

HP Pavilion dv4 Entertainment PC Maintenance and Service Guide



© Copyright 2008 Hewlett-Packard
Development Company, L.P.

Athlon, Sempron, and Turion are trademarks of Advanced Micro Devices, Inc. Bluetooth is a trademark owned by its proprietor and used by Hewlett-Packard Company under license. Intel, Celeron, Pentium, and Core are trademarks of Intel Corporation in the U.S. and other countries. Microsoft, Windows, and Windows Vista are U.S. registered trademarks of Microsoft Corporation. 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.

Second Edition: November 2008

First Edition: July 2008

Document Part Number: 468133-002

Safety warning notice

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

Table of contents

1 Product description

2 External component identification

Top components	8
TouchPad	8
Lights	9
Buttons, speakers, and fingerprint reader	10
Keys	13
Display	14
Front components	15
Rear component	16
Right-side components	16
Left-side components	17
Bottom components	18
Wireless antennae	19

3 Illustrated parts catalog

Serial number location	20
Computer major components	21
Display assembly components	25
Plastics Kit	28
Mass storage devices	29
Miscellaneous parts	32
Sequential part number listing	36

4 Removal and replacement procedures

Preliminary replacement requirements	47
Tools required	47
Service considerations	47
Plastic parts	47
Cables and connectors	48
Drive handling	48
Grounding guidelines	49

Electrostatic discharge damage	49
Packaging and transporting guidelines	50
Workstation guidelines	50
Equipment guidelines	51
Unknown user password	52
Component replacement procedures	53
Serial number	53
Computer feet	54
Battery	55
SIM	56
Optical drive	57
Hard drive	59
WLAN module	62
WWAN module	65
Memory module	67
RTC battery	69
Camera/microphone module for standard display assembly	70
Keyboard	72
Keyboard cover	74
Bluetooth module	76
Speaker assembly	77
SIM connector board	79
Display assembly	80
Standard display assembly	84
Flush Glass display assembly	87
Top cover	92
TouchPad	95
Fingerprint reader board	97
Modem module	99
Audio board	101
USB board	103
TV tuner antenna	105
System board	107
Power button board	110
Modem module cable	112
Fan and heat sink	114
Heat sink assembly for discrete graphics system	115
Heat sink assembly for UMA graphics system	116
Processor	118
5 Setup Utility	
Starting the Setup Utility	121
Changing the language of the Setup Utility	121

Navigating and selecting in the Setup Utility	122
Displaying system information	122
Restoring default settings in the Setup Utility	123
Exiting the Setup Utility	123
Setup Utility menus	124

6 Specifications

Computer specifications	126
14.1-inch, WXGA, BrightView display specifications	127
Hard drive specifications	128
Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer (DL) support specifications	129
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive specifications	130
System DMA specifications	131
System interrupt specifications—Intel processors	132
System interrupt specifications—AMD processors	133
System I/O address specifications—Intel processors	134
System I/O address specifications—AMD processors	136
System memory map specifications—Intel processors	138
System memory map specifications—AMD processors	139

7 Screw listing

Phillips PM1.5×9.0 slotted screw	142
Phillips PM2.0×3.0 broadhead screw	143
Phillips PM2.0×4.0 screw	144
Phillips PM2.0×10.0 captive screw	148
Phillips PM2.5×3.0 screw	149
Phillips PM2.5×4.0 screw	150
Phillips PM2.5×6.0 screw	155
Phillips PM2.5×6.0 captive screw	157
Phillips PM2.5×7.0 screw	158
Phillips PM2.5×9.0 screw	159
Phillips PM2.5×17.0 screw	161
Phillips PM3.0×4.0 screw	162

8 Backup and recovery

Recovering system information	163
Backing up your information	163
When to back up	163
Backup suggestions	164
Using system restore points	164
When to create restore points	164
Create a system restore point	164

Restore to a previous date and time	165
Creating recovery discs	165
Performing a recovery	166
Recovering from the recovery discs	166
Recovering from the dedicated recovery partition (select models only)	166

9 Connector pin assignments

Audio-in (microphone)	168
Audio-out (headphone)	169
External monitor	170
RJ-11 (modem)	171
RJ-45 (network)	172
HDMI	173
Universal Serial Bus	174

10 Power cord set requirements

Requirements for all countries or regions	175
Requirements for specific countries or regions	176

11 Recycling

Battery	177
Display	177

Index	183
--------------------	------------

1 Product description

Category	Description	Intel processors with discrete graphics subsystem	Intel processors with UMA graphics subsystem	AMD processors with UMA graphics subsystem
Product Name	HP Pavilion dv4 Entertainment PC	√	√	√
Processors	Intel® Core™ Duo with 1066-MHz front side bus (FSB)			
	T9600 2.8-GHz processor with 6-MB L2 cache	√	√	
	T9550 2.66-GHz processor with 6-MB L2 cache	√	√	
	T9400 2.53-GHz processor with 6-MB L2 cache	√	√	
	P8700 2.53-GHz processor with 3-MB L2 cache	√	√	
	P8600 2.4-GHz processor with 3-MB L2 cache	√	√	
	P8400 2.26-GHz processor with 3-MB L2 cache	√	√	
	T5900 2.2-GHz processor with 2-MB L2 cache	√	√	
	P7450 2.13-GHz processor with 3-MB L2 cache	√	√	
	P7350 2.0-GHz processor with 3-MB L2 cache	√	√	
	T6600 2.2-GHz processor with 3-MB L2 cache	√	√	
	T6400 2.06-GHz processor with 3-MB L2 cache	√	√	
	T5800 2.0-GHz processor with 2-MB L2 cache	√	√	
	Intel Pentium® Dual-Core			
	T4200 2.0-GHz processor with 4-MB L2 cache	√	√	
	T3400 2.16-GHz processor with 1-MB L2 cache	√	√	

Category	Description	Intel processors with discrete graphics subsystem	Intel processors with UMA graphics subsystem	AMD processors with UMA graphics subsystem
	T3200 2.00-GHz processor with 1-MB L2 cache	√	√	
	Intel Celeron®			
	T1600 1.66-GHz processor with 2-MB L2 cache	√	√	
	AMD Turion™ Ultra Dual-Core/35W			
	ZM-86 2.4-GHz processor with 2-MB L2 cache			√
	ZM-84 2.3-GHz processor with 2-MB L2 cache			√
	ZM-82 2.2-GHz processor with 2-MB L2 cache			√
	ZM-80 2.1-GHz processor with 2-MB L2 cache			√
	AMD Turion Dual-Core/35W			
	RM-74 2.2-GHz processor with 1-MB L2 cache			√
	RM-72 2.1-GHz processor with 1-MB L2 cache			√
	RM-70 2.0-GHz processor with 1-MB L2 cache			√
	AMD Athlon™ x2 Dual-Core/35W			
	QL-64 2.1-GHz processor with 1-MB L2 cache			√
	QL-62 2.0-GHz (1-MB L2 cache)			√
	QL-60 1.9-GHz processor with 1-MB L2 cache			√
	AMD Sempron™ x2 Single-Core/35W			
	SI-42 2.1-GHz processor with 512-KB L2 cache			√
	SI-40 2.0-GHz processor with 512-KB L2 cache			√
Chipset	Northbridge: Intel PM45	√		
	Northbridge: Intel GM45		√	
	Northbridge: Intel GL40	√	√	
	Southbridge: Intel ICH9m	√	√	
	Northbridge: AMD M780G			√
	Southbridge: AMD SB700			√

Category	Description	Intel processors with discrete graphics subsystem	Intel processors with UMA graphics subsystem	AMD processors with UMA graphics subsystem
Graphics	nVidia Discrete PCI Express x 64 Graphics <ul style="list-style-type: none"> nVidia GeForce9200M GS (NB9M-GE-S) with 256 MB of dedicated video memory (32MB x 16 DDR2 x 4 PCs) with 256 MB of video memory when system memory is less than 1 GB (64 MB + 192 MB Turbo cache) nVidia GeForce9200M GS (NB9M-GE-S) with 512 MB of dedicated video memory (64MB x 16 DDR2 x 4 PCs) with 512 MB of video memory when system memory is less than 1 GB (64 MB + 448 MB Turbo cache) <p>System design supports up to 55-W GPU requirement.</p>	√		
	AMD Internal Graphics with Layout "Sideport" memory			√
	UMA nVidia <p>Unified Memory Architecture (UMA) with shared video memory (ATI Radeon HD 3200 Graphics):</p> <ul style="list-style-type: none"> Up to 251 MB on computers with 1024 MB of system memory Up to 358 MB on computers with 2048 MB of system memory <p>Memory size is a dynamic change.</p>			√
Panel	Display panel options: <ul style="list-style-type: none"> 14.1-inch, WXGA LED with BrightView 14.1-inch, WXGA with BrightView 14.1-inch, WXGA, Anti-Glare with Flushed Glass (1280 x 800) 	√	√	√

Category	Description	Intel processors with discrete graphics subsystem	Intel processors with UMA graphics subsystem	AMD processors with UMA graphics subsystem
Memory	2 SODIMM slots	√	√	√
	Customer-accessible/upgradable			
	DDRII PC2-5300 (800-MHz)			
	Supports up to 4 GB of system RAM			
	Supports the following configurations:			
	4096 MB (2048 × 2)	√	√	√
3072 MB (2048 × 1, 1024 × 1)	√	√	√	
2048 MB (2048 × 1)	√	√	√	
2048 MB (1024 × 2)	√	√	√	
1024 MB (1024 × 1)	√	√	√	
Hard drives	Supports all 9.5-mm SATA, 2.5-inch hard drives	√	√	√
	Swappable bay support, hot plug and play			
	Supports the following drives:	√	√	√
	<ul style="list-style-type: none"> • 500-GB, 5400-rpm • 400-GB, 5400-rpm • 320-GB, 5400-rpm • 250-GB, 5400-rpm • 160-GB, 5400-rpm • 120-GB, 5400-rpm 			
Optical drives	Swappable bay SATA, 12.7mm tray load	√	√	√
	8× DVD±RW DL SuperMulti	√	√	√
	DVD±RW DL LightScribe SuperMulti	√	√	√
	Blu-ray ROM DVD±R/RW SuperMulti DL Drive	√	√	√
	Blu-ray ROM with LightScribe DVD ±R/RW SuperMulti DL Drive	√	√	
Webcam	Low-light, VGA camera, fixed (no tilt) with activity light	√	√	√
	640×480 by 24 frames per second			
Microphone	2 integrated omnidirectional digital microphones	√	√	√

Category	Description	Intel processors with discrete graphics subsystem	Intel processors with UMA graphics subsystem	AMD processors with UMA graphics subsystem
	Dual array microphones with software (beam forming, echo cancellation, noise suppression)	√	√	√
Audio	HD audio	√	√	√
	Supports Windows Vista® Premium Logo requirements	√	√	√
	Pavilion-branded Altec Lansing speakers	√	√	√
Modem	56K V.92 data/fax modem	√	√	√
	Supports all worldwide certification requirements	√	√	√
	Modem cable not included	√	√	√
Ethernet	Integrated Gigabit 10/100/1000 network interface card (NIC)	√		√
	Integrated 10/100 network interface card (NIC)		√	√
Wireless	Integrated wireless (WLAN and WWAN) options:			
	Intel WiFi Link 5100 Wireless ABG and Bluetooth with 2 antennae	√	√	
	Intel WiFi Link 5100 with 2 antennae	√	√	
	Broadcom 4321AGN Wi-Fi Adapter (802.11a/b/g/n) + Bluetooth with 2 antennae	√	√	√
	Broadcom 4321AGN Wi-Fi Adapter (802.11a/b/g/n) with 2 antennae	√	√	√
	Broadcom 802.11a/b/g/n with 2 antennae			√
	Broadcom 802.11a/b/g/n with Bluetooth and 2 antennae			√
	54g 802.11b/g with 2 antennae	√	√	
	54g 802.11b/g with Bluetooth and 2 antennae	√	√	
	2 WWAN 5-band antennae built into display assembly	√	√	
	Subscriber identity module (SIM) security (customer-accessible in battery bay)	√	√	

Category	Description	Intel processors with discrete graphics subsystem	Intel processors with UMA graphics subsystem	AMD processors with UMA graphics subsystem
	Support for the following WWAN formats: <ul style="list-style-type: none"> Evolution-data optimized (EVDO) High-speed downlink packet access (HSDPA) 	√	√	
Integrated TV tuner	TV tuner antenna and cable for both DVB-T and ATSC/NTSC	√	√	
	Integrated NTSC/ATSC/QAM Hybrid TV tuner (not available with WWAN)	√	√	
	Integrated Analog/DVB-T TV tuner (not available with WWAN)	√	√	
	Integrated DVB-T TV tuner (not available with WWAN)	√	√	
External card expansion	One ExpressCard54 slot	√	√	√
	Digital Media Slot, supports SD, MMC, MS, MSpro, xD	√	√	√
Internal card expansion	2 mini full-size PCI slots	√	√	√
Ports	Audio-in (stereo microphone)	√	√	√
	Audio-out (2) (stereo headphones)	√	√	√
	AC Adapter (smart pin)	√	√	√
	Consumer infrared	√	√	√
	eSATA (third USB port)	√	√	√
	HDMI	√	√	√
	MCX	√	√	√
	RJ-11 (modem)	√	√	√
	RJ-45 (Ethernet, includes link and activity lights)	√	√	√
	USB (3)	√	√	√
	VGA (Dsub 15-pin)	√	√	√
Docking	Expansion port 3 supports HP xb4 Docking Station and HP Notebook QuickDock	√	√	√
Keyboard/TouchPad	14.1-inch keyboard	√	√	√
	TouchPad (supports 2-way scroll with legend)	√	√	√

Category	Description	Intel processors with discrete graphics subsystem	Intel processors with UMA graphics subsystem	AMD processors with UMA graphics subsystem
Power requirements	12-cell 2.20-Ah Li-ion battery	√	√	√
	6-cell 2.55-Ah Li-ion battery	√	√	√
	6-cell 2.20-Ah Li-ion battery	√	√	√
	65-W AC adapter with localized cable plug support (2-wire plug with ground pin, supports 2-pin DC connector)		√	√
	90-W AC adapter with localized cable plug support (2-wire plug with ground pin, supports 2-pin DC connector)	√		√
	Standard commercial smart pin	√	√	√
Security	Security cable slot	√	√	√
	Fingerprint reader	√	√	√
Operating system	Preinstalled:			
	Windows Vista Business (32-bit)	√	√	√
	Windows Vista Home Basic (32-bit)	√	√	√
	Windows Vista Premium (32- and 64-bit)	√	√	√
	Windows Vista Ultimate (64-bit)	√	√	
Serviceability	End-user replaceable parts:			
	AC adapter	√	√	√
	Battery (system)	√	√	√
	Hard drive	√	√	√
	Memory module	√	√	√
	Optical drive	√	√	√
	Mini Card components	√	√	√

2 External component identification

Top components


TouchPad

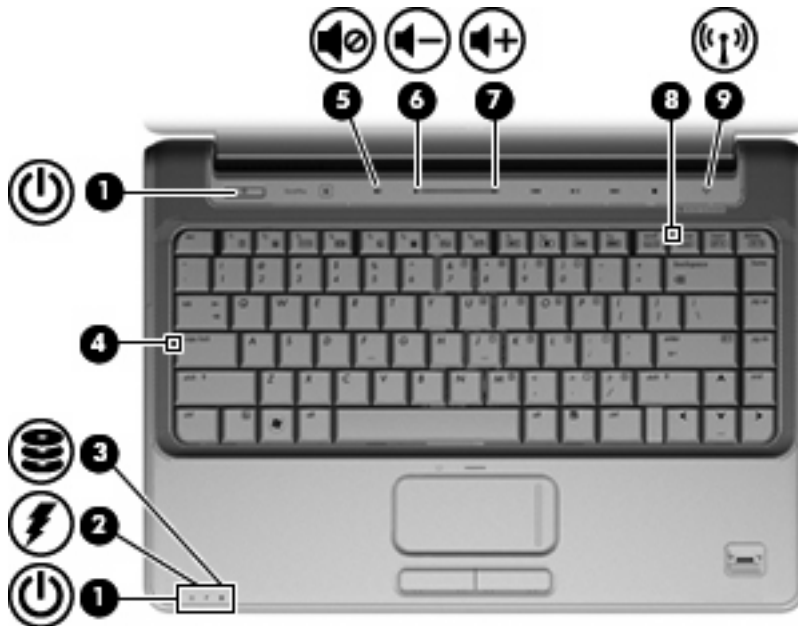


Component	Description
(1) TouchPad light	<ul style="list-style-type: none">• White: TouchPad is enabled.• Amber: TouchPad is disabled.
(2) TouchPad*	Moves the pointer and selects or activates items on the screen.
(3) Left TouchPad button*	Functions like the left button on an external mouse.
(4) TouchPad on/off button	Enables/disables the TouchPad.
(5) TouchPad vertical scroll zone*	Scrolls up or down.
(6) Right TouchPad button*	Functions like the right button on an external mouse.

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

Lights

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




Component	Description
(1) Power lights (2)*	<ul style="list-style-type: none"> On: The computer is on. Blinking: The computer is in the Sleep state. Off: The computer is off or in Hibernation.
(2) Battery light	<ul style="list-style-type: none"> On: A battery is charging. Blinking: A battery that is the only available power source has reached a low battery level or a critical battery level. Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
(3) Drive light	<ul style="list-style-type: none"> Blinking: The hard drive or optical drive (select models only) is being accessed. On: HP ProtectSmart Hard Drive Protection has temporarily parked the internal hard drive, and if present, the hard drive in the SmartBay.
(4) Caps lock light	On: Caps lock is on.
(5) Volume mute light	<ul style="list-style-type: none"> White: Computer sound is turned on. Amber: Computer sound is turned off.
(6) Volume down light	On: The volume scroll zone is being used to decrease speaker volume.
(7) Volume up light	On: The volume scroll zone is being used to increase speaker volume.

Component	Description
(8) Num lock light	On: Num lock is on or the embedded numeric keypad is enabled.
(9) Wireless light	<ul style="list-style-type: none"> Blue: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. Amber: All wireless devices are off.

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

Buttons, speakers, and fingerprint reader

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




Component	Description
(1) Speakers (2)	Produce sound.

Component	Description
(2) Power button*	<ul style="list-style-type: none"> • When the computer is off, press the button to turn on the computer. • When the computer is on, briefly press the button to initiate Sleep. • When the computer is in the Sleep state, briefly press the button to exit Sleep. • When the computer is in Hibernation, briefly press the button to exit Hibernation. <p>If the computer has stopped responding and Windows® shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer.</p> <p>To learn more about your power settings, select Start > Control Panel > System and Maintenance > Power Options.</p>
(3) Media button	<ul style="list-style-type: none"> • Launches the MediaSmart program (for models with MediaSmart preinstalled). • Launches the QuickPlay program (for models with QuickPlay preinstalled). • Launches the DVDPlay program (for models with DVDPlay preinstalled). <p>NOTE: If the computer has been set up to require a logon password, you may be asked to log on to Windows. MediaSmart, QuickPlay, or DVDPlay launches after you log on. Refer to the MediaSmart, QuickPlay, or DVDPlay software Help for more information.</p>
(4) Volume mute button	Mutes and restores speaker sound.
(5) 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.
(6) Previous/rewind button	<ul style="list-style-type: none"> • Plays the previous track or chapter when the button is pressed once. • Rewinds media when the button is pressed simultaneously with the fn key.
(7) Play/pause button	Plays or pauses media.
(8) Next/fast forward button	<ul style="list-style-type: none"> • Plays the next track or chapter when the button is pressed once. • Fast forwards media when pressed simultaneously with the fn key.
(9) Stop button	Stops playback.
(10) Wireless button	<p>Turns the wireless feature on or off but does not establish a wireless connection.</p> <p>NOTE: A wireless network must be set up in order to establish a wireless connection.</p>

Component	Description
(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

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



Component	Description
(1) <code>esc</code> key	Displays system information when pressed in combination with the <code>fn</code> key.
(2) <code>fn</code> key	Executes frequently used system functions when pressed in combination with a function key or the <code>esc</code> key.
(3) Windows logo key	Displays the Windows Start menu.
(4) 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 <code>fn</code> key.

Display

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



Component	Description
(1) Internal display switch	Turns off the display if the display is closed while the computer is turned on.
(2) Internal digital dual array microphones (2)	Record sound.
(3) Integrated webcam light (select models only)	On: The integrated webcam is in use.
(4) Integrated webcam (select models only)	Records video and captures still photographs.

Front components




Component	Description
(1) Power light	<ul style="list-style-type: none"> On: The computer is on. Blinking: The computer is in the Sleep state. Off: The computer is off or in Hibernation.
(2) Battery light	<ul style="list-style-type: none"> On: A battery is charging. Blinking: A battery that is the only available power source has reached a low battery level or a critical battery level. Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
(3) Drive light	<ul style="list-style-type: none"> Blinking: The hard drive or optical drive (select models only) is being accessed. On: HP ProtectSmart Hard Drive Protection has temporarily parked the internal hard drive, and if present, the hard drive in the SmartBay.
(4) Consumer infrared lens	Receives a signal from the HP Remote Control (select models only).
(5) Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(6) Audio-out (headphone) jacks (2)	Produce sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.

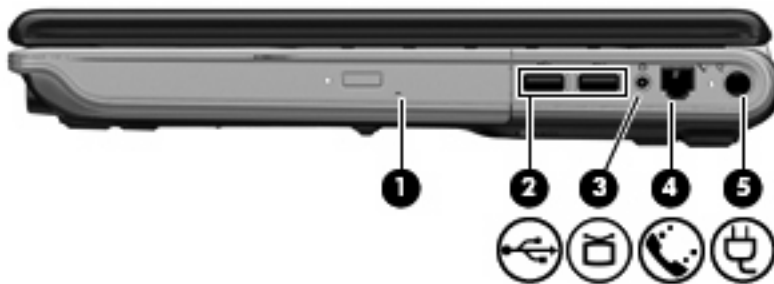
Rear component



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

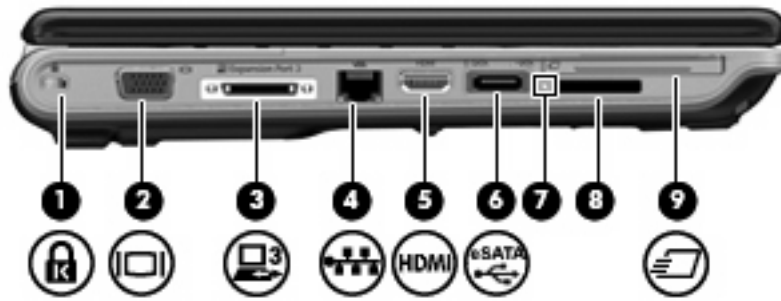
Right-side components

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



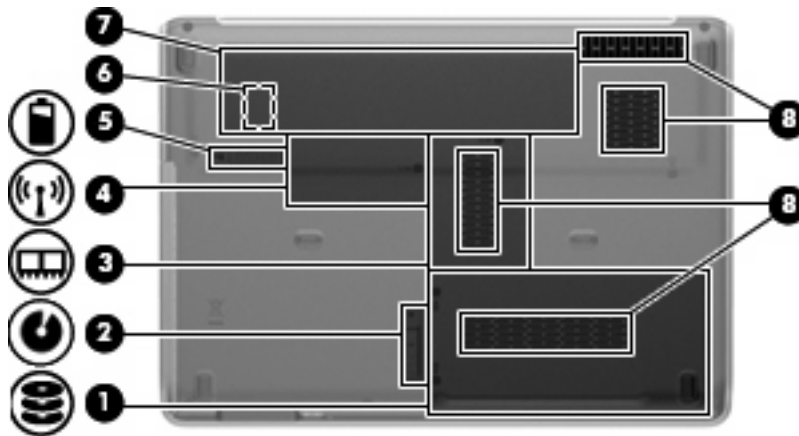
Component	Description
(1) SmartBay	Supports an optical drive or hard drive.
(2) USB ports (2)	Connect optional USB devices.
(3) TV antenna/cable jack (select models only)	Connects a TV antenna, a digital cable device, or a satellite device that receives standard or high-definition TV broadcasts.
(4) RJ-11 (modem) jack (select models only)	Connects a modem cable.
(5) Power connector	Connects an AC adapter.

Left-side components



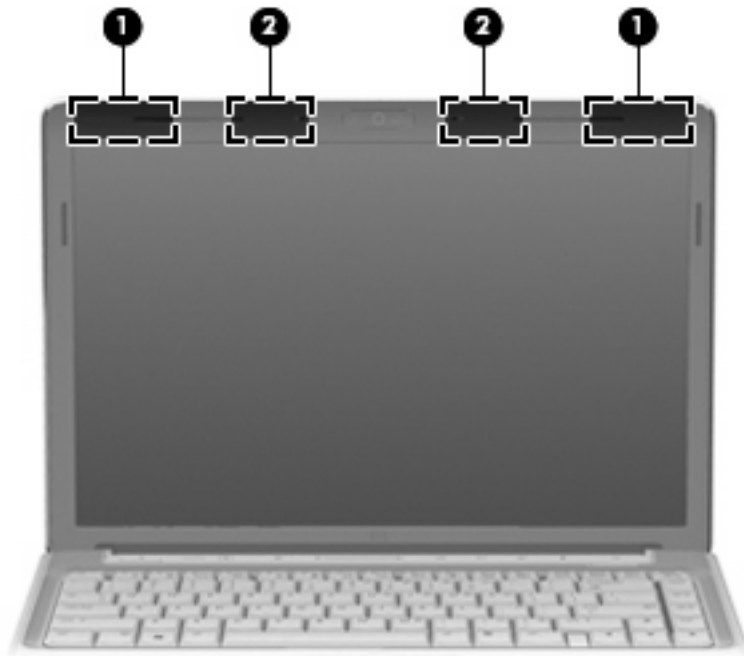
Component	Description
(1) Security cable slot	Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2) External monitor port	Connects an external VGA monitor or projector.
(3) Expansion port 3	Connects the computer to an optional docking device or optional expansion product. NOTE: The computer has only one expansion port. The term <i>expansion port 3</i> describes the type of expansion port.
(4) RJ-45 (network) jack	Connects a network cable.
(5) HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component.
(6) eSATA/USB port	Connects high-performance eSATA components, such as an eSATA external hard drive, or connect an optional USB device.
(7) Digital Media Slot light	On: A digital card is being accessed.
(8) Digital Media Slot	Supports the following optional digital card formats: <ul style="list-style-type: none"> • Memory Stick (MS) • Memory Stick Pro (MSP) • MultiMediaCard (MMC) • Secure Digital (SD) Memory Card • xD-Picture Card (XD)
(9) ExpressCard slot	Supports optional ExpressCard/54 cards.

Bottom components



Component	Description
(1) Hard drive and WLAN module compartment	<p>Holds the hard drive and the wireless LAN (WLAN) module.</p> <p>CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact technical support through Help and Support.</p>
(2) SmartBay release latch	Releases the SmartBay module.
(3) Memory module compartment	Contains the 2 memory module slots.
(4) Mini Card compartment	<p>On select models, holds a wireless WAN (WWAN) module and/or the TV tuner card.</p> <p>CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact technical support through Help and Support.</p>
(5) Battery release latch	Releases the battery from the battery bay.
(6) SIM slot (select models only)	Contains a subscriber identity module (SIM). The SIM slot is located inside the battery bay.
(7) Battery bay	Holds the battery.
(8) Vents (4)	<p>Enable airflow to cool internal components.</p> <p>NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p>

Wireless antennae



Component	Description
(1) WWAN antennae (2)*	Send and receive wireless signals to communicate with wireless wide-area networks (WWAN).
(2) WLAN antennae (2)*	Send and receive wireless signals to communicate with wireless local area networks (WLAN).

*The antennae are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennae free from obstructions.

To see wireless regulatory notices, refer to the section of the *Regulatory, Safety and Environmental Notices* that applies to your country or region. These notices are located in Help and Support.

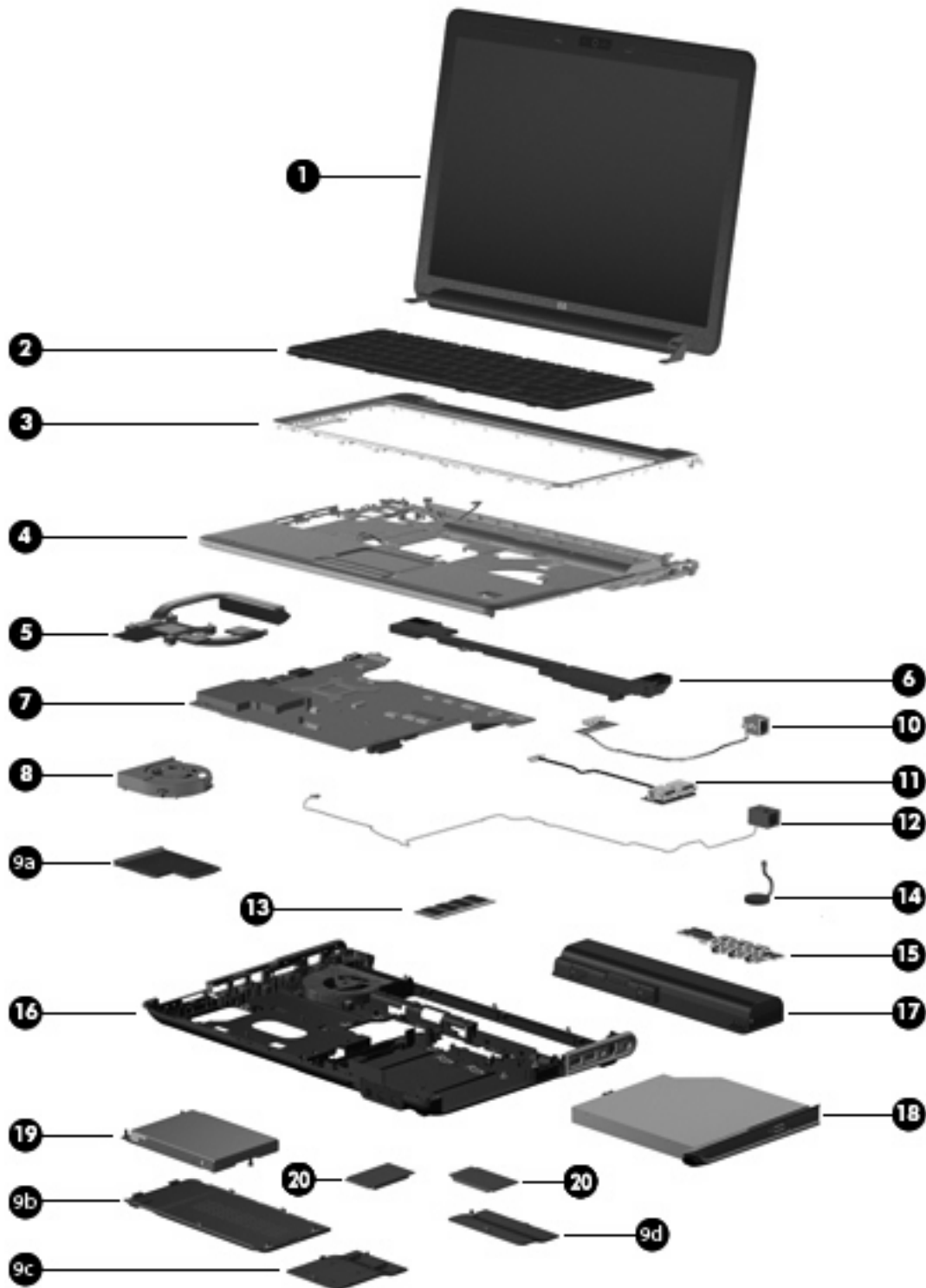
3 Illustrated parts catalog

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 (see Display assembly components on page 25 for display assembly spare part component information)	

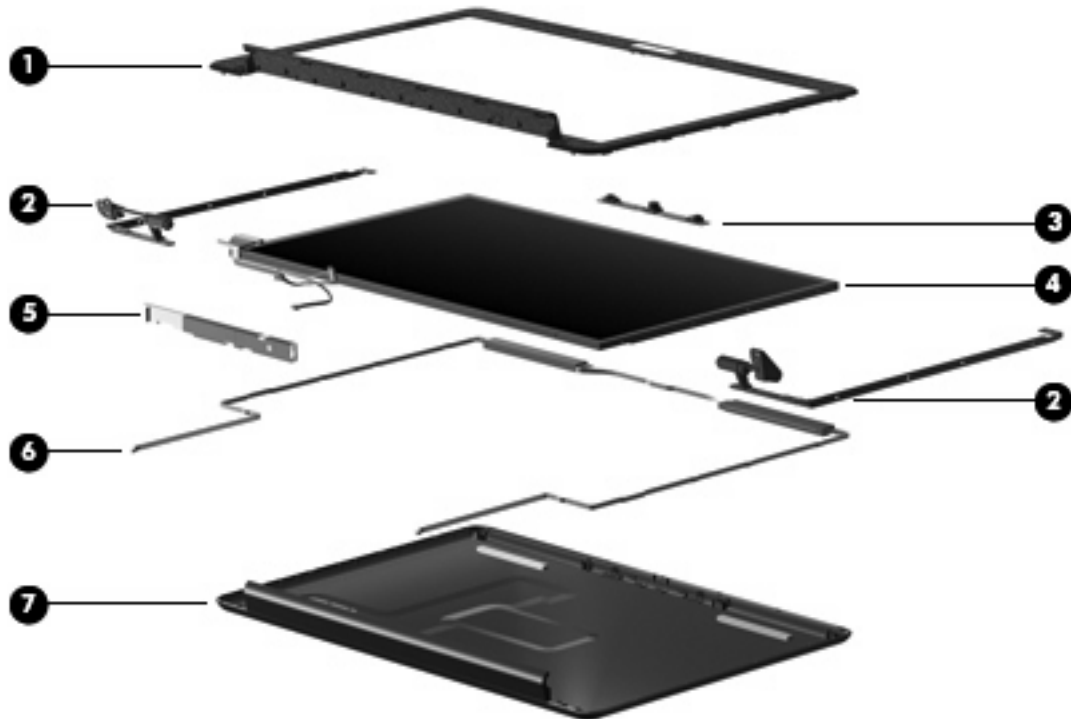
Item	Description	Spare part number
(2)	Keyboards	
	NOTE: For a comprehensive list of keyboard spare part numbers, see the Sequential part number listing on page 36 .	
	For use with standard computer models	486901-xxx
	For use only with bronze-colored computer models	508119-xx1
	For use in blue-colored computer models	508120-xx1
	For use in blue-colored computer models only in the United States	507319-001
(3)	Keyboard covers	
	<ul style="list-style-type: none"> For use with standard computer models 	486852-001
	<ul style="list-style-type: none"> For use with bronze-colored computer models 	495663-001
	<ul style="list-style-type: none"> For use with standard computer models 	512231-001
	<ul style="list-style-type: none"> For use with bronze-colored computer models 	512232-001
(4)	Top covers (include TouchPad and TouchPad cable)	
	<ul style="list-style-type: none"> Equipped with a fingerprint reader (includes fingerprint reader board and cable) 	486830-001
	<ul style="list-style-type: none"> Not equipped with a fingerprint reader 	488105-001
	<ul style="list-style-type: none"> For bronze-colored computer models equipped with a fingerprint reader 	495661-001
	<ul style="list-style-type: none"> For bronze-colored computer models not equipped with a fingerprint reader 	495662-001
	<ul style="list-style-type: none"> For use in blue-colored computer models 	502579-001
(5)	Heat sink (includes thermal material)	
	<ul style="list-style-type: none"> For use in models with Intel processors and UMA graphics subsystems 	486838-001
	<ul style="list-style-type: none"> For use in models with AMD processors and UMA graphics subsystems 	492260-001
(6)	Speaker assembly	486837-001
(7)	System boards (include thermal material)	
	For use in computer models with Intel processors:	
	<ul style="list-style-type: none"> On models equipped with a 256-MB discrete graphics subsystem 	486723-001
	<ul style="list-style-type: none"> On models equipped with a 512-MB discrete graphics subsystem 	496730-001
	<ul style="list-style-type: none"> On models equipped with a UMA graphics subsystem 	486724-001
	For use in computer models with AMD processors:	
	<ul style="list-style-type: none"> With QuickPlay 	488238-001
	<ul style="list-style-type: none"> With MediaSmart 	511858-001
(8)	Fan (includes thermal material)	486844-001
(9)	Plastics Kit (see Plastics Kit on page 28 for Plastics Kit spare part component information)	486833-001
(9a)	ExpressCard slot bezel	
(9b)	Hard drive bay cover	

