HP Pavilion dv5 Entertainment PC
Maintenance and Service Guide

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Safety warning notice

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

Table of contents

1 Product description

2 External component identification

Top components 7
Display and top components 7
Buttons, fingerprint reader, and speakers 9
Keys 11
TouchPad 12
Front components 13
Rear components 14
Right-side components 14
Left-side components 15
Bottom components 16

3 Illustrated parts catalog

Service tag 17
Computer major components 18
Display assembly components 27
AntiGlare display assembly spare parts 27
BrightView display assembly spare parts 28
Plastics Kit 30
Cable Kit 31
Mass storage devices 32
Miscellaneous parts 34
Sequential part number listing 35

4 Removal and replacement procedures

Preliminary replacement requirements 44
Tools required 44
Service considerations 44
Plastic parts 44
Cables and connectors 45
Drive handling 45

Grounding guidelines 46
Electrostatic discharge damage 46
Packaging and transporting guidelines 47
Workstation guidelines 47
Equipment guidelines 48
Unknown user password 49
Component replacement procedures 50
Service tag 50
Computer feet 51
Battery 52
Webcam/microphone module 53
Optical drive 55
TV tuner module 57
RTC battery 59
Memory module 60
Hard drive 62
WLAN module 65
Switch cover and keyboard 69
Power button board 73
Speaker assembly 74
Bluetooth module 75
Display assembly 76
Top cover 84
Modem module 87
Audio/infrared board 89
USB board 90
System board 92
TV tuner module cable 94
Modem module cable 95
Power connector cable 96
Fan/heat sink assembly 98
Processor 102

5 Setup Utility

Starting the Setup Utility 104
Using the Setup Utility 105
Changing the language of the Setup Utility 105
Display system information 105
Restoring default settings in the Setup Utility 106
Exiting the Setup Utility 106
Setup Utility menus 107
Main menu 107
Security menu 107

System Configuration menu 107
Diagnostics menu 108

6 Specifications

Computer specifications 109
15.4-inch, SXGA+ display specifications 110
15.4-inch WXGA display specifications 111
Hard drive specifications 112
Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer 113
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive specifications 114
System DMA specifications, AMD 115
System DMA specifications, Intel 115
System interrupt specifications, AMD discrete graphics 116
System interrupt specifications, AMD UMA graphics 117
System interrupt specifications, Intel 118
System I/O address specifications, AMD 119
System I/O address specifications, Intel 121
System memory map specifications, AMD discrete graphics 123
System memory map specifications, AMD UMA graphics 124
System memory map specifications, Intel 125

7 Screw listing

Phillips PM2.5×7.0 screw 127
Phillips PM2.5×6.0 captive screw 131
Phillips PM2.0×4.0 screw 132
Phillips PM2.0×4.0 screw 135
Phillips PM2.5×4.0 screw 136
Phillips PM3.0×4.0 screw 138
Phillips PM2.5×6.0 screw 139
Phillips PM2.0×10.0 captive screw 140

8 Backup and Recovery

Recovering system information 142
Creating recovery discs 143
Backing up your information 144
When to back up 144
Backup suggestions 144
Using system restore points 144
When to create restore points 145
Create a system restore point 145
Restore to a previous date and time 145
Performing a recovery 146
Recovering from the recovery discs 146

Recovering from the dedicated recovery partition (select models only) 146

9 Connector pin assignments

1394 147
Audio-in (microphone) 147
Audio-out (headphone) 148
External monitor 148
HDMI 149
RJ-11 (modem) 150
RJ-45 (network) 150
Universal Serial Bus 151

10 Power cord set requirements

Requirements for all countries or regions 152
Requirements for specific countries or regions 153

11 Recycling

Battery 154
Display 154

Index 160

1 Product description

Category	Description	Computer models equipped with AMD processors and graphics subsystems with discrete memory	Computer models equipped with AMD processors and graphics subsystems with UMA memory	Computer models equipped with Intel processors and graphics subsystems with discrete memory
Product Name	HP Pavilion dv5 Entertainment PC	√	√	√
Processors	**AMD processors:**			
	AMD Turion™ Ultra Dual-Core 35W ZM-86 2.40-GHz with 2-MB L2 cache	√	√	
	AMD Turion Ultra Dual-Core 35W ZM-82 2.20-GHz, with 2-MB L2 cache	√	√	
	AMD Turion Ultra Dual-Core 35W ZM-80 2.10-GHz, with 2-MB L2 cache	√	√	
	AMD Turion Dual-Core 35W RM-70 2.00-GHz with 1-MB L2 cache	√	√	
	AMD Athlon™ X2 Dual-Core 35W QL-60 1.90-GHz with 1-MB L2 cache	√	√	
	Intel® processors:			
	Intel Core™2 Duo T9600 2.80-GHz with 6-MB L2 cache and 1066-MHz front side bus (FSB)			√
	Intel Core2 Duo T9400 2.53-GHz with 6-MB L2 cache and 1066-MHz FSB			√
	Intel Core Duo T8600 2.40-GHz with 3-MB L2 cache and 1066-MHz FSB			√
	Intel Core Duo T8400 2.26-GHz with 3-MB L2 cache and 1066-MHz FSB			√
Chipset	Northbridge: AMD M770 chipset, ATI Radeon HD 3450 graphics	√		
	Northbridge: AMD M780G chipset, ATI Radeon HD 3200 graphics		√	
	Southbridge: AMD SB700	√	√	
	Northbridge: Intel PM45			√
	Southbridge: Intel ICH9M			√

Category	Description	Computer models equipped with AMD processors and graphics subsystems with discrete memory	Computer models equipped with AMD processors and graphics subsystems with UMA memory	Computer models equipped with Intel processors and graphics subsystems with discrete memory
Graphics	ATi Mobility Radeon HD 3450 with 256 MB of discrete graphics subsystem memory (32 MB × 16 DDR2 × 4 PCs)	√		
	Unified memory architecture (UMA) with shared video memory: • Up to 358 MB of graphics subsystem memory on computer models equipped with 2048 MB or more of main system memory • Up to 251 MB of graphics subsystem memory on computer models equipped with 1024 MB • Memory size is dynamic change		√	
	Discrete graphics subsystem memory • GeForce 9650M GT, Nvidia NB9P-GS with 512 MB (32 MB × 16 DDR2 ×8 PCs) • GeForce 9300M GS, Nvidia NB9M-GEB with 256 MB (32 MB × 16 DDR2 × 4 PCs)			√
Panels	• 15.4-inch, WSXGA+ (1680 × 1050) AntiGlare	√	√	√
	• 15.4-inch, WSXGA+ (1680 × 1050) BrightView	√	√	√
	• 15.4-inch, WXGA+ (1440 × 900) AntiGlare	√	√	√
	• 15.4-inch, WXGA+ (1440 × 900) BrightView	√	√	√
	• AntiGlare glass panel cover support	√	√	√
	• Support for lighted logo on display enclosure	√	√	√
	• Typical brightness 200 nits	√	√	√
Memory	2 SODIMM slots	√	√	√
	Customer-accessible/upgradable	√	√	√
	PC2-6400, 800-MHz, DDR2	√	√	√
	Dual-channel support	√	√	√

Category	Description	Computer models equipped with AMD processors and graphics subsystems with discrete memory	Computer models equipped with AMD processors and graphics subsystems with UMA memory	Computer models equipped with Intel processors and graphics subsystems with discrete memory
	Supports up to 4096 MB system memory • 4096-MB total system memory (2048 MB × 2, dual-channel) • 3072-MB total system memory (2048 MB × 1 + 1024 × 1) • 2048-MB total system memory (1024 MB × 2, dual-channel) • 2048-MB total system memory (2048 MB × 1) • 1024-MB total system memory (512 MB × 2, dual-channel) • 1024-MB total system memory (1024 MB × 1)	√	√	√
Hard drives	Supports all Serial ATA (SATA) 9.5-mm, 2.5-inch hard drives	√	√	√
	Supports up to 2 hard drives	√	√	√
	Support for Accelerometer hard drive protection	√	√	√
	Support for solid-state drive (SSD) on dual hard drive configurations, with SSD set as the primary drive	√	√	√
	Dual hard drive configurations: • 640-GB (320-GB, 5400-rpm × 2) • 500-GB (250-GB, 5400-rpm × 2) • 320-GB (160-GB, 7200-rpm × 2) • 320-GB (160-GB, 5400-rpm × 2) • 64-GB SSD + 320-GB, 5400-rpm	√	√	√
	Single hard drive configurations: • 320-GB, 5400-rpm • 250-GB, 5400-rpm • 160-GB, 7200-rpm • 160-GB, 5400-rpm • 120-GB, 5400-rpm	√	√	√
Optical drives	12.7-mm tray load	√	√	√
	Parallel ATA	√	√	√

