

HP Pavilion dv2000 Entertainment PC Maintenance and Service Guide



© Copyright 2007 Hewlett-Packard
Development Company, L.P.

Bluetooth is a trademark owned by its proprietor and used by Hewlett-Packard Company under license. Intel and Core are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Microsoft, Windows, and Windows Vista are either trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries. SD Logo is a trademark of its proprietor.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

First Edition: April 2007

Document Part Number: 448075-001

Safety warning notice

- ⚠ **WARNING!** To reduce the possibility of heat-related injuries or 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 complies with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).
-

Table of contents

1 Product description

2 External component identification

Top components	5
Display components	5
Buttons, speakers, and fingerprint reader	6
Keys	8
Lights	9
TouchPad	10
Front components	11
Left-side components	12
Rear component	13
Right-side components	13
Bottom components	14

3 Illustrated parts catalog

Serial number location	15
Computer major components	16
Display assembly components	21
Door/Cover Kit	23
Cable Kit	24
Mass storage devices	25
Miscellaneous parts	26
Sequential part number listing	27

4 Removal and replacement procedures

Preliminary replacement requirements	33
Tools required	33
Service considerations	33
Plastic parts	33
Cables and connectors	34
Drive handling	34
Grounding guidelines	35
Electrostatic discharge damage	35
Packaging and transporting guidelines	36
Workstation guidelines	36
Equipment guidelines	37
Unknown user password	38

Component replacement procedures	39
Serial number	39
Battery	40
Camera module	41
Display inverter	43
Hard drive	45
WLAN module	48
RTC battery	50
Computer feet	51
Memory module	51
Optical drive	53
Keyboard	54
Switch cover	56
Display assembly	59
Top cover	65
TouchPad	68
Wireless switch board	70
Modem module	71
Audio board	73
Bluetooth module	74
USB board	76
Speaker assembly	78
Display switch module	80
System board	82
Power connector cable	84
ExpressCard assembly	85
Fan/heat sink assembly	87
Processor	90

5 Setup Utility

Starting the Setup Utility	93
Changing the language of the Setup Utility	93
Navigating and selecting in the Setup Utility	94
Displaying system information	94
Restoring default settings in the Setup Utility	94
Using advanced Setup Utility features	95
Closing the Setup Utility	95
Setup Utility menus	95

6 Specifications

Computer specifications	97
14.1-inch, WXGA, BrightView display specifications	98
Hard drive specifications	99
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive specifications	100
System DMA specifications	101
System interrupt specifications	101
System I/O address specifications	102
System memory map specifications	104

7 Screw listing

Phillips PM2.0×5.0 captive screw	106
Phillips PM2.5×4.0 screw	107
Phillips PM3.0×4.0 screw	110
Phillips PM2.0×6.0 shoulder screw	111
Phillips PM2.5×9.0 screw	112
Silver Phillips PM2.0×3.0 screw	114
Phillips PM2.5×7.0 screw	115
Black Phillips PM2.0×3.0 screw	117
Black Phillips PM2.5×5.0 screw	119
Phillips PM2.0×5.0 screw	121
Silver Phillips PM2.5×5.0 screw	122
Phillips PM2.0×2.0 screw	124
Phillips PM2.0×4.0 screw	125
Phillips PM2.0×11.0 captive screw	126

8 Backup and Recovery

Recovering system information	127
Backing up your information	127
When to back up	127
Back up suggestions	128
Using system restore points	128
When to create restore points	128
Create a system restore point	128
Restore to a previous date and time	129
Creating recovery discs	129
Reinstalling software programs and drivers	130
Reinstalling preinstalled programs and drivers	130
Reinstalling programs from discs	130
Performing a recovery	131
Recovering from the recovery discs	131
Recovering from the partition on the hard drive	131
Deleting the recovery partition on the hard drive	132
Updating reinstalled software	132

9 Connector pin assignments

Audio-in (microphone)	133
Audio-out (headphone)	133
External monitor	134
RJ-11 (modem)	135
RJ-45 (network)	135
S-Video-out	136
Universal Serial Bus	136

10 Power cord set requirements

Requirements for all countries or regions	137
Requirements for specific countries or regions	138

11 Recycling

Battery	139
Display	139

Index	145
--------------------	------------

1 Product description

Category	Description
Product Name	HP Pavilion dv2000 Entertainment PC
Processors	Intel® dual-core 64-bit processor with 800-MHz front side bus (FSB) <ul style="list-style-type: none">• Intel Core™ Duo T7300 2.00-GHz processor with 4 MB of L2 cache• Intel Core Duo T7100 1.80-GHz processor with 2 MB of L2 cache• Intel Core Duo T5450 1.67-GHz processor with 2 MB of L2 cache
Chipset	<ul style="list-style-type: none">• Northbridge Intel GM965• Southbridge ICH8m
Graphics	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 dynamic change)
Panels	14.1-inch, WXGA (16:10 aspect ratio) BrightView
Memory	<ul style="list-style-type: none">• Two SODIMM slots• Customer-accessible/upgradable• Supports up to 2 GB of system RAM• DDRII PC2-5300 (667-MHz)<ul style="list-style-type: none">◦ 2048 (1024 × 2)◦ 1536 (1024 + 512)◦ 1024 (1024 × 1, 512 × 2)◦ 512 (512 × 1)
Hard drives	<ul style="list-style-type: none">• Supports 9.5-mm, 2.5-inch hard drives• Serial ATA• Supports the following drives:<ul style="list-style-type: none">◦ 160-GB, 5400-rpm◦ 120-GB, 5400-rpm◦ 80-GB, 5400-rpm

Category	Description
Optical drives	<ul style="list-style-type: none"> • 12.7-mm tray load • Fixed (removal of 1 screw required) • Parallel ATA • Supports the following drives: <ul style="list-style-type: none"> ◦ DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe ◦ DVD±RW and CD-RW Super Multi Double-Layer Combo Drive ◦ DVD-CD/RW Combo Drive
Diskette drive	Supports external USB drive only
Camera	<ul style="list-style-type: none"> • Low-light, VGA camera • Fixed (no tilt) • 640 × 480 by 20 frames per second
Microphone	2 dual-array microphones with software
Audio	<ul style="list-style-type: none"> • HD audio • Supports Windows Vista Premium Logo requirements • Pavilion-branded Altec Lansing speakers
Modem	<ul style="list-style-type: none"> • 56K V.92 data/fax modem • Supports all world-wide certification requirements • Modem cable not included
Ethernet	<ul style="list-style-type: none"> • Integrated Marvell E8039 10/100 network interface card (NIC) • Ethernet cable not included
Wireless	<p>Integrated wireless local area network (WLAN) options by way of wireless module:</p> <ul style="list-style-type: none"> • 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®
External media card	<ul style="list-style-type: none"> • One ExpressCard54 slot • 5-in-1 Digital Media Slot, supports SD, MMC, SDIO, MS, MSpro, xD • Supports miniature versions of SD, MMC, MS Duo with adapter (adapter is not included) • Supports 2nd Mini-PCle
Ports	<ul style="list-style-type: none"> • Audio-in (mono microphone) • Audio-out (stereo headphone) • Audio-out (stereo headphone with S/PDIF) • Consumer infrared

Category	Description
	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 14.1-inch keyboard • TouchPad with 2 buttons and two-way scroll (taps enabled as default)
Power requirements	<ul style="list-style-type: none"> • 12-cell 2.20-Ah Li-ion battery • 6-cell 2.55-Ah Li-ion battery • 6-cell 2.20-Ah Li-ion battery • 65W AC adapter with localized cable plug support (2-wire plug with ground pin, supports 2-pin DC connector)
Security	<ul style="list-style-type: none"> • Security cable slot • Fingerprint reader
Operating system	<p>Preinstalled:</p> <ul style="list-style-type: none"> • Configurable Windows Vista™ embedded "QuickPlay Direct" • Windows Vista Business (32-bit) • Windows Vista Home Basic (32-bit) • Windows Vista Premium (32- and 64-bit) • Windows Vista Ultimate (64-bit)
Serviceability	<p>End-user replaceable parts:</p> <ul style="list-style-type: none"> • AC adapter • Battery (system) • Hard drive • Memory module • Optical drive • WLAN module

2 External component identification

Top components

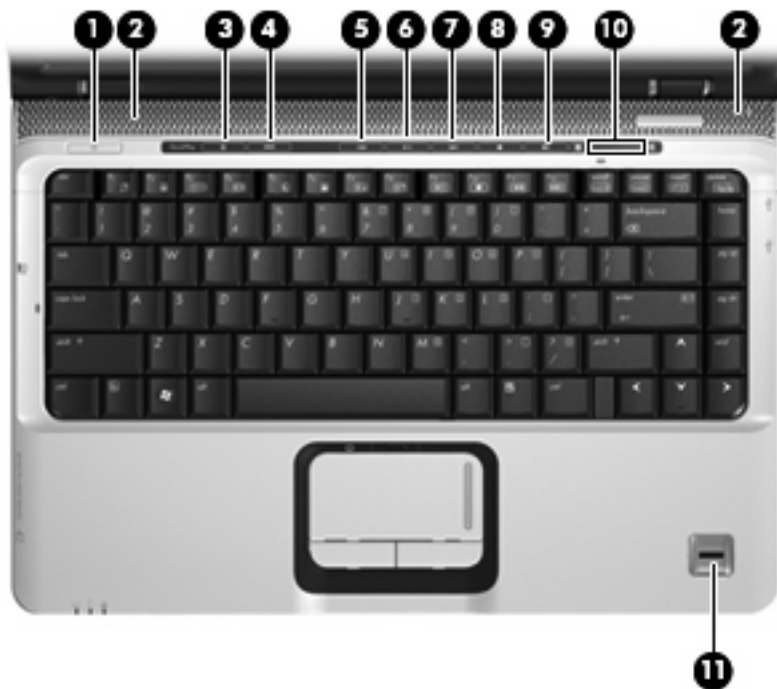
Display components



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

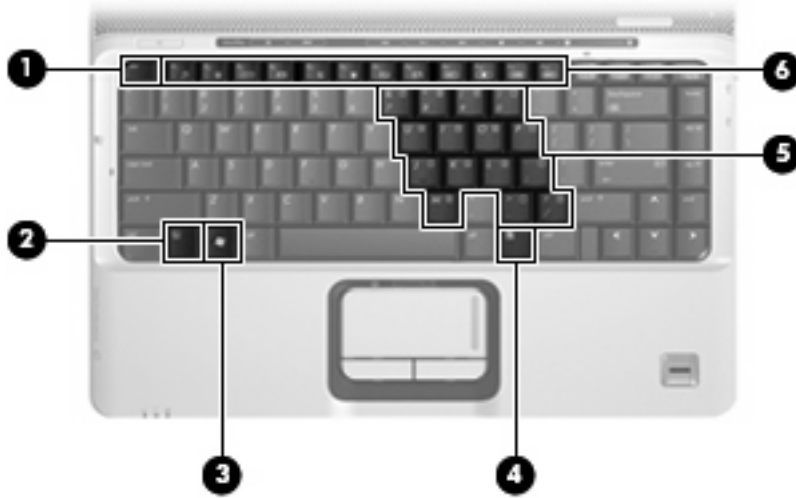


Item	Component	Description
(1)	Power button*	<ul style="list-style-type: none"> When the computer is off, press the button to turn on the computer. When the computer is on, press the button to shut down the computer. When the computer is in the Sleep state, press the button briefly to exit Sleep. When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>If the computer has stopped responding and Windows® shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer.</p> <p>To learn more about power settings, select Start > Control Panel > System and Maintenance > Power Options.</p>
(2)	Speakers (2)	Produce sound.
(3)	Media button	<p>Opens the QuickPlay program.</p> <p>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.</p>
(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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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)*	<ul style="list-style-type: none"> On: The computer is on. Blinking: The computer is in the Sleep state. Off: The computer is off or in Hibernation.
(2)	Battery light	<ul style="list-style-type: none"> On: A battery is charging. Blinking: A battery that is the only available power source has reached a low battery level or a critical battery level. Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
(3)	Drive light	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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> On: The computer is on. Blinking: The computer is in the Sleep state. Off: The computer is off or in Hibernation.
(2)	Battery light	<ul style="list-style-type: none"> On: A battery is charging. Blinking: A battery that is the only available power source has reached a low battery level or a critical battery level. Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
(3)	Drive light	Blinking: The hard drive or optical drive is being accessed.
(4)	Wireless switch	<p>Turns the wireless feature on or off, but does not create a wireless connection.</p> <p>NOTE: To establish a wireless connection, a wireless network must already be set up.</p>
(5)	Wireless light	<ul style="list-style-type: none"> 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



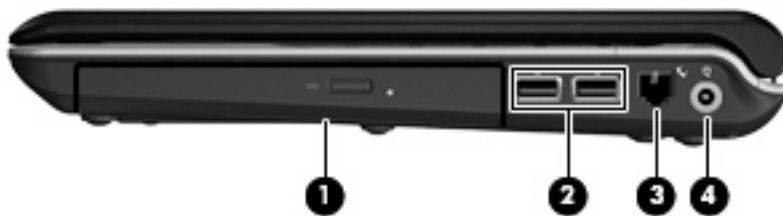
Item	Component	Function
(1)	Security cable slot	Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)	S-Video-out jack	Connects an optional S-Video device such as a television, 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 <i>expansion port 3</i> 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: <ul style="list-style-type: none"> • 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



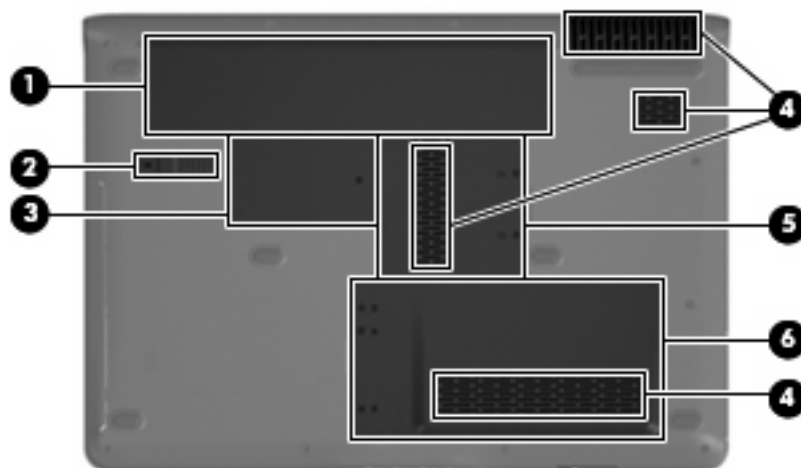
Component	Description
Vent	Enables airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.

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

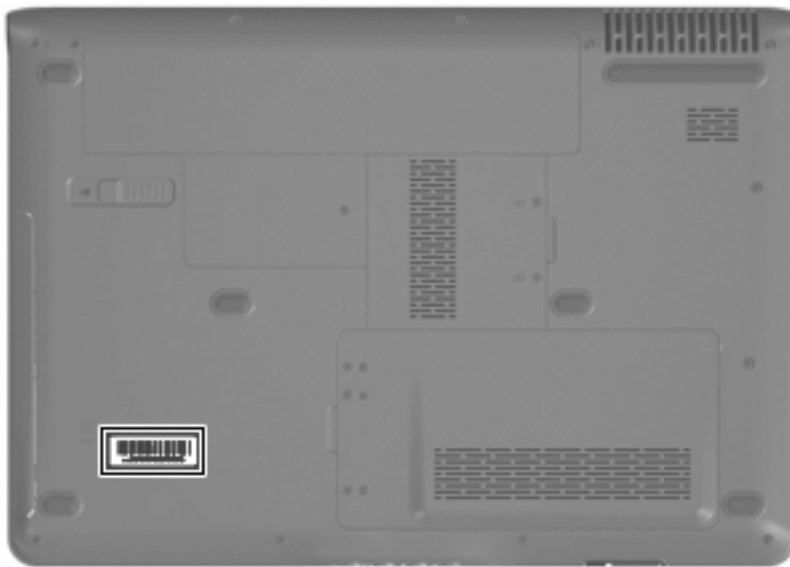


Item	Component	Function
(1)	Battery bay	Holds the battery.
(2)	Battery release latch	Releases the battery from the battery bay.
(3)	Wireless module compartment	Contains a wireless module slot. CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized 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.

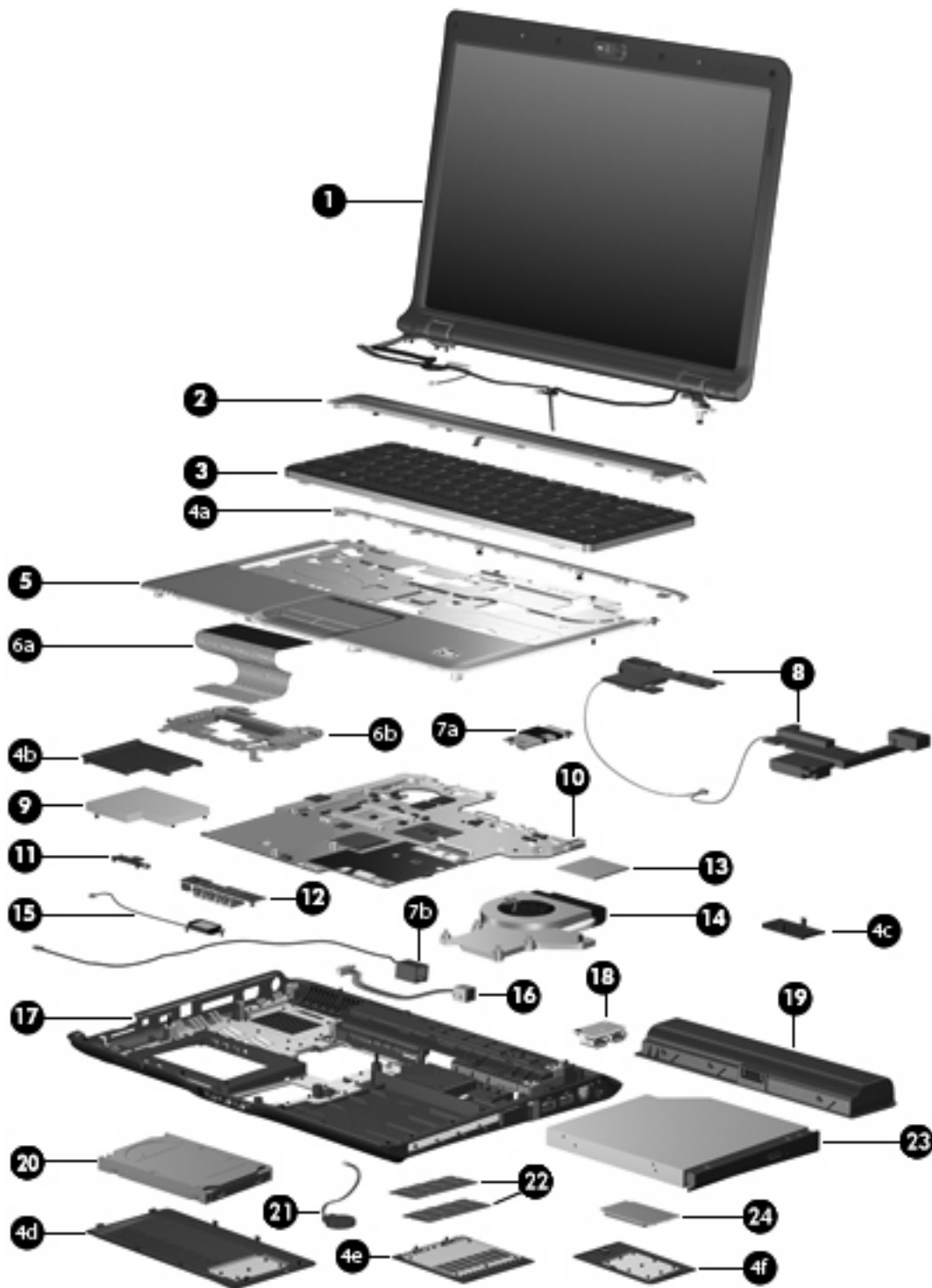
3 Illustrated parts catalog

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	

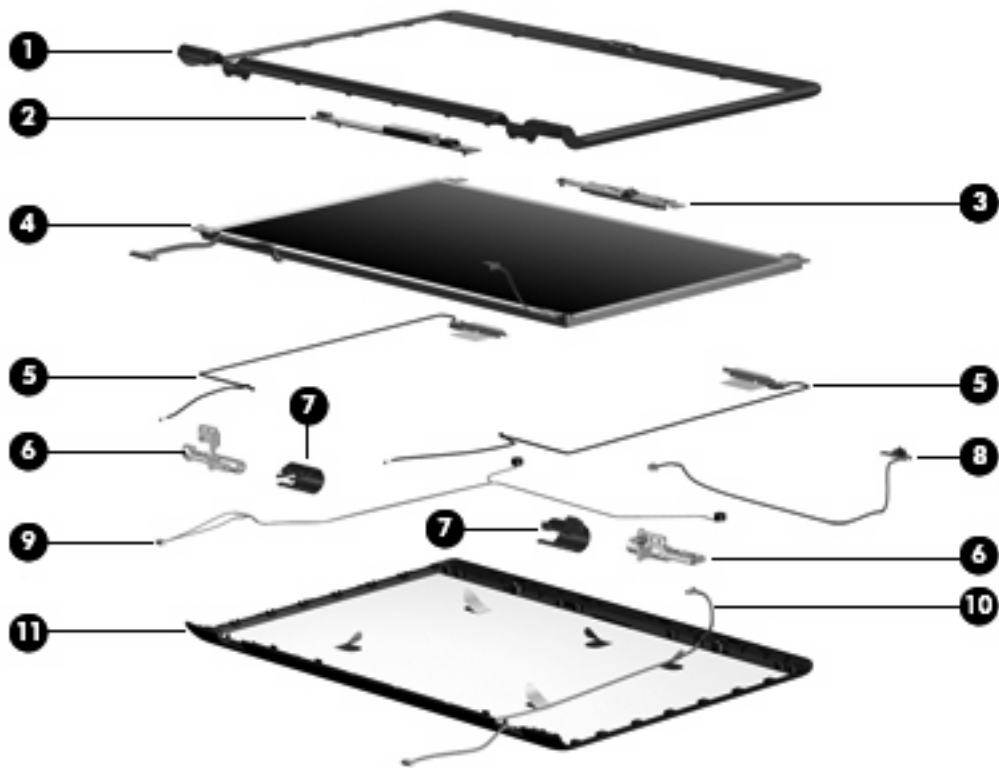
Item	Description	Spare part number
	14.1-inch, WXGA, BrightView, display assembly for use only with computer models equipped with a camera (includes camera, microphones, and WLAN transceivers and antenna cables)	448604-001
	14.1-inch, WXGA, BrightView, display assembly for use only with computer models not equipped with a camera (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 21 for more information on display assembly internal component spare part numbers.	
(2)	Switch covers	
	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
(3)	Keyboards	
	Belgium	448615-021
	Brazil	448615-201
	Denmark, Finland, Norway, and Sweden	448615-DH1
	France	448615-051
	Germany	448615-041
	Greece	448615-DJ1
	Israel	448615-BB1
	Italy	448615-061
	Korea	448615-AD1
	Latin America	448615-161
	The Netherlands and Europe	448615-B31
	Portugal	448615-131
	Russia	448615-251
	Saudi Arabia	448615-171
	Spain	448615-071
	Switzerland	448615-111
	Taiwan	448615-AB1
	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

Item	Description	Spare part number
	Door/Cover Kit (see Door/Cover Kit on page 23 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 only with computer models equipped with a fingerprint reader (includes fingerprint reader board and cable)	448618-001
	For use only with computer models not equipped with a fingerprint reader	448619-001
	For use only with computer models sold at Best Buy (includes fingerprint reader board and cable)	451600-001
(6a)	TouchPad (include TouchPad bracket and TouchPad cable)	451341-001
(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 (included with modem module)	
(8)	Speaker assembly	417089-001
(9)	ExpressCard assembly	417112-001
(10)	System boards (include thermal material)	
	For use only with computer models equipped with both a camera	448596-001
	For use only with computer models not equipped with a camera	448598-001
(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 T7300 (2.00-GHz, 4 MB of L2 cache)	448601-001
	Intel Core Duo T7100 (1.80-GHz, 2 MB of L2 cache)	448600-001
	Intel Core Duo T5450 (1.67-GHz, 2 MB of L2 cache)	451597-001
(14)	Fan/heat sink assembly (includes thermal material)	448625-001
	Fan/heat sink assembly mounting bracket (not illustrated)	417114-001
(15)	Bluetooth module (includes Bluetooth module cable)	397923-002
(16)	Power connector cable	448628-001
(17)	Base enclosure	448621-001
	Rubber Feet Kit (includes computer feet, not illustrated)	417095-001

Item	Description	Spare part number
(18)	USB board (includes USB board cable)	417085-001
(19)	Batteries	
	12-cell, 8.80-Ah	452056-001
	6-cell, 2.55-Ah	441611-001
	6-cell, 2.20-Ah	452057-001
(20)	Hard drives (include hard drive bracket)	
	160-GB, 5400-rpm	452060-001
	120-GB, 5400-rpm	452059-001
	80-GB, 5400-rpm	452058-001
(21)	RTC battery	417076-001
(22)	Memory modules (667-MHz, PC2-5300, 1-DIMM)	
	1024-MB	452062-001
	512-MB	452061-001
(23)	Optical drives (include bezel and bracket)	
	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
(24)	WLAN modules	
	802.11a/b/g/n WLAN modules:	
	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> For use in Australia, New Zealand, Pakistan, the People's Republic of China, and South Korea 	441086-003
	802.11a/b/g WLAN modules:	
	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> 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, 	452063-002