Item	Description	Spare part number
(9c)	Memory module compartment cover	
(9d)	Wireless module compartment cover	
(10)	Modem modules and cable	
	Modem module for use with most computer models	461749-001
	Modem module for use with computer models in Australia and New Zealand	461749-011
	Modem module cable for use with computer models with Intel processors	494981-001
(11)	USB board (includes USB board cable)	486842-001
(12)	Power button with connector cable	486853-001
(13)	Memory modules (800-MHz, PC2-6400, 1-DIMM)	
	For use in computer models with AMD processors:	
	• 2048-GB	482169-002
	• 1024-MB	482168-002
	• 512-MB	482167-002
	For use in computer models with Intel processors:	
	• 2048-MB	482169-001
	• 1024-MB	482168-001
	• 512-MB	482167-001
(14)	RTC battery	486835-001
(15)	Audio board (includes audio connectors, infrared lens, and audio board cable)	486840-001
(16)	Base enclosures	
	• For use only in standard computer models without a modem module or TV tuner	486848-001
	• For use only in standard computer models with a TV tuner	486849-001
	• For use only in standard computer models with a modem module	486850-001
	• For use only in standard computer models with a modem module and TV tuner	486851-001
	• For use only in bronze-colored computer models without a modem module or TV tuner	495664-001
	• For use only in bronze-colored computer models with a TV tuner	495665-001
	• For use only in bronze-colored computer models with a modem module	495666-001
	• For use only in bronze-colored computer models with a modem module and TV tuner	495667-001
(17)	Batteries	
	• 12-cell, 8.80-Ah	484172-001
	• 6-cell, 2.55-Ah	484171-001
	• 6-cell, 2.20-Ah	482186-003

Item	Description	Spare part number
(18)	Optical drives (include bezel and bracket) (see Mass storage devices on page 29 for optical drive spare part component information)	
(19)	Hard drives (include hard drive bracket) (see Mass storage devices on page 29 for hard drive spare part component information)	
(20)	Processors (include thermal material)	
	AMD processors:	
	• Athlon QL-64 (2.1-GHz, 1-MB L2 cache)	506053-001
	• Turion 64 ZM-86 (2.4-GHz, 2-MB L2 cache)	487345-005
	• Turion 64, ZM-84 (2.3-GHz, 2-MB L2 cache)	497177-001
	• Turion 64 ZM-82 (2.2-GHz, 2-MB L2 cache)	487346-005
	• Turion 64 ZM-80 (2.1-GHz, 2-MB L2 cache)	487347-005
	• Turion 64 RM-74 (2.2-GHz, 1-MB L2 cache)	507979-001
	• Turion 64 RM-72 (2.1-GHz, 1-MB L2 cache)	497178-001
	• Turion 64 RM-70 (2.0-GHz, 1-MB L2 cache)	487348-006
	• Turion 64 QL-62 (2-GHz, 1-MB L2 cache)	497179-001
	• Turion 64 QL-60 (1.9-GHz, 1-MB L2 cache)	487349-006
	• Sempron SI-42 (2.1GHz, 512-KB cache)	497180-001
	• Sempron SI-40 (2.0-GHz, 512-KB L2 cache)	487350-004
	Intel processors:	
	• Core 2 Duo T9600 (2.80-GHz, 6-MB L2 cache)	486727-001
	• Core 2 Duo T9550 (2.66-GHz, 6-MB L2 cache)	507953-001
	• Core 2 Duo T9400 (2.53-GHz, 6-MB L2 cache)	483260-001
	• Core 2 Duo P8700 (2.53-GHz, 3-MB L2 cache)	507960-001
	• Core 2 Duo P8600 (2.40-GHz, 3-MB L2 cache)	483259-001
	• Core 2 Duo P8400 (2.26-GHz, 3-MB L2 cache)	483258-001
	• Core 2 Duo T5900 (2.2-GHz, 2-MB L2 cache)	495639-001
	• Core 2 Duo P7450 (2.13-GHz, 3-MB L2 cache)	495640-001 or 507965-001
	• Core 2 Duo P7350 (2.0-GHz, 3-MB L2 cache)	491856-001
	• Core 2 Duo T6600 (2.2 GHz, 3-MB L2 cache)	513593-001
	• Core 2 Duo T6400 (2.06 GHz, 3-MB L2 cache)	513592-001
	• Core 2 Duo T5800 (2.0-GHz, 2-MB L2 cache)	495638-001
	• Pentium Dual-Core T4200 (2.0-MHz, 4-MB L2 cache)	513599-001
	• Pentium Dual-Core T3400 (2.16-GHz, 1-MB L2 cache)	504784-001
	• Pentium Dual-Core T3200 (2.0-GHz, 1-MB L2 cache)	504783-001

Item	Description	Spare part number
	<ul style="list-style-type: none"> Celeron 575 (2.2-GHz, 1-MB L2 cache) 	502838-001
	<ul style="list-style-type: none"> Celeron T1600 (1.66-GHz, 2-MB L2 cache) 	497773-001

Display assembly components

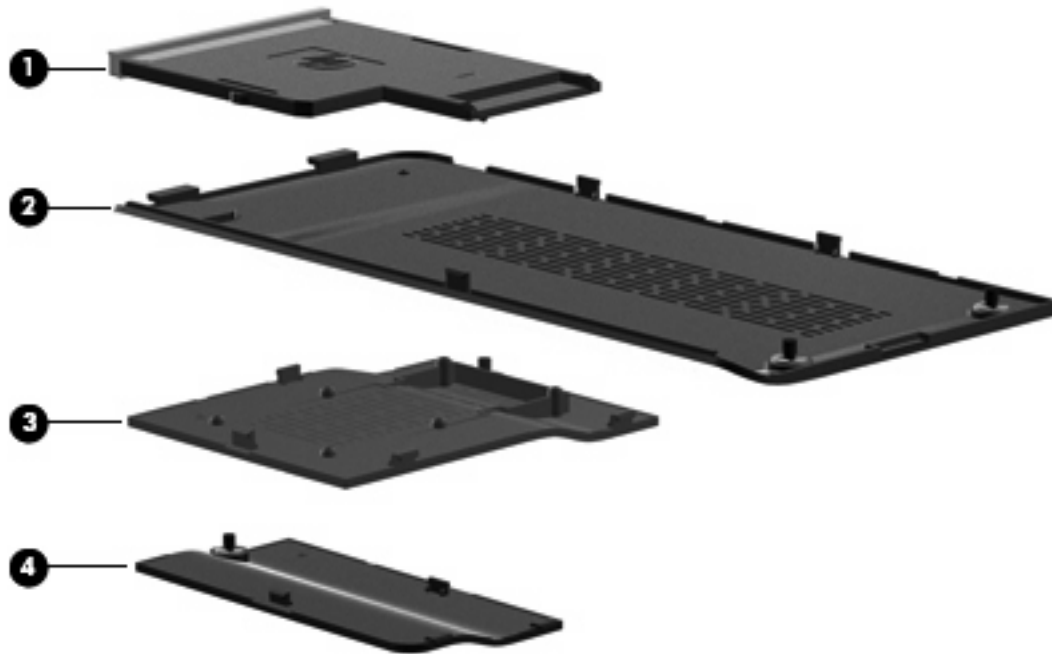


Item	Description	Spare part number
	Display assemblies (not illustrated)	
	<ul style="list-style-type: none"> 14.1-inch WXGA, Brightview display assembly with a camera/microphone module for use with standard computer models 	486882-001
	<ul style="list-style-type: none"> 14.1-inch WXGA, Brightview display assembly with a camera/microphone module for use with bronze-colored computer models 	496736-001
	<ul style="list-style-type: none"> 14.1-inch WXGA, Brightview LED display assembly with a camera/microphone module for use with standard computer models 	486883-001
	<ul style="list-style-type: none"> 14.1-inch WXGA, Brightview LED display assembly with a camera/microphone module for use with bronze-colored computer models 	496741-001
	<ul style="list-style-type: none"> 14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/microphone module for use with standard computer models 	486872-001
	<ul style="list-style-type: none"> 14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/microphone module for use with bronze-colored computer models 	496732-001
	<ul style="list-style-type: none"> 14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/microphone module for use in blue-colored computer models 	502577-001
(1)	Display bezels	

Item	Description	Spare part number
	<ul style="list-style-type: none"> For use only with standard computer models equipped with a camera/microphone module (includes openings for camera module and microphones) 	494978-001
	<ul style="list-style-type: none"> For use only with standard computer models not equipped with a camera/microphone module (includes openings for microphones) 	486893-001
	<ul style="list-style-type: none"> For use only with bronze-colored computer models equipped with a camera/microphone module (includes openings for camera module and microphones) 	496743-001
	<ul style="list-style-type: none"> For use only with bronze-colored computer models not equipped with a camera/microphone module (includes openings for camera/microphone module and microphones) 	496735-001
(2)	Display Hinge Kits	
	<ul style="list-style-type: none"> For use with standard display assemblies 	486894-001
	<ul style="list-style-type: none"> For use with Flush Glass display assemblies 	486880-001
(3)	Camera/microphone module (includes camera/microphone module bracket and 2-sided tape)	486876-001
(4)	Display panels (includes display panel cable)	
	<ul style="list-style-type: none"> 14.1-inch, WXGA, BrightView display panel for use in computers with Intel processors (includes display panel cable) 	483261-001
	<ul style="list-style-type: none"> 14.1-inch, WXGA, BrightView LED display panel for use in computers with Intel processors (includes display panel cable) 	483262-001
	<ul style="list-style-type: none"> 14.1-inch, WXGA, BrightView display panel for use in computers with AMD processors (includes display panel cable) 	497182-001
	<ul style="list-style-type: none"> 14.1-inch, WXGA, BrightView LED display panel for use in computers with AMD processors (includes display panel cable) 	497183-001
(5)	Display inverter (includes Mylar shield)	486736-001
(6)	Wireless Antenna Kits	
	<ul style="list-style-type: none"> For use with standard display assemblies 	489068-001
	<ul style="list-style-type: none"> For use with Flush Glass display assemblies 	489067-001
(7)	Display enclosures (includes logo light and cables)	
	<ul style="list-style-type: none"> For use with standard computer models with a camera/microphone module 	486890-001
	<ul style="list-style-type: none"> For use with bronze-colored computer models with a camera/microphone module 	496734-001
	<ul style="list-style-type: none"> For use with standard computer models 	494967-001
	<ul style="list-style-type: none"> For use with bronze-colored computer models 	496742-001
	<ul style="list-style-type: none"> For use with standard computer models with Flush Glass display assemblies 	486875-001
	<ul style="list-style-type: none"> For use with bronze-colored computer models with Flush Glass display assemblies 	496733-001
	<ul style="list-style-type: none"> For use in blue-colored computer models 	502578-001
	Rubber display bezel kits (contains all rubber pieces for the display bezel; not illustrated)	
	<ul style="list-style-type: none"> For use with standard computer models 	496729-001
	<ul style="list-style-type: none"> For use with bronze-colored computer models 	486874-001

Item	Description	Spare part number
Miscellaneous display parts (not illustrated)		
•	Hinge trim for use on standard computer models with Flush Glass display assemblies	495629-001
•	Hinge trim for use on bronze-colored computer models with Flush Glass display assemblies	502592-001
•	Hinge trim for use on blue-colored computer models	502595-001
•	Display trim for use with standard computer models with Flush Glass display assemblies	486877-001
•	Display trim for use with bronze-colored computer models with Flush Glass display assemblies	502593-001
•	Display trim for use with blue-colored computer models	502596-001
•	LCD cable for Flush Glass display assemblies	486878-001
•	Microphone cable for Flush Glass display assemblies	495631-001
•	LED transfer board for standard display assemblies	494977-001

Plastics Kit



Item	Description	Spare part number
	Plastics Kit	486833-001
(1)	ExpressCard slot bezel	
(2)	Hard drive bay cover (includes 2 captive screws, secured by C-clips)	
(3)	Memory module compartment cover (includes 1 captive screw secured by a C-clip)	
(4)	Wireless module compartment cover (includes 1 captive screw, secured by a C-clip)	

Mass storage devices



Item	Description	Spare part number
(1)	Hard drives (include hard drive bracket)	
	For use in computer models with AMD processors:	
	• 500-GB, 5400-rpm	497184-001
	• 400-GB, 5400-rpm	499993-001
	• 320-GB, 5400-rpm	459611-004
	• 320-GB, 5400-rpm, MultiBay	497186-001
	• 250-GB, 5400-rpm	454605-002
	• 250-GB, 5400-rpm, MultiBay	497185-001
	• 160-GB, 5400-rpm	454925-002
	• 120-GB, 5400-rpm	454924-002
	For use in computer models with Intel processors:	
	• 500-GB, 5400-rpm	497775-001
	• 400-GB, 5400-rpm	497774-001
	• 320-GB, 5400-rpm	459611-005
	• 250-GB, 5400-rpm	454605-003
	• 160-GB, 5400-rpm	454925-003
	• 120-GB, 5400-rpm	454924-003
	For use in swappable bay in standard computer models (includes metal bracket)	
	• 320-GB, 5400-rpm	496726-001
	• 250-GB, 5400-rpm	488126-001
	• 160-GB, 5400-rpm	488127-001

Item	Description	Spare part number
	For use in swappable bay in bronze-colored computer models (includes metal bracket)	
	• 320-GB, 5400-rpm	496728-001
	• 250-GB, 5400-rpm	496727-001
	For use in blue-colored computer models	
	• 320-GB, 5400-rpm	507275-001
	• 250-GB, 5400-rpm	507274-001
	Hard drive hardware kits (contains screws, hard drive bracket, and connector; not illustrated)	
	• Internal hard drive hardware kit	482158-001
	• Swappable bay hard drive hardware kit for use in standard computer models	488128-001
	• Swappable bay hard drive hardware kit for use in bronze-colored computer models	502597-001
	• Swappable bay blank for use in standard computer models	491876-001
	• Swappable bay blank for use in bronze-colored computer models	502591-001
(2)	Optical drives (include bezel and bracket)	
	For use in standard computer models with AMD processors:	
	• Blu-ray ROM DVD±R/RW SuperMulti DL Drive	482181-002
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	482177-002
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	482175-002
	For use in bronze-colored computer models with AMD processors:	
	• Blu-ray ROM DVD±R/RW SuperMulti DL Drive	497524-001
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	497523-001
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	497522-001
	For use in standard computer models with Intel processors:	
	• Blu-ray ROM DVD±R/RW SuperMulti DL Drive	482181-001
	• Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive	508123-001
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	482177-001
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	482175-001
	For use in bronze-colored computer models with Intel processors:	
	• Blu-ray ROM DVD±R/RW SuperMulti DL Drive	495655-001
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	495654-001
	• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	495653-001

Item	Description	Spare part number
	<ul style="list-style-type: none"> Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive 	508124-001
	Swappable bay hardware kits for use with standard computer models (Includes pre-attached front bezel)	
	<ul style="list-style-type: none"> Blu-ray BD ROM and DVD±RW Drive hardware kit 	488210-001
	<ul style="list-style-type: none"> DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe hardware kit 	488209-001
	<ul style="list-style-type: none"> DVD±RW and CD-RW Super Multi Double-Layer Combo Drive hardware kit 	482183-001
	Swappable bay hardware kits for use with bronze-colored computer models. Includes pre-attached front bezel.	
	<ul style="list-style-type: none"> Blu-ray BD ROM and DVD±RW Drive hardware kit 	495658-001
	<ul style="list-style-type: none"> DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe hardware kit 	495657-001
	<ul style="list-style-type: none"> DVD±RW and CD-RW Super Multi Double-Layer Combo Drive hardware kit 	495656-001

Miscellaneous parts

Description	Spare part number
AC adapters	
• 90-W PFC AC adapter	463955-001
• 65-W PFC AC adapter	463958-001
Bluetooth module	483113-001
Cables	
• Audio cable	486841-001
• Bluetooth module cable for use in models with discrete graphics subsystems	488130-001
• Bluetooth module cable for use in models with UMA graphics subsystems	486847-001
• CAT5e network cable	454619-001
• DC-in audio cable	486836-001
• USB cable	486843-001
Carrying cases	
• Standard carrying case	418162-001
• Ladies slim case	418163-001
Display lid switch assembly	486846-001
Fingerprint reader	486828-001
Mouse options	
• Optical wired mouse	436238-001
• Wireless laser mouse with USB adapter	430958-001
• Notebook sleeve for use in blue-colored computer models	504582-001
Power cords:	
• Argentina	490371-D01
• Australia and New Zealand	490371-011
• Belgium, Europe, Finland, France, Germany, Greece, the Netherlands, Norway, Portugal, Spain, and Sweden	490371-021
• Brazil	490371-201
• Canada, French Canada, Latin America, Thailand, and the United States	490371-001
• Denmark	490371-081
• India	490371-D61
• Israel	490371-BB1
• Italy	490371-061
• Japan	490371-291
• The People's Republic of China	490371-AA1

Description	Spare part number
• South Africa	490371-AR1
• South Korea	490371-AD1
• Switzerland	490371-111
• Taiwan	490371-AB1
• The United Kingdom and Hong Kong	490371-031
Remote Controls	
• ExpressCard remote control	464793-001
• ExpressCard remote control for use in blue-colored computer models	464793-002
• Full function remote control	465540-001
• Full function remote control for use with blue-colored computer models	465540-002
• Full function remote control with Teletext	465541-001
• Full function remote control with Teletext for use with blue-colored computer models	465541-002
Rubber Kit for use with all computer models (includes computer feet and screw covers)	486834-001
Screw Kits (includes all screws)	
• For use with standard display assemblies	486873-001
• For use with Flush Glass display assemblies	496731-001
SIM module for models with WWAN	486845-001
TouchPad (include TouchPad bracket and TouchPad cable)	494960-001
TouchPad button	486832-001
TouchPad bracket (included with top cover spare part kits and with TouchPad)	494961-001
TV tuners	
• ATSC/NTSC TV tuner antenna	482900-001
• TV tuner antenna with PAL jack	482900-002
• ATSC/NTSC TV tuner	482899-001
• DVB-T/ANG Integrated TV tuner	482899-002
• DVB-T tuner	482899-003
• DVB-T tuner for use only in the AP region	482899-004
Wired headset with volume control	371693-001
WLAN modules	
802.11a/b/g/n WLAN modules:	
• For use in Antigua & Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, Uruguay, the United States, Venezuela, and Vietnam	480985-001

Description	Spare part number
<ul style="list-style-type: none"> For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe 	487330-002
<ul style="list-style-type: none"> For use in the United States and Canada 	487330-001
802.11a/b/g WLAN module for use in the United States and Canada	482957-001
802.11b/g WLAN modules	
<ul style="list-style-type: none"> For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe 	459263-002
<ul style="list-style-type: none"> For use in the United States and Canada 	459263-001
802.11n WLAN modules:	

Description	Spare part number
<ul style="list-style-type: none"> For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe 	453730-002
<ul style="list-style-type: none"> For use in Japan 	453730-291
<ul style="list-style-type: none"> For use in the United States and Canada 	453730-001
WWAN modules	
HP EVDO-A WWAN module for use in the United States	451131-002
HP un2400 Mobile Broadband Module	483377-001
HP UMTS/HSDPA/EDGE WWAN module, including GPRS	459350-001

Sequential part number listing

Spare part number	Description
371693-001	Wired headset with volume control
418162-001	Standard carrying case
418163-001	Ladies slim carrying case
430958-001	Wireless laser mouse with USB adapter
436238-001	Optical wired mouse
451131-002	EVDO-A WWAN module for use in the United States
453730-001	802.11n WLAN for use in the United States and Canada
453730-002	802.11n WLAN for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
453730-291	802.11n WLAN for use in Japan
454605-002	250-GB hard drive for use in computer models with AMD processors
454605-003	250-GB hard drive for use in computer models with Intel processors
454619-001	CAT5e network cable
454924-002	120-GB hard drive for use in computer models with AMD processors
454924-003	120-GB hard drive for use in computer models with Intel processors
454925-002	160-GB hard drive for use in computer models with AMD processors
454925-003	160-GB hard drive for use in computer models with Intel processors
459263-001	802.11b/g WLAN for use in the United States and Canada

Spare part number	Description
459263-002	802.11b/g WLAN for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
459350-001	UMTS/HSDPA/EDGE WWAN module, including GPRS
459611-004	320-GB hard drive for use in computer models with AMD processors
459611-005	320-GB hard drive for use in computer models with Intel processors
461749-001	Modem module for use with most computer models
461749-011	Modem module for use with computer models in Australia and New Zealand
463955-001	90-W PFC AC adapter
463958-001	65-W PFC AC adapter
464793-001	ExpressCard remote control
464793-002	ExpressCard remote control for use with blue-colored computer models
465540-001	Full function remote control
465540-002	Full function remote control for use with blue-colored computer models
465541-001	Full function remote control with TeleText
465541-002	Full function remote control with TeleText for use in blue-colored computer models
480985-001	802.11a/b/g/n WLAN 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
482158-001	Internal hard drive hardware kit (contains screws, hard drive bracket, and connector)
482167-001	512-KB memory module for use in computer models with Intel processors
482167-002	512-KB memory module for use in computer models with AMD processors
482168-001	1024-MB memory module for use in computer models with Intel processors
482168-002	1024-MB memory module for use in computer models with AMD processors
482169-001	2048-MB memory module for use in computer models with Intel processors

Spare part number	Description
482169-002	2048-MB memory module for use in computer models with AMD processors
482175-001	DVD±RW and CD-RW Super Multi Double-Layer Combo optical drive for use in standard computer models with Intel processors (includes bezel and bracket)
482175-002	DVD±RW and CD-RW Super Multi Double-Layer Combo optical drive for use in standard computer models with AMD processors (includes bezel and bracket)
482177-001	DVD±RW and CD-RW Super Multi Double-Layer Combo with LightScribe optical drive for use in standard computer models with Intel processors (includes bezel and bracket)
482177-002	DVD±RW and CD-RW Super Multi Double-Layer Combo with LightScribe optical drive for use in standard computer models with AMD processors (includes bezel and bracket)
482181-001	Blu-ray BD ROM and DVD±RW optical drive for use in standard computer models with Intel processors (includes bezel and bracket)
482181-002	Blu-ray BD ROM and DVD±RW optical drive for use in standard computer models with AMD processors (includes bezel and bracket)
482183-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive hardware kit for use with standard computer models (includes front bezel)
482186-003	6-cell battery, 2.20-Ah
482899-001	ATSC/NTSC TV tuner
482899-002	DVB-T/ANG Integrated TV tuner
482899-003	DVB-T tuner
482899-004	DVB-T tuner for use only in the AP region
482900-001	ATSC/NTSC TV tuner antenna
482900-002	TV tuner antenna with PAL jack
482957-001	802.11a/b/g WLAN module for use in the United States and Canada
483113-001	Bluetooth module
483258-001	Intel Core 2 Duo P8400 processor (2.26-GHz, 3-MB L2 cache)
483259-001	Intel Core 2 Duo P8600 processor (2.40-GHz, 3-MB L2 cache)
483260-001	Intel Core 2 Duo T9400 processor (2.53-GHz, 6-MB L2 cache)
483261-001	14.1-inch, WXGA, BrightView display panel for use in computers with Intel processors (includes display panel cable)
483262-001	14.1-inch, WXGA, BrightView LED display panel for use in computers with Intel processors (includes display panel cable)
483377-001	HP un2400 Mobile Broadband Module
484171-001	6-cell battery, 2.55-Ah
484172-001	12-cell battery, 8.80-Ah
486723-001	System board (includes thermal material) for use in models with Intel processors equipped with a 256-MB discrete graphics subsystem
486724-001	System board (includes thermal material) for use in models with Intel processors equipped with a UMA graphics subsystem
486727-001	Intel Core 2 Duo T9600 processor (2.80-GHz, 6-MB L2 cache)

Spare part number	Description
486736-001	Display inverter (includes Mylar shield)
486828-001	Fingerprint reader
486830-001	Top cover (includes TouchPad and TouchPad cable) for use with standard computer models equipped with a fingerprint reader (includes fingerprint reader and cable)
486832-001	TouchPad button
486833-001	Plastics kit
486834-001	Rubber feet kit for use with all computer models
486835-001	RTC battery
486836-001	DC-in audio cable
486837-001	Speaker assembly
486838-001	Heat sink (includes thermal material) for use in models with Intel processors and UMA graphics subsystems
486840-001	Audio board (includes audio connectors, infrared lens, and audio board cable)
486841-001	Audio cable
486842-001	USB board (includes USB board cable)
486843-001	USB cable
486844-001	Fan (includes thermal material)
486845-001	SIM module for models with WWAN
486846-001	Display lid switch assembly
486847-001	Bluetooth module cable for use in models with UMA graphics subsystems
486848-001	Base enclosure for use in standard computer models without a modem module or TV tuner
486849-001	Base enclosure for use in standard computer models with a TV tuner
486850-001	Base enclosure for use in standard computer models with a modem module
486851-001	Base enclosure for use in standard computer models with a modem module and TV tuner
486852-001	Keyboard cover for use with standard computer models
486853-001	Power button with connector cable
486872-001	14.1-inch WXGA, Brightview LED display assembly with a camera/microphone module for use with bronze-colored computer models
486873-001	Screw kit for use with standard display assemblies
486874-001	Rubber display bezel kit for use with bronze-colored computer models (contains all rubber pieces for the display bezel)
486875-001	Display enclosure for use with standard computer models with Flush Glass display assemblies (includes Logo light and cables)
486876-001	Camera/microphone module (includes bracket and 2-sided tape)
486877-001	Display trim for use with standard computer models with Flush Glass display assemblies
486878-001	LCD cable for Flush Glass display assemblies

Spare part number	Description
486880-001	Display hinge kit for use with standard display assemblies
486882-001	14.1-inch WXGA, Brightview display assembly with a camera/microphone module for use with standard computer models
486883-001	14.1-inch WXGA, Brightview LED display assembly with a camera/microphone module for use with standard computer models
486890-001	Display enclosure for use with standard computer models with a camera/microphone module (includes logo light and cable)
486893-001	Display bezel for use only with standard computer models not equipped with a camera/microphone module (includes openings for microphones)
486894-001	Display hinge kit for use with Flush Glass display assemblies
486901-001	Keyboard for use with standard computer models for use in The United States
486901-031	Keyboard for use with standard computer models for use in The United Kingdom
486901-041	Keyboard for use with standard computer models for use in Germany
486901-051	Keyboard for use with standard computer models for use in France
486901-061	Keyboard for use with standard computer models for use in Italy
486901-071	Keyboard for use with standard computer models for use in Spain
486901-111	Keyboard for use with standard computer models for use in Switzerland
486901-121	Keyboard for use with standard computer models for use in French Canada
486901-131	Keyboard for use with standard computer models for use in Portugal
486901-141	Keyboard for use with standard computer models for use in Turkey
486901-151	Keyboard for use with standard computer models for use in Greece
486901-161	Keyboard for use with standard computer models for use in Latin America
486901-171	Keyboard for use with standard computer models for use in Saudi Arabia
486901-201	Keyboard for use with standard computer models for use in Brazil
486901-251	Keyboard for use with standard computer models for use in Russia
486901-281	Keyboard for use with standard computer models for use in Thailand
486901-291	Keyboard for use with standard computer models for use in Japan
486901-A41	Keyboard for use with standard computer models for use in The Netherlands and Europe
486901-AB1	Keyboard for use with standard computer models for use in Taiwan
486901-AD1	Keyboard for use with standard computer models for use in South Korea
486901-B31	Keyboard for use with standard computer models for International use
486901-BB1	Keyboard for use with standard computer models for use in Israel
486901-DH1	Keyboard for use with standard computer models for use in Denmark, Finland, Norway, and Sweden
487330-001	802.11a/b/g/n WLAN for use in the United States and Canada

Spare part number	Description
487330-002	802.11a/b/g/n WLAN for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
487345-005	AMD Turion 64 ZM-86 processor (2.4-GHz, 2-MB L2 cache)
487346-005	AMD Turion 64 ZM-82 processor (2.2-GHz, 2-MB L2 cache)
487347-005	AMD Turion 64 ZM-80 processor (2.1-GHz, 2-MB L2 cache)
487348-006	AMD Turion 64 RM-70 processor (2.0-GHz, 1-MB L2 cache)
487349-006	AMD Turion 64 QL-60 processor (1.9-GHz, 1-MB L2 cache)
487350-004	AMD Sempron SI-40 processor (2.0-GHz, 512-KB L2 cache)
488105-001	Top cover (includes TouchPad and TouchPad cable) for use with standard computer models not equipped with a fingerprint reader
488126-001	250-GB hard drive for use in swappable bay in standard computer models (includes metal bracket)
488127-001	160-GB hard drive for use in swappable bay in standard computer models (includes metal bracket)
488128-001	Swappable bay hard drive hardware kit for use in standard computer models (contains screws, hard drive bracket, and connector)
488130-001	Bluetooth module cable for use in models with discrete graphics subsystems
488209-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe hardware kit for use with standard computer models (includes front bezel)
488210-001	Blu-ray BD ROM and DVD±RW Drive hardware kit for use with standard computer models (includes front bezel)
488238-001	System board (includes thermal material) for use in models with AMD processors with QuickPlay
489067-001	Wireless antenna kit for use with Flush Glass display assemblies
489068-001	Wireless antenna kit for use with standard display assemblies
490371-001	Power cord for use in Canada, French Canada, Latin America, Thailand, and the United States
490371-011	Power cord for use in Australia and New Zealand

Spare part number	Description
490371-021	Power cord for use in Belgium, Europe, Finland, France, Germany, Greece, the Netherlands, Norway, Portugal, Spain, and Sweden
490371-031	Power cord for use in The United Kingdom and Hong Kong
490371-061	Power cord for use in Italy
490371-081	Power cord for use in Denmark
490371-111	Power cord for use in Switzerland
490371-201	Power cord for use in Brazil
490371-291	Power cord for use in Japan
490371-AA1	Power cord for use in The People's Republic of China
490371-AB1	Power cord for use in Taiwan
490371-AD1	Power cord for use in South Korea
490371-AR1	Power cord for use in South Africa
490371-BB1	Power cord for use in Israel
490371-D01	Power cord for use in Argentina
490371-D61	Power cord for use in India
491856-001	Intel Core 2 Duo P7350 processor (2.0-GHz, 3-MB L2 cache)
491876-001	Swappable bay blank for use in standard computer models
492260-001	Heat sink (includes thermal material) for use in models with AMD processors and UMA graphics subsystems
494960-001	TouchPad (includes TouchPad bracket and TouchPad cable)
494961-001	TouchPad bracket (included with top cover and TouchPad spare parts kits)
494967-001	Display enclosure for use with standard computer models (includes logo light and cables)
494977-001	LED transfer board for standard display assemblies
494978-001	Display bezel for use only with standard computer models equipped with a camera/microphone module (includes openings for camera module and microphones)
494981-001	Modem module cable for use in computer models with Intel processors
495629-001	Hinge trim for use on standard computer models with Flush Glass display assemblies
495631-001	Microphone cable for Flush Glass display assemblies
495638-001	Intel Core 2 Duo T5800 processor (2.0-GHz, 2-MB L2 cache)
495639-001	Intel Core 2 Duo T5900 processor (2.2-GHz, 2-MB L2 cache)
495640-001	Intel Core 2 Duo P7450 processor (2.13-GHz, 3-MB L2 cache)
495653-001	DVD±RW and CD-RW Super Multi Double-Layer Combo optical drive for use in bronze-colored computer models with Intel processors (includes bezel and bracket)
495654-001	DVD±RW and CD-RW Super Multi Double-Layer Combo with LightScribe optical drive for use in bronze-colored Standard Edition computer models with Intel processors (includes bezel and bracket)

Spare part number	Description
495655-001	Blu-ray BD ROM and DVD±RW optical drive for use in bronze-colored computer models with Intel processors (includes bezel and bracket)
495656-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive hardware kit for use with bronze-colored computer models (includes front bezel)
495657-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe hardware kit for use with bronze-colored computer models (includes front bezel)
495658-001	Blu-ray BD ROM and DVD±RW Drive hardware kit for use with bronze-colored computer models (includes front bezel)
495661-001	Top cover (includes TouchPad and TouchPad cable) for use with bronze-colored computer models equipped with a fingerprint reader (includes fingerprint reader and cable)
495662-001	Top cover (includes TouchPad and TouchPad cable) for use with bronze-colored computer models not equipped with a fingerprint reader
495663-001	Keyboard cover for use with bronze-colored computer models
495664-001	Base enclosure for use in bronze-colored computer models without a modem module or TV tuner
495665-001	Base enclosure for use in bronze-colored computer models with a TV tuner
495666-001	Base enclosure for use in bronze-colored computer models with a modem module
495667-001	Base enclosure for use in bronze-colored computer models with a modem module and TV tuner
496726-001	320-GB hard drive for use in swappable bay in standard computer models (includes metal bracket)
496727-001	250-GB hard drive for use in swappable bay in bronze-colored computer models (includes metal bracket)
496728-001	320-GB hard drive for use in swappable bay in bronze-colored computer models (includes metal bracket)
496729-001	Rubber kit for use with standard computer models
496730-001	System board (includes thermal material) for use in models with Intel processors equipped with a 512-MB discrete graphics subsystem
496731-001	Screw kit for use with Flush Glass display assemblies
496732-001	14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/microphone module for use with standard computer models
496733-001	Display enclosure use with bronze-colored computer models with Flush Glass display assemblies (includes Logo light and cables)
496734-001	Display enclosure for use with bronze-colored computer models with a camera/microphone module (includes logo light and cable)
496735-001	Display bezel for use only with bronze-colored computer models not equipped with a camera/microphone module (includes openings for camera/microphone module and microphones)
496736-001	14.1-inch WXGA, Brightview display assembly with a camera/microphone module for use with bronze-colored computer models
496741-001	14.1-inch WXGA, Brightview LED display assembly with a camera/microphone module for use with bronze-colored computer models
496742-001	Display enclosure for use with bronze-colored computer models (includes Logo light and cables)
496743-001	Display bezel for use only with bronze-colored computer models equipped with a camera/microphone module (includes openings for camera module and microphones)
497177-001	AMD Turion 64, ZM-84 processor (2.3-GHz, 2-MB L2 cache)