Category	Description	Computer models equipped with AMD processors and graphics subsystems with discrete memory	Computer models equipped with AMD processors and graphics subsystems with UMA memory	Computer models equipped with Intel processors and graphics subsystems with discrete memory
	Fixed (1 screw for removal)	√	√	√
	Support for the following optical drives: • DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe • DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive • Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer	√	√	√
Webcam	Low-light VGA camera	√	√	√
	Fixed (no tilt)	√	√	√
	Activity LED	√	√	√
	640 × 480 by 24 frames per second	√	√	√
Microphone	2 omnidirectional microphones, dual array with appropriate software (supports beam forming, echo cancellation, and noise suppression)	√	√	√
Audio	HD Audio (IDT)	√	√	√
	Integrated subwoofer	√	√	√
	Supports Microsoft Premium Requirements	√	√	√
	Pavilion-branded Altec Lansing speakers	√	√	√
Modem	56K V.92 data/fax modem	√	√	√
	Supports all world-wide certification requirements	√	√	√
Ethernet	Integrated Realtek 10/100/1000 network interface card (NIC)	√		√
	Integrated Realtek 10/100 NIC		√	
Wireless	**Integrated wireless local area network (WLAN) options by way of wireless module:**			
	Atheros AR9280 802.11a/b/g/n	√	√	
	Broadcom 4321 802.11a/b/g/n	√	√	
	Atheros AR2425 802.11b/g	√	√	
	Intel Wi-Fi Link 5100 802.11a/b/g/n WLAN module			√

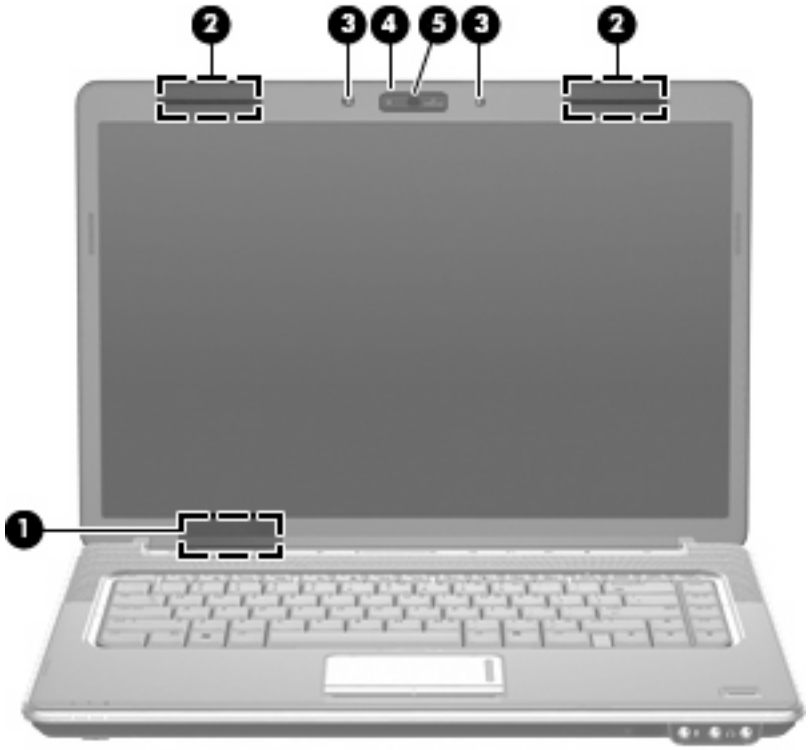
Category	Description	Computer models equipped with AMD processors and graphics subsystems with discrete memory	Computer models equipped with AMD processors and graphics subsystems with UMA memory	Computer models equipped with Intel processors and graphics subsystems with discrete memory
	Intel Wi-Fi Link 5100 802.11a/b/g WLAN module			√
	Broadcom 4322 802.11a/b/g/n WLAN module			√
	Broadcom BCM4312 802.11b/g WLAN module			√
Wireless	Integrated ATSC/NTSC/QAM hybrid TV tuner module	√	√	√
	Integrated world-wide analog DVB-T TV tuner module	√	√	√
	Support for TV tuner antennae for both DVB-T and ATSC/NTSC	√	√	√
External media card	One ExpressCard 54 slot	√	√	
	Digital Media Slot, supports SD, MMC, SD I/O, MS, MSP, xD	√	√	√
Ports	Audio-in (mono microphone)	√	√	√
	Audio-out (stereo headphone)	√	√	√
	Audio-out (stereo headphone with S/PDIF)	√	√	√
	Consumer infrared	√	√	√
	eSATA	√	√	√
	High-Definition Multimedia Interface (HDMI) v1.3 supporting 1080p with HDCP key	√	√	√
	IEEE 1394a	√		√
	RJ-11 (modem; select models only)	√	√	√
	RJ-45 (Ethernet, includes link and activity lights)	√	√	√
	TV tuner antenna (select models only)	√		√
	USB (4 on computer models not equipped with an eSATA port; 3 on computer models equipped with an eSATA port)	√	√	√
	VGA (Dsub 15-pin)	√	√	√
	2-pin AC power for 90-W AC adapter	√	√	√
Docking	Expansion port 3 supports the HP xb3000 Notebook Expansion Base and HP Notebook QuickDock	√	√	√

Category	Description	Computer models equipped with AMD processors and graphics subsystems with discrete memory	Computer models equipped with AMD processors and graphics subsystems with UMA memory	Computer models equipped with Intel processors and graphics subsystems with discrete memory
Keyboard/ pointing devices	17-inch full-size keyboard with numeric keypad	√	√	√
	Touchpad supports 2-way scrolling	√	√	√
	Taps enabled as default	√	√	√
Power requirements	8-cell 2.55-Ah Li-ion battery	√		√
	6-cell 2.20-Ah Li-ion battery		√	
	90-W AC adapter with localized cable plug support (2-wire plug with ground pin, supports 2-pin DC connector)	√		√
	65-W AC adapter with localized cable plug support (2-wire plug with ground pin, supports 2-pin DC connector)		√	
Security	Security cable slot	√	√	√
	Fingerprint reader (select models only)	√	√	√
Operating system	**Preinstalled:**			
	FreeDOS	√	√	√
	Linux Red Flag	√	√	√
	Windows Vista® Business (32 bit)	√	√	√
	Windows Vista Home Basic (32 bit) vvv			√
	Windows Vista Premium (32 bit)	√	√	√
	Windows Vista Ultimate (64 bit)	√	√	√
Serviceability	AC adapter	√	√	√
	Battery (system)	√	√	√
	Hard drives (2)	√	√	√
	Memory module	√	√	√
	Optical drive	√	√	√
	TV tuner module	√	√	√
	WLAN module	√	√	√

2 External component identification

Top components

Display and top components



Item	Component	Description
(1)	Internal display switch	Turns off the display and initiates Sleep if the display is closed while the power is on.
(2)	Wireless antennae (select models only)	Send and receive signals from one or more wireless devices. These antennae are not visible from the outside of the computer. **NOTE:** For optimal transmission, keep the areas immediately around the antennae free from obstructions. **NOTE:** 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.

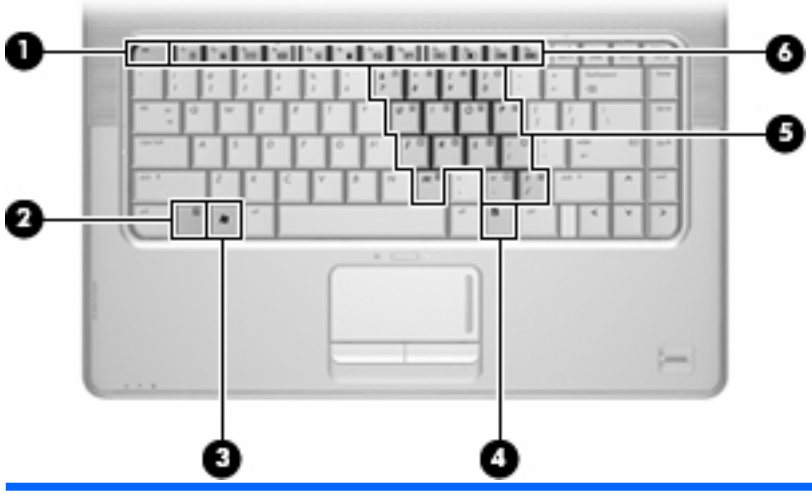
Item	Component	Description
(3)	Internal microphones (2)	Record sound.
(4)	Integrated webcam light	On: The integrated webcam is in use.
(5)	Integrated webcam	Records video and captures still photographs.

Buttons, fingerprint reader, and speakers

Item	Component	Description
(1)	Speakers (2)	Produce sound.
(2)	Power button*	• When the computer is off, press the button to turn on the computer. • When the computer is on, press the button briefly to initiate Sleep. • When the computer is in the Sleep state, press the button briefly to exit Sleep. • When the computer is in Hibernation, press the button briefly to exit Hibernation. If the computer has stopped responding and Windows® shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer. To learn more about your power settings, select **Start > Control Panel > System and Maintenance > Power Options**.
(3)	Media button	• Launches the QuickPlay program (for models with QuickPlay preinstalled). **NOTE:** If the computer has been set up to require a logon password, you may be asked to log on to Windows. QuickPlay launches after you log on. Refer to the QuickPlay software Help for more information.
(4)	Volume mute button	Mutes and restores speaker sound.

