HP Pavilion dv2500 Notebook PC
Maintenance and Service Guide

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Third Edition: August 2007

First Edition: April 2007

Document Part Number: 448075-003

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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1 Product description

Category	Description	Intel processors with discrete graphics subsystem	Intel processors with UMA graphics subsystem	AMD processors with UMA graphics subsystem
Product Name	**HP Pavilion dv2500 Notebook PC**	√	√	√
Processors	**Intel® Core™ Duo with 800-MHz front side bus (FSB)**			
	T7300 2.00-GHz processor with 4-MB L2 cache	√	√	
	T7100 1.80-GHz processor with 2-MB L2 cache	√	√	
	T5450 1.67-GHz processor with 2-MB L2 cache	√	√	
	AMD processors			
	Turion™ TL-62 (2.1-Ghz, 1600-MHz FSB, 1-MB L2 cache)			√
	Turion TL-60 (2.0-Ghz, 1600-MHz FSB, 1-MB L2 cache)			√
	Turion TL-58 (1.9-GHz, 1600-MHz FSB, 1-MB L2 cache)			√
	Turion TL-55 (1.8-GHz, 512-KB L2 cache)			√
	Turion MK-38 (2.2-GHz, 512-MB L2 cache)			√
	Athlon™ TK-53 (1.7-GHz, 2-GB L2 cache)			√
	Sempron™ 3600 (2.0-GHz, 256-KB L2 cache)			√
Chipset	Northbridge: Intel PM965	√		
	Northbridge: GM965		√	
	Southbridge: Intel ICH8m	√	√	
	Northbridge: nVidia MCP67M			√
	Southbridge: nVidia Integrated			√

Category	Description	Intel processors with discrete graphics subsystem	Intel processors with UMA graphics subsystem	AMD processors with UMA graphics subsystem
Graphics	**nVidia Discrete PCI Express × 16 Graphics** • nVidia NB8M GS with 64 MB of dedicated video memory (8M × 32 GDDR3 × 2 PCs) with 128 MB of video memory when system memory is less than 1 GB (64 MB + 64 MB Turbo Cache) • nVidia NB8M GS with 64 MB of dedicated video memory (8M × 32 GDDR3 × 2 PCs) with 256 MB of video memory when system memory is greater than or equal to 1 GB (64 MB + 192 MB Turbo Cache) System design supports up to 55-W GPU requirement.	√		
	Mobile Intel Graphics Media Accelerator X3100 Unified Memory Architecture (UMA) with shared video memory: • Up to 64 MB on computers with 512 MB or less of system memory • Up to 128 MB on computers with more than 512 MB of system memory Memory size is a dynamic change.		√	
	UMA nVidia Unified Memory Architecture (UMA) with shared video memory: • Up to 64 MB on computers with 512 MB of system memory • Up to 256 MB on computers with 1024 MB of system memory • Up to 576 MB on computers with more than 2048 MB of system memory			√
Panel	14.1-inch, WXGA with BrightView	√	√	√
Memory	2 SODIMM slots	√	√	√

Category	Description	Intel processors with discrete graphics subsystem	Intel processors with UMA graphics subsystem	AMD processors with UMA graphics subsystem
	Customer-accessible/upgradable	√	√	√
	Supports up to 4 GB of system RAM			√
	Supports up to 2 GB of system RAM	√	√	
	DDRII PC2-5300 (667-MHz)	√	√	√
	Supports the following configuration: 4096 (2048 x 2)			√
	Supports the following configurations: • 2048 (1024 × 2) • 1536 (1024 + 512) • 1024 (1024 × 1, 512 × 2) • 512 (512 × 1)	√	√	√
Hard drives	Supports 9.5-mm, 2.5-inch hard drives	√	√	√
	Serial ATA	√	√	√
	Supports the following drives: • 250-GB, 5400-rpm • 160-GB, 5400-rpm • 120-GB, 5400-rpm • 80-GB, 5400-rpm	√	√	√
Optical drives	Fixed (removal of 1 screw required)	√	√	√
	Parallel ATA	√	√	√
	12.7-mm tray load	√	√	√
	Supports the following drives: • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe • DVD±RW and CD-RW Super Multi Double-Layer Combo Drive • DVD-CD/RW Combo Drive	√	√	√
Diskette drive	Supports external USB drive only	√	√	√
Camera	Low-light, VGA camera	√	√	√

Category	Description	Intel processors with discrete graphics subsystem	Intel processors with UMA graphics subsystem	AMD processors with UMA graphics subsystem
	Fixed (no tilt)	√	√	√
	640 × 480 by 20 frames per second	√	√	√
Microphone	2 dual-array microphones with software	√	√	√
Audio	HD audio	√	√	√
	Supports Windows Vista® Premium Logo requirements	√	√	√
	Pavilion-branded Altec Lansing speakers	√	√	√
Modem	56K V.92 data/fax modem	√	√	√
	Supports all world-wide certification requirements	√	√	√
	Modem cable not included	√	√	√
Ethernet	Integrated Marvell E8039 10/100 network interface card (NIC)	√	√	√
	Ethernet cable not included	√	√	√
Wireless	**Integrated wireless local area network (WLAN) options by way of wireless module:**			
	Intel PRO Wireless 3945 802.11a/b/g and 802.11b/g with 2 antennae integrated into the display assembly	√	√	
	Intel PRO Wireless 4965 802.11a/b/g/n with 3 antennae integrated into the display assembly @ 2.4 and 5.0 GHz	√	√	
	Intel WLAN + Bluetooth®	√	√	
	Broadcom 4321AGN Wi-Fi Adapter (802.11a/b/g/draft-n) + Bluetooth w/2 antennas			√
	Broadcom 4321AGN Wi-Fi Adapter (802.11a/b/g/draft-n) w/2 antennas			√
External media card	One ExpressCard54 slot	√	√	√
	Digital Media Slot, supports SD, MMC, SD I/O, MS, MSpro, xD	√	√	√

Category	Description	Intel processors with discrete graphics subsystem	Intel processors with UMA graphics subsystem	AMD processors with UMA graphics subsystem
	Supports miniature versions of SD, MMC, MS Duo with adapter (adapter is not included)	√	√	√
	Supports 2nd Mini-PCIe	√	√	√
Ports	Audio-in (mono microphone)	√	√	√
	Audio-out (stereo headphone)	√	√	√
	Audio-out (stereo headphone with S/PDIF)	√	√	√
	Consumer infrared	√	√	√
	RJ-11 (modem)	√	√	√
	RJ-45 (Ethernet, includes link and activity lights)	√	√	√
	S-Video-out	√	√	√
	USB (3)	√	√	√
	VGA (Dsub 15-pin)	√	√	√
	1394	√	√	√
	2-pin AC power	√	√	√
Docking	Expansion port 3 supports HP xb3000 Notebook Expansion Base and HP Notebook QuickDock	√	√	√
Keyboard/pointing devices	14.1-inch keyboard	√	√	√
	TouchPad with 2 buttons and four-way scroll (taps enabled as default)	√	√	√
Power requirements	12-cell 2.20-Ah Li-ion battery	√	√	√
	6-cell 2.55-Ah Li-ion battery	√	√	√
	6-cell 2.20-Ah Li-ion battery	√	√	√
	65-W AC adapter with localized cable plug support (2-wire plug with ground pin, supports 2-pin DC connector)	√	√	√
Security	Security cable slot	√	√	√
	Fingerprint reader	√	√	√
Operating system	**Preinstalled:**			
	Configurable Windows Vista embedded "QuickPlay Direct"	√	√	

Category	Description	Intel processors with discrete graphics subsystem	Intel processors with UMA graphics subsystem	AMD processors with UMA graphics subsystem
	Windows Vista Business (32-bit)	√	√	√
	Windows Vista Home Basic (32-bit)	√	√	√
	Windows Vista Premium (32- and 64-bit)	√	√	√
	Windows Vista Ultimate (64-bit)	√	√	
Serviceability	**End-user replaceable parts:**			
	AC adapter	√	√	√
	Battery (system)	√	√	√
	Hard drive	√	√	√
	Memory module	√	√	√
	Optical drive	√	√	√
	WLAN module	√	√	√

2 External component identification

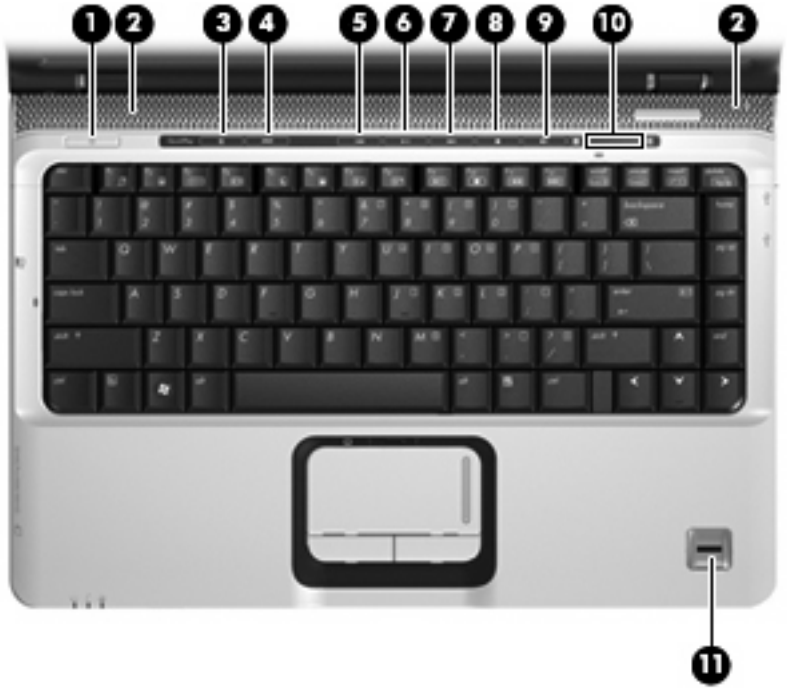
Top components

Display components

Item	Component	Description
(1)	Internal microphones (2) (select models only)	Record sound. **NOTE:** If there is a microphone icon next to each microphone opening, the computer has internal microphones.
(2)	Integrated camera light (select models only)	On: The integrated camera is in use.
(3)	Integrated camera (select models only)	Records video and captures still photographs.
(4)	Internal display switch*	Turns off the display if the display is closed while the computer is on.

*The location of the internal display switch varies by computer model.

Buttons, speakers, and fingerprint reader

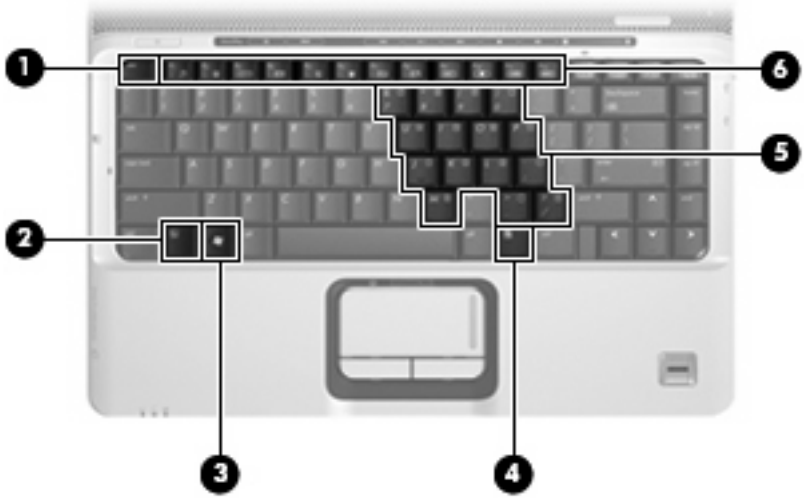


Item	Component	Description
(1)	Power button*	• When the computer is off, press the button to turn on the computer. • When the computer is on, press the button to initiate Sleep. • When the computer is in the Sleep state, press the button briefly to exit Sleep. • When the computer is in Hibernation, press 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 power settings, select **Start > Control Panel > System and Maintenance > Power Options**.
(2)	Speakers (2)	Produce sound.
(3)	Media button	Opens the QuickPlay program. **NOTE:** If the computer has been set up to require a logon password, you may be asked to log on to Windows. QuickPlay opens after you log on. Refer to the QuickPlay Help for more information.
(4)	DVD button	Opens the DVD playback feature of the QuickPlay program.

Item	Component	Description
		NOTE: If the computer has been set up to require a logon password, you may be asked to log on to Windows. QuickPlay opens after you log on. Refer to the QuickPlay Help for more information.
(5)	Previous/rewind button	• Plays the previous track or chapter when pressed once. • Rewinds media when pressed simultaneously with the fn key.
(6)	Play/pause button	Plays or pauses the disc.
(7)	Next/fast forward button	• Plays the next track or chapter when pressed once. • Fast forwards media when pressed simultaneously with the fn key.
(8)	Stop button	Stops the disc.
(9)	Volume mute button	Mutes and restores the speaker sound.
(10)	Volume scroll zone	Adjusts speaker volume. Slide your finger to the left to decrease volume and to the right to increase volume. You can also tap the minus sign on the scroll zone to decrease volume, or tap the plus sign on the scroll zone to increase volume.
(11)	Fingerprint reader (select models only)	Allows a fingerprint logon to Windows, instead of a password logon.

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

Keys



Item	Component	Function
(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)	Windows applications key	Displays a shortcut menu for items beneath the pointer.
(5)	Embedded numeric keypad keys	Can be used like the keys on an external numeric keypad.
(6)	Function keys	Execute frequently used system functions when pressed in combination with the fn key.

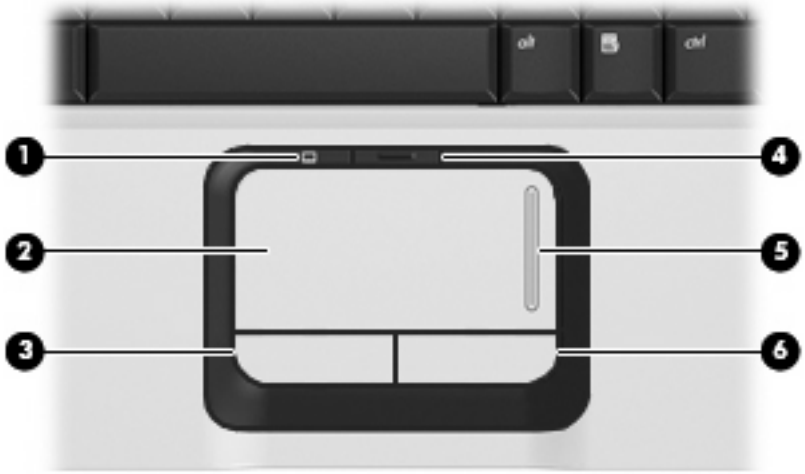
Lights

Item	Component	Description
(1)	Power lights (2)*	• 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)	Caps lock light	On: Caps lock is on.
(5)	Media button light	Blinks once when the media button is pressed.
(6)	DVD button light	Blinks once when the DVD button is pressed.
(7)	Previous/rewind light	Blinks once when the previous/rewind button is pressed.
(8)	Play/pause light	Blinks once when the play/pause button is pressed.
(9)	Next/fast forward light	Blinks once when the next/fast forward button is pressed.
(10)	Stop light	Blinks once when the stop button is pressed.
(11)	Volume mute light	• Blue: Computer sound is turned on. • Amber: Computer sound is turned off.
(12)	Volume down light	Blinking: The volume scroll zone is being used to decrease speaker volume.

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

*The 2 power lights display the same information. The light on the power button is visible only when the computer is open. The power light on the front of the computer is visible whether the computer is open or closed.

TouchPad



Item	Component	Function
(1)	TouchPad light	• Blue: TouchPad is enabled. • Amber: TouchPad is disabled.
(2)	TouchPad*	Moves the pointer and selects or activates items on the screen.
(3)	TouchPad left 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)	TouchPad right button*	Functions like the right button on an external mouse.

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

Front components

Item	Component	Function
(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)	Wireless switch	Turns the wireless feature on or off, but does not create a wireless connection. **NOTE:** To establish a wireless connection, a wireless network must already be set up.
(5)	Wireless light	• Blue: An integrated wireless device, such as a WLAN device and/or a Bluetooth® device, is turned on. • Amber: An integrated wireless device is turned off.
(6)	Consumer infrared lens	Receives a signal from a remote control device, such as the HP Remote Control.
(7)	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(8)	Audio-out (headphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.
(9)	Audio-out (headphone) S/PDIF jack (select models only)	Produces sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.

Left-side components

Item	Component	Function
(1)	Security cable slot	Attaches an optional security cable to the computer. **NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)	S-Video-out jack	Connects an optional S-Video device such as a television, VCR, camcorder, overhead projector, or video capture card.
(3)	External monitor port	Connects an external VGA monitor or projector.
(4)	Expansion port 3	Connects the computer to an optional docking device or expansion product. **NOTE:** The computer has only one expansion port. The term *expansion port 3* describes the type of expansion port.
(5)	RJ-45 (network) jack	Connects a network cable.
(6)	USB port (select models only)	Connects an optional USB device. **NOTE:** Depending on your computer model, the computer may include an HDMI port or a USB port.
(7)	1394 port (select models only)	Connects an optional IEEE 1394 or 1394a device, such as a camcorder.
(8)	Digital Media Slot	Supports the following optional digital card formats: • Memory Stick (MS) • Memory Stick Pro (MSP) • MultiMediaCard (MMC) • Secure Digital Input/Output (SD I/O) • Secure Digital (SD) Memory Card • xD-Picture Card (XD) • xD-Picture Card (XD) Type H • xD-Picture Card (XD) Type M
(9)	Digital Media Slot light	On: A digital card is being accessed.
(10)	ExpressCard slot	Supports optional ExpressCard/54 cards.

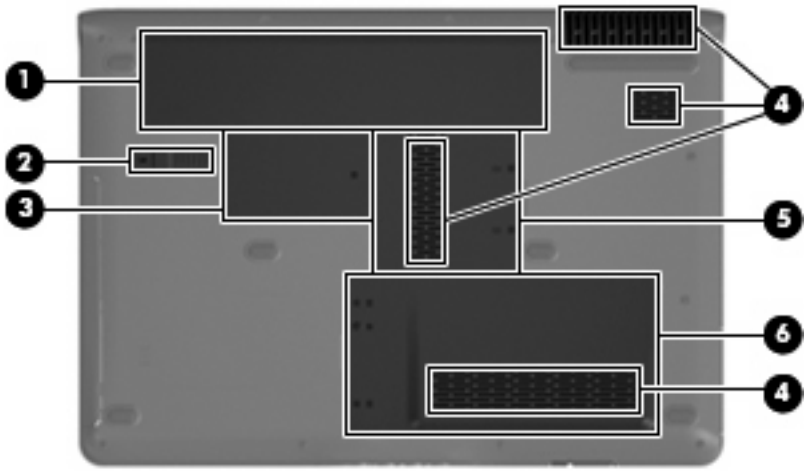
Rear component

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

Right-side components

Item	Component	Function
(1)	Optical drive	Reads optical discs, and, on select models, also writes to optical discs.
(2)	USB ports	Connect optional USB devices.
(3)	RJ-11 (modem) jack	Connects a modem cable.
(4)	Power connector	Connects an AC adapter.

Bottom components

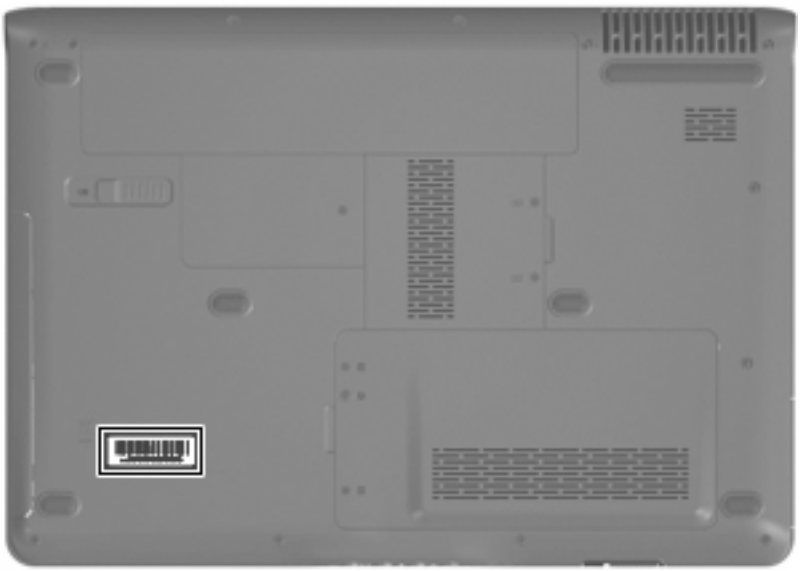


Item	Component	Function
(1)	Battery bay	Holds the battery.
(2)	Battery release latch	Releases the battery from the battery bay.
(3)	Wireless module compartment	Contains a wireless module slot. **CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized 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.
(4)	Vents (4)	Enable airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(5)	Memory module compartment	Contains 2 memory module slots.
(6)	Hard drive bay	Holds the hard drive and the RTC battery.

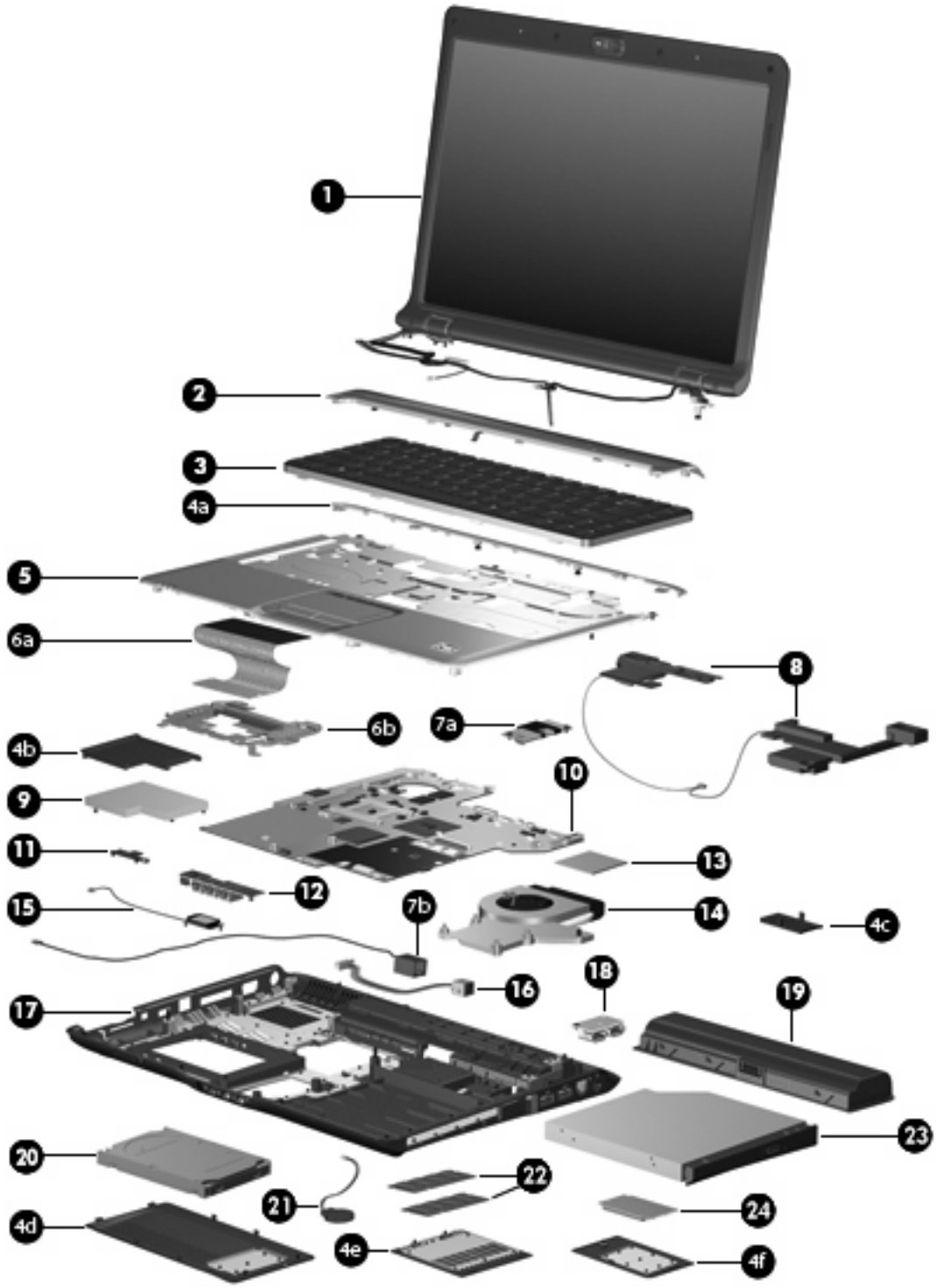
3 Illustrated parts catalog

Serial number location

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



Computer major components



Item	Description	Spare part number
(1)	**Display assemblies**	

Item	Description	Spare part number
	14.1-inch, WXGA, BrightView, display assembly for use only with computer models equipped with a camera module (includes camera module, microphones, and WLAN transceivers and antenna cables)	448604-001
	14.1-inch, WXGA, BrightView, display assembly for use only with computer models not equipped with a camera module (includes microphones and WLAN transceivers and antenna cables)	448603-001
	14.1-inch, WXGA, BrightView, display assembly for use only with computer models sold at Best Buy (includes camera module, microphones, and WLAN transceivers and antenna cables)	451906-001
	NOTE: See Display assembly components on page 25 for more information on display assembly internal component spare part numbers.	
(2)	**Switch covers**	
	For use only in computer models with Intel processors:	
	• Switch cover (includes LED board and cable and power button board and cable)	451312-001
	• Switch cover for use only with computer models sold at Best Buy (includes LED board and cable and power button board and cable)	451599-001
	For use only in computer models with AMD processors:	
	• Switch cover (includes LED board and cable and power button board and cable)	455849-001
(3)	**Keyboards**	
	Belgium	448615-021
	Brazil	448615-201
	Canadian French	448615-121
	Denmark, Finland, Norway, and Sweden	448615-DH1
	France	448615-051
	Germany	448615-041
	Greece	448615-DJ1
	Israel	448615-BB1
	Italy	448615-061
	Latin America	448615-161
	Japan	448615-291
	The Netherlands and Europe	448615-B31
	Portugal	448615-131
	Russia	448615-251
	Saudi Arabia	448615-171
	South Korea	448615-AD1
	Spain	448615-071
	Switzerland	448615-111
	Taiwan	448615-AB1

Item	Description	Spare part number
	Thailand	448615-281
	Turkey	448615-141
	The United Kingdom	448615-031
	The United States	448615-001
	Keyboard for use in the United States only on computer models sold at Best Buy	452236-001
	Door/Cover Kit (see Door/Cover Kit on page 27 for more Door/Cover Kit spare part component information)	417073-001
(4a)	Top cover trim	
(4b)	ExpressCard slot bezel	
(4c)	SIM slot cover	
(4d)	Hard drive cover	
(4e)	Memory module compartment cover	
(4f)	Wireless module compartment cover	
(5)	**Top covers** (include TouchPad and TouchPad cable)	
	For use in computer models with Intel or AMD processors:	
	• Equipped with a fingerprint reader (includes fingerprint reader board and cable)	448618-001
	For use in computer models with Intel processors:	
	• Not equipped with a fingerprint reader	448619-001
	• Sold at Best Buy (includes fingerprint reader board and cable)	451600-001
	For use in computer models with AMD processors:	
	• Not equipped with a fingerprint reader	455835-001
(6a)	**TouchPad** (include TouchPad bracket and TouchPad cable)	
	For use with computer models with Intel processors	451341-001
	For use with computer models with AMD processors	455838-001
(6b)	**TouchPad bracket** (included with top cover spare part kits and with TouchPad)	
(7a)	**Modem module** (includes modem module cable)	431852-001
(7b)	**Modem module cable** for use with computer models with Intel processors (included with modem module)	
	For use with computer models with AMD processors	455847-001
(8)	**Speaker assembly**	417089-001
(9)	**ExpressCard assembly**	417112-001
(10)	**System boards** (include thermal material)	
	For use in computer models with Intel processors:	
	• Equipped with a discrete graphics subsystem	448596-001
	• Equipped with a UMA graphics subsystem	448598-001

Item	Description	Spare part number
	For use in computer models with AMD processors	453413-001
(11)	**Wireless switch board** (includes wireless switch board cable)	417092-001
(12)	**Audio board** (includes audio connectors, infrared lens, and audio board cable)	448626-001
(13)	**Processors** (include thermal material)	
	Intel Core Duo processors:	
	• T7300 (2.00-GHz, 4-MB L2 cache)	448601-001
	• T7100 (1.80-GHz, 2-MB L2 cache)	448600-001
	• T5450 (1.67-GHz, 2-MB L2 cache)	451597-001
	• T5250e (1.50-GHz, 2-MB L2 cache)	453948-001
	AMD processors:	
	• Turion TL-62 (2.1 -GHz, 1-MB L2 cache)	455809-001
	• Turion TL-60 (2.0 -GHz, 1-MB L2 cache)	455807-001
	• Turion TL-58 (1.9 -GHz, 1-MB L2 cache)	448561-001
	• Turion TL-55 (1.86 -GHz, 1-MB L2 cache)	455808-001
	• Turion MK-38 (2.2-GHz, 512-MB L2 cache)	449904-001
	• Athlon TK-53 (1.7-GHz, 2-GB L2 cache)	451013-001
	• Sempron 3600 (2.0-GHz, 256-KB L2 cache)	450609-001
(14)	**Fan/heat sink assembly** (includes thermal material)	
	For use in computer models with Intel processors	448625-001
	For use in computer models with AMD processors	455843-001
	Fan/heat sink assembly mounting bracket (not illustrated)	417114-001
(15)	**Bluetooth module** (includes Bluetooth module cable)	397923-002
	Bluetooth module cable for use in computer models with AMD processors (not illustrated)	458663-001
(16)	**Power connector cable**	
	For use with computer models with Intel processors	448628-001
	For use with computer models with AMD processors	430462-001
(17)	**Base enclosures**	
	For use only with computer models with Intel processors that are equipped with a discrete graphics subsystem	451342-001
	For use only with computer models with Intel or AMD processors that are equipped with a UMA graphics subsystem	448621-001
	Rubber Feet Kit (includes computer feet, not illustrated)	417095-001
(18)	**USB board** (includes USB board cable)	
	For use in computer models with Intel processors	417085-001
	For use in computer models with AMD processors	455839-001