Spare part number	Description
497178-001	AMD Turion 64 RM-72 processor (2.1-GHz, 1-MB L2 cache)
497179-001	AMD Turion 64 QL-62 processor (2-GHz, 1-MB L2 cache)
497180-001	AMD Sempron SI-40 processor (2.0-GHz, 512-KB L2 cache)
497182-001	14.1-inch, WXGA, BrightView display panel for use in computers with AMD processors (includes display panel cable)
497183-001	14.1-inch, WXGA, BrightView LED display panel for use in computers with AMD processors (includes display panel cable)
497184-001	500-GB hard drive for use in computer models with AMD processors
497185-001	250-GB MultiBay hard drive for use in computer models with AMD processors
497186-001	320-GB MultiBay hard drive for use in computer models with AMD processors
497522-001	DVD±RW and CD-RW Super Multi Double-Layer Combo optical drive for use in bronze-colored computer models with AMD processors (includes bezel and bracket)
497523-001	DVD±RW and CD-RW Super Multi Double-Layer Combo with LightScribe optical drive for use in bronze-colored computer models with AMD processors (includes bezel and bracket)
497524-001	Blu-ray BD ROM and DVD±RW optical drive for use in bronze-colored computer models with AMD processors (includes bezel and bracket)
497773-001	Intel Celeron T1600 processor (1.66-GHz)
497774-001	400-GB hard drive for use in computer models with Intel processors
497775-001	500-GB hard drive for use in computer models with Intel processors
499993-001	400-GB hard drive for use in computer models with AMD processors
502577-001	14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/microphone module for use in blue-colored computer models
502578-001	Display enclosure for use in blue-colored computer models
502579-001	Top cover for use in blue-colored computer models
502591-001	Swappable bay blank for use in bronze-colored computer models
502592-001	Hinge trim for use on bronze-colored computer models with Flush Glass display assemblies
502593-001	Display trim for use with bronze-colored computer models with Flush Glass display assemblies
502595-001	Hinge trim for use on blue-colored computer models
502596-001	Display trim for use with blue-colored computer models
502597-001	Swappable bay hard drive hardware kit for use in bronze-colored computer models (contains screws, hard drive bracket, and connector)
502838-001	Intel Celeron 575 processor (2.2 GHz, 1-MB L2 cache)
504582-001	Notebook sleeve for use in blue-colored computer models
504783-001	Intel Pentium Dual-Core T3200 processor (2.0 GHz, 1-MB L2 cache)
504784-001	Intel Pentium Dual-Core T3400 processor (2.16 GHz, 1-MB L2 cache)
506053-001	AMD Athlon QL-64 processor (2.1 GHz, 1-MB L2 cache)
507274-001	250-GB hard drive for use in blue-colored computer models

Spare part number	Description
507275-001	320-GB hard drive for use in blue-colored computer models
507319-001	Keyboard for use only in blue-colored computer models in the United States
507953-001	Intel Core 2 Duo T9550 processor (2.66-GHz, 6-MB L2 cache)
507960-001	Intel Core 2 Duo P8700 processor (2.53-GHz, 3-MB L2 cache)
507965-001	Intel Core 2 Duo T5800 processor (2.0 GHz, 2-MB L2 cache)
507979-001	Turion 64 RM-74 [processor (2.2 GHz, 1-MB L2 cache)
508119-001	Keyboard for use with bronze-colored computer models for use in The United States
508119-031	Keyboard for use with bronze-colored computer models for use in The United Kingdom
508119-041	Keyboard for use with bronze-colored computer models for use in Germany
508119-051	Keyboard for use with bronze-colored computer models for use in France
508119-061	Keyboard for use with bronze-colored computer models for use in Italy
508119-071	Keyboard for use with bronze-colored computer models for use in Spain
508119-111	Keyboard for use with bronze-colored computer models for use in Switzerland
508119-121	Keyboard for use with bronze-colored computer models for use in French Canada
508119-131	Keyboard for use with bronze-colored computer models for use in Portugal
508119-141	Keyboard for use with bronze-colored computer models for use in Turkey
508119-151	Keyboard for use with bronze-colored computer models for use in Greece
508119-161	Keyboard for use with bronze-colored computer models for use in Latin America
508119-171	Keyboard for use with bronze-colored computer models for use in Saudi Arabia
508119-201	Keyboard for use with bronze-colored computer models for use in Brazil
508119-251	Keyboard for use with bronze-colored computer models for use in Russia
508119-281	Keyboard for use with bronze-colored computer models for use in Thailand
508119-291	Keyboard for use with bronze-colored computer models for use in Japan
508119-A41	Keyboard for use with bronze-colored computer models for use in The Netherlands and Europe
508119-AB1	Keyboard for use with bronze-colored computer models for use in Taiwan
508119-AD1	Keyboard for use with bronze-colored computer models for use in South Korea
508119-B31	Keyboard for use with bronze-colored computer models for International use
508119-BB1	Keyboard for use with bronze-colored computer models for use in Israel
508119-DH1	Keyboard for use with bronze-colored computer models for use in Denmark, Finland, Norway, and Sweden
508120-001	Keyboard for use with blue-colored computer models for use in the United States
508120-031	Keyboard for use with blue-colored computer models for use in the United Kingdom
508120-041	Keyboard for use with blue-colored computer models for use in Germany
508120-051	Keyboard for use with blue-colored computer models for use in France
508120-061	Keyboard for use with blue-colored computer models for use in Italy

Spare part number	Description
508120-071	Keyboard for use with blue-colored computer models for use in Spain
508120-111	Keyboard for use with blue-colored computer models for use in Switzerland
508120-121	Keyboard for use with blue-colored computer models for use in French Canada
508120-131	Keyboard for use with blue-colored computer models for use in Portugal
508120-141	Keyboard for use with blue-colored computer models for use in Turkey
508120-151	Keyboard for use with blue-colored computer models for use in Greece
508120-161	Keyboard for use with blue-colored computer models for use in Latin America
508120-171	Keyboard for use with blue-colored computer models for use in Saudi Arabia
508120-201	Keyboard for use with blue-colored computer models for use in Brazil
508120-251	Keyboard for use with blue-colored computer models for use in Russia
508120-281	Keyboard for use with blue-colored computer models for use in Thailand
508120-291	Keyboard for use with blue-colored computer models for use in Japan
508120-A41	Keyboard for use with blue-colored computer models for use in The Netherlands and Europe
508120-AB1	Keyboard for use with blue-colored computer models for use in Taiwan
508120-AD1	Keyboard for use with blue-colored computer models for use in South Korea
508120-B31	Keyboard for use with blue-colored computer models for International use
508120-BB1	Keyboard for use with blue-colored computer models for use in Israel
508120-DH1	Keyboard for use with blue-colored computer models for use in Denmark, Finland, Norway, and Sweden
508123-001	Blu-ray BD ROM and DVD±RW Drive with LightScribe
508124-001	Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL drive for use in bronze-colored computer models
511858-001	System board (includes thermal material) for use in models with AMD processors with MediaSmart
512231-001	Keyboard cover for use in standard computer models
512232-001	Keyboard cover for use in bronze-colored computer models
513592-001	Core 2 Duo T6400 (2.06 GHz, 3-MB L2 cache)
513593-001	Core 2 Duo T6600 (2.2 GHz, 3-MB L2 cache)
513599-001	Pentium Dual-Core T4200 processor, 2.0-MHz, 4-MB L2 cache; includes thermal material

4 Removal and replacement procedures

Preliminary replacement requirements


Tools required

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


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

Service considerations

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

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

Plastic parts

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

Cables and connectors

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

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

Drive handling

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

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

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

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

Handle drives on surfaces covered with at least one inch of shockproof 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 55](#)).
5. Remove the RTC battery (see [RTC battery on page 69](#)).
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 104 screws, in 12 different sizes, that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Serial number

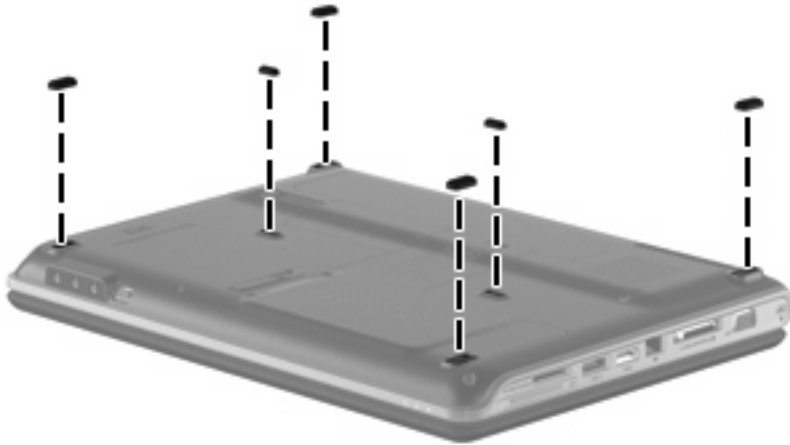
Report the computer serial number to HP when requesting information or ordering spare parts. The serial number is located on the bottom of the computer.



Computer feet

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

Description	Spare part number
Rubber Kit for use with all computer models (includes computer feet and screw covers)	486834-001



Battery

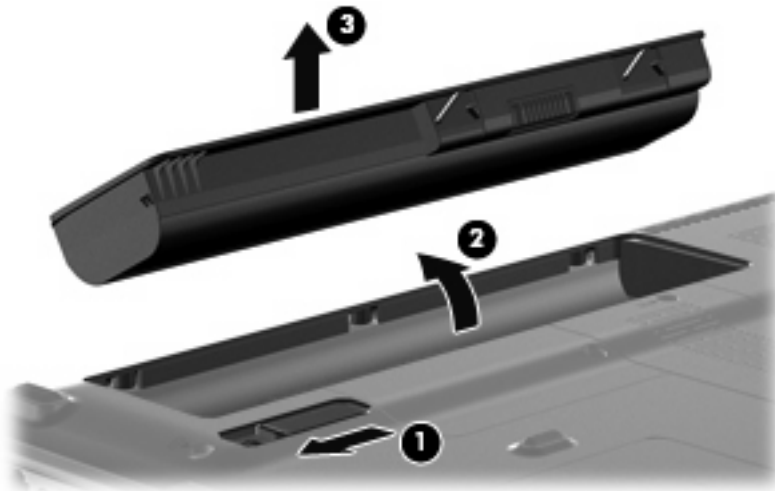
Description	Spare part number
<ul style="list-style-type: none">12-cell, 8.80-Ah	484172-001
<ul style="list-style-type: none">6-cell, 2.55-Ah	484171-001
<ul style="list-style-type: none">6-cell, 2.20-Ah	482186-003

Before disassembling the computer, follow these steps:

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


Remove the battery:

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



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

SIM

 **NOTE:** This section applies only to computer models with WWAN capability.

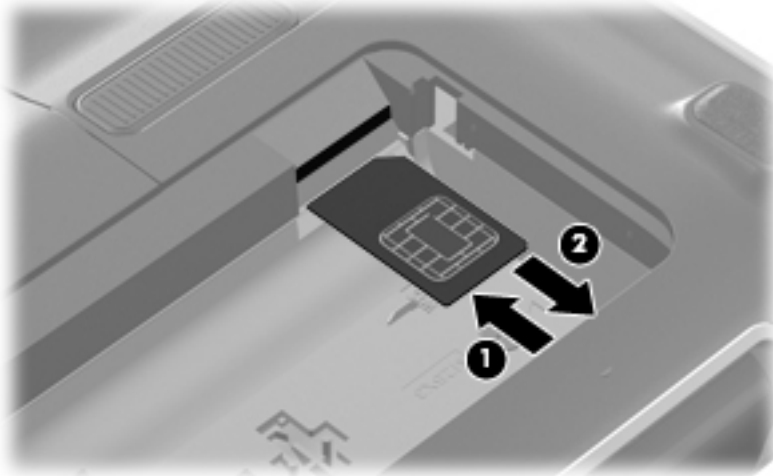
NOTE: If there is a SIM inserted in the SIM slot, it must be removed before disassembling the computer. Be sure that the SIM is reinserted in the SIM slot after reassembling the computer.

Before removing the SIM, 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 55](#)).

Remove the SIM:

1. Press in on the SIM **(1)**. (The module is partially ejected from the SIM slot.)
2. Remove the SIM **(2)** from the SIM slot.



Reverse this procedure to insert the SIM.

Optical drive

Description	Spare part number
For use in standard computer models with AMD processors:	
• Blu-ray BD ROM and DVD±RW Drive	482181-002
• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	482177-002
• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	482175-002
For use in bronze-colored computer models with AMD processors:	
• Blu-ray BD ROM and DVD±RW Drive	497524-001
• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	497523-001
• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	497522-001
For use in standard computer models with Intel processors:	
• Blu-ray BD ROM and DVD±RW Drive	482181-001
• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	482177-001
• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	482175-001
• Blu-ray BD ROM and DVD±RW Drive with LightScribe	508123-001
For use in bronze-colored computer models with Intel processors:	
• Blu-ray BD ROM and DVD±RW Drive	495655-001
• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	495654-001
• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	495653-001
• Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive	508124-001
Swappable bay hardware kits for use with standard computer models (Includes pre-attached front bezel)	
• Blu-ray BD ROM and DVD±RW Drive hardware kit	488210-001
• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe hardware kit	488209-001
• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive hardware kit	482183-001
Swappable bay hardware kits for use with bronze-colored computer models. Includes pre-attached front bezel.	
• Blu-ray BD ROM and DVD±RW Drive hardware kit	495658-001
• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe hardware kit	495657-001
• DVD±RW and CD-RW Super Multi Double-Layer Combo Drive hardware kit	495656-001



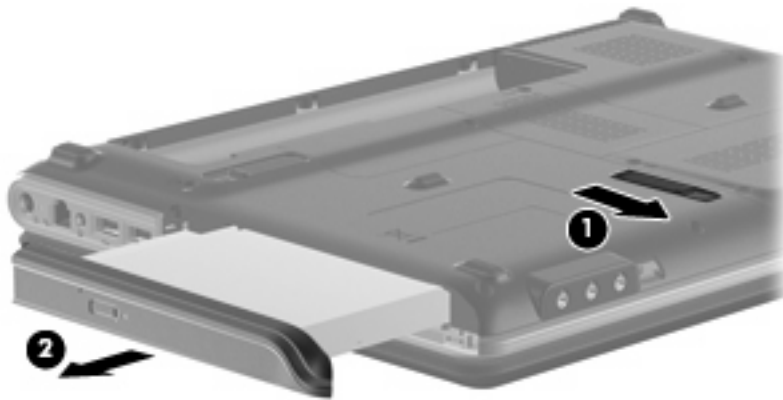
NOTE: All optical drive spare part kits include an optical drive bezel.

Before removing the optical drive, follow these steps:

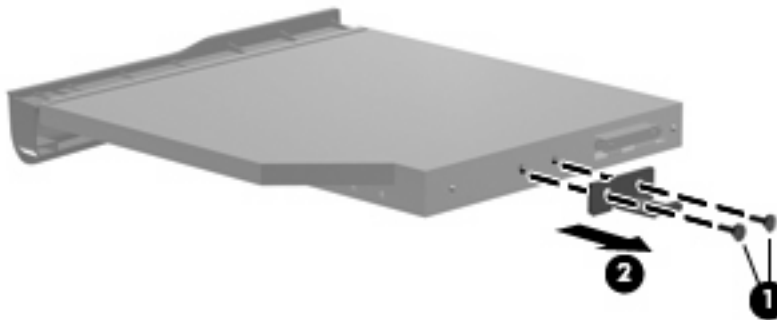
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 55](#)).

Remove the optical drive:

1. Position the computer with right side toward you.
2. Slide the swappable bay release latch **(1)** away from the battery bay.
3. Remove the optical drive **(2)**.



4. If it is necessary to replace the optical drive bracket, position the optical drive with the optical drive bracket toward you.
5. Remove the two Phillips PM2.0×4.0 screws **(1)** that secure the optical drive bracket to the optical drive.
6. Remove the optical drive bracket **(2)**.



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

Hard drive

Description	Spare part number
For use in computer models with AMD processors:	
• 500-GB, 5400-rpm	497184-001
• 400-GB, 5400-rpm	499993-001
• 320-GB, 5400-rpm	459611-004
• 320-GB, 5400-rpm, MultiBay	497186-001
• 250-GB, 5400-rpm	454605-002
• 250-GB, 5400-rpm, MultiBay	497185-001
• 160-GB, 5400-rpm	454925-002
• 120-GB, 5400-rpm	454924-002
For use in computer models with Intel processors:	
• 500-GB, 5400-rpm	497775-001
• 400-GB, 5400-rpm	497774-001
• 320-GB, 5400-rpm	459611-005
• 250-GB, 5400-rpm	454605-003
• 160-GB, 5400-rpm	454925-003
• 120-GB, 5400-rpm	454924-003
For use in swappable bay in standard computer models (includes metal bracket)	
• 320-GB, 5400-rpm	496726-001
• 250-GB, 5400-rpm	488126-001
• 160-GB, 5400-rpm	488127-001
For use in swappable bay in bronze-colored computer models (includes metal bracket)	
• 320-GB, 5400-rpm	496728-001
• 250-GB, 5400-rpm	496727-001
For use in blue-colored computer models (includes metal bracket)	
• 320-GB, 5400-rpm	507275-001
• 250-GB, 5400-rpm	507274-001
Hard drive hardware kits (contains screws, hard drive bracket, and connector; not illustrated)	
• Internal hard drive hardware kit	482158-001
• Swappable bay hard drive hardware kit for use in standard computer models	488128-001
• Swappable bay hard drive hardware kit for use in bronze-colored computer models	502597-001
• Swappable bay blank for use in standard computer models	491876-001
• Swappable bay blank for use in bronze-colored computer models	502591-001

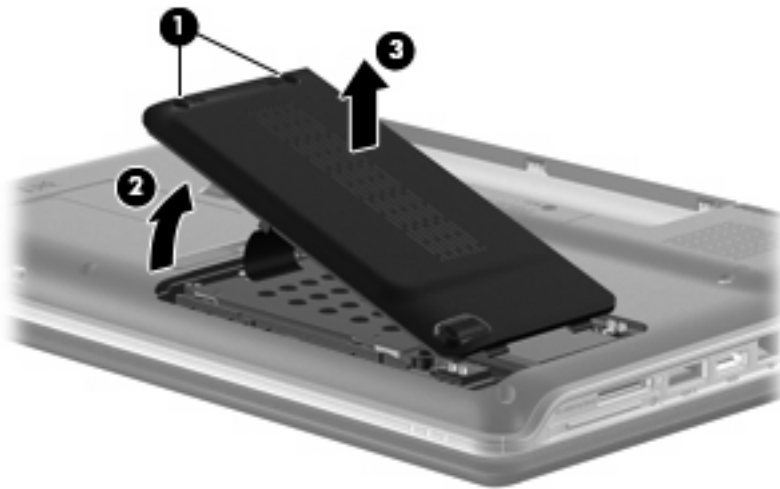
 **NOTE:** All hard drive spare part kits include a hard drive bracket.

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 55](#)).

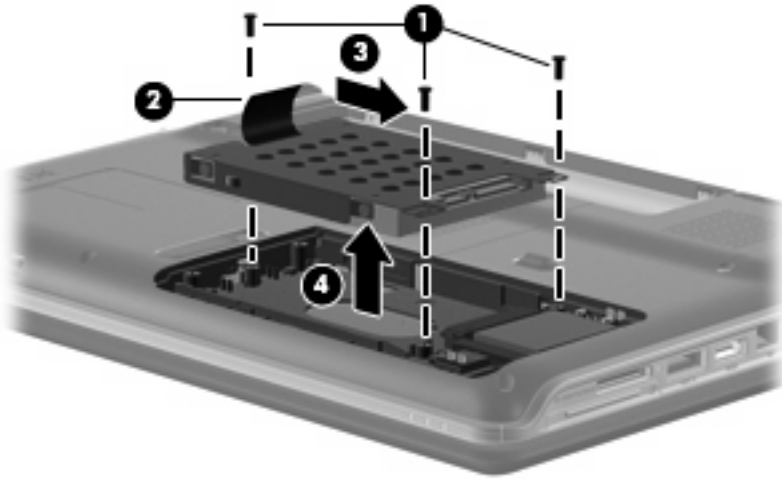
Remove the hard drive:

1. Position the computer with the front toward you.
2. Loosen the two Phillips PM2.5×6.0 captive screws **(1)** that secure the hard drive bay cover to the computer.
3. Lift the left side of the hard drive bay cover **(2)**, swing it to right, and remove the cover **(3)**. The hard drive bay cover is included in the Plastics Kit, spare part number 486833-001.

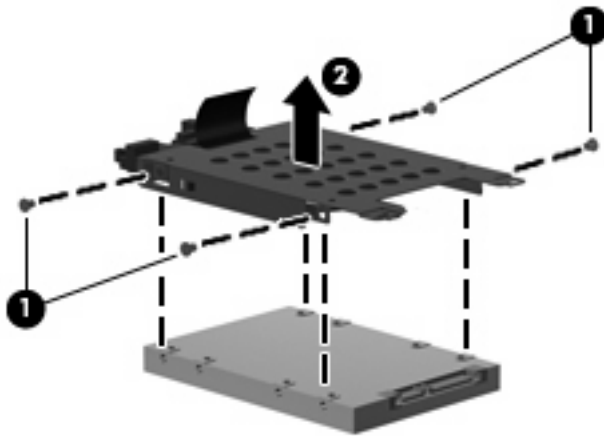


4. Remove the three black Phillips PM2.0×4.0 screws **(1)** that secure the hard drive to the computer.
5. Use the Mylar tab **(2)** to slide the hard drive away from the hard drive connector **(3)**.

6. Remove the hard drive from the hard drive bay (4).



7. If it is necessary to replace the hard drive bracket, remove the four Phillips PM3.0×4.0 screws (1) that secure the hard drive bracket to the hard drive.
8. Lift the bracket (2) straight up to remove it from the hard drive.



Reverse this procedure to reassemble and install the hard drive.

WLAN module

Description	Spare part number
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 	480985-001
<ul style="list-style-type: none"> For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe 	487330-002
<ul style="list-style-type: none"> For use in the United States and Canada 	487330-001
802.11a/b/g WLAN module for use in the United States and Canada	482957-001
802.11b/g WLAN modules	

Description	Spare part number
<ul style="list-style-type: none"> For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe 	459263-002
<ul style="list-style-type: none"> For use in the United States and Canada 	459263-001
802.11n WLAN modules:	
<ul style="list-style-type: none"> For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe 	453730-002
<ul style="list-style-type: none"> For use in Japan 	453730-291
<ul style="list-style-type: none"> For use in the United States and Canada 	453730-001

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


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.

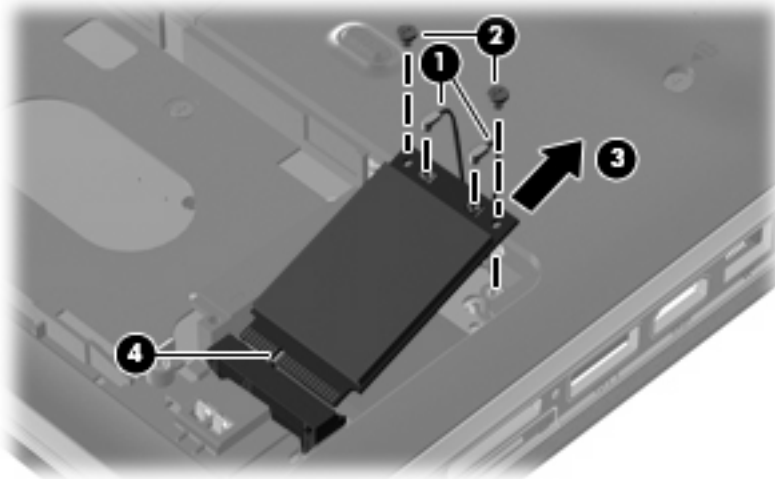
Before removing the WLAN module, follow these steps:

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 55](#)).
5. Remove the hard drive bay cover (see [Hard drive on page 59](#))

Remove the WLAN module:

1. Disconnect the wireless antenna wires (1) from the from the wireless module.
2. Remove the 2 Phillips PM2.0×4.0 screws (2) securing the WLAN module to the computer.
3. Remove the WLAN module (3) by pulling it away from the slot at an angle. (The edge of the module opposite the slot rises away from the computer.)

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



Reverse this procedure to install a WLAN module.

WWAN module

Description	Spare part number
WWAN modules	
HP EVDO-A WWAN module for use in the United States	451131-002
HP un2400 Mobile Broadband Module	483377-001
HP UMTS/HSDPA/EDGE WWAN module, including GPRS	459350-001

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

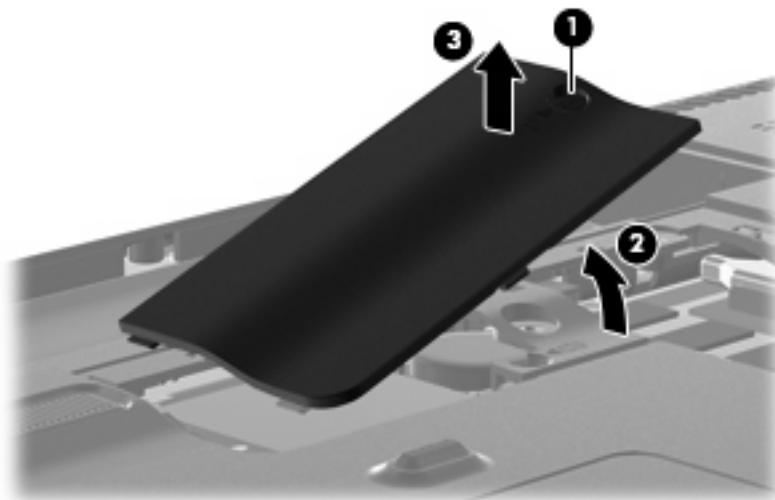
CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module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

Before removing the WWAN module, follow these steps:


1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 55](#)).

Remove the WWAN module:


1. Loosen the Phillips PM2.5×6.0 captive screw (1) that secures the WWAN module cover to the computer. (The edge of the module opposite the slot rises away from the computer.)
2. Lift the inside edge of the cover and slide out to disengage the tabs (2).
3. Remove the cover (3).

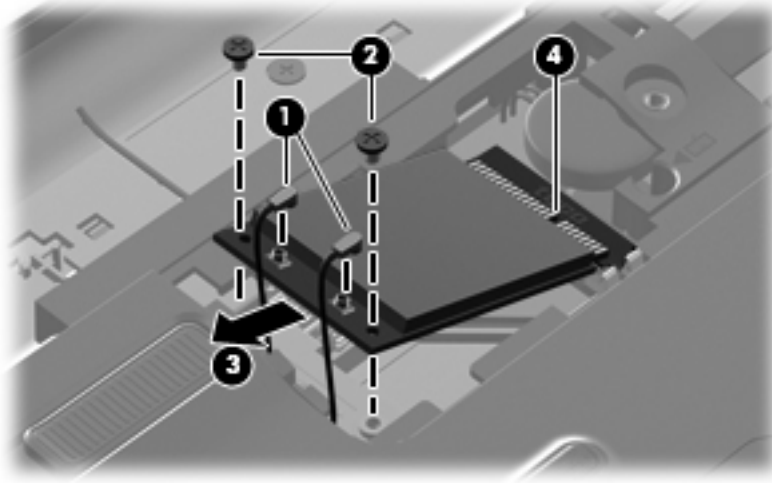


4. Disconnect the WWAN antenna cables (1) from the terminals on the WWAN module.

 **NOTE:** The red WWAN antenna cable is connected to the WWAN module “Main” terminal. The blue WWAN antenna cable is connected to the WWAN module “Aux” terminal.

5. Remove the two Phillips PM2.0×4.0 screws that secure the module to the computer **(2)**.
6. Remove the WWAN module **(3)** by pulling the module away from the slot at an angle.

 **NOTE:** WWAN modules are designed with a notch **(4)** to prevent incorrect insertion.



Reverse this procedure to install the WWAN module.

Memory module

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

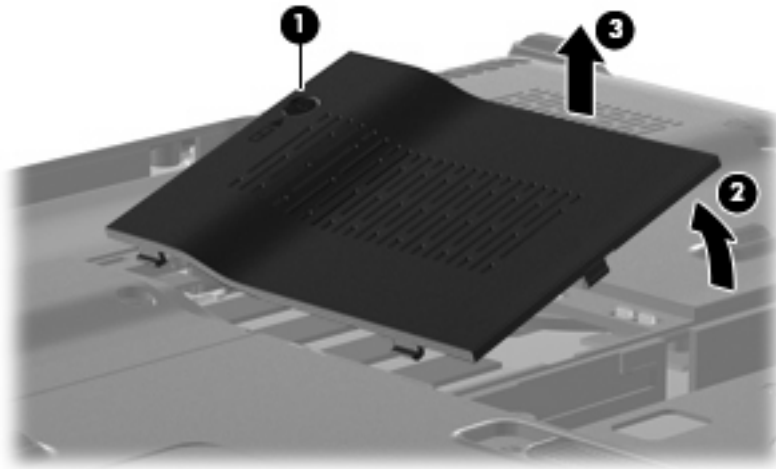
Before removing the memory module, follow these steps:

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 55](#)).


Remove the memory module:

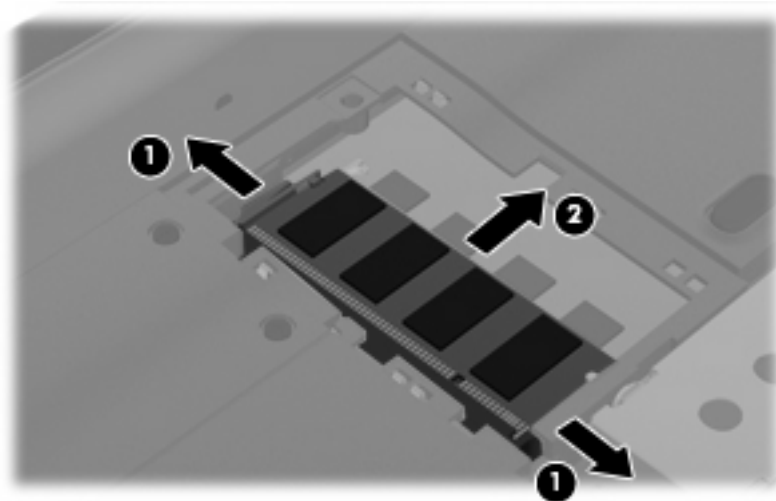
1. Position the computer with the front toward you.
2. Loosen the Phillips PM2.5×6.0 captive screw **(1)** that secures the memory module compartment cover to the computer.

3. Lift the right side of the cover (2), swing it to the left, and remove the cover (3). The memory module compartment cover is included in the Plastics Kit, spare part number 486833-001.



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 to prevent incorrect insertion into the memory module slot.



Reverse this procedure to install a memory module.

RTC battery

Description	Spare part number
RTC battery	486835-001

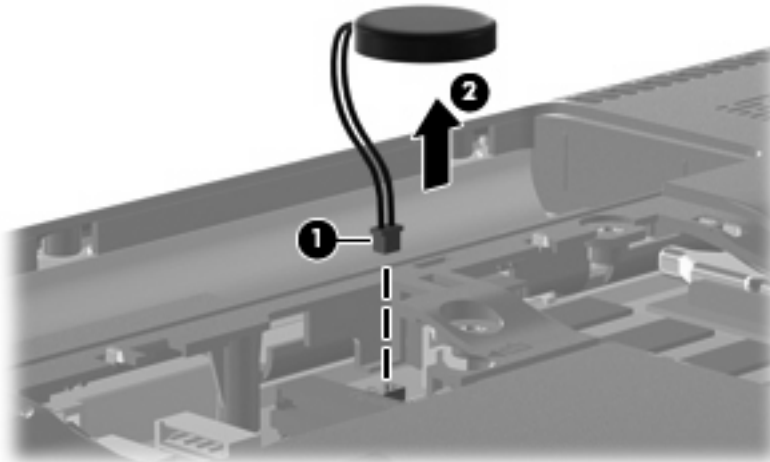
 **NOTE:** Removing the RTC battery and leaving it uninstalled for 5 or more minutes causes all passwords and CMOS settings to be cleared.

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 55](#)).
5. Remove the hard drive bay cover (see [Hard drive on page 59](#)).

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.

Camera/microphone module for standard display assembly

Description	Spare part number
Camera/microphone module (includes camera/microphone module bracket and 2-sided tape)	486876-001

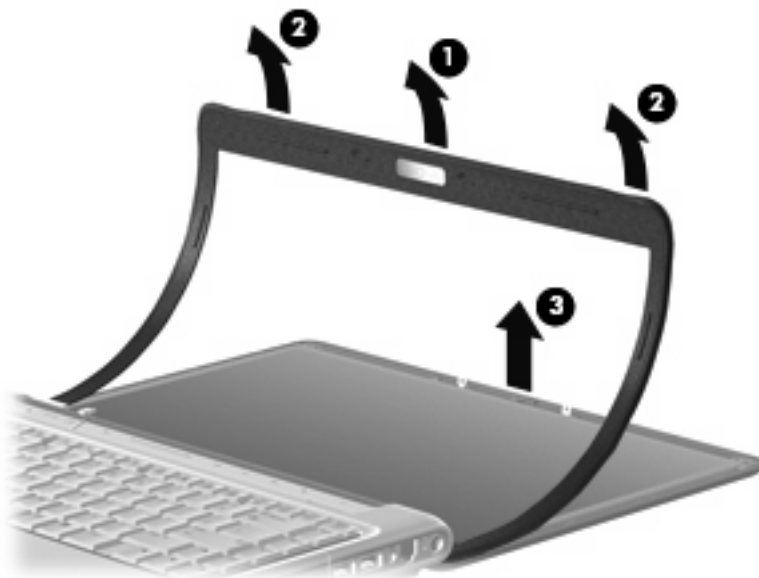
If it has been determined that the camera/microphone module is the component that must be replaced to complete the computer repair, the display assembly does not have to be removed. Follow the procedures in this section to replace the camera/microphone module. For information on replacing the display assembly and display assembly internal components replacement part numbers, see [Display assembly on page 80](#).