Item	Description	Spare part number
	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	
	<ul style="list-style-type: none"> 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
	Cable Kit (not illustrated; see Cable Kit on page 24 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 (includes openings for camera and microphones)	448607-001
	For use only with computer models not equipped with a camera (includes openings for microphones)	448606-001
	For use only with computer models sold at Best Buy (includes openings for camera and microphones)	451907-001
(2)	Display inverter (includes Mylar shield)	417097-001
(3)	Camera module	417113-001
(4)	14.1-inch, WXGA, BrightView display panel (includes display panel cable)	448602-001
(5)	Wireless Antenna Kit	448609-001
	Display Hinge Kit	430473-001
(6)	Left and right display hinges	
(7)	Left and right display hinge covers	
(8)	Display switch module	
	Display Cable Kit	448610-001
(9)	Microphones and cables	
(10)	Camera module cable	

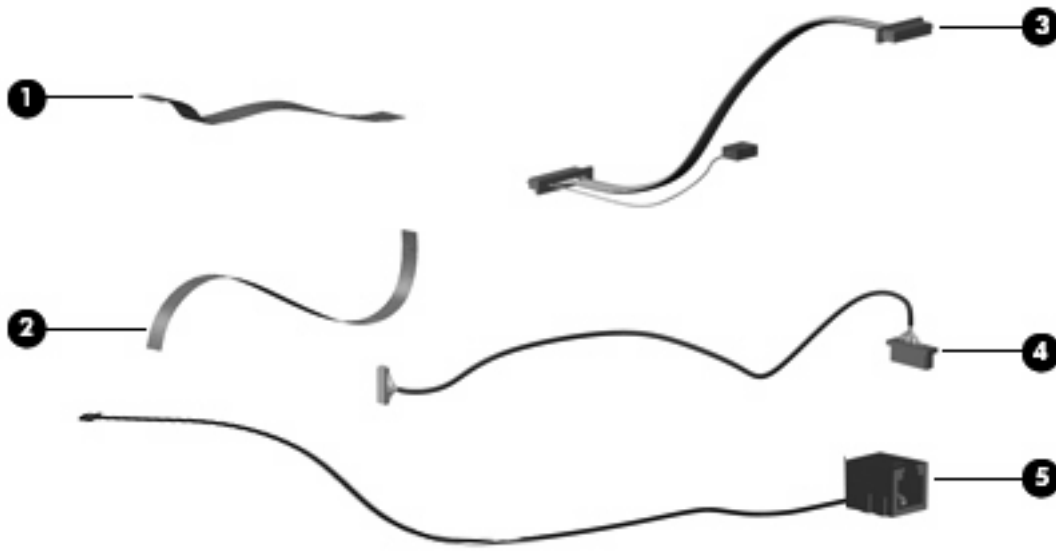
Item	Description	Spare part number
(11)	Display enclosures	
	Display enclosure (includes logo and WLAN wireless antenna transceivers and cables)	448605-001
	Display enclosure for use only with computer models sold at Best Buy (includes logo and WLAN wireless antenna transceivers and cables)	451598-001
	Display Label Kit (not illustrated)	448608-001
	Display Screw Kit (includes display bezel rubber screw covers, not illustrated)	417104-001

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)	
	160-GB, 5400-rpm	452060-001
	120-GB, 5400-rpm	452059-001
	80-GB, 5400-rpm	452058-001
(2)	Optical drives (include bezel and bracket)	
	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

Miscellaneous parts

Description	Spare part number
AC adapters	
90W PFC AC adapter	409515-001
65W 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 tuner	412175-001
DVB-T antenna adapter	412176-001
Earbud headset	371693-003
HP backpack	405527-001
HP carrying case	418162-001
HP Remote Control	407313-001
Infrared emitter with cable	439129-001
Optical wired mouse	436238-001
RF input adapter cable (without ferrite)	407940-001
Vista remote control (fits into ExpressCard slot)	439128-001
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
India	383496-D61
Israel	383496-BB1
Italy	383496-061
Korea	383496-AD1
The People's Republic of China	383496-AA1
South Africa	383496-AR1
Switzerland	383496-111

Description	Spare part number
Taiwan	383496-AB1
The United Kingdom and Hong Kong	383496-031
Screw Kit	417108-001
<ul style="list-style-type: none"> • 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
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-AA1	Power cord for use in the People's Republic of China
383496-AB1	Power cord for use in Taiwan

Spare part number	Description
383496-AD1	Power cord for use in 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
407939-001	Composite video cable
407940-001	RF input adapter cable (without ferrite)
409407-004	802.11b/g WLAN module for use in Thailand
409515-001	90W PFC AC adapter
412175-001	DVB-T tuner
412176-001	DVB-T antenna adapter
417073-001	Door/Cover Kit (see Door/Cover Kit on page 23 for more Door/Cover Kit component information)
417075-001	Cable Kit (see Cable Kit on page 24 for more Cable Kit component information)
417076-001	RTC battery
417085-001	USB board (includes USB board cable)
417089-001	Speaker assembly
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
417108-001	Screw Kit
417112-001	ExpressCard assembly
417113-001	Camera module
417114-001	Fan/heat sink assembly mounting bracket
417220-001	65W PFC AC adapter
418162-001	HP carrying case
430473-001	Display Hinge Kit (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)
436238-001	Optical wired mouse

Spare part number	Description
439128-001	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	Vista remote control (does not fit into ExpressCard slot)
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
441611-001	6-cell, 2.55-Ah battery
448596-001	System board for use only with computer models equipped with a camera (includes thermal material)
448598-001	System board for use only with computer models not equipped with a camera (includes thermal material)
448600-001	Intel Core Duo T7100 processor (1.80-GHz, 2 MB of L2 cache; includes thermal material)
448601-001	Intel Core Duo T7300 processor (2.00-GHz, 4 MB of L2 cache; includes thermal material)
448602-001	14.1-inch, WXGA, BrightView display panel (includes display panel cable)
448603-001	14.1-inch, WXGA, BrightView, display assembly for use only with computer models not equipped with a camera (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 (includes camera, 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 only with computer models not equipped with a camera (includes openings for microphones)
448607-001	Display bezel for use only with computer models equipped with a camera (includes openings for camera and microphones)
448608-001	Display Label Kit
448609-001	Wireless Antenna Kit
448610-001	Display Cable Kit (includes microphones and microphone cables and camera 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

Spare part number	Description
448615-061	Keyboard for use in Italy
448615-071	Keyboard for use in Spain
448615-111	Keyboard for use in Switzerland
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-AB1	Keyboard for use in Taiwan
448615-AD1	Keyboard for use in Korea
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 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 not equipped with a fingerprint reader (includes TouchPad and TouchPad cable)
448621-001	Base enclosure
448625-001	Fan/heat sink assembly (includes thermal material)
448626-001	Audio board (includes audio connectors, infrared lens, and audio board cable)
448628-001	Power connector cable
451312-001	Switch cover (includes LED board and cable and power button board and cable)
451341-001	TouchPad (includes TouchPad bracket and TouchPad cable)
451597-001	Intel Core Duo T5450 processor (1.67-GHz, 2 MB of L2 cache, includes thermal material)
451598-001	Display enclosure for use only with computer models sold at Best Buy (includes logo and WLAN wireless antenna transceivers and cables)
451599-001	Switch cover for use only with computer models 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 sold at Best Buy
451906-001	14.1-inch, WXGA, BrightView, display assembly for use only with computer models sold at Best Buy (includes camera, camera cable, microphones, and WLAN transceivers and antenna cables)
451907-001	Display bezel for use only with computer models sold at Best Buy (includes openings for camera and microphones)

Spare part number	Description
452050-001	DVD/CD-RW Combo Drive (includes bezel and bracket)
452051-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive (includes bezel and bracket)
452052-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe (includes bezel and bracket)
452056-001	12-cell, 8.80-Ahr battery
452057-001	6-cell, 2.20-Ahr battery
452058-001	80-GB, 5400-rpm hard drive (includes hard drive bracket)
452059-001	120-GB, 5400-rpm hard drive (includes hard drive bracket)
452060-001	160-GB, 5400-rpm hard drive (includes hard drive bracket)
452061-001	1024-MB memory module (667-MHz, PC2-5300, 1-DIMM)
452062-001	512-MB memory module (667-MHz, PC2-5300, 1-DIMM)
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 sold at Best Buy

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 are ready to install them.

Use nonmagnetic tools.

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

Unknown user password

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

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

Before disassembling the computer, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the RTC battery (see [RTC battery on page 50](#)).
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.

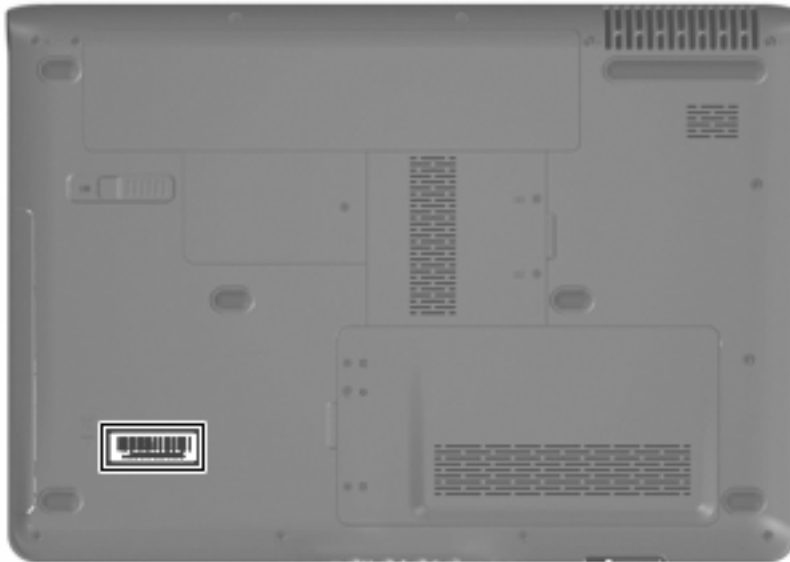
Component replacement procedures

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.



Battery

Description	Spare part number
12-cell, 2.20-Ah Li-ion battery	452056-001
6-cell, 2.55-Ah Li-ion battery	441611-001
6-cell, 2.20-Ah Li-ion battery	452057-001

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 59](#).

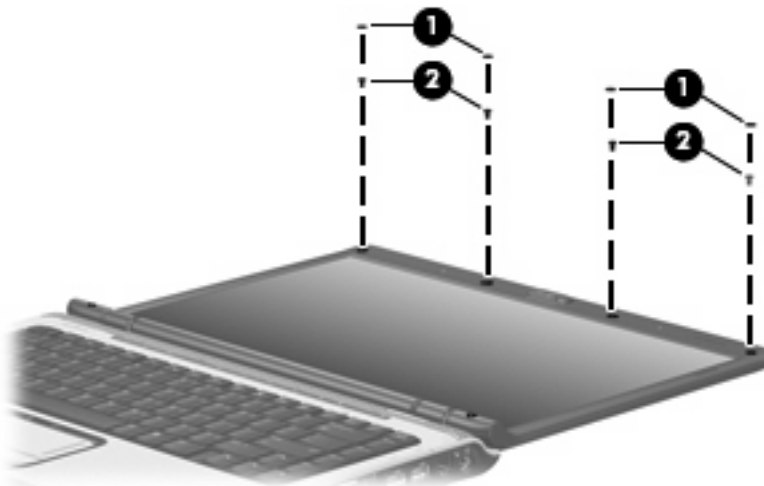
Description	Spare part number
Camera module (includes 2-sided tape)	417113-001

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 40](#)).

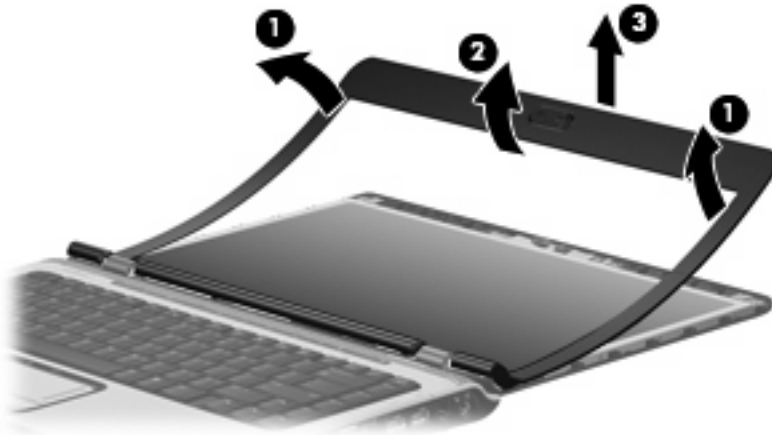
Remove the camera module:

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.

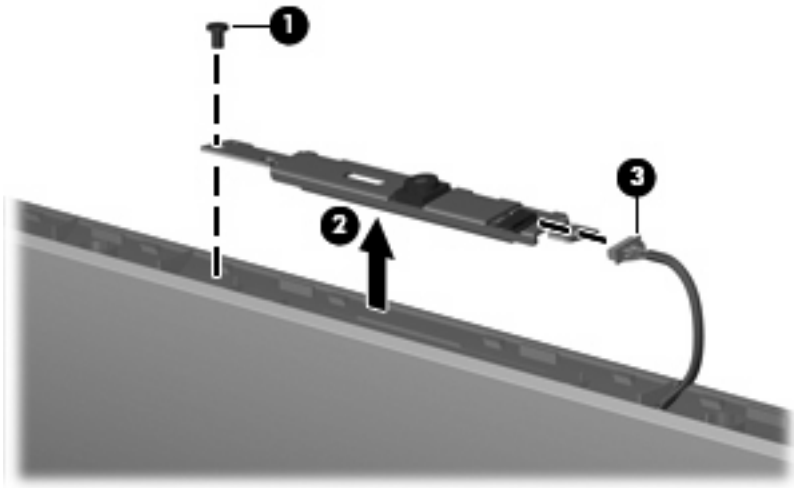


5. Flex the inside edges of the left and right sides **(1)** and the top edge **(2)** of the display bezel until the bezel disengages from the display enclosure.

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

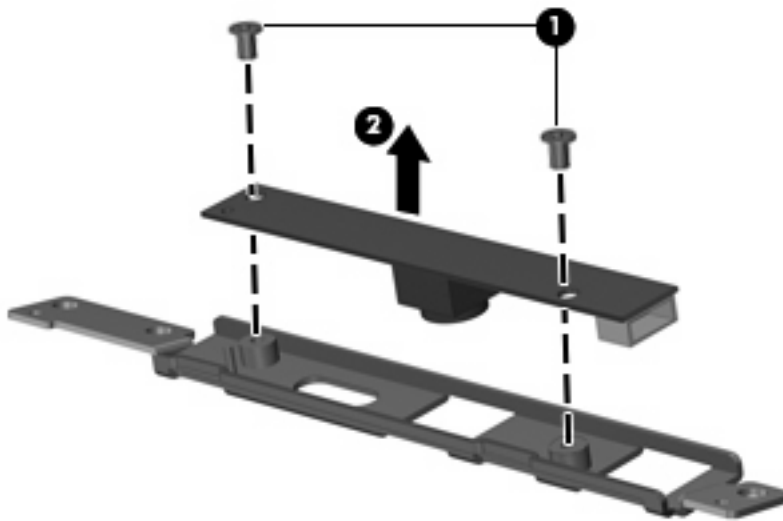


7. Remove the Phillips PM2.5×4.0 screw **(1)** that secures the camera module assembly to the display enclosure.
8. Release the camera module assembly **(2)** from the display enclosure as far as the camera module cable allows.
9. Disconnect the camera module cable **(3)** from the camera module.



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 59](#).

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

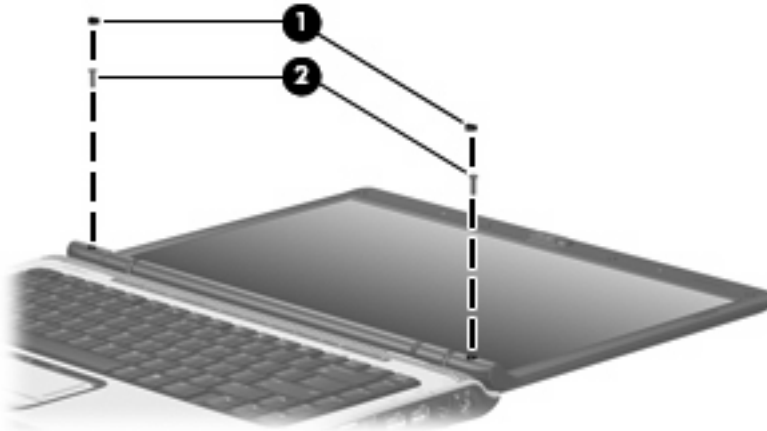
Before removing the display inverter, follow these steps:

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 40](#)).

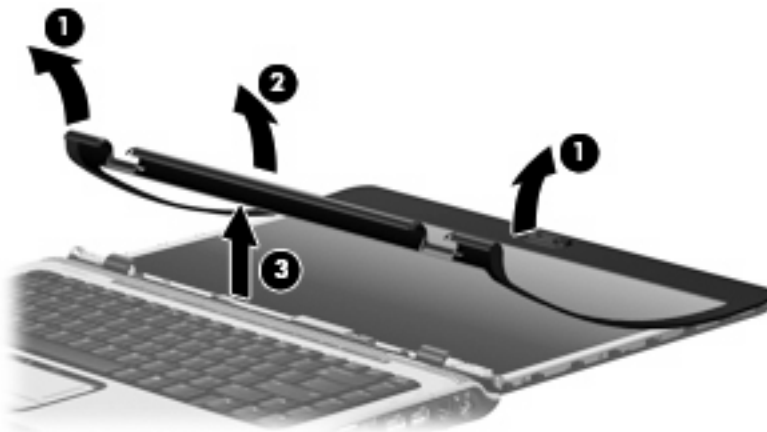
Remove the display inverter:

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.

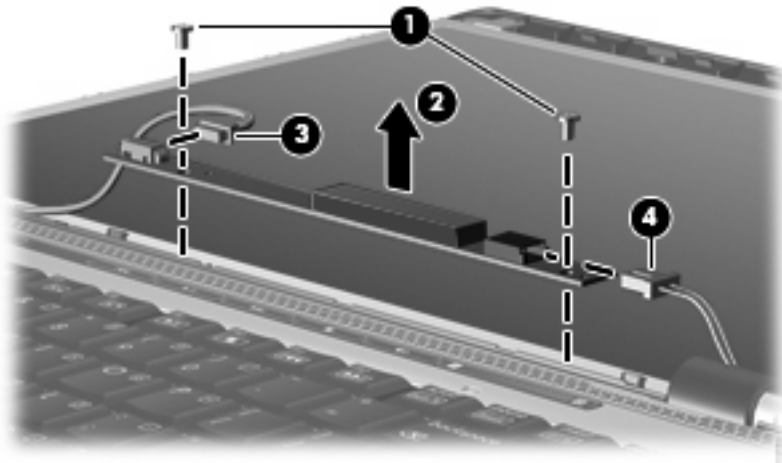


5. Flex the inside edges of the left and right sides **(1)** and the bottom edge **(2)** of the display bezel until the bezel disengages from the display enclosure.
6. Release the display bezel bottom edge **(3)**. Display bezels are available using the following spare part numbers:
 - 448607-001 (for use only with computer models equipped with a camera; includes openings for camera and microphones)
 - 448606-001 (for use only with computer models not equipped with a camera; includes openings for microphones)
 - 451907-001 (for use only with computer models sold at Best Buy; includes openings for camera 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
160-GB, 5400-rpm	452060-001
120-GB, 5400-rpm	452059-001
80-GB, 5400-rpm	452058-001

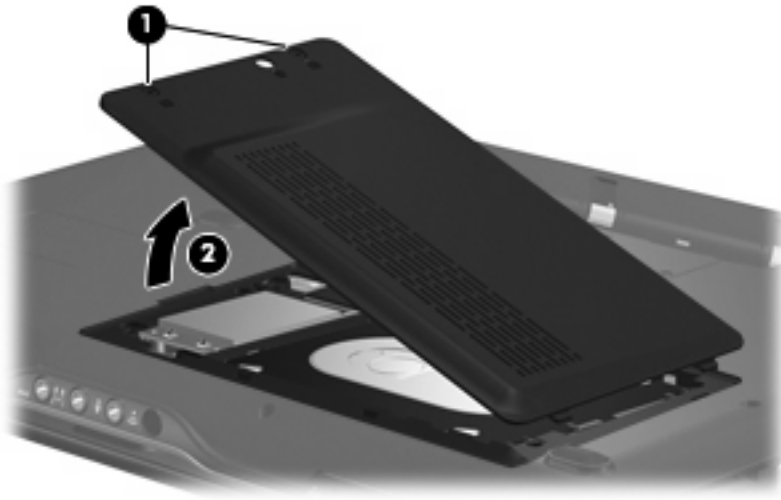
Before removing the hard drive, follow these steps:

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 40](#)).

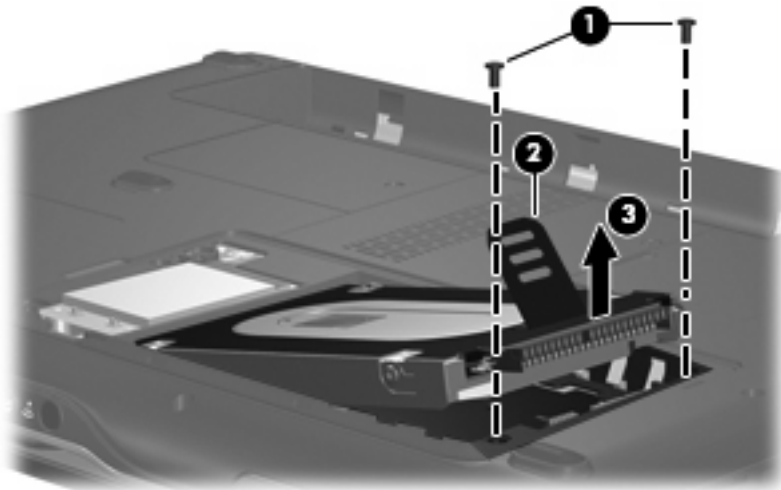
Remove the hard drive:

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.

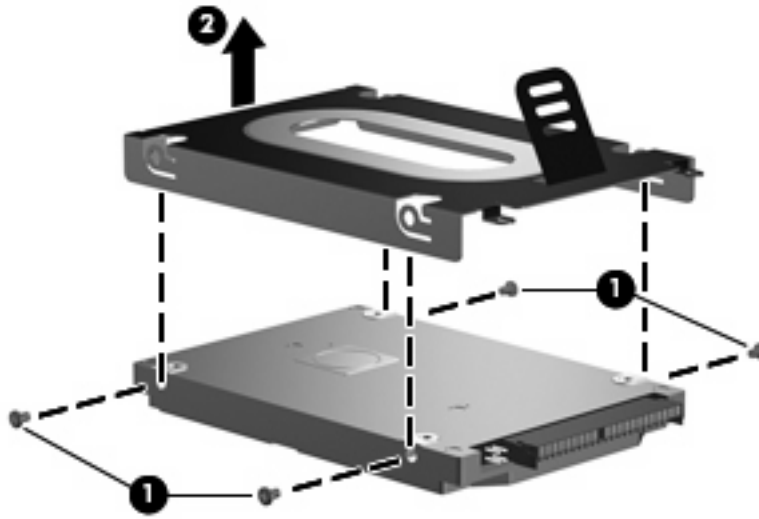


4. Remove the two black Phillips PM2.5×5.0 screws **(1)** that secure the hard drive to the computer.
5. Use the Mylar tab **(2)** to lift the hard drive **(3)** until it disconnects from the computer.



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.

- 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:	
<ul style="list-style-type: none">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
<ul style="list-style-type: none">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
<ul style="list-style-type: none">For use in Australia, New Zealand, Pakistan, the People's Republic of China, and South Korea	441086-003
802.11a/b/g WLAN modules:	
<ul style="list-style-type: none">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
<ul style="list-style-type: none">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
<ul style="list-style-type: none">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

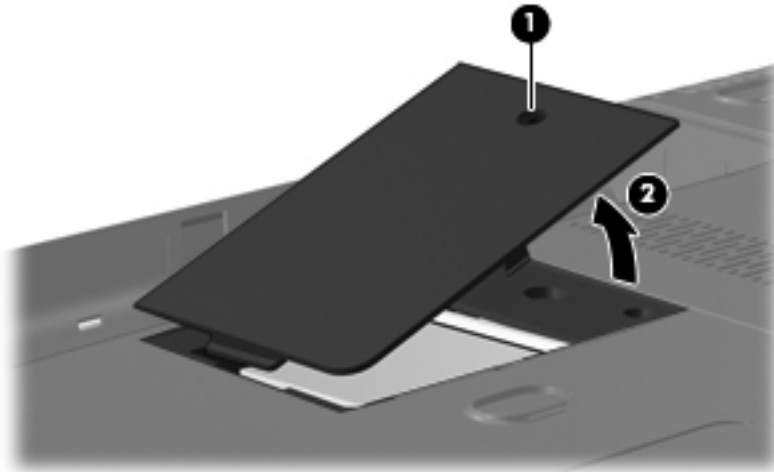
Before removing the WLAN module, follow these steps:

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 40](#)).


