualization Technology	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: ■ **f10** and **f12** Delay (seconds)—Set the delay for the **f10** and **f12** 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: ❒ Hard drive ❒ Internal CD/DVD ROM drive ❒ USB Diskette on Key/USB hard disk ❒ USB CD/DVD ROM drive ❒ USB Floppy ❒ Network adapter

Diagnostics menu

Select	To Do This
Hard Disk Self Test	Run a comprehensive self-test on the hard drive. ✎ On models with two hard drives, this menu option is called the Primary Hard Disk Self Test.
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.

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6

Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Length	22.2 cm	8.74 in
Width	32.8 cm	12.9 in
Height (front to rear)	3.2 to 3.5 cm	1.25 to 1.39 in
Weight	2.2 kg	4.93 lbs
Input power		
Operating voltage	19.0 V dc @ 4.74 A - 65 W	
Operating current	4.74 A	
Temperature		
Operating (not writing to optical disc)	0°C to 35°C	32°F to 95°F
Operating (writing to optical disc)	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft

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

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13.4-inch display specifications

	Metric	U.S.
Dimensions		
Height	18.0 cm	7.1 in
Width	28.7 cm	11.3 in
Diagonal	33.9 cm	13.4 in
Number of colors	Up to 16.8 million	
Contrast ratio	250:1 (typical)	
Brightness	200 nits (typical)	
Pixel resolution		
Pitch	0.279 × 0.279 mm	
Format	1366 × 768	
Configuration	RGB vertical stripe	
Backlight	Edge lit	
Character display	80 × 25	
Total power consumption	4.0 W	
Viewing angle	±40° horizontal, +120°/-40° vertical (typical)	

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13.3-inch display specifications

	Metric	U.S.
Dimensions		
Height	17.8 cm	7.0 in
Width	28.4 cm	11.2 in
Diagonal	33.6 cm	13.3 in
Number of colors	Up to 16.8 million	
Contrast ratio	250:1 (typical)	
Brightness	200 nits (typical)	
Pixel resolution		
Pitch	0.279 × 0.279 mm	
Format	1366 × 768	
Configuration	RGB vertical stripe	
Backlight	Edge lit	
Character display	80 × 25	
Total power consumption	4.0 W	
Viewing angle	±40° horizontal, +120°/-40° vertical (typical)	

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Hard drive specifications

	500-GB*	320-GB*	250-GB*	160-GB*
Dimensions				
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm	70 mm
Weight	101 g	101 g	101 g	101 g
Interface type	SATA	SATA	SATA	SATA
Transfer rate	100 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec
Security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)				
Single track	1.0 ms	1.5 ms	2.0 ms	2.0 ms
Average	14.0 ms	12.0 ms	12.0 ms	12.0 ms
Maximum	22.0 ms	22.0 ms	22.0 ms	22.0 ms
Logical blocks	976,773,168	625,142,448	488,397,168	312,581,808
Disc rotational speed	7200 and 5400 rpm	7200 and 5400 rpm	7200 and 5400 rpm	5400 rpm
Operating temperature	5°C to 55°C (41°F to 131°F)			

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

Certain restrictions and exclusions apply. Contact technical support for details.

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

Applicable disc	**Read:**	**Write:**
	BD-ROM, BD-ROM-DL, BD-R, BD-R-DL, BD-RE, BD-RE-DL, DVD-ROM, DVD+R, DVD+R-DL, DVD+RW, DVD-R, DVD-R-DL, DVD-RW, DVD-RAM (Ver.2), CD-DA, CD-ROM (mode 1 and mode 2), CD-ROM XA (mode 2, form 1 and form 2), Photo CD (single and multiple sessions), CD Extra, CD-R, CD-RW, and CD-TEXT	DVD-RAM (Ver.2), DVD+R, DVD-R, CD-R, and CD-ROM
Access time	**BD**	**DVD**
Random	< 230 ms	< 180 ms
Cache buffer	4.5 MB	
Data transfer rate		
2X BD-RAM	9 MB/sec	
8X DVD	2,400 KB/sec	
16X CD-R	2,400 KB/sec	
16X CD-RW	2,400 KB/sec	

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

Applicable disc	Read:	Write:
	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CDROM, 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	2.5 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	

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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*	Not applicable
DMA6	Not assigned
DMA7	Not assigned

*ExpressCard controller can use DMA 1, 2, or 5.

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System memory map specifications

Size	Memory address	System function
640 KB	00000000-0009FFFF	Base memory
128 KB	000A0000-000BFFFF	Video memory
64 KB	000C0000-000CFFFF	Video BIOS
64 KB	000E8000-000FFFFF	System BIOS
	00100000- XFFFFFFF	Extended memory (based on memory installed)
	(X+1)0000000-FEDFFFFF	PCI bus
	FED00000-FED003FF	High precision event timer
	FEE01000-FFFFFFFF	PCI bus

System interrupt specifications

Hardware IRQ	System function
IRQ0	System timer
IRQ1	Standard 101-/102-key or Microsoft natural keyboard
IRQ8	System CMOS/real-time clock
IRQ12	Synaptics PS/2 TouchPad
IRQ13	Numeric data processor
IRQ16	Intel ICH9 Family USB universal host controller 2937 Mobile Intel 4 Series express chipset family
IRQ17	High definition audio controller Intel ICH9 Family USB universal host controller 2938 Marvell Yukon 88E8072 PCIE-gigabit Ethernet controller
IRQ18	Intel ICH9 Family USB universal host controller 2939 Intel ICH9 Family USB universal host controller 2936
IRQ19	Intel ICH9 Family USB2 enhanced controller 293C
IRQ20	Intel ICH9 Family USB2 enhanced controller 293A Intel ICH9 Family USB universal host controller 2934
IRQ21	Intel ICH9M-E/M SATA AHCI controller
IRQ22	Intel ICH9 Family USB universal host controller 2935

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

✎ 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.

✎ For operating systems after Windows 2000, APIC (Advanced programming interrupt controller) is used.

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System I/O address specifications

I/O address (hex)	System function (shipping configuration)
000 - 01F	DMA controller
020 - 021	Program interrupt controller
024 - 025	Program interrupt controller
028 - 029	Program interrupt controller
02C - 03D	Program interrupt controller
02E - 02F	Motherboard resources
030 - 031	Program interrupt controller
034 - 035	Program interrupt controller
038 - 039	Program interrupt controller
03C- 03D	Program interrupt controller
040 - 043	System timer
04E-04F	Motherboard resources
050-053	System timer
060	Standard 101-/102-key or Microsoft natural keyboard
061	Motherboard resources
062	Microsoft ACPI-compliant embedded controller
063	Motherboard resources
064	Standard 101-/102-key or Microsoft natural keyboard
065	Motherboard resources
066	Microsoft ACPI-compliant embedded controller
067	Motherboard resources
070	Motherboard resources
071-077	System CMOS/real time clock
080	Motherboard resources
081-091	Direct memory access controller
092	Motherboard resources
093-09F	Direct memory access controller
0A0-0A1	Program interrupt controller
0A4-0A5	Program interrupt controller
0A8-0A9	Program interrupt controller
0AC-0AD	Program interrupt controller
0B0-0B1	Program interrupt controller
0B2-0B3	Motherboard resources
0B4- 0B5	Program interrupt controller
0B8-0B9	Program interrupt controller
0BC- 0BD	Program interrupt controller