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

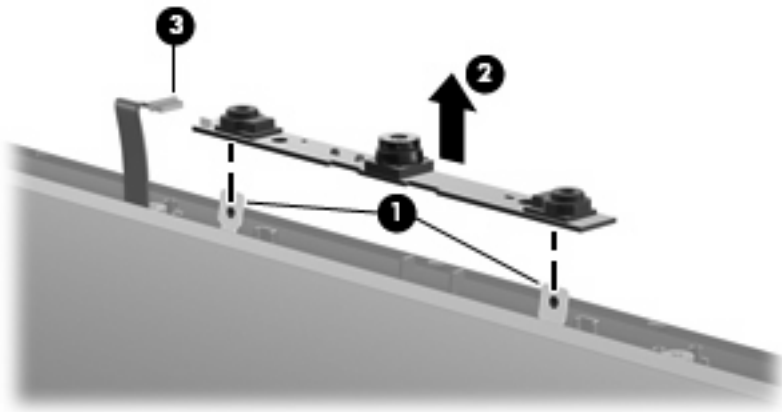
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 55](#)).

Remove the camera/microphone module:

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




4. Release the camera/microphone module assembly from the display enclosure brackets (1), and lift it out as far as the camera/microphone module cable allows (2).
5. Disconnect the camera/microphone module cable (3) from the camera/microphone module.



Reverse this procedure to install the camera/microphone module.

Keyboard

Description	Spare part number
Keyboards	
For use with standard computer models	486901-xxx
For use in blue-colored computer models only in the United States	507319-001
For use only with bronze-colored computer models	508119-xxx
For use in blue-colored computer models	508120-xxx

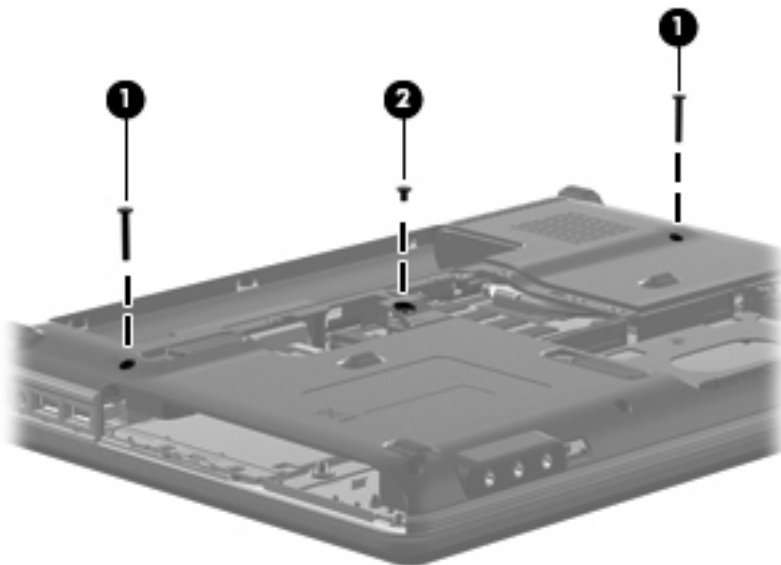
 **NOTE:** For a comprehensive list of keyboard spare part numbers, see the [Sequential part number listing on page 36](#).

Before removing the keyboard, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 55](#)).

Remove the keyboard:

1. Turn the computer upside down, with the front toward you.
2. Remove the two Phillips PM2.5×17.0 screws (1), and the Phillips PM2.5×9.0 screw (2) that secure the keyboard to the computer.

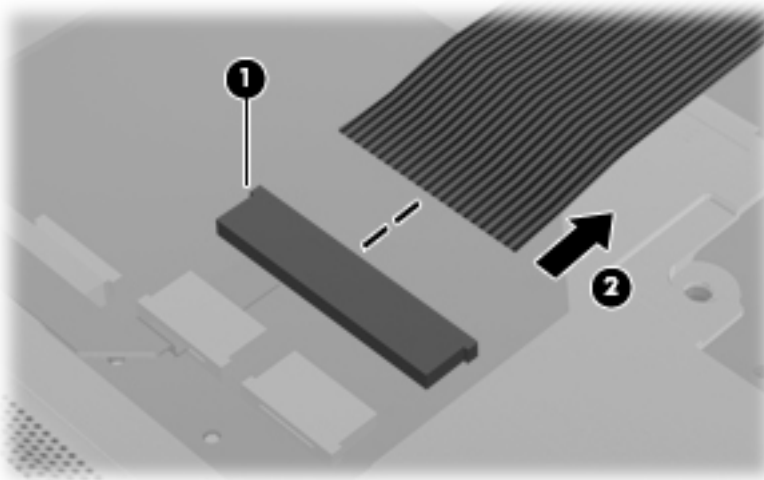


3. Turn the computer display-side up, with the front toward you.
4. Open the computer as far as possible.

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. 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.



8. Remove the keyboard.

Reverse this procedure to install the keyboard.

Keyboard cover

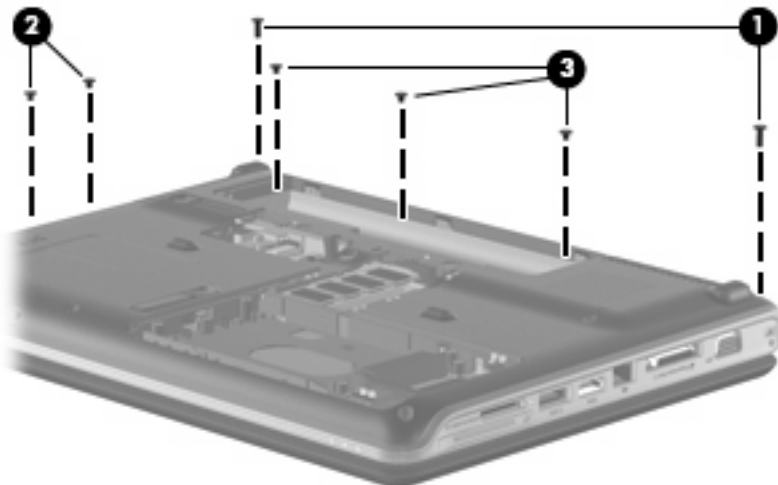
Description	Spare part number
Keyboard covers	
<ul style="list-style-type: none">For use with standard computer models	486852-001
<ul style="list-style-type: none">For use with bronze-colored computer models	495663-001
<ul style="list-style-type: none">For use with standard computer models	512231-001
<ul style="list-style-type: none">For use with bronze-colored computer models	512232-001

Before removing the keyboard 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 55](#)).
5. Remove the keyboard (see [Keyboard on page 72](#)).

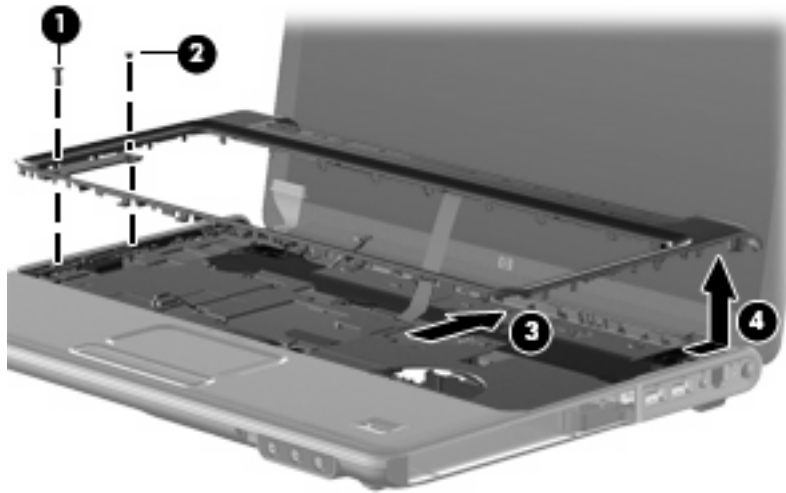
Remove the keyboard cover:

1. Remove the two Phillips PM2.5×7.0 screws (1), the two Phillips PM2.0×4.0 screws (2), and the three Phillips PM2.5×3.0 screws (3) that secure the keyboard 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. Remove the Phillips PM2.5×9.0 screw (1), and the Phillips PM2.5×4.0 screw (2) securing the keyboard cover to the top cover.

5. Release the keyboard cover (3) by sliding it toward the display assembly until it disengages from the computer.
6. Remove the keyboard cover (4).



Reverse this procedure to install the keyboard cover.

Bluetooth module

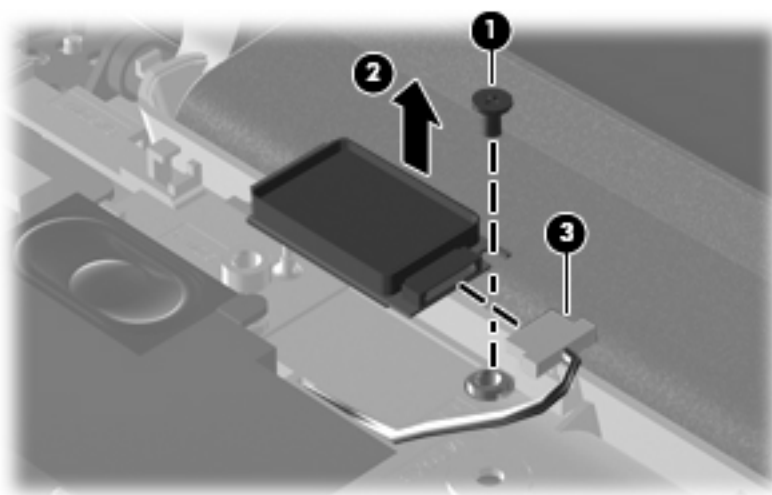
Description	Spare part number
Bluetooth module	483113-001

Before removing the Bluetooth module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 55](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. WLAN cover (see [WLAN module on page 62](#))
 - c. Optical drive (see [Optical drive on page 57](#))
 - d. Keyboard (see [Keyboard on page 72](#))
 - e. Keyboard cover (see [Keyboard cover on page 74](#))

Remove the Bluetooth module:

1. Remove the Phillips PM2.0×4.0 screw **(1)** that secures the Bluetooth module to the system board.
2. Lift the Bluetooth module from the system board **(2)**.
3. Disconnect the Bluetooth module cable from the Bluetooth module **(3)**.



Reverse the above procedure to install the Bluetooth module.

Speaker assembly

Description	Spare part number
Speaker assembly	486837-001

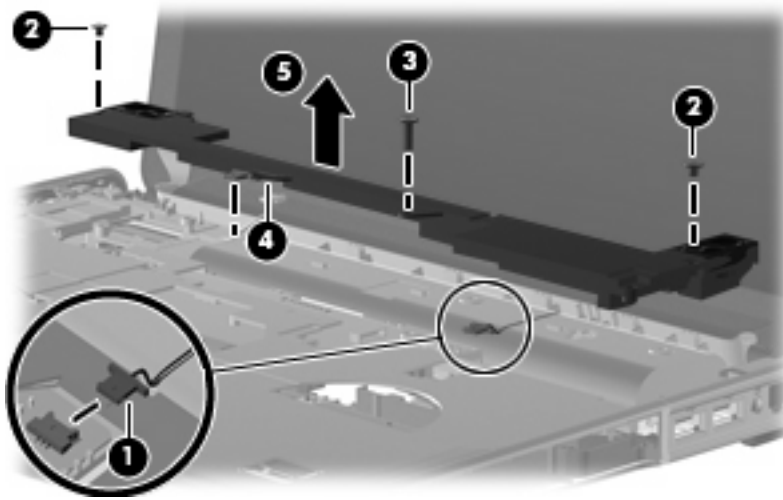
Before removing the speaker assembly, follow these steps:

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 55](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Wireless module compartment cover (see [WLAN module on page 62](#))
 - c. Optical drive (see [Optical drive on page 57](#))
 - d. Keyboard (see [Keyboard on page 72](#))
 - e. Keyboard cover (see [Keyboard cover on page 74](#))
 - f. Display assembly (see [Display assembly on page 80](#))
 - g. Top cover (see [Top cover on page 92](#))

Remove the speaker assembly:

1. Disconnect the num lock 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. Remove the Phillips PM2.5×9.0 screw **(3)** that secures the speaker assembly to the computer.
4. Disconnect the speaker cable **(4)** from the system board.


5. Lift the speaker assembly (5) straight up to remove it from the computer.



Reverse this procedure to install the speaker assembly.

SIM connector board

Description	Spare part number
SIM module for models with WWAN	486845-001

 **NOTE:** This section applies only to computer models with WWAN capability.

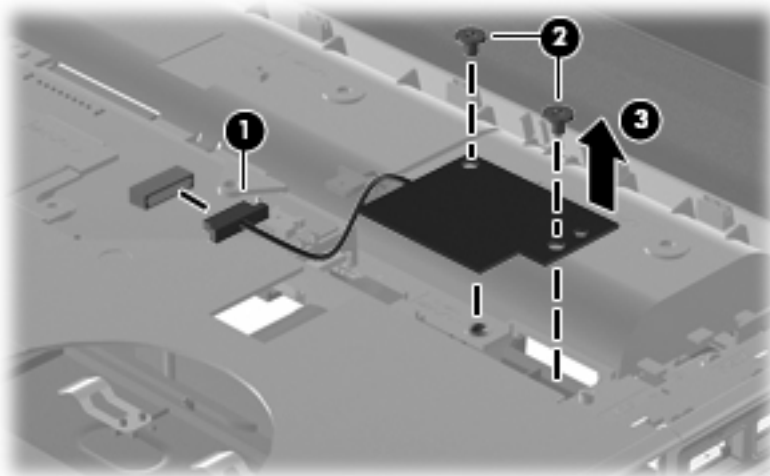
NOTE: If there is a SIM inserted in the SIM slot, it must be removed before disassembling the computer. Be sure that the SIM is reinserted in the SIM slot after reassembling the computer.

Before removing the SIM connector 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 55](#)).
5. Remove the SIM (see [SIM on page 56](#))
6. Remove the keyboard (see [Keyboard on page 72](#))
7. Remove the keyboard cover (see [Keyboard cover on page 74](#))
8. Remove the speaker. (see [Speaker assembly on page 77](#))

Remove the SIM connector board:

1. Disconnect the SIM connector board cable **(1)** from the system board.
2. Remove the 2 Phillips PM2.5×4.0 screws **(2)** that secure the SIM connector board to the system board.
3. Remove the SIM connector board **(3)**.



Reverse this procedure to install the SIM connector board.

Display assembly

Description	Spare part number
Display assemblies	
<ul style="list-style-type: none"> 14.1-inch WXGA, Brightview display assembly with a camera/microphone module for use with standard computer models 	486882-001
<ul style="list-style-type: none"> 14.1-inch WXGA, Brightview display assembly with a camera/microphone module for use with bronze-colored computer models 	496736-001
<ul style="list-style-type: none"> 14.1-inch WXGA, Brightview LED display assembly with a camera/microphone module for use with standard computer models 	486883-001
<ul style="list-style-type: none"> 14.1-inch WXGA, Brightview LED display assembly with a camera/microphone module for use with bronze-colored computer models 	496741-001
<ul style="list-style-type: none"> 14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/microphone module for use with standard computer models 	486872-001
<ul style="list-style-type: none"> 14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/microphone module for use with bronze-colored computer models 	496732-001
<ul style="list-style-type: none"> 14.1-inch WXGA, Brightview Flush Glass display assembly with a camera/microphone module for use in blue-colored computer models 	502577-001
Display bezels	
<ul style="list-style-type: none"> For use only with standard computer models equipped with a camera/microphone module (includes openings for camera module and microphones) 	494978-001
<ul style="list-style-type: none"> For use only with standard computer models not equipped with a camera/microphone module (includes openings for microphones) 	486893-001
<ul style="list-style-type: none"> For use only with bronze-colored computer models equipped with a camera/microphone module (includes openings for camera module and microphones) 	496743-001
<ul style="list-style-type: none"> For use only with bronze-colored computer models not equipped with a camera/microphone module (includes openings for camera/microphone module and microphones) 	496735-001
Display Hinge Kits	
<ul style="list-style-type: none"> For use with standard display assemblies 	486894-001
<ul style="list-style-type: none"> For use with Flush Glass display assemblies 	486880-001
Display panels (includes display panel cable)	
<ul style="list-style-type: none"> 14.1-inch, WXGA, BrightView display panel for use in computers with Intel processors (includes display panel cable) 	483261-001
<ul style="list-style-type: none"> 14.1-inch, WXGA, BrightView LED display panel for use in computers with Intel processors (includes display panel cable) 	483262-001
<ul style="list-style-type: none"> 14.1-inch, WXGA, BrightView display panel for use in computers with AMD processors (includes display panel cable) 	497182-001
<ul style="list-style-type: none"> 14.1-inch, WXGA, BrightView LED display panel for use in computers with AMD processors (includes display panel cable) 	497183-001
Display inverter (includes Mylar shield)	486736-001
Wireless Antenna Kits	

Description	Spare part number
<ul style="list-style-type: none"> For use with standard display assemblies 	489068-001
<ul style="list-style-type: none"> For use with Flush Glass display assemblies 	489067-001
Display enclosures (includes logo light and cables)	
<ul style="list-style-type: none"> For use with standard computer models with a camera/microphone module 	486890-001
<ul style="list-style-type: none"> For use with bronze-colored computer models with a camera/microphone module 	496734-001
<ul style="list-style-type: none"> For use with standard computer models 	494967-001
<ul style="list-style-type: none"> For use with bronze-colored computer models 	496742-001
<ul style="list-style-type: none"> For use with standard computer models with Flush Glass display assemblies 	486875-001
<ul style="list-style-type: none"> For use with bronze-colored computer models with Flush Glass display assemblies 	496733-001
<ul style="list-style-type: none"> For use in blue-colored computer models 	502578-001
Rubber display bezel kits (contains all rubber pieces for the display bezel)	
<ul style="list-style-type: none"> For use with standard computer models 	496729-001
<ul style="list-style-type: none"> For use with bronze-colored computer models 	486874-001
Miscellaneous display parts	
<ul style="list-style-type: none"> Hinge trim for use on standard computer models with Flush Glass display assemblies 	495629-001
<ul style="list-style-type: none"> Hinge trim for use on bronze-colored computer models with Flush Glass display assemblies 	502592-001
<ul style="list-style-type: none"> Hinge trim for use on blue-colored computer models 	502595-001
<ul style="list-style-type: none"> Display trim for use with standard computer models with Flush Glass display assemblies 	486877-001
<ul style="list-style-type: none"> Display trim for use with bronze-colored computer models with Flush Glass display assemblies 	502593-001
<ul style="list-style-type: none"> Display trim for use with blue-colored computer models 	502596-001
<ul style="list-style-type: none"> LCD cable for Flush Glass display assemblies 	486878-001
<ul style="list-style-type: none"> Microphone cable for Flush Glass display assemblies 	495631-001
<ul style="list-style-type: none"> LED transfer board for standard display assemblies 	494977-001

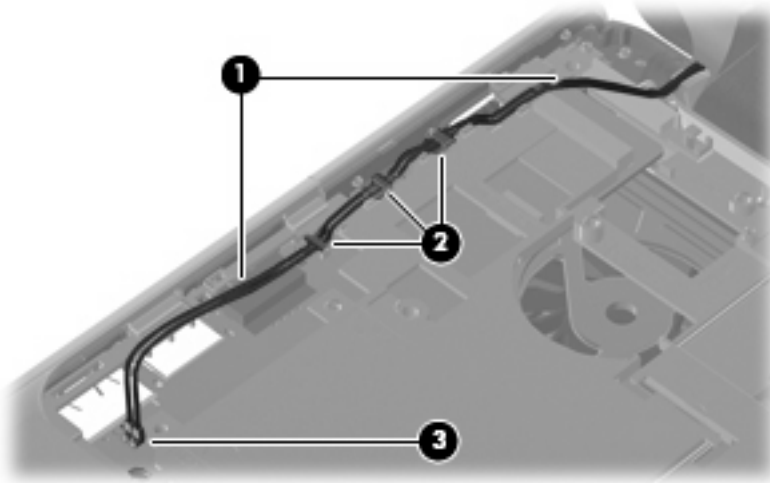
Before removing the display assembly, follow these steps:

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 55](#)).

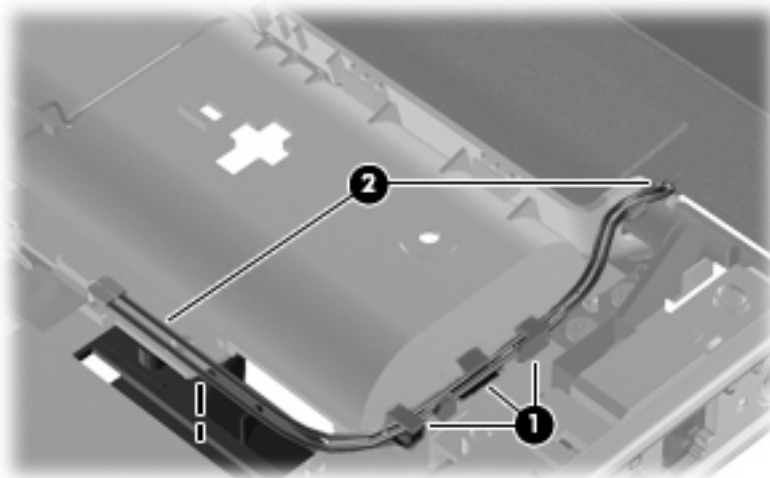
5. Disconnect the wireless antenna cables from the WLAN module (see [WLAN module on page 62](#)).
6. Remove the following components:
 - a. Keyboard (see [Keyboard on page 72](#))
 - b. Keyboard cover (see [Keyboard cover on page 74](#))
 - c. Speaker (see [Speaker assembly on page 77](#))

Remove the display assembly:

1. Locate the wireless antenna cable (1), and remove from path (2).
2. Disconnect the wireless antenna cable from the system board (3).



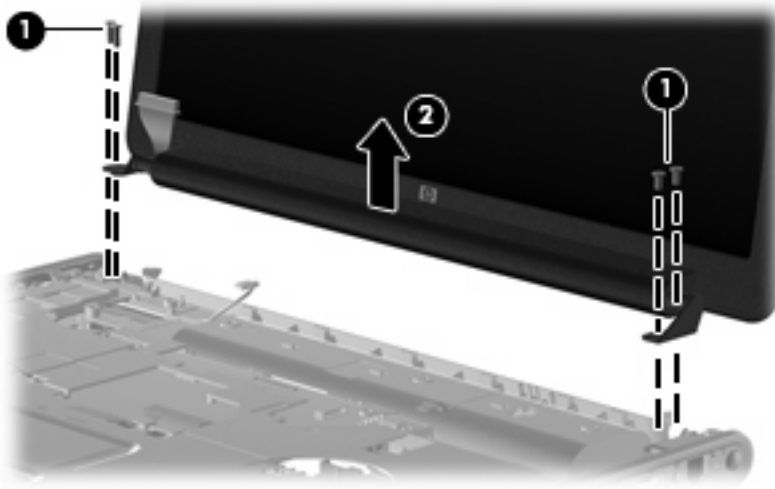
3. Remove the wireless antenna cable from the path (1) and disconnect it from the system board (2).



△ CAUTION: The display assembly will be unsupported when the following screws are removed. To prevent damage to the display assembly, support it before removing the screws.

4. Remove the four Phillips PM2.5×7.0 screws (1) that secure the display assembly to the computer.

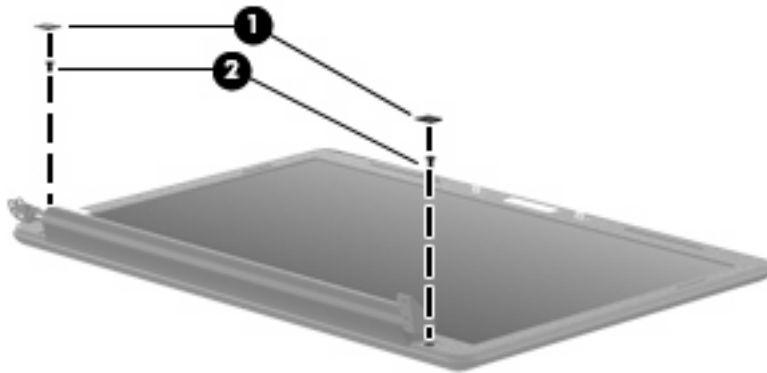
5. Remove the display assembly (2).



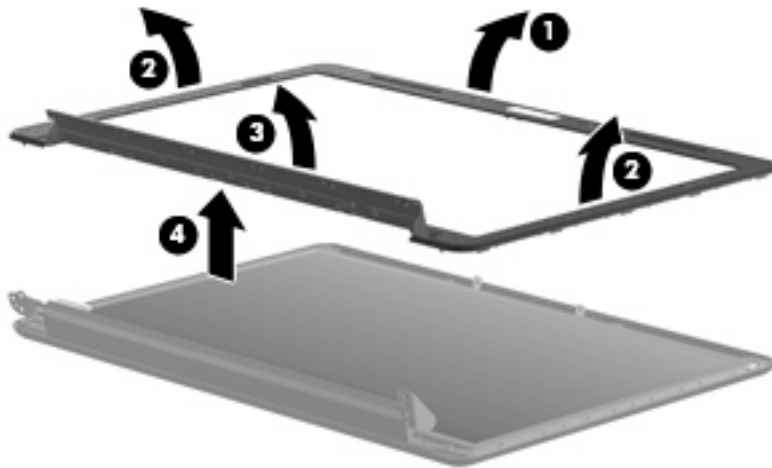
If it is necessary to replace other display assembly components, continue to the section that corresponds to the appropriate display assembly


Standard display assembly

1. If it is necessary to replace the standard display bezel or any of the standard display assembly internal components, remove the following screw covers (1) and screws (2).



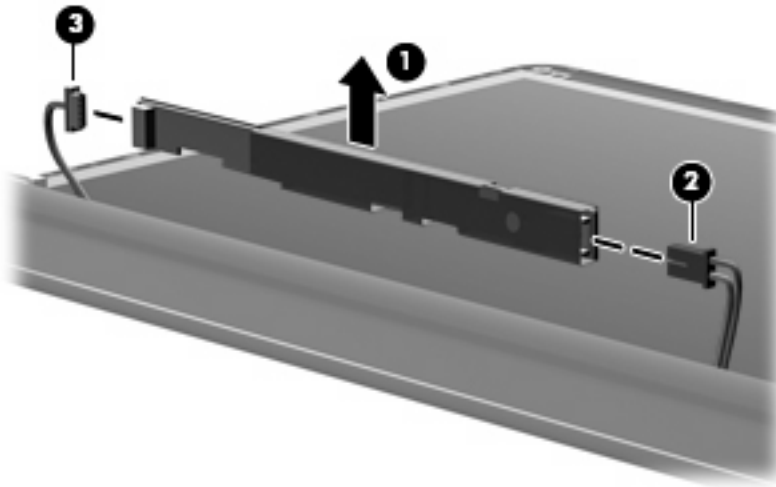
2. Flex the inside edges of the top (1) and sides (2) of the display bezel until the bezel disengages from the display enclosure.
3. Swing the bezel forward (3), and remove the display bezel (4).



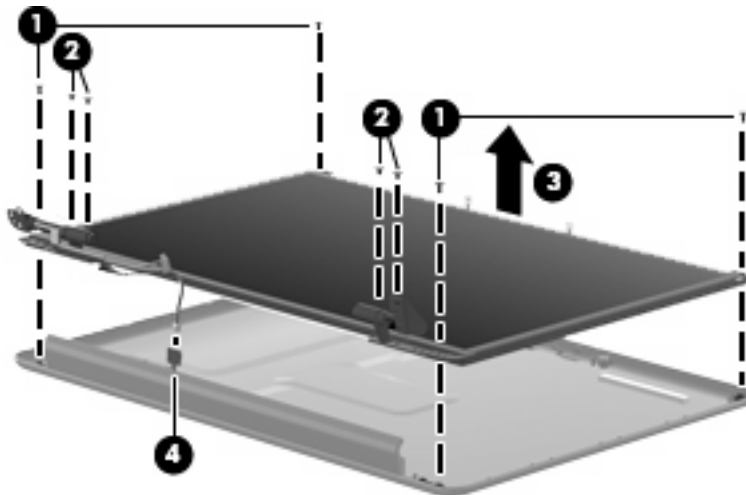
 **NOTE:** See [Camera/microphone module for standard display assembly on page 70](#) for camera/microphone module replacement instructions.

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

5. Disconnect the display panel cable (2) and the backlight cable (3) from the display inverter.

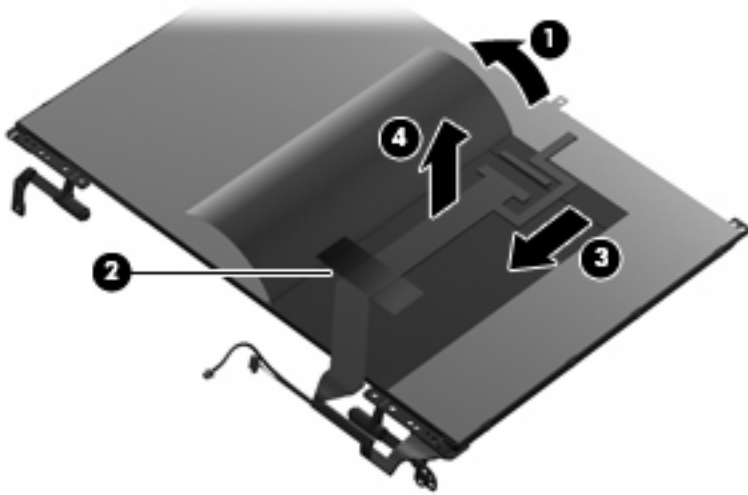


6. Remove the display inverter.
7. If it is necessary to replace the standard display panel, remove the four Phillips PM2.5×6.0 screws (1), and the four Phillips PM2.5×4.0 screws (2) that secure the display panel to the display enclosure.
8. Lift the display panel out of the display enclosure (3), and disconnect the display LED cable (4).



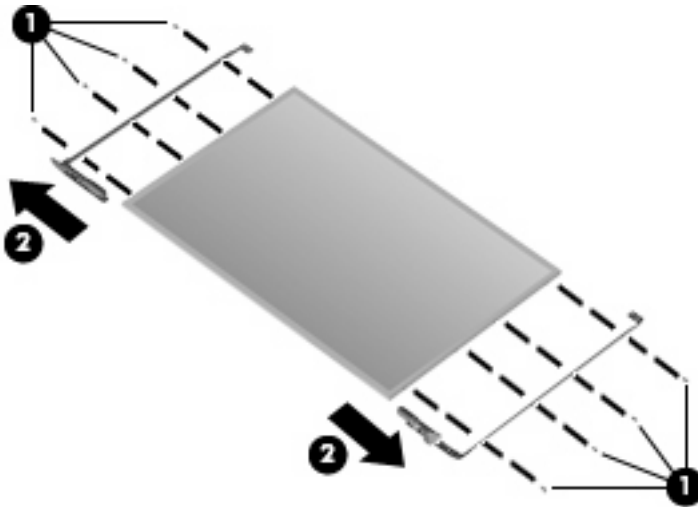
9. If it is necessary to replace the standard display panel cable, release the foil shield (1) covering the cable.
10. Remove the tape (2) securing the cable to the display panel.
11. Disconnect the display panel cable (3) from the display panel.

12. Remove the display panel cable (4).



13. If it is necessary to replace the standard display hinges, remove the eight Phillips PM2.0×4.0 screws (1) that secure the hinges to the display panel.

14. Remove the display hinges (2).

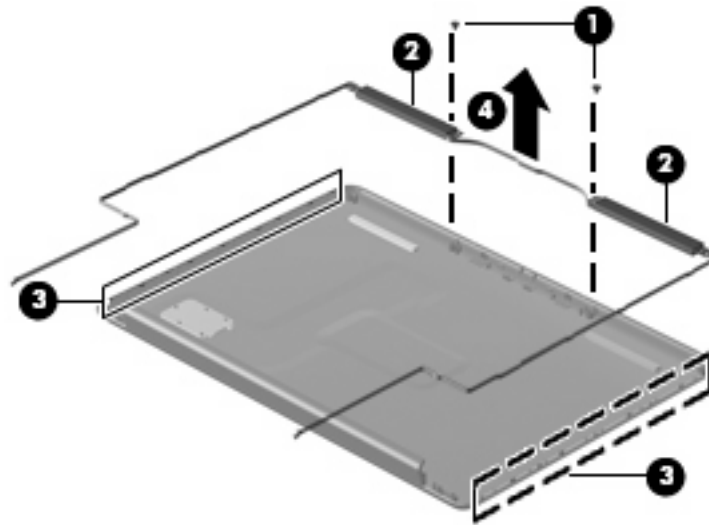


15. If it is necessary to replace the standard display wireless antenna transceivers and cables, remove the two Phillips PM2.5×4.0 screws (1) that secure each transceiver to the display enclosure.

16. Remove the wireless antenna cables from the clips (2) built into the display enclosure.

17. Detach the wireless antenna transceivers (3) from the display enclosure.

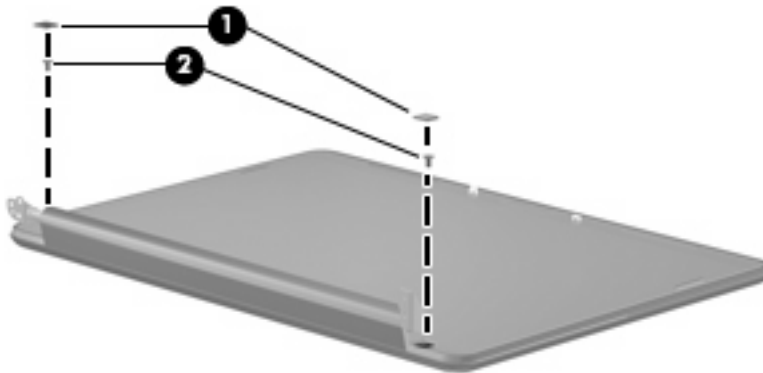
18. Remove the wireless antenna transceivers and cables (4) from the display enclosure.



Reverse this procedure to reassemble and install the standard display assembly.

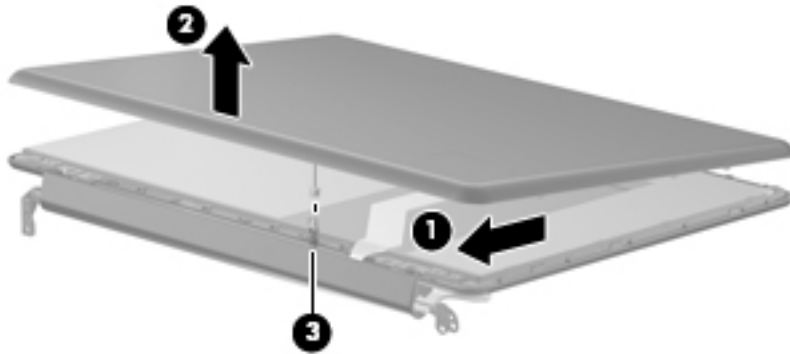
Flush Glass display assembly

1. If it is necessary to replace the Flush Glass display enclosure or any of the replaceable Flush Glass display assembly components, remove the following screw covers (1) and screws (2):

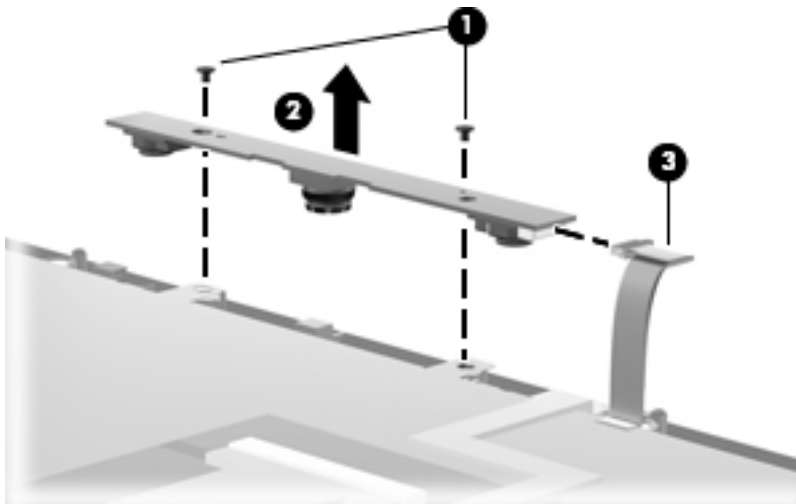


2. Turn the display assembly over.
3. Slide the display enclosure toward the bottom edge of the assembly (1), and lift up to detach (2).