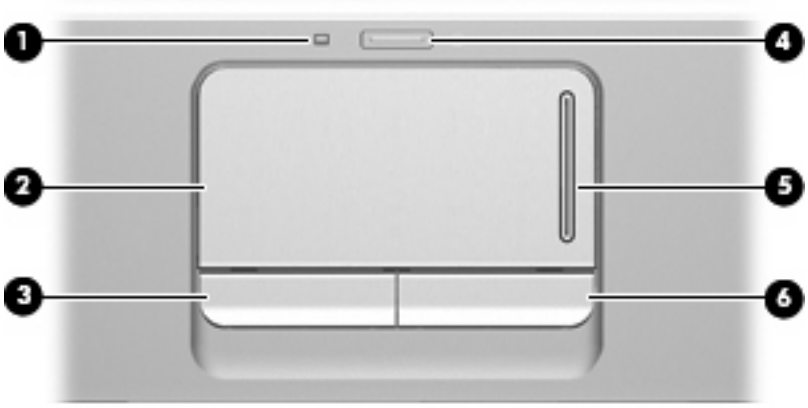
Item	Component	Description
(5)	Volume scroll zone	Adjusts speaker volume. Slide your finger to the left to decrease volume and to the right to increase volume. You can also tap the minus sign on the scroll zone to decrease volume, or tap the plus sign on the scroll zone to increase volume.
(6)	Previous/rewind button	• 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 the disc.
(8)	Next/fast forward button	• 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	Turns the wireless feature on or off, but does not create a wireless connection. **NOTE:** A wireless network must be set up in order to establish a wireless connection.
(11)	Fingerprint reader	Allows a fingerprint logon to Windows, instead of a password logon.
*This table describes factory settings. For information about changing factory settings, refer to the user guides located in Help and Support.		

Keys



Item	Component	Function
(1)	esc key	Displays system information about your computer when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with a function key or the esc key.
(3)	Windows logo key	Displays the Windows® Start menu.
(4)	Windows applications key	Displays a shortcut menu for items beneath the pointer.
(5)	Embedded numeric keypad keys	Can be used like the keys on an external numeric keypad.
(6)	Function keys	Execute frequently used system functions when pressed in combination with the fn key.

TouchPad



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

*This table describes factory settings. View or change pointing device preferences by selecting **Start > Control Panel > Hardware and Sound > Mouse**.

Front components

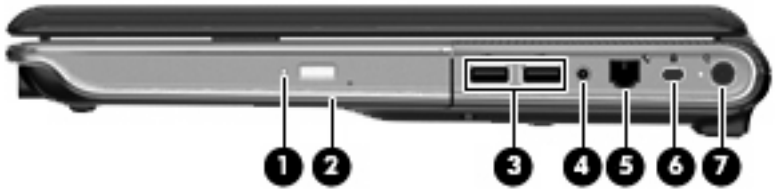
Item	Component	Function
(1)	Power light	• On: The computer is on. • Blinking: The computer is in the Sleep state. • Off: The computer is off or in Hibernation.
(2)	Battery light	• On: A battery is charging. • Blinking: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly. • Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
(3)	Drive light	Blinking: The hard drive or optical drive is being accessed.
(4)	Consumer infrared lens	Receives a signal from the HP Remote Control.
(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.

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

Rear components

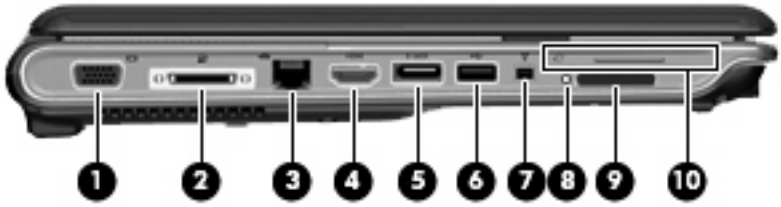
Component	Function
Vents (2)	Enables airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.

Right-side components



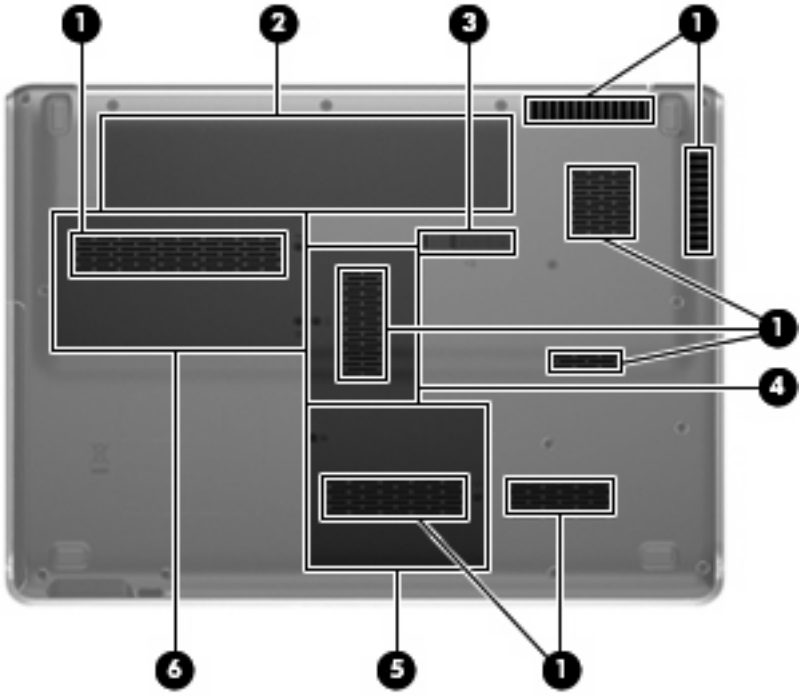
Item	Component	Function
(1)	Optical drive light	Blinking: The optical drive is being accessed.
(2)	Optical drive	Reads optical discs and, on select models, also writes to optical discs.
(3)	USB ports (2)	Connect optional USB devices.
(4)	TV antenna jack (select models only)	Connects a TV antenna, a digital cable device, or a satellite device that receives standard or high-definition TV broadcasts.
(5)	RJ-11 (modem) jack (select models only)	Connects a modem cable.
(6)	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.
(7)	Power connector	Connects an AC adapter.

Left-side components



Item	Component	Function
(1)	External monitor port	Connects an external VGA monitor or projector.
(2)	Expansion port 3	Connects the computer to an optional docking device or an optional expansion product. **NOTE:** The computer has only one expansion port. The term expansion port 3 describes the type of expansion port.
(3)	RJ-45 (network) jack	Connects a network cable.
(4)	HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component.
(5)	eSATA/USB port	Connects an optional high-performance eSATA component, such as an eSATA external hard drive, or an optional USB device.
(6)	USB port	Connects an optional USB device.
(7)	1394 port (select models only)	Connects an optional IEEE 1394 or 1394a device, such as a camcorder.
(8)	Digital Media Slot light	On: A digital card is being accessed.
(9)	Digital Media Slot	Supports the following optional digital card formats: Secure Digital (SD) Memory Card, MultiMediaCard (MMC), Memory Stick (MS), Memory Stick Pro (MSP), xD-Picture Card (XD), xD-Picture Card (XD) Type H, xD-Picture Card (XD) Type M.
(10)	ExpressCard slot	Supports optional ExpressCard/54 cards.

Bottom components



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

3 Illustrated parts catalog

Service tag

The service tag, affixed to the bottom of the computer, provides information that may be needed when troubleshooting system problems. The service tag provides the following information:

(1) Product name: This is the product name affixed to the front of the computer.