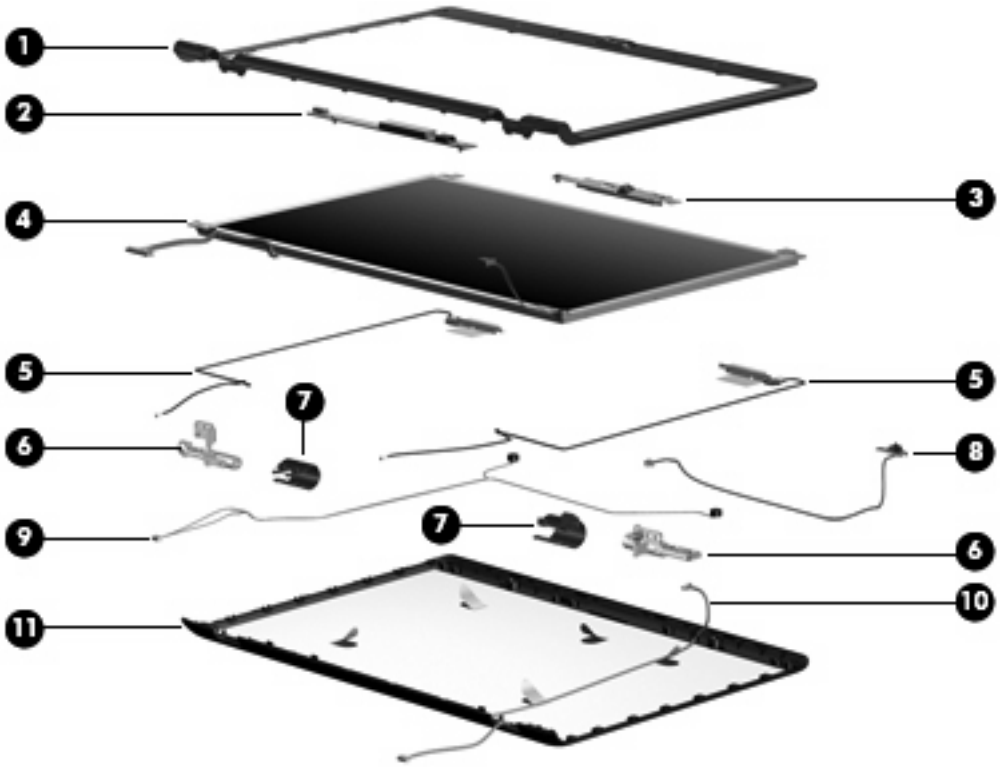
Item	Description	Spare part number
(19)	**Batteries**	
	For use in computer models with Intel or AMD processors:	
	• 6-cell, 2.55-Ah	441611-001
	For use in computer models with Intel processors:	
	• 12-cell, 8.80-Ah	452056-001
	• 6-cell, 2.20-Ah	452057-001
	For use in computer models with AMD processors:	
	• 12-cell, 8.80-Ah	455806-001
	• 6-cell, 2.20-Ah	455804-001
(20)	**Hard drives** (include hard drive bracket)	
	For use in computer models with Intel processors:	
	• 250-GB, 5400-rpm	453949-001
	• 160-GB, 5400-rpm	452060-001
	• 120-GB, 5400-rpm	452059-001
	• 80-GB, 5400-rpm	452058-001
	For use in computer models with AMD processors:	
	• 250-GB, 5400-rpm	455827-001
	• 160-GB, 5400-rpm	453418-001
	• 120-GB, 5400-rpm	453417-001
	• 80-GB, 5400-rpm	453416-001
	Hard drive hardware kit (contains screws, hard drive bracket, and connector; not illlustrated)	453419-001
(21)	**RTC battery**	417076-001
(22)	**Memory modules** (667-MHz, PC2-5300, 1-DIMM)	
	For use in computer models with Intel processors:	
	• 1024-MB	452062-001
	• 512-MB	452061-001
	For use in computer models with AMD processors:	
	• 1024-MB	453415-001
	• 512-MB	453414-001
(23)	**Optical drives** (include bezel and bracket)	
	For use in computer models with Intel processors:	
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	452052-001
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	452051-001

Item	Description	Spare part number
	• DVD/CD-RW Combo Drive	452050-001
	For use in computer models with AMD processors:	
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	455830-001
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	455829-001
	• DVD/CD-RW Combo Drive	455828-001
(24)	**WLAN modules**	
	802.11a/b/g/n WLAN modules:	
	• For use in Antigua & Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, Uruguay, the United States, Venezuela, and Vietnam	441086-001
	• For use in Austria, Azerbaijan, Bahrain, Belgium, Brazil, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Qatar, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and Uzbekistan	441086-002
	• For use in Australia, New Zealand, Pakistan, the People's Republic of China, and South Korea	441086-003
	• For use in Japan	441086-291
	802.11a/b/g WLAN modules:	
	• For use in Antigua and Barbuda, Argentina, Australia, the Bahamas, Barbados, Brunei, Canada, Chile, the Dominican Republic, Guam, Guatemala, Hong Kong, India, Indonesia, Malaysia, Mexico, New Zealand, Panama, Paraguay, Saudi Arabia, Taiwan, the United States, and Vietnam	452063-001
	• For use in Aruba, Austria, Azerbaijan, Bahrain, Belgium, Bermuda, Brazil, Bulgaria, the Cayman Islands, Colombia, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, El Salvador, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Jordan, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, the United Kingdom, and Uzbekistan	452063-002
	• For use in Ecuador, Haiti, Honduras, Pakistan, the People's Republic of China, Peru, Qatar, South Korea, Uruguay, and Venezuela	452063-003
	802.11b/g WLAN module for use in Thailand	409407-004
	Broadcom 4311AG 802.11a/b/g modules:	
	• For use in the United States and Canada	441075-001
	• For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the	441075-002

Item	Description	Spare part number
	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-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	
	• For use in Japan	441075-291
	Broadcom 802.11b/g WLAN modules:	
	• For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States	441090-001
	• For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	441090-002
	• For use in Japan	441090-291
	802.11n WLAN modules:	
	• For use in the United States and Canada	436255-001

Item	Description	Spare part number
	• For use in the Argentina, Australia, Belize, Bolivia, Brazil, Chile, Columbia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Hong Kong, Indonesia, Nicaragua, Paraguay, the People's Republic of China, Peru, South Korea, Taiwan, Thailand, Uruguay, Venezuela	436256-001
	• For use in Japan	436256-291
	Cable Kit (not illustrated; see Cable Kit on page 28 for more Cable Kit component information)	417075-001

Display assembly components



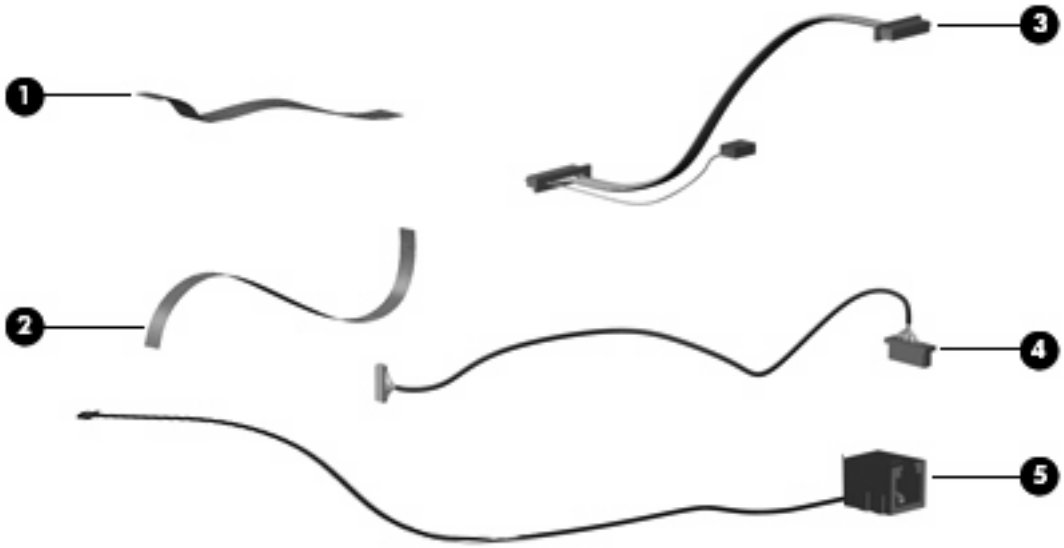
Item	Description	Spare part number
(1)	**Display bezels**	
	For use only with computer models equipped with a camera module (includes openings for camera module and microphones)	448607-001
	For use only with computer models not equipped with a camera module (includes openings for microphones)	448606-001
	For use only with computer models sold at Best Buy (includes openings for camera module and microphones)	451907-001
	Rubber display bezel kit (contains all rubber pieces for the display bezel; not illustrated)	458653-001
(2)	**Display inverter** (includes Mylar shield)	417097-001

Item	Description	Spare part number
(3)	**Camera module** (includes camera module bracket and 2-sided tape)	453673-001
(4)	**14.1-inch, WXGA, BrightView display panel** (includes display panel cable)	
	For use with computer models with Intel processors	448602-001
	For use with computer models with AMD processors	455810-001
(5)	**Wireless Antenna Kit**	
	For use with computer models with Intel processors	448609-001
	For use with computer models with AMD processors	458657-001
	Display Hinge Kit	
	For use with computer models with Intel processors	430473-001
	For use with computer models with AMD processors	455817-001
(6)	Left and right display hinges	
(7)	Left and right display hinge covers for use in computer models with Intel processors (included in Display Hinge Kit)	
	Left and right display hinge covers for use in computer models with AMD processors	455845-001
(8)	Display switch module	431881-001
	Display Cable Kit	448610-001
(9)	Microphones and cables	
(10)	Camera module cable	
(11)	**Display enclosures**	
	Display enclosure (includes logo and WLAN wireless antenna transceivers and cables)	448605-001
	Display enclosure for use only with computer models sold at Best Buy (includes logo and WLAN wireless antenna transceivers and cables)	451598-001
	Display Label Kit (not illustrated)	448608-001
	Display Screw Kit (includes display bezel rubber screw covers, not illustrated)	
	For use in computer models with Intel processors	417104-001
	For use in computer models with AMD processors	455868-001
	Display cable for use in computer models with AMD processors (plugs from unit into display panel; not illustrated)	458655-001
	Display bracket for use in computer models with AMD processors (not illustrated)	455811-001

Door/Cover Kit

Item	Description	Spare part number
	Door/Cover Kit	417073-001
(1)	Top cover trim	
(2)	ExpressCard slot bezel	
(3)	Hard drive cover (includes 2 captive screws, secured by C-clips)	
(4)	Memory module compartment cover (includes 2 captive screws, secured by C-clips)	
(5)	Wireless module compartment cover (includes 1 captive screw, secured by a C-clip)	
(6)	SIM slot cover	

Cable Kit



Item	Description	Spare part number
	Cable Kit	417075-001
(1)	Power button board cable	
(2)	LED board cable	
(3)	USB board cable (includes num lock light)	
(4)	Bluetooth module cable	
(5)	Modem module cable (includes RJ-11 connector)	

Mass storage devices

Item	Description	Spare part number
(1)	**Hard drives** (include hard drive bracket)	
	For use in computer models with Intel processors:	
	• 250-GB, 5400-rpm	453949-001
	• 160-GB, 5400-rpm	452060-001
	• 120-GB, 5400-rpm	452059-001
	• 80-GB, 5400-rpm	452058-001
	For use in computer models with AMD processors:	
	• 250-GB, 5400-rpm	455827-001
	• 160-GB, 5400-rpm	453418-001
	• 120-GB, 5400-rpm	453417-001
	• 80-GB, 5400-rpm	453416-001
	Hard drive hardware kit (contains screws, hard drive bracket, and connector; not illustrated)	453419-001
(2)	**Optical drives** (include bezel and bracket)	
	For use in computer models with Intel processors:	
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	452052-001
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	452051-001
	• DVD/CD-RW Combo Drive	452050-001
	For use in computer models with AMD processors:	
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	455830-001
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	455829-001
	• DVD/CD-RW Combo Drive	455828-001

Miscellaneous parts

Description	Spare part number
AC adapters	
90-W PFC AC adapter	409515-001
65-W PFC AC adapter	417220-001
ATSC/NTSC TV tuner antenna	439131-001
ATSC/NTSC/PAL TV tuner	439130-001
Composite video cable	407939-001
DVB-T antenna and DVB-T antenna adapter	412176-002
DVB-T tuner	412175-001
DVB-T tuner adapter	412176-001
Earbud headset	371693-003
Fingerprint reader	458113-001
HP backpack	405527-001
HP carrying case	418162-001
HP Remote Control for use with computer models with Intel processors	407313-001
HP Remote Control for use with computer models with AMD processors	435743-001
Infrared emitter with cable	439129-001
Optical wired mouse	436238-001
Power/USB bracket for use in computer models with AMD processors	455833-001
RF input adapter cable (without ferrite)	407940-001
TV tuner remote control for use in Europe, the Middle East, and Africa	408479-002
USB digital drive	364727-002
USB infrared receiver	408483-001
Windows Vista remote control (fits into ExpressCard slot)	439128-001
Windows Vista remote control (does not fit into ExpressCard slot)	439254-001
Wireless laser mouse (includes cable adapter)	430958-001
Power cords:	
Argentina	383496-D01
Australia and New Zealand	383496-011
Belgium, Europe, Finland, France, Germany, Greece, the Netherlands, Norway, Portugal, Spain, and Sweden	383496-021
Brazil	383496-201
Canada, French Canada, Latin America, Thailand, and the United States	383496-001
Denmark	383496-081

Description	Spare part number
India	383496-D61
Israel	383496-BB1
Italy	383496-061
Japan	383496-291
The People's Republic of China	383496-AA1
South Africa	383496-AR1
South Korea	383496-AD1
Switzerland	383496-111
Taiwan	383496-AB1
The United Kingdom and Hong Kong	383496-031
Screw Kit	
For use in computer models with Intel processors	417108-001
For use in computer models with AMD processors	455867-001

- Phillips PM3.0×4.0 screw
- Phillips PM2.5×9.0 screw
- Phillips PM2.5×7.0 screw
- Black Phillips PM2.5×5.0 screw
- Silver Phillips PM2.5×5.0 screw
- Phillips PM2.5×4.0 screw
- Phillips PM2.0×11.0 captive screw
- Phillips PM2.0×8.0 screw
- Phillips PM2.0×6.0 muster screw
- Phillips PM2.0×5.0 screw
- Phillips PM2.0×5.0 captive screw
- Phillips PM2.0×4.0 screw
- Black Phillips PM2.0×3.0 screw
- Silver Phillips PM2.0×3.0 screw
- Phillips PM2.0×2.0 screw

Sequential part number listing

Spare part number	Description
364727-002	USB digital drive

Spare part number	Description
371693-003	Wired headset with volume control
383496-001	Power cord for use in the United States
383496-011	Power cord for use in Australia
383496-021	Power cord for use in Europe
383496-031	Power cord for use in the United Kingdom
383496-061	Power cord for use in Italy
383496-081	Power cord for use in Denmark
383496-111	Power cord for use in Switzerland
383496-201	Power cord for use in Brazil
383496-291	Power cord for use in Japan
383496-AA1	Power cord for use in the People's Republic of China
383496-AB1	Power cord for use in Taiwan
383496-AD1	Power cord for use in South Korea
383496-AR1	Power cord for use in South Africa
383496-BB1	Power cord for use in Israel
383496-D01	Power cord for use in Argentina
383496-D61	Power cord for use in India
397923-002	Bluetooth module (includes Bluetooth module cable)
405527-001	HP backpack
407313-001	HP Remote Control for use with computer models with Intel processors
407939-001	Composite video cable
407940-001	RF input adapter cable (without ferrite)
408479-002	TV tuner remote control for use in Europe, the Middle East, and Africa
408843-001	USB infrared receiver
409407-004	802.11b/g WLAN module for use in Thailand
409515-001	90-W PFC AC adapter
412175-001	DVB-T tuner
412176-001	DVB-T tuner adapter
412176-002	DVB-T antenna and DVB-T antenna adapter
417073-001	Door/Cover Kit (see Door/Cover Kit on page 27 for more Door/Cover Kit component information)
417075-001	Cable Kit (see Cable Kit on page 28 for more Cable Kit component information)
417076-001	RTC battery
417085-001	USB board for use in computer models with Intel processors (includes USB board cable)
417089-001	Speaker assembly

Spare part number	Description
417092-001	Wireless switch board(includes wireless switch board cable)
417095-001	Rubber Feet Kit (includes computer feet)
417097-001	Display inverter (includes Mylar shield)
417104-001	Display Screw Kit for use in computer models with Intel processors
417108-001	Screw Kit for use in computer models with Intel processors
417112-001	ExpressCard assembly
417114-001	Fan/heat sink assembly mounting bracket
417220-001	65-W PFC AC adapter
418162-001	HP carrying case
430462-001	Power connector cable for use in computer models with AMD processors
430473-001	Display Hinge Kit for use in computer models with Intel processors (includes left and right display hinges, left and right display hinge covers, and display switch module)
430958-001	Wireless laser mouse (includes cable adapter)
431852-001	Modem module (includes modem module cable)
431881-001	Display switch module
435743-001	HP Remote Control for use with computer models with AMD processors
436238-001	Optical wired mouse
436255-001	WLAN 802.11n module for use in the United States and Canada
436256-001	WLAN 802.11n module for use in the Argentina, Australia, Belize, Bolivia, Brazil, Chile, Columbia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Hong Kong, Indonesia, Nicaragua, Paraguay, the People's Republic of China, Peru, South Korea, Taiwan, Thailand, Uruguay, Venezuela
436256-291	WLAN 802.11n module for use in Japan
439128-001	Windows Vista remote control (fits into ExpressCard slot)
439129-001	Infrared emitter with cable
439130-001	ATSC/NTSC/PAL TV tuner
439131-001	ATSC/NTSC TV tuner antenna
439254-001	Windows Vista remote control (does not fit into ExpressCard slot)
441075-001	Broadcom 4311AG 802.11a/b/g WLAN module for use in the United States and Canada
441075-002	Broadcom 4311AG 802.11a/b/g WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, 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,

Spare part number	Description
	Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
441075-291	Broadcom 4311AG 802.11a/b/g WLAN module for use in Japan
441086-001	802.11a/b/g/n WLAN module for use in Antigua & Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, Uruguay, the United States, Venezuela, and Vietnam
441086-002	802.11a/b/g/n WLAN module for use in Austria, Azerbaijan, Bahrain, Belgium, Brazil, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Qatar, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and Uzbekistan
441086-003	802.11a/b/g/n WLAN module for use in Australia, New Zealand, Pakistan, the People's Republic of China, and South Korea
441086-291	802.11a/b/g/n WLAN module for use in Japan
441090-001	Broadcom 802.11b/g WLAN module for use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States
441090-002	Broadcom 802.11b/g WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
441090-291	Broadcom 802.11b/g WLAN module for use in Japan
441611-001	6-cell, 2.55-Ah battery for use in computers with Intel or AMD processors
448561-001	AMD Turion TL-58 processor (1.9-GHz, 1-MB L2 cache)
448596-001	System board for use only with computer models with Intel processors and equipped with a discrete graphics subsystem (includes thermal material)

Spare part number	Description
448598-001	System board for use only with computer models with Intel processors and equipped with a UMA graphics subsystem (includes thermal material)
448600-001	Intel Core Duo T7100 processor (1.80-GHz, 2-MB L2 cache; includes thermal material)
448601-001	Intel Core Duo T7300 processor (2.00-GHz, 4-MB L2 cache; includes thermal material)
448602-001	14.1-inch, WXGA, BrightView display panel for use in computer models with Intel processors (includes display panel cable)
448603-001	14.1-inch, WXGA, BrightView, display assembly for use only with computer models not equipped with a camera module (includes microphones and WLAN transceivers and antenna cables)
448604-001	14.1-inch, WXGA, BrightView, display assembly for use only with computer models equipped with a camera module (includes camera module, microphones, and WLAN transceivers and antenna cables)
448605-001	Display enclosure (includes logo and WLAN wireless antenna transceivers and cables)
448606-001	Display bezel for use with computer models that are not equipped with a camera module (includes openings for microphones)
448607-001	Display bezel for use with computer models equipped with a camera module (includes openings for camera module and microphones)
448609-001	Wireless Antenna Kit for use in computer models with Intel processors
448610-001	Display Cable Kit (includes microphones and microphone cables and camera module cable)
448615-001	Keyboard for use in the United States
448615-021	Keyboard for use in Belgium
448615-031	Keyboard for use in the United Kingdom
448615-041	Keyboard for use in Germany
448615-051	Keyboard for use in France
448615-061	Keyboard for use in Italy
448615-071	Keyboard for use in Spain
448615-111	Keyboard for use in Switzerland
448615-121	Keyboard for use in French Canada
448615-131	Keyboard for use in Portugal
448615-141	Keyboard for use in Turkey
448615-161	Keyboard for use in Latin America
448615-171	Keyboard for use in Saudi Arabia
448615-201	Keyboard for use in Brazil
448615-251	Keyboard for use in Russia
448615-281	Keyboard for use in Thailand
448615-291	Keyboard for use in Japan
448615-AB1	Keyboard for use in Taiwan
448615-AD1	Keyboard for use in South Korea

Spare part number	Description
448615-B31	Keyboard for international use
448615-BB1	Keyboard for use in Israel
448615-DH1	Keyboard for use in Denmark, Finland, Norway, and Sweden
448615-DJ1	Keyboard for use in Greece
448618-001	Top cover for use only with computer models with Intel or AMD processors that are equipped with a fingerprint reader (includes TouchPad, TouchPad cable, fingerprint reader board, fingerprint reader board cable)
448619-001	Top cover for use only with computer models with Intel processors that are not equipped with a fingerprint reader (includes TouchPad and TouchPad cable)
448621-001	Base enclosure for use only with computer models with Intel or AMD processors that are equipped with a UMA graphics subsystem
448625-001	Fan/heat sink assembly for use in computer models with Intel processors (includes thermal material)
448626-001	Audio board (includes audio connectors, infrared lens, and audio board cable)
448628-001	Power connector cable for use in computer models with Intel processors
449904-001	Turion MK-38 processor (2.2-GHz, 512-MB L2 cache)
450609-001	AMD Sempron 3600 processor (2.0-GHz, 256-KB L2 cache)
451013-001	Athlon TK-53 processor (1.7-GHz, 2-GB L2 cache)
451312-001	Switch cover for use only in computer models with Intel processors (includes LED board and cable and power button board and cable)
451341-001	TouchPad for use in computer models with Intel processors (includes TouchPad bracket and TouchPad cable)
451342-001	Base enclosure for use only with computer models with Intel processors equipped with a discrete graphics subsystem
451597-001	Intel Core Duo T5450 processor (1.67-GHz, 2-MB L2 cache, includes thermal material)
451598-001	Display enclosure for use only with computer models with Intel processors sold at Best Buy (includes logo and WLAN wireless antenna transceivers and cables)
451599-001	Switch cover for use only with computer models with Intel processors sold at Best Buy (includes LED board and cable and power button board and cable)
451600-001	Top cover for use only with computer models with Intel processors sold at Best Buy
451906-001	14.1-inch, WXGA, BrightView, display assembly for use only with computer models with Intel processors sold at Best Buy (includes camera module, camera module cable, microphones, and WLAN transceivers and antenna cables)
451907-001	Display bezel for use only with computer models with Intel processors sold at Best Buy (includes openings for camera module and microphones)
452050-001	DVD/CD-RW Combo Drive for use in computer models with Intel processors (includes bezel and bracket)
452051-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive for use in computer models with Intel processors (includes bezel and bracket)
452052-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe for use in computer models with Intel processors (includes bezel and bracket)
452056-001	12-cell, 8.80-Ahr battery for use in computer models with Intel processors
452057-001	6-cell, 2.20-Ahr battery for use in computer models with Intel processors

Spare part number	Description
452058-001	80-GB, 5400-rpm hard drive (includes hard drive bracket) for use in computer models with Intel processors
452059-001	120-GB, 5400-rpm hard drive (includes hard drive bracket) for use in computer models with Intel processors
452060-001	160-GB, 5400-rpm hard drive (includes hard drive bracket) for use in computer models with Intel processors
452061-001	1024-MB memory module (667-MHz, PC2-5300, 1-DIMM) for use in computer models with Intel processors
452062-001	512-MB memory module (667-MHz, PC2-5300, 1-DIMM) for use in computer models with Intel processors
452063-001	802.11a/b/g WLAN module for use in Antigua and Barbuda, Argentina, Australia, the Bahamas, Barbados, Brunei, Canada, Chile, the Dominican Republic, Guam, Guatemala, Hong Kong, India, Indonesia, Malaysia, Mexico, New Zealand, Panama, Paraguay, Saudi Arabia, Taiwan, the United States, Vietnam
452063-002	802.11a/b/g WLAN module for use in Aruba, Austria, Azerbaijan, Bahrain, Belgium, Bermuda, Brazil, Bulgaria, the Cayman Islands, Colombia, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, El Salvador, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Jordan, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, the United Kingdom, and Uzbekistan
452063-003	802.11a/b/g WLAN module for use in Ecuador, Haiti, Honduras, Pakistan, the People's Republic of China, Peru, Qatar, South Korea, Uruguay, and Venezuela
452236-001	Keyboard for use in the United States only on computer models with Intel processors sold at Best Buy
453413-001	System board for use in computer models with AMD processors
453414-001	512-MB memory module for use in computer models with AMD processors (667-MHz, PC2-5300, 1-DIMM)
453415-001	1-GB memory module for use in computer models with AMD processors (667-MHz, PC2-5300, 1-DIMM)
453416-001	80-GB hard drive for use in computer models with AMD processors
453417-001	120-GB hard drive for use in computer models with AMD processors
453418-001	160-GB hard drive for use in computer models with AMD processors
453419-001	Hard drive hardware kit for use in computer models with AMD processors (contains screws, hard drive bracket, and connector)
453673-001	Camera module (includes camera module bracket and 2-sided tape)
453948-001	Intel Core Duo T5250e processor (1.50-GHz, 2-MB L2 cache; includes thermal material)
453949-001	250-GB, 5400-rpm hard drive for use in computer models with Intel processors (includes hard drive bracket)
455804-001	6-cell, 2.20-Ahr battery for use in computer models with AMD processors
455806-001	12-cell, 8.80-Ahr battery for use in computer models with AMD processors
455807-001	AMD Turion TL-60 processor (2.0-GHz, 1-MB L2 cache)
455808-001	AMD Turion TL-55 processor (1.86-GHz, 1-MB L2 cache)
455809-001	AMD Turion TL-62 processor (2.1-GHz, 1-MB L2 cache)
455810-001	14.1-inch, WXGA, BrightView display panel for use in computer models with AMD processors (includes display panel cable)
455811-001	Display bracket for use in computer models with AMD processors
455817-001	Display Hinge Kit for use in computer models with AMD processors (includes left and right display hinges, left and right display hinge covers, and display switch module)
455827-001	250-GB hard drive for use in computer models with AMD processors

Spare part number	Description
455828-001	DVD/CD-RW Combo Drive for use in computer models with AMD processors (includes bezel and bracket)
455829-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive for use in computer models with AMD processors (includes bezel and bracket)
455830-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe for use in computer models with AMD processors (includes bezel and bracket)
455832-001	Power connector cable for use in computer models with AMD processors
455833-001	Power/USB bracket for use in computer models with AMD processors
455835-001	Top cover for use only with computer models with AMD processors that are not equipped with a fingerprint reader (includes TouchPad and TouchPad cable)
455838-001	TouchPad for use in computer models with AMD processors (includes TouchPad bracket and TouchPad cable)
455839-001	USB board for use in computer models with AMD processors (includes USB board cable)
455843-001	Fan/heat sink assembly for use in computer models with AMD processors (includes thermal material)
455845-001	Display hinge covers for use in computer models with AMD processors
455847-001	Modem module cable for use in computer models with AMD processors
455849-001	Switch cover for use only in computer models with Intel processors (includes LED board and cable and power button board and cable)
455867-001	Screw Kit for use in computer models with AMD processors
455868-001	Display Screw Kit for use in computer models with AMD processors
458113-001	Fingerprint reader
458653-001	Rubber display bezel kit for use in computer models with AMD processors
458655-001	Display cable for use in computer models with AMD processors
458657-001	Wireless Antenna Kit for use in computer models with AMD processors
458663-001	Bluetooth module cable for use in computer models with AMD processors

4 Removal and replacement procedures

Preliminary replacement requirements

Tools required

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

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

Service considerations

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

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

Plastic parts

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

Cables and connectors

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

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

Drive handling

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

Avoid exposing a hard drive to products that have magnetic fields, such as monitors or speakers.

Avoid exposing a drive to temperature extremes or liquids.

If a drive must be mailed, place the drive in a bubble pack mailer or other suitable form of protective packaging and label the package “FRAGILE.”

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

Use nonmagnetic tools.

Before touching an electronic component, discharge static electricity by using the guidelines described in this section.

Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.

If you remove a component, place it in an electrostatic-safe container.

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

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

Typical electrostatic voltage levels

	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.

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

Unknown user password

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

NOTE: These steps also clear CMOS.

Before disassembling the computer, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 47).
5. Remove the RTC battery (see RTC battery on page 59).
6. Wait approximately 5 minutes.
7. Replace the RTC battery and reassemble the computer.
8. Connect AC power to the computer. Do not reinsert any batteries at this time.
9. Turn on the computer.

All passwords and all CMOS settings have been cleared.

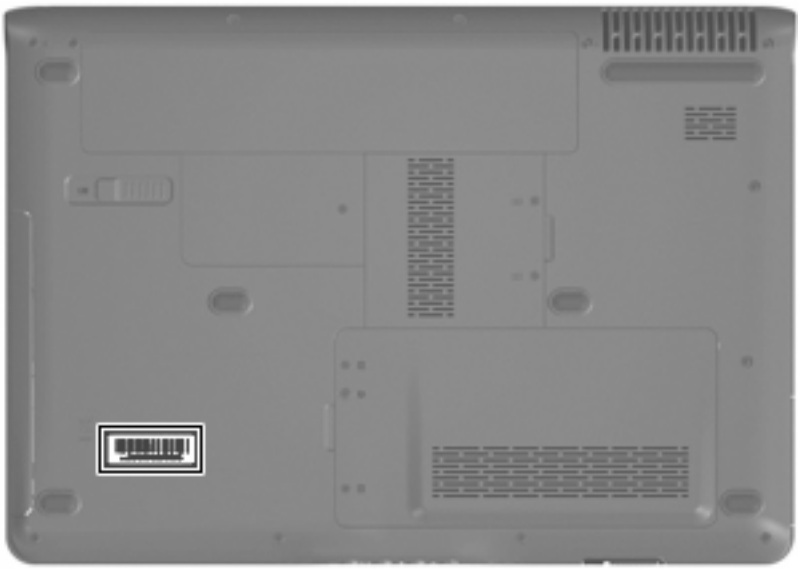
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 95 screws, in 15 different sizes, that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Serial number

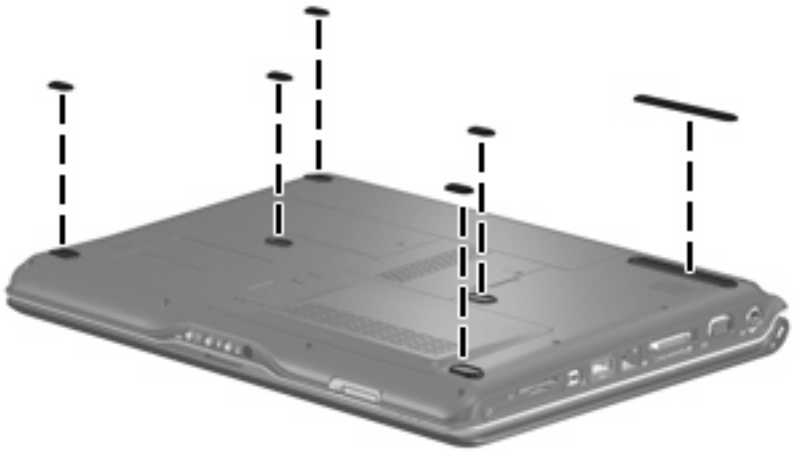
Report the computer serial number to HP when requesting information or ordering spare parts. The serial number is located on the bottom of the computer.