4. Disconnect the LED board from the enclosure **(3)** to remove the enclosure.

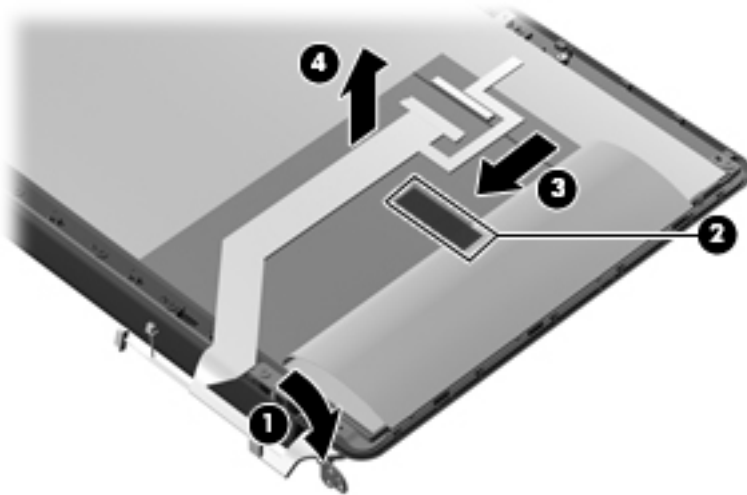


5. If it is necessary to replace the camera/microphone assembly, remove the two Phillips PM2.5×4.0 screws **(1)** that secure the camera/microphone module.
6. Lift the module out as far as the camera/microphone module cable allows **(2)**.
7. Disconnect the camera/microphone module cable **(3)** from the camera/microphone module.

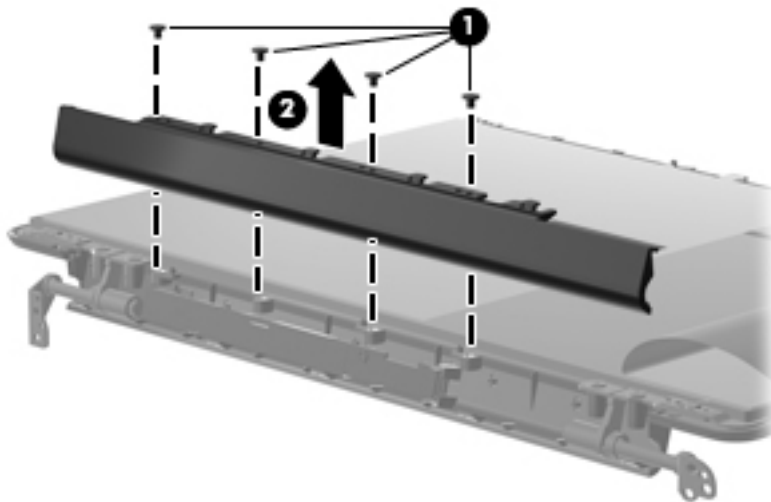


8. If it is necessary to replace the Flush Glass display panel cable, turn the display assembly over.
9. Release the foil shield covering the display panel cable **(1)**.
10. Remove the tape **(2)** securing the cable to the display panel.
11. Disconnect the display panel cable **(3)** from the display panel.

12. Remove the display panel cable (4).

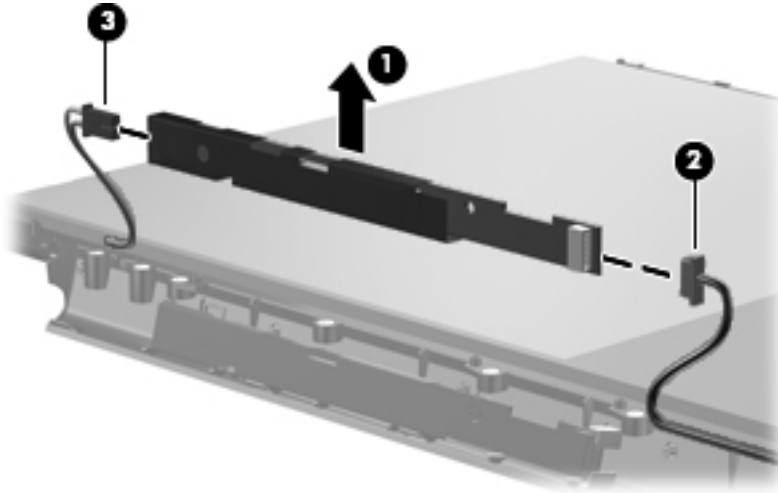


13. If it is necessary to replace the inverter, remove the four Phillips PM2.5×4.0 screws (1) that secure the inverter cover to the display assembly, and remove the inverter cover (2).

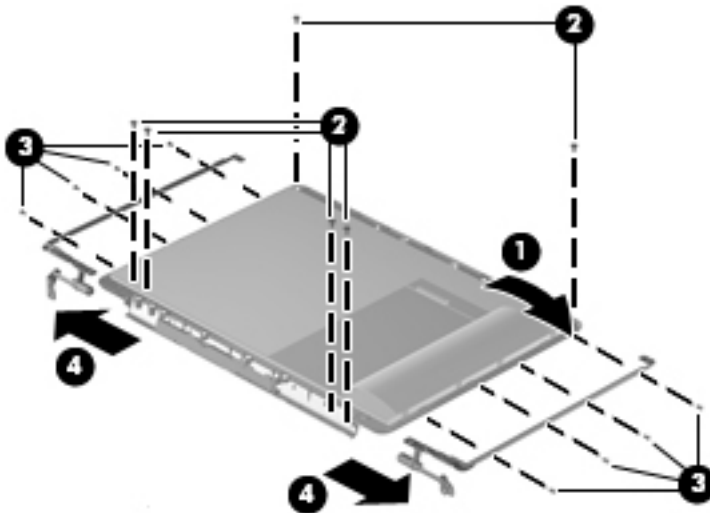


14. Release the inverter from the display assembly, and lift as far as the attached cables will allow (1).

15. Disconnect the backlight cable (2), and the display panel cable (3) from the inverter.

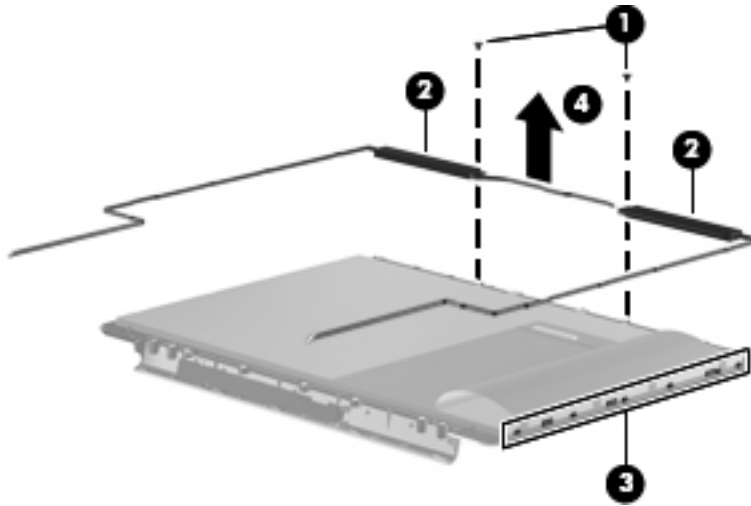


16. If it is necessary to replace the display hinges, release the foil tab (1).
17. Remove the six Phillips PM2.5×4.0 screws (2), and the eight Phillips PM2.0×4.0 screws (3) that secure the hinges to the display panel.
18. Remove the hinges (4).



19. If it is necessary to replace the wireless antenna assembly, remove the two Phillips PM2.5×4.0 screws (1) that secure the transceivers to the display enclosure.
20. Detach the wireless antenna transceivers (2) from the display enclosure.
21. Remove the wireless antenna cables from the clips (3) built into the display enclosure.

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



Reverse this procedure to reassemble and install the Flush Glass display assembly.

Top cover

Description	Spare part number
Top covers (include TouchPad and TouchPad cable)	
<ul style="list-style-type: none">Equipped with a fingerprint reader (includes fingerprint reader board and cable)	486830-001
<ul style="list-style-type: none">Not equipped with a fingerprint reader	488105-001
<ul style="list-style-type: none">For bronze-colored computer models equipped with a fingerprint reader	495661-001
<ul style="list-style-type: none">For bronze-colored computer models not equipped with a fingerprint reader	495662-001
<ul style="list-style-type: none">For use in blue-colored computer models	502579-001

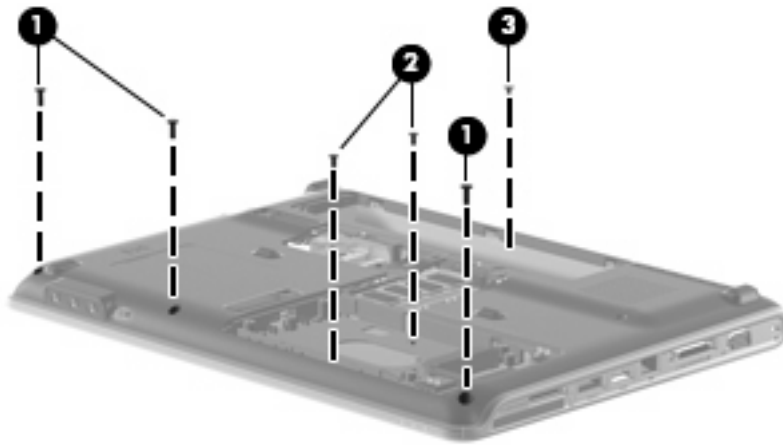
Before removing the top cover, follow these steps:

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 55](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. WLAN cover (see [WLAN module on page 62](#))
 - c. Optical drive (see [Optical drive on page 57](#))
 - d. Keyboard (see [Keyboard on page 72](#))
 - e. Keyboard cover (see [Keyboard cover on page 74](#))
 - f. Speaker (see [Speaker assembly on page 77](#))
 - g. Display assembly (see [Display assembly on page 80](#))

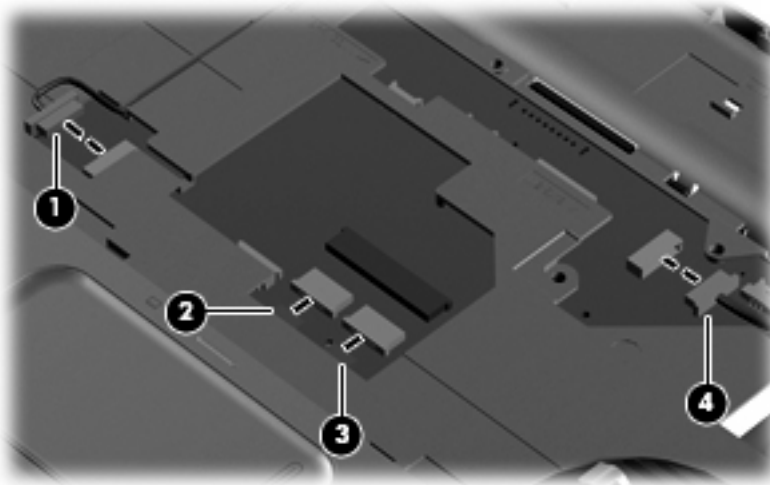
Remove the top cover:

1. Turn the computer upside down, with the front toward you.

2. Remove the three Phillips PM2.5×9.0 screws (1), the two Phillips PM2.5×6.0 screws (2), and the one Phillips PM2.5×4.0 screws (3) that secure the top cover to the computer.

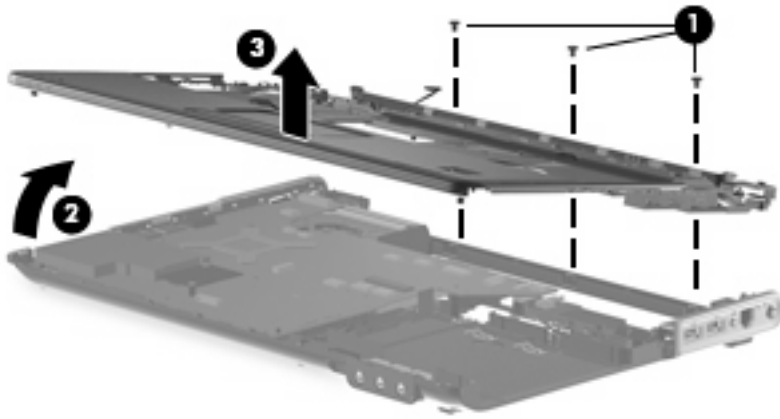


3. Turn the computer right-side up, with the front toward you.
4. Disconnect the Bluetooth module cable (1), the TouchPad cable (2), the fingerprint reader board cable (3), and the USB board cable (4) from on the system board.



5. Remove the three Phillips PM2.5×4.0 screws (1).

6. Lift the front edge of the top cover (2) and remove it (3).



Reverse this procedure to install the top cover.

TouchPad

Description	Spare part number
TouchPad (include TouchPad bracket and TouchPad cable)	494960-001
TouchPad button	486832-001
TouchPad bracket (included with top cover spare part kits and with TouchPad)	494961-001

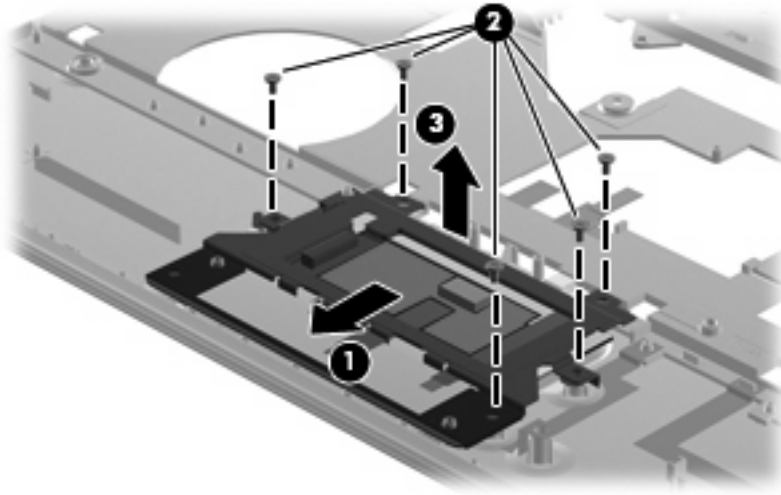
Before removing the TouchPad, follow these steps:

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 55](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. WLAN cover (see [WLAN module on page 62](#))
 - c. Optical drive (see [Optical drive on page 57](#))
 - d. Keyboard (see [Keyboard on page 72](#))
 - e. Keyboard cover (see [Keyboard cover on page 74](#))
 - f. Display assembly (see [Display assembly on page 80](#))
 - g. Top cover (see [Top cover on page 92](#))

Remove the TouchPad:

1. Turn the top cover upside down, with the front toward you.
2. Disconnect the TouchPad cable **(1)**.
3. Remove the five Phillips PM2.5×4.0 screws that secure the TouchPad to the top cover **(2)**.

4. Remove the TouchPad board from the top cover (3).



Reverse the above procedure to reassemble and install the TouchPad.

Fingerprint reader board

Description	Spare part number
Fingerprint reader	486828-001

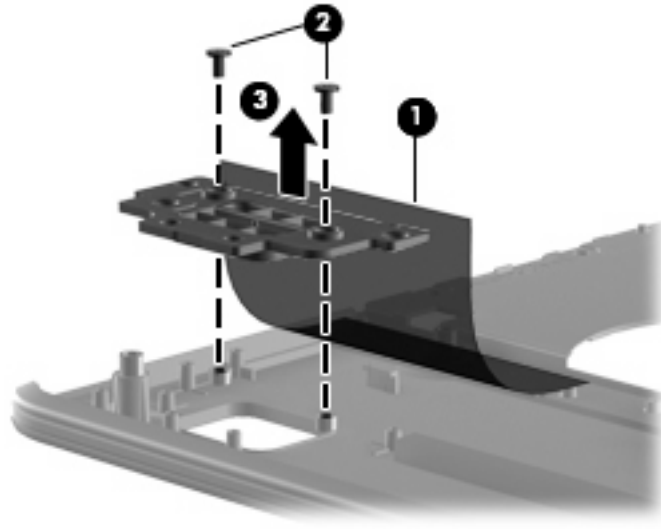
Before removing the fingerprint reader, follow these steps:

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 55](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. WLAN cover (see [WLAN module on page 62](#))
 - c. Optical drive (see [Optical drive on page 57](#))
 - d. Keyboard (see [Keyboard on page 72](#))
 - e. Keyboard cover (see [Keyboard cover on page 74](#))
 - f. Display assembly (see [Display assembly on page 80](#))
 - g. Top cover (see [Top cover on page 92](#))

Remove the TouchPad:

1. Turn the top cover upside down, with the front toward you.
2. Fold back the Mylar cover **(1)**.
3. Remove the two Phillips PM2.0×3.0 screws that secure the fingerprint reader to the top cover **(2)**.

4. Remove the fingerprint reader from the top cover (3).



Reverse the above procedure to reassemble and install the fingerprint reader.

Modem module

Description	Spare part number
Modem module for use with most computer models	461749-001
Modem module for use with computer models in Australia and New Zealand	461749-011

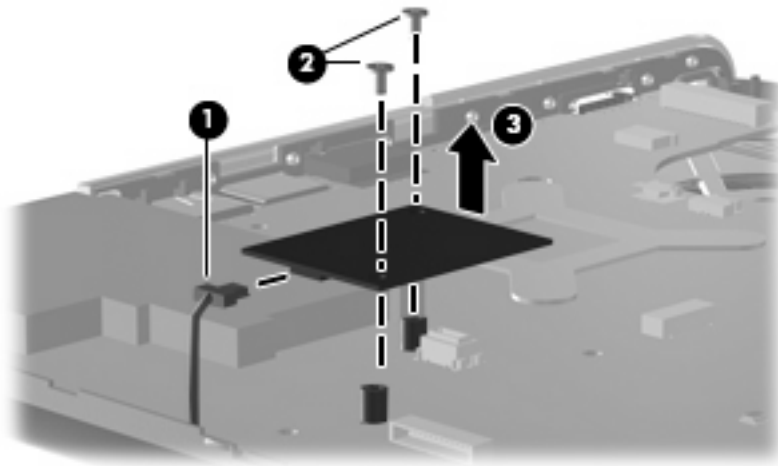
Before removing the modem module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 55](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. WLAN cover (see [WLAN module on page 62](#))
 - c. Optical drive (see [Optical drive on page 57](#))
 - d. Keyboard (see [Keyboard on page 72](#))
 - e. Keyboard cover (see [Keyboard cover on page 74](#))
 - f. Display assembly (see [Display assembly on page 80](#))
 - g. Top cover (see [Top cover on page 92](#))

Remove the modem module:

1. Disconnect the modem module cable **(1)** from the modem module.
2. Remove the two Phillips PM2.0×4.0 screws **(2)** that secure the modem module to the system board.

3. Lift up on the back 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)	486840-001

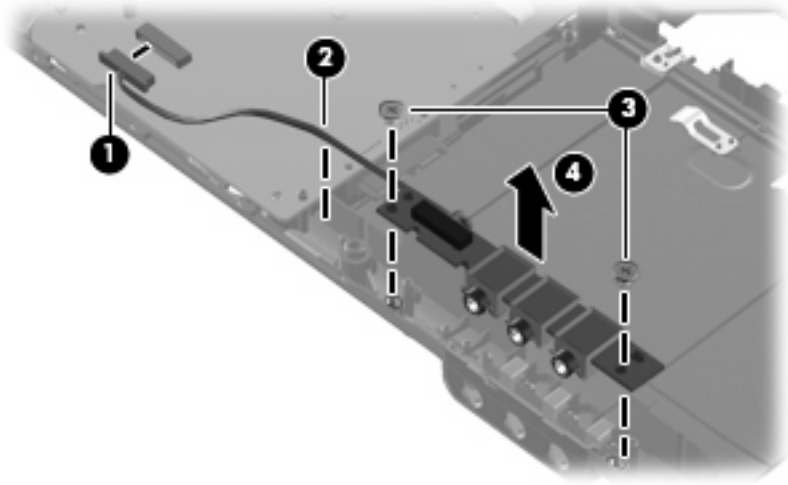
Before removing the audio board, follow these steps:

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 55](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. WLAN cover (see [WLAN module on page 62](#))
 - c. Optical drive (see [Optical drive on page 57](#))
 - d. Keyboard (see [Keyboard on page 72](#))
 - e. Keyboard cover (see [Keyboard cover on page 74](#))
 - f. Display assembly (see [Display assembly on page 80](#))
 - g. Top cover (see [Top cover on page 92](#))

Remove the audio board:

1. Disconnect the audio board cable **(1)** from the system board, and remove the cable from the audio board **(2)**.
2. Remove the two Phillips PM2.5×4.0 screws **(3)** that secure the audio board to the computer.

3. Remove the audio board (4).



Reverse the above procedure to install the audio board.

USB board

Description	Spare part number
USB board (includes USB board cable)	486842-001

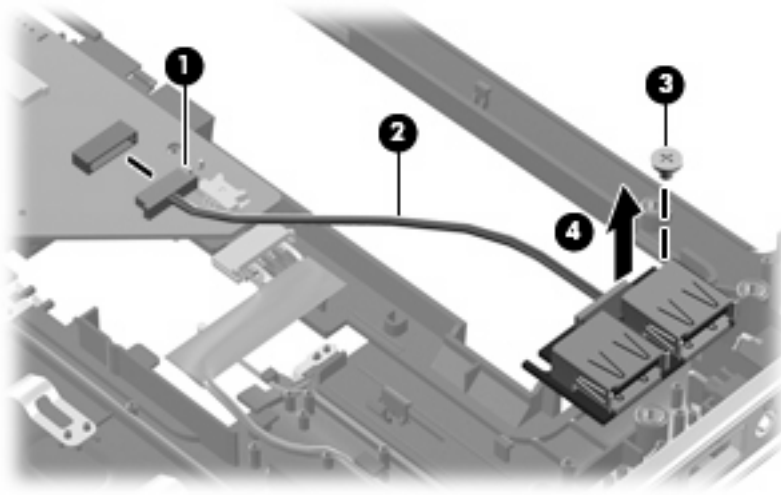
Before removing the USB board, follow these steps:

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 55](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Wireless module compartment cover (see [WLAN module on page 62](#))
 - c. Optical drive (see [Optical drive on page 57](#))
 - d. Keyboard (see [Keyboard on page 72](#))
 - e. Keyboard cover (see [Keyboard cover on page 74](#))
 - f. Display assembly (see [Display assembly on page 80](#))
 - g. Top cover (see [Top cover on page 92](#))

Remove the USB board:

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

TV tuner antenna

Description	Spare part number
TV tuners	
• ATSC/NTSC TV tuner antenna	482900-001
• TV tuner antenna with PAL jack	482900-002
• ATSC/NTSC TV tuner	482899-001
• DVB-T/ANG Integrated TV tuner	482899-002
• DVB-T tuner	482899-003
• DVB-T tuner for use only in the AP region	482899-004

If it has been determined that the TV tuner antenna cable is the component that must be replaced to complete the computer repair, follow the procedures in this section to replace the cable.

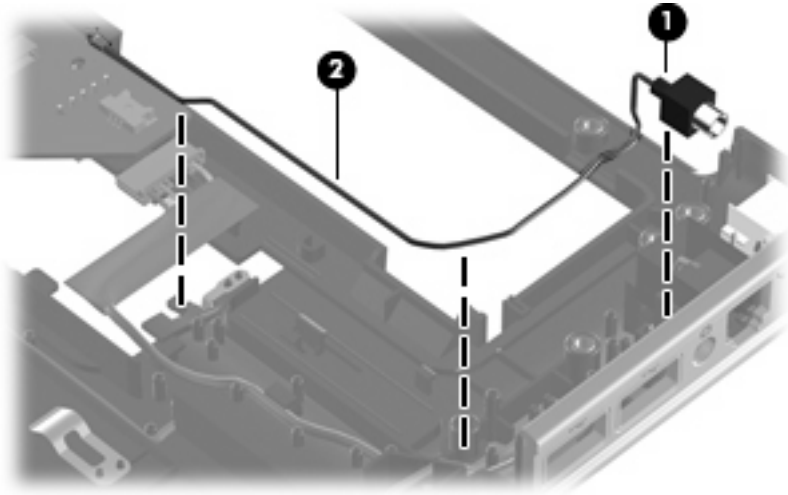
Before removing the TV antenna cable, follow these steps:

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 55](#))
5. Remove the keyboard (see [Keyboard on page 72](#))
6. Remove the keyboard cover (see [Keyboard cover on page 74](#))
7. Remove the display assembly (see [Display assembly on page 80](#))
8. Remove the top cover (see [Top cover on page 92](#))
9. Remove the USB board (see [USB board on page 103](#))

Remove the TV tuner antenna cable:

1. Disconnect the TV tuner antenna cable from the system board **(1)**.

2. Remove the cable from the base enclosure clips (2).



Reverse this procedure to install the TV tuner antenna cable.

System board

Description	Spare part number
System boards (include thermal material)	
For use in computer models with Intel processors:	
<ul style="list-style-type: none">On models equipped with a 256-MB discrete graphics subsystem	486723-001
<ul style="list-style-type: none">On models equipped with a 512-MB discrete graphics subsystem	496730-001
<ul style="list-style-type: none">On models equipped with a UMA graphics subsystem	486724-001
For use in computer models with AMD processors:	
<ul style="list-style-type: none">With QuickPlay	488238-001
<ul style="list-style-type: none">With MediaSmart	511858-001

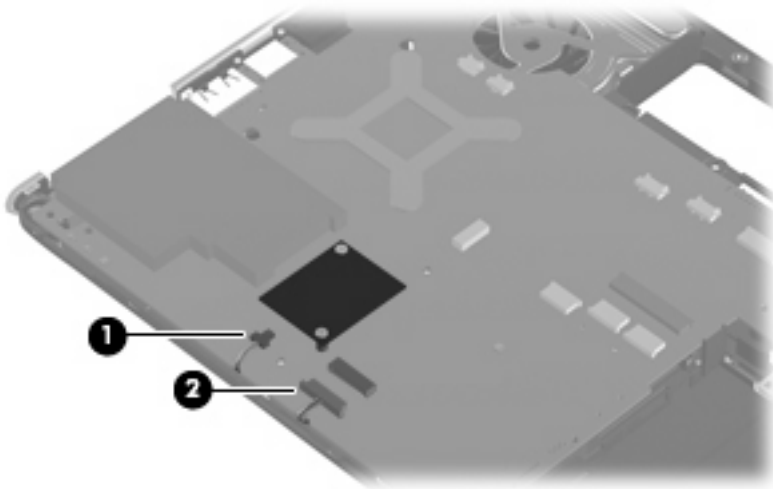
 **NOTE:** All system board spare part kits include replacement thermal material.

Before removing the system board, follow these steps:

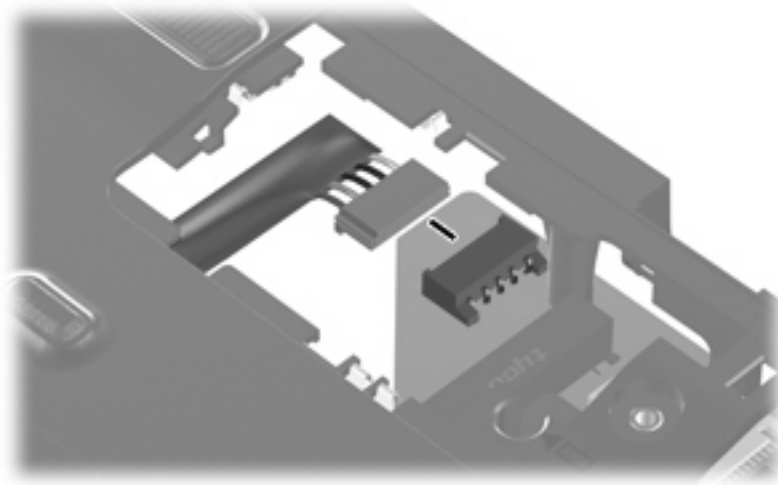
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 55](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Keyboard (see [Keyboard on page 72](#))
 - d. Keyboard cover (see [Keyboard cover on page 74](#))
 - e. Display assembly (see [Display assembly on page 80](#))
 - f. Top cover (see [Top cover on page 92](#))

Remove the system board:

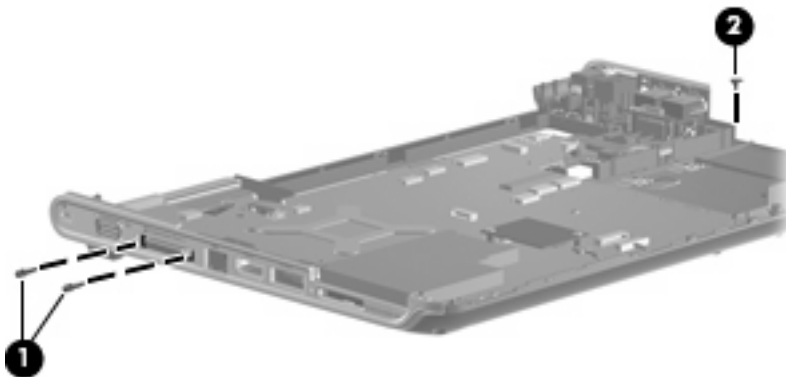
1. Disconnect the following cables from the system board:
 - Modem module cable **(1)**
 - Audio board cable **(2)**



2. Disconnect the power connector cable from the system board.

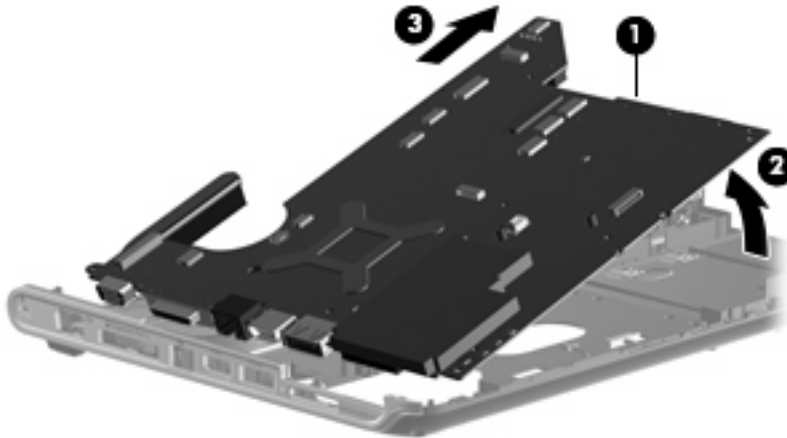


3. Remove the two Phillips PM1.5×9.0 slotted screws (1), and the Phillips PM2.5×4.0 screw (2) that secure the system board to the computer.



4. Use the optical drive connector (1) to lift the right side of the system board until it rests at an angle.
5. Lift the system board (2).

6. Release the system board (3) 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.



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

- Fan and heat sink assembly (see [Fan and heat sink on page 114](#))
- Processor (see [Processor on page 118](#))
- RTC battery (see [RTC battery on page 69](#))
- Memory modules (see [Memory module on page 67](#))
- WLAN module (see [WLAN module on page 62](#))
- Modem module (see [Modem module on page 99](#))

Reverse the preceding procedure to install the system board.

Power button board

Description	Spare part number
Power button with connector cable	486853-001

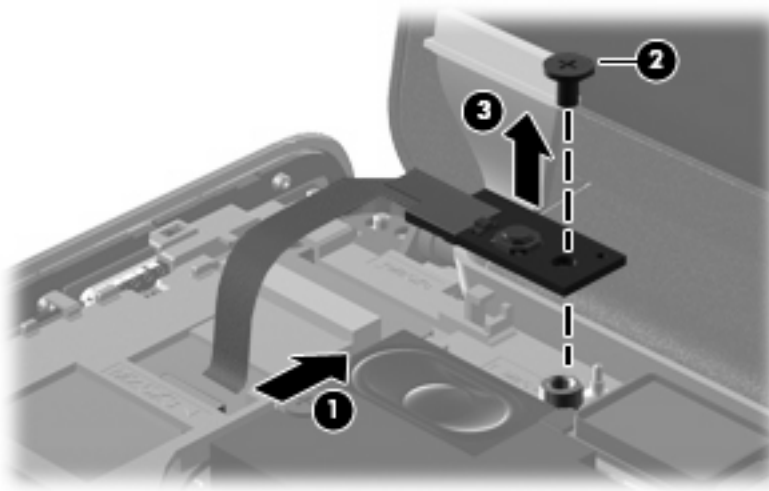
Before removing the power button board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 55](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Keyboard (see [Keyboard on page 72](#))
 - d. Keyboard cover (see [Keyboard cover on page 74](#))
 - e. Display assembly (see [Display assembly on page 80](#))
 - f. Top cover (see [Top cover on page 92](#))
 - g. System board (see [System board on page 107](#))

Remove the power button board:

1. Disconnect the low insertion force (LIF) cable **(1)** from the power button board.
2. Remove the Phillips PM2.0×4.0 screw **(2)** that secures the power button board to the system board.

3. Remove the power button board (3).



Reverse this procedure to install the power button board.

Modem module cable

Description	Spare part number
Modem module cable for use with computer models with Intel processors	494981-001

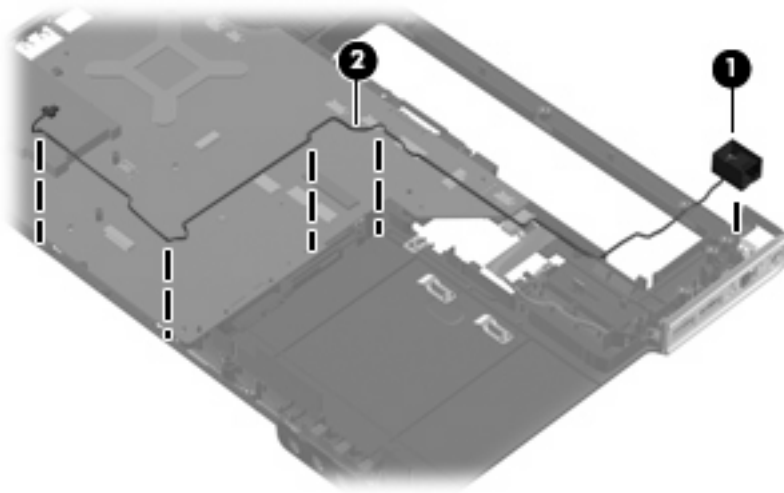
Before removing the modem module cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 55](#))
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. WLAN cover (see [WLAN module on page 62](#))
 - c. Optical drive (see [Optical drive on page 57](#))
 - d. Keyboard (see [Keyboard on page 72](#))
 - e. Keyboard cover (see [Keyboard cover on page 74](#))
 - f. Display assembly (see [Display assembly on page 80](#))
 - g. Top cover (see [Top cover on page 92](#))
 - h. Modem module (see [Modem module on page 99](#))
 - i. System board (see [System board on page 107](#))
 - j. USB board (see [USB board on page 103](#))
 - k. Audio board (see [Audio board on page 101](#))

Remove the modem module cable:

1. Disconnect the modem module cable from the system board **(1)**.


2. Remove the cable from the base enclosure clips (2).



Reverse the preceding procedure to install the modem module cable.