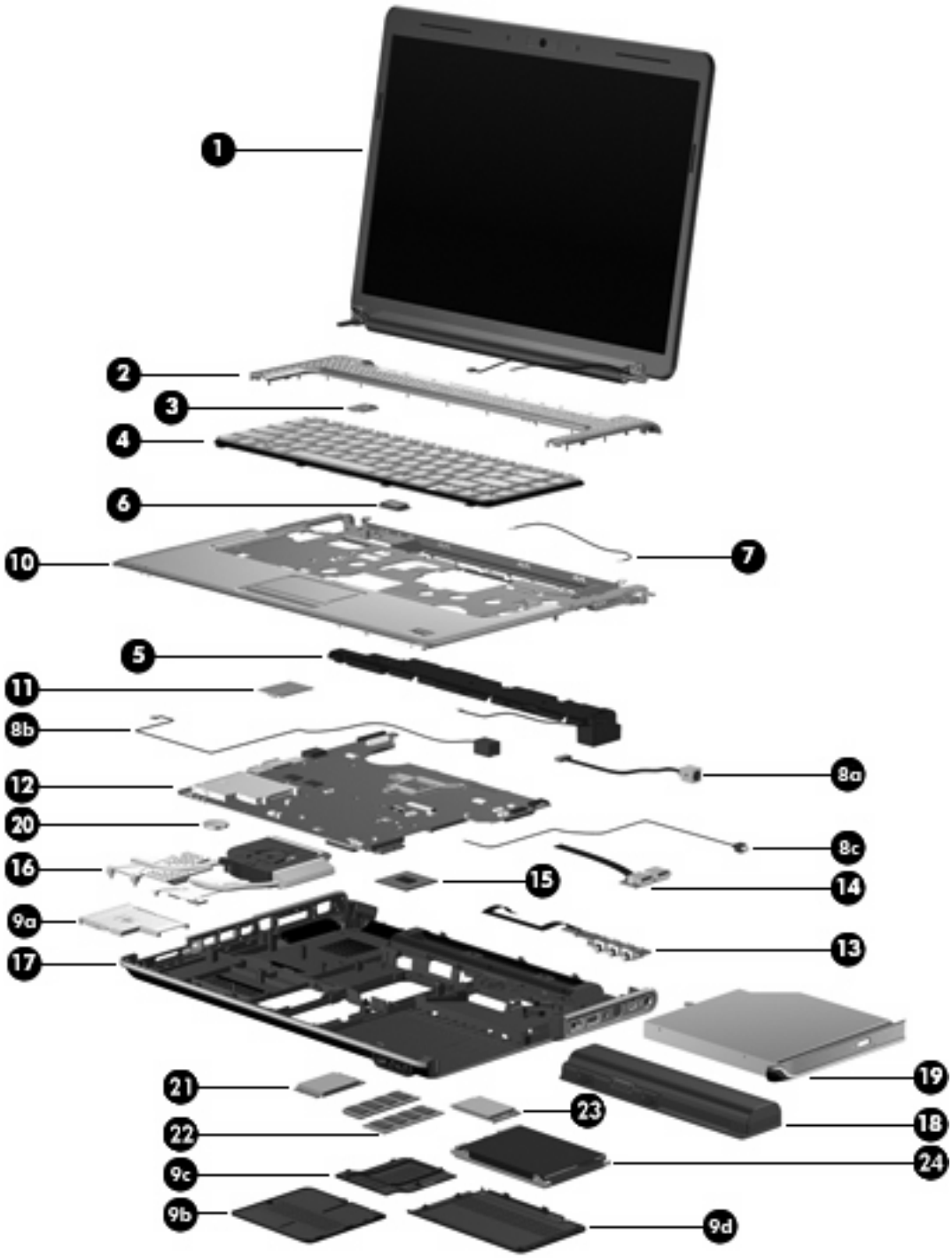
(2) Serial number (s/n): This is an alphanumeric identifier that is unique to each product.

(3) Part number/Product number (p/n): This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.

(4) Model description: This is the number needed to locate documents, drivers, and support for the computer.

(5) Warranty period: Describes the duration of the warranty period for the computer.

Computer major components



Item	Description	Spare part number
(1)	**15.4-inch display assemblies** (include wireless antenna transceivers and cables)	
	WSXGA+ AntiGlare display assembly with webcam and 2 microphones	484372-001
	WSXGA+ BrightView display assembly with webcam and 2 microphones	484368-001
	WXGA AntiGlare display assembly with webcam and 2 microphones	484371-001

Item	Description	Spare part number
	WXGA Brightview display assembly with webcam and 2 microphones	484367-001
	NOTE: See Display assembly components on page 27 for more information on display assembly spare part numbers.	
(2)	**Switch cover** (includes LED board and cable)	488316-001
(3)	**Power button board** (includes cable)	486796-001
(4)	**Keyboards** (include keyboard cable)	
	Belgium	488590-A41
	Brazil	488590-201
	Canada	488590-121
	The Czech Republic	488590-221
	Denmark, Norway, and Sweden	488590-DH1
	France	488590-051
	Germany	488590-041
	Greece	488590-151
	Hungary	488590-211
	Israel	488590-BB1
	Italy	488590-061
	Japan	488590-291
	Latin America	488590-161
	The Netherlands and Europe	488590-B31
	Portugal	488590-131
	Russia	488590-251
	Saudi Arabia	488590-171
	South Korea	488590-AD1
	Spain	488590-071
	Switzerland	488590-111
	Taiwan	488590-AB1
	Thailand	488590-281
	Turkey	488590-141
	The United Kingdom	488590-031
	The United States	488590-001
(5)	**Speaker assembly**	486801-001
(6)	**Bluetooth® modules** (do not include a Bluetooth module cable)	
	For use only with computer models equipped with AMD processors	412766-002
	For use only with computer models equipped with Intel processors	483113-001

Item	Description	Spare part number
(7)	**Bluetooth module cable**	489822-001
	Cable Kit, includes: **NOTE:** See Cable Kit on page 31 for more Cable Kit spare part information.	501891-001
(8a)	Power connector cable	
(8b)	Modem module cable	
(8c)	TV tuner module antenna cable	
	Plastics Kit, includes: **NOTE:** See Plastics Kit on page 30 for more Cable Kit spare part information.	486793-001
(9a)	ExpressCard slot bezel	
(9b)	Mini Card module compartment cover	
(9c)	Memory module compartment cover	
(9d)	Hard drive bay cover	
(10)	**Top covers** (include TouchPad and TouchPad buttons):	
	For use only with computer models equipped with a fingerprint reader	486527-001
	For use only with computer models not equipped with a fingerprint reader	486526-001
(11)	**Modem modules:** **NOTE:** The modem module spare part kits do not include a modem module cable. The modem module cable is included in the Cable Kit, spare part number 501891-001.	
	For use in all countries and regions except Australia and New Zealand	461749-001
	For use only in Australia and New Zealand	461749-011
(12)	**System boards** (include replacement thermal material):	
	For use only with computer models equipped with AMD processors:	
	• With RX781 Northbridge and ATI-M82-S discrete graphics subsystem memory	482324-001
	• With RS780 Northbridge and ATI-M UMA graphics subsystem memory	482325-001
	For use only with computer models equipped with Intel processors:	
	• With PM45 Northbridge and nVidia NB9P-GS discrete graphics subsystem memory and 512-GB of graphics subsystem memory	482870-001
	• With PM45 Northbridge and nVidia NB9M-GE discrete graphics subsystem memory and 256-GB of graphics subsystem memory	482867-001
	• With GM45 Northbridge and UMA graphics subsystem memory	482869-001
	• With ICH9M Northbridge and UMA graphics subsystem memory	482868-001
(13)	**Audio/infrared board** (includes cable)	486797-001
(14)	**USB board** (includes cable)	486798-001
(15)	**Processors** (include replacement thermal material):	
	AMD processors:	

Item	Description	Spare part number
	• Turion Ultra Dual-Core 35W ZM-86 2.40-GHz processor with 2-MB L2 cache	484260-001
	• Turion Ultra Dual-Core 35W ZM-82 2.20-GHz, processor with 2-MB L2 cache	484261-001
	• Turion Ultra Dual-Core 35W ZM-80 2.10-GHz, processor with 2-MB L2 cache	484262-001
	• Turion Dual-Core 35W RM-70 2.00-GHz with 1-MB L2 cache	484263-001
	• Athlon X2 Dual-Core 35W QL-60 1.90-GHz with 1-MB L2 cache	484264-001
	Intel processors:	
	• Intel Core2 Duo T9600 2.80-GHz processor with 6-MB L2 cache and 1066-MHz FSB	483859-001
	• Intel Core2 Duo T9400 2.53-GHz processor with 6-MB L2 cache and 1066-MHz FSB	483860-001
	• Intel Core Duo T8600 2.40-GHz processor with 3-MB L2 cache and 1066-MHz FSB	483861-001
	• Intel Core Duo T8400 2.26-GHz processor with 3-MB L2 cache and 1066-MHz FSB	486523-001
(16)	**Fan/heat sink assemblies** (include replacement thermal material):	
	For use only with computer models equipped with AMD processors and graphics subsystems with discrete memory	493001-001
	For use only with computer models equipped with AMD processors and graphics subsystems with UMA memory	491572-001
	For use only with computer models equipped with Intel processors and graphics subsystems with discrete memory	486799-001
	For use only with computer models equipped with Intel processors and graphics subsystems with UMA memory	492314-001
(17)	**Base enclosures** (include rubber feet)	
	For use only with computer models equipped with a 1394 port, modem module, and TV tuner module	486783-001
	For use only with computer models equipped with a 1394 port and modem module, but not a TV tuner module	486784-001
	For use only with computer models equipped with a 1394 port and TV tuner module, but not a modem module	486785-001
	For use only with computer models equipped with a 1394 port, but not a modem module or a TV tuner module	486786-001
	For use only with computer models equipped with a modem module and a TV tuner module, but not a 1394 port	486787-001
	For use only with computer models equipped with a TV tuner module, but not a 1394 port or modem module	486788-001
	For use only with computer models equipped with a modem module, but not a 1394 port or TV tuner module	486789-001
	For use only with computer models not equipped with a 1394 port, modem module, or TV tuner module	486790-001
	Rubber Feet Kit (not illustrated, includes 4 base enclosure rubber feet)	486794-001