Computer feet

Description	Spare part number
Rubber Feet Kit (includes base enclosure rubber feet and display bezel screw covers)	417095-001

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



Battery

Description	Spare part number
For use in computer models with Intel or AMD processors:	
6-cell, 2.55-Ah Li-ion battery	441611-001
For use in computer models with Intel processors:	
12-cell, 8.80-Ah Li-ion battery	452056-001
6-cell, 2.20-Ah Li-ion battery	452057-001
For use in computer models with AMD processors:	
12-cell, 8.80-Ah	455806-001
6-cell, 2.20-Ah	455804-001

Before disassembling the computer, follow these steps:

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

Remove the battery:

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

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

Camera module

If it has been determined that the camera module is the component that must be replaced to complete the computer repair, the display assembly does not have to be removed. Follow the procedures in this section to replace the camera module. For information on replacing the display assembly and other display assembly internal components, see Display assembly on page 68.

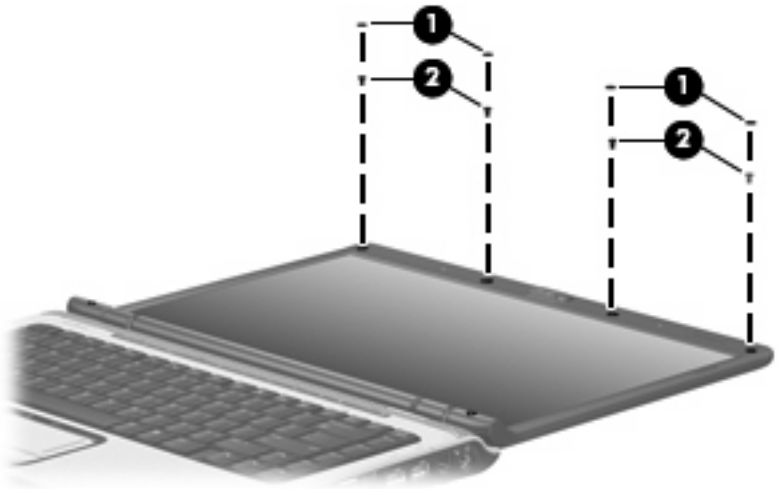
Description	Spare part number
Camera module (includes camera module bracket and 2-sided tape)	453673-001

Before removing the camera 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 47).

Remove the camera module:

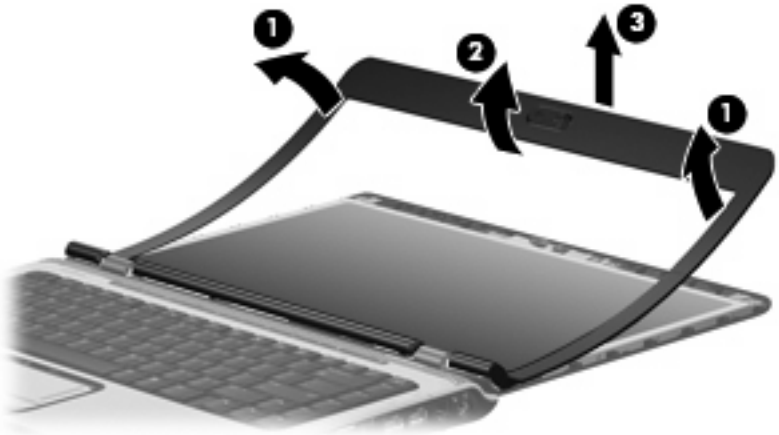
1. Turn the computer display-side up, with the front toward you.
2. Open the computer as far as it will open.
3. Remove the four rubber screw covers **(1)** on the display bezel top edge. The display rubber screw covers are included in the Rubber Feet Kit, spare part number 417095-001.
4. Remove the four Phillips PM2.5×5.0 screws **(2)** that secure the display bezel top edge to the display assembly.



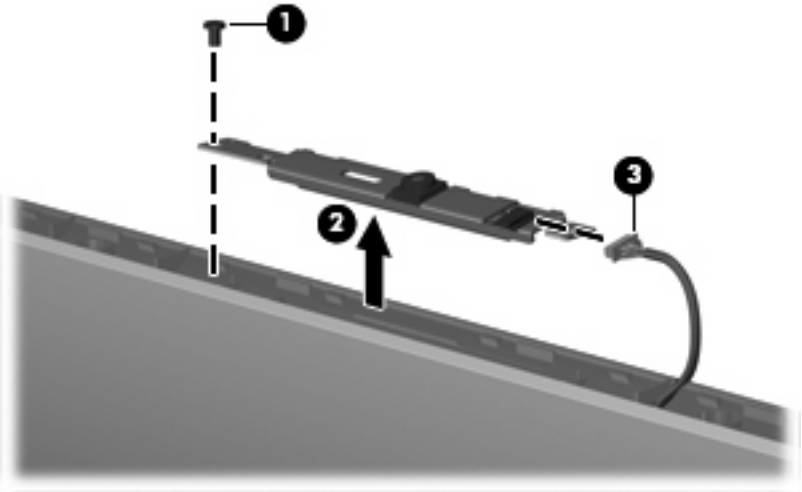
5. Flex the inside edges of the left and right sides **(1)** and the top edge **(2)** of the display bezel until the bezel disengages from the display enclosure.

6. Release the display bezel top edge **(3)**. Display bezels are available using the following spare part numbers:

   - 448607-001 (for use only with computer models that are equipped with a camera module; includes openings for camera module and microphones)
   - 448606-001 (for use only with computer models not equipped with a camera module; includes openings for microphones)
   - 451907-001 (for use only with computer models with Intel processors sold at Best Buy; includes openings for camera module and microphones)

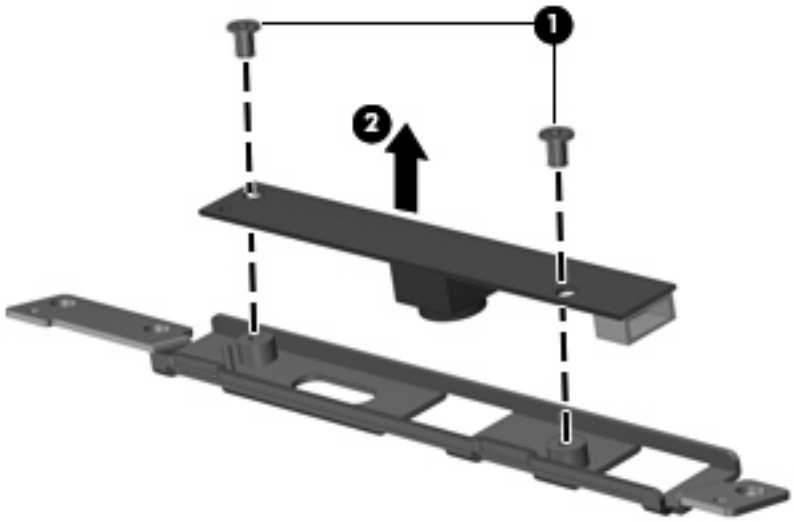


7. Remove the Phillips PM2.5×4.0 screw **(1)** that secures the camera module assembly to the display enclosure.
8. Release the camera module assembly **(2)** from the display enclosure as far as the camera module cable allows.
9. Disconnect the camera module cable **(3)** from the camera module.



10. Turn the camera module assembly upside down.
11. Remove the two Phillips PM2.0×3.0 screws **(1)** that secure the camera module to the camera module bracket.

12. Remove the camera module **(2)** from the bracket.



Reverse this procedure to install the camera module.

Display inverter

If it has been determined that the display inverter is the component that must be replaced to complete the computer repair, the display assembly does not have to be removed. Follow the procedures in this section to replace the display inverter. For information on replacing the display assembly and other display assembly internal components, see Display assembly on page 68.

Description	Spare part number
Display inverter (includes 2-sided tape)	417097-001

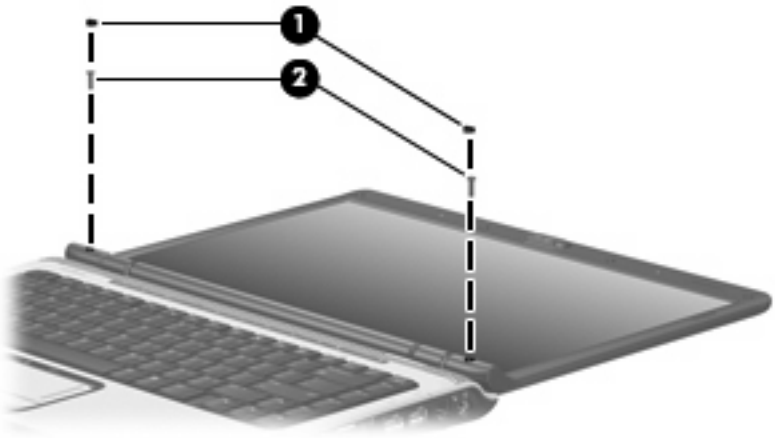
Before removing the display inverter, follow these steps:

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 47).

Remove the display inverter:

1. Turn the computer display-side up, with the front toward you.
2. Open the computer as far as it will open.
3. Remove the two rubber screw covers **(1)** on the display bezel bottom edge. The display rubber screw covers are included in the Rubber Feet Kit, spare part number 417095-001.

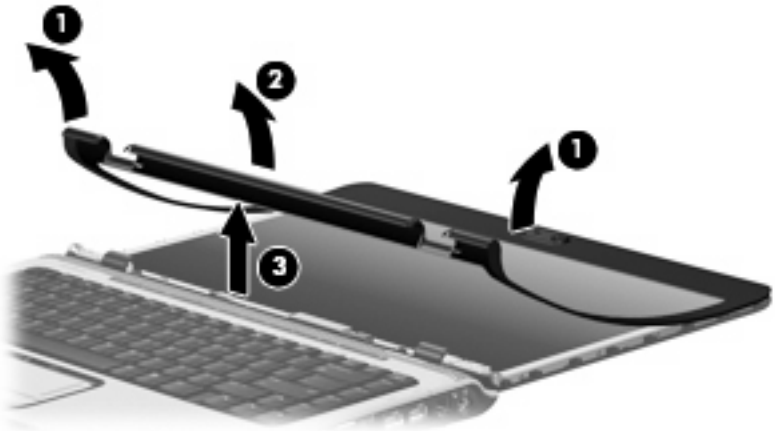
4. Remove the two Phillips PM2.5×9.0 screws **(2)** that secure the display bezel bottom edge to the display assembly.



5. Flex the inside edges of the left and right sides **(1)** and the bottom edge **(2)** of the display bezel until the bezel disengages from the display enclosure.

6. Release the display bezel bottom edge **(3)**. Display bezels are available using the following spare part numbers:.

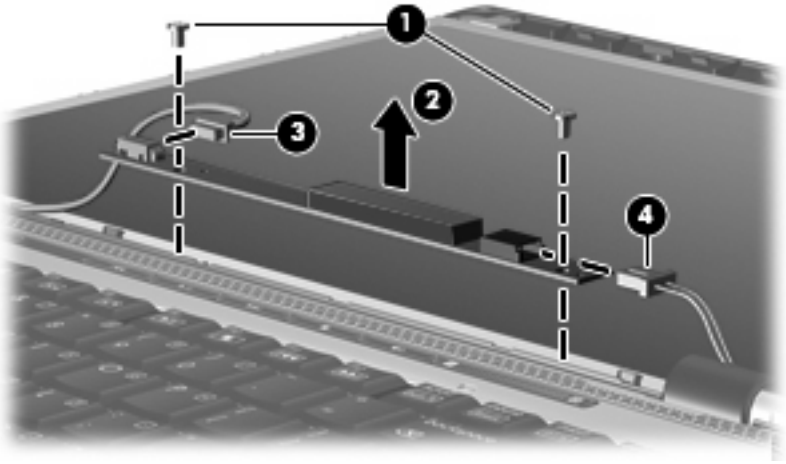
   - 448607-001 (for use only with computer models equipped with a camera module; includes openings for camera module and microphones)
   - 448606-001 (for use only with computer models not equipped with a camera module; includes openings for microphones)
   - 451907-001 (for use only with computer models with Intel processors sold at Best Buy; includes openings for camera module and microphones)



7. Remove the two Phillips PM2.5×5.0 screws **(1)** that secure the display inverter to the display enclosure.

8. Release the display inverter **(2)** from the display enclosure as far as the display panel cable and the backlight cable allow.

9. Disconnect the display panel cable **(3)** and the backlight cable **(4)** from the display inverter.



10. Remove the display inverter.

Reverse this procedure to install the display inverter.

Hard drive

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

Description	Spare part number
For use in computer models with Intel processors:	
250-GB, 5400-rpm	453949-001
160-GB, 5400-rpm	452060-001
120-GB, 5400-rpm	452059-001
80-GB, 5400-rpm	452058-001
For use in computer models with AMD processors:	
250-GB, 5400-rpm	455827-001
160-GB, 5400-rpm	453418-001
120-GB, 5400-rpm	453417-001
80-GB, 5400-rpm	453416-001
Hard drive hardware kit (contains screws, hard drive bracket, and connector)	453419-001

Before removing the hard drive, follow these steps:

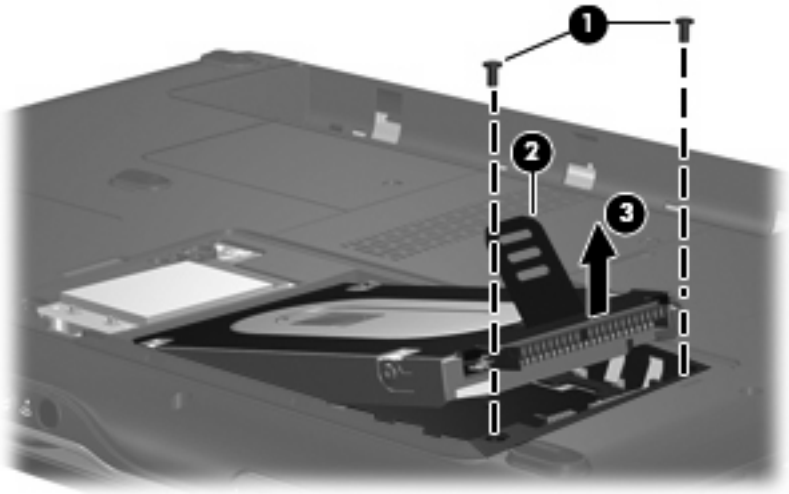
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.

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 47).

Remove the hard drive:

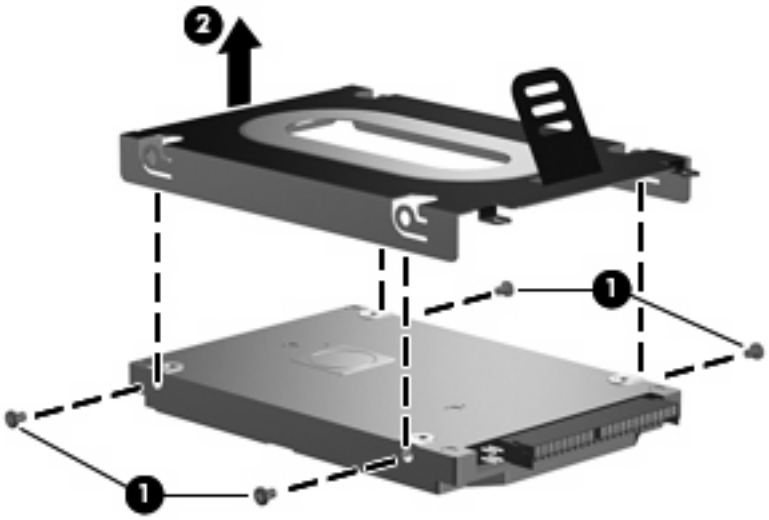
1. Position the computer with the front toward you.
2. Loosen the two Phillips PM2.0×5.0 captive screws **(1)** that secure the hard drive cover to the computer.
3. Lift the left side of the hard drive cover **(2)**, swing it to right, and remove the cover. The hard drive cover is included in the Door/Cover Kit, spare part number 417073-001.

4. Remove the two black Phillips PM2.5×5.0 screws **(1)** that secure the hard drive to the computer.
5. Use the Mylar tab **(2)** to lift the hard drive **(3)** until it disconnects from the computer.



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

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



Reverse this procedure to reassemble and install the hard drive.

WLAN module

Description	Spare part number
802.11a/b/g/n WLAN modules:	
For use in Antigua & Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, Uruguay, the United States, Venezuela, and Vietnam	441086-001
For use in Austria, Azerbaijan, Bahrain, Belgium, Brazil, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Qatar, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and Uzbekistan	441086-002
For use in Australia, New Zealand, Pakistan, the People's Republic of China, and South Korea	441086-003
For use in Japan	441086-291
802.11a/b/g WLAN modules:	
For use in Antigua and Barbuda, Argentina, Australia, the Bahamas, Barbados, Brunei, Canada, Chile, the Dominican Republic, Guam, Guatemala, Hong Kong, India, Indonesia, Malaysia, Mexico, New Zealand, Panama, Paraguay, Saudi Arabia, Taiwan, the United States, and Vietnam	452063-001
For use in Aruba, Austria, Azerbaijan, Bahrain, Belgium, Bermuda, Brazil, Bulgaria, the Cayman Islands, Colombia, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, El Salvador, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Jordan, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, the United Kingdom, and Uzbekistan	452063-002
For use in Ecuador, Haiti, Honduras, Pakistan, the People's Republic of China, Peru, Qatar, South Korea, Uruguay, and Venezuela	452063-003
802.11b/g WLAN module for use in Thailand	409407-004
Broadcom 4311AG 802.11a/b/g modules:	
For use in the United States and Canada	441075-001
For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab	441075-002

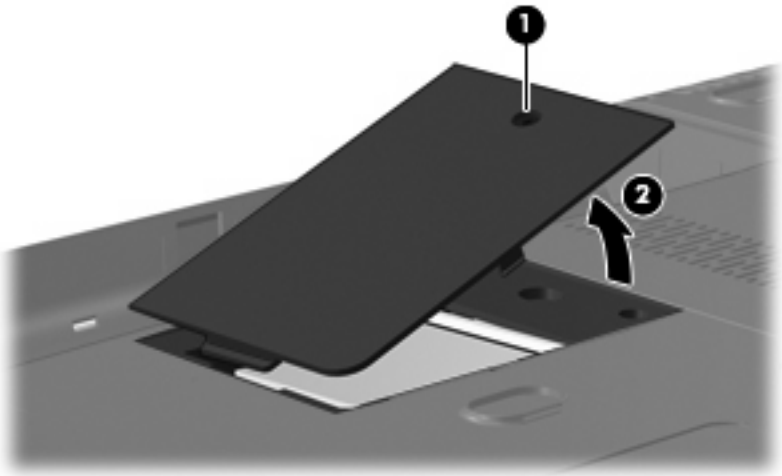
Description	Spare part number
Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	
For use in Japan	441075-291
Broadcom 802.11b/g WLAN modules:	
For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States	441090-001
For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	441090-002
For use in Japan	441090-291
802.11n WLAN modules:	
For use in the United States and Canada	436255-001
For use in the Argentina, Australia, Belize, Bolivia, Brazil, Chile, Columbia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Hong Kong, Indonesia, Nicaragua, Paraguay, the People's Republic of China, Peru, South Korea, Taiwan, Thailand, Uruguay, Venezuela	436256-001
For use in Japan	436256-291

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 47).

Remove the WLAN module:

1. Position the computer with the front toward you.
2. Loosen the Phillips PM2.0×5.0 captive screw **(1)** that secures the wireless module compartment cover to the computer.
3. Lift the right edge of the wireless module compartment cover **(2)**, swing it to the left, and remove the cover. The wireless module compartment cover is included in the Door/Cover Kit, spare part number 417073-001.



4. Disconnect the WLAN antenna cables **(1)** from the WLAN module.

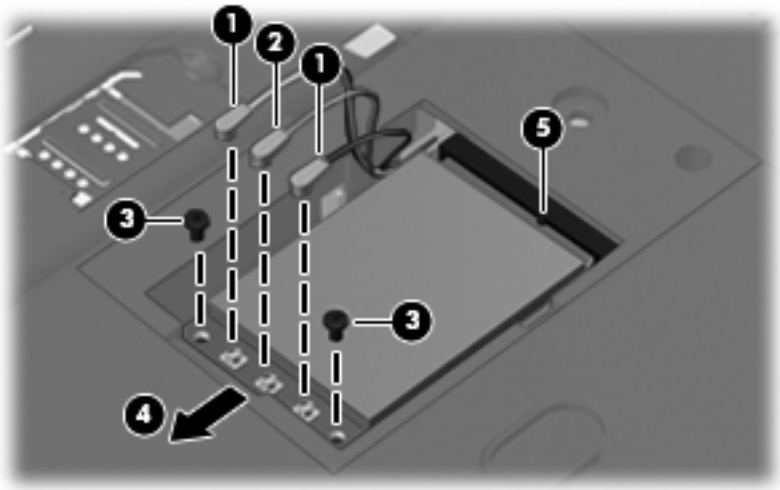
NOTE: The black WLAN antenna cable is connected to the WLAN module "Main" terminal. The white WLAN antenna cable is connected to the WLAN module "Aux" terminal.

NOTE: Computer models equipped with an 802.11a/b/g/n WLAN module will have an additional wireless antenna cable **(2)**, yellow in color.

5. Remove the two Phillips PM2.0×3.0 screws **(3)** that secure the WLAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)

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

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



Reverse this procedure to install a WLAN module.

RTC battery

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

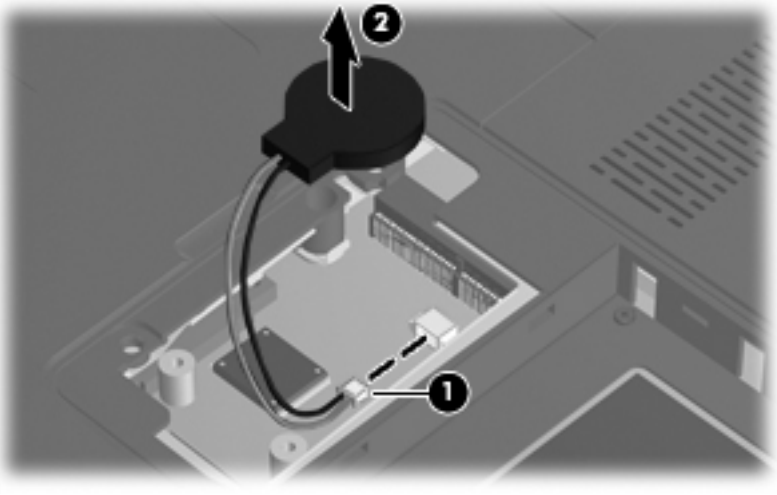
Description	Spare part number
RTC battery (includes 2-sided tape)	417076-001

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 47).
5. Remove the hard drive cover (see Hard drive on page 52).

Remove the RTC battery:

1. Disconnect the RTC battery cable **(1)** from the system board.
2. Remove the RTC battery **(2)**.



Reverse this procedure to install the RTC battery.

Memory module

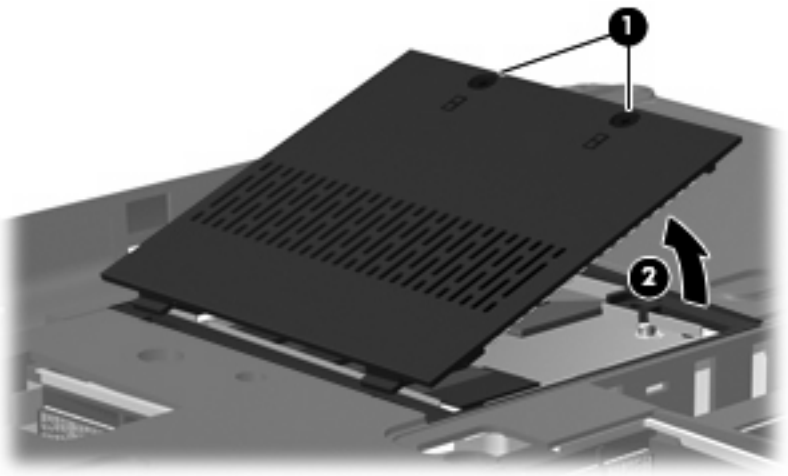
Description	Spare part number
For use in computer models with Intel processors:	
1024-MB (667-MHz, PC2-5300, 1-DIMM)	452062-001
512-MB (667-MHz, PC2-5300, 1-DIMM)	452061-001
For use in computer models with AMD processors:	
1024-MB (667-MHz, PC2-5300, 1-DIMM)	453415-001
512-MB (667-MHz, PC2-5300, 1-DIMM)	453414-001

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 47).

Remove the memory module:

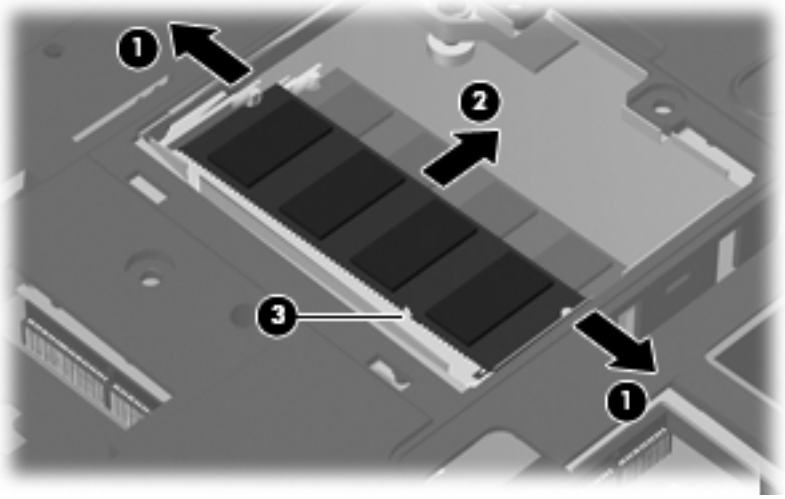
1. Position the computer with the front toward you.
2. Loosen the two Phillips PM2.0×5.0 captive screws **(1)** that secure the memory module compartment cover to the computer.
3. Lift the right side of the cover **(2)**, swing it to the left, and remove the cover. The memory module compartment cover is included in the Door/Cover Kit, spare part number 417073-001.



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

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

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



Reverse this procedure to install a memory module.

Optical drive

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

Description	Spare part number
For use in computer models with Intel processors:	
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	452052-001
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	452051-001
DVD/CD-RW Combo Drive	452050-001
For use in computer models with AMD processors:	
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	455830-001
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	455829-001
DVD/CD-RW Combo Drive	455828-001

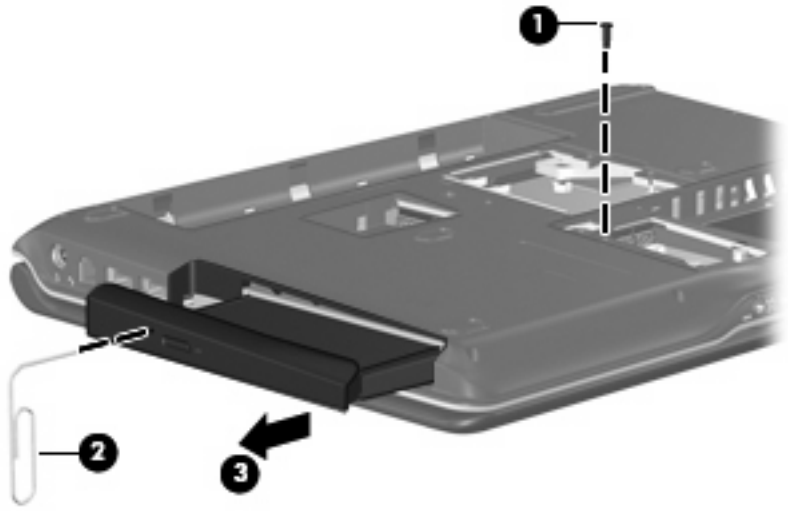
Before removing the optical drive, follow these steps:

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 47).

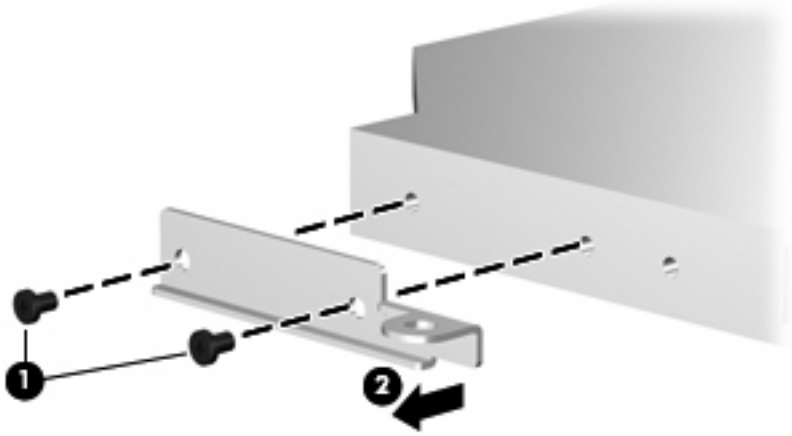
Remove the optical drive:

1. Position the computer with right side toward you.
2. Remove the Phillips PM2.5×7.0 screw **(1)** that secures the optical drive to the computer.
3. Insert a thin tool, such as a paper clip **(2)**, into the release access. (The optical drive media tray is partially ejected from the optical drive.)

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



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



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

Keyboard

Countries or regions	Spare part number	Countries or regions	Spare part number
Belgium	448615-021	Portugal	448615-131
Brazil	448615-201	Russia	448615-251
Canadian French	448615-121	Saudi Arabia	448615-171
Denmark, Finland, Norway, and Sweden	448615-DH1	South Korea	448615-AD1

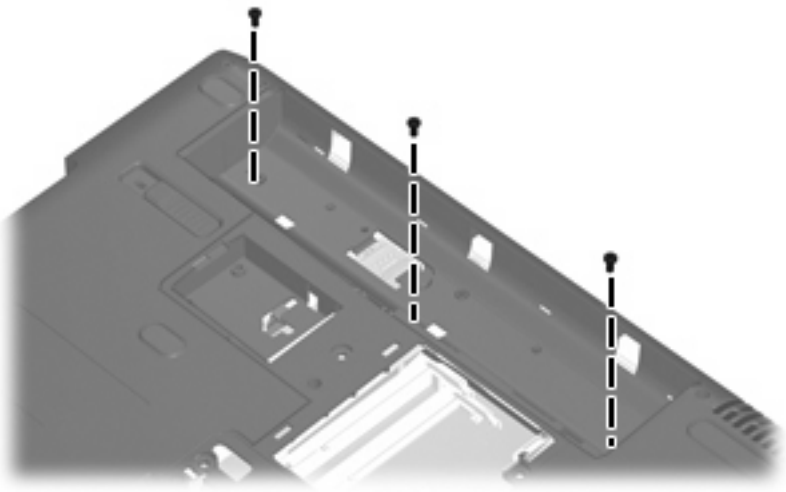
Countries or regions	Spare part number	Countries or regions	Spare part number
France	448615-051	Spain	448615-071
Germany	448615-041	Switzerland	448615-111
Greece	448615-DJ1	Taiwan	448615-AB1
Israel	448615-BB1	Thailand	448615-281
Italy	448615-061	Turkey	448615-141
Japan	448615-291	The United Kingdom	448615-031
Latin America	448615-161	The United States	448615-001
The Netherlands and Europe	448615-B31		
Keyboard for use in the United States only on computer models sold at Best Buy			452236-001

Before removing the keyboard, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 47).