Fan and heat sink

Description	Spare part number
Heat sink (includes thermal material)	
<ul style="list-style-type: none">For use in models with Intel processors UMA graphics subsystems	486838-001
<ul style="list-style-type: none">For use in models with AMD processors and UMA graphics subsystems	492260-001
Fan (includes thermal material)	486844-001

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

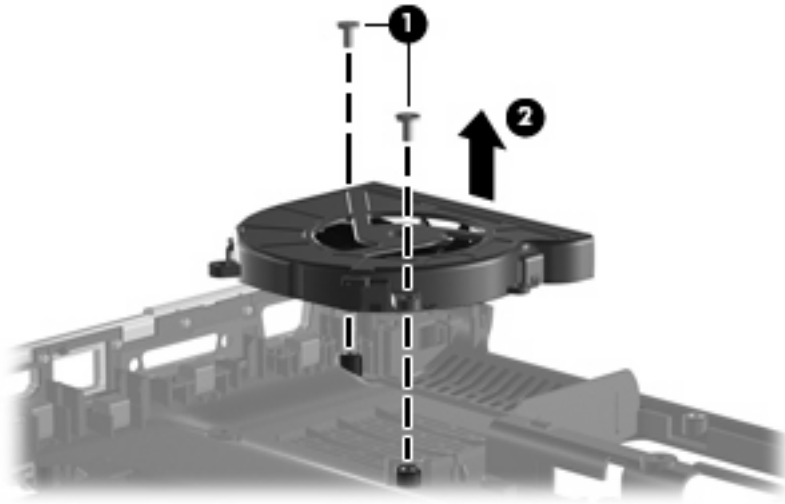
Before removing the fan and heat sink assemblies, follow these steps:

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 55](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Keyboard (see [Keyboard on page 72](#))
 - d. Keyboard cover (see [Keyboard cover on page 74](#))
 - e. Display assembly (see [Display assembly on page 80](#))
 - f. Top cover (see [Top cover on page 92](#))
 - g. System board (see [System board on page 107](#))

Remove the fan:

1. Turn the system board upside down with the front toward you.
2. Remove the two Phillips PM2.5×4.0 screws **(1)** securing the fan to the system board.


- Lift the fan up (2) to remove.



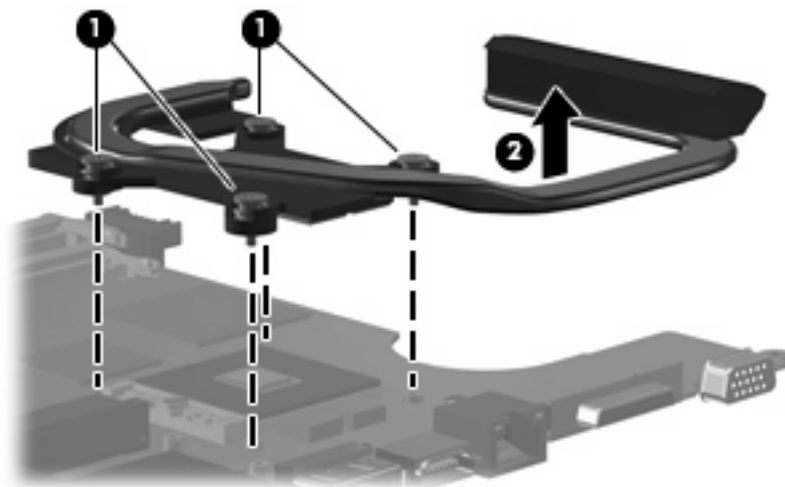
- If it is necessary to replace the heat sink, select the section following that relates to the correct system board.


Heat sink assembly for discrete graphics system

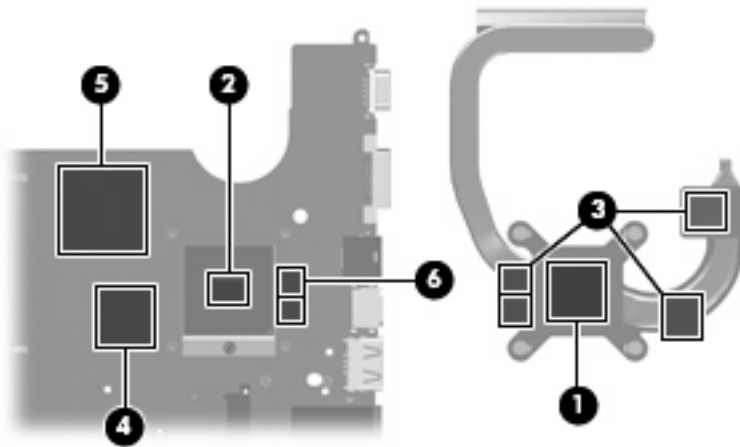
- Loosen the four Phillips PM2.0×10.0 captive screws (1) that secure the heat sink assembly to the system board.

 **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.

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




 **NOTE:** Each time the fan and heat sink are removed, the thermal material must be thoroughly cleaned from the surfaces of the heat sink and system board components: heat sink (1), processor (2), heat sink (3), Northbridge clip (4), nVidia video chip (5), and capacitors (6). Thermal pads and thermal paste must be installed on all surfaces before the fan and heat sink are reinstalled. Thermal pads and thermal paste are included with all fan, heat sink, system board, and processor spare part kits.



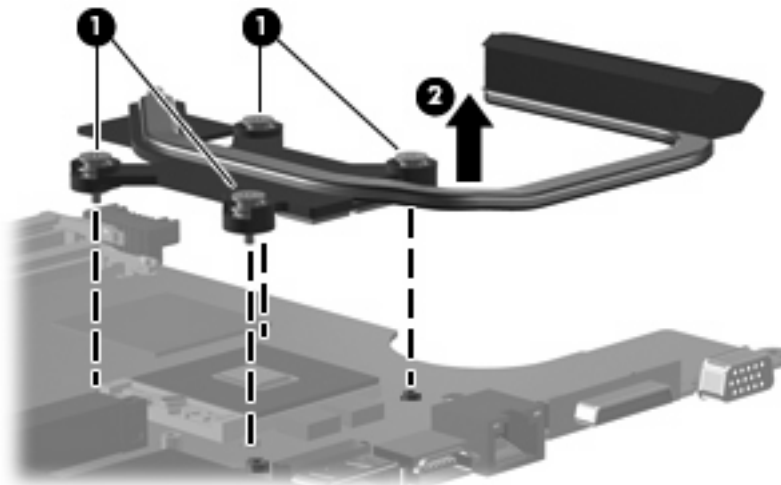
Reverse this procedure to install the fan/heat sink assembly.


Heat sink assembly for UMA graphics system

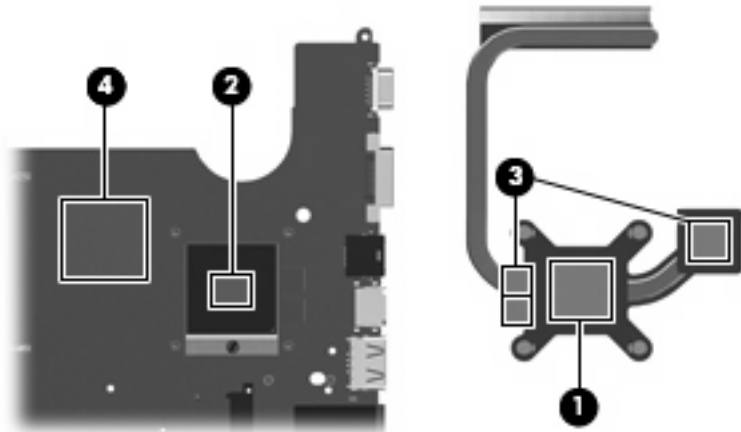
1. Loosen the four Phillips PM2.0×10.0 captive screws (1) that secure the heat sink assembly to the system board.

 **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.

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



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




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

Processor

Description	Spare part number
Processors (include thermal material)	
AMD processors:	
• Athlon QL-64 (2.1 GHz, 1-MB L2 cache)	506053-001
• Turion 64 ZM-86 (2.4 GHz, 2-MB L2 cache)	487345-005
• Turion 64, ZM-84 (2.3 GHz, 2-MB L2 cache)	497177-001
• Turion 64 ZM-82 (2.2 GHz, 2-MB L2 cache)	487346-005
• Turion 64 ZM-80 (2.1 GHz, 2-MB L2 cache)	487347-005
• Turion 64 RM-74 (2.2-GHz, 1-MB L2 cache)	507979-001
• Turion 64 RM-72 (2.1 GHz, 1-MB L2 cache)	497178-001
• Turion 64 RM-70 (2.0 GHz, 1-MB L2 cache)	487348-006
• Turion 64 QL-62 (2.0 GHz, 1-MB L2 cache)	497179-001
• Turion 64 QL-60 (1.9 GHz, 1-MB L2 cache)	487349-006
• Sempron SI-42 (2.1 GHz, 512-KB L2 cache)	497180-001
• Sempron SI-40 (2.0 GHz, 512-KB L2 cache)	487350-004
Intel processors:	
• Core 2 Duo T9600 (2.80 GHz, 6-MB L2 cache)	486727-001
• Core 2 Duo T9550 (2.66-GHz, 6-MB L2 cache)	507953-001
• Core 2 Duo T9400 (2.53 GHz, 6-MB L2 cache)	483260-001
• Core 2 Duo P8700 (2.53-GHz, 3-MB L2 cache)	507960-001
• Core 2 Duo P8600 (2.40 GHz, 3-MB L2 cache)	483259-001
• Core 2 Duo P8400 (2.26 GHz, 3-MB L2 cache)	483258-001
• Core 2 Duo T6600 (2.2 GHz, 3-MB L2 cache)	513593-001
• Core 2 Duo T6400 (2.06 GHz, 3-MB L2 cache)	513592-001
• Core 2 Duo T5900 (2.2 GHz, 2-MB L2 cache)	495639-001
• Core 2 Duo P7450 (2.13 GHz, 3-MB L2 cache)	495640-001 or 507965-001
• Core 2 Duo P7350 (2.0 GHz, 3-MB L2 cache)	491856-001
• Core 2 Duo T6600 (2.2 GHz, 3-MB L2 cache)	513593-001
• Core 2 Duo T6400 (2.06 GHz, 3-MB L2 cache)	513592-001
• Core 2 Duo T5800 (2.0 GHz, 2-MB L2 cache)	495638-001
• Pentium Dual-Core T4200 (2.0-MHz, 4-MB L2 cache)	513599-001
• Pentium Dual-Core T3400 (2.16 GHz, 1-MB L2 cache)	504784-001
• Pentium Dual-Core T3200 (2.0 GHz, 1-MB L2 cache)	504783-001

Description	Spare part number
• Celeron 575 (2.2 GHz, 1-MB L2 cache)	502838-001
• Celeron T1600 (1.66 GHz, 2-MB L2 cache)	497773-001

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


Before removing the processor, follow these steps:

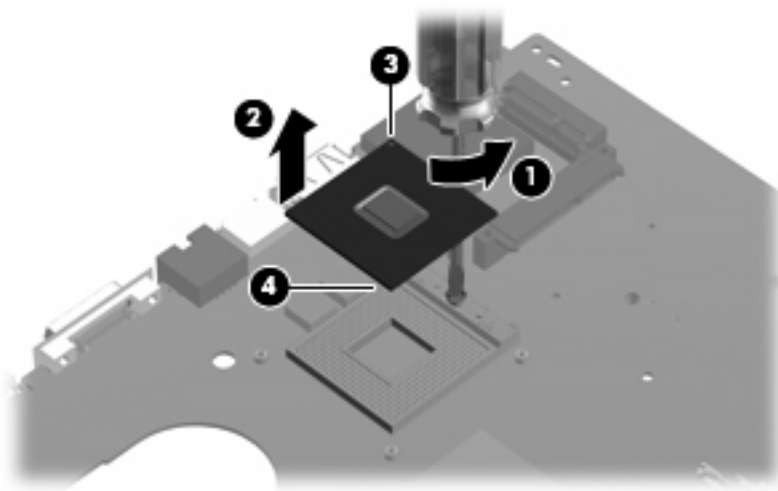
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 55](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Keyboard (see [Keyboard on page 72](#))
 - d. Keyboard cover (see [Keyboard cover on page 74](#))
 - e. Display assembly (see [Display assembly on page 80](#))
 - f. Top cover (see [Top cover on page 92](#))
 - g. System board (see [System board on page 107](#))
 - h. Fan and heat sink (see [Fan and heat sink on page 114](#))

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.

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

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

To start the Setup Utility:

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

– or –

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

Changing the language of the Setup Utility

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

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

– or –

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

2. Use the arrow keys to select **System Configuration > Language**, and then press **enter**.

3. Use the arrow keys to select a language, and then press **enter**.
4. When a confirmation prompt with your language selected is displayed, press **enter**.
5. To save your change and exit the Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press **enter**.

Your change goes into effect immediately.

Navigating and selecting in the Setup Utility

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

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

Displaying system information

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

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

– or –

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

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

Restoring default settings in the Setup Utility

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


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

– or –

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

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

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

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

Exiting the Setup Utility

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

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

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


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

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

After either choice, the computer restarts in Windows.

Setup Utility menus

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

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

Main menu

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

Security menu

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

System Configuration menu

Select	To do this
Language Support	Change the Setup Utility language.
Button Sound (select models only)	Enable/disable the capacitive button tapping sound.
Virtualization Technology (select models only)	Enable/disable the processor Virtualization Technology.
Processor C6 State (select models only)	Enable/disable the processor C6 sleep state.
LAN Power Saving (select models only)	Enable/disable LAN Power Saving. When enabled, saves power when the computer is in DC mode.
Card Reader/1394 Power Saving (select models only)	Enable/disable Card Reader/1394 Power Saving.
Fan Always On	Enabled/disable Fan Always On. When enabled, the computer fan will always be on.
Boot Options	Set the following boot options: <ul style="list-style-type: none">• f9 and f10 Delay (sec.)—Set the delay for the f9 and f10 functions of the Setup Utility in intervals of 5 seconds each (0, 5, 10, 15, 20).• CD-ROM boot—Enable/disable boot from CD-ROM.• Floppy boot—Enable/disable boot from diskette.• Internal Network Adapter boot—Enable/disable boot from Internal Network Adapter.• Boot Order—Set the boot order for:

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

Diagnostics menu

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

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Height (front to back)	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	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures.		

14.1-inch, WXGA, BrightView display specifications

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

Hard drive specifications

	250-GB*	200-GB*	160-GB*	120-GB*	80-GB*
Dimensions					
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm	70 mm	70 mm
Weight	102 g	102 g	102 g	102 g	102 g
Interface type	SATA	SATA	SATA	SATA	SATA
Transfer rate					
Synchronous (maximum)	100 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec
Security	ATA security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)					
Single track	3 ms	2 ms	3 ms	3 ms	3 ms
Average	13 ms	12 ms	13 ms	13 ms	13 ms
Maximum	24 ms	22 ms	24 ms	24 ms	24 ms
Logical blocks	495,702,655	390,721,968	317,249,699	237,937,274	158,624,849
Disk rotational speed	5400 rpm				
Operating temperature	5°C to 55°C (41°F to 131°F)				

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

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

	500-GB*	400-GB*	320-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
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	1 ms	1 ms	3 ms
Average	11 ms	11 ms	13 ms
Maximum	22 ms	25 ms	24 ms
Logical blocks	976,773,168	781,422,768	604,234,532
Disk rotational speed	5400 rpm		

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

NOTE: Certain restrictions and exclusions apply. Consult technical support for details.*1 GB = 1 billion bytes when referring to hard drive storage capacity. Accessible capacity is less. Actual drive specifications may differ slightly.

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

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

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

Applicable disc	Read:	Write:
	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	CD-R and CD-RW DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM
Access time	CD	DVD
Random	< 175 ms	< 230 ms
Cache buffer	2 MB	
Data transfer rate		
24X CD-ROM	3,600 KB/sec	
8X DVD	10,800 KB/sec	
24X CD-R	3,600 KB/sec	
16X CD-RW	2,400 KB/sec	
8X DVD+R	10,800 KB/sec	
4X DVD+RW	5,400 KB/sec	
8X DVD-R	10,800 KB/sec	
4X DVD-RW	5,400 KB/sec	
2.4X DVD+R(9)	2,700 KB/sec	
5X DVD-RAM	6,750 KB/sec	
Transfer mode	Multiword DMA Mode	

System DMA specifications

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

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

†Not assigned for computer models with AMD processors.

System interrupt specifications—Intel processors

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

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

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

System interrupt specifications—AMD processors

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

System I/O address specifications—Intel processors

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

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

System I/O address specifications—AMD processors

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

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

System memory map specifications—Intel processors

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

System memory map specifications—AMD processors

Memory address (hex)	System function
000A0000 - 000BFFFF	nVidia MCP67M
000A0000 - 000BFFFF	PCI bus
000C0000 - 000C3FFF	PCI bus
000C4000 - 000C7FFF	PCI bus
000C80000 - 00CBFFF	PCI bus
000CC000 - 000CFFFF	PCI bus
000D000 - 00D3FFF	PCI bus
000D4000 - 000D7FFF	PCI bus
000D800 - 00DBFFF	PCI bus
000DC00 - 00DFFFF	PCI bus
000E0000 - 00E3FFF	PCI bus
000E4000 - 000E7FFF	PCI bus
000E800 - 000EBFFF	PCI bus
000EC00 - 000EFFFF	PCI bus
000F0000 - 000FFFFF	PCI bus
4000000 - FEBFFFFFF	PCI bus
D0000000 - DFFFFFFF	nVidia MCP67M
E000000 - EFFFFFFF	Motherboard resources
F00000 - F3FFFFFF	PCI standard PCI-to-PCI bridge
F4000000 - F4FFFFFF	nVidia MCP67M
F500000 - F5FFFFFF	nVidia MCP67M
F6000000 – F6003FFF	Broadcom 802.11b/g WLAN
F600000 - F60FFFFF	PCI standard PCI-to-PCI bridge
F610000 - F61007FF	RICOH OHCI Compliant IEEE 1394 Host Controller
F6100000 - F61FFFFFF	PCI standard PCI-to-PCI bridge
F6100800 - F61008FF	SDA Standard Compliant SD Host Controller
F6100C00 - F6100CFF	Ricoh SD/MMC Host Controller
F6101000 - F61010FF	Ricoh Memory Stick Controller
F6101400 - F61014FF	Ricoh xD-Picture Card Controller
F620000 - F627FFFF	nVidia nForce System Management Controller
F6480000 - F6483FFF	High Definition Audio Controller
F6484000 - F6485FFF	Standard Dual Channel PCI IDE Controller
F6486000 - F6486FFF	Standard OpenHCD USB Host Controller

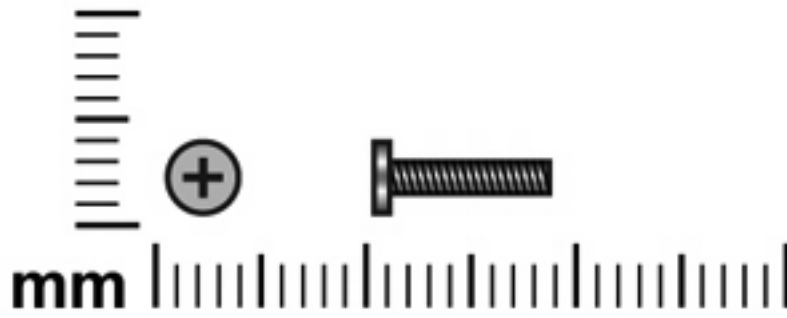
Memory address (hex)	System function
F6487000 - F6487FFF	Standard OpenHCD USB Host Controller
F6488000 - F6488FFF	nVidia nForce Networking Controller
F6489000 - F64890FF	Standard Enhanced PCI to USB Host Controller
FF6489400 - F64894FF	Standard Enhanced PCI to USB Host Controller
F6489800 - F648980F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

7 Screw listing

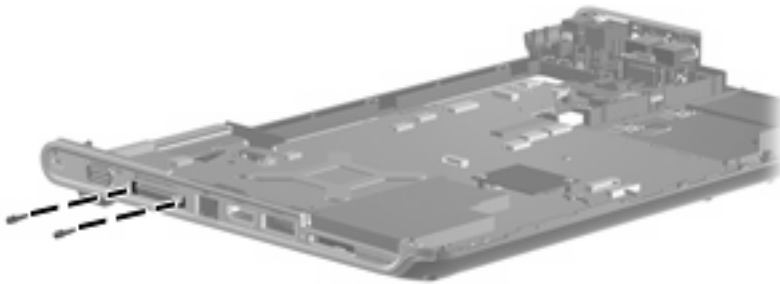
This section provides specification and reference information for the screws and screw locks used in the computer. All screws listed in this section are available in the Screw Kits.

Description	Spare part number
Screw Kits (includes all screws)	
<ul style="list-style-type: none">For use with standard display assemblies	486873-001
<ul style="list-style-type: none">For use with Flush Glass display assemblies	496731-001

Phillips PM1.5×9.0 slotted screw

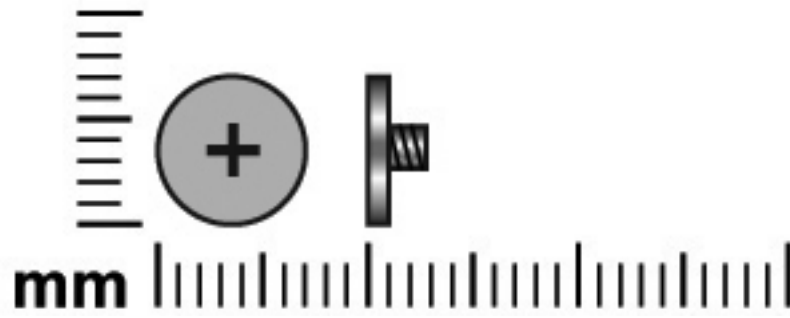


Color	Quantity	Length	Thread	Head diameter
Black	2	9.0 mm	1.5 mm	4.0 mm

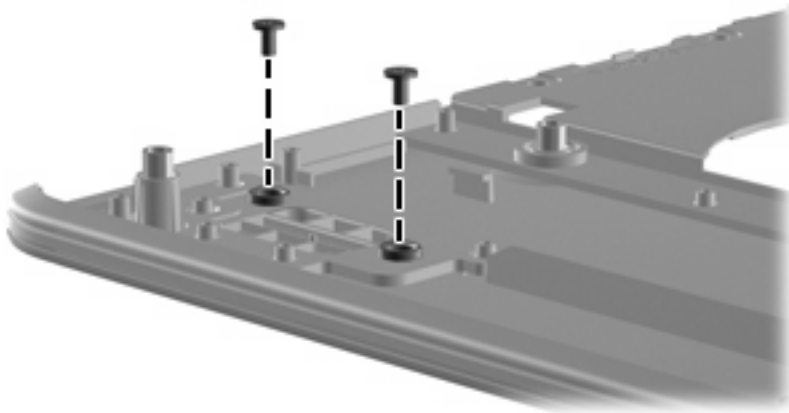


Where used: Two slotted screws that secure the system board to the base enclosure

Phillips PM2.0×3.0 broadhead screw

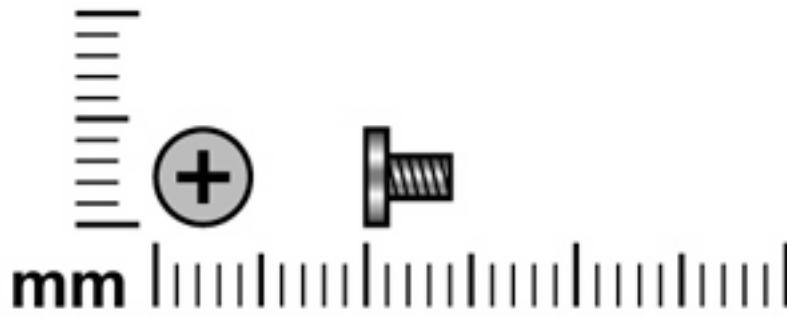


Color	Quantity	Length	Thread	Head diameter
Black	2	3.0 mm	2.0 mm	7.0 mm

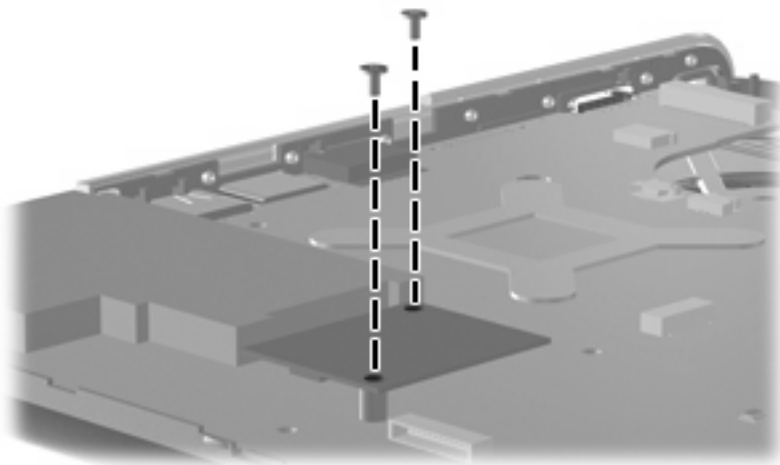


Where used: Two broadhead screws that secure the fingerprint reader board to the top cover

Phillips PM2.0×4.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	23	4.0 mm	2.0 mm	5.0 mm



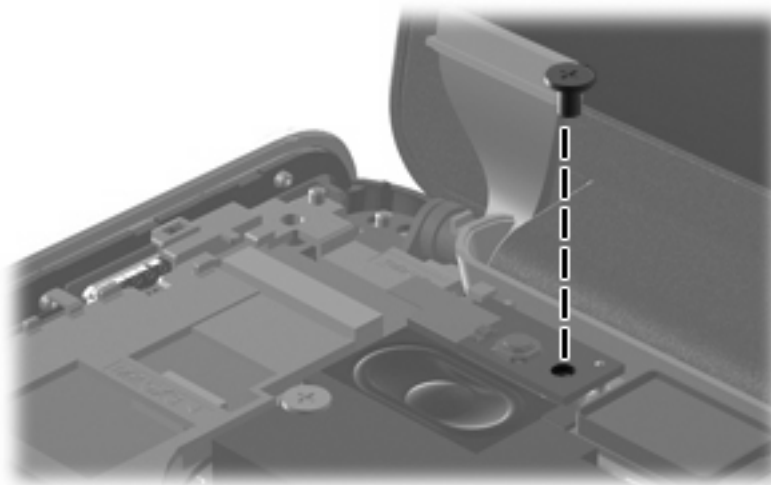
Where used: Two screws that secure the modem module to the computer



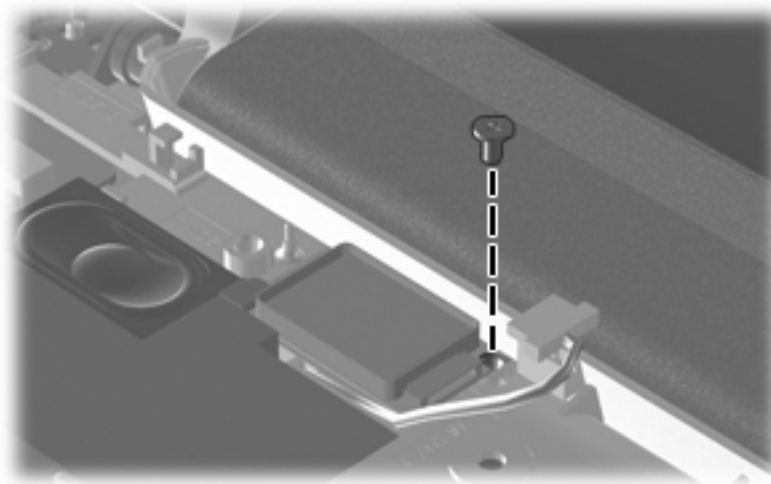
Where used: Two screws that secure the optical drive to the computer



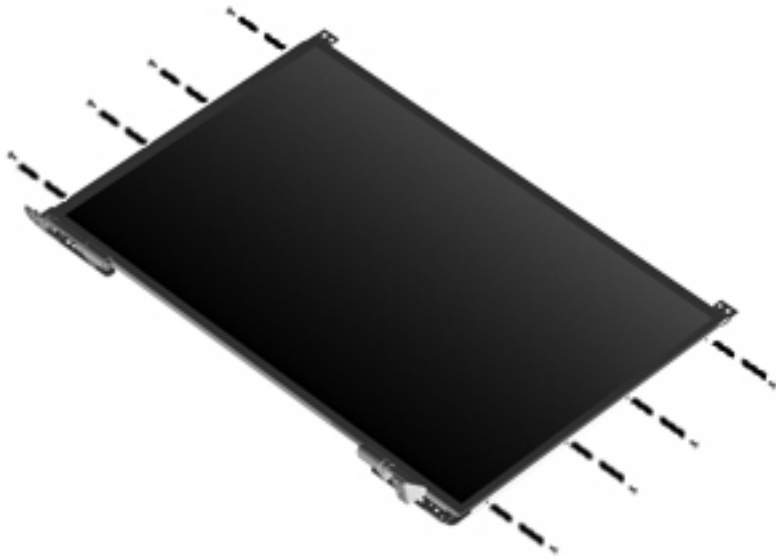
Where used: Two screws that secure the keyboard cover to the computer



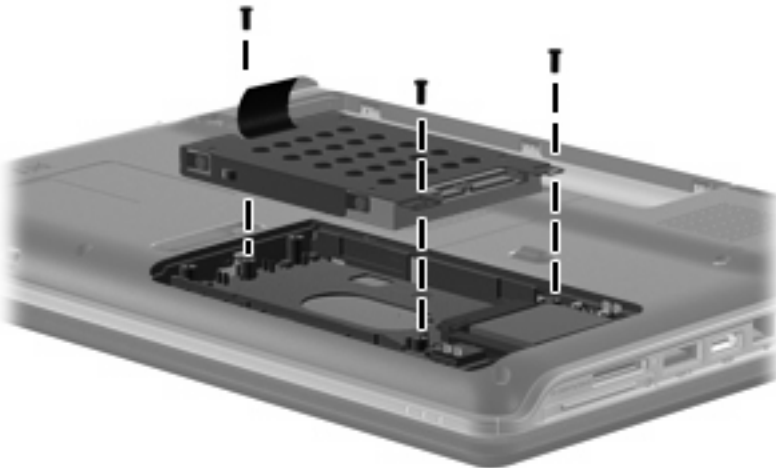
Where used: One screw that secures the power button board to the computer



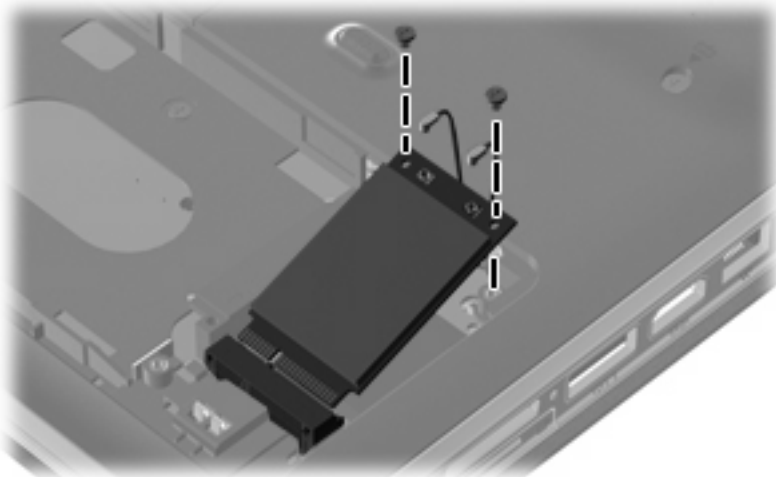
Where used: One screw that secures the Bluetooth module to the computer



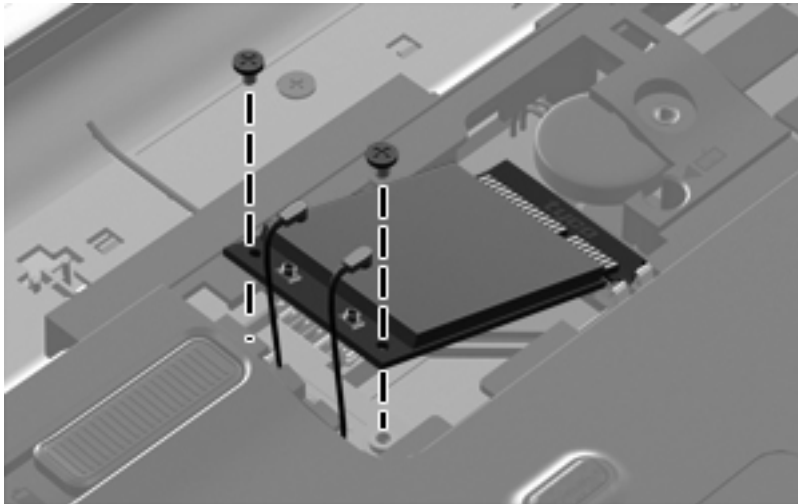
Where used: Eight screws that secure the display assembly hinge to the computer