Item	Description	Spare part number
(18)	**Batteries:**	
	12-cell, 95-Wh, 2.55-Ah Li-ion battery for use with all computer models	484172-001
	6-cell, 55-Wh, 2.55-Ah Li-ion battery for use with all computer models	484171-001
	6-cell, 47-Wh, 2.55-Ah Li-ion battery for use only with computer models equipped with AMD processors	484170-002
	6-cell, 47-Wh, 2.55-Ah Li-ion battery for use only with computer models equipped with Intel processors	484170-001
(19)	**Optical drives** (include bezel and bracket):	
	Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer, LightScribe, and bronze bezel	486525-002
	Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer, LightScribe, and silver bezel	486525-001
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe and bronze bezel for use only with computer models equipped with AMD processors	483864-003
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe and bronze bezel for use only with computer models equipped with Intel processors	483864-002
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe and silver bezel	483864-001
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with bronze bezel	483863-002
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with silver bezel	483863-001
(20)	**RTC battery**	491571-001
(21)	**TV tuner modules:** **NOTE:** The TV tuner module spare part kits do not include a TV tuner module cable. The TV tuner module cable is included in the Cable Kit, spare part number 501891-001.	
	DVB-T TV tuner module	482899-003
	DVB-T/ANG TV tuner module	482899-002
	NTSC/ATSC/ANG TV tuner module	482899-001
	TV tuner external antenna cables (not illustrated):	
	With F-PAL jack	482900-001
	With PAL jack	482900-002
(22)	**Memory modules** (667-MHz, PC2-5300, 1-DIMM):	
	2048-MB memory module for use only with computer models equipped with AMD processors	484268-002
	1024-MB memory module for use only with computer models equipped with AMD processors	484267-002
	2048-MB memory module for use only with computer models equipped with Intel processors	484268-001
	1024-MB memory module for use only with computer models equipped with Intel processors	484267-001

Item	Description	Spare part number
	512-MB memory module for use only with computer models equipped with Intel processors	484266-001
(23)	**WLAN modules:**	
	WLAN modules for use only with computer models equipped with AMD processors:	
	• Atheros AR9280 802.11a/b/g/n WLAN module for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	482260-001
	• Atheros AR9280 802.11a/b/g/n WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	482260-002
	• Broadcom 4321 802.11a/b/g/n WLAN module for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	453730-001
	• Broadcom 4321 802.11a/b/g/n WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique,	453730-002

Item	Description	Spare part number
	Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	
	• Atheros AR2425 802.11b/g for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	459339-001
	• Atheros AR2425 802.11b/g for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	459339-002
	WLAN modules for use only with computer models equipped with Intel processors:	
	• Intel Wi-Fi Link 5100 802.11a/b/g WLAN module for use in all countries and regions	482957-001
	• Intel Wi-Fi Link 5100 802.11a/b/g/n WLAN module for use in all countries and regions	480985-001
	• Broadcom 4322 802.11a/b/g/n WLAN module for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	487330-001
	• Broadcom 4322 802.11a/b/g/n WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei,	487330-002

Item	Description	Spare part number
	Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	
	• Broadcom BCM4312 802.11b/g WLAN module for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	459263-001
	• Broadcom BCM4312 802.11b/g WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	459263-002
(24)	**Hard drives** (include left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators):	

Item	Description	Spare part number
	Hard drives for use only with computer models equipped with AMD processors:	
	• 320-GB, 5400-rpm	462355-002
	• 250-GB, 5400-rpm	489819-002
	• 160-GB, 5400-rpm	489818-002
	• 120-GB, 5400-rpm	489817-002
	Hard drives for use only with computer models equipped with Intel processors:	
	• 320-GB, 5400-rpm	462355-001 and 489821-001
	• 250-GB, 5400-rpm	489819-001
	• 160-GB, 7200-rpm	489820-001
	• 160-GB, 5400-rpm	489818-001
	• 120-GB, 5400-rpm	489817-001
	Hard Drive Hardware Kit (not illustrated, includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)	483862-001

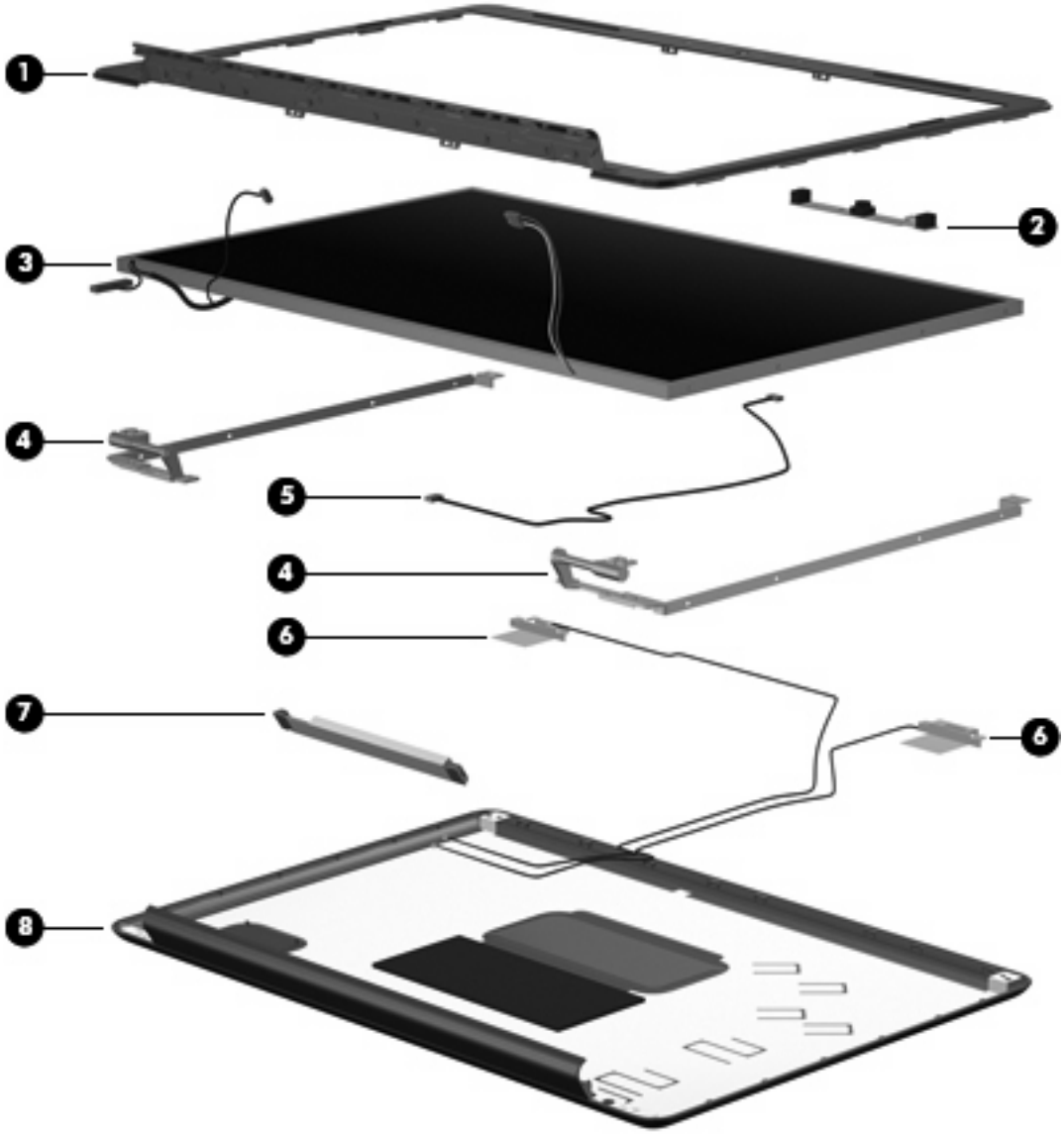
Display assembly components

The HP Pavilion dv5 Entertainment PC offers 2 types of display assemblies. Component spare parts are listed in this section for AntiGlare display assemblies and BrightView display assemblies.

AntiGlare display assembly spare parts

Item	Description	Spare part number
(1)	**Display enclosure** (includes wireless antenna transceivers and cables):	485339-001
(2)	**Display inverter cover**	486792-001
(3)	**Display inverter**	488317-001
(4)	**Webcam/microphone module**	485345-001
(5)	**Display Hinge Kit** (includes left and right hinges)	485340-001
	Display Rubber Kit (not illustrated, includes display bezel rubber screw covers)	486537-001
	Display Screw Kit (not illustrated)	485343-001