Remove the keyboard:

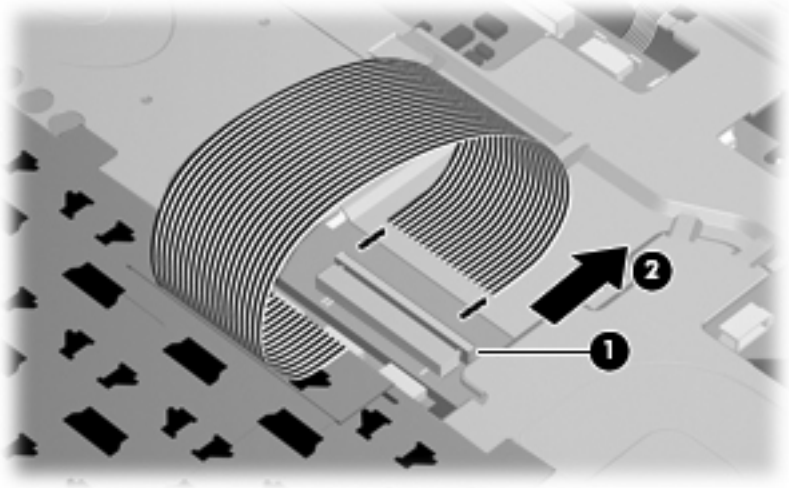
1. Turn the computer upside down, with the front toward you.
2. Remove the three Phillips PM2.5×7.0 screws that secure the keyboard to the computer.



3. Turn the computer display-side up, with the front toward you.
4. Open the computer as far as possible.

5. Lift the rear edge of the keyboard **(1)** until it rests at an angle.
6. Release the keyboard **(2)** by sliding it back to disengage the tabs on the front edge of the keyboard from the top cover.
7. Lift the rear edge of the keyboard **(3)** and swing it forward until it rests on the palm rest.

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



9. Remove the keyboard.

Reverse this procedure to install the keyboard.

Switch cover

Description	Spare part number
For use only in computer models with Intel processors;	
Switch cover (includes LED board and cable and power button board and cable)	451312-001
Switch cover for use only with computer models sold at Best Buy (includes LED board and cable and power button board and cable)	451599-001

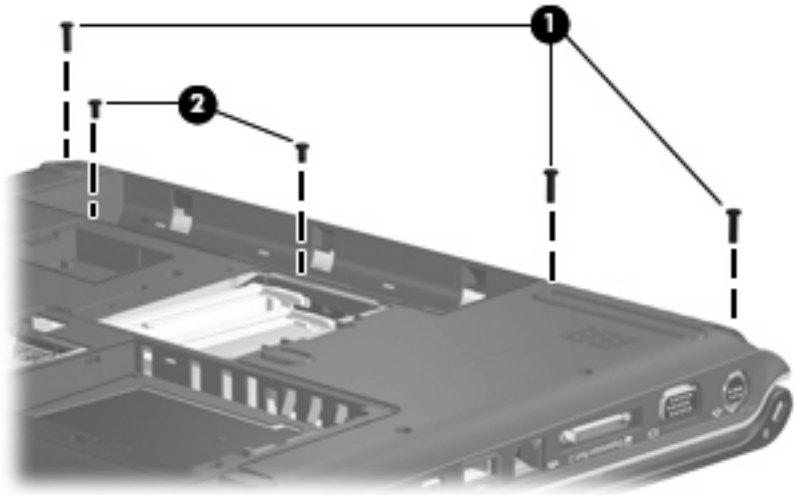
Description	Spare part number
For use only in computer models with AMD processors:	
Switch cover (includes LED board and cable and power button board and cable)	455849-001

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 47).
5. Remove the keyboard (see Keyboard on page 63).

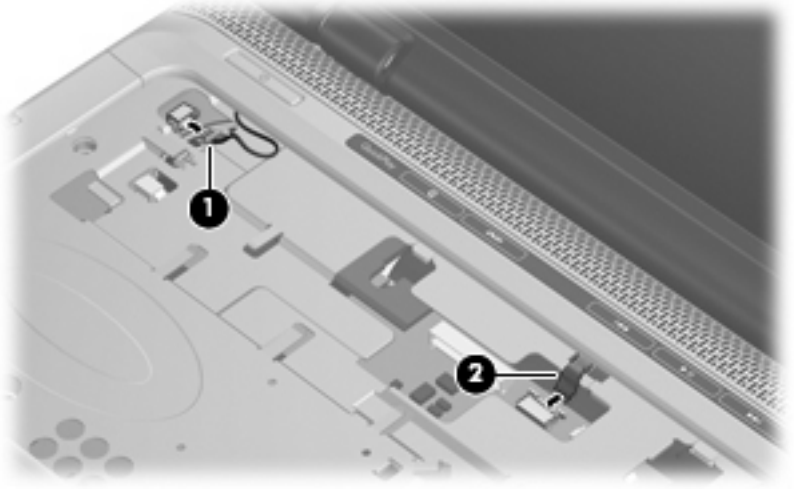
Remove the switch cover:

1. Remove the three Phillips PM2.5×9.0 screws **(1)** and the silver Phillips PM2.5×5.0 screw **(2)** that secure the switch cover to the computer.

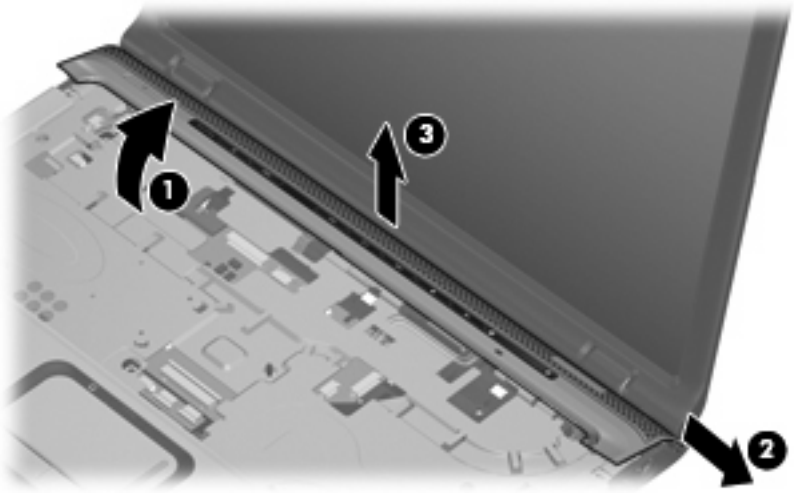


2. Turn the computer display-side up, with the front toward you.
3. Open the computer as far as possible.
4. Disconnect the power button board cable **(1)** from the system board.

5. Release the ZIF connector to which the LED board cable **(2)** is connected and disconnect the cable from the system board.



6. Lift the front edge of the switch cover **(1)** to disengage it from the computer.
7. Release the switch cover **(2)** by sliding it to the right until it disengages from the computer.
8. Remove the switch cover **(3)**.



Reverse this procedure to install the switch cover.

Display assembly

Description	Spare part number
14.1-inch, WXGA, BrightView, display assembly for use only with computer models equipped with a camera module (includes camera module, microphones, and WLAN transceivers and antenna cables)	448604-001
14.1-inch, WXGA, BrightView, display assembly for use only with computer models not equipped with a camera module (includes microphones and WLAN transceivers and antenna cables)	448603-001
14.1-inch, WXGA, BrightView, display assembly for use only with computer models sold at Best Buy (includes camera module, microphones, and WLAN transceivers and antenna cables)	451906-001

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 47).
5. Disconnect the wireless antenna cables from the WLAN module (see WLAN module on page 55).
6. Remove the following components:
   a. Keyboard (see Keyboard on page 63)
   b. Switch cover (see Switch cover on page 65)

Remove the display assembly:

1. Close the computer and turn it upside down, with the rear panel toward you.
2. Remove the Phillips PM2.5×9.0 screw that secures the display assembly to the computer.

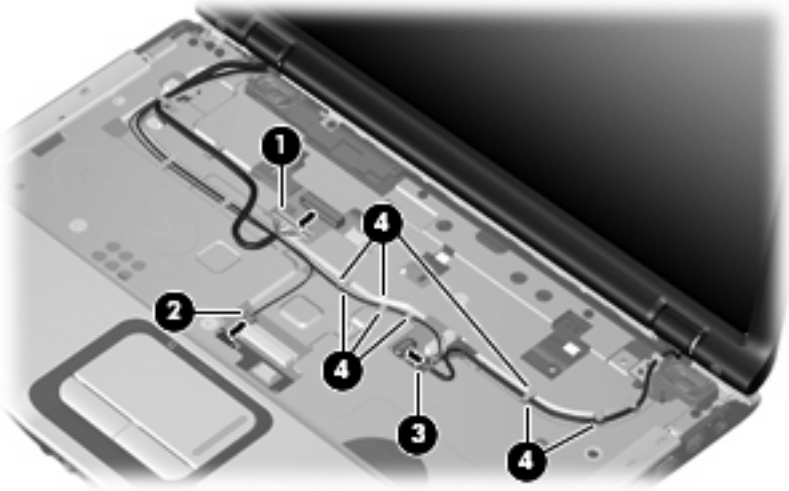
3. Turn the computer display-side up, with the front toward you.

4. Open the display as far as possible.
5. Disconnect the following cables:

   (1) Display panel cable

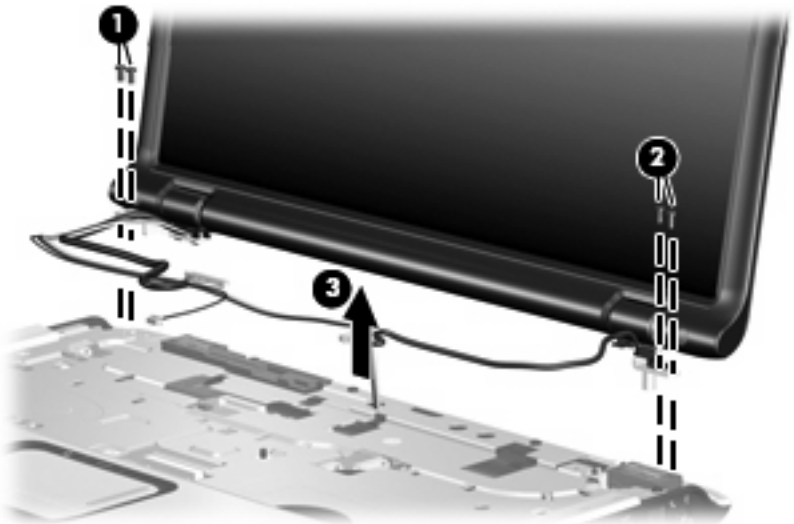
   (2) Camera module cable

   (3) Microphone cable
6. Remove the camera module, microphone, and wireless antenna cables from the hole in the system board and the routing channels **(4)** built into the top cover.



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

7. Remove the two black Phillips PM2.5×5.0 screws **(1)** and the two Phillips PM2.5×7.0 screws **(2)** that secure the display assembly to the computer.
8. Remove the display assembly **(3)**.



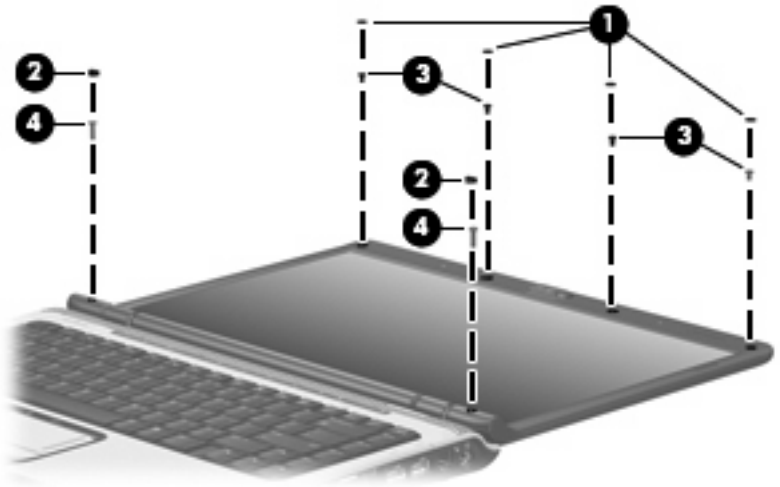
9. If it is necessary to replace the display bezel or any of the display assembly internal components, remove the following screw covers and screws:

   (1) Four rubber screw covers on the display bezel top edge. The display rubber screw covers are included in the Rubber Feet Kit, spare part number 417095-001.

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

   (3) Four Phillips PM2.5×5.0 screws on the display bezel top edge

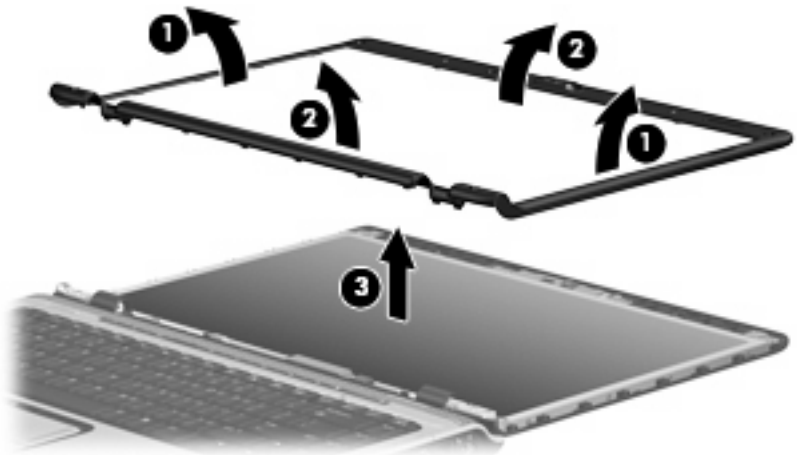
   (4) Two Phillips PM2.5×9.0 screws on the display bezel bottom edge



10. Flex the inside edges of the left and right sides **(1)** and the top and bottom sides **(2)** of the display bezel until the bezel disengages from the display enclosure.

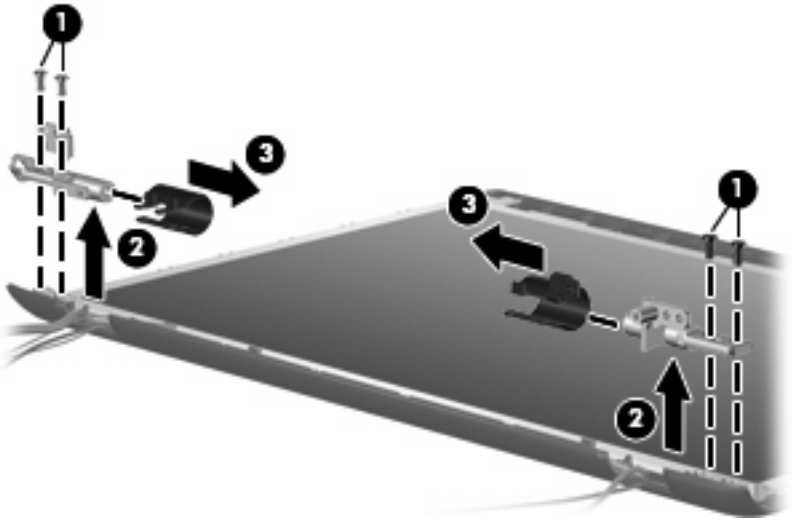
11. Remove the display bezel **(3)**. Display bezels are available using the following spare part numbers:

    - 448607-001 (for use only with computer models equipped with a camera module)
    - 448606-001 (or use only with computer models not equipped with a camera module)
    - 451907-001 (for use only with computer models with Intel processors sold at Best Buy; includes openings for camera module and microphones)

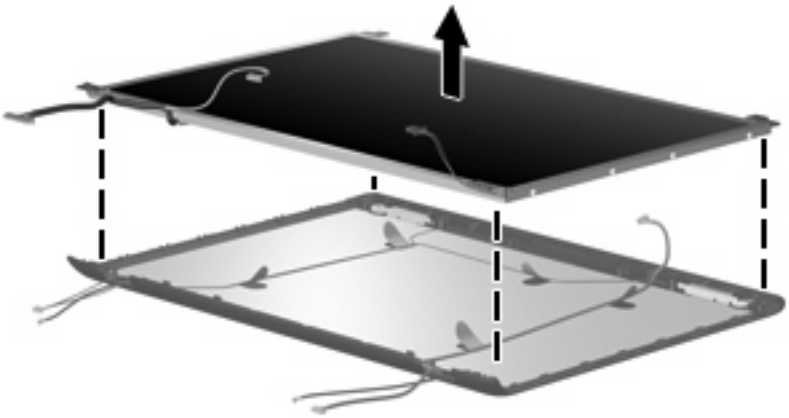


NOTE: See Camera module on page 48 for camera module replacement instructions. See Display inverter on page 50 for display inverter replacement instructions.

12. If it is necessary to replace the display hinges, remove the two Phillips PM2.5×7.0 screws **(1)** that secure each hinge to the display panel. The display hinges and display hinge covers are available using spare part number 430473-001 for computers with Intel processors or 455817-001 for computers with AMD processors.
13. Remove the display hinges **(2)**.
14. Remove the display hinge covers **(3)** by sliding them off of the display hinges.

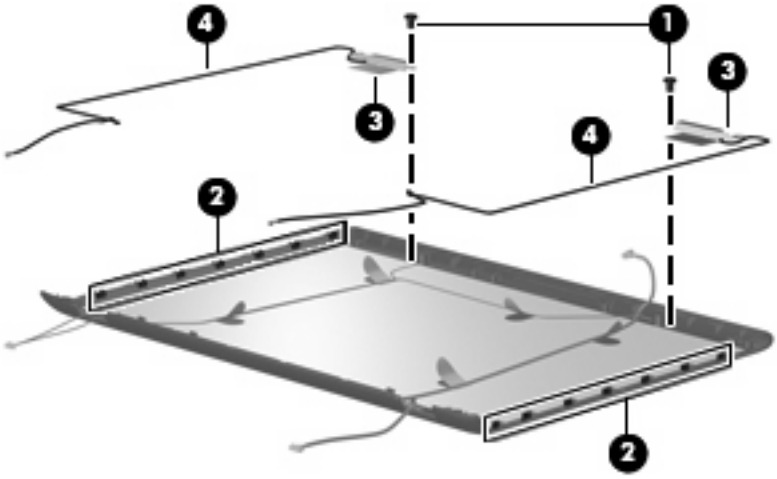


15. Remove the display panel from the display enclosure. The display panel is available using spare part number 448602-001 for computers with Intel processors and 455810-001 for computers with AMD processors.



16. If it is necessary to replace the wireless antenna transceivers and cables, remove the Phillips PM2.5×4.0 screw **(1)** that secures each transceiver to the display enclosure. The wireless antenna transceivers and cables are included in the Wireless Antenna Kit, spare part number 448609-001 for computers with Intel processors, 458657-001 for computers with AMD processors.
17. Remove the wireless antenna cables from the clips **(2)** built into the display enclosure.
18. Detach the wireless antenna transceivers **(3)** from the display enclosure.

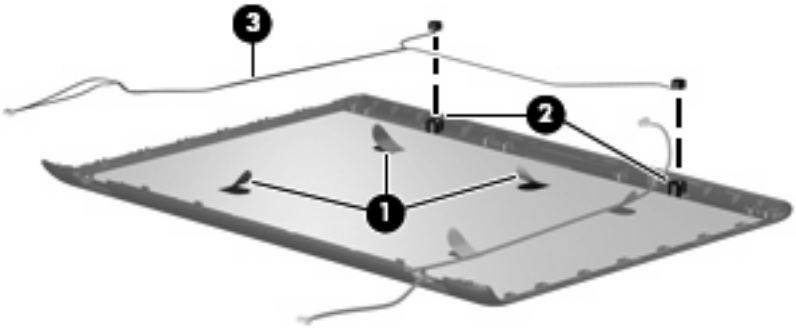
19. Remove the wireless antenna transceivers and cables **(4)** from the display enclosure.



20. If it is necessary to replace the microphones and cables, release the retention tabs **(1)** built into the display enclosure that secure the microphone cables to the display enclosure. The microphones and cables are included in the Display Cable Kit, spare part number 448610-001.

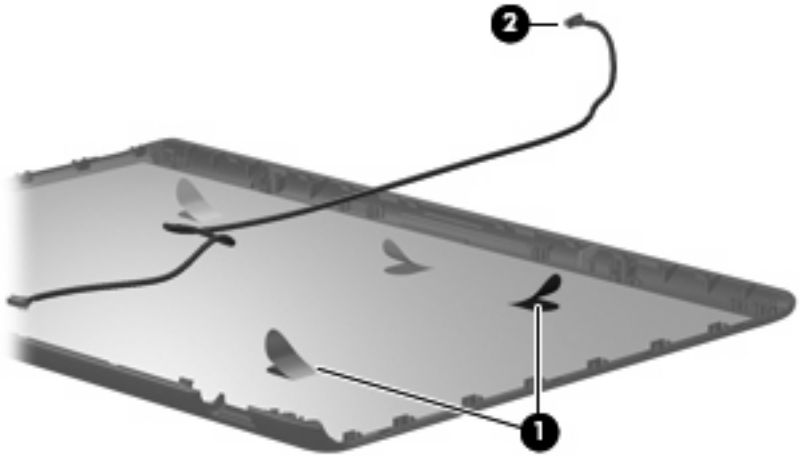
21. Remove the microphone receivers **(2)** from the clips in the display enclosure.

22. Remove the microphone cables **(3)** from the display enclosure.



23. If it is necessary to replace the camera module cable, release the retention tabs **(1)** built into the display enclosure that secure the camera module cable to the display enclosure. The camera module cable is included in the Display Cable Kit, spare part number 448610-001.

24. Remove the camera module cable **(2)** from the display enclosure.



Reverse this procedure to reassemble and install the display assembly.

Top cover

Description	Spare part number
For use in computer models with Intel or AMD processors:	
Equipped with a fingerprint reader (includes TouchPad, TouchPad cable, fingerprint reader board, fingerprint reader board cable)	448618-001
For use in computer models with Intel processors:	
Not equipped with a fingerprint reader (includes TouchPad and TouchPad cable)	448619-001
Sold at Best Buy (includes TouchPad and TouchPad cable)	451600-001
For use in computer models with AMD processors:	
Not equipped with a fingerprint reader (includes TouchPad and TouchPad cable)	455835-001

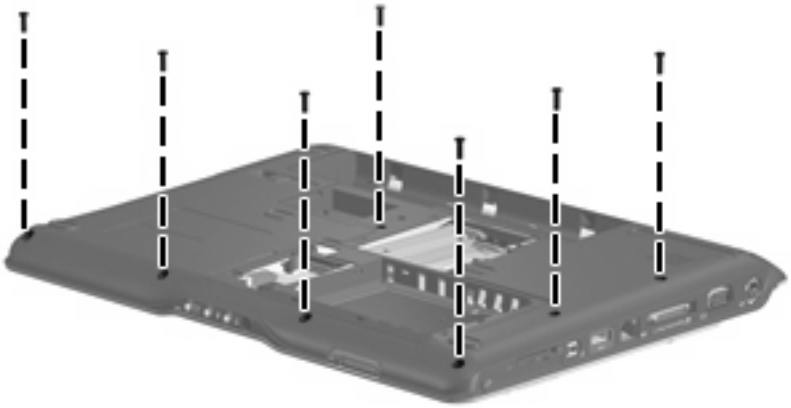
Before removing the top cover, follow these steps:

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.

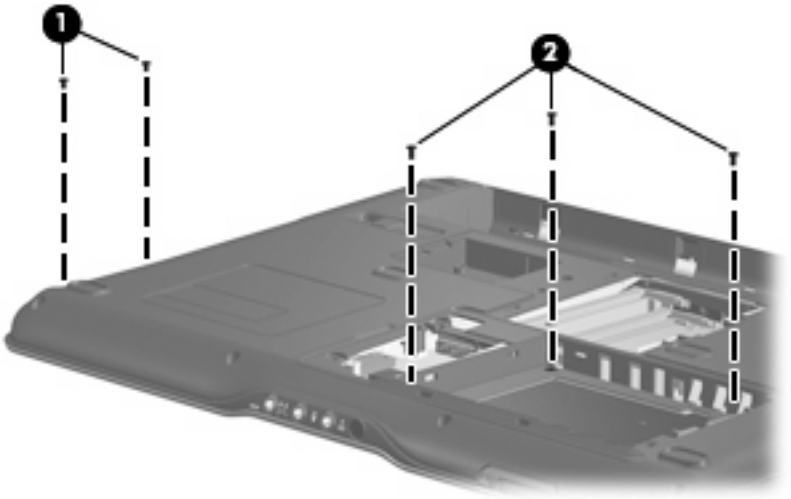
4. Remove the battery (see Battery on page 47).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 52)
   b. WLAN cover (see WLAN module on page 55)
   c. Optical drive (see Optical drive on page 62)
   d. Keyboard (see Keyboard on page 63)
   e. Switch cover (see Switch cover on page 65)
   f. Display assembly (see Display assembly on page 68)

Remove the top cover:

1. Turn the computer upside down, with the front toward you.
2. Remove the seven Phillips PM2.5×9.0 screws that secure the top cover to the computer.

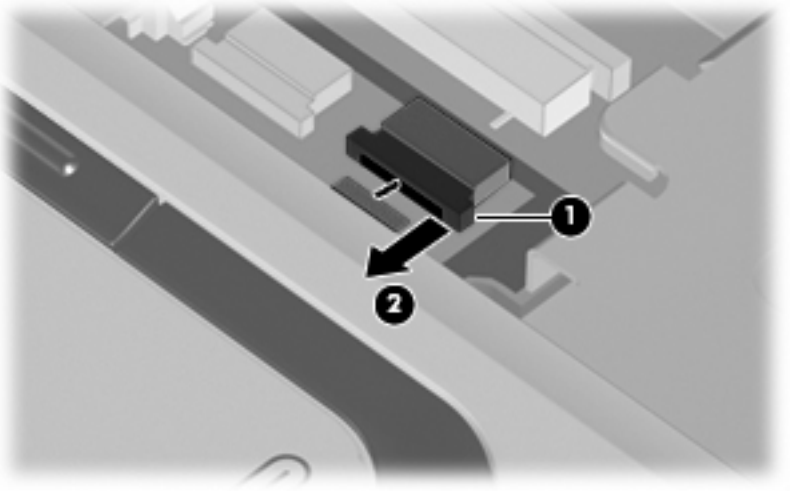


3. Remove the two Phillips PM2.0×3.0 screws **(1)** and the three Phillips PM2.0×4.0 screws **(2)** that secure the top cover to the computer.



4. Turn the computer right-side up, with the front toward you.

5. Release the ZIF connector **(1)** to which the TouchPad cable is connected and disconnect the cable **(2)** from on the system board.

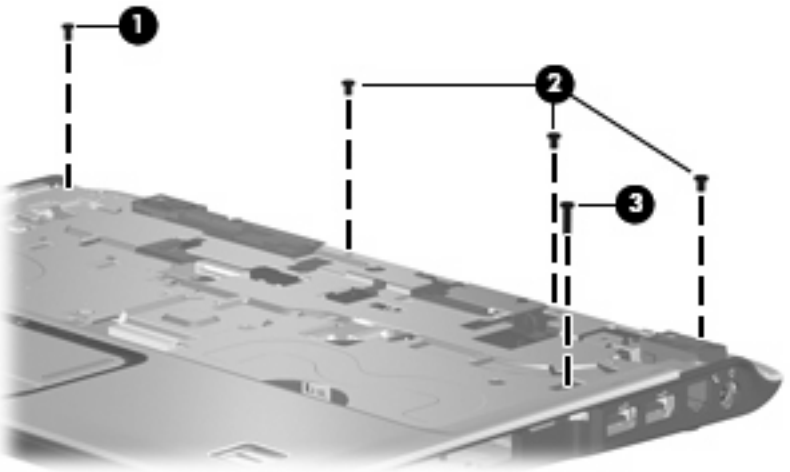


6. Remove the following screws:

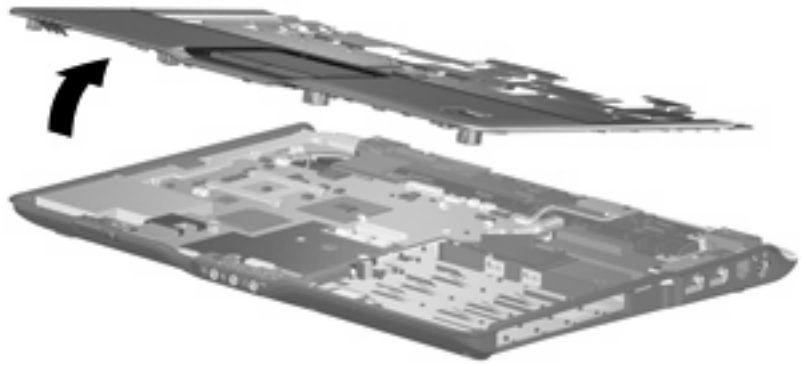
(1) One Phillips PM2.5x5.0 screw

(2) Three Phillips PM2.5×4.0 screws

(3) One Phillips PM2.5×9.0 screw



7. Lift the front edge of the top cover and remove it.



Reverse this procedure to install the top cover.

TouchPad

Description	Spare part number
TouchPad for use with computer models with Intel processors (includes TouchPad bracket and TouchPad cable)	451341-001
TouchPad for use with computer models with AMD processors (includes TouchPad bracket and TouchPad cable)	455838-001

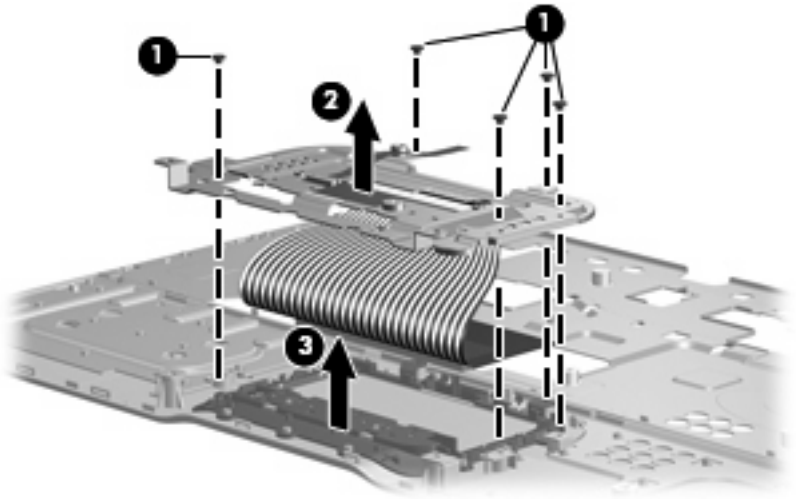
Before removing the TouchPad, follow these steps:

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 47).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 52)
   b. WLAN cover (see WLAN module on page 55)
   c. Optical drive (see Optical drive on page 62)
   d. Keyboard (see Keyboard on page 63)
   e. Switch cover (see Switch cover on page 65)
   f. Display assembly (see Display assembly on page 68)
   g. Top cover (see Top cover on page 73)

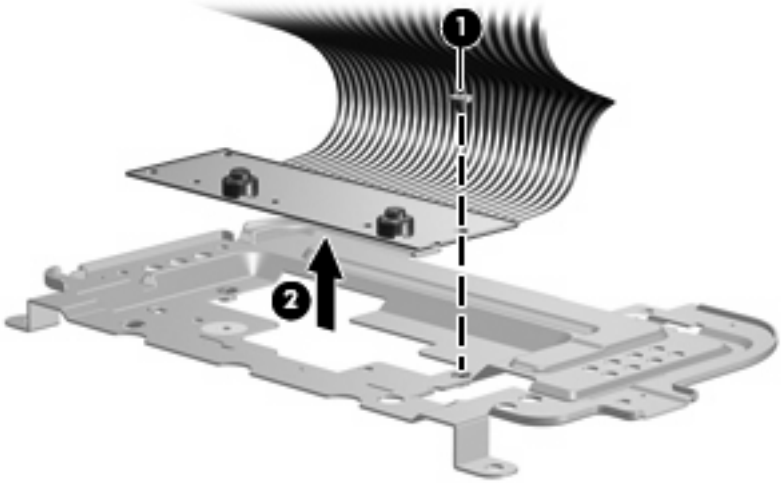
Remove the TouchPad:

1. Turn the top cover upside down, with the front toward you.
2. Remove the five Phillips PM2.0×3.0 screws **(1)** that secure the TouchPad bracket to the top cover.