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

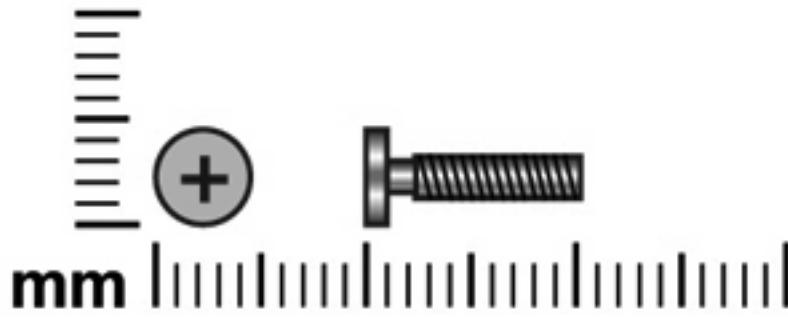


Where used: Two screws that secure the WLAN module to the computer

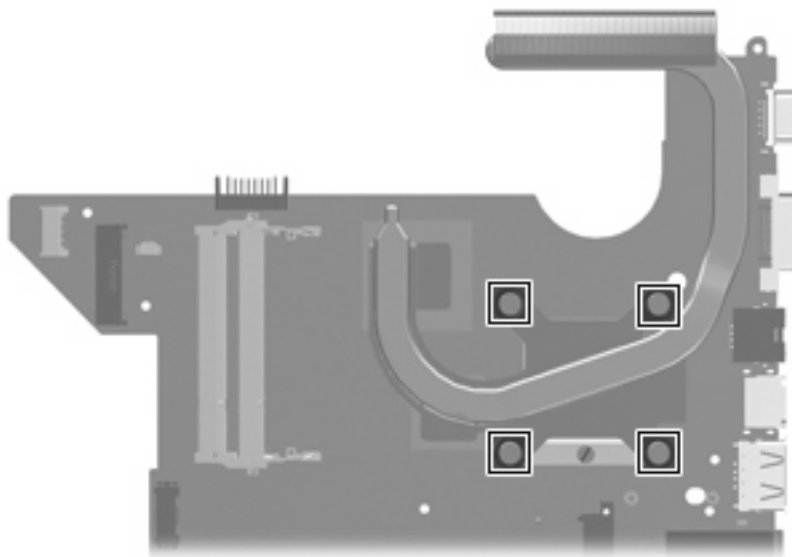


Where used: Two screws that secure the WWAN module to the computer

Phillips PM2.0×10.0 captive screw

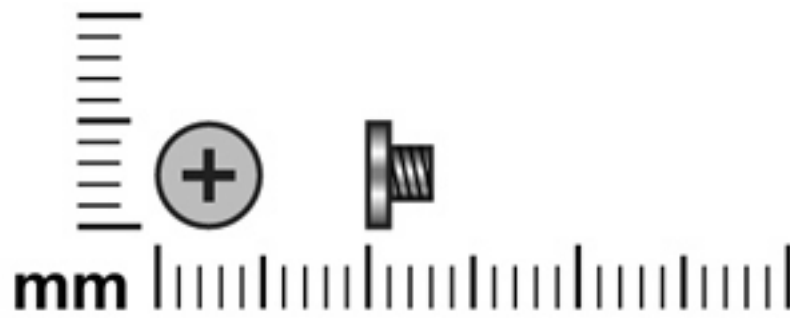


Color	Quantity	Length	Thread	Head diameter
Silver	4	10.0 mm	2.0 mm	5.0 mm

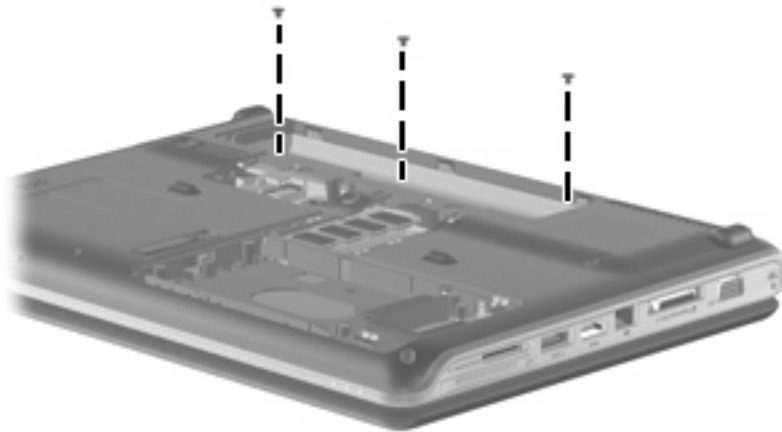


Where used: Four captive screws (secured by C-clips) that secure the heat sink assembly to the system board

Phillips PM2.5×3.0 screw

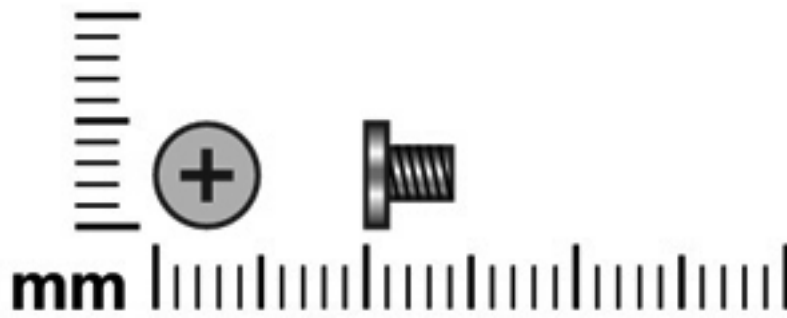


Color	Quantity	Length	Thread	Head diameter
Black	3	3.0 mm	2.5 mm	4.0 mm

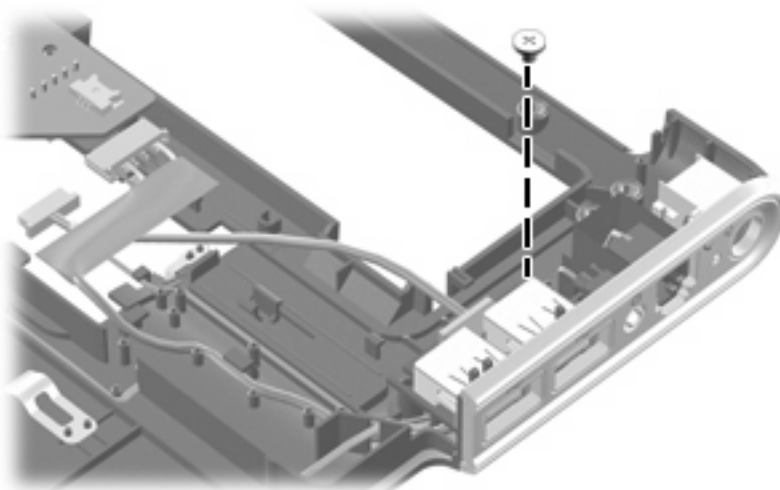


Where used: Three screws that secure the keyboard cover to the computer

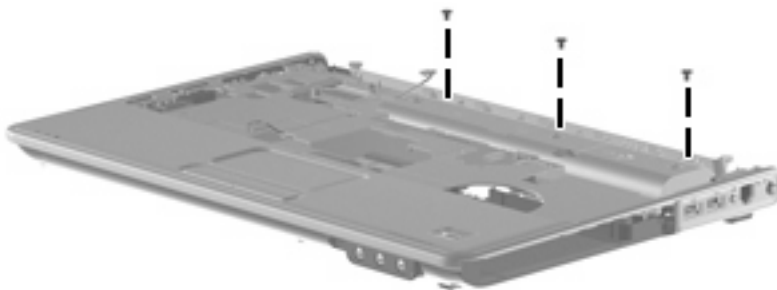
Phillips PM2.5×4.0 screw



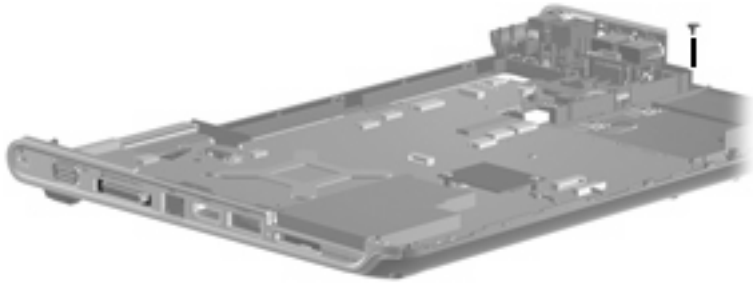
Color	Quantity	Length	Thread	Head diameter
Black	38	4.0 mm	2.5 mm	5.0 mm



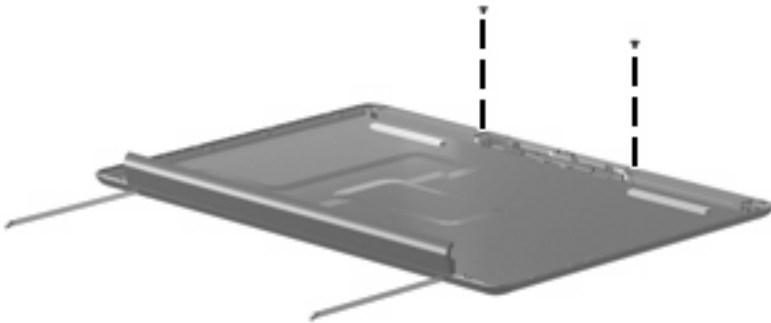
Where used: One screw that secures the USB board to the computer



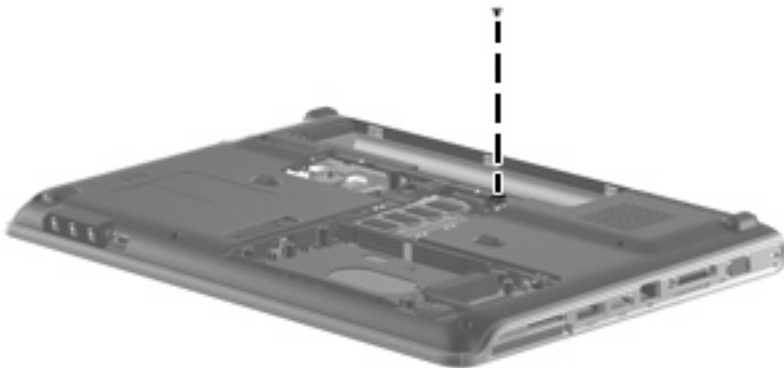
Where used: Three screws that secure the top cover to the computer



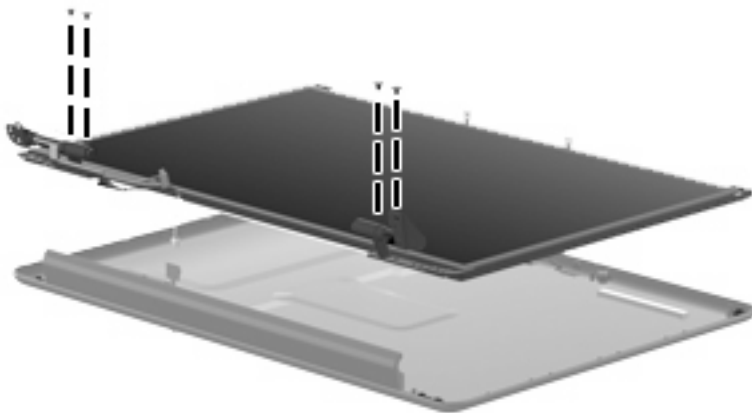
Where used: One screw that secures the system board to the base enclosure



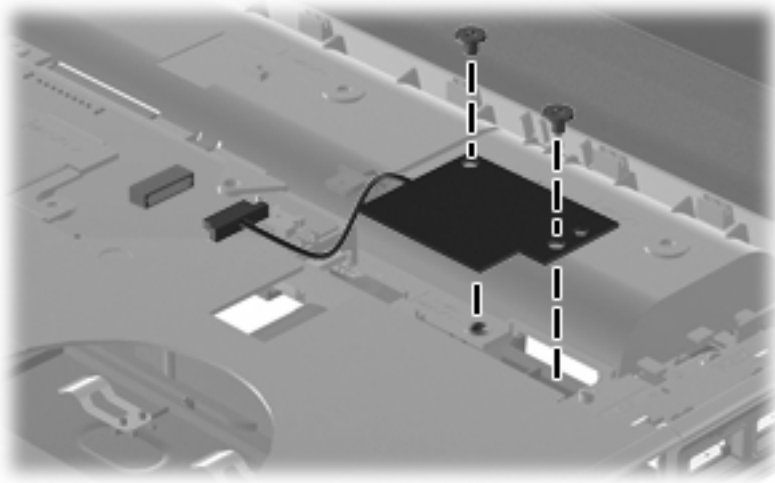
Where used: Two screws that secure the wireless antenna transceivers to the display enclosure



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



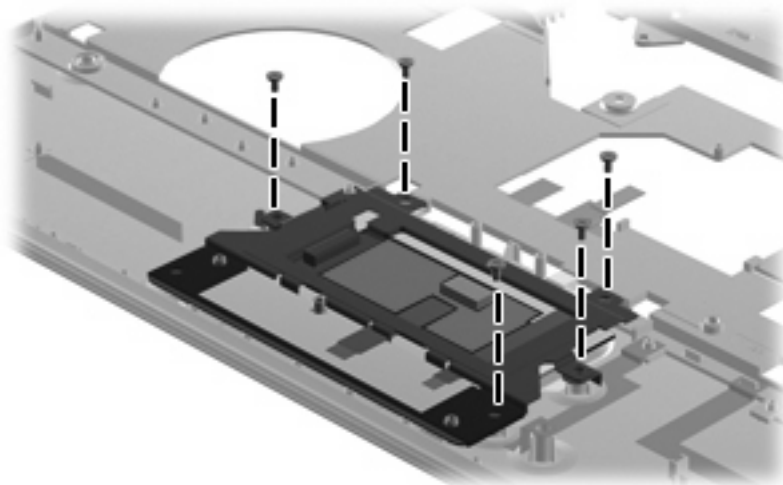
Where used: Four screws that secure the display panel to the display assembly



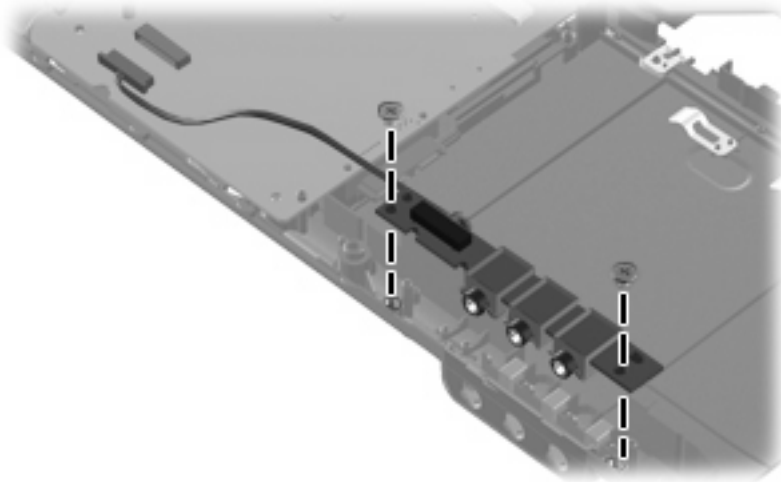
Where used: Two screws that secure the SIM connector board to the system board



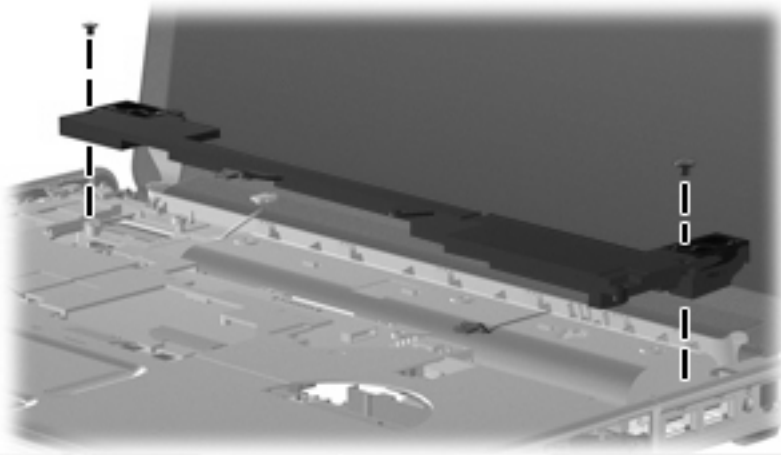
Where used: One screw that secures the keyboard cover to the top cover



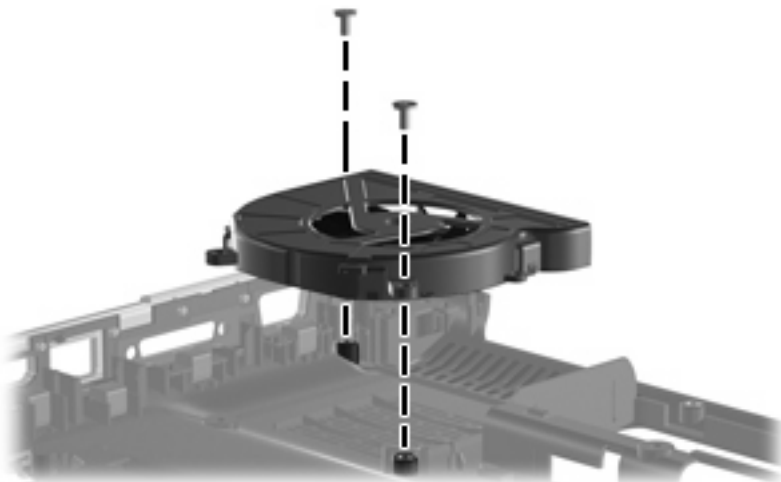
Where used: Five screws that secure the TouchPad to the top cover



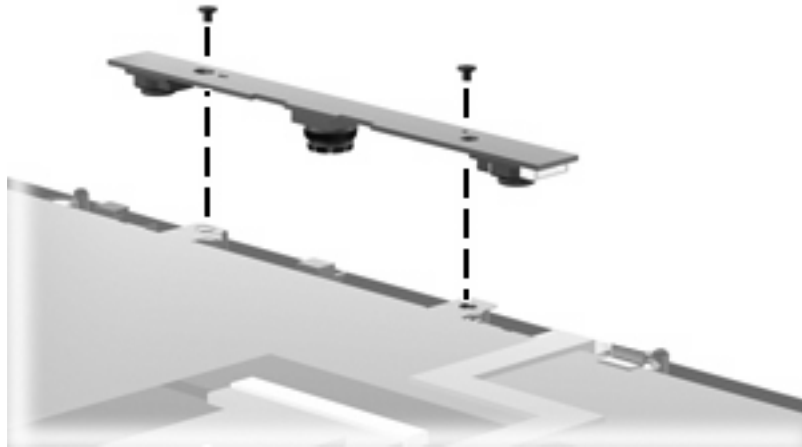
Where used: Two screws that secure the audio board to the computer



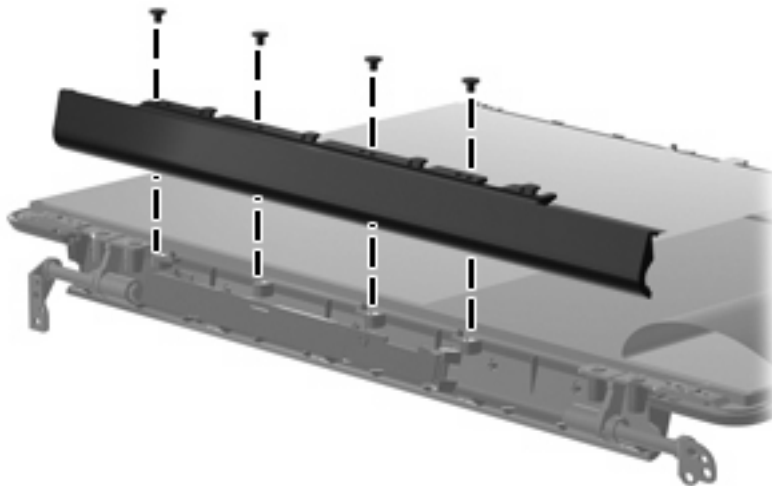
Where used: Two screws that secure the speaker assembly to the computer



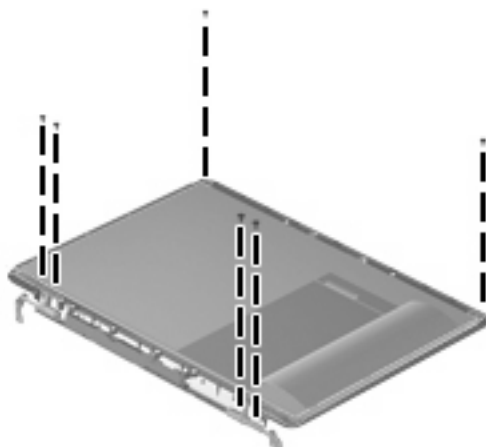
Where used: Two screws that secure the fan to the system board



Where used: Two screws that secure the camera/microphone module to the Flush Glass display assembly

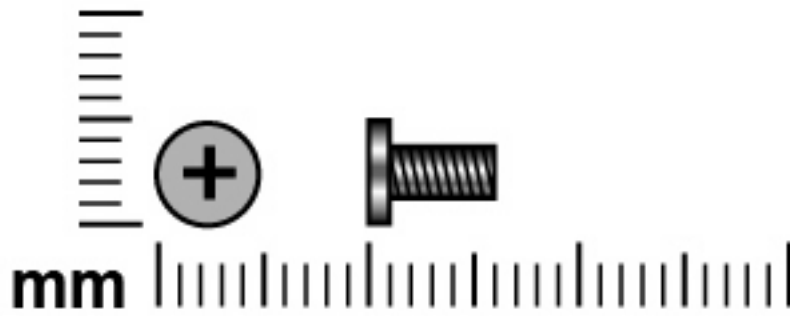


Where used: Four screws that secure the inverter cover to the Flush Glass display assembly

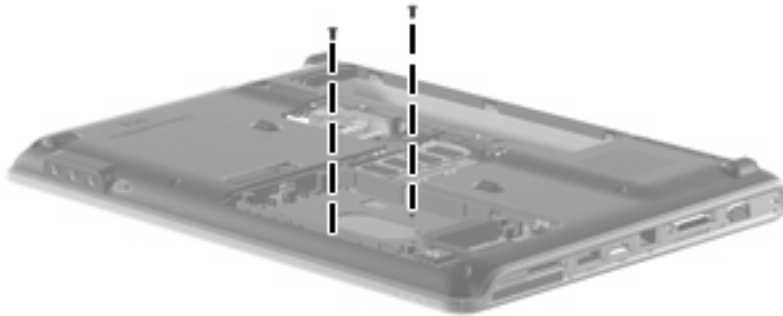


Where used: Six screws that secure the hinge to the Flush Glass display assembly

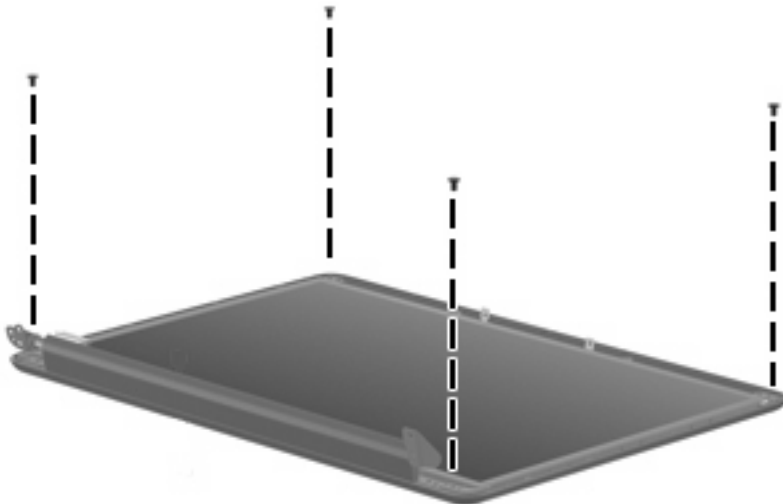
Phillips PM2.5×6.0 screw



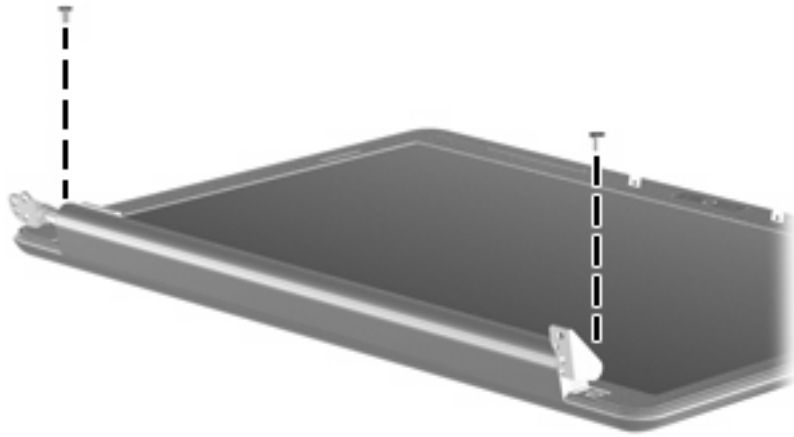
Color	Quantity	Length	Thread	Head diameter
Black	8	6.0 mm	2.5 mm	4.0 mm



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

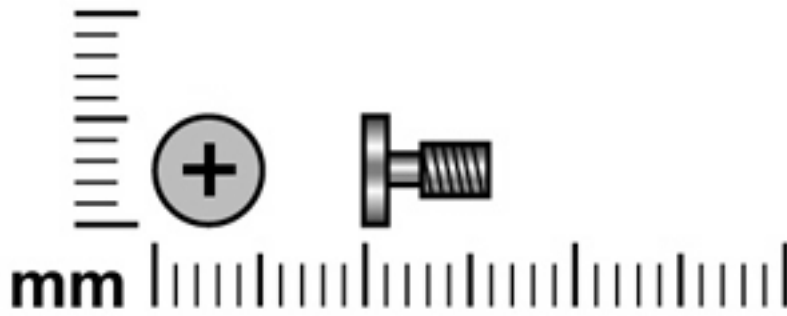


Where used: Four screws that secure the display bracket to the display assembly

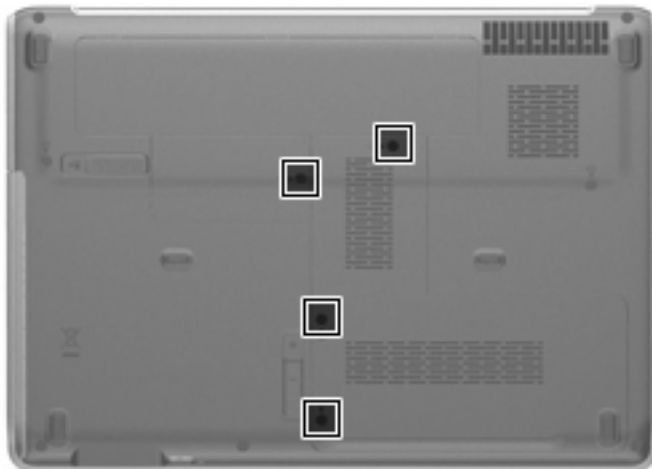


Where used: Two screws that secure the enclosure to the Flush Glass display assembly

Phillips PM2.5×6.0 captive screw

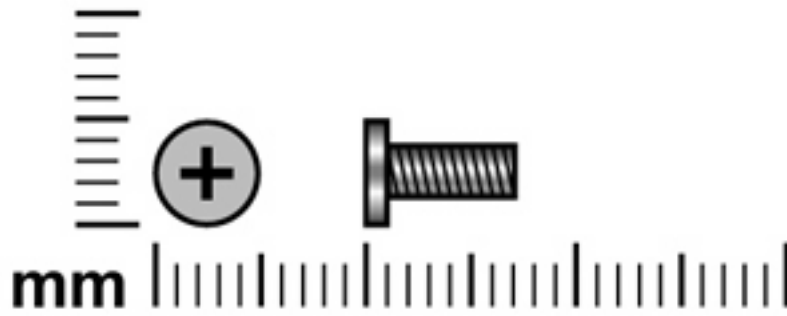


Color	Quantity	Length	Thread	Head diameter
Black	4	6.0 mm	2.5 mm	5.0 mm

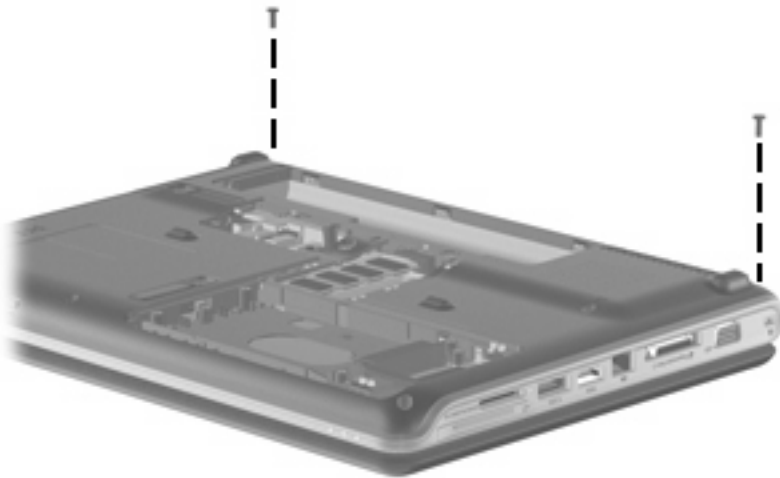


Where used: Four captive screws that secure the hard drive, memory, and WWAN covers to the computer

Phillips PM2.5×7.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	4	7.0 mm	2.5 mm	5.0 mm

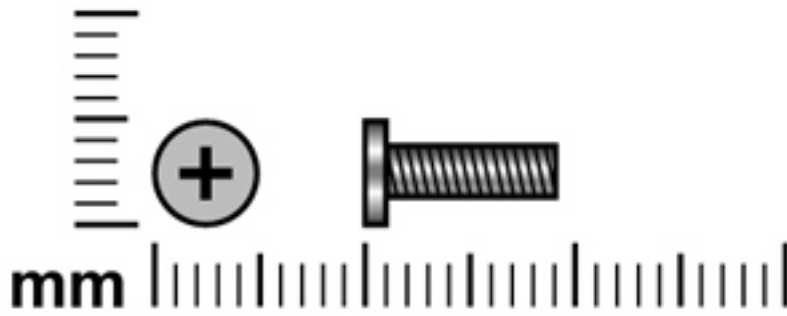


Where used: Two screws securing the keyboard cover to the computer

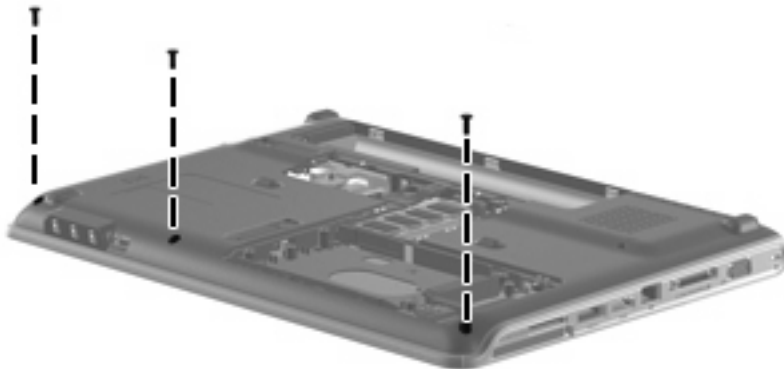


Where used: Two screws that secure the bezel to the display assembly

Phillips PM2.5×9.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	6	9.0 mm	2.5 mm	4.0 mm



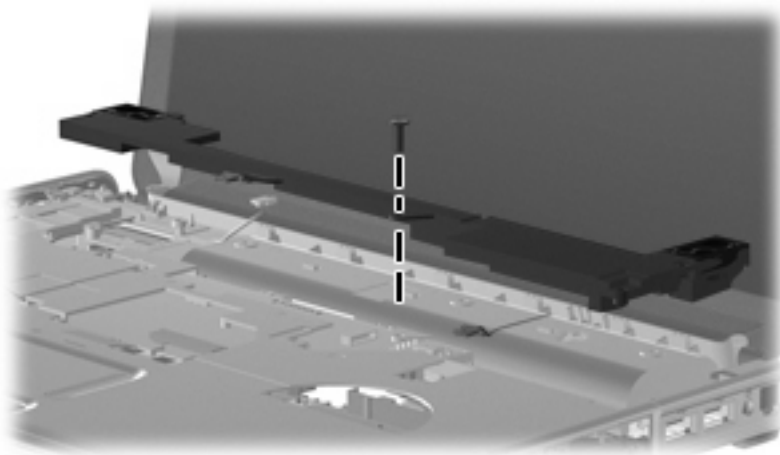
Where used: Three screws that secure the top cover to the computer



Where used: One screw that secures the keyboard to the computer

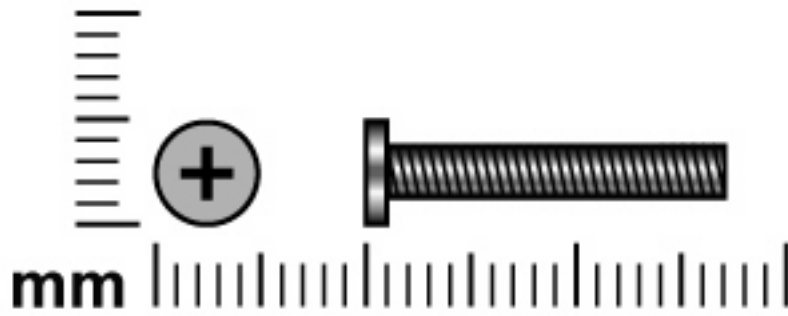


Where used: One screw that secures the keyboard cover to the top cover

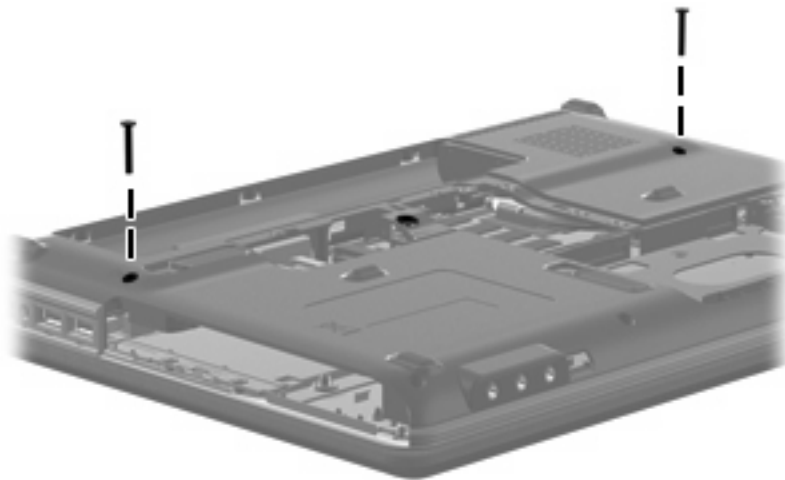


Where used: One screw that secures the speaker assembly to the top cover

Phillips PM2.5×17.0 screw

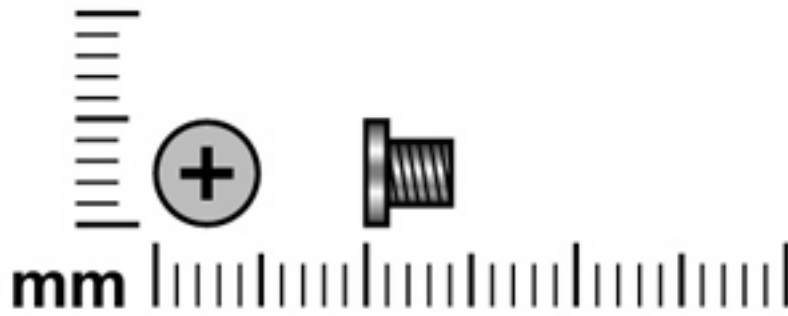


Color	Quantity	Length	Thread	Head diameter
Black	2	17.0 mm	2.5 mm	4.0 mm

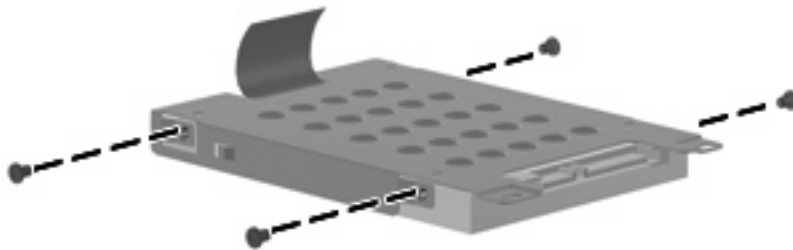


Where used: Two screws that secure the keyboard to the computer

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: Four screws that secure the hard drive bracket to the hard drive


8 Backup and recovery

Recovering system information

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

Tools provided by the operating system and HP Recovery Manager software are designed to help you with the following tasks for safeguarding your information and restoring it in case of a system failure:

- Creating a set of recovery discs (Recovery Manager software feature). Recovery discs are used to start up (boot) your computer and restore the operating system and software programs to factory settings in case of system failure or instability.
- Backing up your information regularly to protect your important system files.
- Creating system restore points (operating system feature). System restore points allow you to reverse undesirable changes to your computer by restoring the computer to an earlier state.
- Recovering a program or driver (Recovery Manager software feature). This feature helps you reinstall a program or driver without performing a full system recovery.
- Performing a full system recovery (Recovery Manager software feature). With Recovery Manager, you can recover your full factory image if you experience system failure or instability. Recovery Manager works from a dedicated recovery partition (select models only) on the hard drive or from recovery discs you create.