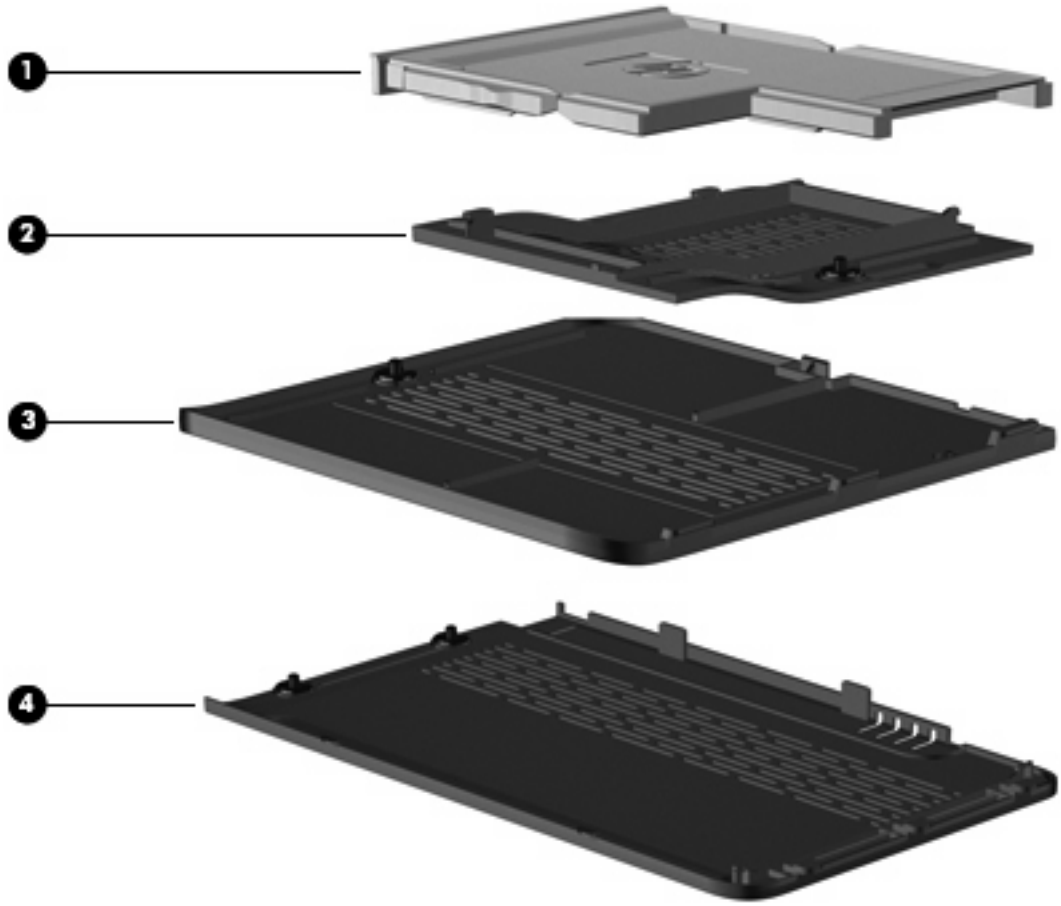
BrightView display assembly spare parts



Item	Description	Spare part number
(1)	**Display bezel** (includes logo and display lid switch actuator magnet)	480444-001
(2)	**Webcam/microphone module**	480446-001
(3)	**BrightView display panels** (include display panel cable):	
	For use only with computer models equipped with WSXGA+ display panels	480441-001
	For use only with computer models equipped with WXGA display panels	480440-001
(4)	**Display Hinge Kit** (includes left and right hinges)	486534-001
(5)	**Display Cable Kits** (include display panel cable, not illustrated, and microphone receiver and cable)	
	For use only with computer models equipped with WSXGA+ display panels	486536-001
	For use only with computer models equipped with WXGA display panels	493020-001

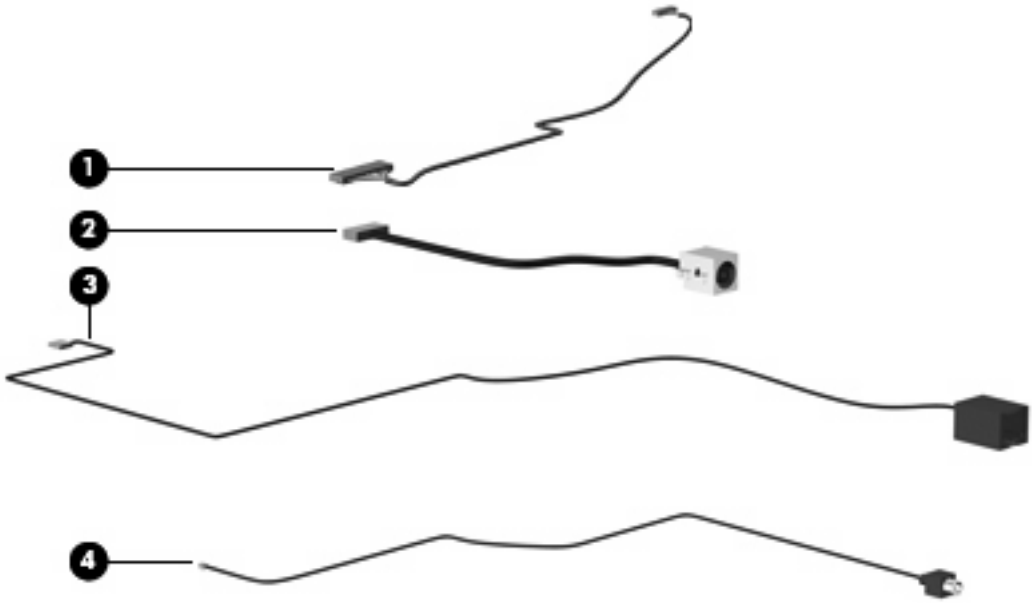
Item	Description	Spare part number
(6)	**Wireless antenna transceivers and cables**:	
	For use with computer models equipped with 802.11a/b/g/n WLAN modules (includes 3 wireless antenna transceivers and cables)	489804-001
	For use with computer models equipped with 802.11a/b/g and 802.11b/g WLAN modules (includes 2 wireless antenna transceivers and cables)	487748-001
(7)	**Display inverter**	488317-001
(8)	**Display enclosures** (include wireless antenna transceivers and cables and logo LED board and cable):	
	For use with computer models equipped with 802.11a/b/g/n WLAN modules (includes 3 wireless antenna transceivers and cables)	480445-001
	For use with computer models equipped with 802.11a/b/g and 802.11b/g WLAN modules (includes 2 wireless antenna transceivers and cables)	488884-001
	Display Rubber Kit (not illustrated, includes display bezel rubber screw covers)	480442-001
	Display Screw Kit (not illustrated)	480443-001

Plastics Kit



Item	Description	Spare part number
	Plastics Kit	486793-001
(1)	ExpressCard slot bezel	
(2)	Mini Card module compartment cover (includes 1 captive screw, secured by a C-clip)	
(3)	Memory module compartment cover (includes 1 captive screw, secured by a C-clip)	
(4)	Hard drive bay cover (includes 2 captive screws, secured by C-clips)	

Cable Kit



Item	Description	Spare part number
	Cable Kit	501891-001
(1)	Bluetooth module cable	
(2)	Power connector cable	
(3)	Modem module cable (includes RJ-11 jack)	
(4)	TV tuner module cable	

Mass storage devices

Item	Description	Spare part number
(1)	**Hard drives** (include left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators):	
	For use only with computer models equipped with AMD processors:	
	• 320-GB, 5400-rpm	462355-002
	• 250-GB, 5400-rpm	489819-002
	• 160-GB, 5400-rpm	489818-002
	• 120-GB, 5400-rpm	489817-002
	For use only with computer models equipped with Intel processors:	
	• 320-GB, 5400-rpm	462355-001 and 489821-001
	• 250-GB, 5400-rpm	489819-001
	• 160-GB, 7200-rpm	489820-001
	• 160-GB, 5400-rpm	489818-001
	• 120-GB, 5400-rpm	489817-001
	Hard Drive Hardware Kit (not illustrated, includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)	483862-001
(2)	**Optical drives** (include bezel and bracket)	
	Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer, LightScribe, and bronze bezel	486525-002

Item	Description	Spare part number
	Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer, LightScribe, and silver bezel	486525-001
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe and bronze bezel for use only with computer models equipped with AMD processors	483864-003
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe and bronze bezel for use only with computer models equipped with Intel processors	483864-002
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe and silver bezel	483864-001
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with bronze bezel	483863-002
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with silver bezel	483863-001

Miscellaneous parts

Description	Spare part number
AC adapters	
90-W AC adapter	391173-001 and 463955-001
65-W AC adapter	463958-001
Carrying cases	
HP carrying case	418162-001
HP slim bag	418163-001
CAT5E cable	454619-001
Wired headset with volume control	371693-003
Optical mouse	436238-001
Wireless laser mouse (includes infrared transceiver)	430958-001
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
South Africa	490371-AR1
South Korea	490371-AD1
Switzerland	490371-111
Taiwan	490371-AB1
The United Kingdom and Hong Kong	490371-031
Remote controls	
Full-function remote control	465540-001
Full-function remote control with teletext	464793-001

Description	Spare part number
Thin profile remote control (fits into ExpressCard slot)	465541-001
Screw Kit • Phillips PM3.0×4.0 screw • Phillips PM2.5×7.0 screw • Phillips PM2.5×6.0 screw • Phillips PM2.5×6.0 captive screw • Phillips PM2.5×4.0 screw • Phillips PM2.0×10.0 captive screw • Phillips PM2.0×4.0 screw	486795-001 and 493002-001

Sequential part number listing

Spare part number	Description
371693-003	Wired headset with volume control
391173-001	90-W AC adapter
412766-002	Bluetooth module for use only with computer models equipped with AMD processors (does not include a Bluetooth module cable) **NOTE:** The Bluetooth module cable is available using spare part number 489822-001.
418162-001	HP carrying case
418163-001	HP slim bag carrying case
430958-001	Wireless laser mouse (includes infrared transceiver)
436238-001	Optical mouse
453730-001	Broadcom 4321 802.11a/b/g/n WLAN module for use only with computer models equipped with AMD processors in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States
453730-002	Broadcom 4321 802.11a/b/g/n WLAN module for use only with computer models equipped with AMD processors in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone,