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.




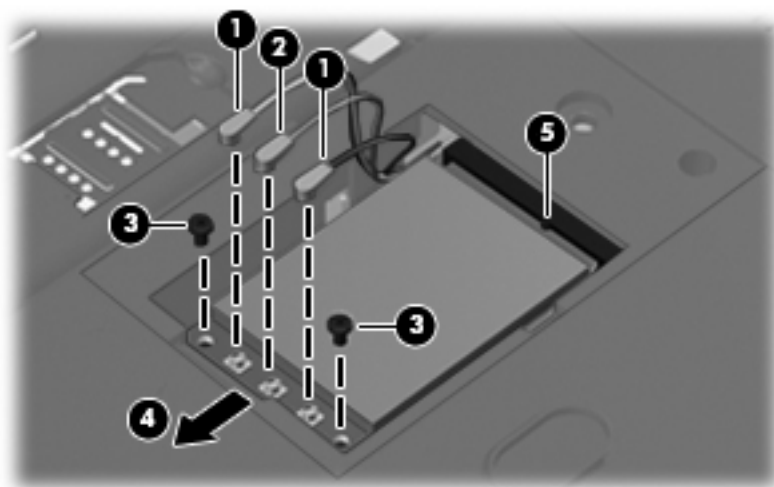
4. Disconnect the WLAN antenna cables **(1)** from the WLAN module.

 **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.

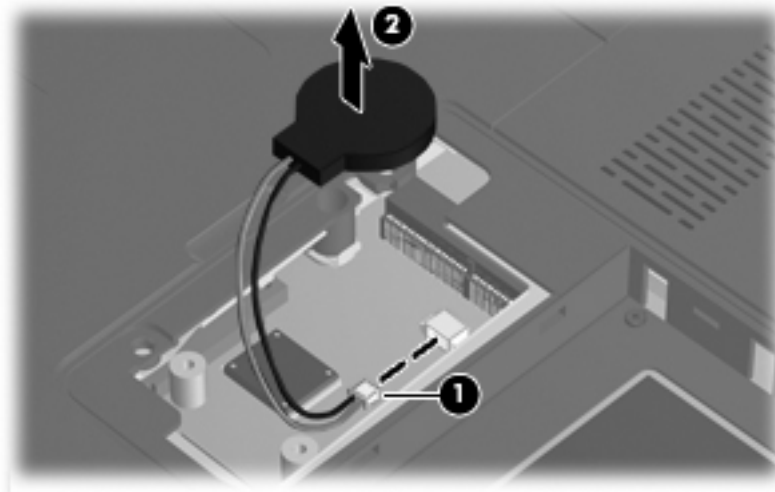
Description	Spare part number
RTC battery (includes 2-sided tape)	417076-001

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 40](#)).
5. Remove the hard drive cover (see [Hard drive on page 45](#)).

Remove the RTC battery:

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

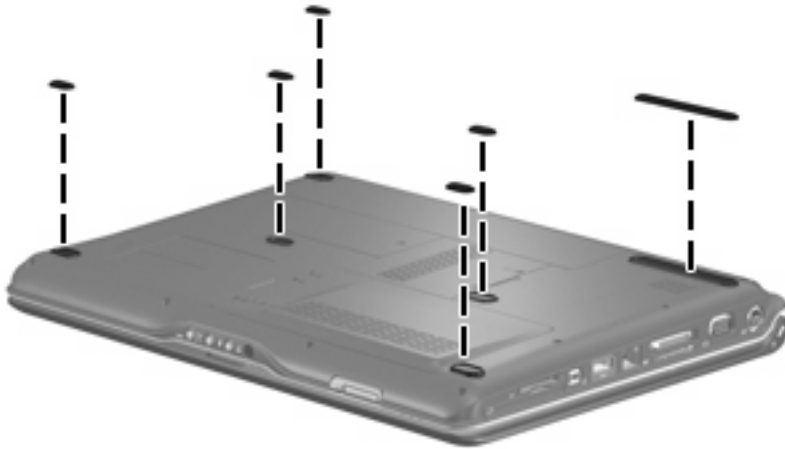


Reverse this procedure to install the RTC battery.

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.



Memory module

Description	Spare part number
1024-MB (667-MHz, PC2-5300, 1-DIMM)	452062-001
512-MB (667-MHz, PC2-5300, 1-DIMM)	452061-001

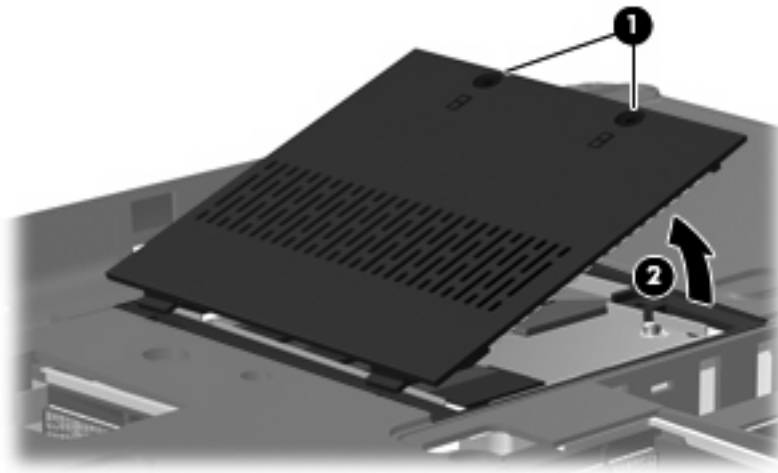
Before removing the memory module, follow these steps:

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 40](#)).


Remove the memory module:

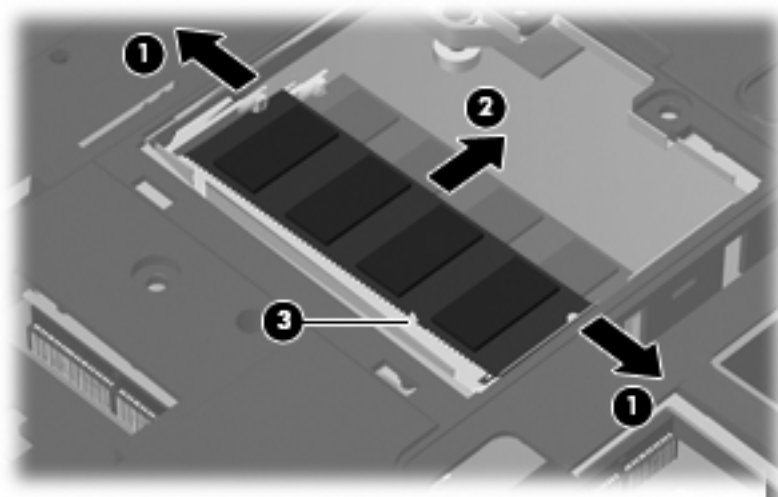
1. Position the computer with the front toward you.
2. Loosen the two Phillips PM2.0×5.0 captive screws **(1)** that secure the memory module compartment cover to the computer.

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.

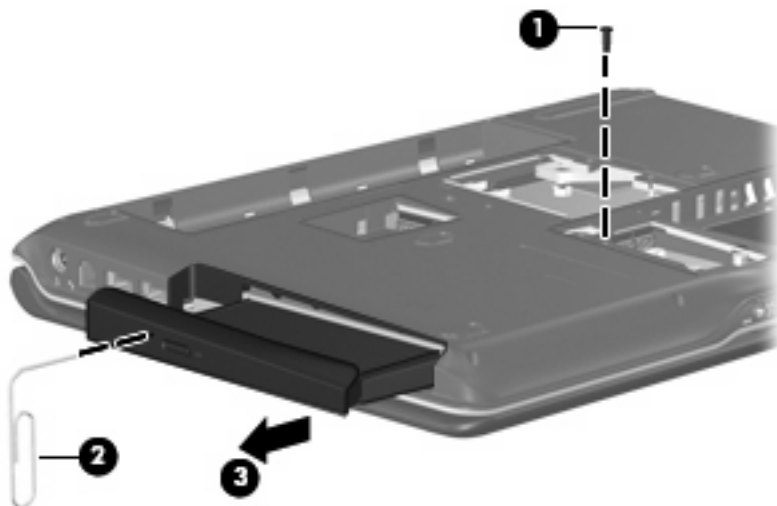
Description	Spare part number
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	452052-001
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	452051-001
DVD/CD-RW Combo Drive	452050-001

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 40](#)).

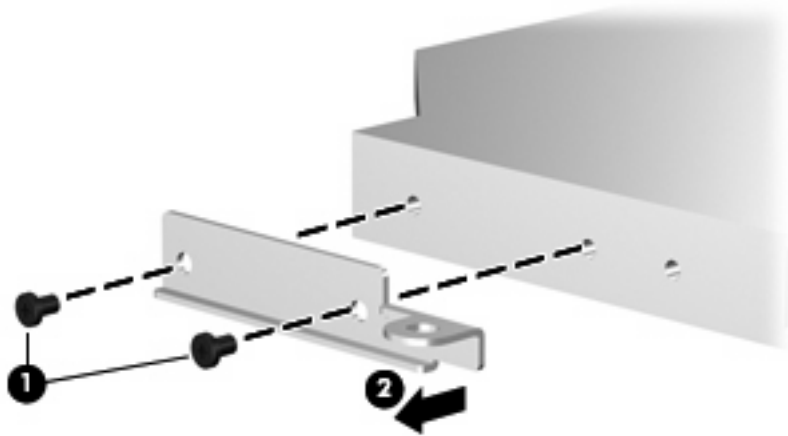
Remove the optical drive:

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.

- Remove the optical drive bracket **(2)**.



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

Keyboard

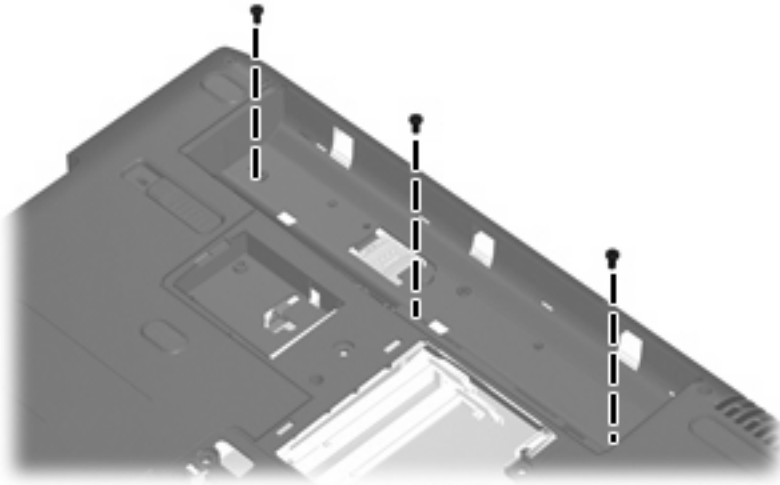
Countries or regions	Spare part number	Countries or regions	Spare part number
Belgium	448615-021	Portugal	448615-131
Brazil	448615-201	Russia	448615-251
Denmark, Finland, Norway, and Sweden	448615-DH1	Saudi Arabia	448615-171
France	448615-051	Spain	448615-071
Germany	448615-041	Switzerland	448615-111
Greece	448615-DJ1	Taiwan	448615-AB1
Israel	448615-BB1	Thailand	448615-281
Italy	448615-061	Turkey	448615-141
Korea	448615-AD1	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:

- Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
- Disconnect all external devices connected to the computer.
- Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
- Remove the battery (see [Battery on page 40](#)).

Remove the keyboard:

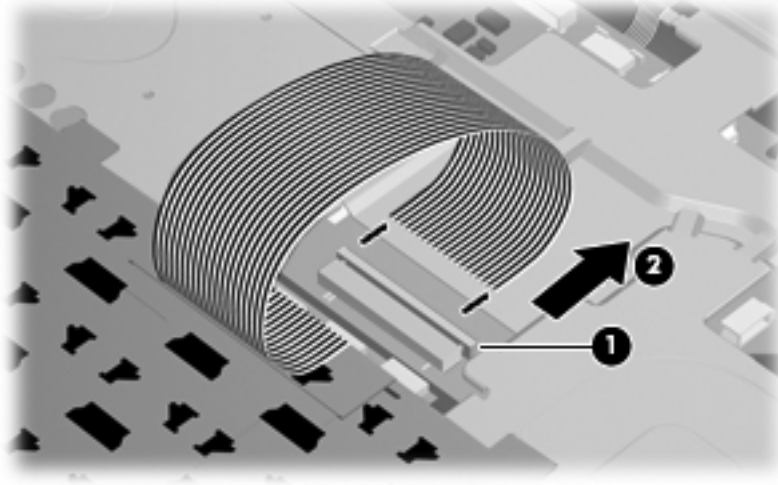
1. Turn the computer upside down, with the front toward you.
2. Remove the three Phillips PM2.5x7.0 screws that secure the keyboard to the computer.



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

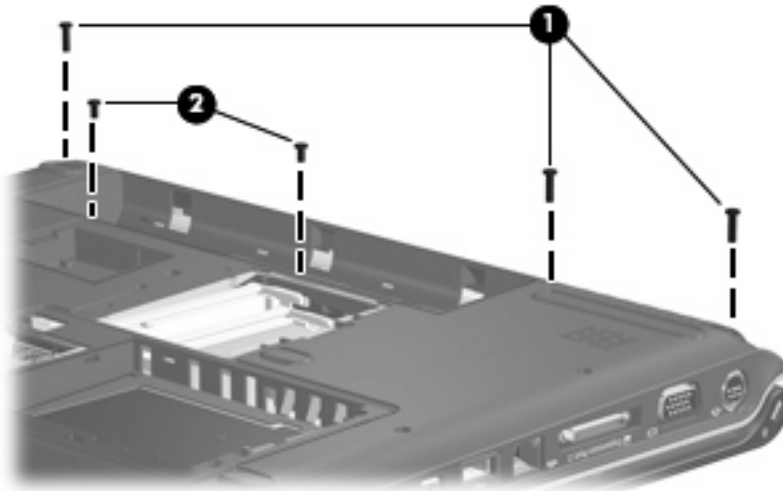
Description	Spare part number
Switch cover (includes LED board and cable and power button board and cable)	451312-001
For use only with computer models sold at Best Buy (includes LED board and cable and power button board and cable)	451599-001

Before removing the switch cover, follow these steps:

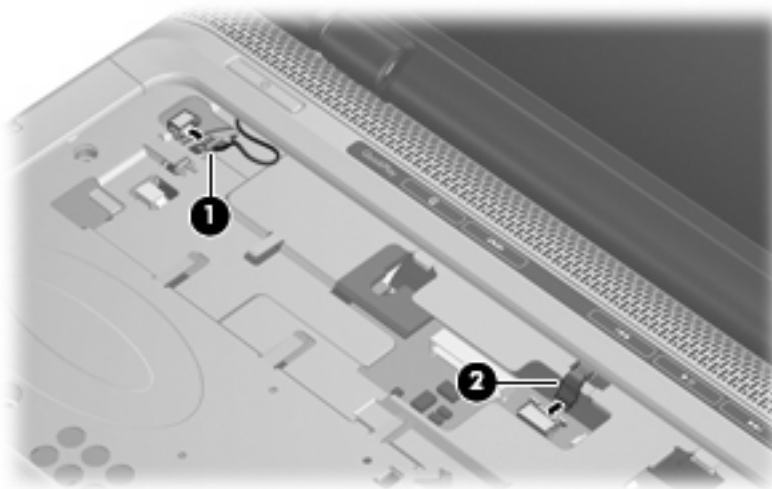
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the keyboard (see [Keyboard on page 54](#)).

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.

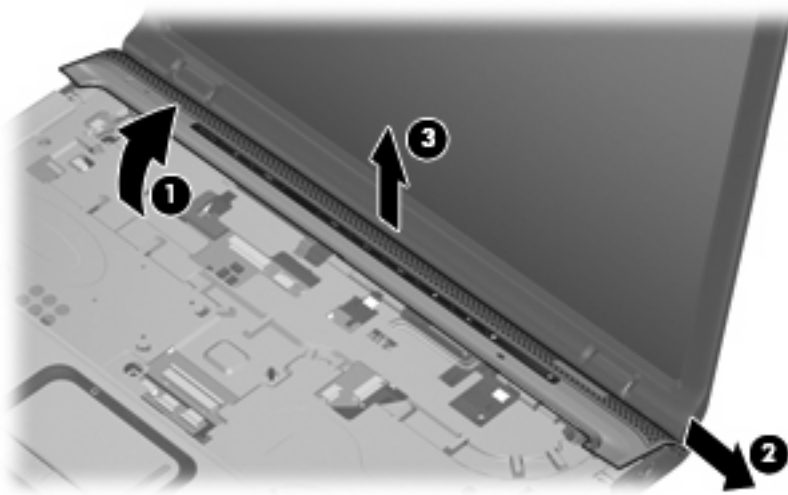


2. Turn the computer display-side up, with the front toward you.
3. Open the computer as far as possible.
4. Disconnect the power button board cable **(1)** from the system board.
5. Release the ZIF connector to which the LED board cable **(2)** is connected and disconnect the cable from the system board.



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 (includes camera, 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 (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, 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 40](#)).
5. Disconnect the wireless antenna cables from the WLAN module (see [WLAN module on page 48](#)).
6. Remove the following components:
 - a. Keyboard (see [Keyboard on page 54](#))
 - b. Switch cover (see [Switch cover on page 56](#))

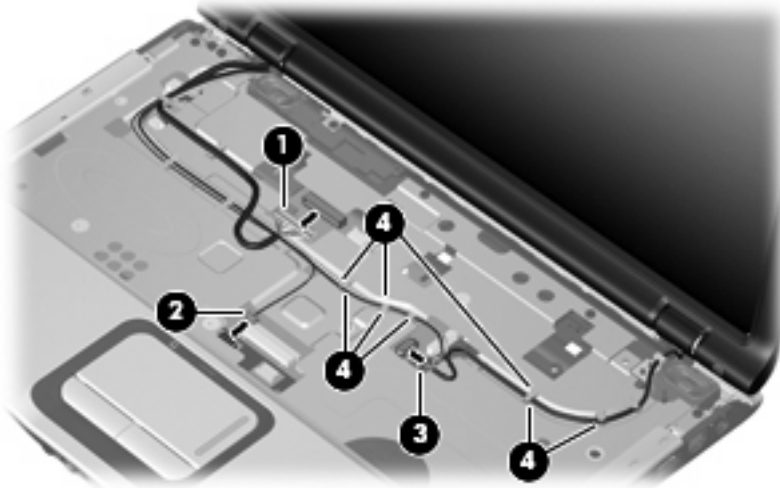
Remove the display assembly:

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.



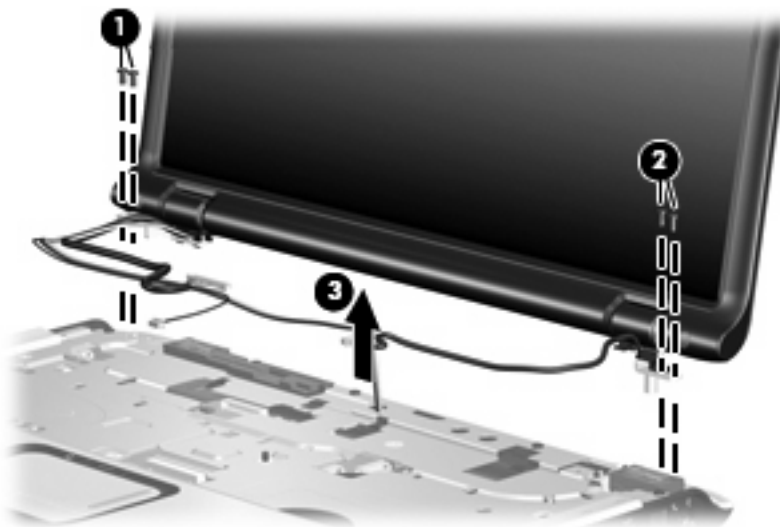
3. Turn the computer display-side up, with the front toward you.

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).



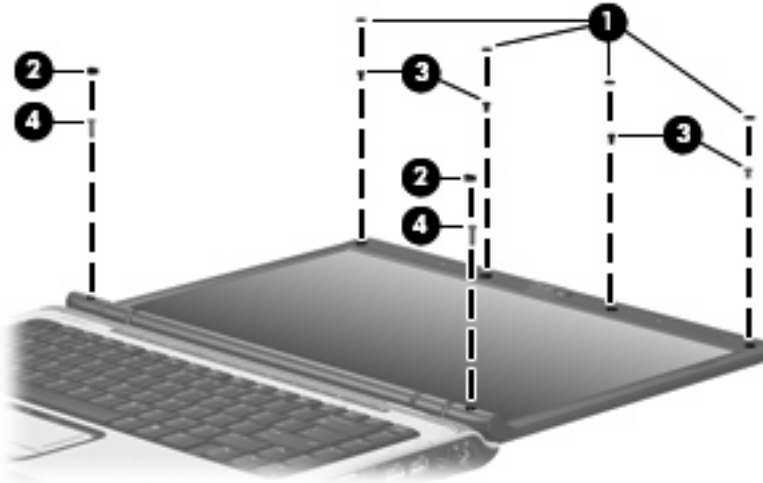
9. If it is necessary to replace the display bezel or any of the display assembly internal components, remove the following screw covers and screws:

(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

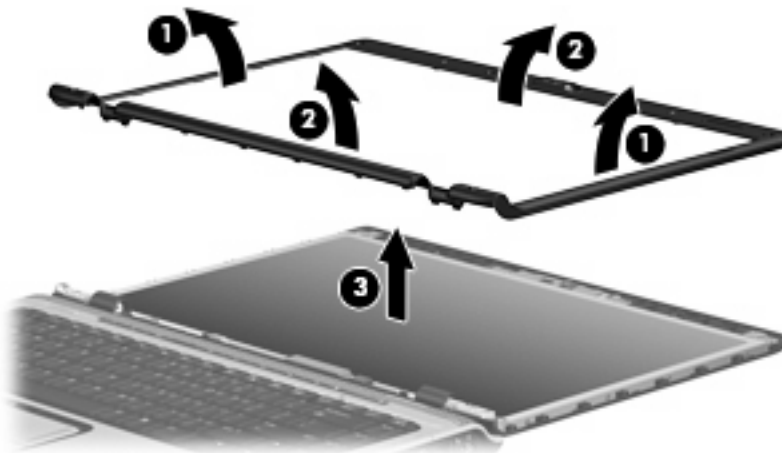
(4) Two Phillips PM2.5×9.0 screws on the display bezel bottom edge




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.

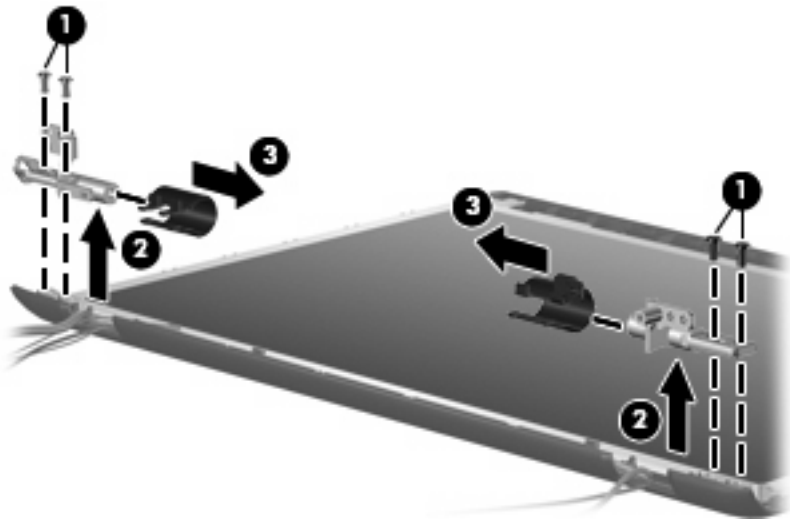
11. Remove the display bezel **(3)**. Display bezels are available using the following spare part numbers:

- 448607-001 (for use only with computer models equipped with a camera)
- 448606-001 (or use only with computer models not equipped with a camera)

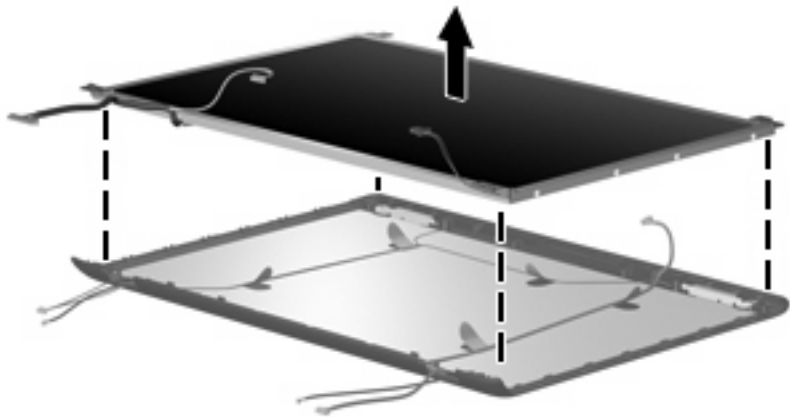


 **NOTE:** See [Camera module on page 41](#) for camera module replacement instructions. See [Display inverter on page 43](#) for display inverter replacement instructions.