Continued

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I/O address (hex)	System function (shipping configuration)
0C0- 0DF	Direct memory access controller
0F0- 0F0	Numeric data processor
0200-027F	Motherboard resources
3B0-3BB	Mobile Intel 4 series express chipset family
3C0-3DF	Mobile Intel 4 series express chipset family
400-47F	Motherboard resources
4D0-4D1	Programmable interrupt controller
500-57F	Motherboard resources
1000-1003	Motherboard resources
1010-101F	Motherboard resources
2000-20FF	Marvell Yukon 88E8072 PCI-E Gigabit Ethernet controller
2000-2FFF	ICH9 family PCI express root port6-294A
3000-4FFF	ICH9 family PCI express root port5-2948
5000-6FFF	ICH9 family PCI express root port3-2944
7000-701F	ICH9M-E/M SATA AHCI controller
7020-703F	ICH9 family USB universal host controller-2936
7040-705F	ICH9 family USB universal host controller-2935
7060-707F	ICH9 family USB universal host controller-2934
7080-709F	ICH9 family USB universal host controller-2939
70A0-70BF	ICH9 family USB universal host controller-2938
70C0-70DF	ICH9 family USB universal host controller-2937
70E0-70E7	ICH9M-E/M SATA AHCI controller
70E8-70EF	ICH9M-E/M SATA AHCI Controller
70F0-70F7	Mobile Intel 4 series express chipset family
70F8-70FB	ICH9M-E/M SATA AHCI controller
70FC-70FF	ICH9M-E/M SATA AHCI controller
EF80-EF9F	Motherboard resources
FE00-FE0F	Motherboard resources
FE80-EF8F	Motherboard resources
FFFF	Motherboard resources

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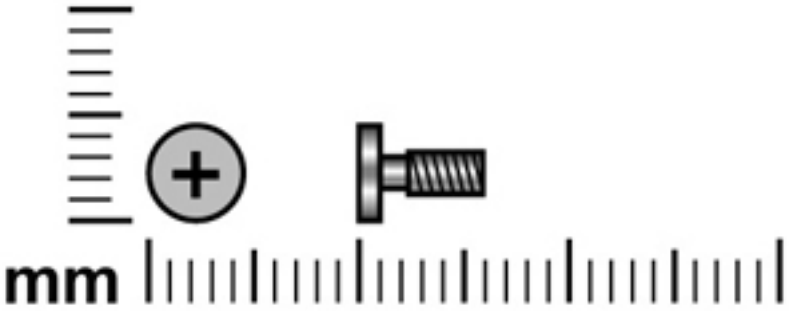
7

Screw listing

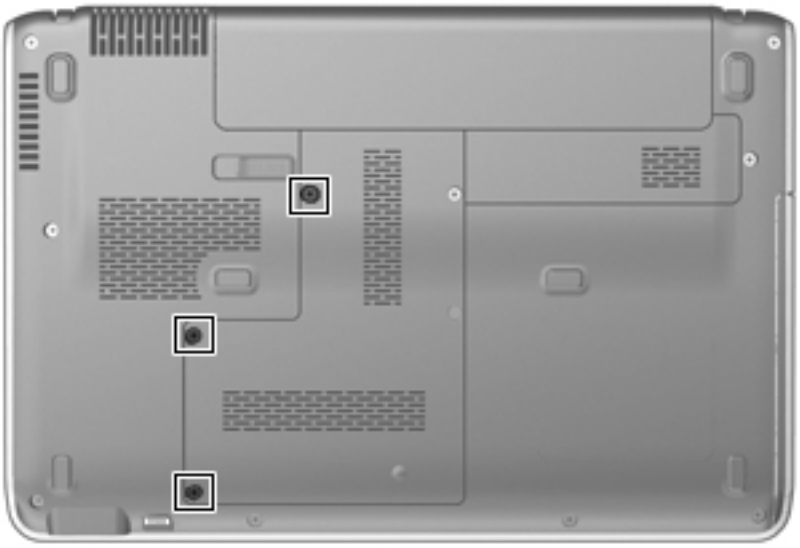
This section provides specification and reference information for the screws used in the computer. The screws listed in this section are available in the Screw Kit, spare part number 496890-001.

Phillips PM2.0×6.0 captive screw



Color	Quantity	Length	Thread	Head diameter
Black	3	6.0 mm	2.0 mm	5.0 mm

Where used: 3 captive screws that secure the hard drive cover to the computer (screws are secured by C-clips)



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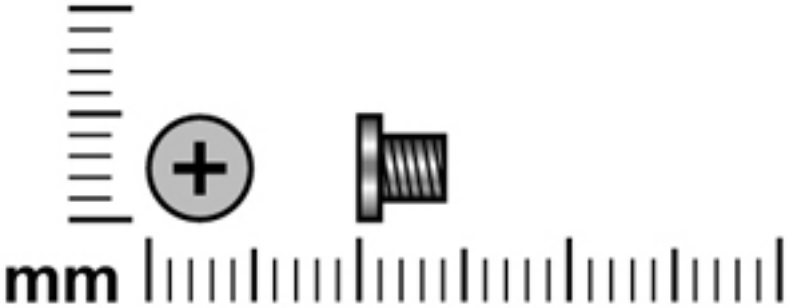
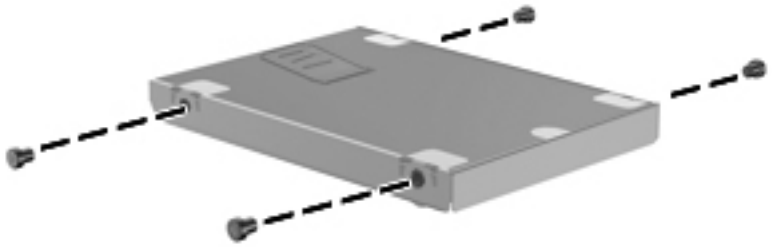
Phillips PM3.0×4.0 screw



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



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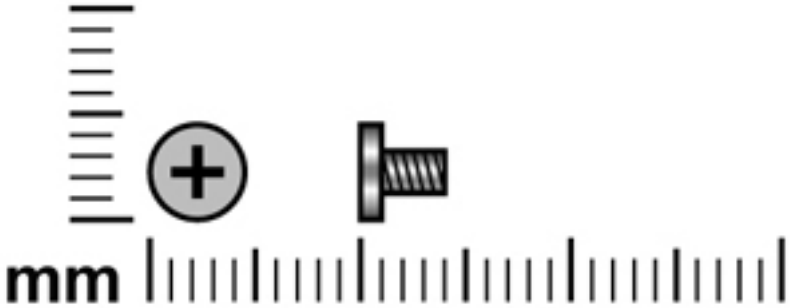
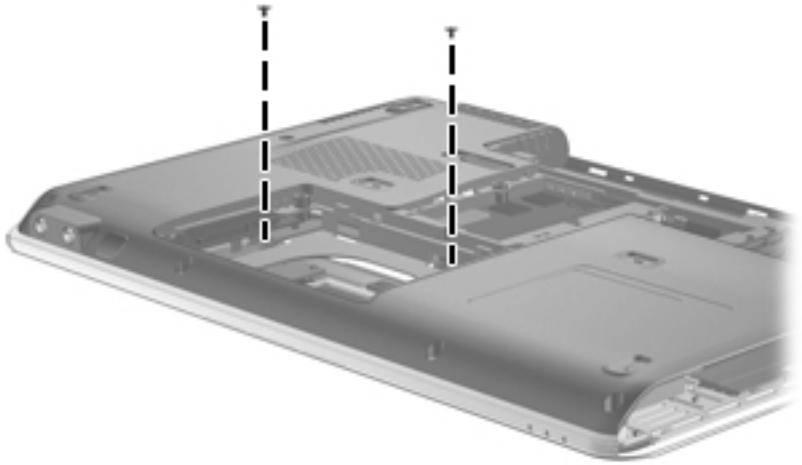
Phillips PM2.0×4.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	4	4.0 mm	2.0 mm	4.5 mm