Spare part number	Description
	Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
454619-001	CAT5E cable
459263-001	Broadcom BCM4312 802.11b/g WLAN module for use only with computer models equipped with Intel processors in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States
459263-002	Broadcom BCM4312 802.11b/g WLAN module for use only with computer models equipped with Intel processors in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
459339-001	Atheros AR2425 802.11b/g for use only with computer models equipped with AMD processors in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States
459339-002	Atheros AR2425 802.11b/g for use only with computer models equipped with AMD processors in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe

Spare part number	Description
461749-001	Modem module for use in all countries and regions except Australia and New Zealand **NOTE:** The modem module spare part kits do not include a modem module cable. The modem module cable is included in the Cable Kit, spare part number 501891-001.
461749-011	Modem module for use only in Australia and New Zealand **NOTE:** The modem module spare part kits do not include a modem module cable. The modem module cable is included in the Cable Kit, spare part number 501891-001.
462355-001	320-GB, 5400-rpm hard drive for use only with computer models equipped with Intel processors (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
462355-002	320-GB, 5400-rpm hard drive for use only with computer models equipped with AMD processors (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
463955-001	90-W AC adapter
463958-001	65-W AC adapter
464793-001	Full-function remote control with teletext
465540-001	Full-function remote control
465541-001	Thin profile remote control (fits into ExpressCard slot)
480985-001	Intel Wi-Fi Link 5100 802.11a/b/g/n WLAN module for use only with computer models equipped with Intel processors in all countries and regions
482260-001	Atheros AR9280 802.11a/b/g/n WLAN module for use only with computer models equipped with AMD processors in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States
482260-002	Atheros AR9280 802.11a/b/g/n WLAN module for use only with computer models equipped with AMD processors in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
482324-001	System board with RX781 Northbridge and ATI-M82-S discrete graphics subsystem memory for use only with computer models equipped with AMD processors (includes replacement thermal material)
482325-001	System board with RS780 Northbridge and ATI-M UMA graphics subsystem memory for use only with computer models equipped with AMD processors (includes replacement thermal material)

Spare part number	Description
482867-001	System board with PM45 Northbridge and nVidia NB9M-GE discrete graphics subsystem memory for use only with computer models equipped with Intel processors (includes replacement thermal material)
482868-001	System board with ICH9M Northbridge and UMA graphics subsystem memory for use only with computer models equipped with Intel processors (includes replacement thermal material)
482869-001	System board with GM45 Northbridge and UMA graphics subsystem memory for use only with computer models equipped with Intel processors (includes replacement thermal material)
482870-001	System board with PM45 Northbridge and nVidia NB9P-GS discrete graphics subsystem memory for use only with computer models equipped with Intel processors (includes replacement thermal material)
482899-001	NTSC/ATSC/ANG TV tuner module **NOTE:** The TV tuner module spare part kits do not include a TV tuner module cable. The TV tuner module cable is included in the Cable Kit, spare part number 501891-001.
482899-002	DVB-T/ANG TV tuner module **NOTE:** The TV tuner module spare part kits do not include a TV tuner module cable. The TV tuner module cable is included in the Cable Kit, spare part number 501891-001.
482899-003	DVB-T TV tuner module **NOTE:** The TV tuner module spare part kits do not include a TV tuner module cable. The TV tuner module cable is included in the Cable Kit, spare part number 501891-001.
482900-001	TV tuner external antenna cable with F-PAL jack
482900-002	TV tuner external antenna cable with PAL jack
482957-001	Intel Wi-Fi Link 5100 802.11a/b/g WLAN module for use only with computer models equipped with Intel processors in all countries and regions
483113-001	Bluetooth module for use only with computer models equipped with Intel processors (does not include a Bluetooth module cable) **NOTE:** The Bluetooth module cable is available using spare part number 489822-001.
483859-001	Intel Core2 Duo T9600 2.80-GHz processor with 6-MB L2 cache and 1066-MHz FSB (includes replacement thermal material)
483860-001	Intel Core2 Duo T9400 2.53-GHz processor with 6-MB L2 cache and 1066-MHz FSB (includes replacement thermal material)
483861-001	Intel Core Duo T8600 2.40-GHz processor with 3-MB L2 cache and 1066-MHz FSB (includes replacement thermal material)
483862-001	Hard Drive Hardware Kit (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
483863-001	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with bronze bezel (includes bezel and bracket)
483863-002	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with bronze bezel (includes bezel and bracket)
483864-001	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe and silver bezel (includes bezel and bracket)
483864-002	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe and bronze bezel for use only with computer models equipped with Intel processors (includes bezel and bracket)
483864-003	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe and bronze bezel for use only with computer models equipped with AMD processors (includes bezel and bracket)

Spare part number	Description
484170-001	6-cell, 55-Wh, 2.55-Ah Li-ion battery for use with all computer models
484170-002	6-cell, 47-Wh, 2.55-Ah Li-ion battery for use only with computer models equipped with AMD processors
484171-001	6-cell, 55-Wh, 2.55-Ah Li-ion battery for use with all computer models
484172-001	12-cell, 95-Wh, 2.55-Ah Li-ion battery for use with all computer models
484260-001	AMD Turion Ultra Dual-Core 35W ZM-86 2.40-GHz processor with 2-MB L2 cache (includes replacement thermal material)
484261-001	AMD Turion Ultra Dual-Core 35W ZM-82 2.20-GHz, processor with 2-MB L2 cache (includes replacement thermal material)
484262-001	AMD Turion Ultra Dual-Core 35W ZM-80 2.10-GHz, processor with 2-MB L2 cache (includes replacement thermal material)
484263-001	AMD Turion Dual-Core 35W RM-70 2.00-GHz with 1-MB L2 cache processor (includes replacement thermal material)
484264-001	AMD Athlon X2 Dual-Core 35W QL-60 1.90-GHz with 1-MB L2 cache processor (includes replacement thermal material)
484266-001	512-MB memory module for use only with computer models equipped with Intel processors (667-MHz, PC2-5300, 1-DIMM)
484267-001	1024-MB memory module for use only with computer models equipped with Intel processors (667-MHz, PC2-5300, 1-DIMM)
484267-002	1024-MB memory module for use only with computer models equipped with AMD processors (667-MHz, PC2-5300, 1-DIMM)
484268-001	2048-MB memory module for use only with computer models equipped with Intel processors (667-MHz, PC2-5300, 1-DIMM)
484268-002	2048-MB memory module for use only with computer models equipped with AMD processors (667-MHz, PC2-5300, 1-DIMM)
484363-001	15.4-inch WXGA BrightView display panel (includes display panel cable)
484364-001	15.4-inch WSXGA+ BrightView display panel (includes display panel cable)
484367-001	15.4-inch WXGA Brightview display assembly with webcam and 2 microphones
484368-001	15.4-inch WSXGA+ BrightView display assembly with webcam and 2 microphones
484371-001	15.4-inch WXGA AntiGlare display assembly with webcam and 2 microphones
484372-001	15.4-inch WSXGA+ AntiGlare display assembly with webcam and 2 microphones
485339-001	Display enclosure for use only with computer models equipped with AntiGlare display assemblies (includes wireless antenna transceivers and cables)
485340-001	Display Hinge Kit for use only with computer models equipped with AntiGlare display assemblies (includes left and right hinges)
485343-001	Display Screw Kit
485344-001	Display Hinge Screw Kit
485345-001	Webcam/microphone module for use only with computer models equipped with AntiGlare display assemblies (includes double-sided tape)
486523-001	Intel Core Duo T8400 2.26-GHz processor with 3-MB L2 cache and 1066-MHz FSB (includes replacement thermal material)

Spare part number	Description
486525-001	Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer, LightScribe, and bronze bezel (includes bezel and bracket)
486525-002	Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer, LightScribe, and bronze bezel (includes bezel and bracket)
486526-001	Top cover for use only with computer models not equipped with a fingerprint reader (includes TouchPad and TouchPad buttons)
486527-001	Top cover for use only with computer models equipped with a fingerprint reader (includes TouchPad and TouchPad buttons)
486532-001	Display bezel
486533-001	Display enclosure (includes logo)
486534-001	Display Hinge Kit for use only with computer models equipped with BrightView display assemblies (includes left and right display hinges)
486536-001	Display panel cable for use with WSXGA+ BrightView display panels
486537-001	Display Rubber Kit (includes display bezel rubber screw covers)
486783-001	Base enclosure for use only with computer models equipped with a 1394 port, modem module, and TV tuner module (includes rubber feet)
486784-001	Base enclosure for use only with computer models equipped with a 1394 port and modem module, but not a TV tuner module (includes rubber feet)
486785-001	Base enclosure for use only with computer models equipped with a 1394 port and TV tuner module, but not a modem module (includes rubber feet)
486786-001	Base enclosure for use only with computer models equipped with a 1394 port, but not a modem module or a TV tuner module (includes rubber feet)
486787-001	Base enclosure for use only with computer models equipped with a modem module and a TV tuner module, but not a 1394 port (includes rubber feet)
486788-001	Base enclosure for use only with computer models equipped with a TV tuner module, but not a 1394 port or modem module (includes rubber feet)
486789-001	Base enclosure for use only with computer models equipped with a modem module, but not a 1394 port or TV tuner module (includes rubber feet)
486790-001	Base enclosure for use only with computer models not equipped with a 1394 port, modem module, or TV tuner module (includes rubber feet)
486791-001	Webcam/microphone module for use only with computer models equipped with BrightView display assemblies (includes double-sided tape)
486792-001	Display inverter cover (for use only with computer models equipped with BrightView display assemblies)
486793-001	Plastics Kit **NOTE:** See Plastics Kit on page 30 for more Cable Kit spare part information.
486794-001	Rubber Feet Kit (includes 4 base enclosure rubber feet)
486795-001	Screw Kit
486796-001	Power button board (includes cable)
486797-001	Audio/infrared board (includes cable)