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.
13. Remove the display hinges **(2)**.
14. Remove the display hinge covers **(3)** by sliding them off of the display hinges.

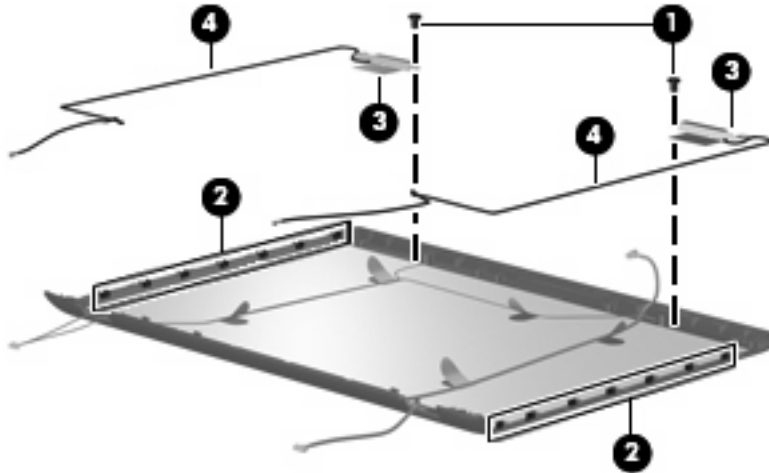


15. Remove the display panel from the display enclosure. The display panel is available using spare part number 448602-001.

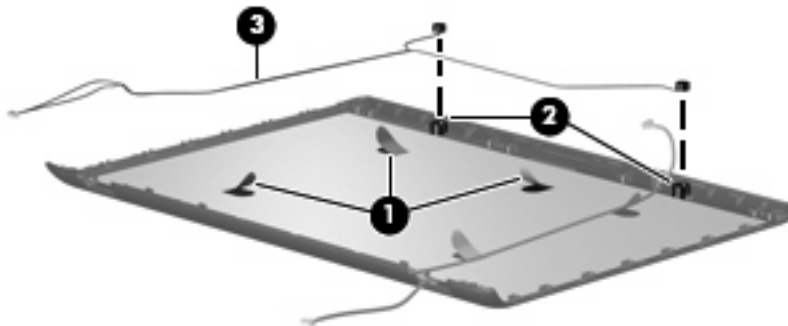


16. If it is necessary to replace the wireless antenna transceivers and cables, remove the Phillips PM2.5×4.0 screw **(1)** that secures each transceiver to the display enclosure. The wireless antenna transceivers and cables are included in the Wireless Antenna Kit, spare part number 448609-001.
17. 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.

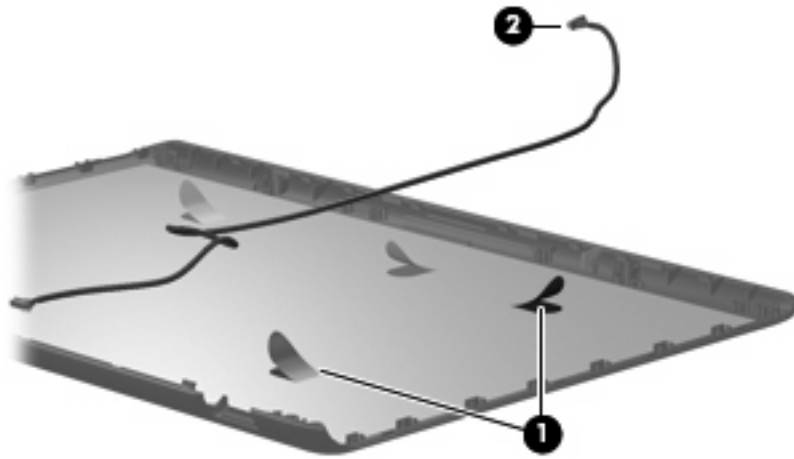


20. If it is necessary to replace the microphones and cables, release the retention tabs **(1)** built into the display enclosure that secure the microphone cables to the display enclosure. The microphones and cables are included in the Display Cable Kit, spare part number 448610-001.
21. Remove the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

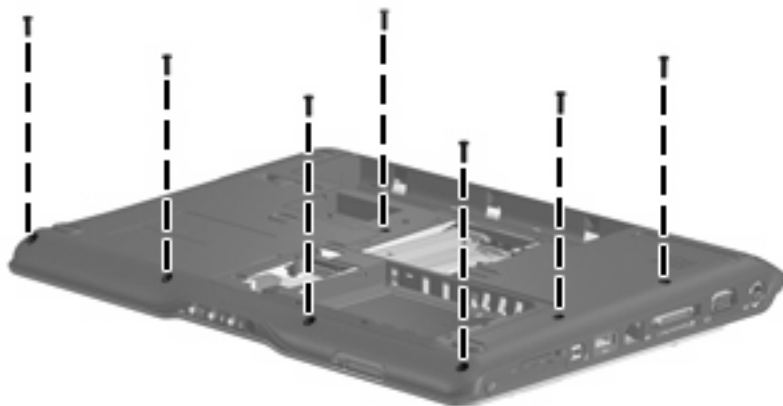
Description	Spare part number
For use only with computer models equipped with a fingerprint reader (includes TouchPad, TouchPad cable, fingerprint reader board, fingerprint reader board cable)	448618-001
For use only with computer models not equipped with a fingerprint reader (includes TouchPad and TouchPad cable)	448619-001
For use only with computer models sold at Best Buy (includes TouchPad and TouchPad cable)	451600-001

Before removing the top cover, follow these steps:

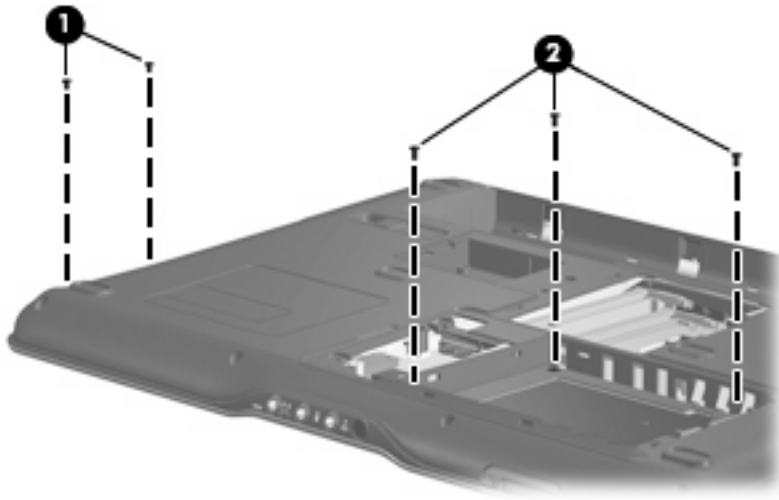
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 45](#))
 - b. WLAN cover (see [WLAN module on page 48](#))
 - c. Optical drive (see [Optical drive on page 53](#))
 - d. Keyboard (see [Keyboard on page 54](#))
 - e. Switch cover (see [Switch cover on page 56](#))
 - f. Display assembly (see [Display assembly on page 59](#))

Remove the top cover:

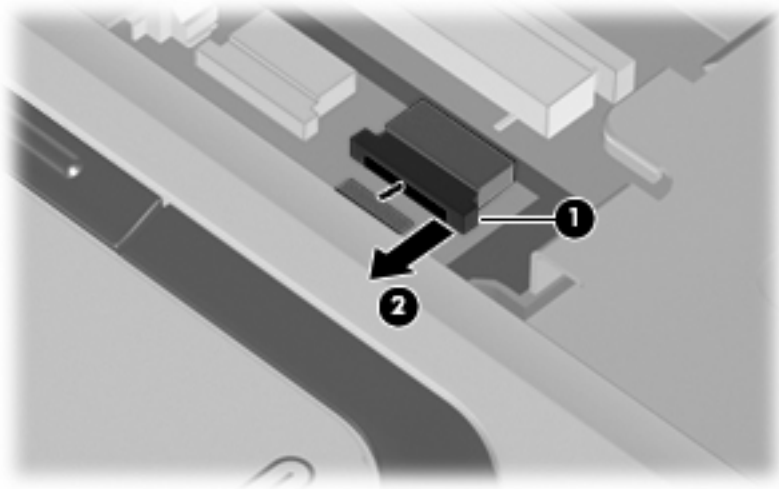
1. Turn the computer upside down, with the front toward you.
2. Remove the seven Phillips PM2.5×9.0 screws that secure the top cover to the computer.



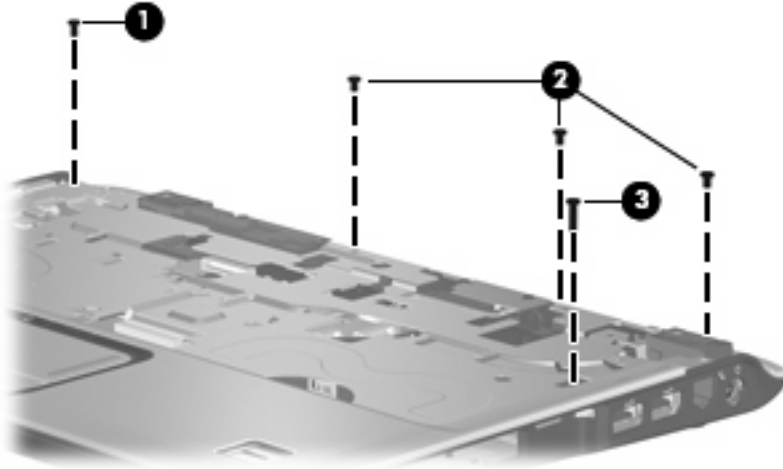
3. Remove the two Phillips PM2.0×3.0 screws **(1)** and the three Phillips PM2.0×4.0 screws **(2)** that secure the top cover to the computer.



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 PM2.5x4.0 screws
 - (3) One Phillips PM2.5x9.0 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 (includes TouchPad bracket and TouchPad cable)	451341-001

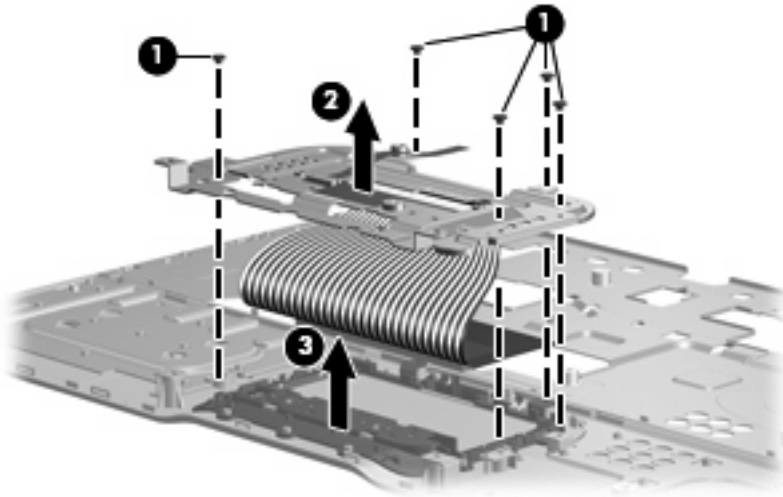
Before removing the TouchPad, follow these steps:

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 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 45](#))
 - b. WLAN cover (see [WLAN module on page 48](#))
 - c. Optical drive (see [Optical drive on page 53](#))
 - d. Keyboard (see [Keyboard on page 54](#))
 - e. Switch cover (see [Switch cover on page 56](#))
 - f. Display assembly (see [Display assembly on page 59](#))
 - g. Top cover (see [Top cover on page 65](#))

Remove the TouchPad:

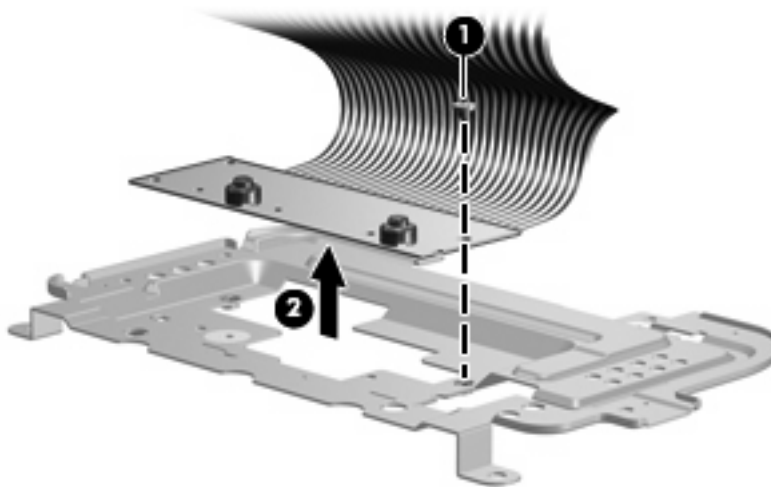
1. Turn the top cover upside down, with the front toward you.
2. Remove the five Phillips PM2.0×3.0 screws **(1)** that secure the TouchPad bracket to the top cover.

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



4. Remove the Phillips PM2.0x2.0 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

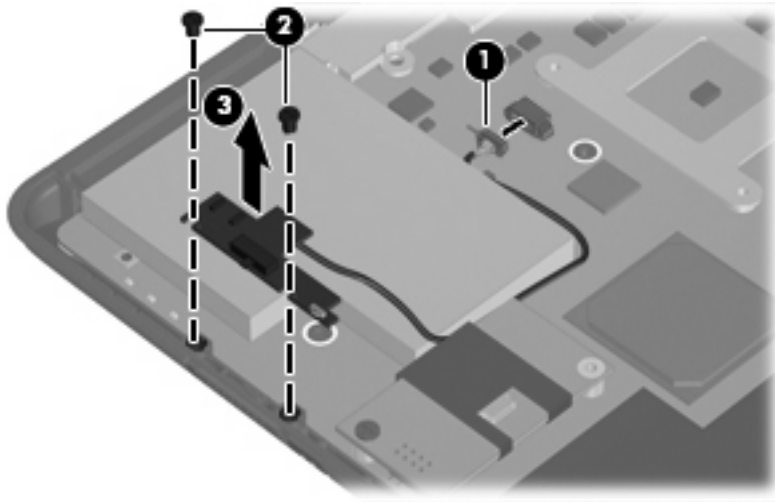
Before removing the wireless switch board, follow these steps:

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 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 45](#))
 - b. WLAN cover (see [WLAN module on page 48](#))
 - c. Optical drive (see [Optical drive on page 53](#))
 - d. Keyboard (see [Keyboard on page 54](#))
 - e. Switch cover (see [Switch cover on page 56](#))
 - f. Display assembly (see [Display assembly on page 59](#))
 - g. Top cover (see [Top cover on page 65](#))

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

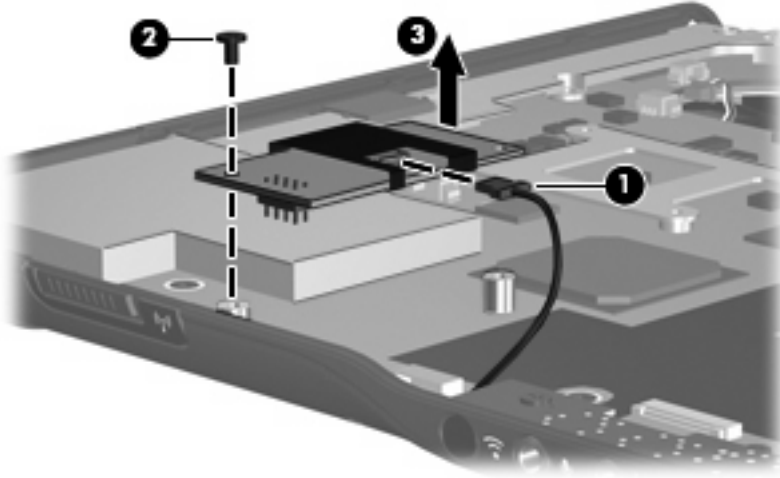
Description	Spare part number
Modem module (includes modem module cable)	431852-001

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 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 45](#))
 - b. WLAN cover (see [WLAN module on page 48](#))
 - c. Optical drive (see [Optical drive on page 53](#))
 - d. Keyboard (see [Keyboard on page 54](#))
 - e. Switch cover (see [Switch cover on page 56](#))
 - f. Display assembly (see [Display assembly on page 59](#))
 - g. Top cover (see [Top cover on page 65](#))

Remove the modem module:

1. Disconnect the modem module cable **(1)** from the modem module.
2. Remove the Phillips PM2.0x6.0 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

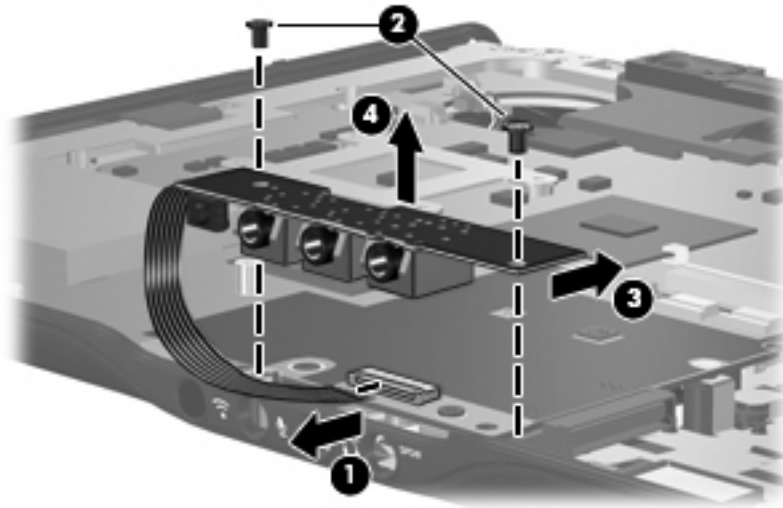
Before removing the audio board, follow these steps:

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 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 45](#))
 - b. WLAN cover (see [WLAN module on page 48](#))
 - c. Optical drive (see [Optical drive on page 53](#))
 - d. Keyboard (see [Keyboard on page 54](#))
 - e. Switch cover (see [Switch cover on page 56](#))
 - f. Display assembly (see [Display assembly on page 59](#))
 - g. Top cover (see [Top cover on page 65](#))

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

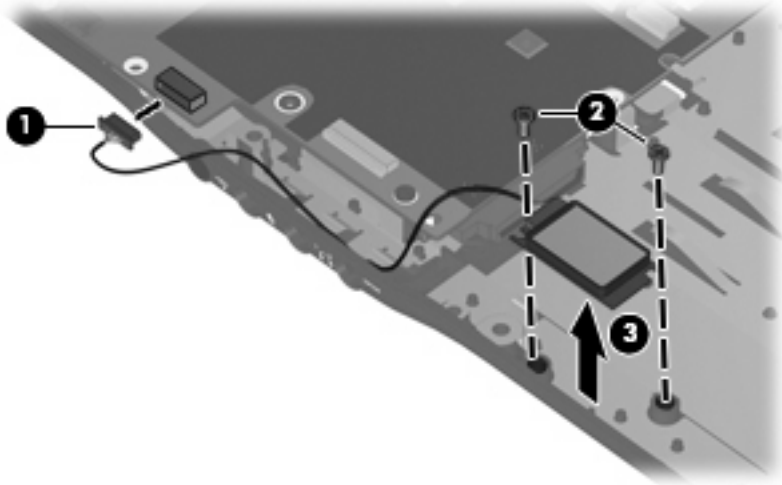
Description	Spare part number
Bluetooth module (includes Bluetooth module cable)	397923-002

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 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 45](#))
 - b. WLAN cover (see [WLAN module on page 48](#))
 - c. Optical drive (see [Optical drive on page 53](#))
 - d. Keyboard (see [Keyboard on page 54](#))
 - e. Switch cover (see [Switch cover on page 56](#))
 - f. Display assembly (see [Display assembly on page 59](#))
 - g. Top cover (see [Top cover on page 65](#))
 - h. Audio board (see [Audio board on page 73](#))

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 (includes USB board cable)	417085-001

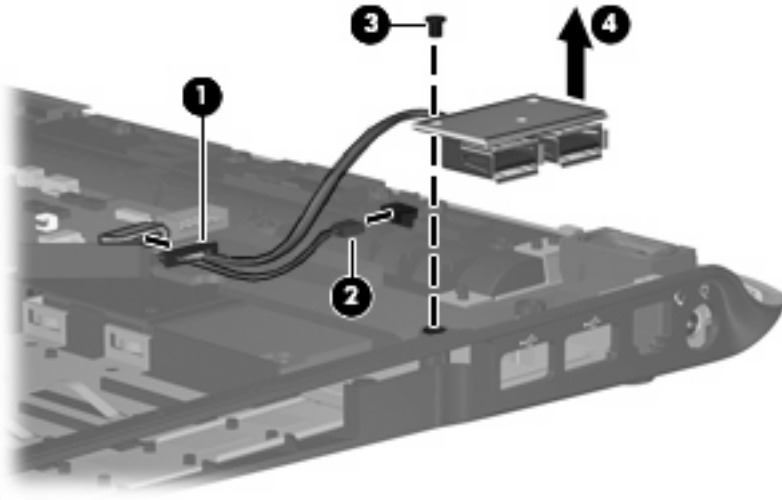
Before removing the USB board, follow these steps:

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 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 45](#))
 - b. Wireless module compartment cover (see [WLAN module on page 48](#))
 - c. Optical drive (see [Optical drive on page 53](#))
 - d. Keyboard (see [Keyboard on page 54](#))
 - e. Switch cover (see [Switch cover on page 56](#))
 - f. Display assembly (see [Display assembly on page 59](#))
 - g. Top cover (see [Top cover on page 65](#))

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

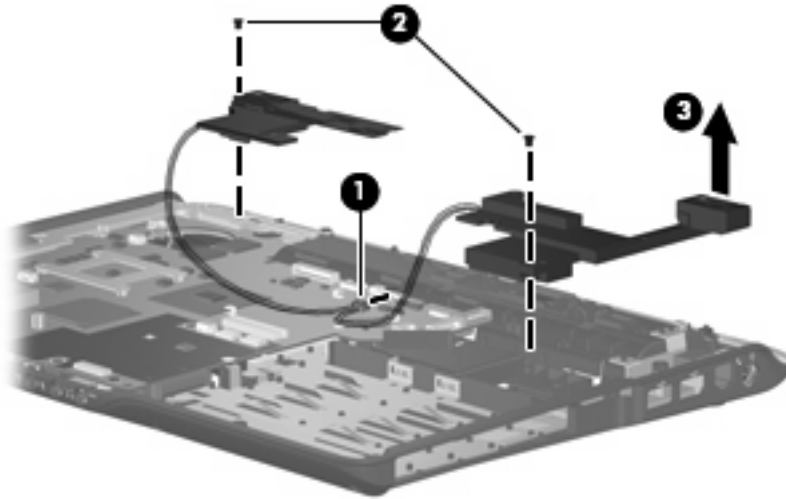
Before removing the speaker assembly, follow these steps:

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 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 45](#))
 - b. Wireless module compartment cover (see [WLAN module on page 48](#))
 - c. Optical drive (see [Optical drive on page 53](#))
 - d. Keyboard (see [Keyboard on page 54](#))
 - e. Switch cover (see [Switch cover on page 56](#))
 - f. Display assembly (see [Display assembly on page 59](#))
 - g. Top cover (see [Top cover on page 65](#))

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

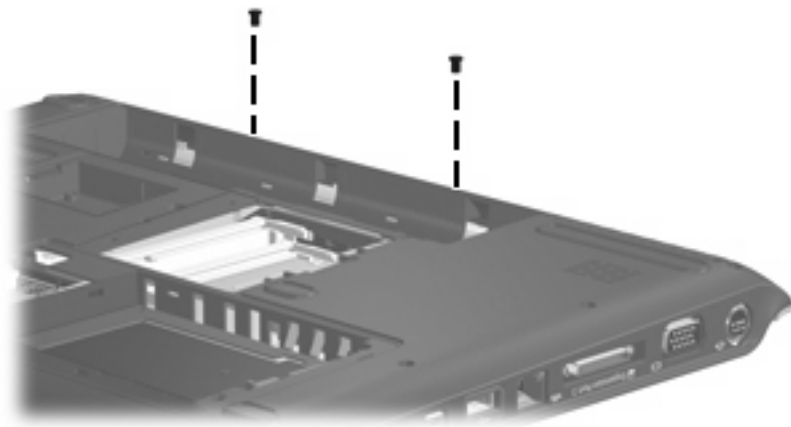
 **NOTE:** The display switch module is included in the Display Hinge Kit, spare part number 430473-001.

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 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 45](#))
 - b. Wireless module compartment cover (see [WLAN module on page 48](#))
 - c. Optical drive (see [Optical drive on page 53](#))
 - d. Keyboard (see [Keyboard on page 54](#))
 - e. Switch cover (see [Switch cover on page 56](#))
 - f. Display assembly (see [Display assembly on page 59](#))
 - g. Top cover (see [Top cover on page 65](#))

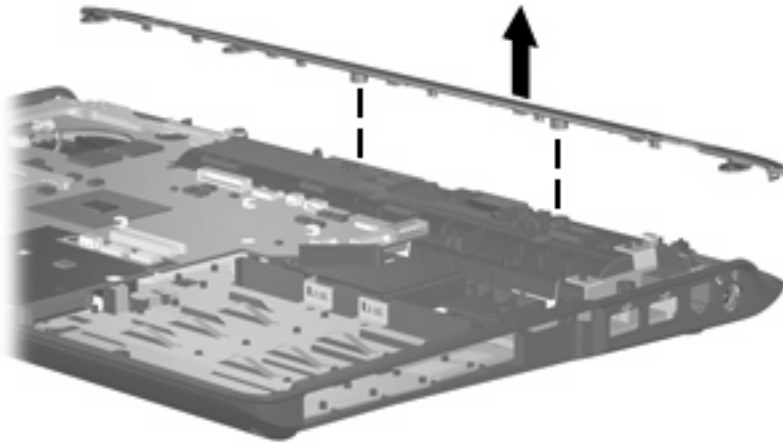
Remove the display switch module:

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.