 **NOTE:** If your computer includes a solid-state drive (SSD), you may not have a recovery partition. Recovery discs have been included for computers that do not have a partition. Use these discs to recover your operating system and software. To check for the presence of a recovery partition, select **Start > Computer**. If the partition is present, an HP Recovery drive is listed in the Hard Disk Drives section of the window.

Backing up your information

When to back up

- On a regularly scheduled basis

 **NOTE:** Set reminders to back up your information periodically.

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

Backup suggestions


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

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

- a. Display the screen.
- b. Copy the screen:
 - To copy only the active window, press **alt+fn+prt sc**.
 - To copy the entire screen, press **fn+prt sc**.
- c. Open a word-processing document, and then select **Edit > Paste**.

Using system restore points


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

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

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

When to create restore points

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

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

Create a system restore point

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

The System Protection window opens.

6. Follow the on-screen instructions.

Restore to a previous date and time


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

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

The System Restore window opens.

5. Follow the on-screen instructions.


Creating recovery discs

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

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

Note the following guidelines before creating recovery discs:

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

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


- The computer must be connected to AC power during this process.
- Only one set of recovery discs can be created per computer.
- Number each disc before inserting it into the computer optical drive.
- If necessary, you can exit the program before you have finished creating the recovery discs. The next time you open Recovery Manager, you will be prompted to continue the disc creation process.

To create a set of recovery discs:

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


Recovery Manager opens.

2. Click **Advanced Options**.


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

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

Performing a recovery

 **NOTE:** You can recover only files that you have previously backed up. HP recommends that you use Recovery Manager to create an entire drive backup as soon as you set up your computer.

Recovery Manager software allows you to repair or restore the system if you experience system failure or instability. Recovery Manager works from recovery discs that you create or from a dedicated recovery partition (select models only) on the hard drive. However, if your computer includes a solid-state drive (SSD), you may not have a recovery partition. If that is the case, recovery discs have been included with your computer. Use these discs to recover your operating system and software.

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


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

Recovering from the recovery discs

To restore the system from the recovery discs:

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

Recovering from the dedicated recovery partition (select models only)

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

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

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

1. Access Recovery Manager in either of the following ways:
 - Select **Start > All Programs > Recovery Manager > Recovery Manager**.
 - or—
 - Restart the computer and press **f11** while the “Press <F11> for recovery” message is displayed on the screen. Then select **Recovery Manager**.

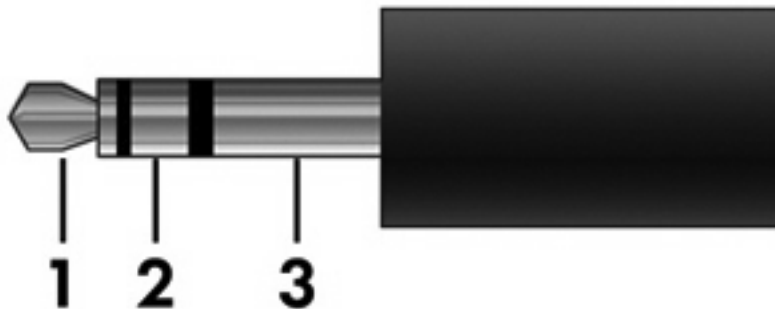
Recovery Manager opens.

2. Click **Advanced Options**.

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

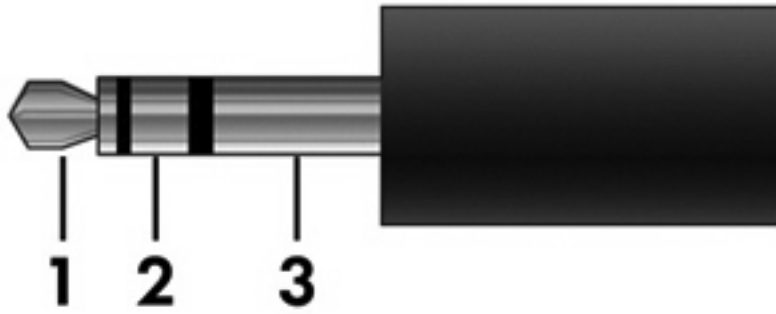
9 Connector pin assignments

Audio-in (microphone)



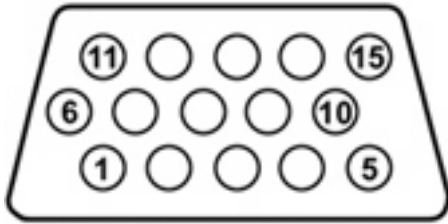
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

Audio-out (headphone)



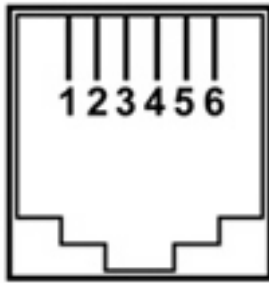
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

External monitor



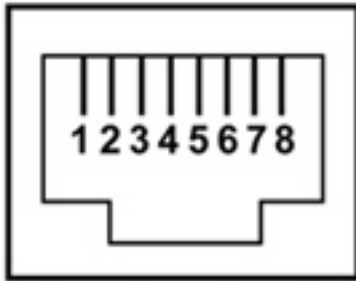
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

RJ-11 (modem)



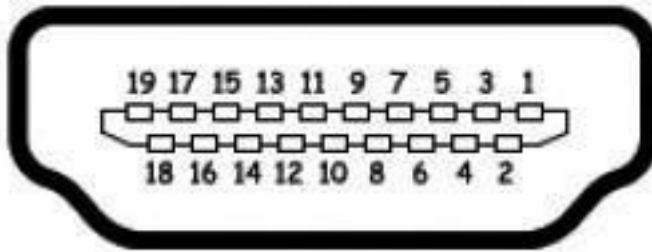
Pin	Signal
1	Unused
2	Tip
3	Ring
4	Unused
5	Unused
6	Unused

RJ-45 (network)



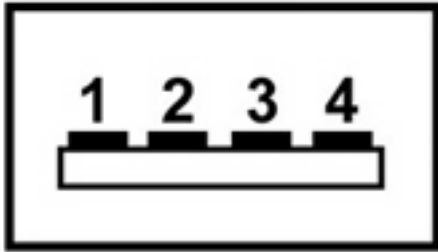
Pin	Signal
1	Transmit +
2	Transmit -
3	Receive +
4	Unused
5	Unused
6	Receive -
7	Unused
8	Unused

HDMI



Pin	Signal
1	Transition minimized differential signal (TDMS) data 2+
2	Transition minimized differential signal (TDMS) data 2 shield
3	Transition minimized differential signal (TDMS) data 2-
4	Transition minimized differential signal (TDMS) data 1+
5	Transition minimized differential signal (TDMS) data 1 shield
6	Transition minimized differential signal (TDMS) data 1-
7	Transition minimized differential signal (TDMS) data 0+
8	Transition minimized differential signal (TDMS) data 0 shield
9	Transition minimized differential signal (TDMS) data 0-
10	Transition minimized differential signal (TDMS) Clock +
11	Transition minimized differential signal (TDMS) data clock shield
12	Transition minimized differential signal (TDMS) data clock-
13	Consumer electronics control (CEC)
14	No connect
15	Display data channel (DDC) clock
16	Display data channel (DDC) data
17	Ground
18	+5V power
19	Hot plug detect

Universal Serial Bus



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

10 Power cord set requirements

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

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

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

Requirements for all countries or regions

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

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

Requirements for specific countries or regions

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

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

11 Recycling

Battery

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

Display

- ⚠ **WARNING!** The backlight contains mercury. Caution must be exercised when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.
- ⚠ **CAUTION:** The procedures in this appendix can result in damage to display components. The only components intended for recycling purposes are the liquid crystal display (LCD) panel and the backlight. Careful handling must be exercised when removing these components.
- 📄 **NOTE: Materials Disposal.** This HP product contains mercury in the backlight in the display assembly that might require special handling at end-of-life. Disposal of mercury may be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities, or see the Electronic Industries Alliance (EIA) Web site at <http://www.eiae.org>.

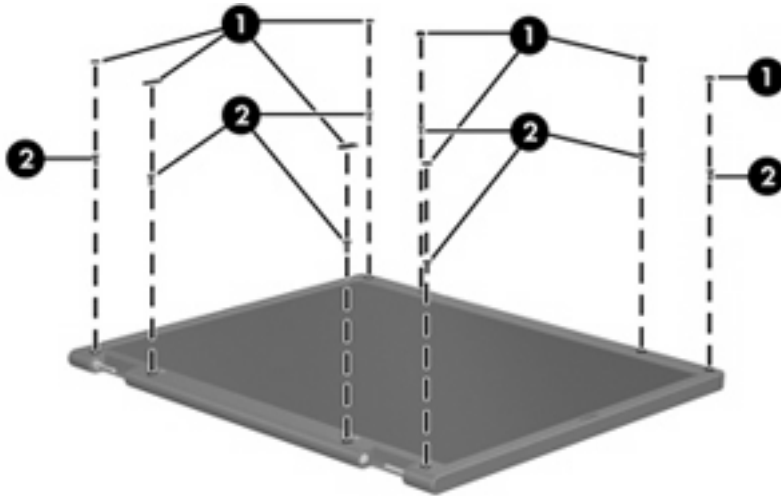
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.



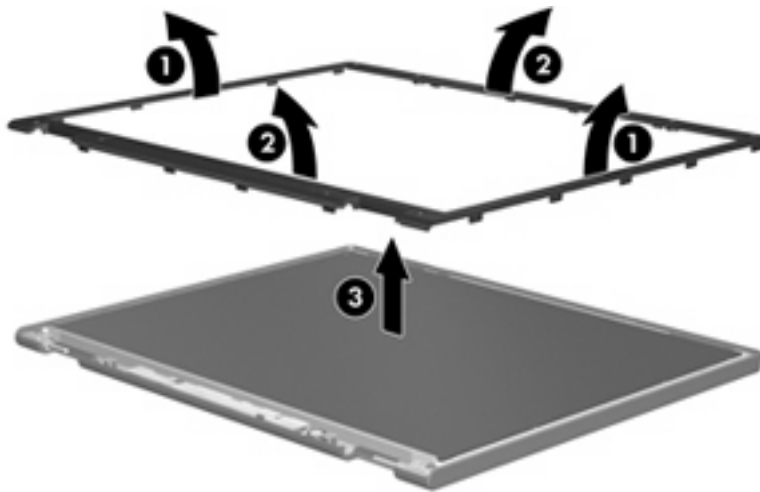
- 📄 **NOTE:** The procedures provided in this appendix are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps to disassemble the display assembly:

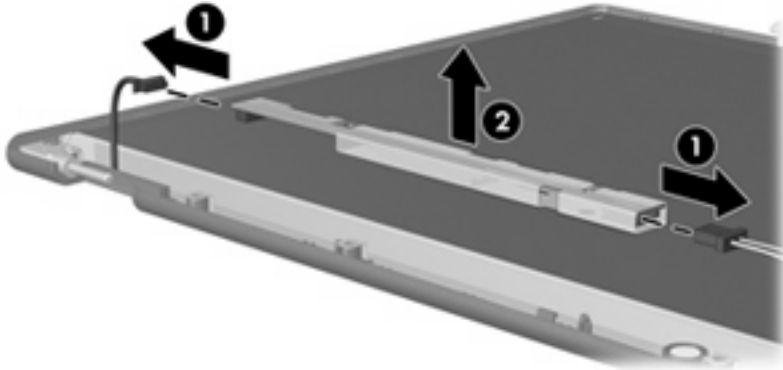
1. Remove all screw covers (1) and screws (2) that secure the display bezel to the display assembly.



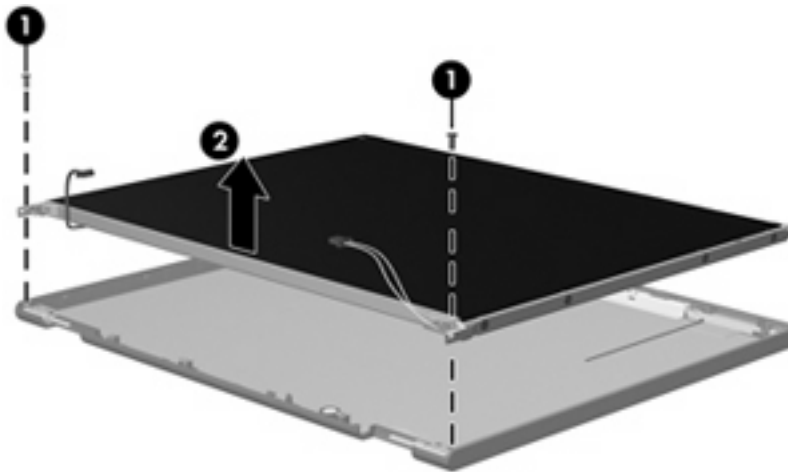
2. Lift up and out on the left and right inside edges (1) and the top and bottom inside edges (2) of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel (3).



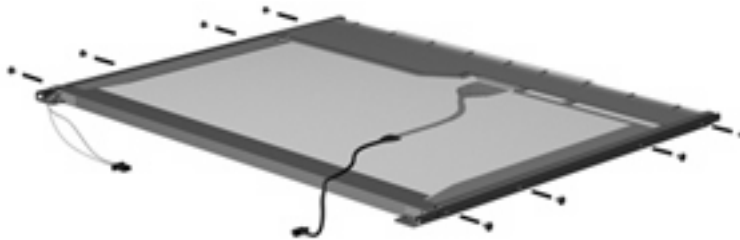
4. Disconnect all display panel cables (1) from the display inverter and remove the inverter (2).



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

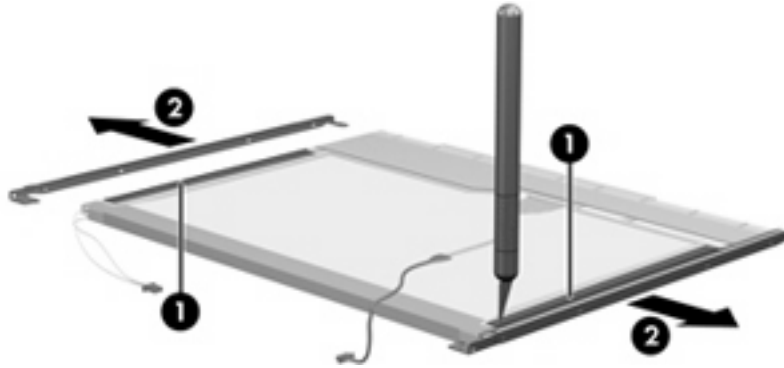


7. Turn the display panel assembly upside down.
8. Remove all screws that secure the display panel frame to the display panel.

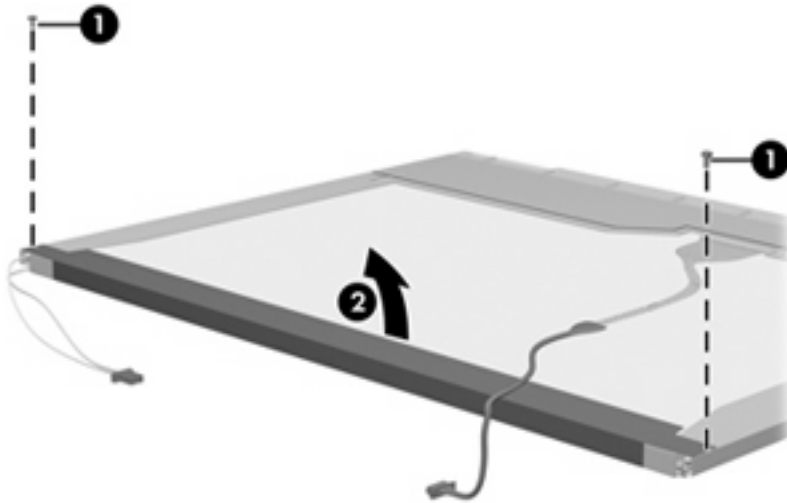


9. Use a sharp-edged tool to cut the tape (1) that secures the sides of the display panel to the display panel frame.

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

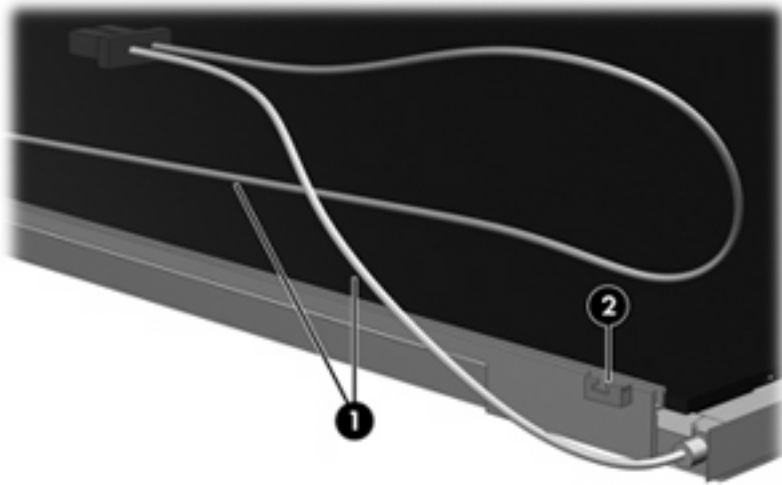


11. Remove the screws (1) that secure the backlight cover to the display panel.
12. Lift the top edge of the backlight cover (2) and swing it outward.

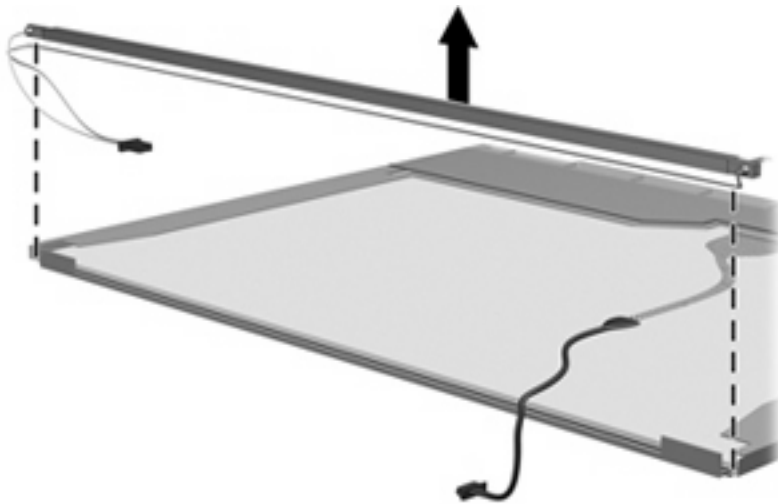


13. Remove the backlight cover.
14. Turn the display panel right-side up.

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

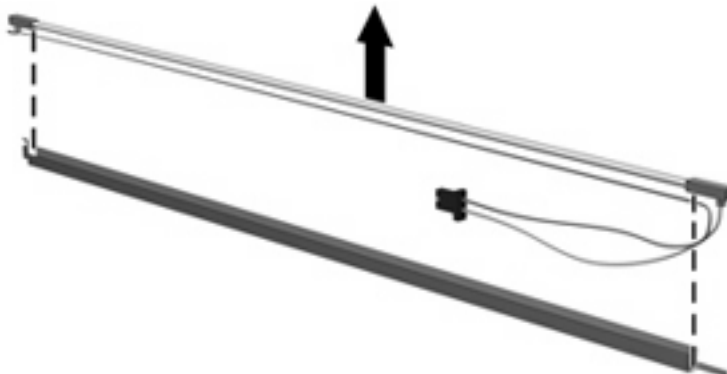


16. Turn the display panel upside down.
17. Remove the backlight frame from the display panel.

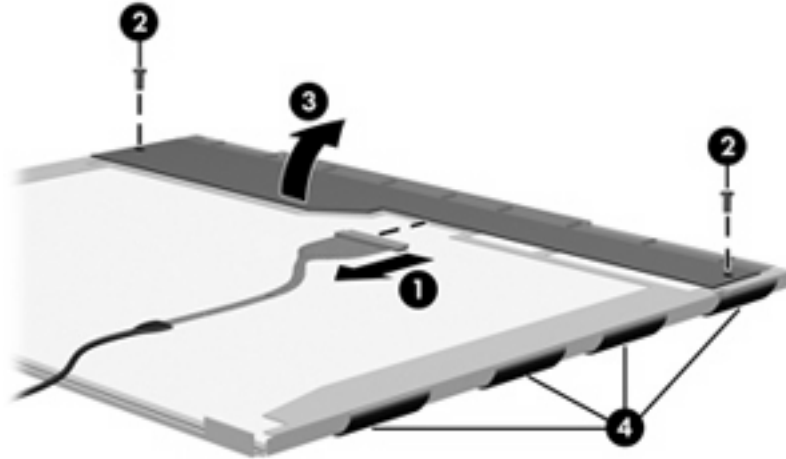


⚠ WARNING! The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

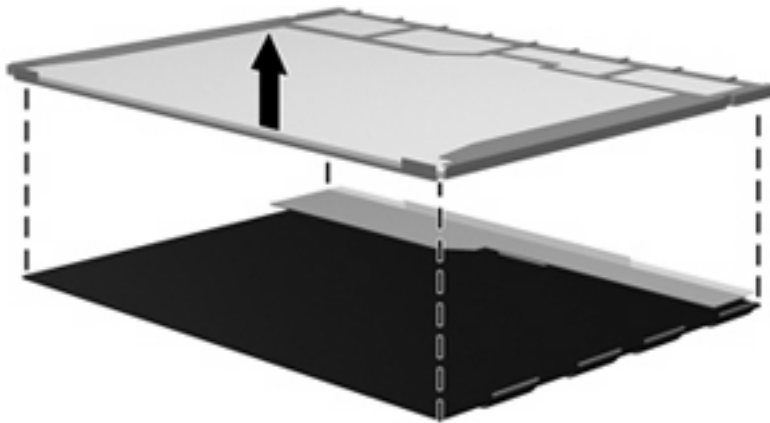
18. Remove the backlight from the backlight frame.



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



23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.

Index

Symbols/Numerics

1394 Power Saving 124

A

AC adapter, spare part numbers 32

administrator password 124

antenna

removal 86

spare part number 26, 80, 86

antennae 19

applications key, Windows 13

audio board

removal 101

spare part number 23, 101

audio, product description 5

audio-in (microphone) jack,

identifying 15

audio-in jack, pin

assignments 168

audio-out (headphone) jacks,

identifying 15

audio-out jack, pin

assignments 169

B

backing up

customized window, toolbar,
and menu bar settings 164

personal files 164

templates 164

backup suggestions 164

base enclosure, spare part

numbers 23

battery

removal 55

spare part numbers 23, 55

battery bay, identifying 18

battery light, identifying 9, 15

battery release latch,
identifying 18

bays

battery 18

hard drive 18

bezel

illustrated 25

spare part numbers 25, 80,
84

Blu-ray Disc ROM Drive

specifications 129

Blu-ray Drive, spare part

number 30, 31, 57

Bluetooth module

removal 76

spare part number 76

boot options 124

boot order 124

button sound 124

buttons

media 11

next/fast forward 11

play/pause 11

power 11

previous/rewind 11

stop 11

TouchPad 8

TouchPad on/off 8

volume mute 11

wireless 11

C

cables, service considerations 48

camera module

illustrated 25

removal 70

spare part number 70

camera module cable,

illustrated 25

camera/microphone module

spare part number 70

camera/microphone module, spare
part number 26

camera/microphone, product

description 4

caps lock light, identifying 9

Card Reader Power Saving 124

carrying case, spare part

number 32

changing the Setup Utility

language 121

chipset, product description 2

CMOS clearing 52

compartments

memory module 18

Mini Card 18

components

bottom 18

front 15

left-side 17

rear 16

right-side 16

top 8

computer feet

locations 54

spare part number 54

computer specifications 126

connector pin assignments

audio-in 168

audio-out 169

external monitor 170

HDMI 173

headphone 169

microphone 168

modem 171

monitor 170

network 172

RJ-11 171

- RJ-45 172
- Universal Serial Bus (USB) 174
- connector, power 16
- connectors, service considerations 48

D

- Diagnostics menu 125
- digital dual array microphones, identifying 14
- Digital Media Slot light, identifying 17
- Digital Media Slot, identifying 17
- diskette drive
 - precautions 48
- display assembly
 - removal 80
 - spare part numbers 21, 80
- display bezel
 - illustrated 25
 - release 70
 - spare part numbers 25, 80, 84
- display components
 - illustrated 25
 - recycling 177
 - spare part numbers 25
- display enclosure
 - illustrated 25
 - spare part numbers 26, 81
- display hinge
 - removal 86
 - spare part number 26, 80, 86
- Display Hinge Kit, spare part number 26, 80, 86
- display inverter
 - illustrated 25
 - spare part number 26, 80
- display panel
 - illustrated 25
 - product description 3
 - removal 85
 - spare part number 26, 80, 85
- display specifications 127
- display switch module
 - illustrated 25
 - spare part number 26, 80

- display switch, identifying 14
- displaying system information 122
- docking support, product description 6
- drive light, identifying 9, 15
- drives
 - preventing damage 48
- drives, boot order 124
- DVB-T tuner, spare part number 33, 105
- DVD/CD-RW Combo Drive
 - precautions 48
 - removal 57
 - spare part number 57
 - specifications 130
- DVD±RW and CD-RW Combo Drive
 - precautions 48
 - removal 57
 - spare part numbers 30, 31, 57
 - specifications 130

E

- electrostatic discharge 49
- eSATA/USB port, identifying 17
- esc key, identifying 13
- Ethernet, product description 5
- exiting the Setup Utility 123
- expansion port, identifying 17
- ExpressCard slot bezel, illustrated 28
- ExpressCard slot, identifying 17
- external media cards, product description 6
- external monitor port
 - identifying 17
 - pin assignments 170

F

- f11 166
- fan always on 124
- fan and heat sink assembly
 - removal 114
 - spare part number 114
- feet
 - locations 54
 - spare part number 54

- fingerprint reader
 - identifying 12
 - removal 97
 - spare part number 32, 97
- fn key, identifying 13
- full system recovery 163
- function keys, identifying 13

G

- graphics, product description 3
- grounding equipment and methods 51

H

- hard drive
 - precautions 48
 - product description 4
 - removal 59
 - spare part numbers 24, 29, 59
 - specifications 128
- hard drive bay cover
 - illustrated 28
 - removal 60
- hard drive bay, identifying 18
- hard drive self test 125
- HDMI jack, pin assignments 173
- HDMI port, identifying 17
- headphone (audio-out) jacks 15
- headphone jack, pin assignments 169
- hinge
 - removal 86
 - spare part number 26, 80, 86
- hinge cover
 - illustrated 25
 - spare part number 26, 80, 86

I

- I/O address specifications 134, 136
- infrared lens, identifying 15
- integrated webcam light, identifying 14
- integrated webcam, identifying 14
- internal cards, product description 6

internal digital dual array
microphones, identifying 14
internal display switch,
identifying 14
interrupt specifications 132, 133
inverter
illustrated 25
spare part number 26, 80

J

jacks
audio-in (microphone) 15
audio-out (headphone) 15
RJ-11 (modem) 16
RJ-45 (network) 17
TV antenna/cable 16

K

keyboard
product description 6
removal 72
spare part numbers 22, 72
Keyboard cover
removal 74
spare part numbers 74
keypad keys, identifying 13
keys
esc 13
fn 13
function 13
keypad 13
Windows applications 13
Windows logo 13

L

LAN Power Saving 124
language support 124
latch
battery release 18
swappable bay release 18
lights
battery 9, 15
caps lock 9
Digital Media Slot 17
drive 9, 15
integrated webcam 14
mute 9
num lock 10
power 9, 15
TouchPad 8
volume down 9

volume mute 9
volume up 9
wireless 10

M

main menu 124
mass storage devices, spare part
numbers 29
media activity buttons,
identifying 11
media button, identifying 11
memory map specifications 138,
139
memory module
product description 4
removal 67
spare part numbers 23, 67
memory module compartment
cover
illustrated 28
removal 68
memory module compartment,
identifying 18
memory test 125
microphone
illustrated 25
product description 4
microphone (audio-in) jack 15
microphone jack, pin
assignments 168
Mini Card compartment,
identifying 18
model name 1
modem jack, pin
assignments 171
modem module
product description 5
removal 99
spare part number 23, 99
monitor port
external 17
pin assignments 170
mouse, spare part numbers 32
mute button, identifying 11
mute light, identifying 9

N

navigating in the Setup
Utility 122

network jack, pin
assignments 172
next/fast forward button,
identifying 11
num lock light, identifying 10

O

operating system, product
description 7
optical drive
precautions 48
product description 4
removal 57
spare part numbers 24, 30,
57
specifications 129, 130

P

packing guidelines 50
password clearing 52
performing a recovery 166
plastic parts 47
Plastics Kit
contents 28
spare part number 22, 28
play/pause button, identifying 11
pointing device, product
description 6
ports
eSATA/USB 17
expansion 17
external monitor 17
HDMI 17
product description 6
USB 16
power button, identifying 11
power connector cable
removal 110
spare part number 23, 110
power connector, identifying 16
power cord set requirements 175
power cord, spare part
numbers 32
power lights, identifying 9, 15
power requirements, product
description 7
power-on password 124
previous/rewind button,
identifying 11

- processor
 - product description 1
 - removal 118
 - spare part numbers 24, 118
- Processor C6 State 124
- product description
 - audio 5
 - camera/microphone 4
 - chipset 2
 - display panel 3
 - docking support 6
 - Ethernet 5
 - external media cards 6
 - graphics 3
 - hard drives 4
 - internal cards 6
 - keyboard 6
 - memory module 4
 - microphone 4
 - modem module 5
 - operating system 7
 - optical drives 4
 - pointing devices 6
 - ports 6
 - power requirements 7
 - processors 1
 - product name 1
 - security 7
 - serviceability 7
 - wireless 5
- product name 1

R

- recovering a program or driver 163
- recovering from the dedicated recovery partition 166
- recovering from the recovery discs 166
- recovery 166
- recovery discs 163, 165
- Recovery Manager 163, 166
- recovery partition 163
- recovery, system 166
- remote control, spare part numbers 33
- removal/replacement
 - preliminaries 47
 - procedures 53
- restore points 164

- restoring default settings 123
- RJ-11 (modem) jack
 - identifying 16
 - pin assignments 171
- RJ-45 (network) jack
 - identifying 17
 - pin assignments 172
- RTC battery
 - removal 69
 - spare part number 23, 69
- Rubber Kit, spare part number 33, 54

S

- Screw Kit
 - contents 141
 - spare part number 33, 141
- screw listing 141
- scrolling regions, TouchPad 8
- secondary hard drive self test 125
- security cable slot, identifying 17
- Security menu 124
- security, product description 7
- selecting in the Setup Utility 122
- serial number 20, 53
- service considerations 47
- serviceability, product description 7
- Setup Utility
 - Diagnostics menu 125
 - Main menu 124
 - overview 121
 - Security menu 124
 - starting 121
 - System Configuration menu 124
- SIM
 - removal 56, 79
 - spare part number 56, 79
- SIM slot, identifying 18
- slots
 - Digital Media 17
 - ExpressCard 17
 - memory module 18
 - security cable 17
 - SIM 18
- solid-state drive (SSD) 163, 166

- speaker assembly
 - removal 77
 - spare part number 22, 77
- speakers, identifying 10
- specifications
 - Blu-ray Disc ROM Drive 129
 - computer 126
 - display 127
 - DVD/CD-RW Combo Drive 130
 - DVD±RW and CD-RW Combo Drive 130
 - hard drive 128
 - I/O addresses 134, 136
 - interrupts 132, 133
 - memory map 138, 139
 - optical drive 129, 130
 - system DMA 131
- static-shielding materials 51
- stop button, identifying 11
- supported discs 165
- swappable bay release latch, identifying 18
- swappable bay, identifying 16
- system board
 - removal 107
 - spare part numbers 22, 107
- System Configuration menu 124
- system DMA 131
- system failure or instability 163
- system information 124
- system memory map 138, 139
- system recovery 166
- system restore points 163, 164

T

- thermal paste, replacement 115, 116
- tools required 47
- top cover
 - removal 92
 - spare part numbers 22, 92
- TouchPad
 - buttons 8
 - identifying 8
 - removal 95
 - scrolling regions 8
 - spare part number 33, 95
- TouchPad cable, spare part number 95

TouchPad light, identifying 8
TouchPad on/off button 8
transporting guidelines 50
TV antenna/cable jack,
identifying 16
TV tuner antenna, spare part
number 33, 105
TV tuner, spare part number 33,
105

WLAN module
removal 62
spare part numbers 33, 62
workstation guidelines 50
WWAN antennae, identifying 19
WWAN module
removal 65
spare part number 35, 65

U

Universal Serial Bus (USB) port, pin
assignments 174
unknown password 52
USB board
removal 103
spare part number 23, 103
USB ports, identifying 16
using system restore 164

V

vents, identifying 16, 18
Virtualization Technology 124
volume down light, identifying 9
volume mute button,
identifying 11
volume mute light, identifying 9
volume scroll zone, identifying 11
volume up light, identifying 9

W

webcam, identifying 14
Windows applications key,
identifying 13
Windows logo key, identifying 13
wireless antenna
removal 86
spare part number 26, 80,
86
Wireless Antenna Kit, spare part
number 26, 80, 86
wireless antennae 19
wireless button, identifying 11
wireless light, identifying 10
wireless module compartment
cover, illustrated 28
wireless module, removal 64
wireless, product description 5
WLAN antennae, identifying 19