Where used: 2 screws that secure the top cover to the base enclosure in the hard drive bay



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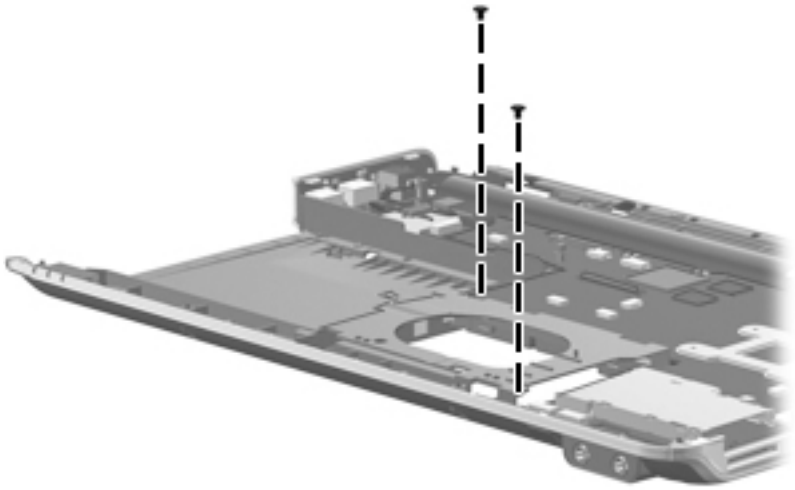
Where used: 2 screws that secure the system board to the base enclosure



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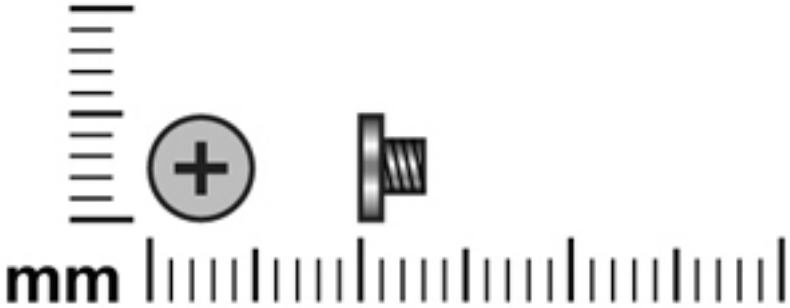
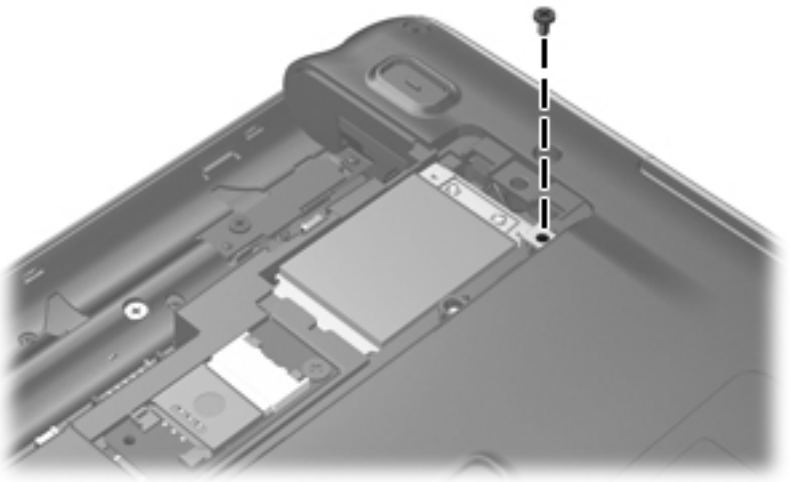
Phillips PM2.5×3.0 screw



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

Where used: One screw that secures the WLAN module bracket to the computer



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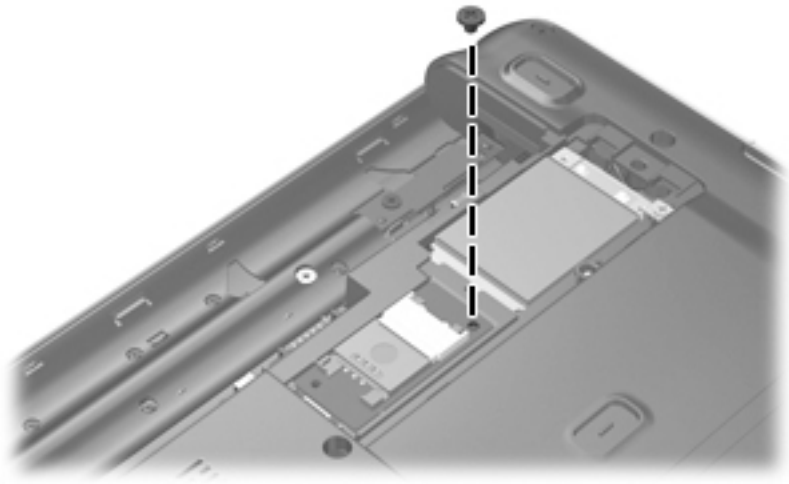
Where used: One screw that secures the SIM slot board to the computer



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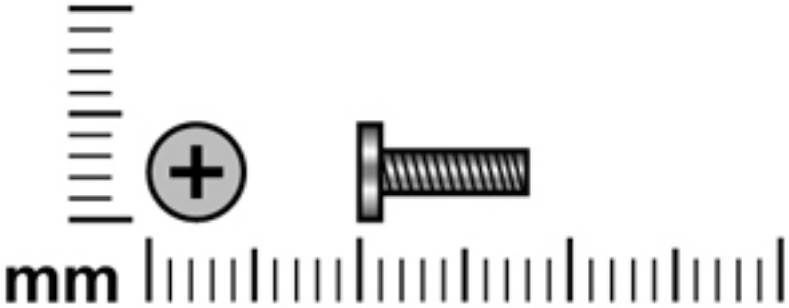
Phillips PM2.0×8.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	10	8.0 mm	2.0 mm	5.0 mm

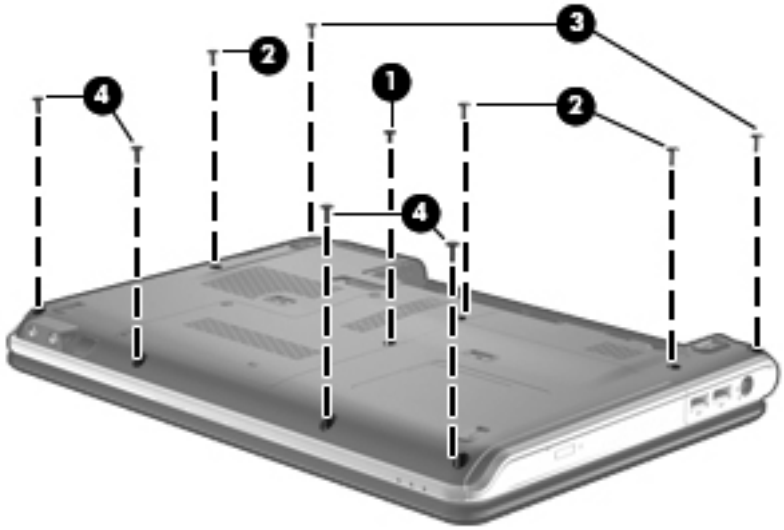
Where used:

❶ One screw that secures the optical drive to the computer

❷ Three screws that secure the keyboard to the computer

❸ Two screws that secure the switch cover to the computer

❹ Four screws that secure the top cover to the base enclosure



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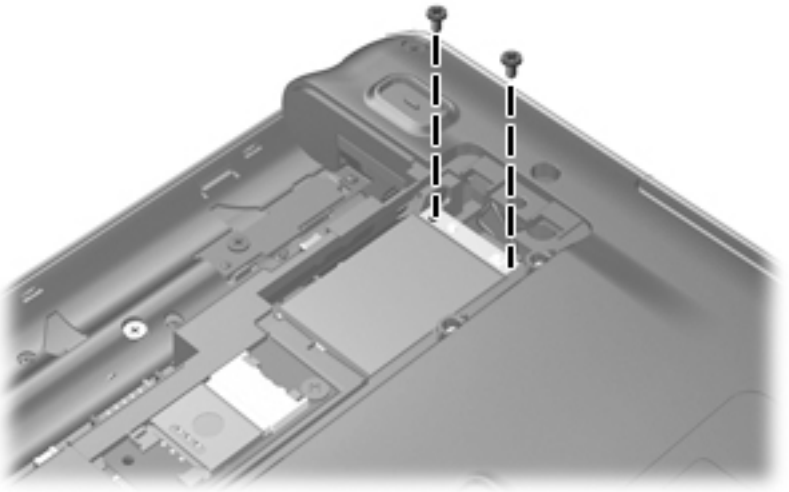
Phillips PM2.0×3.0 screw

Color	Quantity	Length	Thread	Head diameter
Black	27	3.0 mm	2.0 mm	4.5 mm

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



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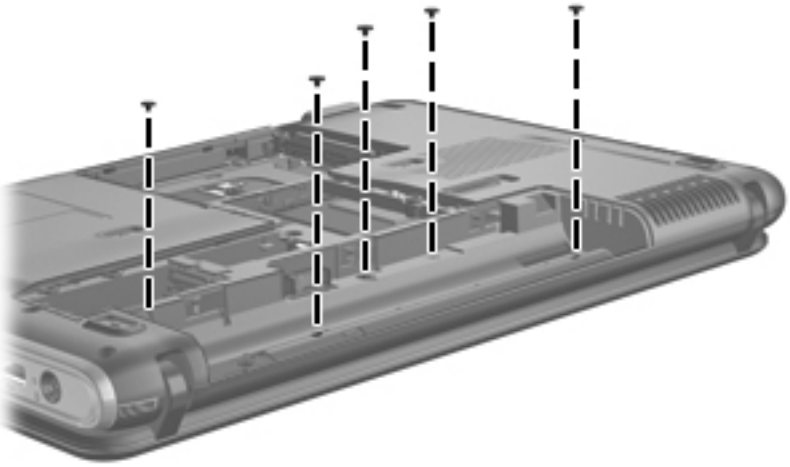
Where used: 2 screws that secure the optical drive bracket to the optical drive

Where used: 5 screws that secure the switch cover to the computer in the battery bay



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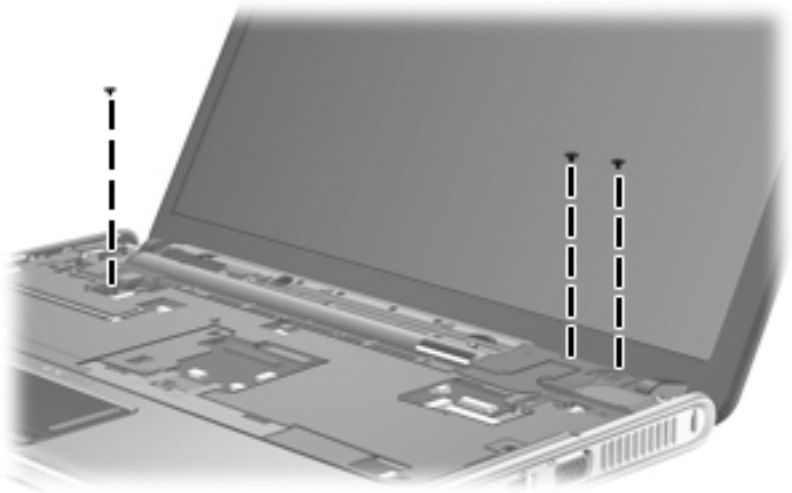
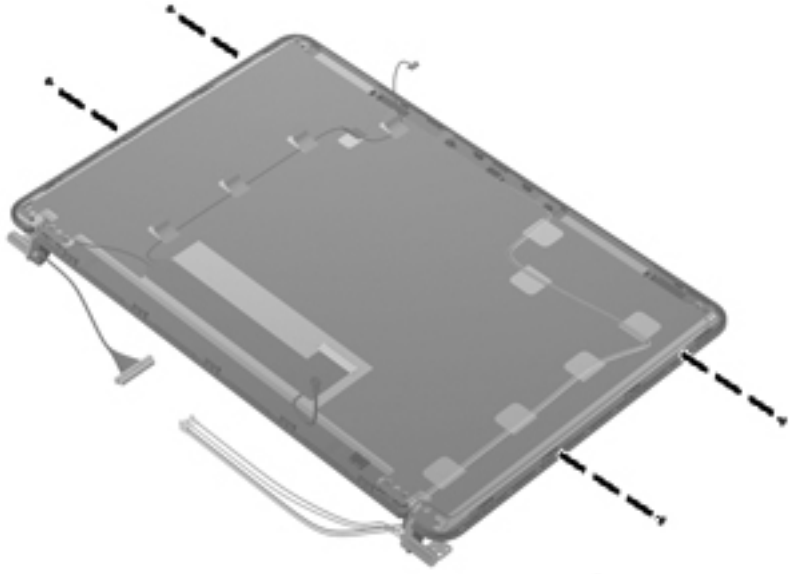
Where used: 3 screws that secure the speaker assembly to the top cover



Where used: 4 screws that secure the hinges to the display panel on AntiGlare display panels



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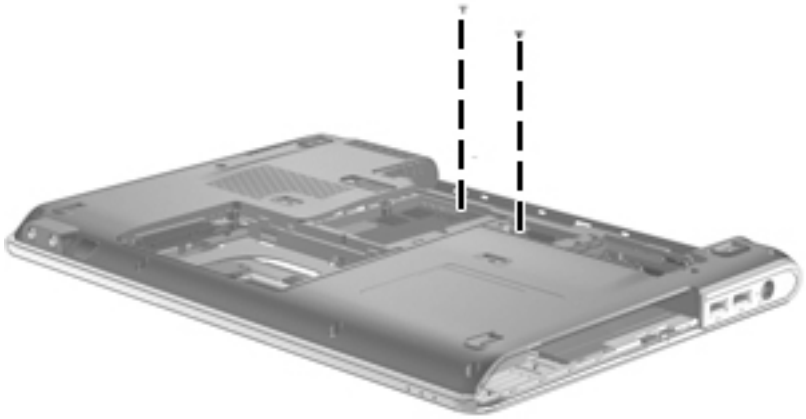
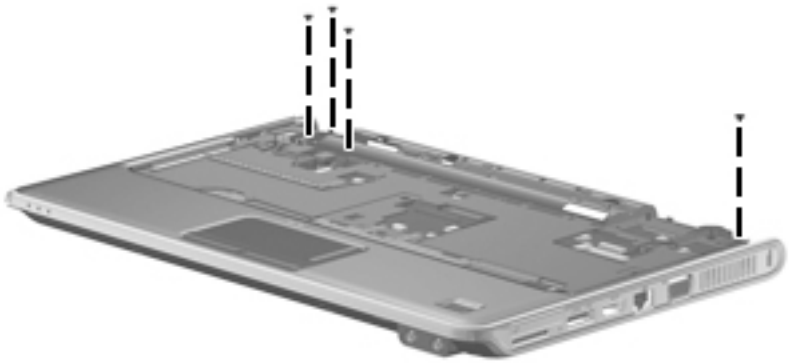
Where used: 2 screws that secure top cover to the base enclosure