3. Remove the TouchPad bracket **(2)** and TouchPad board **(3)** from the top cover.



4. Remove the Phillips PM2.0×2.0 screw **(1)** that secures the TouchPad board to the TouchPad bracket.
5. Remove the TouchPad board **(2)** from the TouchPad bracket.



Reverse the above procedure to reassemble and install the TouchPad.

Wireless switch board

Description	Spare part number
Wireless switch board (includes wireless switch board cable)	417092-001

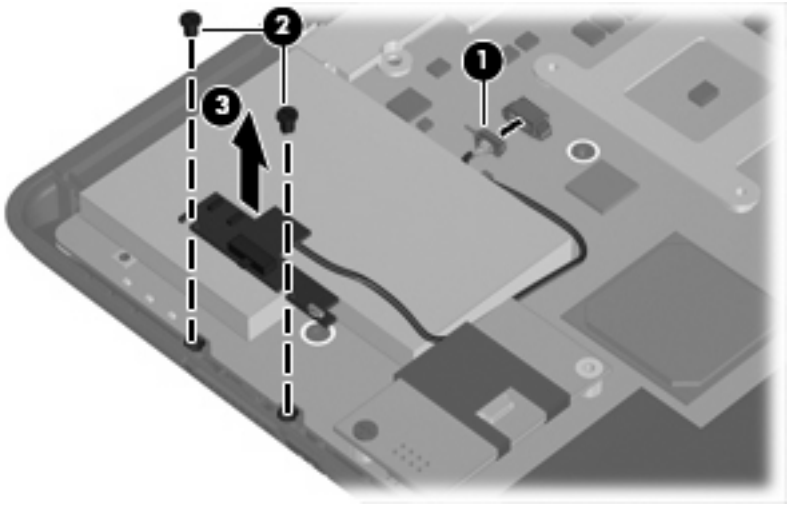
Before removing the wireless switch board, follow these steps:

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 47).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 52)
   b. WLAN cover (see WLAN module on page 55)
   c. Optical drive (see Optical drive on page 62)
   d. Keyboard (see Keyboard on page 63)
   e. Switch cover (see Switch cover on page 65)
   f. Display assembly (see Display assembly on page 68)
   g. Top cover (see Top cover on page 73)

Remove the wireless switch board:

1. Disconnect the wireless switch board cable **(1)** from the system board.
2. Remove the two Phillips PM2.0×3.0 screws **(2)** that secure the wireless switch board to the computer.

3. Remove the wireless switch board **(3)**.



Reverse the above procedure to install the wireless switch board.

Modem module

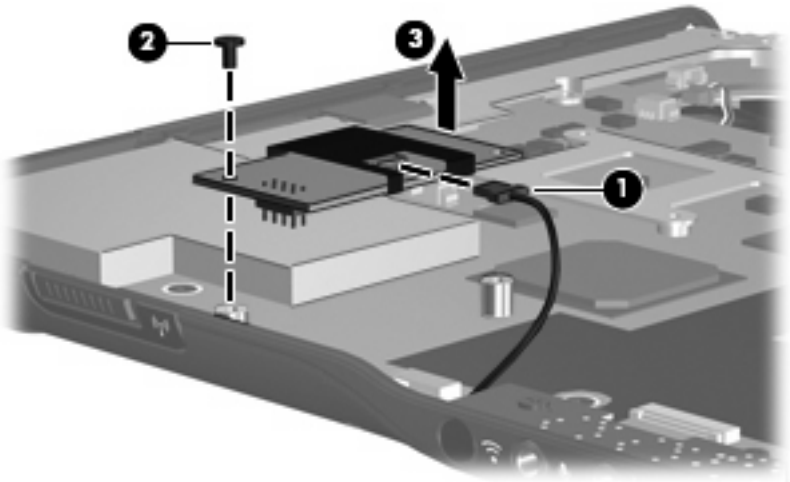
Description	Spare part number
Modem module (includes modem module cable)	431852-001

Before removing the modem module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 47).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 52)
   b. WLAN cover (see WLAN module on page 55)
   c. Optical drive (see Optical drive on page 62)
   d. Keyboard (see Keyboard on page 63)
   e. Switch cover (see Switch cover on page 65)
   f. Display assembly (see Display assembly on page 68)
   g. Top cover (see Top cover on page 73)

Remove the modem module:

1. Disconnect the modem module cable **(1)** from the modem module.
2. Remove the Phillips PM2.0×6.0 screw **(2)** that secures the modem module to the system board.
3. Lift up on the front of the modem module **(3)** to disconnect it from the system board.



4. Remove the modem module.

Reverse the above procedure to install the modem module.

Audio board

Description	Spare part number
Audio board (includes audio connectors, infrared lens, and audio board cable)	448626-001

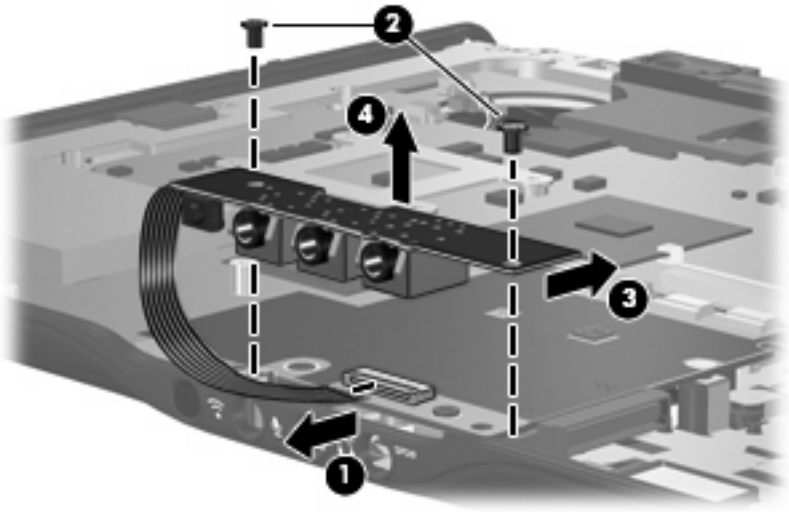
Before removing the audio board, follow these steps:

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 47).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 52)
   b. WLAN cover (see WLAN module on page 55)
   c. Optical drive (see Optical drive on page 62)
   d. Keyboard (see Keyboard on page 63)
   e. Switch cover (see Switch cover on page 65)
   f. Display assembly (see Display assembly on page 68)
   g. Top cover (see Top cover on page 73)

Remove the audio board:

1. Release the ZIF connector to which the audio board cable is connected and disconnect the cable **(1)** from the system board.
2. Remove the two Phillips PM2.5×5.0 screws **(2)** that secure the audio board to the computer.
3. Release the audio board **(3)** by sliding it back until the audio connectors disengage from the base enclosure.

4. Remove the audio board **(4)**.



Reverse the above procedure to install the audio board.

Bluetooth module

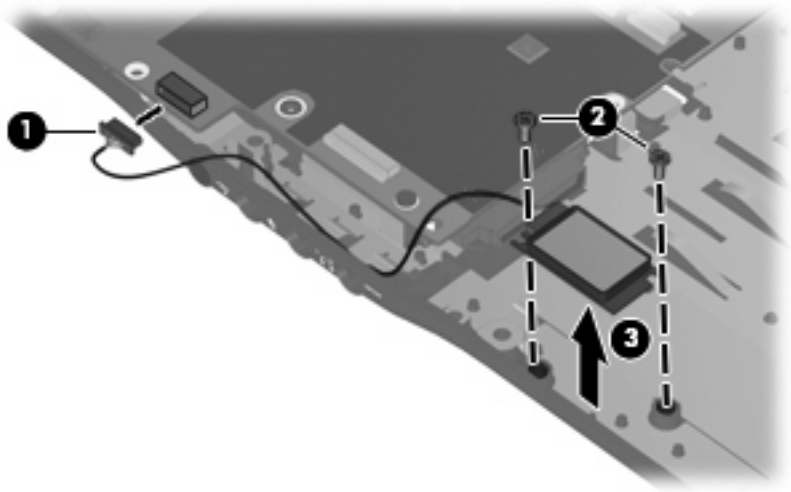
Description	Spare part number
Bluetooth module (includes Bluetooth module cable)	397923-002

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 47).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 52)
   b. WLAN cover (see WLAN module on page 55)
   c. Optical drive (see Optical drive on page 62)
   d. Keyboard (see Keyboard on page 63)
   e. Switch cover (see Switch cover on page 65)
   f. Display assembly (see Display assembly on page 68)
   g. Top cover (see Top cover on page 73)
   h. Audio board (see Audio board on page 82)

Remove the Bluetooth module:

1. Disconnect the Bluetooth module cable **(1)** from the system board. The Bluetooth module cable is included in the Bluetooth module spare part kit and is also available in the Cable Kit, spare part number 417075-001.
2. Remove the two Phillips PM2.0×3.0 screws **(2)** that secure the Bluetooth module to the computer.
3. Remove the Bluetooth module **(3)**.



Reverse the above procedure to install the Bluetooth module.

USB board

Description	Spare part number
USB board for use in computer models with Intel processors (includes USB board cable)	417085-001
USB board for use in computer models with AMD processors (includes USB board cable)	455839-001

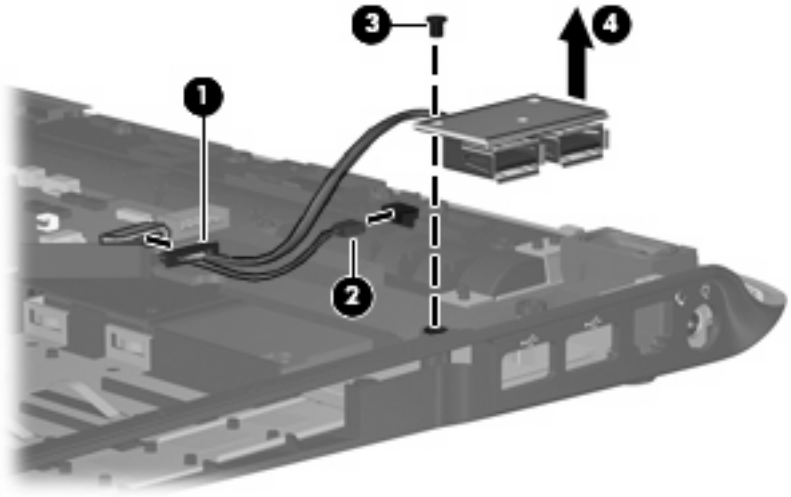
Before removing the USB board, follow these steps:

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 47).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 52)
   b. Wireless module compartment cover (see WLAN module on page 55)
   c. Optical drive (see Optical drive on page 62)
   d. Keyboard (see Keyboard on page 63)
   e. Switch cover (see Switch cover on page 65)
   f. Display assembly (see Display assembly on page 68)
   g. Top cover (see Top cover on page 73)

Remove the USB board:

1. Disconnect the USB board cable **(1)** from the system board. The USB board cable and num lock light cable are included in the USB board spare part kit and are also available in the Cable Kit, spare part number 417075-001.
2. Remove the num lock light cable **(2)** from the clip in the base enclosure.
3. Remove the Phillips PM2.5×4.0 screw **(3)** that secures the USB board to the computer.

4. Lift the USB board **(4)** straight up to remove it from the computer.



Reverse this procedure to install the USB board.

Speaker assembly

Description	Spare part number
Speaker assembly	417089-001

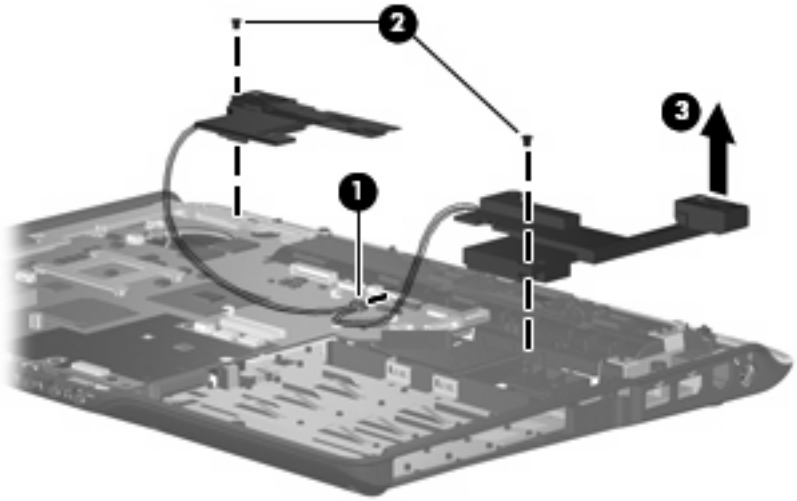
Before removing the speaker assembly, follow these steps:

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 47).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 52)
   b. Wireless module compartment cover (see WLAN module on page 55)
   c. Optical drive (see Optical drive on page 62)
   d. Keyboard (see Keyboard on page 63)
   e. Switch cover (see Switch cover on page 65)
   f. Display assembly (see Display assembly on page 68)
   g. Top cover (see Top cover on page 73)

Remove the speaker assembly:

1. Disconnect the speaker cable **(1)** from the system board.
2. Remove the two Phillips PM2.5×4.0 screws **(2)** that secure the speaker assembly to the computer.

3. Lift the speakers **(3)** straight up to remove them from the computer.



Reverse this procedure to install the speaker assembly.

Display switch module

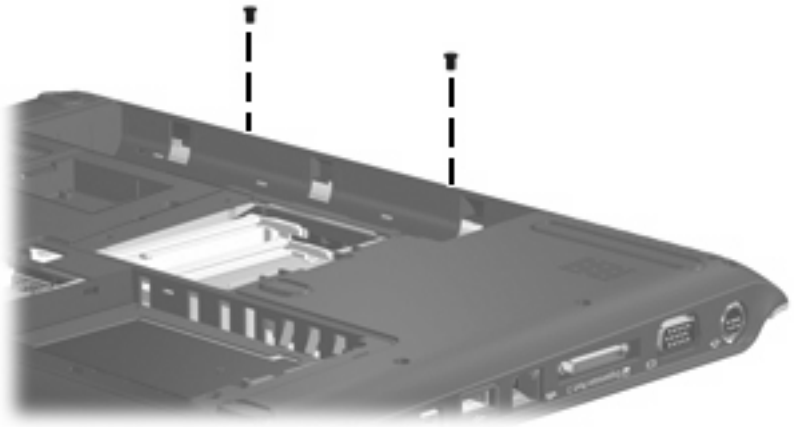
NOTE: The display switch module is included in the Display Hinge Kit, spare part number 430473-001 for computers with Intel processors, 455817-001 for computers with AMD processors.

Before removing the display switch 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 47).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 52)
   b. Wireless module compartment cover (see WLAN module on page 55)
   c. Optical drive (see Optical drive on page 62)
   d. Keyboard (see Keyboard on page 63)
   e. Switch cover (see Switch cover on page 65)
   f. Display assembly (see Display assembly on page 68)
   g. Top cover (see Top cover on page 73)

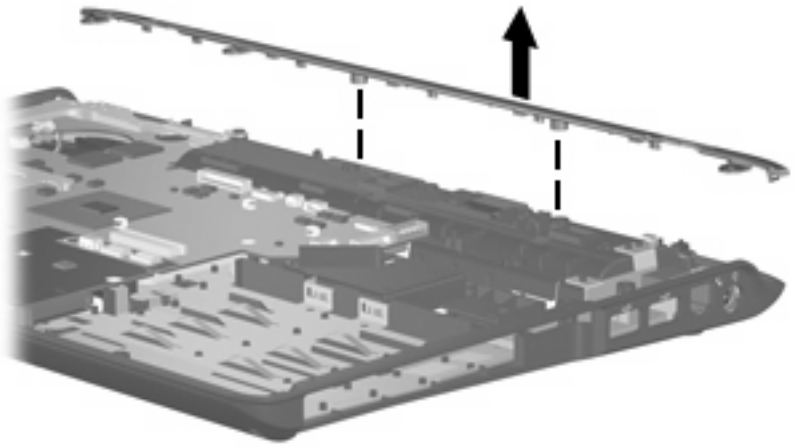
Remove the display switch module:

1. Turn the computer upside down with the front toward you.
2. Remove the two silver Phillips PM2.5×5.0 screws that secure the top cover trim to the computer.

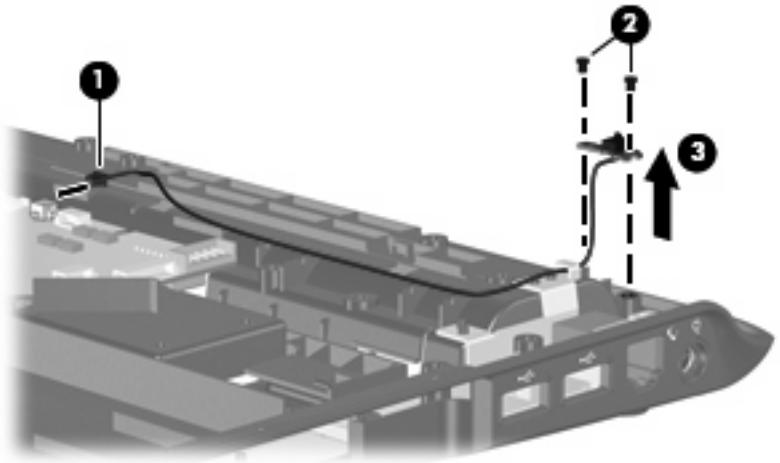


3. Turn the computer right-side up with the front toward you.

4. Remove the top cover trim from the computer. The top cover trim is included in the Door/Cover Kit, spare part number 417073-001.



5. Disconnect the display switch module cable **(1)** from the system board.
6. Remove the Phillips PM2.0×3.0 screw **(2)** that secures the display switch module to the computer.
7. Remove the display switch module **(3)** from the computer.



Reverse this procedure to install the display switch module.

System board

NOTE: All system board spare part kits include replacement thermal material.

Description	Spare part number
For use in computer models with Intel processors:	
Equipped with a discrete graphics subsystem	448596-001
Equipped with a UMA graphics subsystem	448598-001
For use in computer models with AMD processors	453413-001

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 47).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 52)
   b. Optical drive (see Optical drive on page 62)
   c. Keyboard (see Keyboard on page 63)
   d. Switch cover (see Switch cover on page 65)
   e. Display assembly (see Display assembly on page 68)
   f. Top cover (see Top cover on page 73)

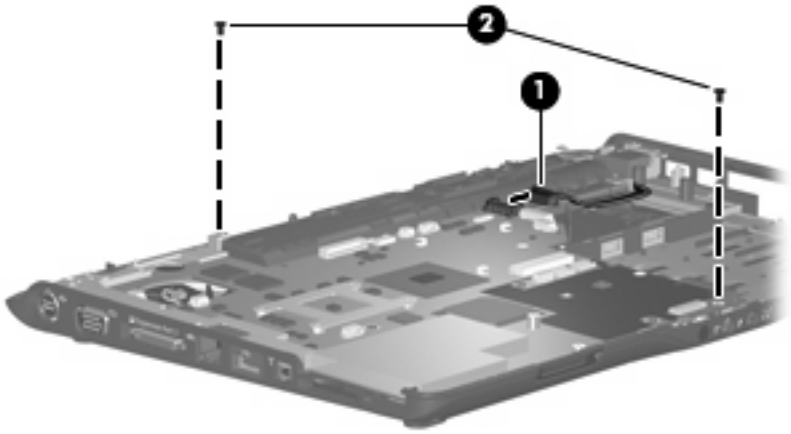
When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- RTC battery (see RTC battery on page 59)
- Memory modules (see Memory module on page 60)
- WLAN module (see WLAN module on page 55)
- Modem module (see Modem module on page 80)

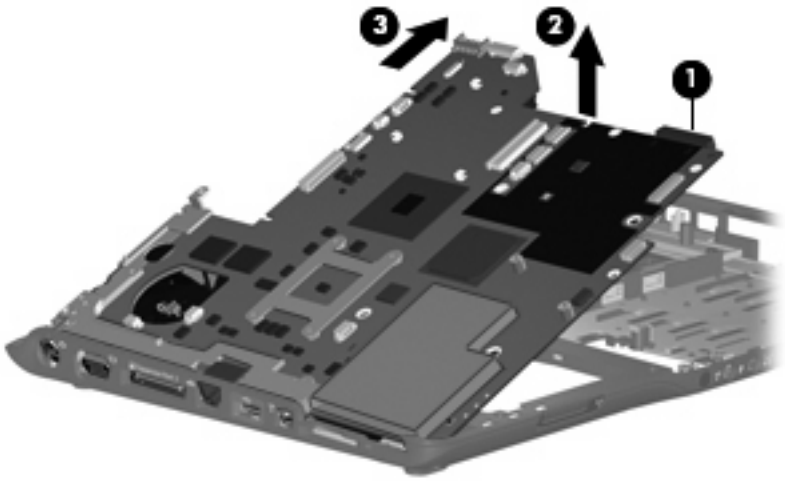
Remove the system board:

1. Disconnect the power connector cable **(1)** from the system board.

2. Remove the two Phillips PM2.5×5.0 screws **(2)** that secure the system board to the computer.



3. Use the optical drive connector **(1)** to lift the right side of the system board until it rests at an angle.
4. Release the system board **(2)** by sliding it to the right at an angle until the connectors on the left side of the system board disengage from the base enclosure.
5. Remove the system board **(3)**.



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

- ExpressCard assembly (see ExpressCard assembly on page 94)
- Fan/heat sink assembly (see Fan/heat sink assembly on page 96)
- Processor (see Processor on page 99)

Reverse the preceding procedure to install the system board.

Power connector cable

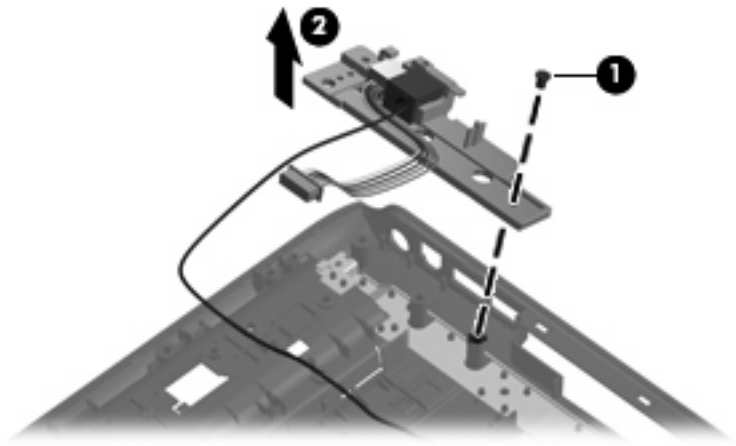
Description	Spare part number
Power connector cable for use in computer models with Intel processors	448628-001
Power connector cable for use in computer models with AMD processors	430462-001

Before removing the power connector cable, follow these steps:

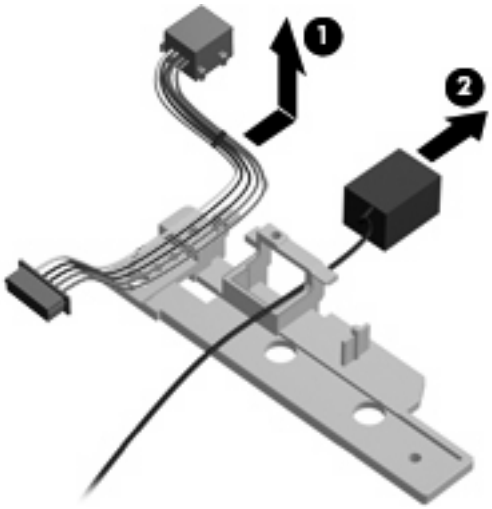
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 47).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 52)
   b. Optical drive (see Optical drive on page 62)
   c. Keyboard (see Keyboard on page 63)
   d. Switch cover (see Switch cover on page 65)
   e. Display assembly (see Display assembly on page 68)
   f. Top cover (see Top cover on page 73)
   g. System board (see System board on page 91)

Remove the power connector cable:

1. Remove the Phillips PM2.5×5.0 screw **(1)** that secures the connector frame to the base enclosure.
2. Remove the connector frame **(2)** from the base enclosure.



3. Remove the power connector **(1)** from the connector frame.
4. Remove the modem connector **(2)** from the connector frame.



Reverse this procedure to install the power connector cable and modem cable.

ExpressCard assembly

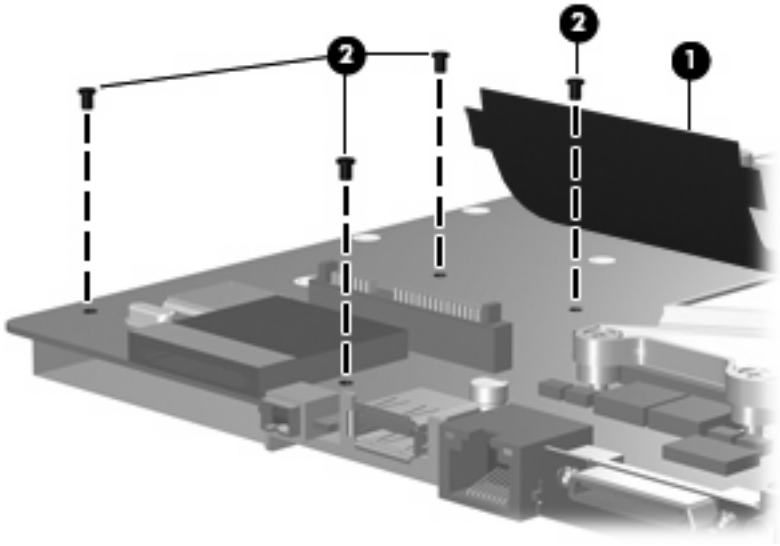
Description	Spare part number
ExpressCard assembly	417112-001

Before removing the ExpressCard assembly, follow these steps:

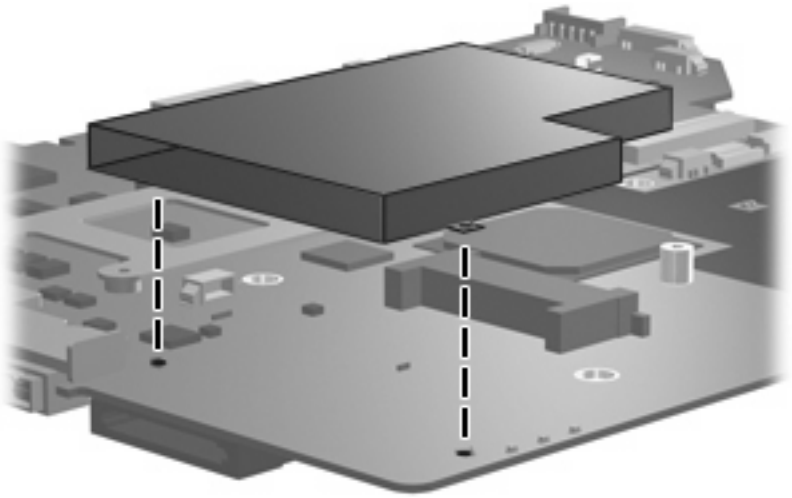
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 47).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 52)
   b. Optical drive (see Optical drive on page 62)
   c. Keyboard (see Keyboard on page 63)
   d. Switch cover (see Switch cover on page 65)
   e. Display assembly (see Display assembly on page 68)
   f. Top cover (see Top cover on page 73)
   g. System board (see System board on page 91)

Remove the ExpressCard assembly:

1. Lift the insulation material **(1)** from the system board to expose the ExpressCard assembly rear screws.
2. Remove the four Phillips PM2.0×6.0 screws **(2)** that secure the ExpressCard assembly to the system board.



3. Turn the system board right-side up with the front toward you.
4. Remove the ExpressCard assembly from the system board.



Reverse this procedure to install the ExpressCard assembly.

Fan/heat sink assembly

Description	Spare part number
Fan/heat sink assembly (includes thermal material)	448625-001

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

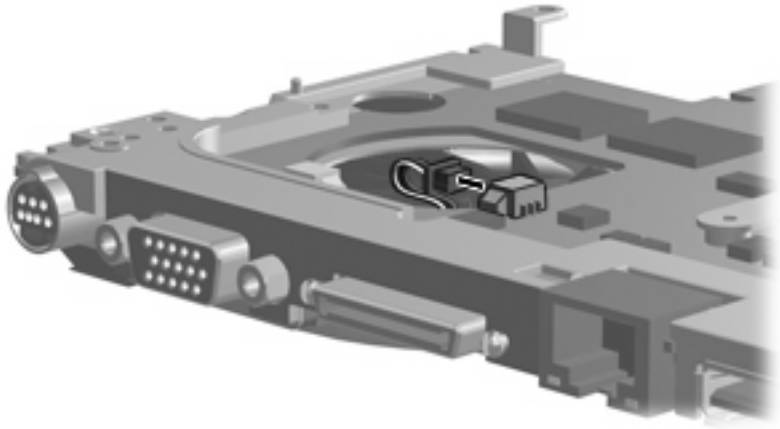
Before removing the fan/heat sink assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 47).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 52)
   b. Optical drive (see Optical drive on page 62)
   c. Keyboard (see Keyboard on page 63)
   d. Switch cover (see Switch cover on page 65)
   e. Display assembly (see Display assembly on page 68)
   f. Top cover (see Top cover on page 73)
   g. System board (see System board on page 91)

Remove the fan/heat sink assembly:

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

2. Disconnect the fan cable from the system board.

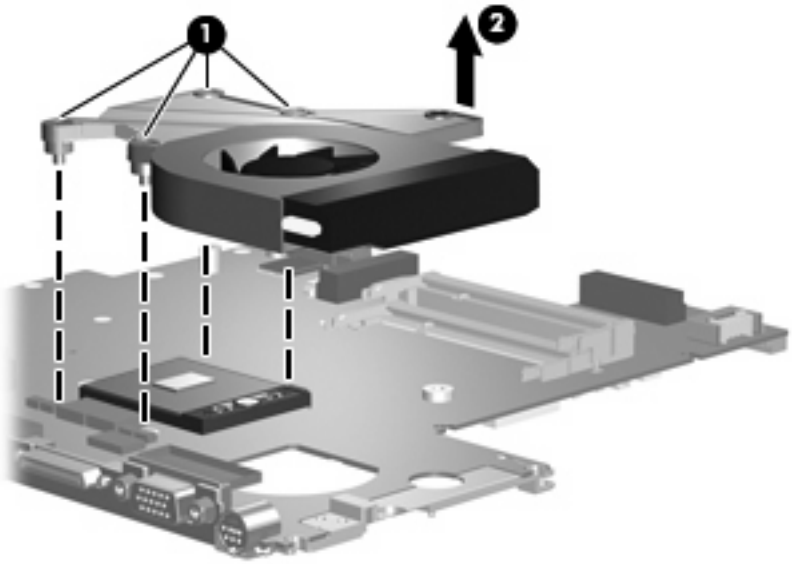


3. Turn the system board upside down with the external monitor port toward you.

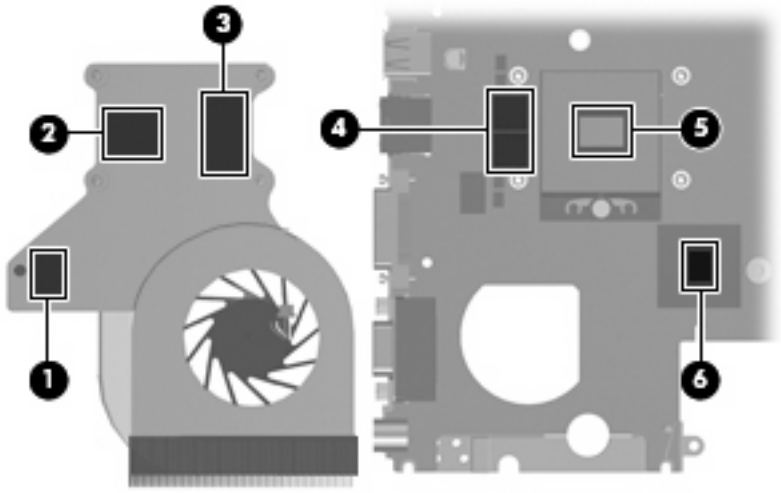
4. Loosen the four Phillips PM2.0×13.0 captive screws **(1)** that secure the fan/heat sink assembly to the system board.