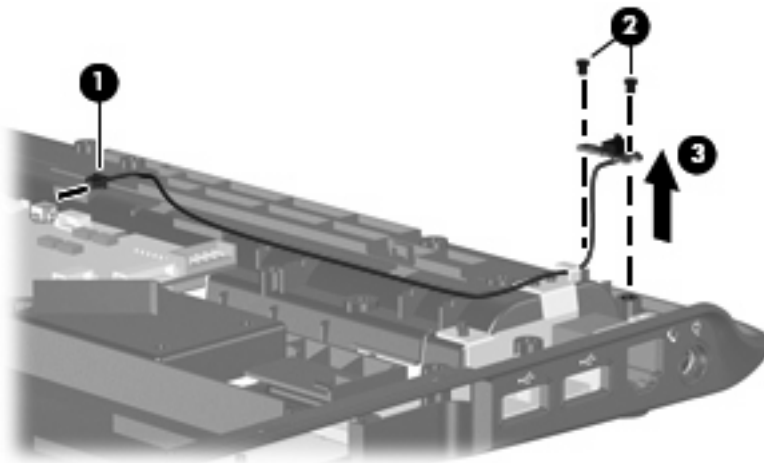


3. Turn the computer right-side up with the front toward you.

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 only with computer models equipped with a camera	448596-001
For use only with computer models not equipped with a camera	448598-001

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 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 45](#))
 - b. Optical drive (see [Optical drive on page 53](#))
 - c. Keyboard (see [Keyboard on page 54](#))
 - d. Switch cover (see [Switch cover on page 56](#))
 - e. Display assembly (see [Display assembly on page 59](#))
 - f. Top cover (see [Top cover on page 65](#))

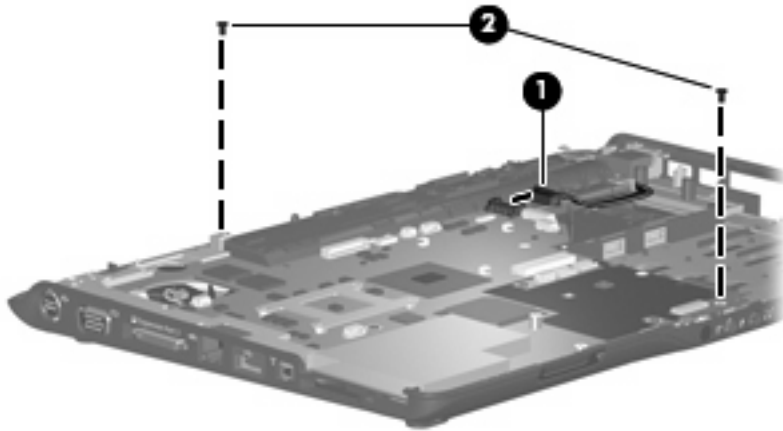
When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- RTC battery (see [RTC battery on page 50](#))
- Memory modules (see [Memory module on page 51](#))
- WLAN module (see [WLAN module on page 48](#))
- Modem module (see [Modem module on page 71](#))

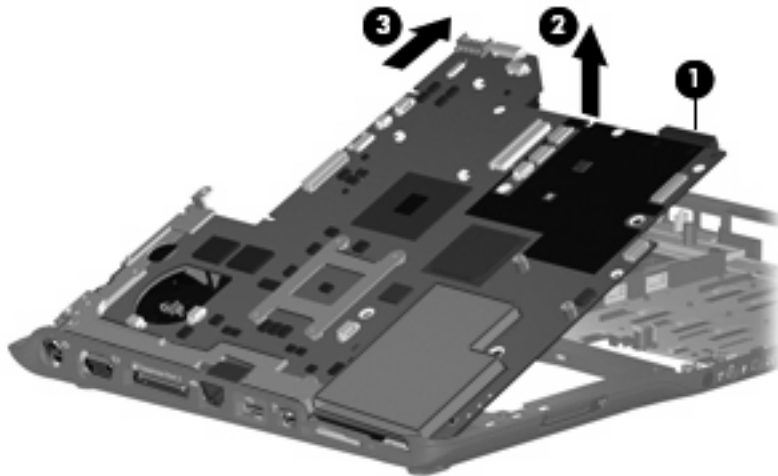
Remove the system board:

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 85](#))
- Fan/heat sink assembly (see [Fan/heat sink assembly on page 87](#))
- Processor (see [Processor on page 90](#))

Reverse the preceding procedure to install the system board.

Power connector cable

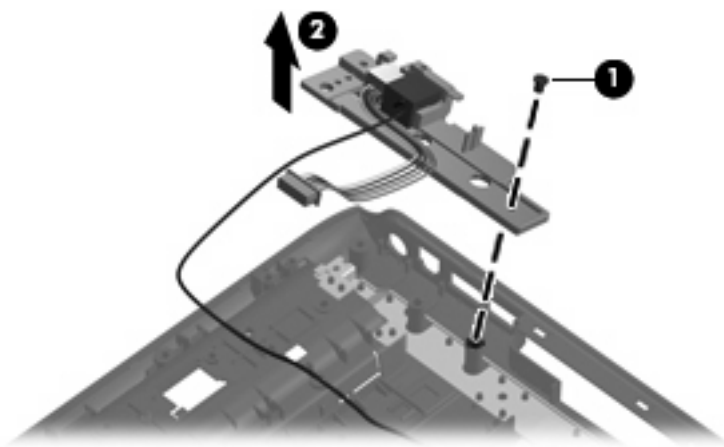
Description	Spare part number
Power connector cable	448628-001

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 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 45](#))
 - b. Optical drive (see [Optical drive on page 53](#))
 - c. Keyboard (see [Keyboard on page 54](#))
 - d. Switch cover (see [Switch cover on page 56](#))
 - e. Display assembly (see [Display assembly on page 59](#))
 - f. Top cover (see [Top cover on page 65](#))
 - g. System board (see [System board on page 82](#))

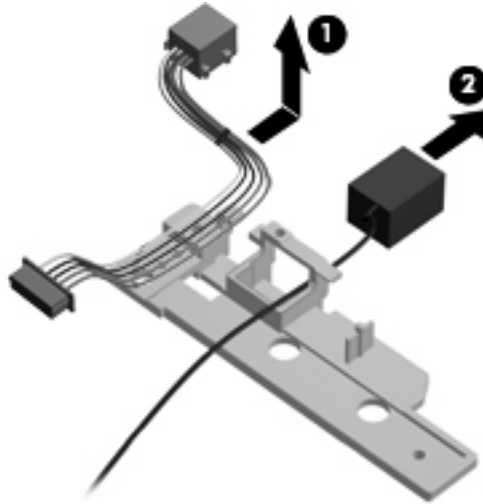
Remove the power connector cable:

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

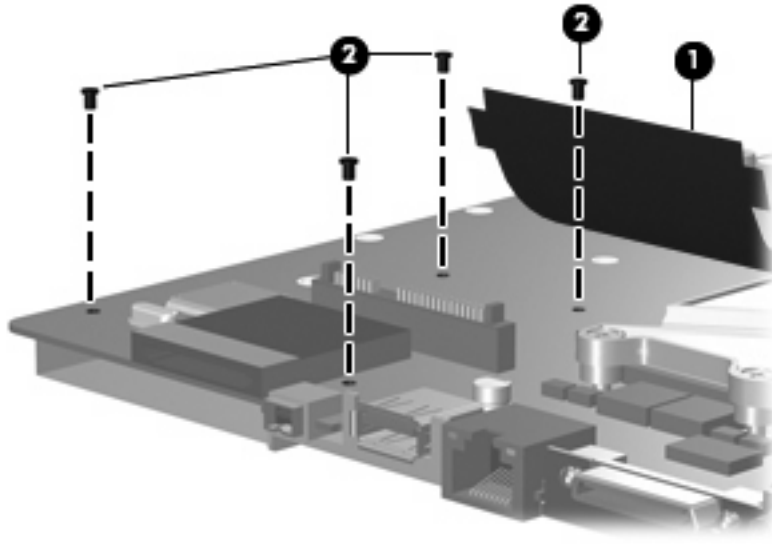
Description	Spare part number
ExpressCard assembly	417112-001

Before removing the ExpressCard assembly, follow these steps:

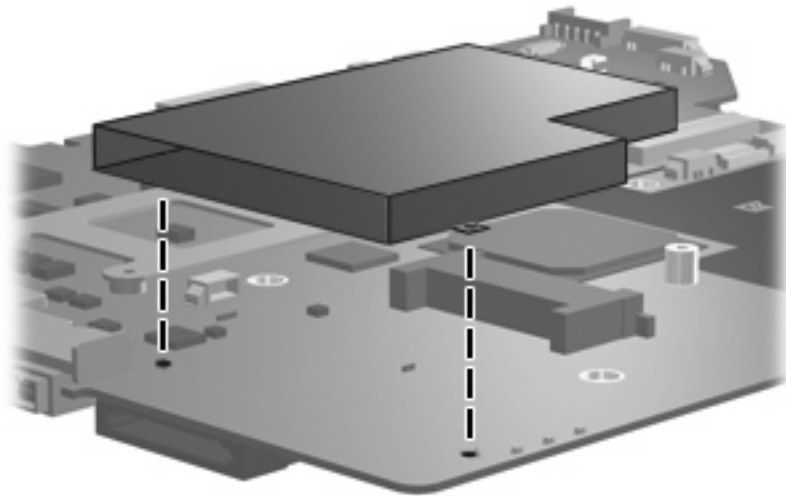
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 45](#))
 - b. Optical drive (see [Optical drive on page 53](#))
 - c. Keyboard (see [Keyboard on page 54](#))
 - d. Switch cover (see [Switch cover on page 56](#))
 - e. Display assembly (see [Display assembly on page 59](#))
 - f. Top cover (see [Top cover on page 65](#))
 - g. System board (see [System board on page 82](#))

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 applications. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

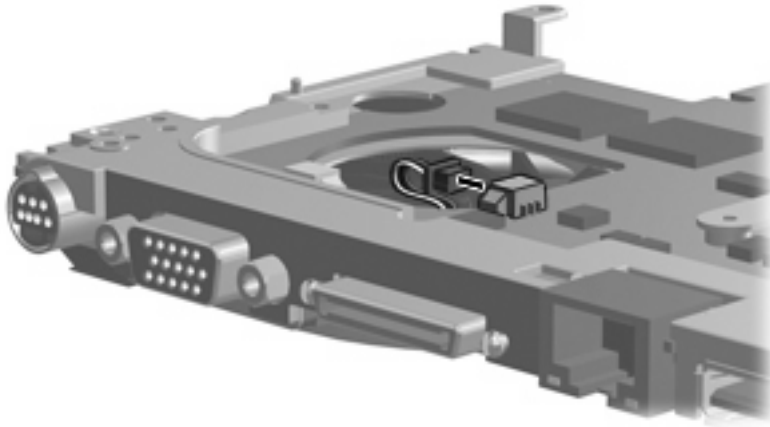
Before removing the fan/heat sink assembly, follow these steps:

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 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 45](#))
 - b. Optical drive (see [Optical drive on page 53](#))
 - c. Keyboard (see [Keyboard on page 54](#))
 - d. Switch cover (see [Switch cover on page 56](#))
 - e. Display assembly (see [Display assembly on page 59](#))
 - f. Top cover (see [Top cover on page 65](#))
 - g. System board (see [System board on page 82](#))


Remove the fan/heat sink assembly:

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

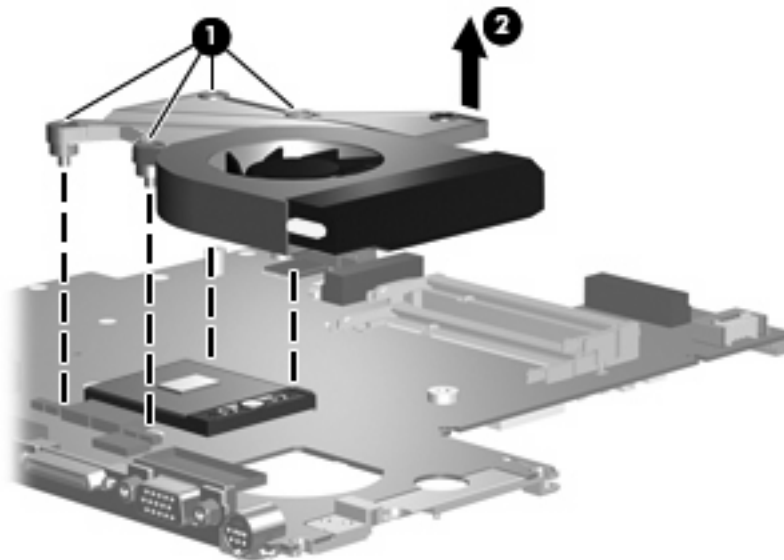
2. Disconnect the fan cable from the system board.




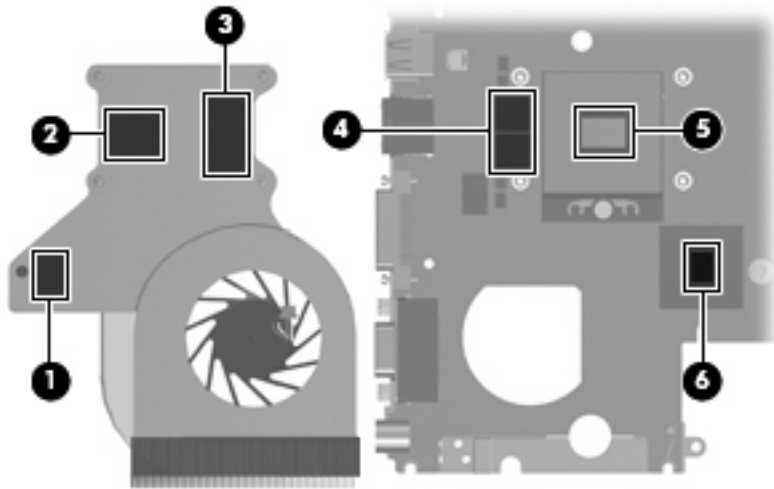
3. Turn the system board upside down with the external monitor port toward you.
4. Loosen the four Phillips PM2.0x13.0 captive screws **(1)** that secure the fan/heat sink assembly to the system board.


 **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)**.

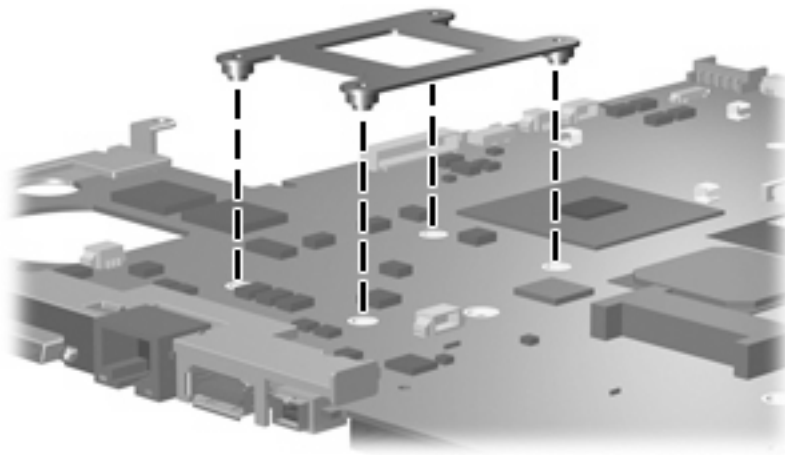


 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the fan/heat sink assembly **(1)** and **(2)**, and **(3)**, the system board components **(4)** and **(6)**, and the processor **(5)** each time the fan/heat sink assembly is removed. Thermal pads and thermal paste must be 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 Core Duo T7300 2.0-GHz processor (4 MB of L2 cache)	448601-001
Intel Core Duo T7100 1.8-GHz processor (2 MB of L2 cache)	448600-001
Intel Core Duo T5450 1.67-GHz processor (2 MB of L2 cache)	451597-001


Before removing the processor, follow these steps:

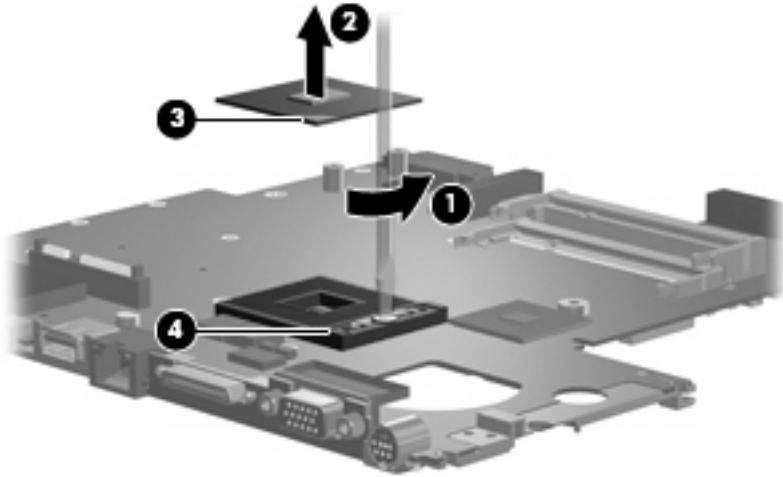
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 45](#))
 - b. Optical drive (see [Optical drive on page 53](#))
 - c. Keyboard (see [Keyboard on page 54](#))
 - d. Switch cover (see [Switch cover on page 56](#))
 - e. Display assembly (see [Display assembly on page 59](#))
 - f. Top cover (see [Top cover on page 65](#))
 - g. System board (see [System board on page 82](#))
 - h. Fan/heat sink assembly (see [Fan/heat sink assembly on page 87](#))

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

Security menu

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

System Configuration menu

Select	To do this
Language Support	Change the Setup Utility language.
Enhanced SATA support (select models only)	Enable/disable enhanced SATA mode.
Boot Options	Set the following boot options: <ul style="list-style-type: none">• 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:<ul style="list-style-type: none">◦ 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

	160-GB*	120-GB*	80-GB*
Dimensions			
Height	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm
Weight	102 g	102 g	102 g
Interface type	SATA	SATA	SATA
Transfer rate			
Synchronous (maximum)	100 MB/sec	100 MB/sec	100 MB/sec
Security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)			
Single track	3 ms	3 ms	3 ms
Average	13 ms	13 ms	13 ms
Maximum	24 ms	24 ms	24 ms
Logical blocks	312,560,480	234,433,260	156,280,320
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 μ m	
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.

System interrupt specifications

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

Hardware IRQ	System function
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 I/O address specifications

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

I/O address (hex)	System function (shipping configuration)
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
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)

I/O address (hex)	System function (shipping configuration)
CF8 - CFB	PCI configuration index register (PCIDIVO-1)
CFC - CFF	PCI configuration data register (PCIDIVO-1)

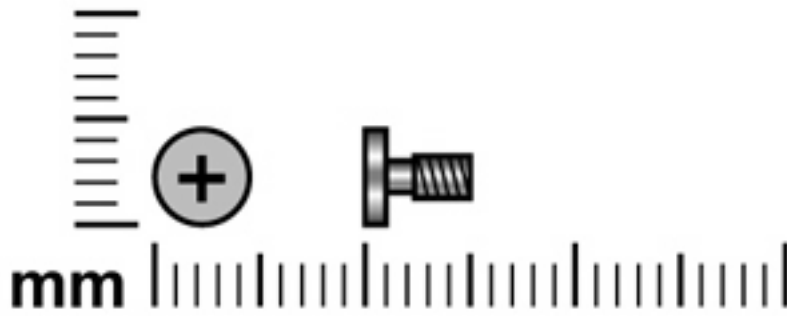
System memory map specifications

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-FFFFFF	Unused
64 KB	FFFF0000-FFFFFFFF	System BIOS

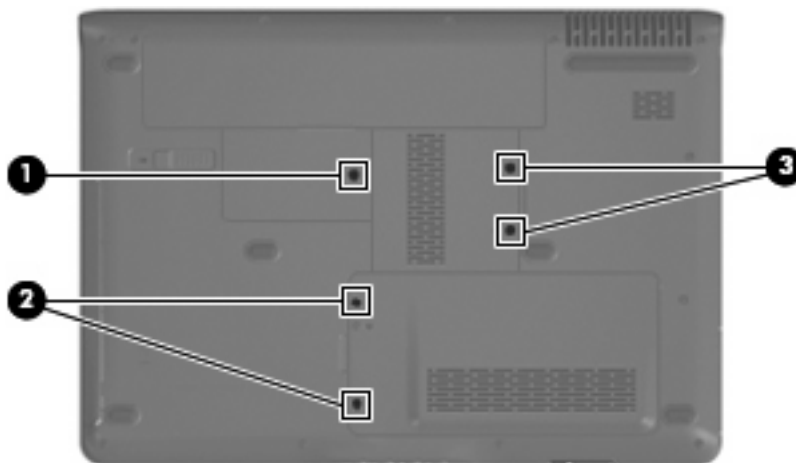
7 Screw listing

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, and the Display Screw Kit, spare part number 417104-001.

Phillips PM2.0×5.0 captive screw



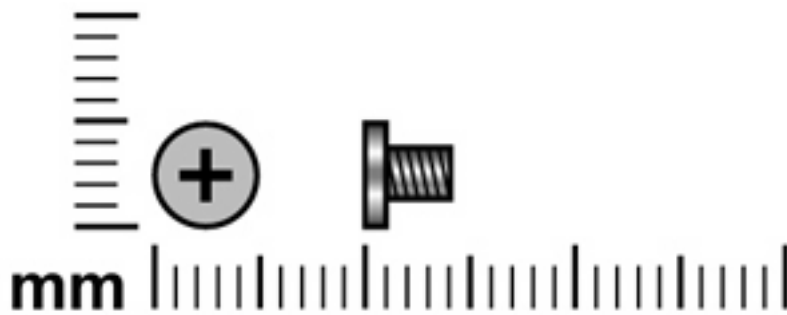
Color	Quantity	Length	Thread	Head diameter
Black	5	5.0 mm	2.0 mm	5.0 mm



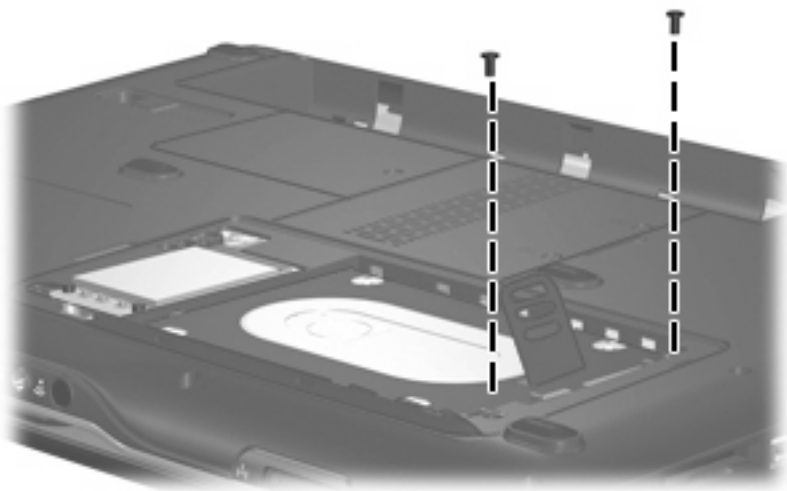
Where used:

- (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

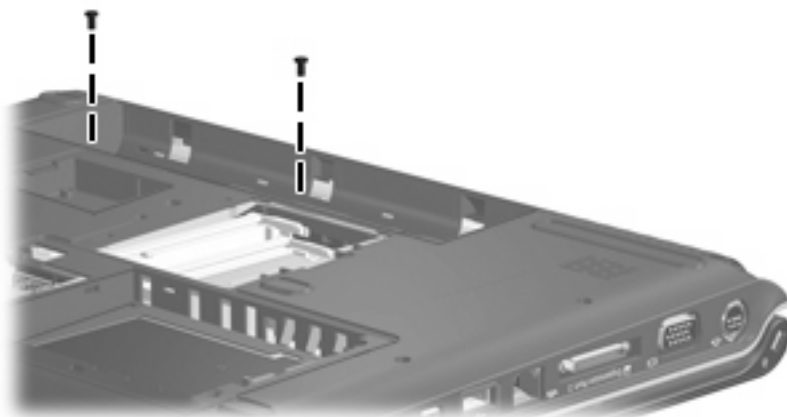
Phillips PM2.5×4.0 screw



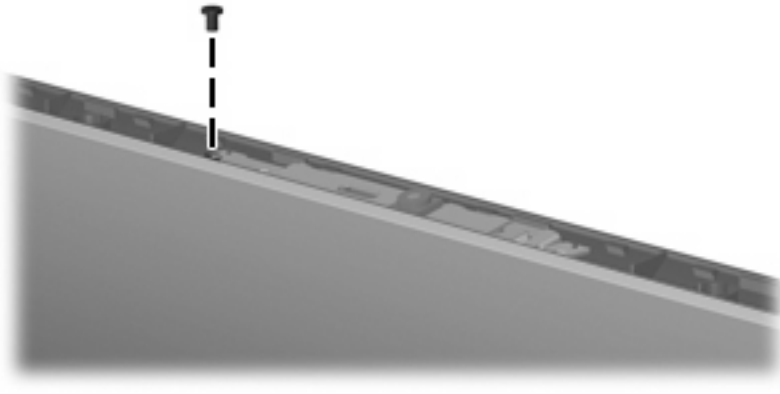
Color	Quantity	Length	Thread	Head diameter
Black	15	4.0 mm	2.5 mm	5.0 mm