Where used: 4 screws that secure the top cover to the base enclosure



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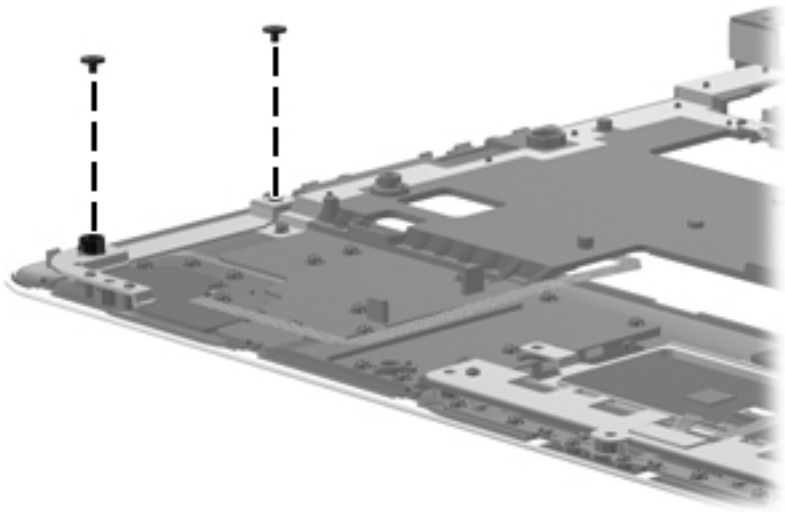
Where used: 2 screws that secure the fingerprint reader board and bracket to the top cover

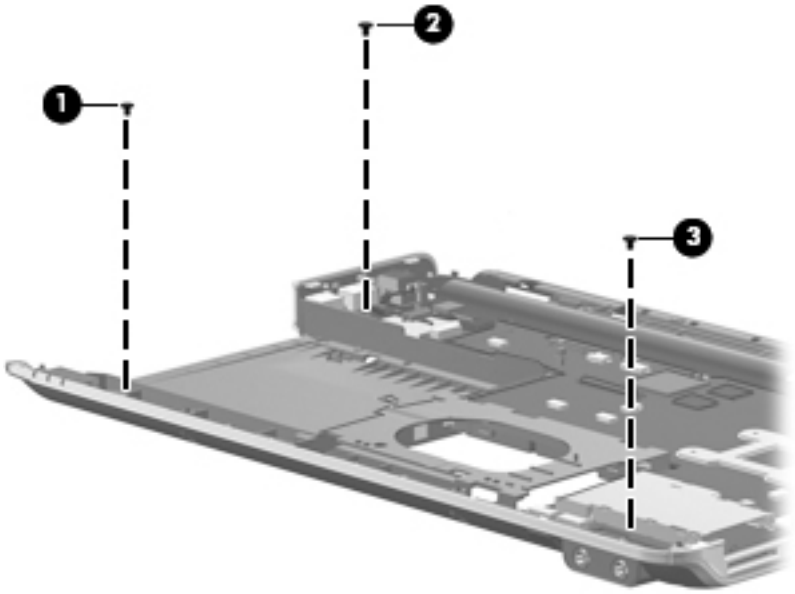


Where used:

❶ One screw that secures the LED board to the base enclosure

❷ One screw that secures the audio board to the base enclosure

❸ One screw that secures the USB board to the base enclosure



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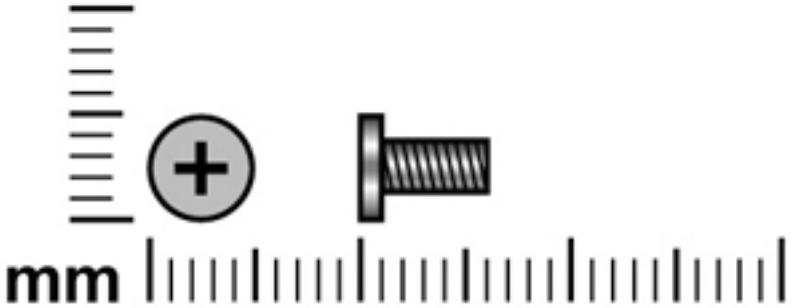
Phillips PM2.5×6.0 screw



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

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

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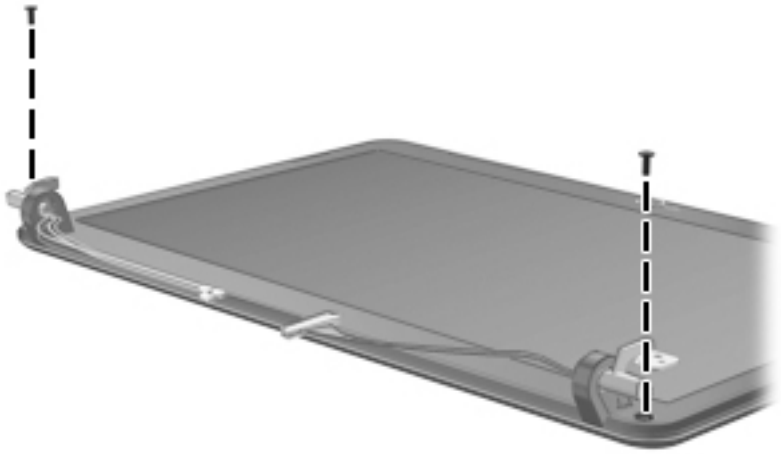
Where used: 2 screws that secure the display enclosure to the display assembly on AntiGlare display assemblies



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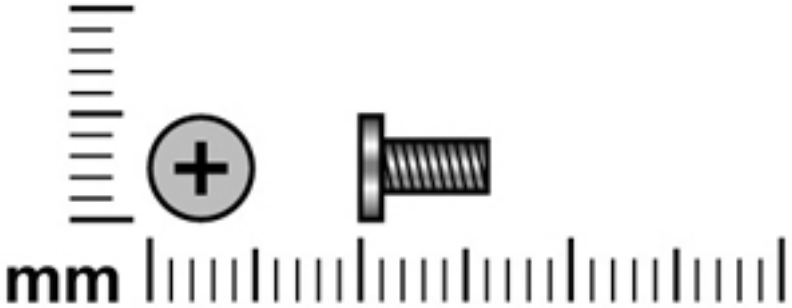
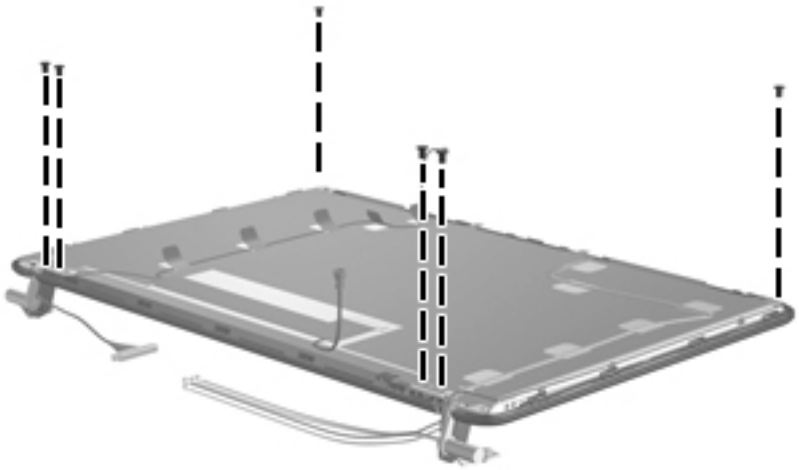
Phillips PM2.5×4.0 screw