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

5. Remove the fan/heat sink assembly **(2)**.

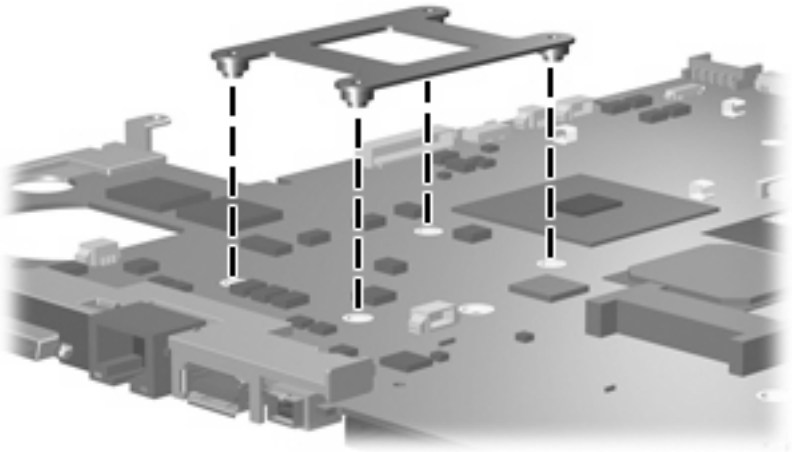


NOTE: The thermal material must be thoroughly cleaned from the surfaces of the fan/heat sink assembly **(1)** and **(2)**, and **(3)**, the system board components **(4)** and **(6)**, and the processor **(5)** each time the fan/heat sink assembly is removed. Thermal pads and thermal paste must be installed on all surfaces before the fan/heat sink assembly is reinstalled. Thermal pads and thermal paste are included with all fan/heat sink assembly, system board, and processor spare part kits.



NOTE: The fan/heat sink assembly mounting bracket must be replaced as shown in the following illustration when installing the fan/heat sink assembly.

The fan/heat sink assembly mounting bracket is available using spare part number 417114-001.



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

Processor

NOTE: All processor spare part kits include thermal material.

Description	Spare part number
Intel processors:	
Intel Core Duo T7300 (2.0-GHz, 4-MB L2 cache)	448601-001
Intel Core Duo T7100 (1.8-GHz, 2-MB L2 cache)	448600-001
Intel Core Duo T5450 (1.67-GHz, 2-MB L2 cache)	451597-001
Intel Core Duo T5250e (1.50-GHz, 2-MB L2 cache)	453948-001
AMD processors:	
Turion TL-62 (2.1-GHz, 1-MB L2 cache)	455809-001
Turion TL-60 (2.0-GHz, 1-MB L2 cache)	455807-001
Turion TL-58 (1.9-GHz, 1-MB L2 cache)	448561-001
Turion TL-55 (1.86-GHz, 1-MB L2 cache)	455808-001
Turion MK-38 (2.2-GHz, 512-MB L2 cache)	449904-001
Athlon TK-53 (1.7-GHz, 2-GB L2 cache)	451013-001
Sempron 3600 (2.0-GHz, 256-KB L2 cache)	450609-001

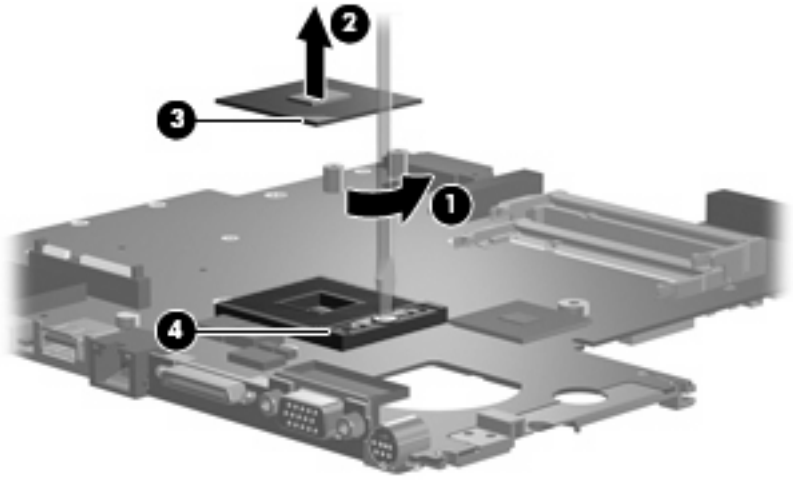
Before removing the processor, follow these steps:

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 47).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 52)
   b. Optical drive (see Optical drive on page 62)
   c. Keyboard (see Keyboard on page 63)
   d. Switch cover (see Switch cover on page 65)
   e. Display assembly (see Display assembly on page 68)
   f. Top cover (see Top cover on page 73)
   g. System board (see System board on page 91)
   h. Fan/heat sink assembly (see Fan/heat sink assembly on page 96)

Remove the processor:

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

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



Reverse this procedure to install the processor.

5 Setup Utility

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

Starting the Setup Utility

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

NOTE: The fingerprint reader (select models only) does not work when accessing the Setup Utility.

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

To start the Setup Utility:

1. Turn on or restart the computer.
2. Before Windows opens and while “Press <F10> to enter setup” is displayed in the lower-left corner of the screen, press f10.

Changing the language of the Setup Utility

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

1. To start the Setup Utility, turn on or restart the computer, and then press f10 while “Press <f10> to enter setup” is displayed in the lower-left corner of the screen.
2. Use the arrow keys to select **System Configuration > Language**, and then press enter.
3. Press f5 or f6 (or use the arrow keys) to select a language, and then press enter to select a language.
4. When a confirmation prompt with your preference selected is displayed, press enter to save your preference.
5. To set your preferences and exit the Setup Utility, press f10 and then follow the instructions on the screen.

Your preferences go into effect when the computer restarts in Windows.

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 drop-down 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. To start the Setup Utility, turn on or restart the computer, and then press f10 while "Press <F10>to enter setup" is displayed in the lower-left corner of the screen.
2. Access the system information by using the **Main** menu.
3. To exit the Setup Utility without changing any settings, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter. (The computer restarts in Windows.)

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. To start the Setup Utility, turn on or restart the computer, and then press f10 while "Press <F10>to enter setup" is displayed in the lower-left corner of the screen.
2. Select **Exit > Load Setup Defaults**, and then press enter.
3. When the Setup Confirmation is displayed, press enter to save your preferences.
4. To set your preferences and exit the Setup Utility, press f10, and then follow the instructions on the screen.

The Setup Utility default settings are set when you exit the Setup Utility and go into effect when the computer restarts.

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

Using advanced Setup Utility features

This section describes the Setup Utility features recommended for all users. For more information about the Setup Utility features recommended for advanced users only, refer to Help and Support, which is accessible only when the computer is in Windows.

The Setup Utility features available for advanced users include a hard drive self-test, a Network Service Boot, and settings for boot order preferences.

The "<F12> to boot from LAN" message that is displayed in the lower-left corner of the screen each time the computer is started or restarted in Windows is the prompt for a Network Service Boot.

The "Press <ESC> to change boot order" message that is displayed in the lower-left corner of the screen each time the computer is started or restarted in Windows is the prompt to change the boot order.

Closing the Setup Utility

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

- To close the Setup Utility and save your changes from the current session, use either of the following procedures:
  - Press f10, and then follow the instructions on the screen.

    —or—
  - 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.

    When you use the f10 procedure, you are offered an option to return to the Setup Utility. When you use the Exit Saving Changes procedure, the Setup Utility closes when you press enter.
- To close 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 the Setup Utility closes, the computer restarts in Windows.

Setup Utility menus

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

NOTE: Some of the Setup Utility menu items listed in this section 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.

System Configuration menu

Select	To do this
Language Support	Change the Setup Utility language.
Enhanced SATA support (select models only)	Enable/disable enhanced SATA mode.
Boot Options	Set the following boot options: • f10 and f12 Delay (sec.)—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 Floppy. • Internal Network Adapter boot—Enable/disable boot from Internal Network Adapter. • Boot Order—Set the boot order for: ◦ USB Floppy ◦ ATAPI CD/DVD ROM Drive ◦ Hard drive ◦ USB Diskette on Key ◦ USB Hard drive ◦ Network adapter
Button Sound (select models only)	Enable/disable the Quick Launch Button tapping sound.
Video memory up to (select models only)	Select the amount of video memory.

Diagnostics menu

Select	To do this
Hard Disk Self Test	Run a comprehensive self-test on the hard drive. **NOTE:** 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.

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Height (front to back)	2.60 to 3.90 cm	1.02 to 1.54 in
Width	33.40 cm	13.15 in
Depth	23.70 cm	9.33 in
Weight (with optical drive, hard drive, and battery)	2.49 kg	5.49 lbs
Input power		
Operating voltage	18.5 V dc —19.0 V dc	
Operating current	3.5 A or 4.74 A	
Temperature		
Operating (not writing to optical disc)	0°C to 35°C	32°F to 95°F
Operating (writing to optical disc)	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating (14.7 to 10.1 psia)	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating (14.7 to 4.4 psia)	-15 m to 12,192 m	-50 ft to 40,000 ft
Shock		
Operating	125 g, 2 ms, half-sine	
Nonoperating	200 g, 2 ms, half-sine	
Random vibration		
Operating	0.75 g zero-to-peak, 10 Hz to 500 Hz, 0.25 oct/min sweep rate	

	Metric	U.S.
Nonoperating	1.50 g zero-to-peak, 10 Hz to 500 Hz, 0.5 oct/min sweep rate	

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

14.1-inch, WXGA, BrightView display specifications

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

Hard drive specifications

	250-GB*	160-GB*	120-GB*	80-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	102 g	102 g	102 g	102 g
Interface type	SATA	SATA	SATA	SATA
Transfer rate				
Synchronous (maximum)	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	3 ms	3 ms	3 ms	3 ms
Average	13 ms	13 ms	13 ms	13 ms
Maximum	24 ms	24 ms	24 ms	24 ms
Logical blocks	495,702,655	317,249,699	237,937,274	158,624,849
Disk rotational speed	5400 rpm			
Operating temperature	5°C to 55°C (41°F to 131°F)			

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

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

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

Applicable disc	**Read:**	**Write:**
	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD +RW, DVD-RAM	CD-R and CD-RW DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM
Center hole diameter	1.5 cm (0.59 in)	
Disc diameter		
Standard disc	12 cm (4.72 in)	
Mini disc	8 cm (3.15 in)	
Disc thickness	1.2 mm (0.047 in)	
Track pitch	0.74 µm	
Access time	CD	DVD
Random	< 175 ms	< 230 ms
Full stroke	< 285 ms	< 335 ms
Audio output level	Audio-out, 0.7 Vrms	
Cache buffer	2 MB	
Data transfer rate		
24X CD-ROM	3,600 KB/sec	
8X DVD	10,800 KB/sec	
24X CD-R	3,600 KB/sec	
16X CD-RW	2,400 KB/sec	
8X DVD+R	10,800 KB/sec	
4X DVD+RW	5,400 KB/sec	
8X DVD-R	10,800 KB/sec	
4X DVD-RW	5,400 KB/sec	
2.4X DVD+R(9)	2,700 KB/sec	
5X DVD-RAM	6,750 KB/sec	
Transfer mode	Multiword DMA Mode	
Startup time	< 15 seconds	
Stop time	< 6 seconds	

System DMA specifications

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

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

†Not assigned for computer models with AMD processors.

System interrupt specifications—Intel processors

Hardware IRQ	System function
IRQ0	System timer
IRQ1	Standard 101-/102-Key or Microsoft® Natural Keyboard
IRQ2	Cascaded
IRQ3	Intel 82801DB/DBM USB2 Enhanced Host Controller—24CD
IRQ4	COM1
IRQ5*	Conexant AC—Link Audio Intel 82801DB/DBM SMBus Controller—24C3 Data Fax Modem with SmartCP
IRQ6	Diskette drive
IRQ7*	Parallel port
IRQ8	System CMOS/real-time clock
IRQ9*	Microsoft ACPI-compliant system
IRQ10*	Intel USB UHCI controller—24C2 Intel 82852/82855 GM/GME Graphic Controller Realtek RTL8139 Family PCI Fast Ethernet Controller
IRQ11	Intel USB EHCI controller—24CD Intel USB UHCI controller—24C4 Intel USB UHCI controller—24C7 Intel Pro/Wireless 2200BG TI OHCI 1394 host controller TI PCI1410 CardBus controller
IRQ12	Synaptics PS/2 TouchPad
IRQ13	Numeric data processor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE channel
*Default configuration; audio possible configurations are IRQ5, IRQ7, IRQ9, IRQ10, or none.	
NOTE: PC Cards may assert IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, or IRQ15. Either the infrared or the serial port may assert IRQ3 or IRQ4.	

System interrupt specifications—AMD processors

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

System I/O address specifications—Intel processors

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

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

System I/O address specifications—AMD processors

I/O address (hex)	System function (shipping configuration)
000 - 008	Direct memory access controller
000 - CF7	PCI Bus
00A - 00F	Direct memory access controller
010 - 01F	Motherboard resources
020 - 021	Programmable interrupt controller
022 - 03F	Motherboard resources
040 - 043	System timer
044 - 05F	Motherboard resources
060 - 060	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
061 - 061	System speaker
062 - 062	Microsoft ACPI-Compliant Embedded Controller
063 - 063	Motherboard resources
064 - 064	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
065 - 065	Motherboard resources
066 - 066	Microsoft ACPI-Compliant Embedded Controller
067 - 06F	Motherboard resources
070 - 071	
072 - 071=3	Motherboard resources
074 - 07f	Motherboard resources
080 - 080	Motherboard resources
081 - 083	Direct memory access controller
087 - 087	Direct memory access controller
089 - 08B	Direct memory access controller
08F - 08F	Direct memory access controller
091 - 093	Motherboard resources
097 - 09F	Motherboard resources
0A0 - 0A1	Programmable interrupt controller
0A2 - 0BF	Motherboard resources
0C0 - 0D1	Direct memory access controller
0D4 - 0DF	Direct memory access controller
0E0 - 0EF	Motherboard resources
0F0 - 0F1	Numeric data processor
1F0 - 1F7	ATA Channel 0

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

System memory map specifications—Intel processors

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

System memory map specifications—AMD processors

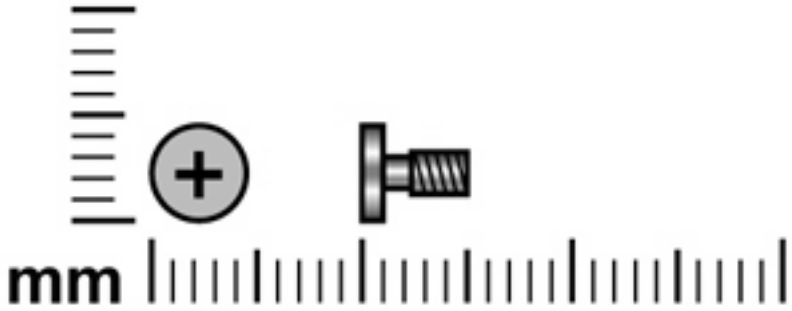
Memory address (hex)	System function
000A0000 - 000BFFFF	nVidia MCP67M
000A0000 - 000BFFFF	PCI bus
000C0000 - 000C3FFF	PCI bus
000C4000 - 000C7FFF	PCI bus
000C80000 - 00CBFFF	PCI bus
000CC000 - 000CFFFF	PCI bus
000D000 - 00D3FFF	PCI bus
000D4000 - 000D7FFF	PCI bus
000D800 - 00DBFFF	PCI bus
000DC00 - 00DFFFF	PCI bus
000E0000 - 00E3FFF	PCI bus
000E4000 - 000E7FFF	PCI bus
000E800 - 000EBFFF	PCI bus
000EC00 - 000EFFFF	PCI bus
000F0000 - 000FFFFF	PCI bus
4000000 - FEBFFFFF	PCI bus
D0000000 - DFFFFFFF	nVidia MCP67M
E000000 - EFFFFFFF	Motherboard resources
F00000 - F3FFFFF	PCI standard PCI-to-PCI bridge
F4000000 - F4FFFFFF	nVidia MCP67M
F500000 - F5FFFFF	nVidia MCP67M
F6000000 – F6003FFF	Broadcom 802.11b/g WLAN
F600000 - F60FFFF	PCI standard PCI-to-PCI bridge
F610000 - F61007FF	RICOH OHCI Compliant IEEE 1394 Host Controller
F6100000 - F61FFFF	PCI standard PCI-to-PCI bridge
F6100800 - F61008FF	SDA Standard Compliant SD Host Controller
F6100C00 - F6100CFF	Ricoh SD/MMC Host Controller
F6101000 - F61010FF	Ricoh Memory Stick Controller
F6101400 - F61014FF	Ricoh xD-Picture Card Controller
F620000 - F627FFFF	nVidia nForce System Management Controller
F6480000 - F6483FFF	High Definition Audio Controller
F6484000 - F6485FFF	Standard Dual Channel PCI IDE Controller

Memory address (hex)	System function
F6486000 - F6486FFF	Standard OpenHCD USB Host Controller
F6487000 - F6487FFF	Standard OpenHCD USB Host Controller
F6488000 - F6488FFF	nVidia nForce Networking Controller
F6489000 - F64890FF	Standard Enhanced PCI to USB Host Controller
FF6489400 - F64894FF	Standard Enhanced PCI to USB Host Controller
F6489800 - F648980F	nVidia nForce Networking Controller
F6489C00 - F6489CFF	nVidia nForce Networking Controller
FEC00000 - FEC00FFF	System board
FEC80000 - FEC80FFF	System board
FED00000 - FED003FF	High precision event timer
FEE00000 - FEEFFFFF	System board
FEF00000 - FEF00FFF	System board
FFC00000 - FFFFFFFF	System board

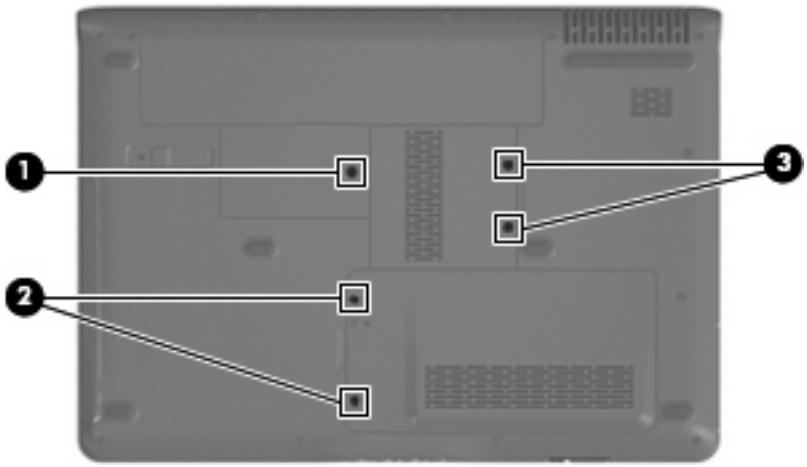
7 Screw listing

This section provides specification and reference information for the screws and screw locks used in the computer. All screws listed in this section are available in the Screw Kit, spare part number 417108-001 for computers with Intel processors, or 455867-001 for computers with AMD processors, and the Display Screw Kit, spare part number 417104-001 for computers with Intel processors, 455868-001 for computers with AMD processors.

Phillips PM2.0×5.0 captive screw



Color	Quantity	Length	Thread	Head diameter
Black	5	5.0 mm	2.0 mm	5.0 mm



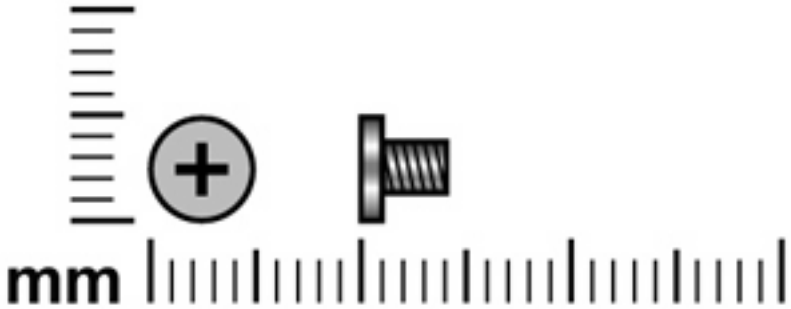
Where used:

(1) Two captive screws (secured by C-clips) that secure the hard drive cover to the computer

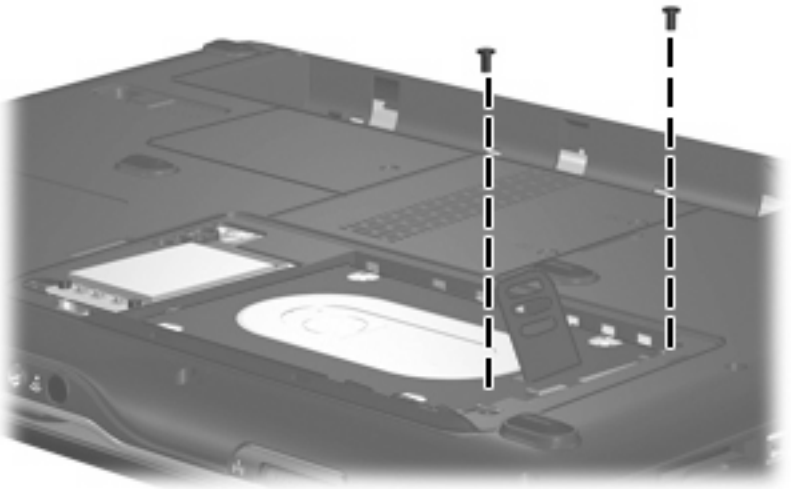
(2) Two captive screws (secured by C-clips) that secure the memory module compartment cover to the computer

(3) One captive screw (secured by a C-clip) that secures the wireless module compartment cover to the computer

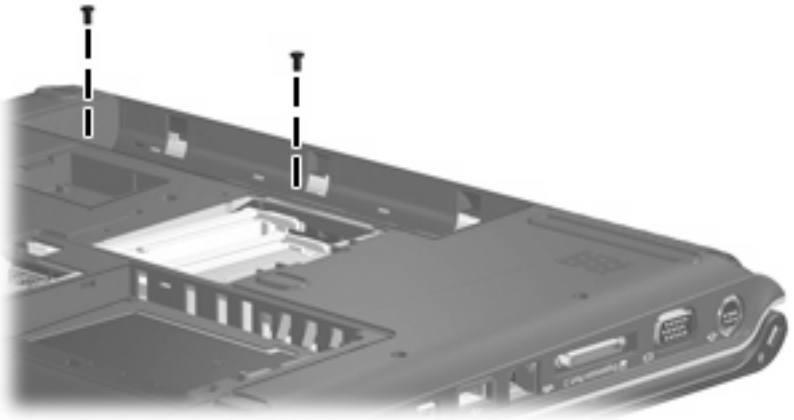
Phillips PM2.5×4.0 screw



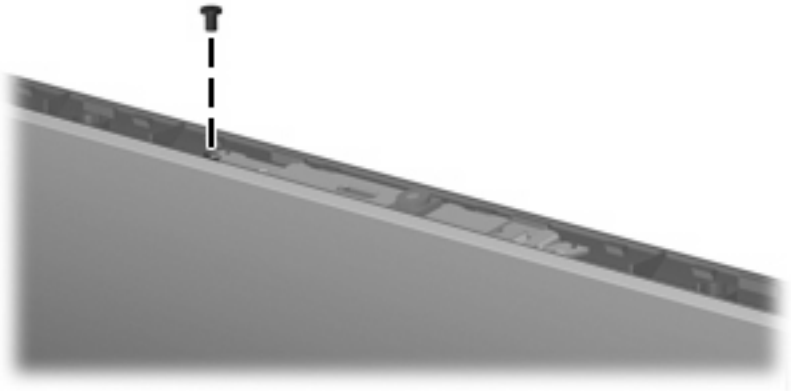
Color	Quantity	Length	Thread	Head diameter
Black	15	4.0 mm	2.5 mm	5.0 mm



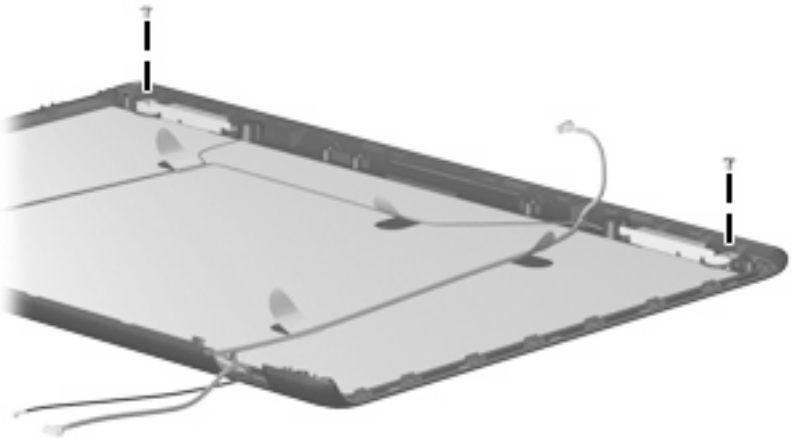
Where used: 2 screws that secure the hard drive to the computer



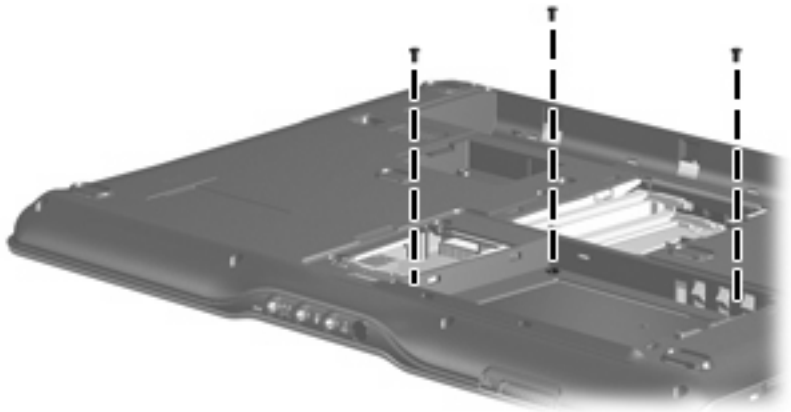
Where used: 2 screws that secure the switch cover to the computer



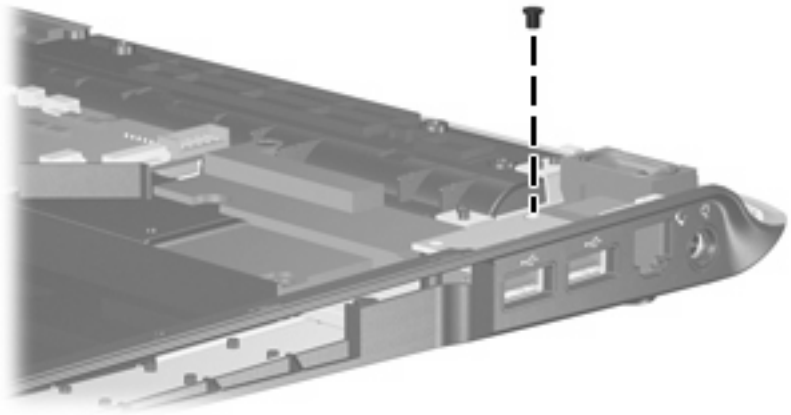
Where used: One screw that secures the camera module assembly to the display enclosure



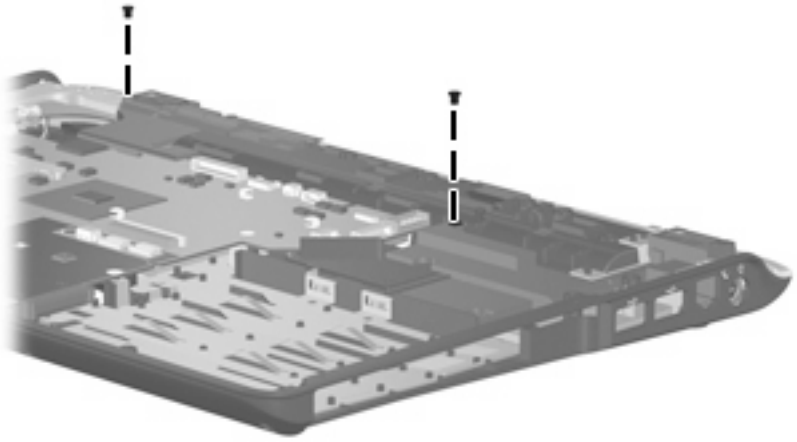
Where used: 2 screws that secure the wireless antenna transceivers to the display enclosure



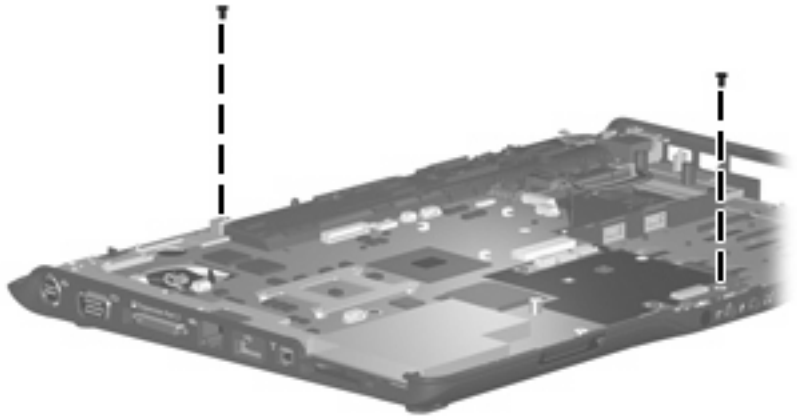
Where used: 3 screws that secure the top cover to the computer