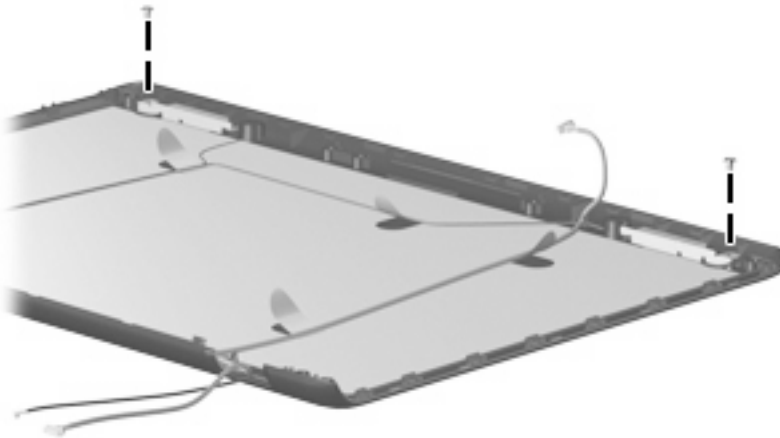
Where used: 2 screws that secure the hard drive to the computer



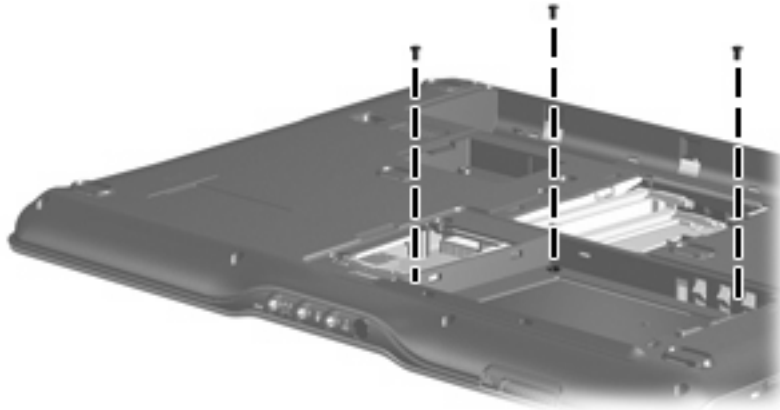
Where used: 2 screws that secure the switch cover to the computer



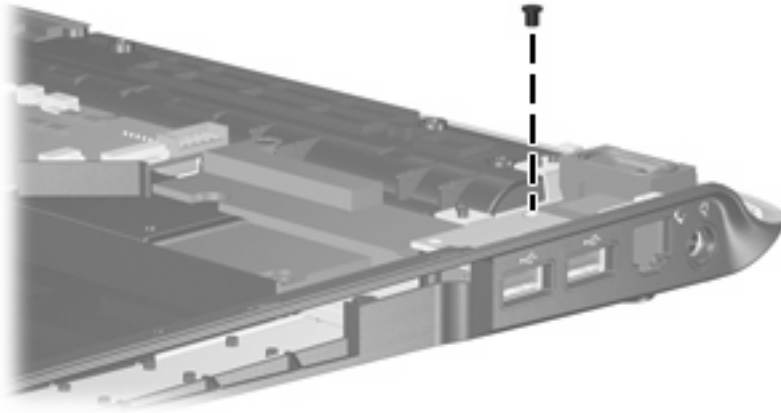
Where used: One screw that secures the camera module assembly to the display enclosure



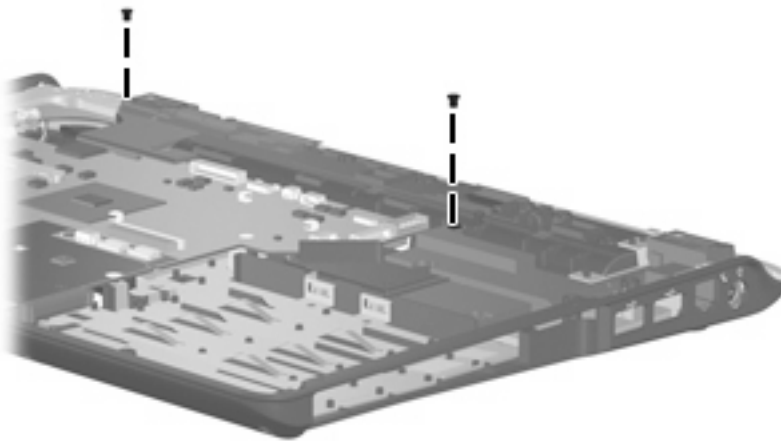
Where used: 2 screws that secure the wireless antenna transceivers to the display enclosure



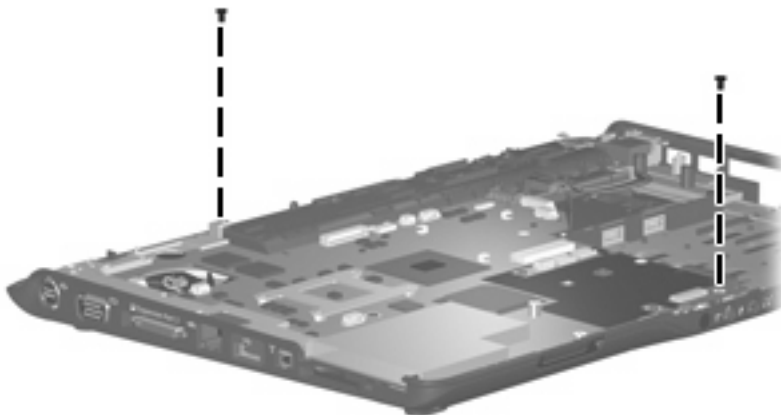
Where used: 3 screws that secure the top cover to the computer



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

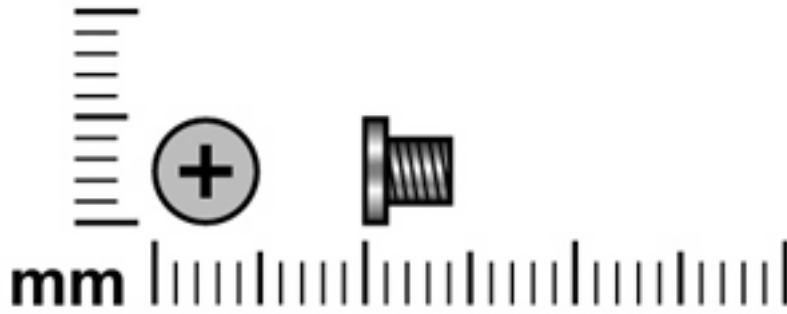


Where used: 2 screw that secures the speaker assembly to the computer

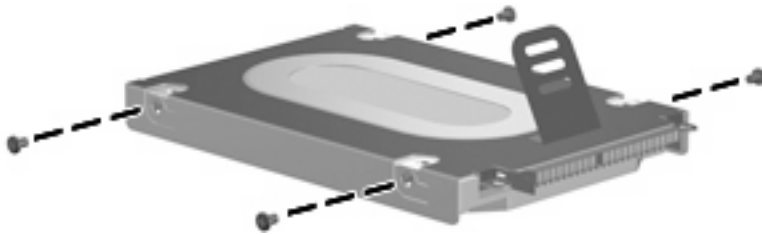


Where used: 2 screws that secure the system board to the computer

Phillips PM3.0×4.0 screw

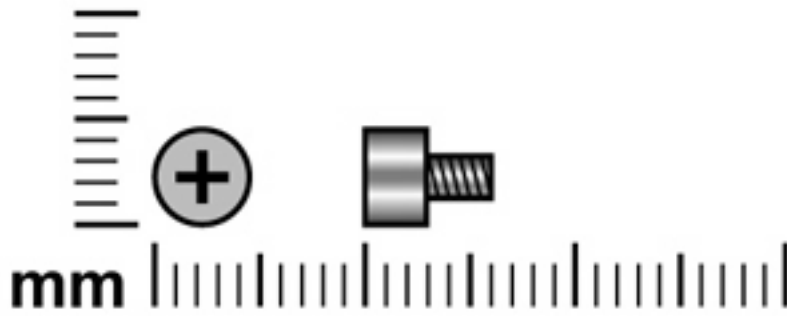


Color	Quantity	Length	Thread	Head diameter
Silver	4	4.0 mm	3.0 mm	5.0 mm

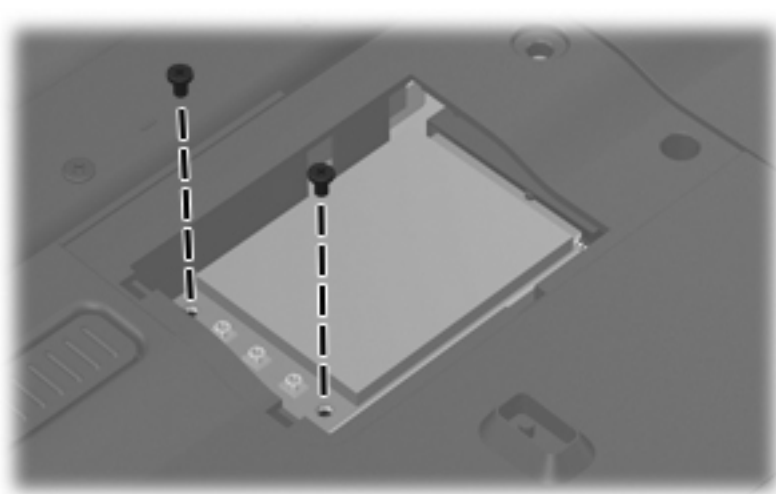


Where used: 4 screws that secure the hard drive bracket to the hard drive

Phillips PM2.0×6.0 shoulder screw

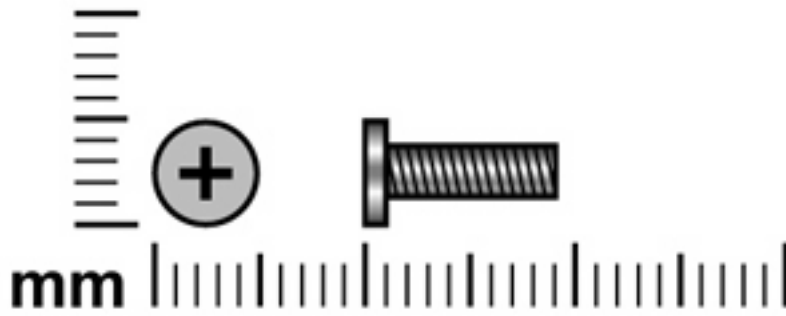


Color	Quantity	Length	Thread	Head diameter
Black	2	6.0 mm	2.0 mm	4.0 mm

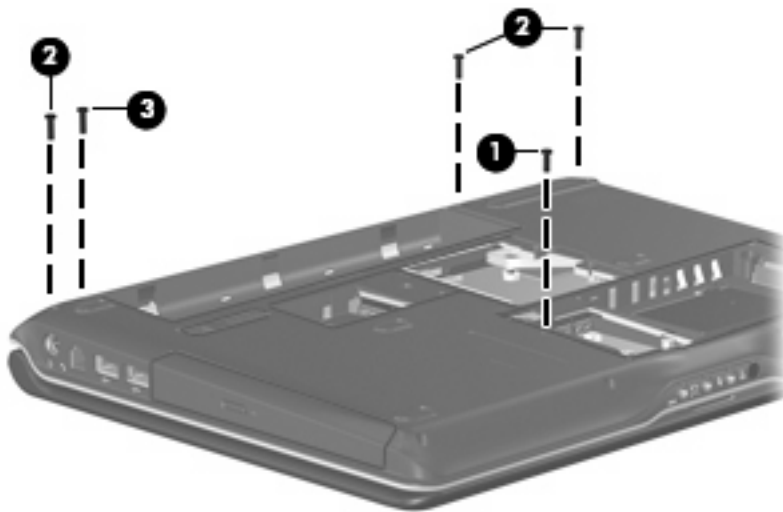


Where used: 2 screws that secure the WLAN module to the computer

Phillips PM2.5×9.0 screw

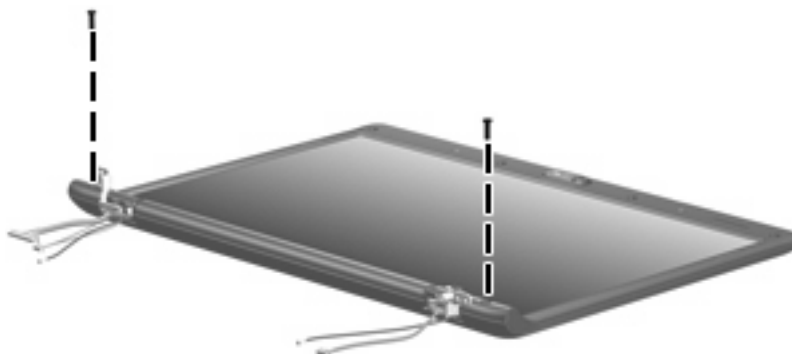


Color	Quantity	Length	Thread	Head diameter
Black	15	9.0 mm	2.5 mm	5.0 mm

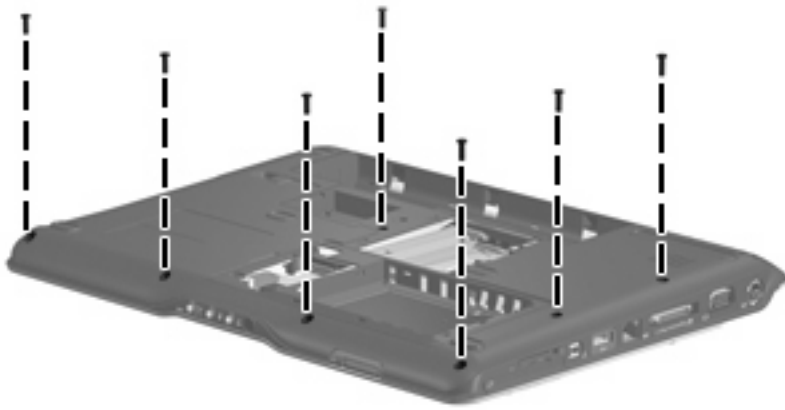


Where used:

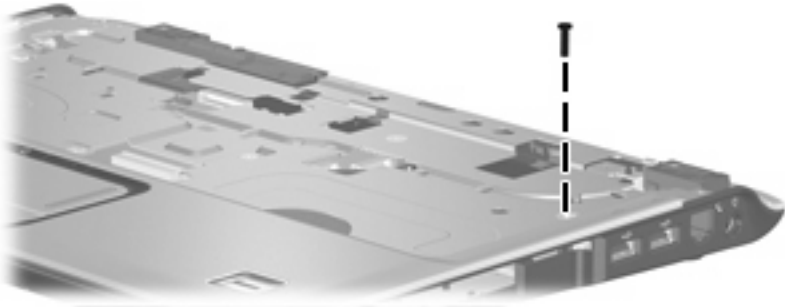
- (1) One screw that secures the optical drive to the computer
- (2) Three screws that secure the switch cover to the computer
- (3) One screw that secures the display assembly to the computer



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

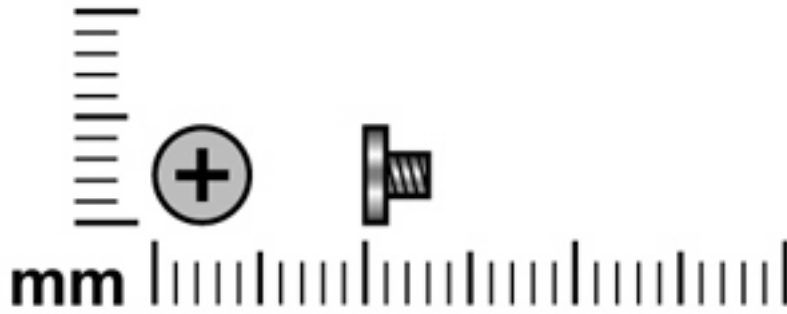


Where used: 7 screws that secure the top cover to the computer

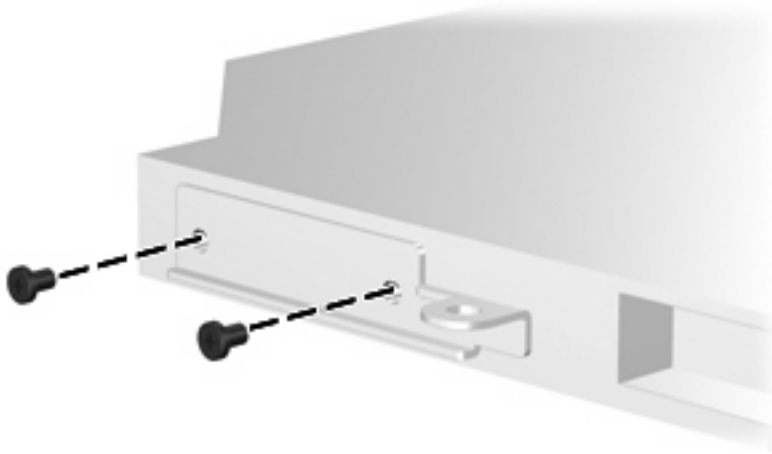


Where used: One screw that secures the top cover to the computer

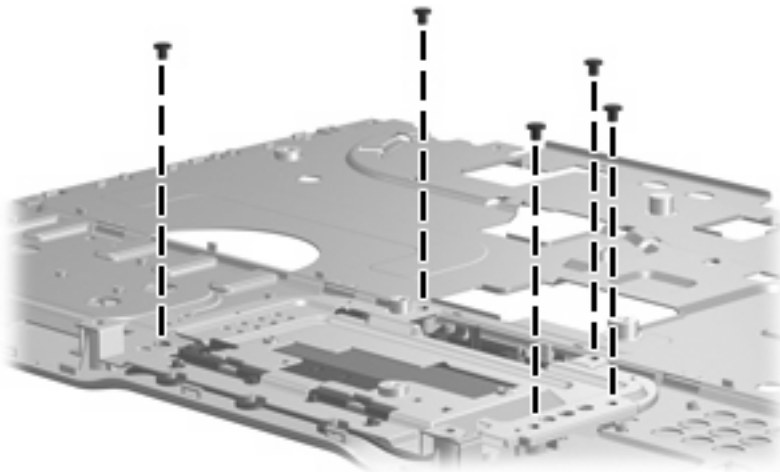
Silver Phillips PM2.0×3.0 screw



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

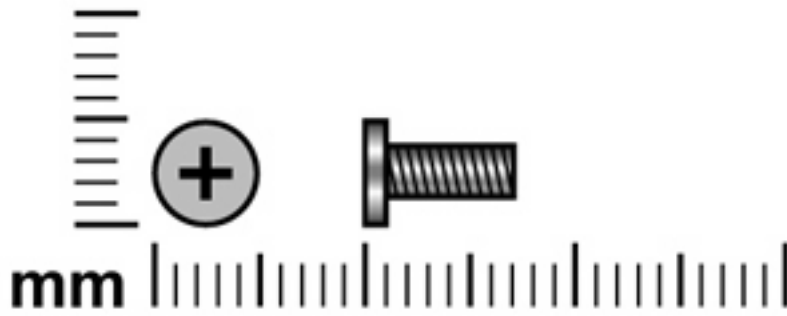


Where used: 2 screws that secure the optical drive bracket to the optical drive

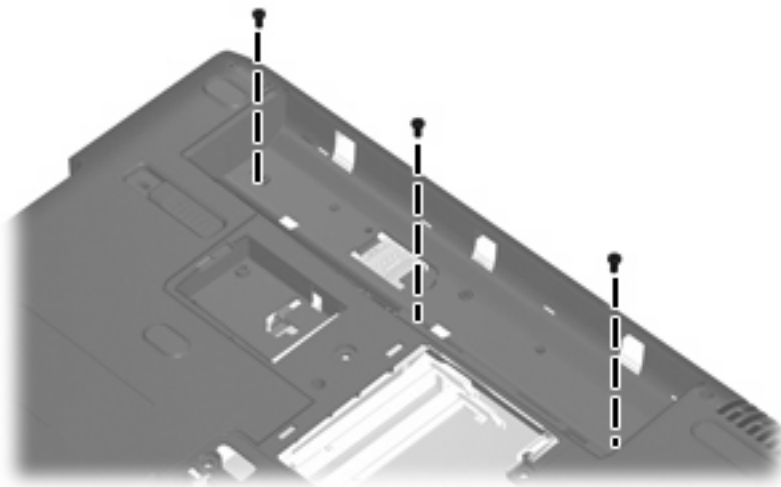


Where used: 5 screws that secure the TouchPad to the top cover

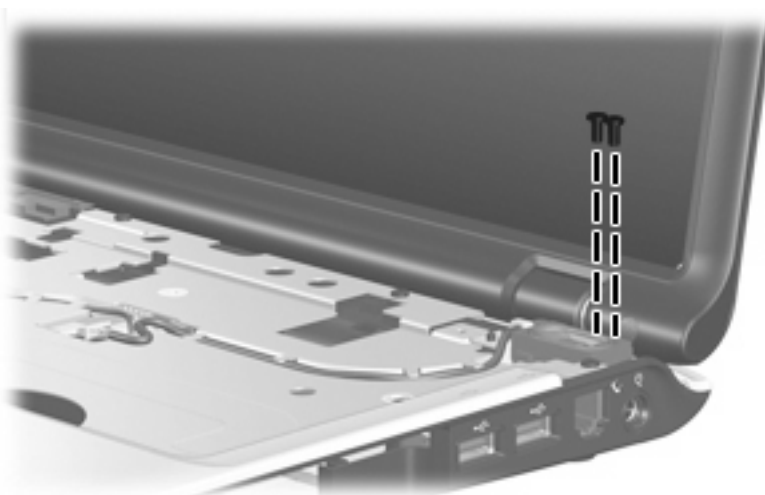
Phillips PM2.5×7.0 screw



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

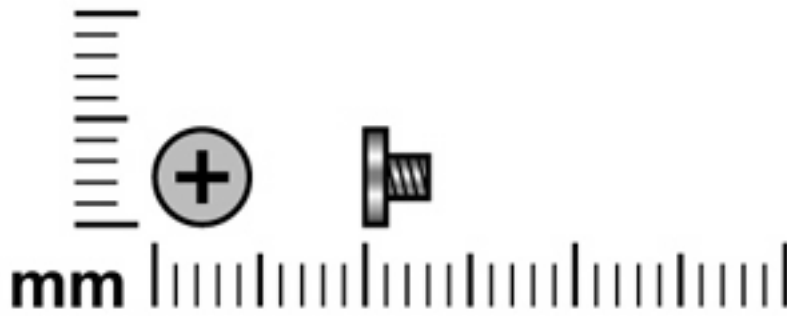


Where used: 2 screws that secure the display assembly to the computer



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

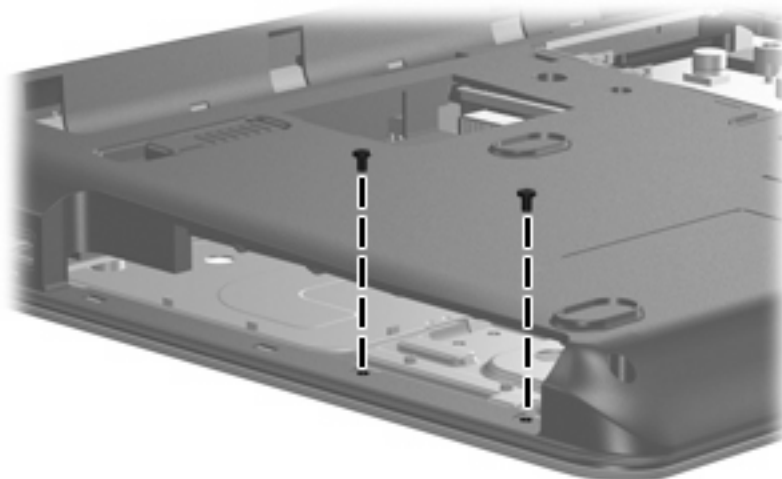
Black Phillips PM2.0×3.0 screw



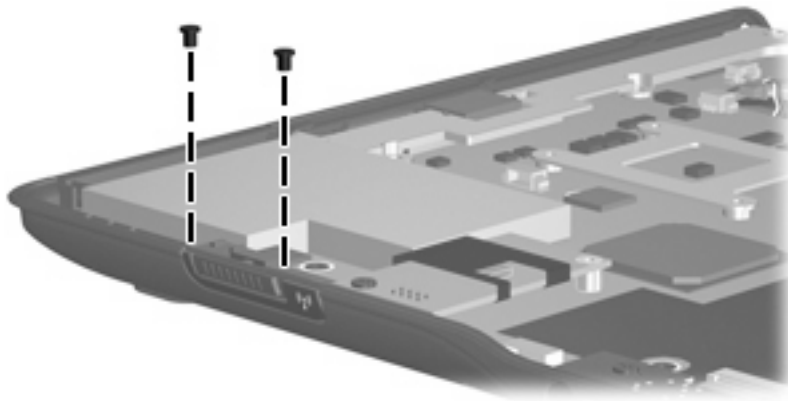
Color	Quantity	Length	Thread	Head diameter
Black	10	3.0 mm	2.0 mm	4.0 mm