Color	Quantity	Length	Thread	Head diameter
Silver	6	4.0 mm	2.5 mm	5.0 mm

Where used: 6 screws that secure the display hinges to the display assembly on AntiGlare display assemblies



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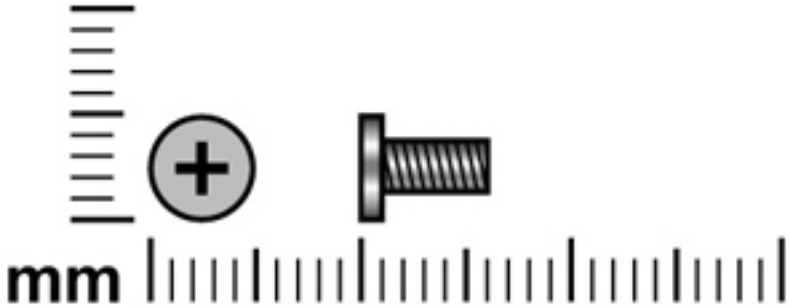
Phillips PM2.0×6.0 screw



Color	Quantity	Length	Thread	Head diameter
Silver	3	6.0 mm	2.0 mm	4.5 mm

Where used: 3 screws that secure the top cover to the base enclosure

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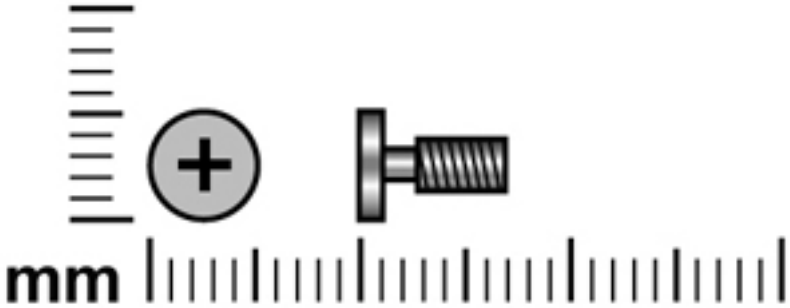
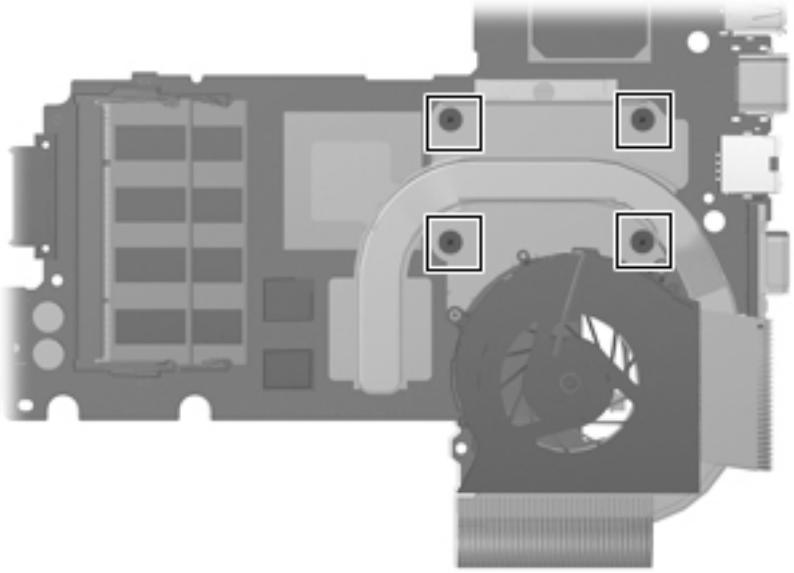
Phillips PM2.0×7.0 captive screw



Color	Quantity	Length	Thread	Head diameter
Silver	4	7.0 mm	2.0 mm	5.0 mm

Where used: 4 captive screws that secure the fan/heat sink assembly to the system board on computer models equipped with graphics subsystems with discrete memory



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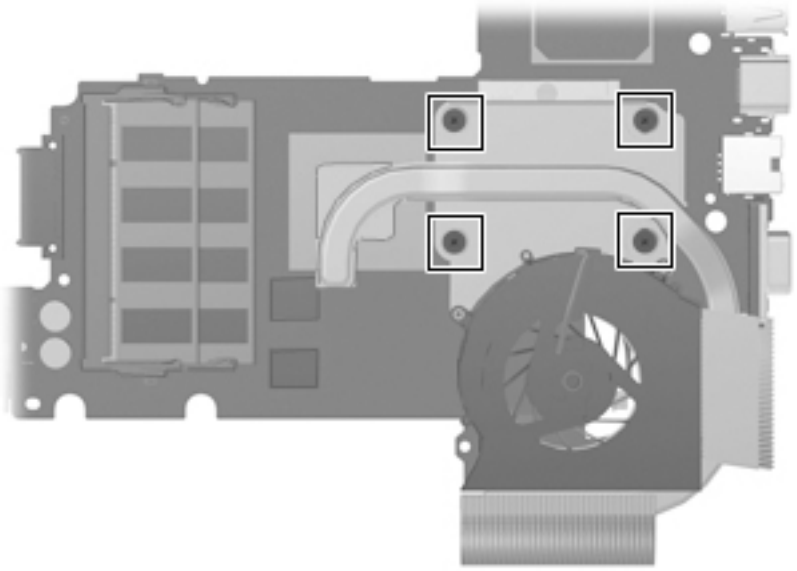
Where used: 4 captive screws that secure the fan/heat sink assembly to the system board on computer models equipped with graphics subsystems with UMA memory



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8

Backup and recovery

Overview

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.

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.

Creating recovery discs

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

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

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

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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.

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

- The computer must be connected to AC power during this process.
- Only one set of recovery discs can be created per computer.
- Number each disc before inserting it into the optical drive.
- If necessary, 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**.

   ✎ 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.

Backing up your information

When to back up

- On a regularly scheduled basis

  ✎ 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.

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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.

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

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

When to create restore points

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

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

Create a system restore point

1. 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.

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Performing a recovery

You can recover only files that you have previously backed up. HP recommends that you use HP 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 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.

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.

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 (select models only)

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 it's 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.

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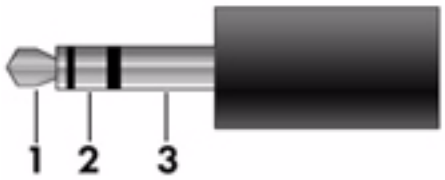
9

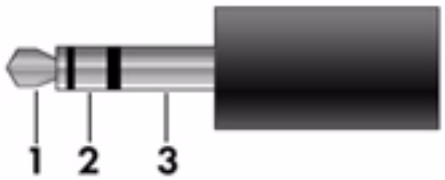
Connector pin assignments

Audio-in (microphone)



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

Audio-out (headphone)



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

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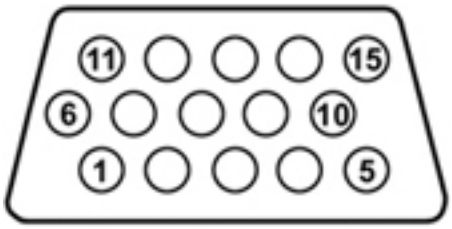
External monitor



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

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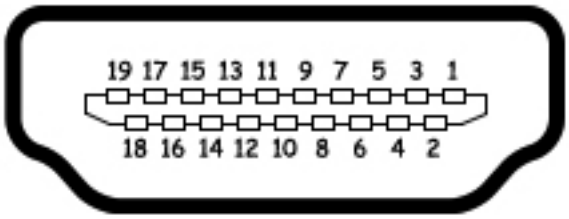
HDMI