Where used: One screw that secures the USB board to the computer

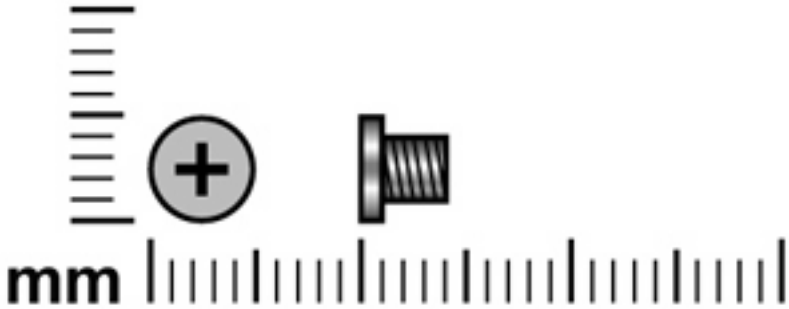


Where used: 2 screw that secures the speaker assembly to the computer

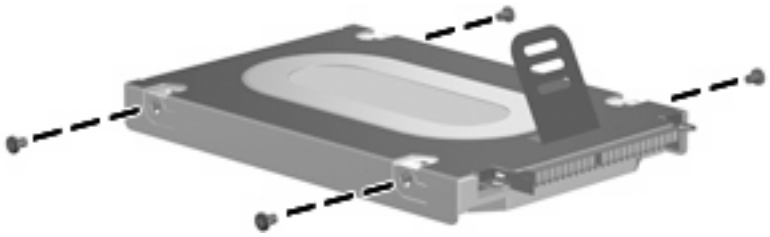


Where used: 2 screws that secure the system board to the computer

Phillips PM3.0×4.0 screw

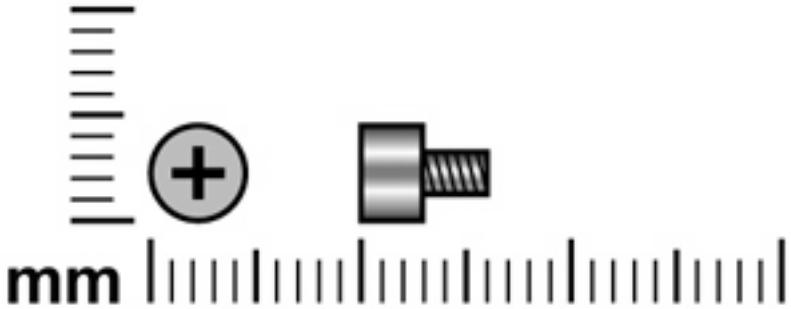


Color	Quantity	Length	Thread	Head diameter
Silver	4	4.0 mm	3.0 mm	5.0 mm

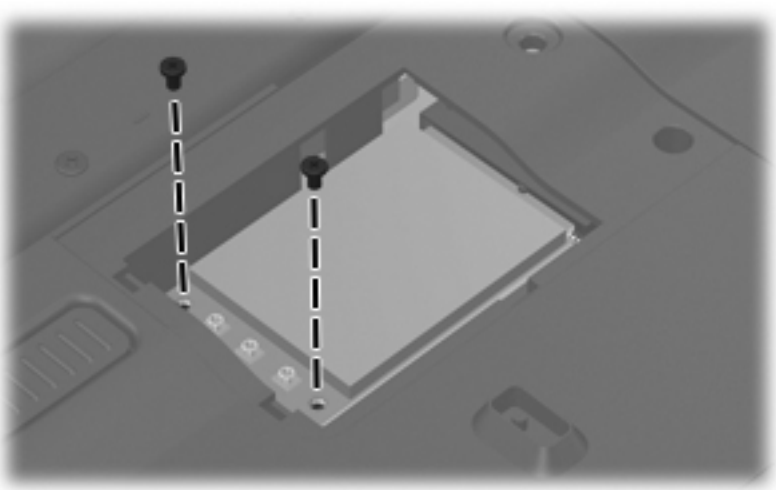


Where used: 4 screws that secure the hard drive bracket to the hard drive

Phillips PM2.0×6.0 shoulder screw

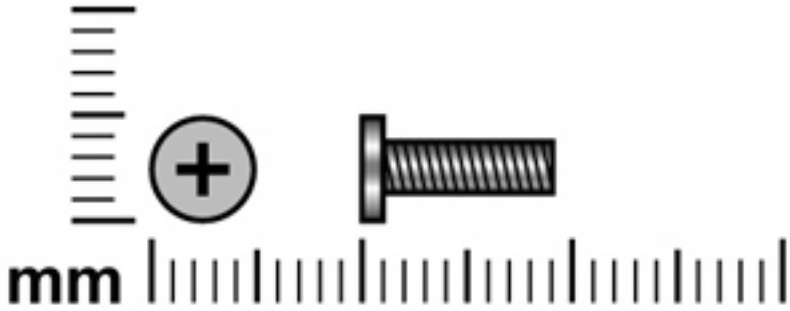


Color	Quantity	Length	Thread	Head diameter
Black	2	6.0 mm	2.0 mm	4.0 mm

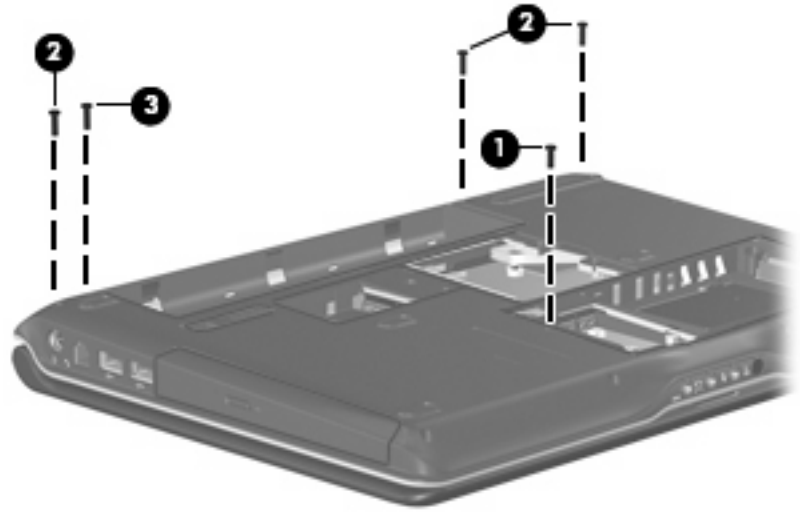


Where used: 2 screws that secure the WLAN module to the computer

Phillips PM2.5×9.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	15	9.0 mm	2.5 mm	5.0 mm

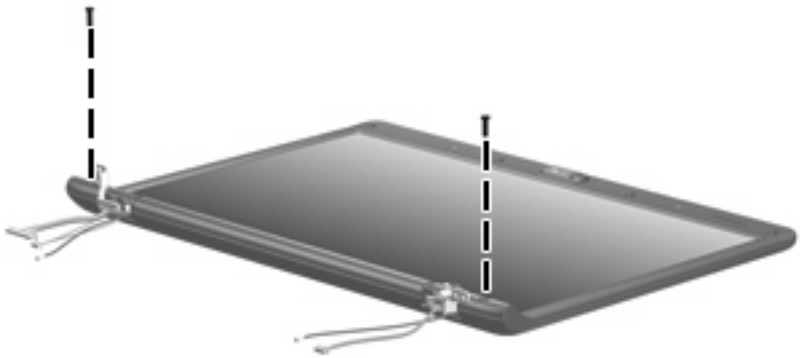


Where used:

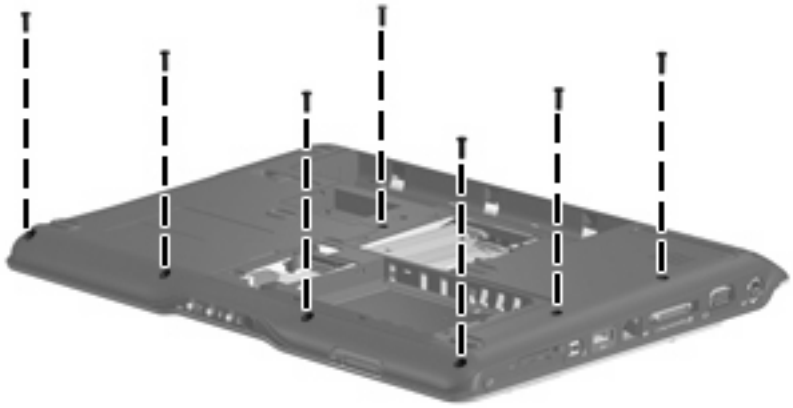
(1) One screw that secures the optical drive to the computer

(2) Three screws that secure the switch cover to the computer

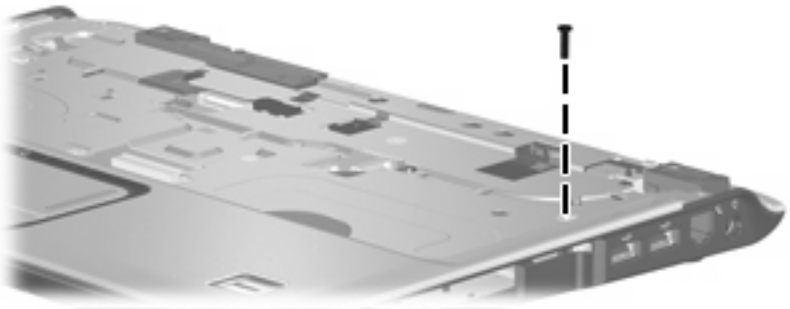
(3) One screw that secures the display assembly to the computer



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



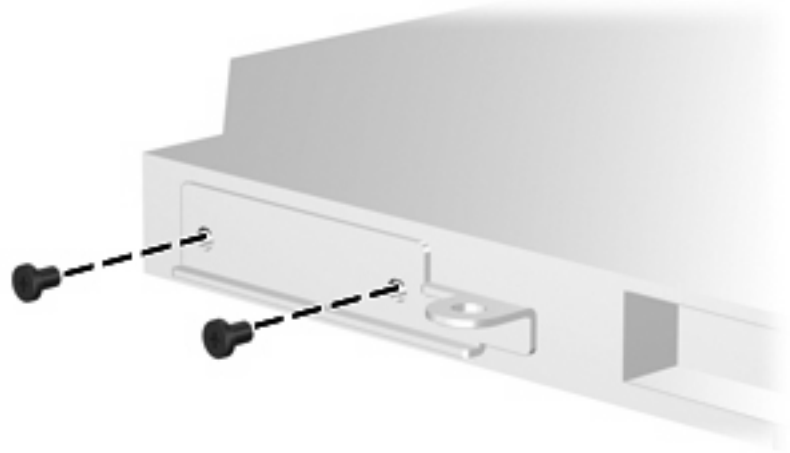
Where used: 7 screws that secure the top cover to the computer



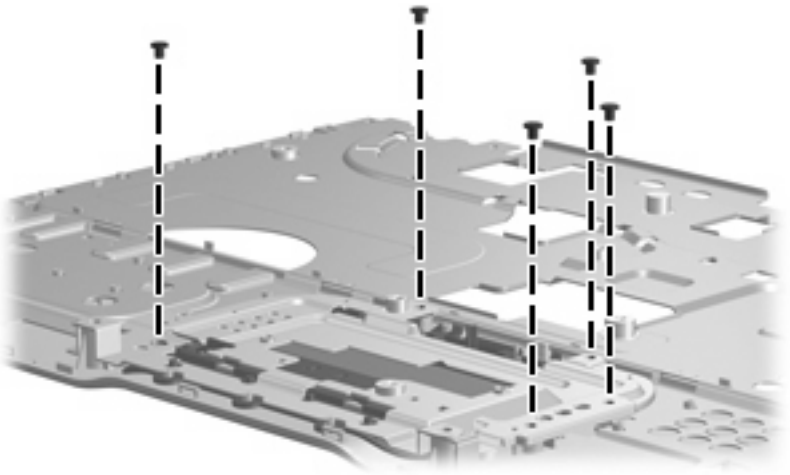
Where used: One screw that secures the top cover to the computer

Silver Phillips PM2.0×3.0 screw

Color	Quantity	Length	Thread	Head diameter
Silver	7	3.0 mm	2.0 mm	4.0 mm

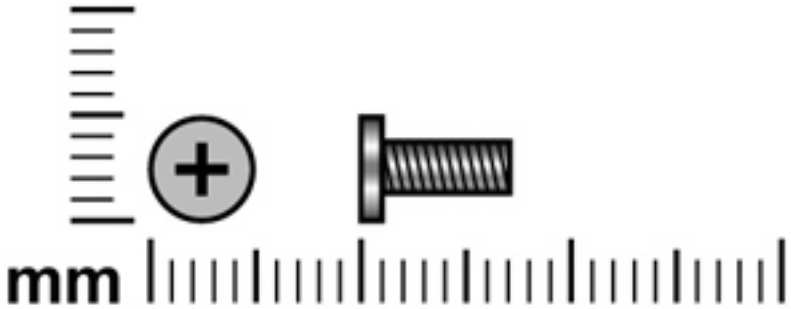


Where used: 2 screws that secure the optical drive bracket to the optical drive

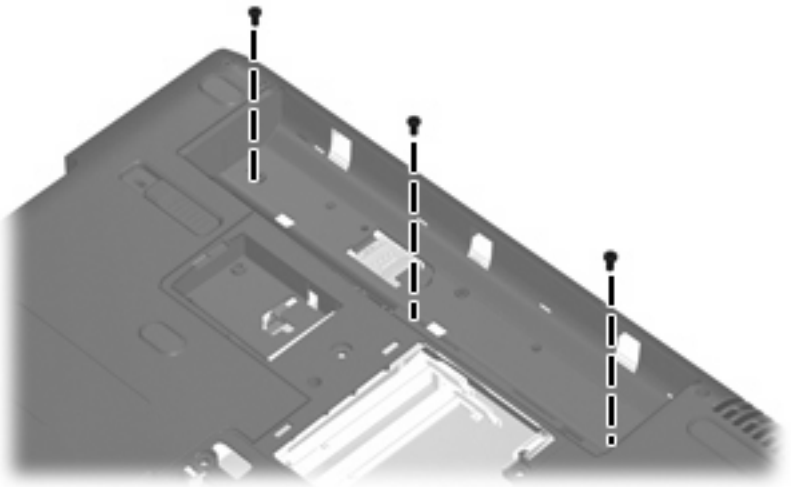


Where used: 5 screws that secure the TouchPad to the top cover

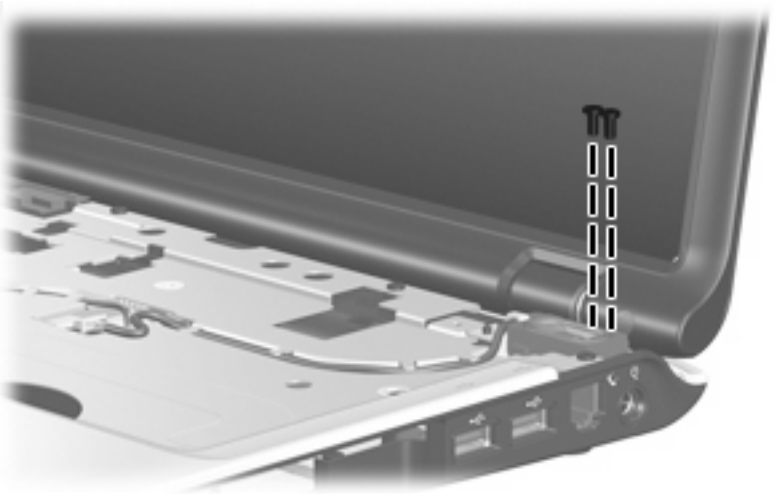
Phillips PM2.5×7.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	9	7.0 mm	2.5 mm	5.0 mm



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



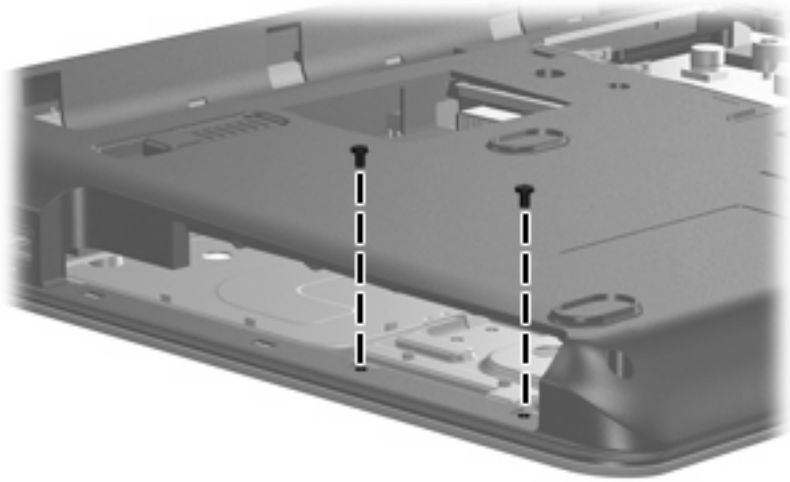
Where used: 2 screws that secure the display assembly to the computer

Where used: 4 screws that secure the display hinges to the display enclosure

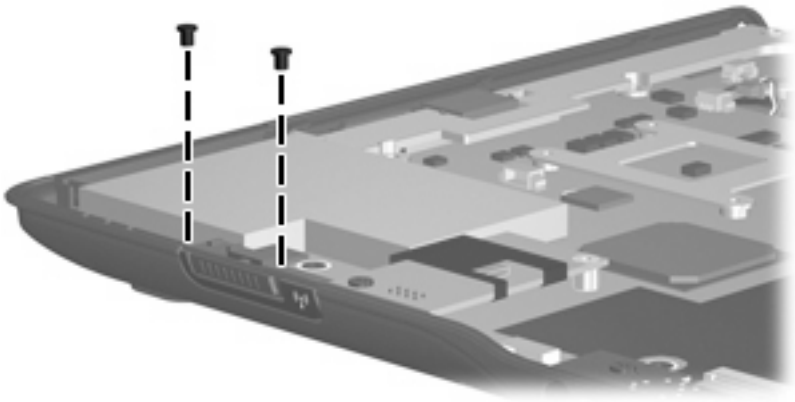
Black Phillips PM2.0×3.0 screw

Color	Quantity	Length	Thread	Head diameter
Black	10	3.0 mm	2.0 mm	4.0 mm

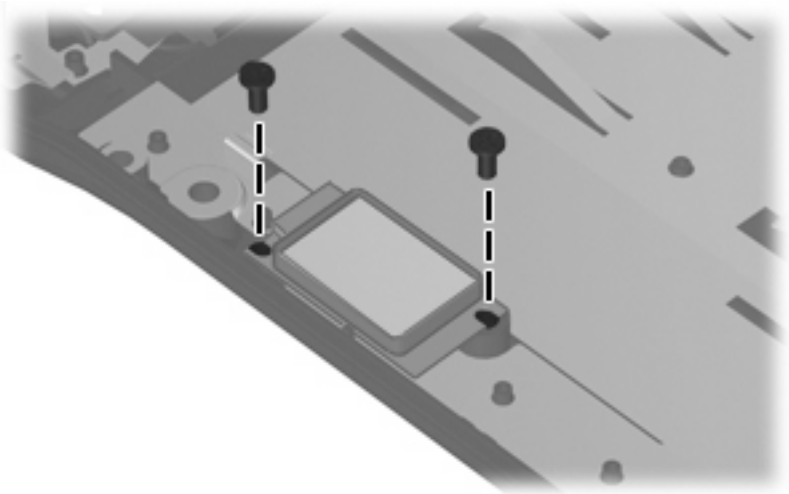
Where used: 2 screws that secure the camera module bracket to the camera module



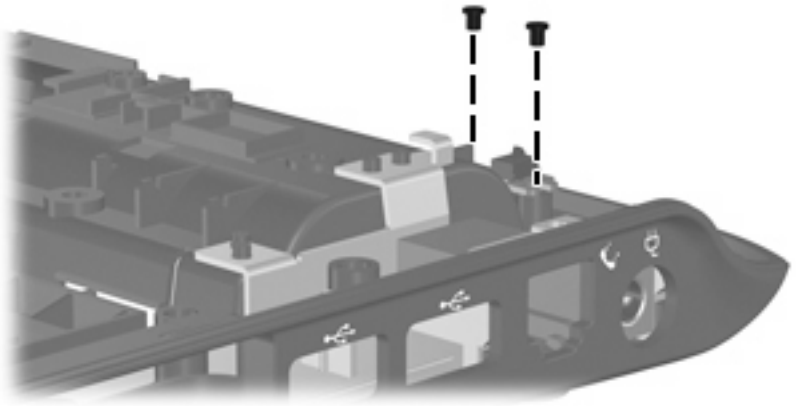
Where used: 2 screws that secure the top cover to the computer



Where used: 2 screws that secure the wireless switch board to the computer

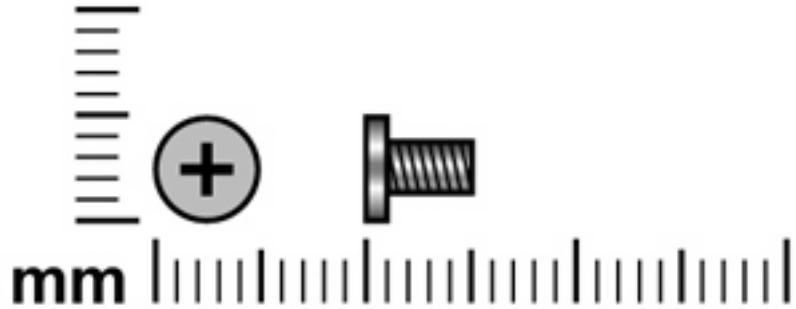


Where used: 2 screws that secure the Bluetooth module to the computer

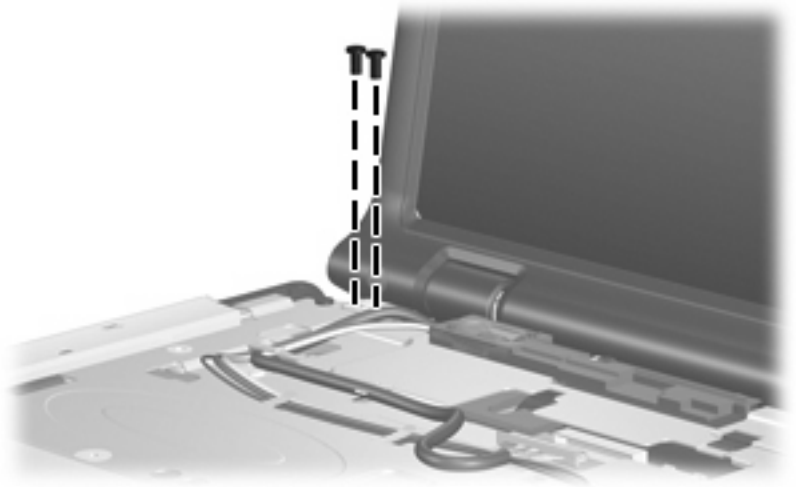


Where used: 2 screws that secure the display switch module to the computer

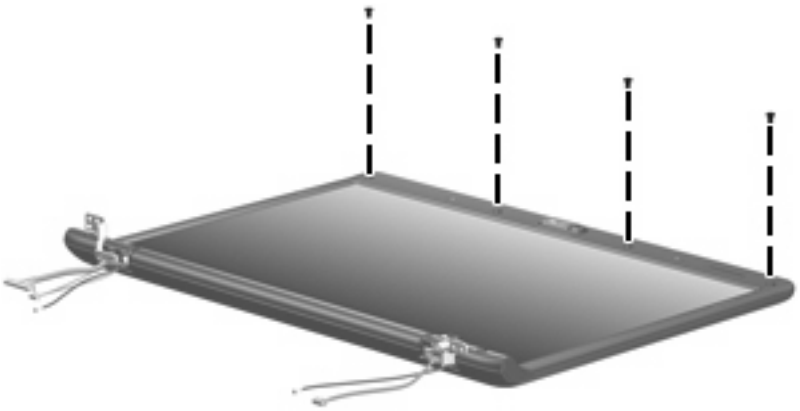
Black Phillips PM2.5×5.0 screw



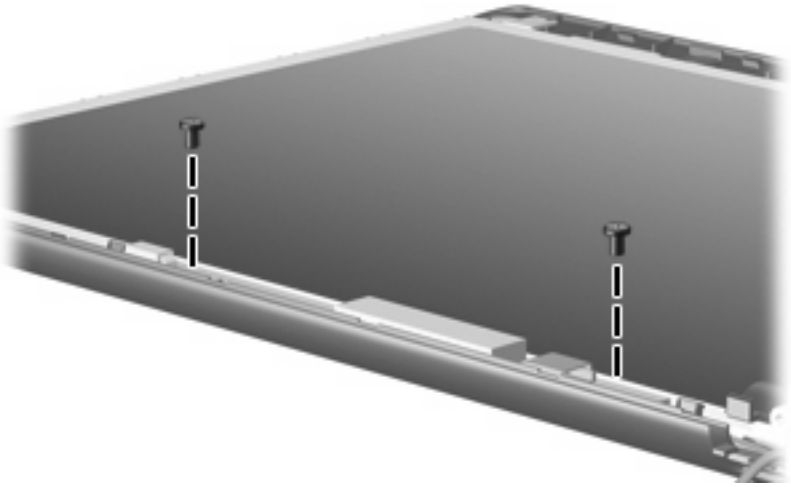
Color	Quantity	Length	Thread	Head diameter
Black	10	5.0 mm	2.5 mm	5.0 mm



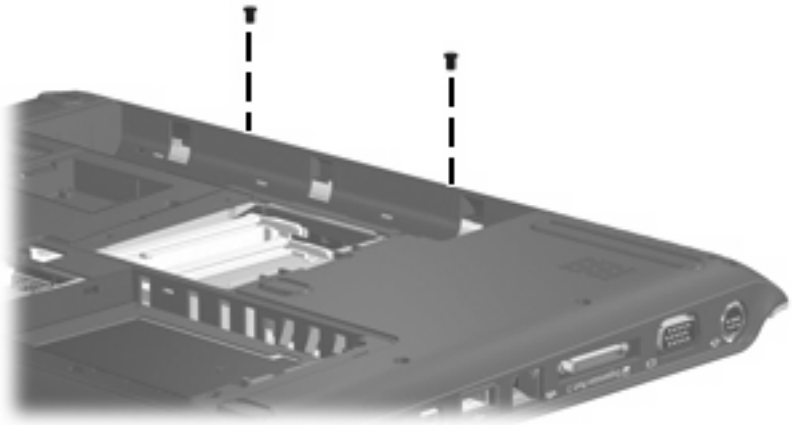
Where used: 2 screws that secure the display assembly to the computer



Where used: 4 screws that secure the display bezel top edge to the display assembly

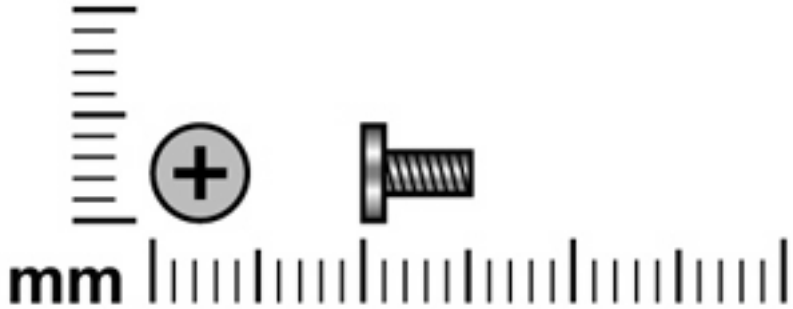


Where used: 2 screws that secure the display inverter to the display enclosure

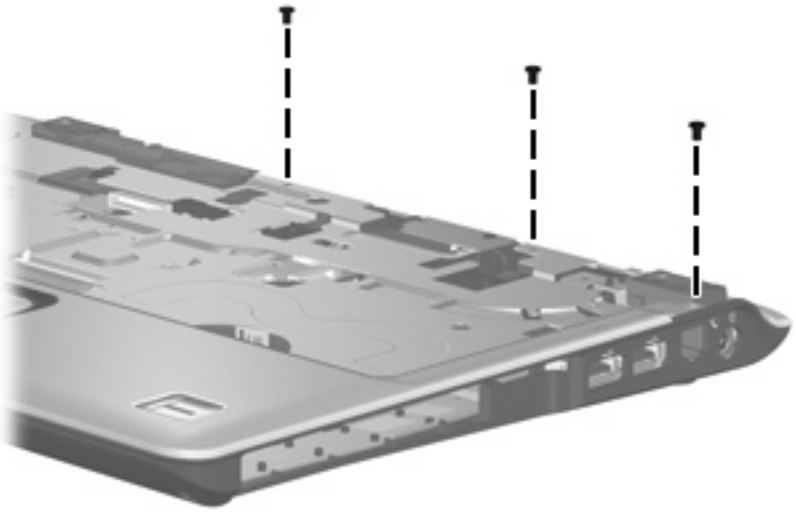


Where used: 2 screws that secure the top cover trim to the computer

Phillips PM2.0×5.0 screw

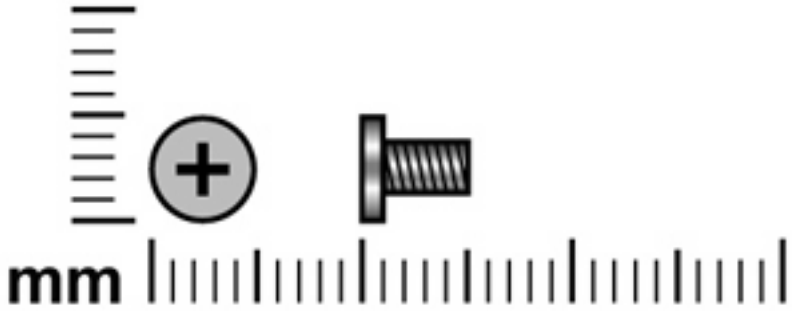


Color	Quantity	Length	Thread	Head diameter
Black	3	5.0 mm	2.0 mm	5.0 mm

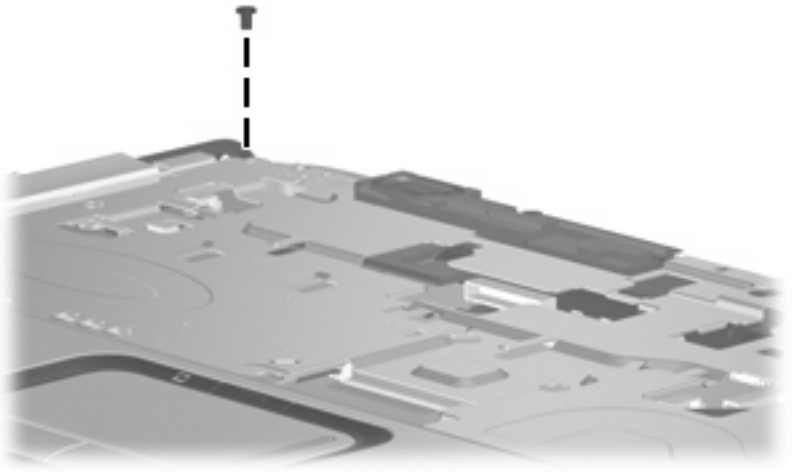


Where used: 3 screws that secure the top cover to the computer

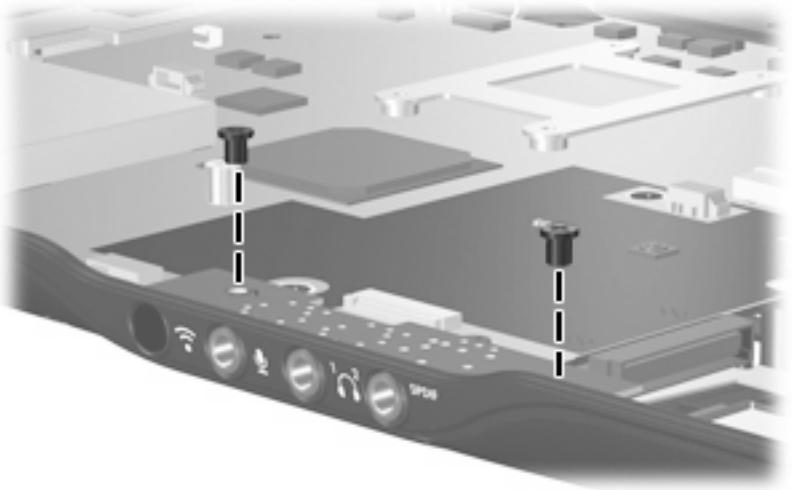
Silver Phillips PM2.5×5.0 screw



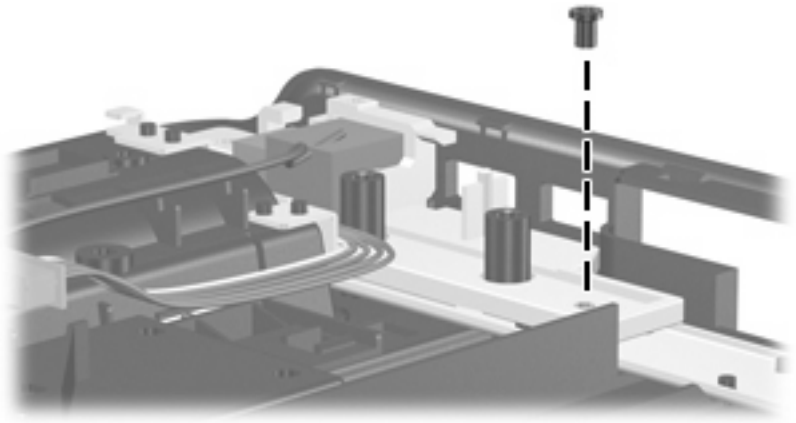
Color	Quantity	Length	Thread	Head diameter
Silver	4	5.0 mm	2.5 mm	5.0 mm