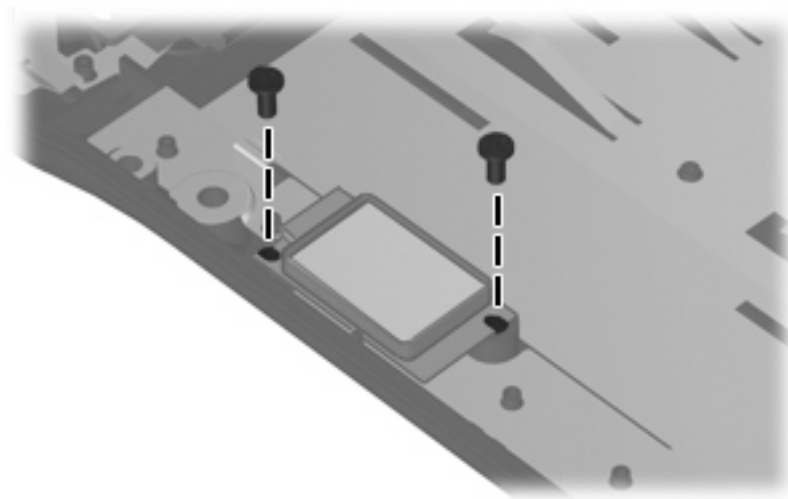
Where used: 2 screws that secure the camera module bracket to the camera module



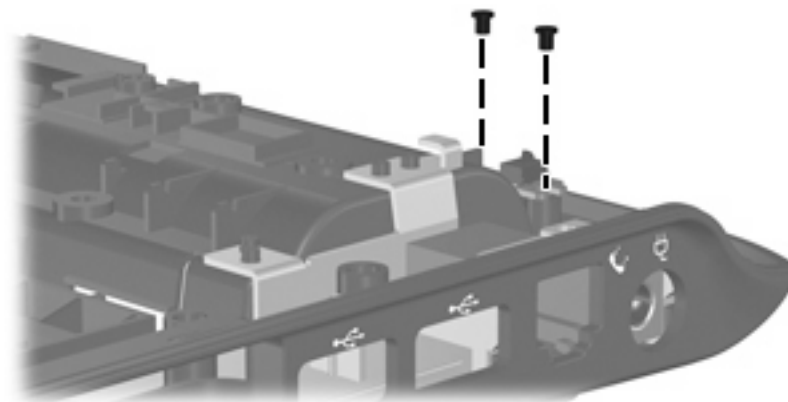
Where used: 2 screws that secure the top cover to the computer



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

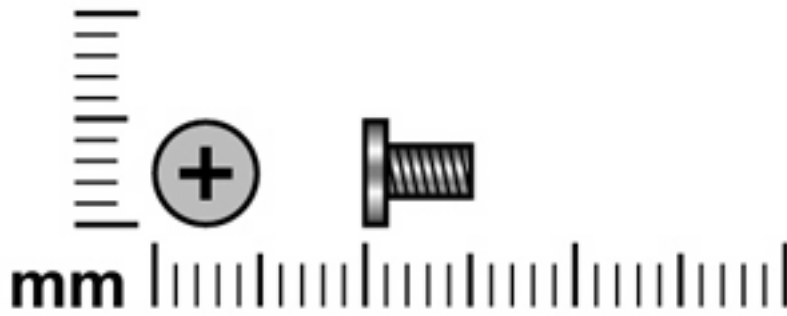


Where used: 2 screws that secure the Bluetooth module to the computer



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

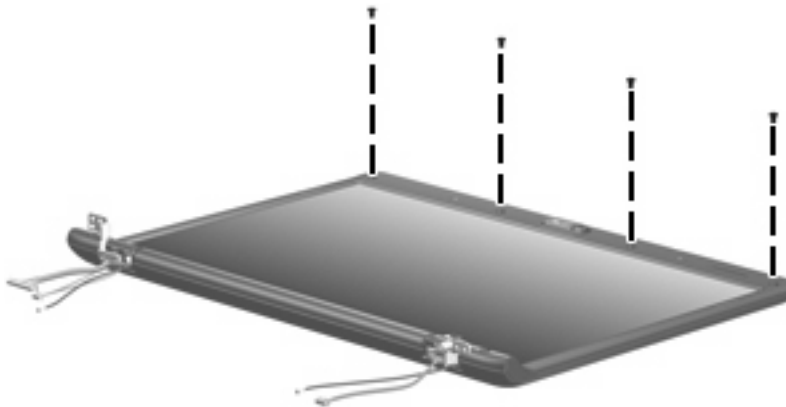
Black Phillips PM2.5×5.0 screw



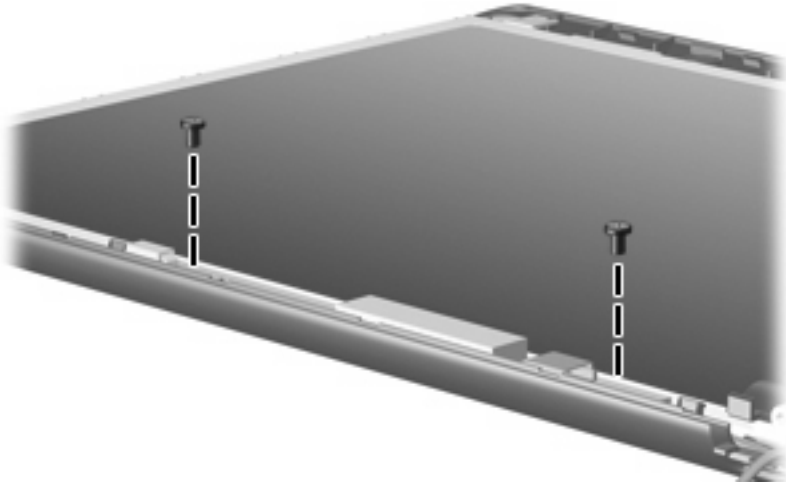
Color	Quantity	Length	Thread	Head diameter
Black	10	5.0 mm	2.5 mm	5.0 mm



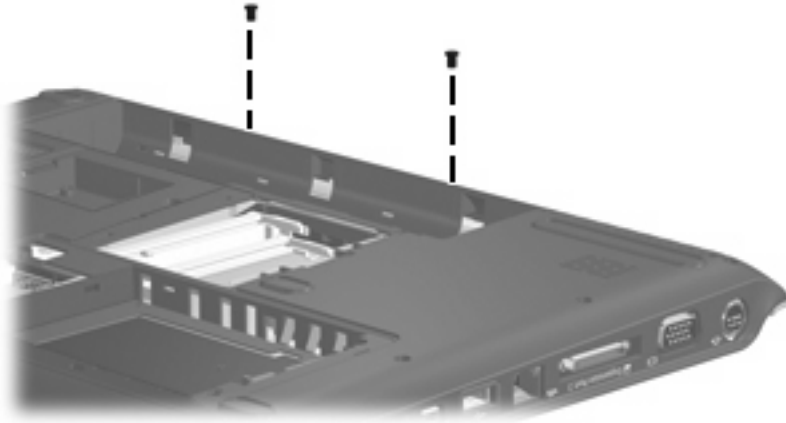
Where used: 2 screws that secure the display assembly to the computer



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

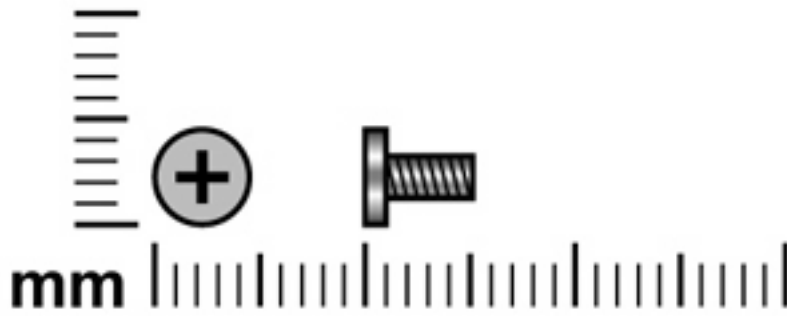


Where used: 2 screws that secure the display inverter to the display enclosure

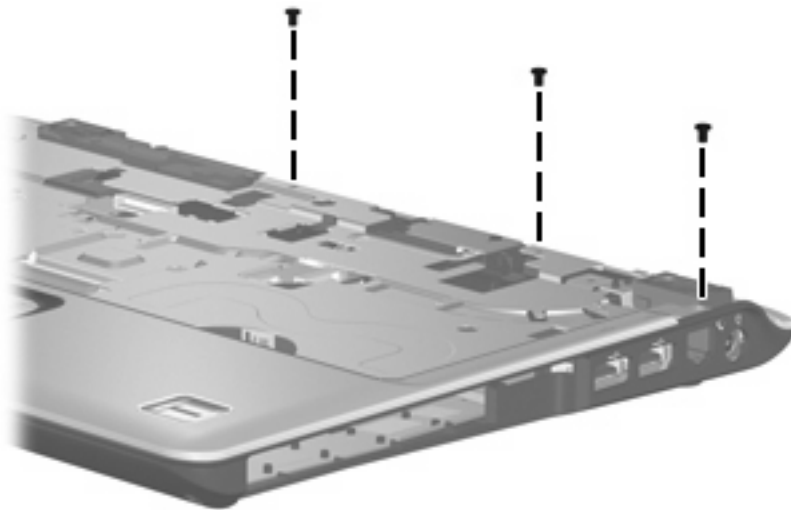


Where used: 2 screws that secure the top cover trim to the computer

Phillips PM2.0×5.0 screw

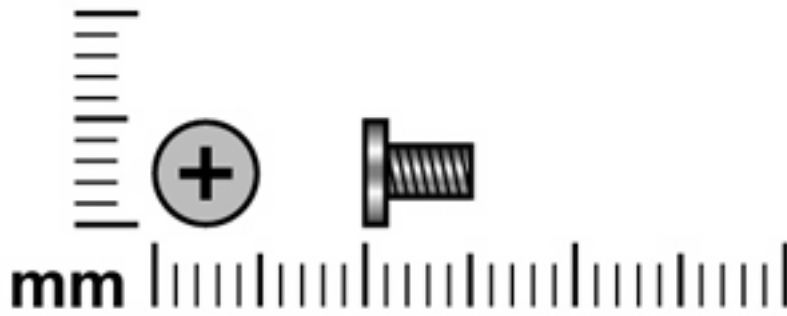


Color	Quantity	Length	Thread	Head diameter
Black	3	5.0 mm	2.0 mm	5.0 mm

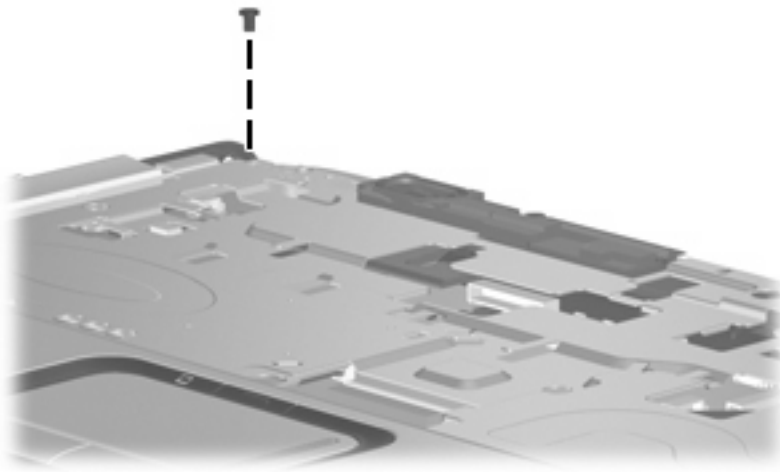


Where used: 3 screws that secure the top cover to the computer

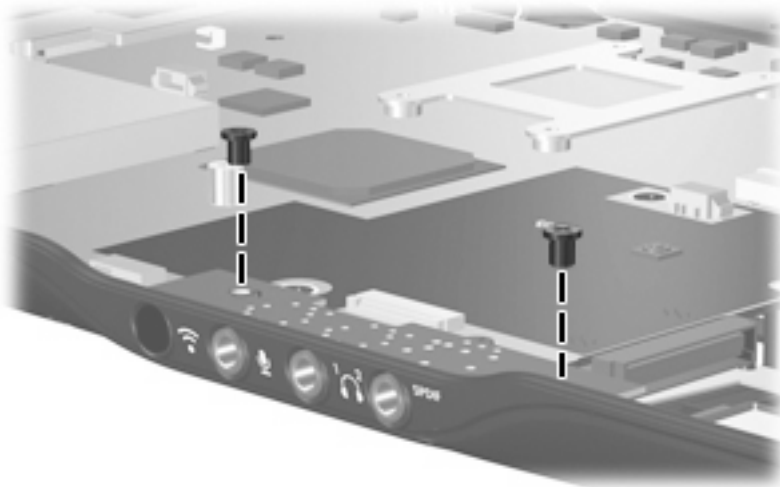
Silver Phillips PM2.5×5.0 screw



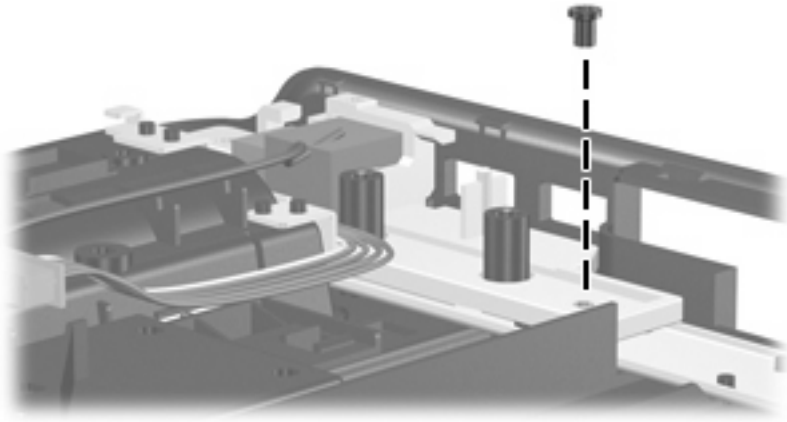
Color	Quantity	Length	Thread	Head diameter
Silver	4	5.0 mm	2.5 mm	5.0 mm



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

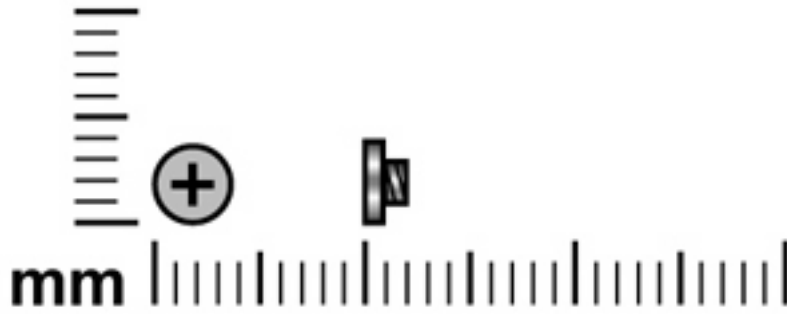


Where used: 2 screws that secure the audio board to the computer

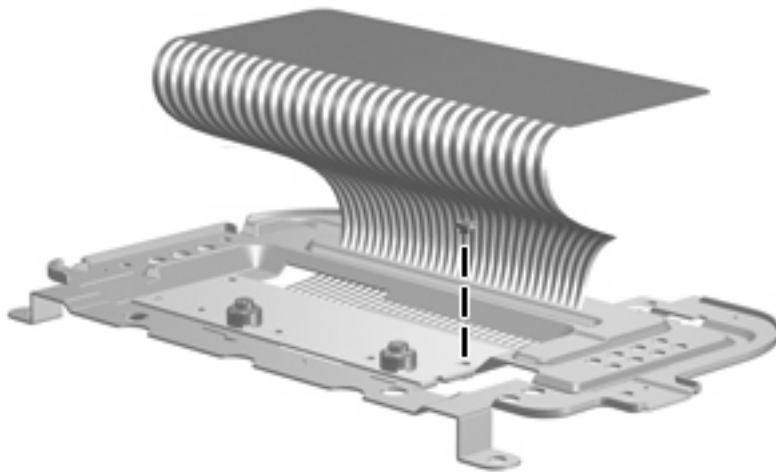


Where used: One screw that secures the connector bracket to the computer

Phillips PM2.0×2.0 screw

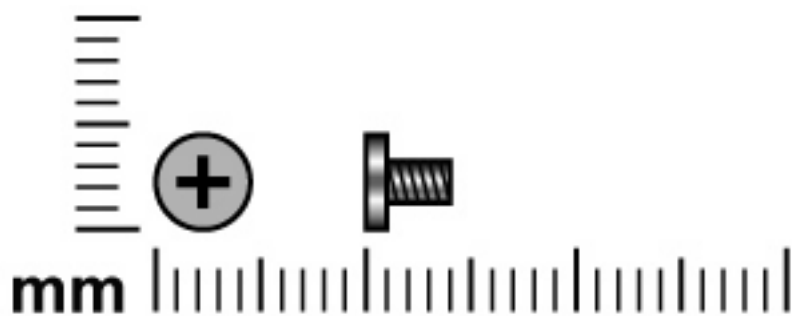


Color	Quantity	Length	Thread	Head diameter
Silver	1	2.0 mm	2.0 mm	4.0 mm

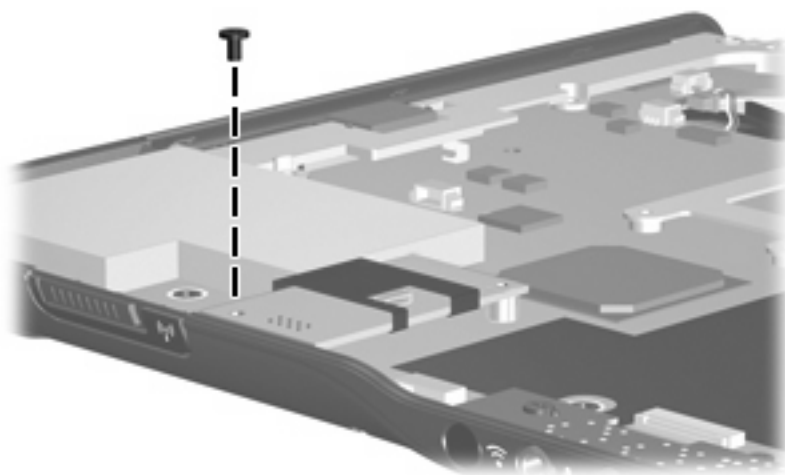


Where used: One screw that secures the TouchPad bracket to the TouchPad board

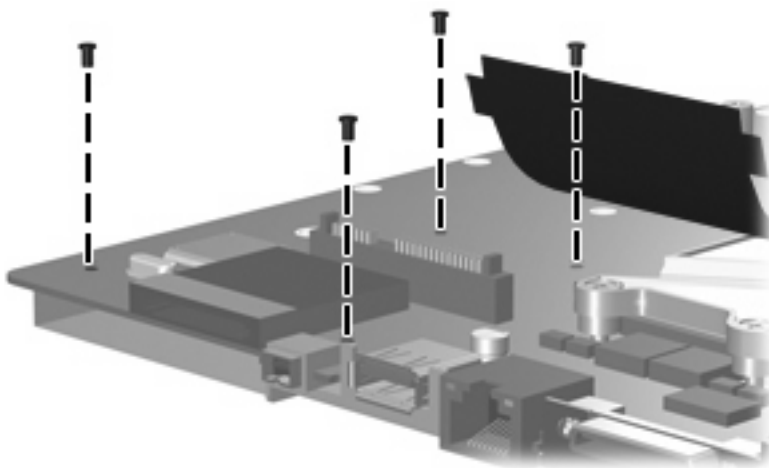
Phillips PM2.0×4.0 screw



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

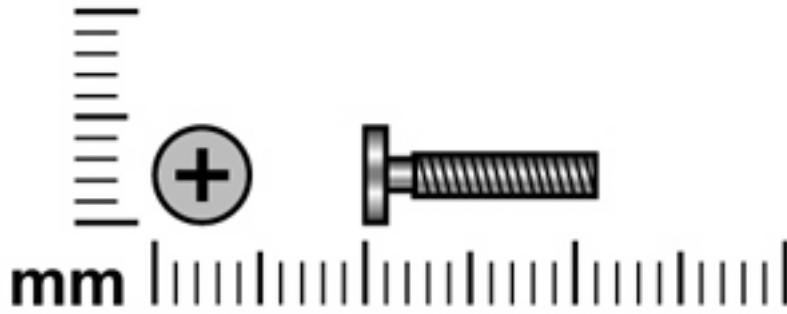


Where used: One screw that secures the modem module to the system board

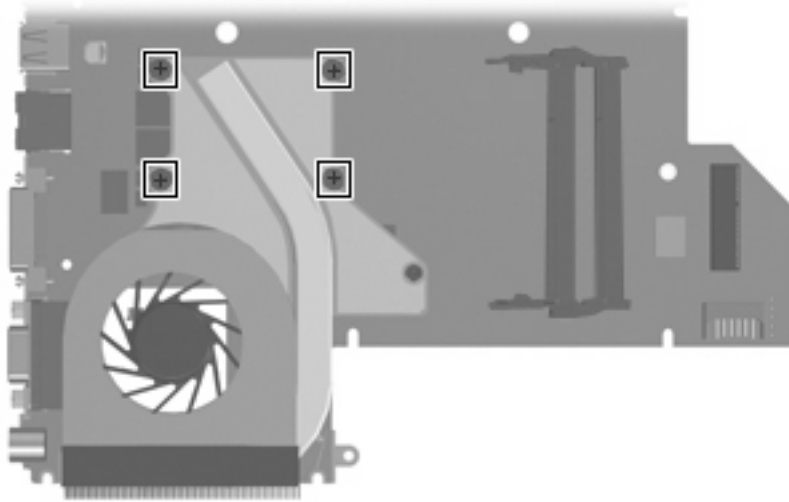


Where used: 4 screws that secure the ExpressCard assembly to the system board

Phillips PM2.0×1 1.0 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.

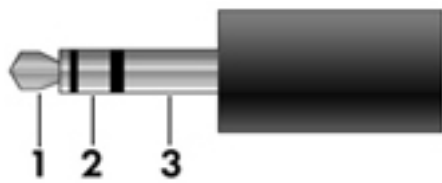
To access update links for the operating system and other software provided on your computer:

- 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.

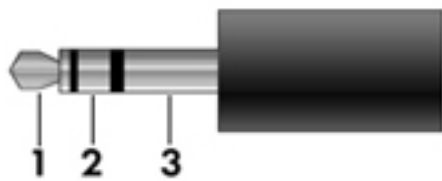
9 Connector pin assignments

Audio-in (microphone)



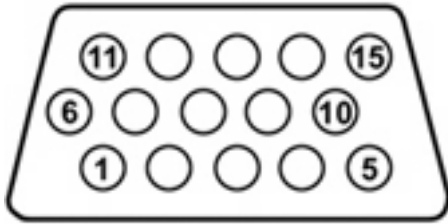
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

Audio-out (headphone)



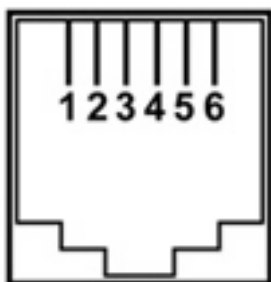
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

External monitor



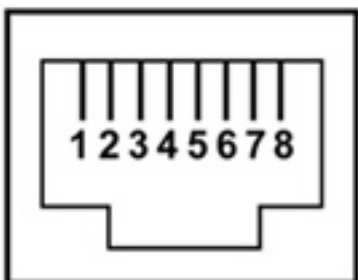
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

RJ-11 (modem)



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

RJ-45 (network)



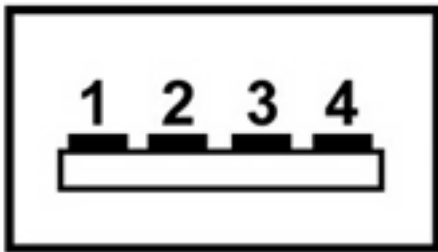
Pin	Signal
1	Transmit +
2	Transmit -
3	Receive +
4	Unused
5	Unused
6	Receive -
7	Unused
8	Unused

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
Korea	EK	4
The Netherlands	KEMA	1
Norway	NEMKO	1
The People's Republic of China	CCC	5
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>.

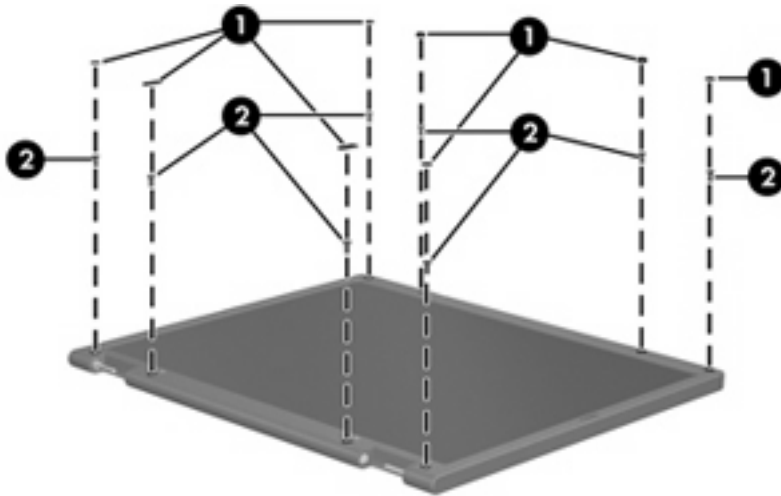
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.