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

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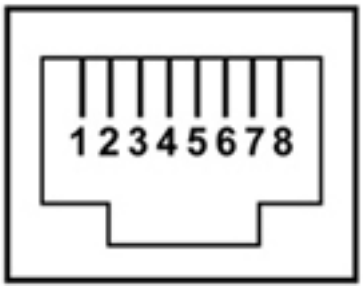
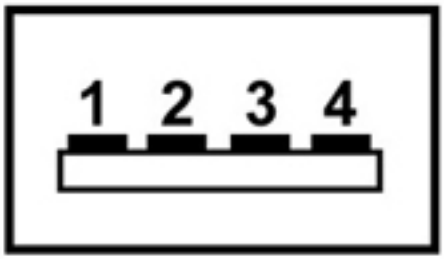
RJ-45 (network)



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

Universal Serial Bus



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

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

Requirements for all countries and regions

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

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

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Requirements for specific countries and regions

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

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

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

Materials Disposal. This HP product contains mercury in the backlight in the display assembly that might require special handling at end-of-life. Disposal of mercury may be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities, or see the Electronic Industries Alliance (EIA) Web site at http://www.eiae.org.

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

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

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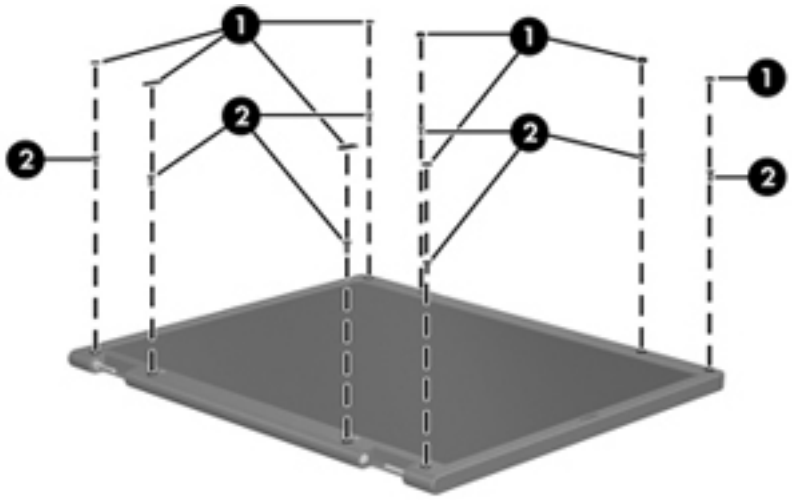
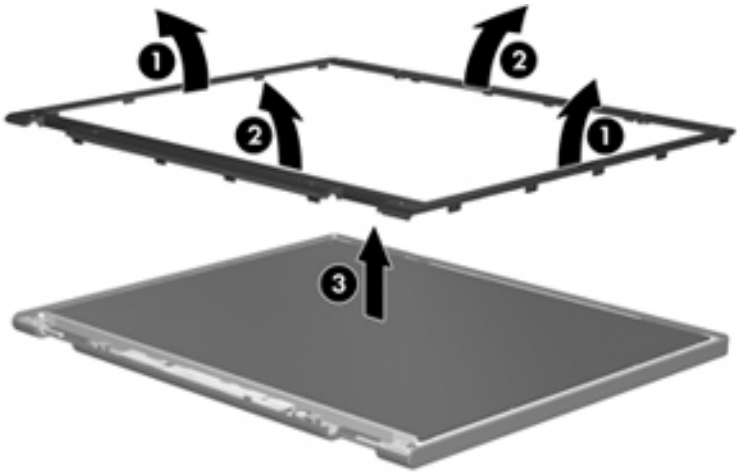
Perform the following steps to disassemble the display assembly:

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



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



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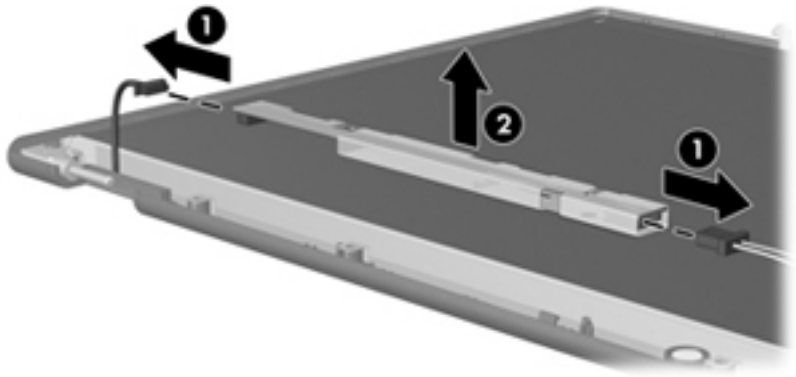
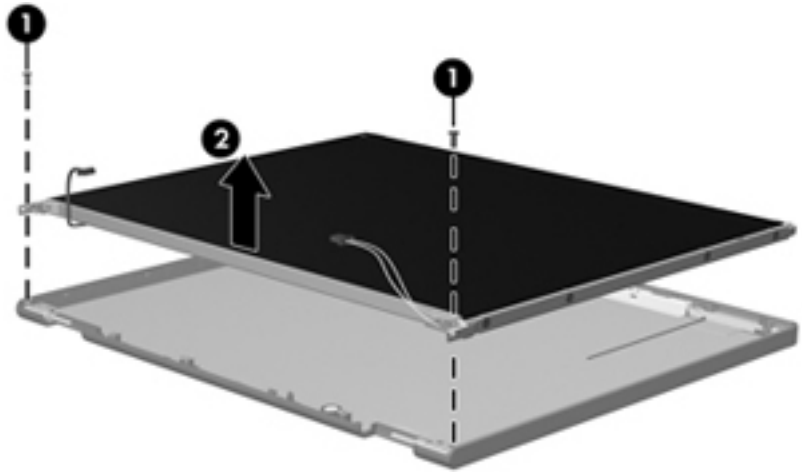
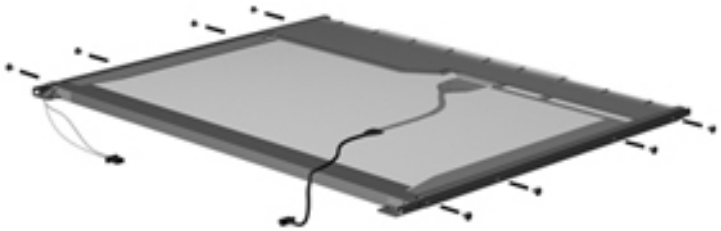
4. Disconnect all display panel cables ❶ from the display inverter and remove the inverter ❷.