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



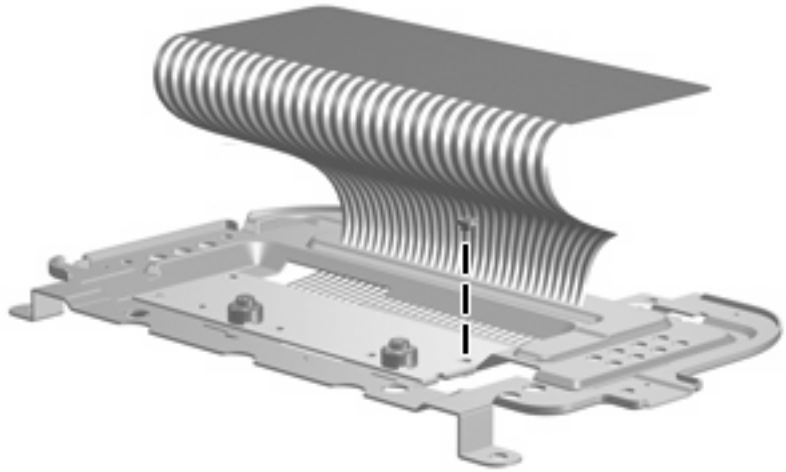
Where used: 2 screws that secure the audio board to the computer



Where used: One screw that secures the connector bracket to the computer

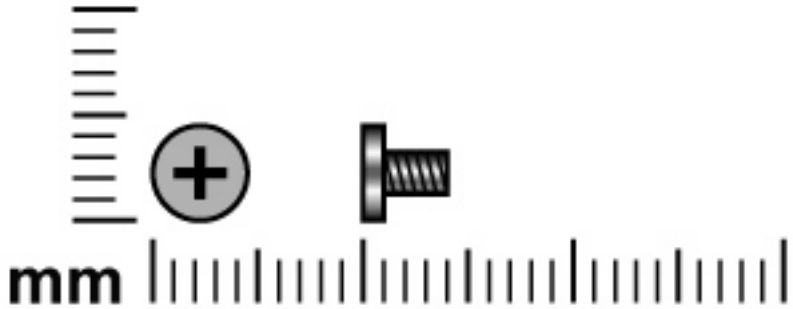
Phillips PM2.0×2.0 screw

Color	Quantity	Length	Thread	Head diameter
Silver	1	2.0 mm	2.0 mm	4.0 mm

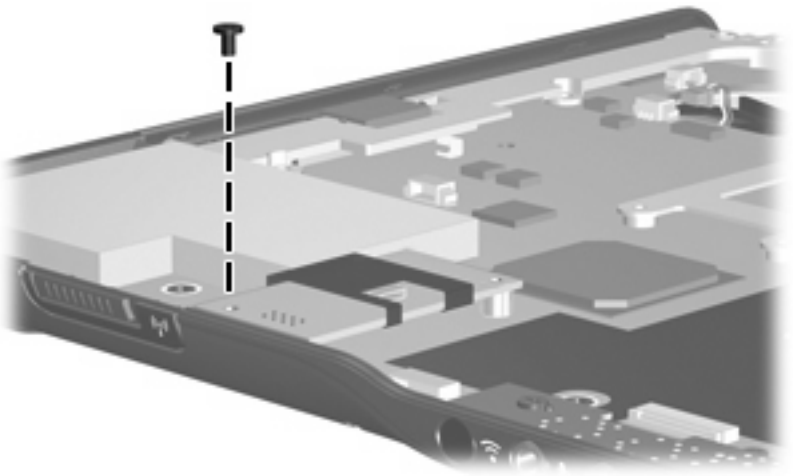


Where used: One screw that secures the TouchPad bracket to the TouchPad board

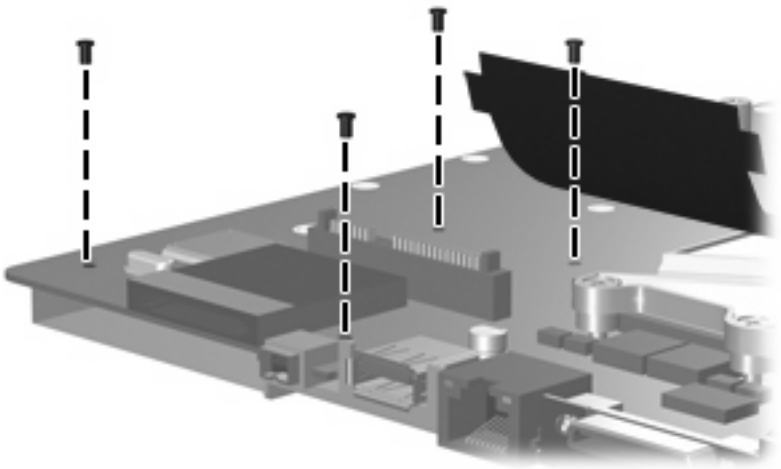
Phillips PM2.0×4.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	5	4.0 mm	2.0 mm	5.0 mm

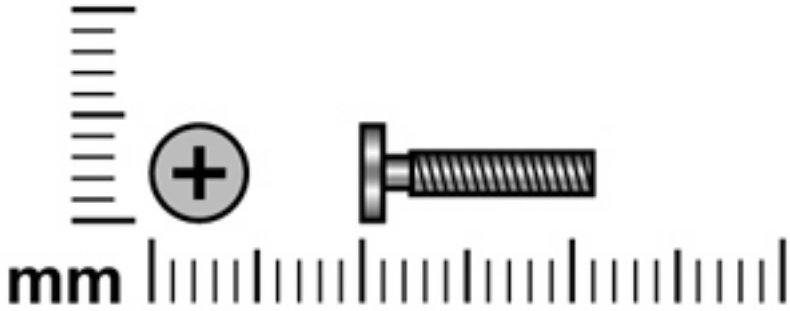


Where used: One screw that secures the modem module to the system board

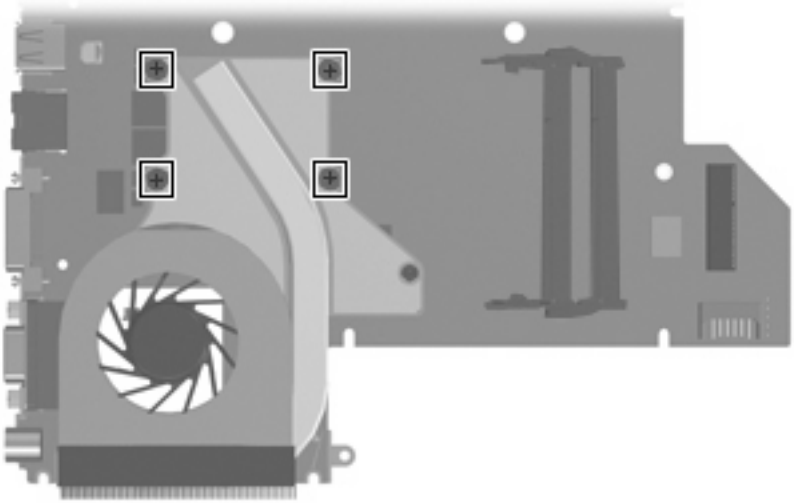


Where used: 4 screws that secure the ExpressCard assembly to the system board

Phillips PM2.0×11.0 captive screw



Color	Quantity	Length	Thread	Head diameter
Silver	4	11.0 mm	2.0 mm	5.0 mm



Where used: 4 captive screws (secured by C-clips) that secure the fan/heat sink assembly to the system board

8 Backup and Recovery

Recovering system information

Tools provided by the operating system and 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:

- Back up your information regularly to protect your important system files.
- Make 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.
- Create 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.
- Recover a program or driver (Recovery Manager software feature). This feature helps you reinstall a program or driver without performing a full system recovery.
- Perform 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 on the hard drive or from recovery discs you create.

Backing up your information

When to back up

- On a regularly scheduled basis.

NOTE: Set reminders to back up your information periodically.

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

Back up suggestions

- Create system restore points using the Windows System Restore feature.
- Store personal files in the Documents folder and back up these folders periodically.
- Back up templates stored in their associated programs.
- Save customized settings in a window, toolbar, or menu bar by taking a screen shot of your settings.

  The screen shot can be a time saver if you have to reset your preferences.

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

  a. Display the screen.

  b. Copy the screen:

  To copy only the active window, press alt+fn+prt sc.

  To copy the entire screen, press fn+prt sc.

  c. Open a word-processing document, and then select **Edit > Paste**.

Using system restore points

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

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

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

When to create restore points

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

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

Create a system restore point

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

   The System Protection window opens.
6. Follow the on-screen instructions.

Restore to a previous date and time

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

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

   The System Restore window opens.
5. Follow the on-screen instructions.

Creating recovery discs

Recovery Manager creates a set of recovery CDs or DVDs for the computer. Use recovery discs to restore the operating system and software programs to factory settings, in case of system failure or instability.

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

Note the following guidelines before creating recovery discs:

- You will need high quality CD-R, DVD-R, or DVD+R media (purchased separately).

  NOTE: Formatted DVD±RW discs and DVD±RW double-layer discs are not compatible with the Recovery Manager software.
- The computer must be connected to AC power during this process.
- Only one set of recovery discs can be created per computer.
- Number each disc before inserting it into the computer optical drive.
- If necessary, you can exit the program before you have finished creating the recovery discs. The next time you open Recovery Manager, you will be prompted to continue the disc creation process.

To create a set of recovery discs:

1. Select **Start > All Programs > Recovery Manager > Recovery Manager**.

   Recovery Manager opens.
2. Click **Advanced Options**.

   NOTE: If you are operating the computer on battery power, you will be prompted to connect to AC power before you can go to the next step.
3. Click **Recovery disc creation**, and then click **Next**.
4. Follow the on-screen instructions.

Reinstalling software programs and drivers

If a program or driver preinstalled at the factory is accidentally erased or is damaged, Recovery Manager allows you to reinstall it.

NOTE: Software not provided with this computer must be reinstalled from the disc provided by the manufacturer or downloaded from the manufacturer's Web site.

NOTE: Before reinstalling the program, be sure it is fully uninstalled.

Recovery Manager replaces corrupted system files and reinstalls deleted system files within the program.

- In most cases, if the program you are reinstalling is still on your computer, the reinstallation process does not affect your personal settings.
- In all cases, if a program has been deleted from your computer, the reinstallation process reinstalls the program or utility to the factory image but cannot restore your personal settings.

Reinstalling preinstalled programs and drivers

1. Remove the program or driver:

   NOTE: In some cases, drivers are not listed in the Programs and Features list. If the driver is not listed, it does not need to be removed.

   a. Select **Start > Control Panel > Programs > Uninstall a program**.

   b. Right-click the program or driver you want to remove, and then click **Uninstall**.

2. Reinstall the program or driver:

   a. Select **Start > All Programs > Recovery Manager > Recovery Manager**.

   Recovery Manager opens.

   b. Click **Advanced Options**.

   c. Click either **Software program re-installation** or **Hardware driver re-installation**, and then click **Next**.

   d. Follow the on-screen instructions.

   e. Restart the computer if prompted.

Reinstalling programs from discs

1. Insert the disc into the optical drive.
2. When the installation wizard opens, follow the installation instructions on the screen.
3. Restart the computer if prompted.

Performing a recovery

Recovery Manager software allows you to repair or restore the system if you experience system failure or instability. Recovery Manager works from recovery discs that you create or from a dedicated recovery partition on the hard drive.

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

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

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 partition on the hard drive

You can perform a recovery from the partition on the hard drive from either the Start button or f11.

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**.
   - 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.

Deleting the recovery partition on the hard drive

The Recovery Manager Advanced Options menu provides the option of deleting the recovery partition, which will increase space on the hard drive. Delete the recovery partition only if you have already created recovery discs.

△ **CAUTION:** After you create the recovery discs, you can increase space on the hard drive by deleting the recovery partition. However, doing this is not recommended. If you delete this partition, you will lose any information that is on the partition, including Recovery Manager software. Thereafter, you must use the recovery discs to access Recovery Manager software.

To delete the recovery partition:

1. If you have not already created recovery discs, create them now.
2. Select **Start > All Programs > Recovery Manager > Recovery Manager**.

   Recovery Manager opens.
3. Click **Advanced Options**.
4. Click **Remove recovery partition**, and then click **Next**.
5. Follow the on-screen instructions.

Updating reinstalled software

After you perform a system recovery, connect to the Internet to update all reinstalled software.

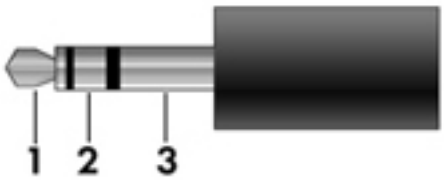
To access update links for the operating system and other software provided on your computer:

▲ Select **Start > Help and Support**.

To update optional software, follow the instructions provided by the software manufacturer. Some programs include an update feature you can access from a Help button or menu within the program.

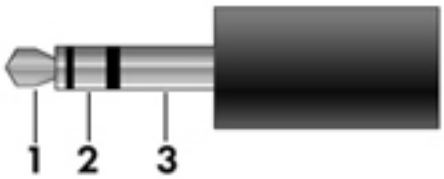
9 Connector pin assignments

Audio-in (microphone)



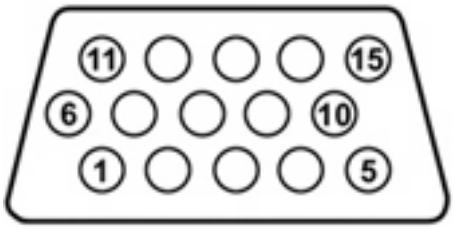
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

Audio-out (headphone)



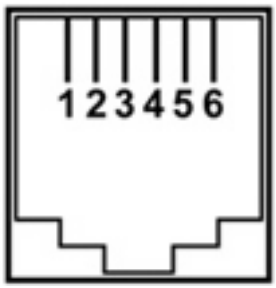
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

External monitor



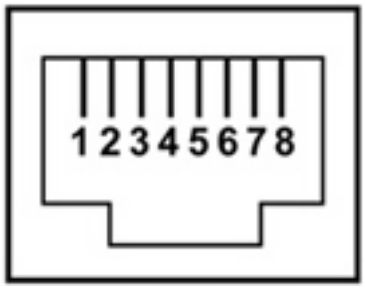
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

RJ-11 (modem)



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

RJ-45 (network)

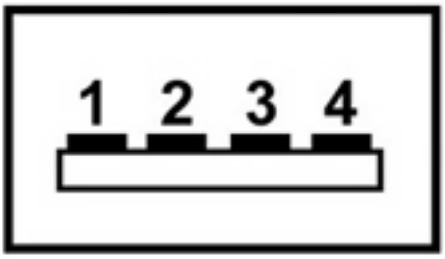


Pin	Signal
1	Transmit +
2	Transmit -
3	Receive +
4	Unused
5	Unused
6	Receive -
7	Unused
8	Unused

S-Video-out

Pin	Signal
1	S-VHS color (C) signal
2	Composite video signal
3	S-VHS intensity (Y) signal
4	S-VHS color ground
5	TV-CD
6	S-VHS intensity ground
7	Composite video ground

Universal Serial Bus



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

10 Power cord set requirements

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

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

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

Requirements for all countries or regions

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

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

Requirements for specific countries or regions

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

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

11 Recycling

Battery

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

Display

⚠ **WARNING!** The backlight contains mercury. Caution must be exercised when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

△ **CAUTION:** The procedures in this appendix can result in damage to display components. The only components intended for recycling purposes are the liquid crystal display (LCD) panel and the backlight. Careful handling must be exercised when removing these components.

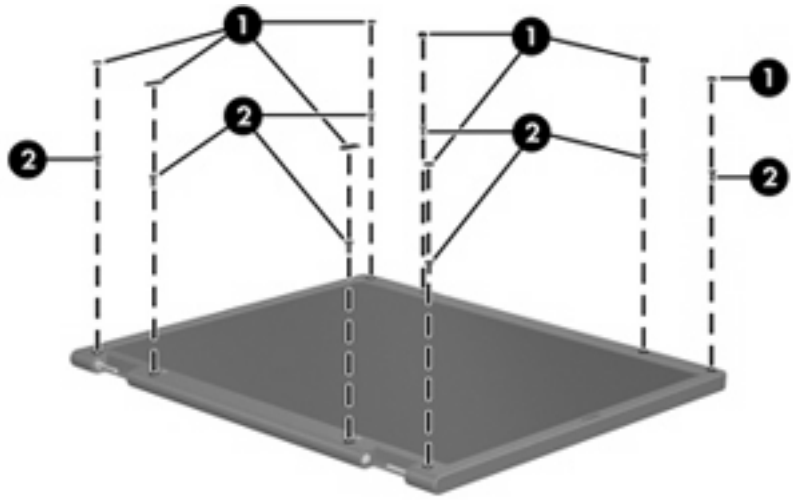
NOTE: **Materials Disposal**. This HP product contains mercury in the backlight in the display assembly that might require special handling at end-of-life. Disposal of mercury may be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities,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

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

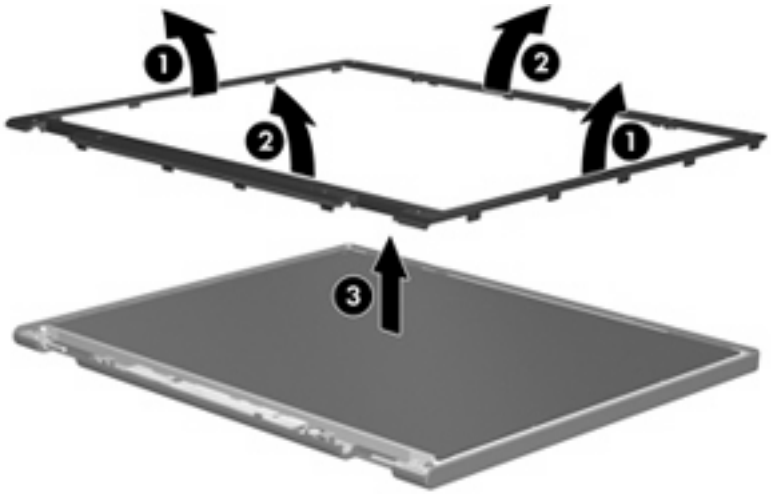
NOTE: The procedures provided in this appendix are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps to disassemble the display assembly:

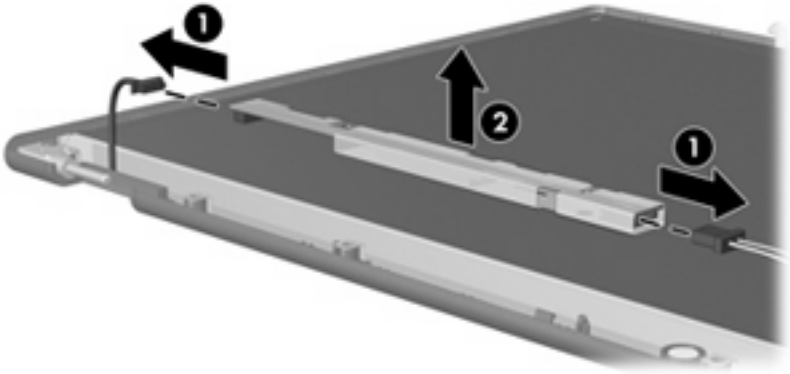
1. Remove all screw covers **(1)** and screws **(2)** that secure the display bezel to the display assembly.



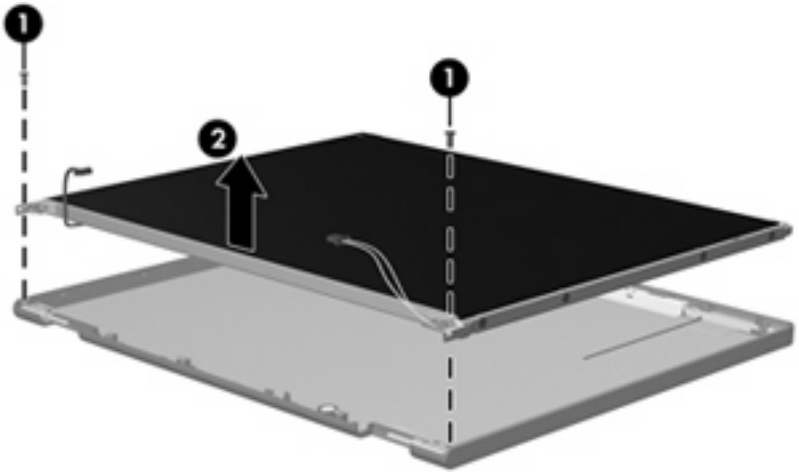
2. Lift up and out on the left and right inside edges **(1)** and the top and bottom inside edges **(2)** of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel **(3)**.



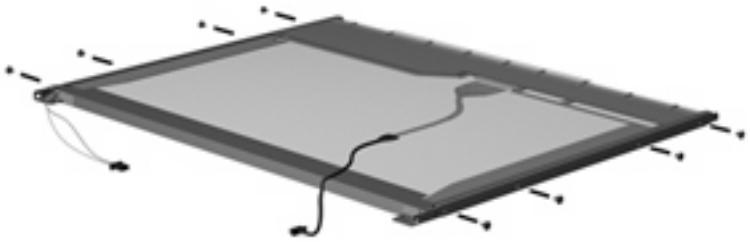
4. Disconnect all display panel cables **(1)** from the display inverter and remove the inverter **(2)**.



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

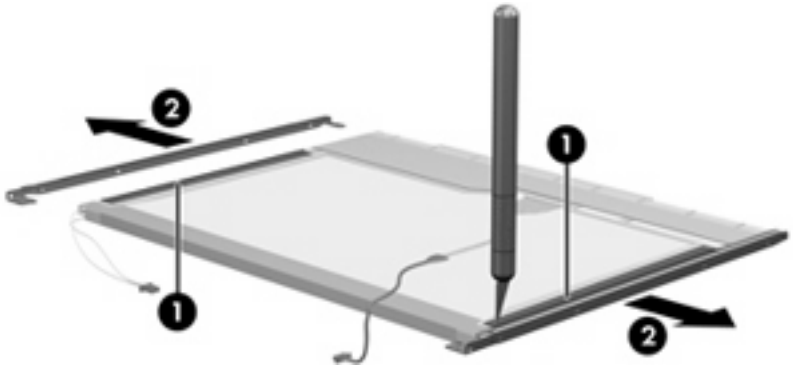


7. Turn the display panel assembly upside down.
8. Remove all screws that secure the display panel frame to the display panel.

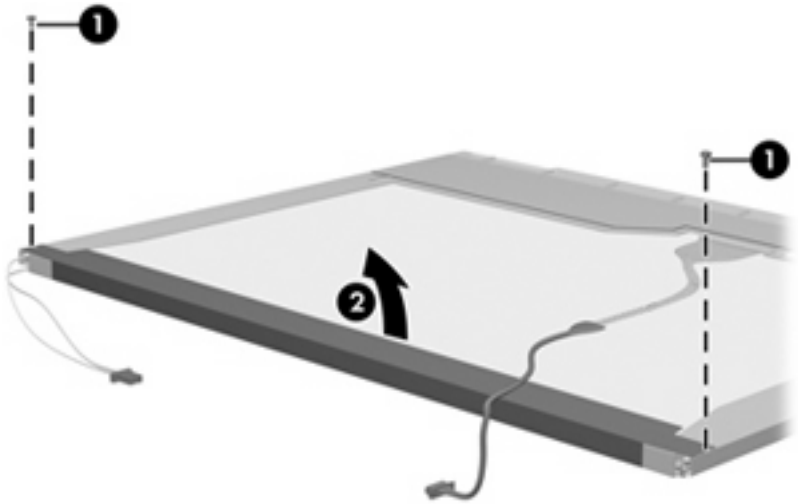


9. Use a sharp-edged tool to cut the tape **(1)** that secures the sides of the display panel to the display panel frame.

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

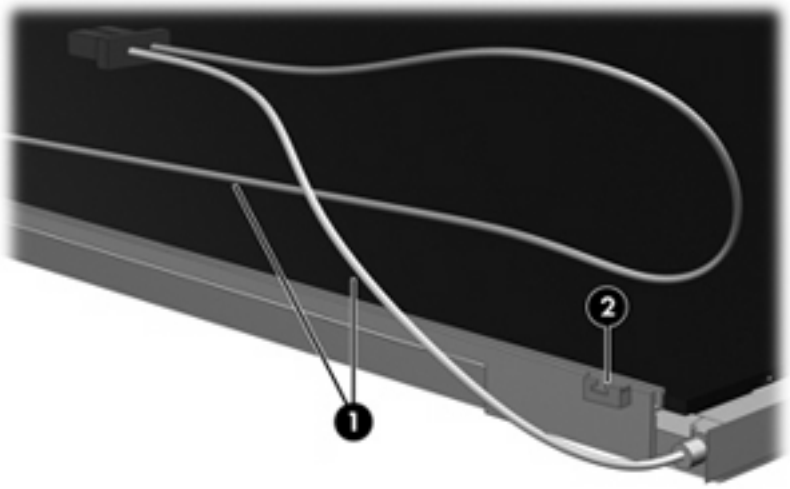


11. Remove the screws **(1)** that secure the backlight cover to the display panel.
12. Lift the top edge of the backlight cover **(2)** and swing it outward.



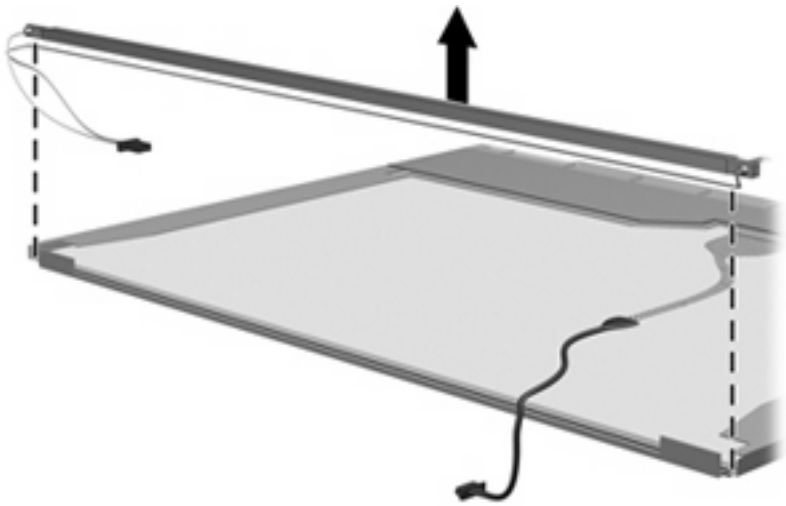
13. Remove the backlight cover.
14. Turn the display panel right-side up.

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



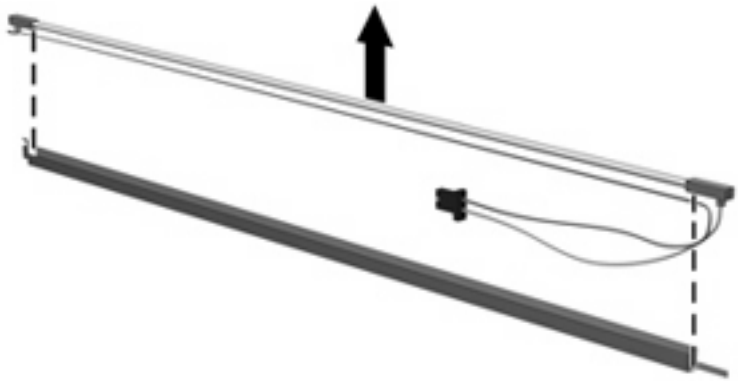
16. Turn the display panel upside down.

17. Remove the backlight frame from the display panel.

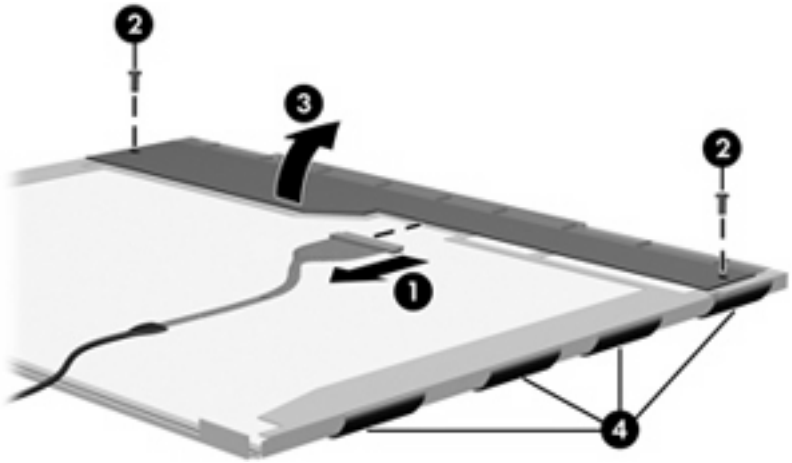


⚠ **WARNING!** The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

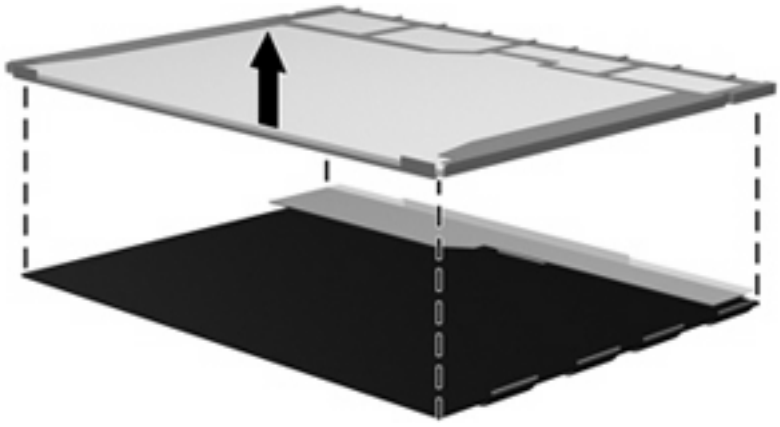
18. Remove the backlight from the backlight frame.



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



23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.

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