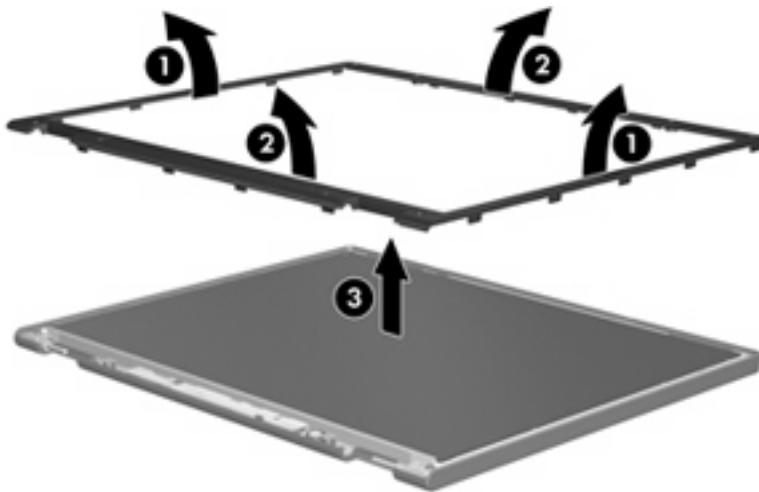
- 📄 **NOTE:** The procedures provided in this appendix are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps to disassemble the display assembly:

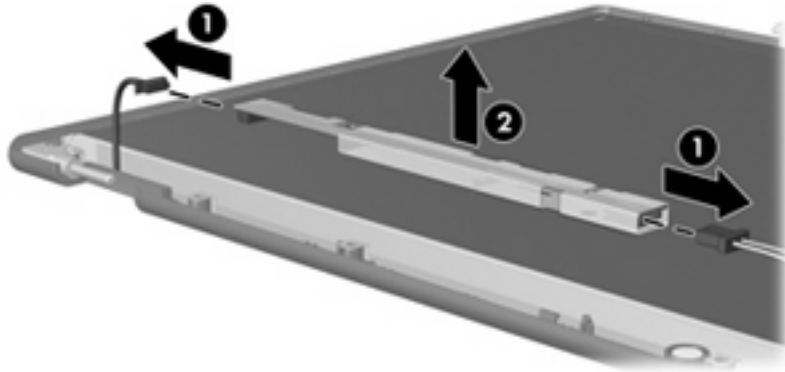
1. Remove all screw covers **(1)** and screws **(2)** that secure the display bezel to the display assembly.



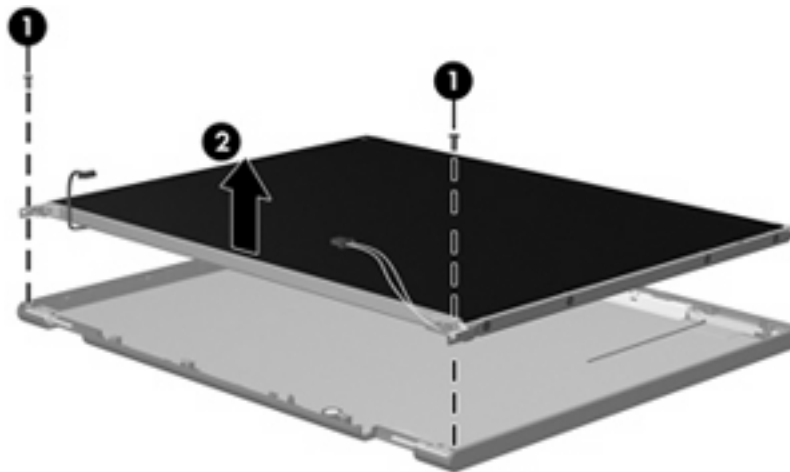
2. Lift up and out on the left and right inside edges **(1)** and the top and bottom inside edges **(2)** of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel **(3)**.



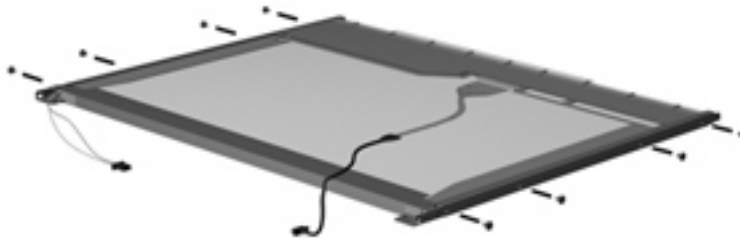
4. Disconnect all display panel cables **(1)** from the display inverter and remove the inverter **(2)**.



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.

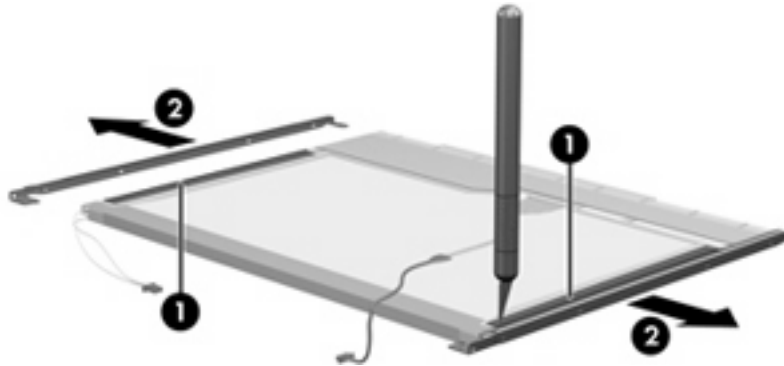


7. Turn the display panel assembly upside down.
8. Remove all screws that secure the display panel frame to the display panel.

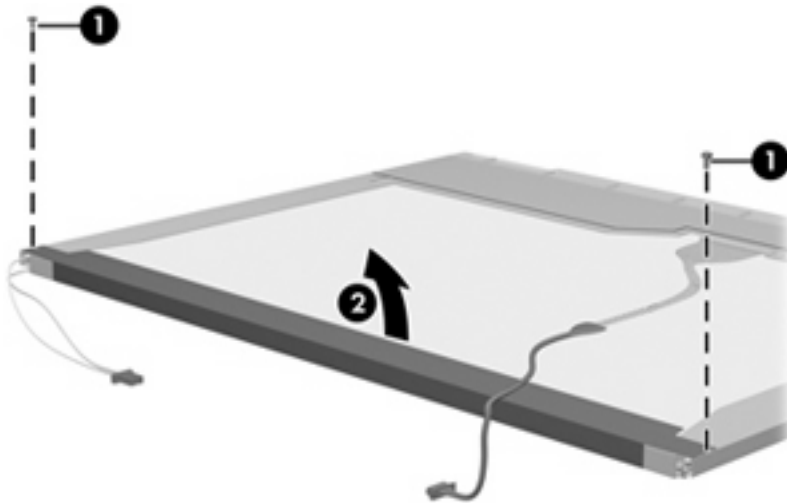


9. Use a sharp-edged tool to cut the tape **(1)** that secures the sides of the display panel to the display panel frame.

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

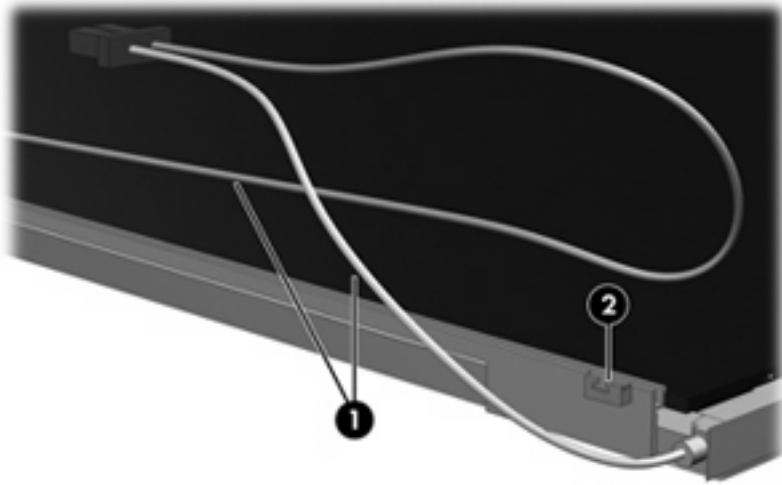


11. Remove the screws **(1)** that secure the backlight cover to the display panel.
12. Lift the top edge of the backlight cover **(2)** and swing it outward.

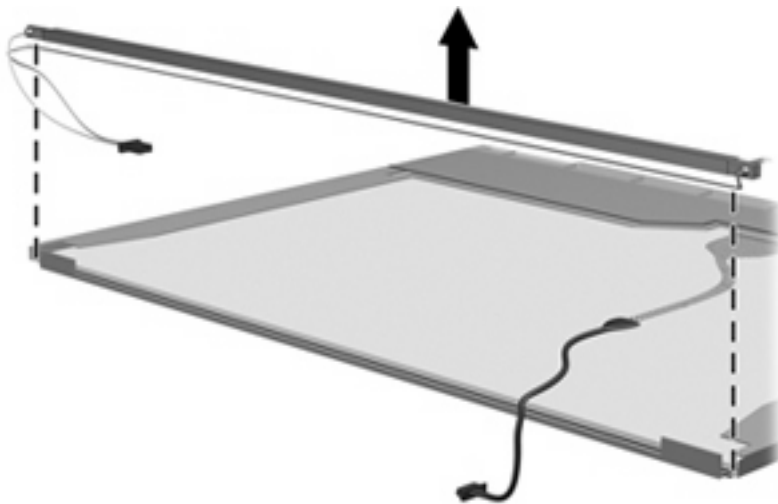


13. Remove the backlight cover.
14. Turn the display panel right-side up.

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

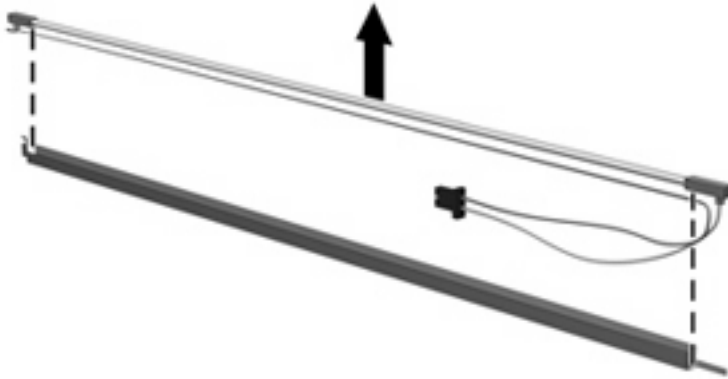


16. Turn the display panel upside down.
17. Remove the backlight frame from the display panel.

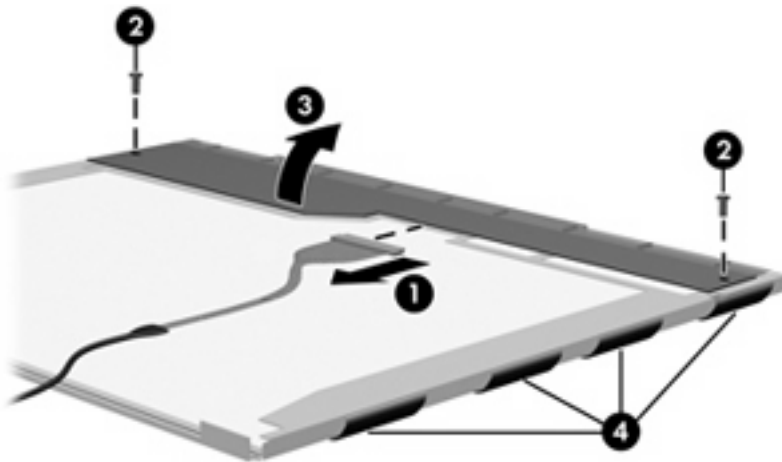


⚠ WARNING! The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

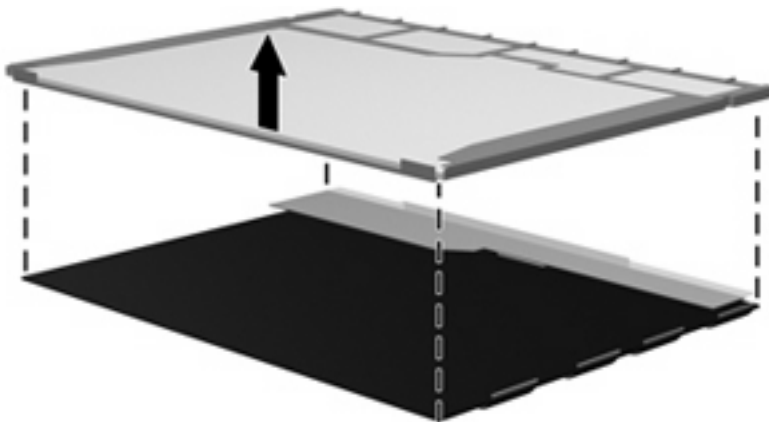
18. Remove the backlight from the backlight frame.



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.

Index

Symbols/Numerics

1394 port, location 12

A

AC adapter, spare part numbers 26, 28

administrator password 96

advanced Setup Utility features 95

antenna

removal 62

spare part number 21, 29, 62

applications key, Windows 8

audio board

removal 73

spare part number 18, 30, 73

audio, product description 2

audio-in jack

location 11

pin assignments 133

audio-out jack

location 11

pin assignments 133

audio-out S/PDIF jack,

location 11

B

backpack, spare part number 26, 28

backup 127

base enclosure, spare part number 18, 30

battery

removal 40

spare part numbers 19, 29, 31, 40

battery bay 14

battery light 9, 11

battery release latch 14

bezel

illustrated 21

spare part numbers 21, 29, 30, 42, 44, 61

Bluetooth module

removal 74

spare part number 18, 28, 74

Bluetooth module cable,

illustrated 24

boot options 96

boot order 96

bottom components 14

button sound 96

buttons

DVD 6

media 6

next/fast forward 7

play/pause 7

power 6

previous/rewind 7

stop 7

volume mute 7

C

Cable Kit

contents 24

spare part number 20, 24, 28

cables, service considerations 34

camera

location 5

product description 2

camera light 5

camera module

illustrated 21

removal 41

spare part number 21, 28, 41

camera module cable

illustrated 21

removal 63

spare part number 63

caps lock light 9

carrying case, spare part

number 26, 28

changing the Setup Utility

language 93

chipset, product description 1

closing the Setup Utility 95

CMOS clearing 38

components

bottom 14

display 5

front 11

keyboard 8

left-side 12

lights 9

rear 13

right-side 13

top 5

TouchPad 10

composite video cable, spare part

number 26, 28

computer feet

locations 51

spare part number 51

computer specifications 97

connector pin assignments

audio-in 133

audio-out 133

external monitor 134

headphone 133

microphone 133

modem 135

monitor 134

network 135

RJ-11 135

- RJ-45 135
- S-Video-out 136
- Universal Serial Bus (USB) 136
- connectors, service considerations 34

D

- Diagnostics menu 96
- Digital Media Slot 12
- Digital Media Slot light 12
- diskette drive
 - precautions 34
 - product description 2
- display assembly
 - removal 59
 - spare part numbers 16, 29, 30, 59
- display bezel
 - illustrated 21
 - release 41, 43
 - spare part numbers 21, 29, 30, 42, 44, 61
- Display Cable Kit, spare part number 21, 29
- display components
 - illustrated 21
 - recycling 139
 - spare part numbers 21
- display enclosure
 - illustrated 21
 - spare part numbers 22, 29, 30
- display hinge
 - removal 62
 - spare part number 21, 28, 62
- Display Hinge Kit, spare part number 21, 28, 62
- display inverter
 - illustrated 21
 - removal 43, 44
 - spare part number 21, 28, 43
- Display Label Kit, spare part number 22, 29
- display panel
 - illustrated 21
 - product description 1

- removal 62
- spare part number 21, 29, 62
- Display Screw Kit, spare part number 22, 28
- display specifications 98
- display switch 5
- display switch module
 - illustrated 21
 - removal 80
 - spare part number 21
- docking support, product description 3
- Door/Cover Kit
 - contents 23
 - spare part number 18, 23, 28
- drive light 9, 11
- drivers, reinstalling 130
- drives
 - boot order 96
 - preventing damage 34
- DVB-T antenna adapter, spare part number 26, 28
- DVB-T tuner, spare part number 26, 28
- DVD button 6
- DVD button light 9
- DVD/CD-RW Combo Drive
 - precautions 34
 - removal 53
 - spare part number 19, 25, 31, 53
 - specifications 100
- DVD±RW and CD-RW Combo Drive
 - precautions 34
 - removal 53
 - spare part numbers 19, 25, 31, 53
 - specifications 100

E

- electrostatic discharge 35
- enhanced SATA support 96
- esc key 8
- Ethernet, product description 2
- expansion port 3 12

- ExpressCard assembly
 - removal 85
 - spare part number 18, 28, 85
- ExpressCard slot 12
- ExpressCard slot bezel, illustrated 23
- external media cards, product description 2
- external monitor port
 - location 12
 - pin assignments 134

F

- fan/heat sink assembly
 - removal 87
 - spare part number 18, 30, 87
- fan/heat sink assembly mounting bracket
 - installation 89
 - spare part number 18, 28, 89
- feet
 - locations 51
 - spare part number 51
- fingerprint reader 7, 93
- fn key 8
- front components 11
- function keys 8

G

- graphics, product description 1
- grounding equipment and methods 37

H

- hard drive
 - precautions 34
 - product description 1
 - removal 45
 - spare part numbers 19, 25, 31, 45
 - specifications 99
- hard drive bay 14
- hard drive cover
 - illustrated 23
 - removal 46
- hard drive self test 96

- headphone jack
 - location 11
 - pin assignments 133
- headset, spare part number 26, 27

- hinge
 - removal 62
 - spare part number 21, 28, 62

- hinge cover
 - illustrated 21
 - removal 62
 - spare part number 21, 28, 62

- I**
- I/O address specifications 102
- infrared emitter, spare part number 26, 29
- infrared lens 11
- interrupt specifications 101
- inverter
 - illustrated 21
 - removal 43, 44
 - spare part number 21, 28, 43

- J**
- jacks
 - audio-in 11
 - audio-out 11
 - audio-out S/PDIF 11
 - headphone 11
 - microphone 11
 - modem 13
 - network 12
 - RJ-11 13
 - RJ-45 12
 - S-Video-out jack 12

- K**
- keyboard
 - product description 3
 - removal 54
 - spare part numbers 17, 29, 31, 54
- keyboard components 8
- keypad keys 8
- keys
 - embedded numeric keypad 8
 - esc 8

- fn 8
- function 8
- Windows applications 8
- Windows logo 8

- L**
- language support 93, 96
- LED board cable, illustrated 24
- left-side components 12
- light components 9
- lights
 - battery 9, 11
 - caps lock 9
 - drive 9, 11
 - DVD button 9
 - media button 9
 - next/fast forward 9
 - num lock 10
 - play/pause 9
 - power 9, 11
 - previous/rewind 9
 - stop 9
 - volume down 9
 - volume mute 9
 - volume up 10
 - wireless 11

- M**
- main menu 95
- mass storage devices, spare part numbers 25
- media button 6
- media button light 9
- memory map specifications 104
- memory module
 - product description 1
 - removal 51
 - spare part numbers 19, 31, 51
- memory module compartment 14
- memory module compartment cover
 - illustrated 23
 - removal 52
- microphone
 - illustrated 21
 - location 5
 - product description 2
 - removal 63

- microphone jack
 - location 11
 - pin assignments 133
- model name 1
- modem jack
 - location 13
 - pin assignments 135
- modem module
 - product description 2
 - removal 71
 - spare part number 18, 28, 71
- modem module cable
 - illustrated 24
 - removal 85
- monitor port
 - location 12
 - pin assignments 134
- mouse, spare part numbers 26, 28

- N**
- navigating in the Setup Utility 94
- network jack
 - location 12
 - pin assignments 135
- next/fast forward button 7
- next/fast forward light 9
- num lock light 10

- O**
- operating system, product description 3
- optical drive
 - location 13
 - precautions 34
 - product description 2
 - removal 53
 - spare part numbers 19, 25, 53
 - specifications 100

- P**
- packing guidelines 36
- password clearing 38
- passwords 96
- plastic parts 33
- play/pause button 7
- play/pause light 9

- pointing device
 - components 10
 - product description 3
- ports
 - 1394 12
 - external monitor port 12
 - monitor port 12
 - product description 2
 - Universal Serial Bus (USB) 12, 13
- power button 6
- power button board cable, illustrated 24
- power connector 13
- power connector cable
 - removal 84
 - spare part number 18, 30, 84
- power cord set requirements 137
- power cord, spare part numbers 26, 27
- power light 9, 11
- power requirements, product description 3
- power-on password 96
- previous/rewind button 7
- previous/rewind light 9
- processor
 - product description 1
 - removal 90
 - spare part numbers 18, 29, 30, 90
- product description
 - audio 2
 - camera 2
 - chipset 1
 - diskette drive 2
 - display panel 1
 - docking support 3
 - Ethernet 2
 - external media cards 2
 - graphics 1
 - hard drives 1
 - keyboard 3
 - memory module 1
 - microphone 2
 - modem module 2
 - operating system 3
 - optical drives 2
 - pointing device 3
 - ports 2
 - power requirements 3
 - processors 1
 - product name 1
 - security 3
 - serviceability 3
 - wireless 2
- product name 1
- R**
 - rear component 13
 - recovery discs 129
 - recovery partition, deleting 132
 - recovery, system 131
 - remote control, spare part numbers 26, 28, 29
 - removal/replacement
 - preliminaries 33
 - procedures 39
 - restore points 128
 - RF input adapter cable without ferrite, spare part number 28
 - RF input adapter cable, spare part number 26
 - right-side components 13
 - RJ-11 jack
 - location 13
 - pin assignments 135
 - RJ-45 jack
 - location 12
 - pin assignments 135
 - RTC battery
 - removal 50
 - spare part number 19, 28, 50
 - Rubber Feet Kit, spare part number 18, 28, 51
- S**
 - S-Video-out jack
 - location 12
 - pin assignments 136
 - Screw Kit
 - contents 105
 - spare part number 27, 28
 - screw listing 105
 - secondary hard drive self test 96
 - security cable slot 12
 - Security menu 96
 - security, product description 3
 - selecting in the Setup Utility 94
 - serial number 15, 39
 - service considerations 33
 - serviceability, product description 3
 - Setup Utility
 - changing the language 93
 - Diagnostics menu 96
 - displaying system information 94
 - Main menu 95
 - navigating 94
 - overview 93
 - Security menu 96
 - selecting 94
 - starting 93
 - System Configuration menu 96
 - using advanced features 95
 - SIM slot cover, illustrated 23
 - software
 - reinstalling 130
 - updating 132
 - speaker assembly
 - removal 78
 - spare part number 18, 28, 78
 - speakers 6
 - specifications
 - computer 97
 - display 98
 - DVD/CD-RW Combo Drive 100
 - DVD±RW and CD-RW Combo Drive 100
 - hard drive 99
 - I/O addresses 102
 - interrupts 101
 - memory map 104
 - optical drive 100
 - system DMA 101
 - static-shielding materials 37
 - stop button 7
 - stop light 9
 - switch cover
 - removal 56
 - spare part numbers 17, 30, 56

- system board
 - removal 82
 - spare part numbers 18, 29, 82
- System Configuration menu 96
- system DMA 101
- system information 94, 95
- system memory map 104

T

- thermal paste, replacement 88
- tools required 33
- top components 5
- top cover
 - removal 65
 - spare part numbers 18, 30, 65
- top cover trim
 - illustrated 23
 - removal 81
- TouchPad
 - removal 68
 - spare part number 18, 30, 68
- TouchPad cable, spare part number 68
- TouchPad components
 - left button 10
 - light 10
 - on/off button 10
 - right button 10
 - scroll zone 10
 - TouchPad 10
- transporting guidelines 36
- TV tuner antenna, spare part number 26, 29
- TV tuner, spare part number 26, 29

U

- Universal Serial Bus (USB) port
 - locations 12, 13
 - pin assignments 136
- unknown password 38
- USB board
 - removal 76
 - spare part number 19, 28, 76
- USB board cable, illustrated 24

V

- vents 13, 14
- video memory 96
- volume down light 9
- volume mute button 7
- volume mute light 9
- volume scroll zone 7
- volume up light 10

W

- Windows applications key 8
- Windows logo key 8
- wireless antenna
 - removal 62
 - spare part number 21, 29, 62
- Wireless Antenna Kit, spare part number 21, 29, 62
- wireless light 11
- wireless module compartment 14
- wireless module compartment cover
 - illustrated 23
 - removal 48
- wireless switch 11
- wireless switch board
 - removal 70
 - spare part number 18, 28, 70
- wireless, product description 2
- WLAN module
 - removal 48
 - spare part numbers 19, 29, 31, 48
 - spare part numbers 28
- workstation guidelines 36