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



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



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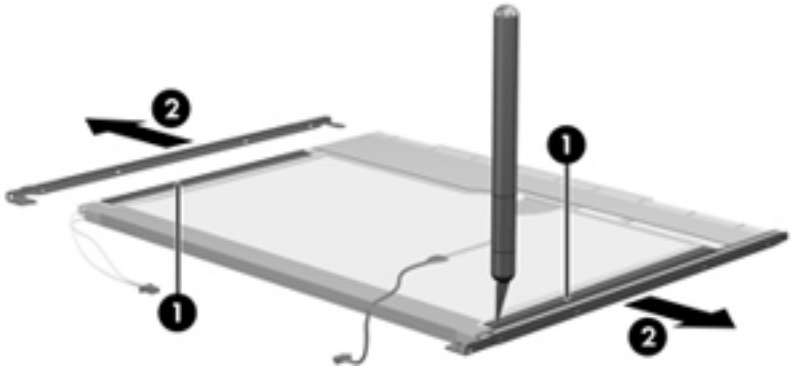
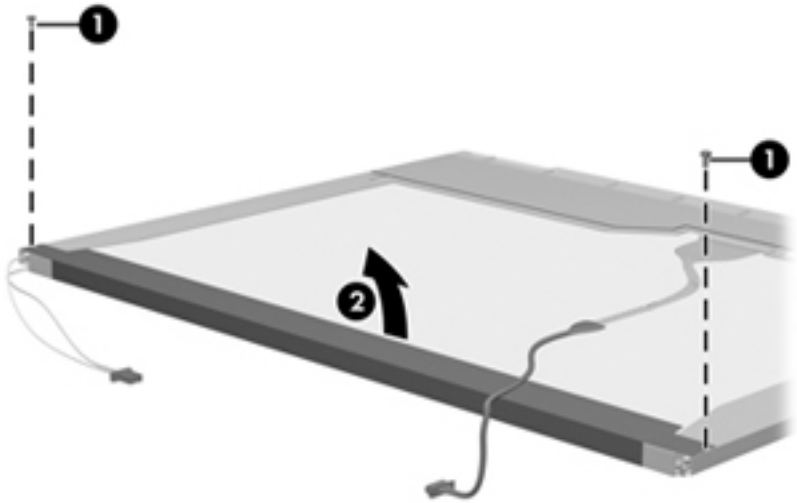
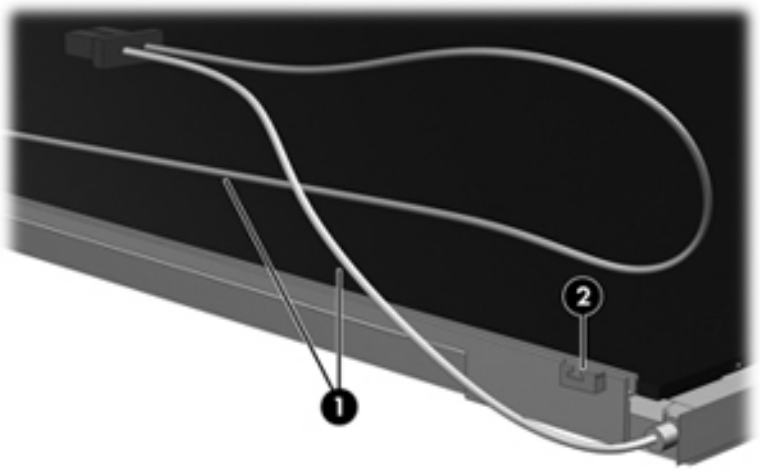
9. Use a sharp-edged tool to cut the tape ❶ that secures the sides of the display panel to the display panel frame.
10. Remove the display panel frame ❷ from the display panel.



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



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



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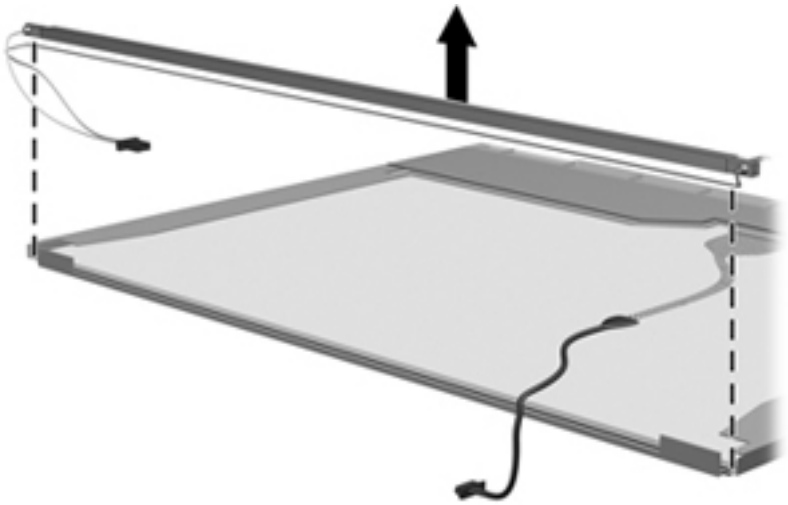
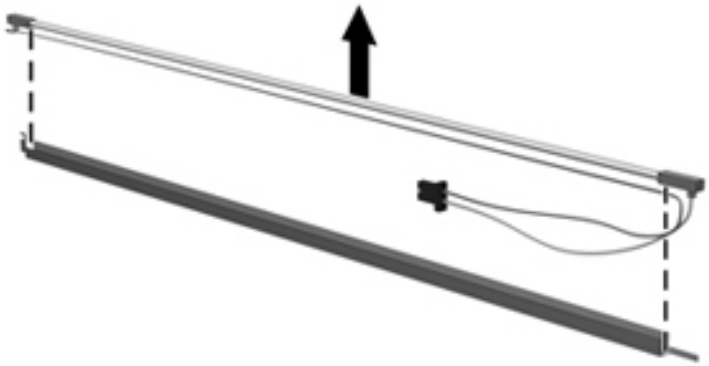
16. Turn the display panel upside down.
17. Remove the backlight frame from the display panel.



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.



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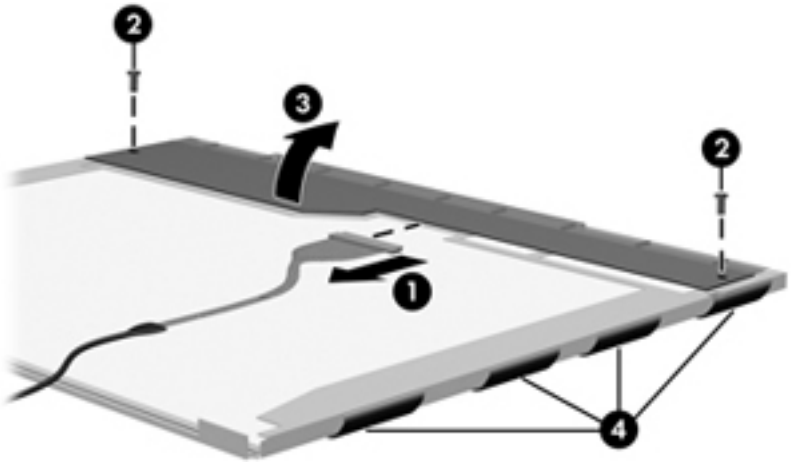
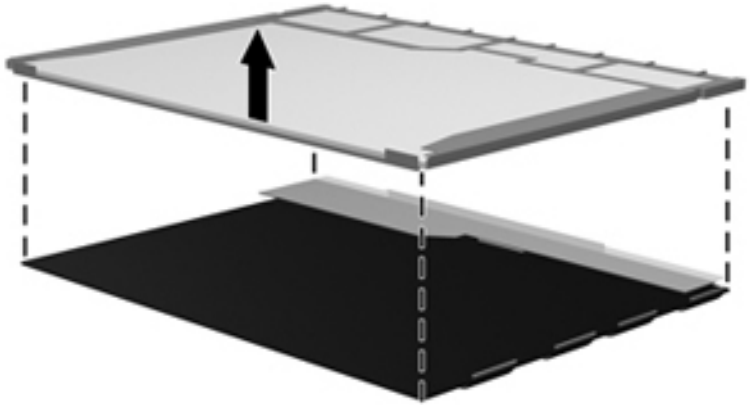
19. Disconnect the display cable ❶ from the LCD panel.
20. Remove the screws ❷ that secure the LCD panel to the display rear panel.
21. Release the LCD panel ❸ from the display rear panel.
22. Release the tape ❹ that secures the LCD panel to the display rear panel.



23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.

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