Spare part number	Description
486798-001	USB board (includes cable)
486799-001	Fan/heat sink assembly for use only with computer models equipped with Intel processors and graphics subsystems with discrete memory (includes replacement thermal material)
486801-001	Speaker assembly
487330-001	Broadcom 4322 802.11a/b/g/n WLAN module for use only with computer models equipped with Intel processors in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States
487330-002	Broadcom 4322 802.11a/b/g/n WLAN module for use only with computer models equipped with Intel processors in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
488316-001	Switch cover (includes LED board and cable)
488317-001	Display inverter
488590-001	Keyboard for use in the United States
488590-031	Keyboard for use in the United Kingdom
488590-041	Keyboard for use in Germany
488590-051	Keyboard for use in France
488590-061	Keyboard for use in Italy
488590-071	Keyboard for use in Spain
488590-111	Keyboard for use in Switzerland
488590-121	Keyboard for use in French Canada
488590-131	Keyboard for use in Portugal
488590-141	Keyboard for use in Turkey
488590-151	Keyboard for use in Greece
488590-161	Keyboard for use in Latin America
488590-171	Keyboard for use in Saudi Arabia

Spare part number	Description
488590-201	Keyboard for use in Brazil
488590-211	Keyboard for use in Hungary
488590-221	Keyboard for use in the Czech Republic
488590-251	Keyboard for use in Russia
488590-281	Keyboard for use in Thailand
488590-291	Keyboard for use in Japan
488590-A41	Keyboard for use in Belgium
488590-AB1	Keyboard for use in Taiwan
488590-AD1	Keyboard for use in South Korea
488590-B31	Keyboard for use in the Netherlands
488590-BB1	Keyboard for use in Israel
488590-DH1	Keyboard for use in Denmark, Norway, and Sweden
489817-001	120-GB, 5400-rpm hard drive for use only with computer models equipped with Intel processors (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
489817-002	120-GB, 5400-rpm hard drive for use only with computer models equipped with AMD processors (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
489818-001	160-GB, 5400-rpm hard drive for use only with computer models equipped with Intel processors (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
489818-002	160-GB, 5400-rpm hard drive for use only with computer models equipped with AMD processors (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
489819-001	250-GB, 5400-rpm hard drive for use only with computer models equipped with Intel processors (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
489819-002	250-GB, 5400-rpm hard drive for use only with computer models equipped with AMD processors (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
489820-001	160-GB, 7200-rpm hard drive for use only with computer models equipped with Intel processors (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
489821-001	320-GB, 5400-rpm hard drive for use only with computer models equipped with Intel processors (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)
489822-001	Bluetooth module cable
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
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

Spare part number	Description
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
491571-001	RTC battery
491572-001	Fan/heat sink assembly for use only with computer models equipped with AMD processors and graphics subsystems with UMA memory (includes replacement thermal material)
492314-001	Fan/heat sink assembly for use only with computer models equipped with Intel processors and graphics subsystems with UMA memory (includes replacement thermal material)
493001-001	Fan/heat sink assembly for use only with computer models equipped with AMD processors and graphics subsystems with discrete memory (includes replacement thermal material)
493002-001	Screw Kit
493020-001	Display Cable Kit for use with WXGA BrightView display panels
501891-001	Cable Kit **NOTE:** See Cable Kit on page 31 for more Cable Kit spare part information.

4 Removal and replacement procedures

Preliminary replacement requirements

Tools required

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

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

Service considerations

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

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

Plastic parts

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

Cables and connectors

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

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

Drive handling

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

Use nonmagnetic tools.

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

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

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

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

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

Typical electrostatic voltage levels

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

Unknown user password

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

NOTE: These steps also clear CMOS.

Before disassembling the computer, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 52).
5. Remove the RTC battery (see RTC battery on page 59).
6. Wait approximately 5 minutes.
7. Replace the RTC battery and reassemble the computer.
8. Connect AC power to the computer. Do not reinsert any batteries at this time.
9. Turn on the computer.

All passwords and all CMOS settings have been cleared.

Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 91 screws, in 8 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.

Service tag

The service tag, affixed to the bottom of the computer, provides information that may be needed when troubleshooting system problems. The service tag provides the following information:

(1) Product name: This is the product name affixed to the front of the computer.

(2) Serial number (s/n): This is an alphanumeric identifier that is unique to each product.

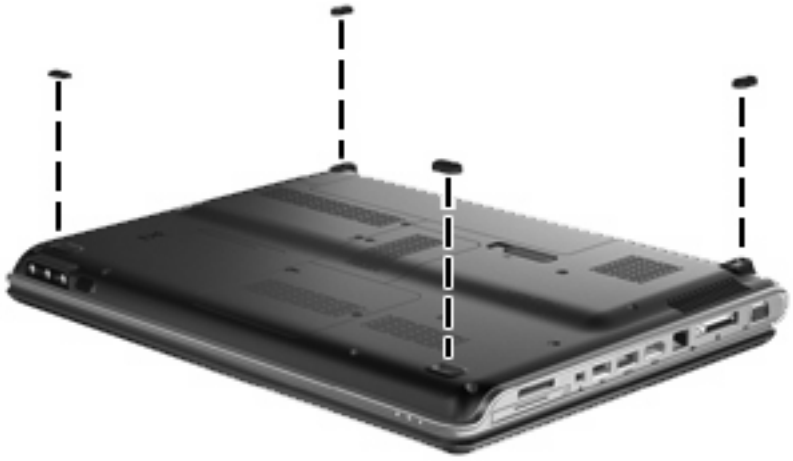
(3) Part number/Product number (p/n): This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.

(4) Model description: This is the number needed to locate documents, drivers, and support for the computer.

(5) Warranty period: Describes the duration of the warranty period for the computer.

Computer feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Rubber Feet Kit, spare part number 486794-001. There are 4 rubber feet that attach to the base enclosure in the locations illustrated below.



Battery

Description	Spare part number
12-cell, 95-Wh, 2.55-Ah Li-ion battery for use with all computer models	484172-001
6-cell, 55-Wh, 2.55-Ah Li-ion battery for use with all computer models	484171-001
6-cell, 47-Wh, 2.55-Ah Li-ion battery for use only with computer models equipped with AMD processors	484170-002
6-cell, 47-Wh, 2.55-Ah Li-ion battery for use only with computer models equipped with Intel processors	484170-001

Before disassembling the computer, follow these steps:

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

Remove the battery:

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

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

Webcam/microphone module

NOTE: This section applies only to computer models equipped with BrightView display assemblies. See Display assembly on page 76 for webcam/microphone module removal instructions for computer models equipped with AntiGlare display assemblies.

NOTE: If it has been determined that the webcam/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 webcam/microphone module. For information on replacing the display assembly and other display assembly internal components, see Display assembly on page 76.

Description	Spare part number
Webcam/microphone module for use only with computer models equipped with BrightView display assemblies (includes double-sided tape)	486791-001

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

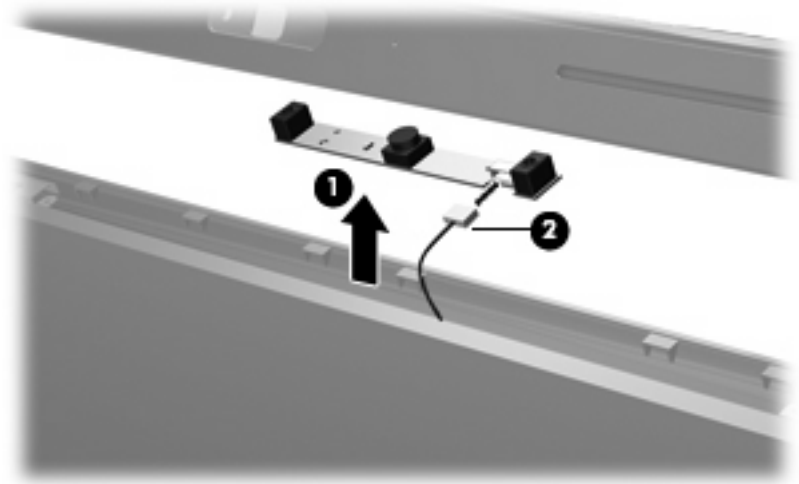
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord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

Remove the webcam/microphone module:

1. Turn the computer display-side up, with the front toward you.
2. Open the computer as far as possible.
3. Flex the inside edges of the top edge **(1)** and the left and right upper corners **(2)** of the display bezel until the bezel disengages from the display enclosure.

4. Release the display bezel top edge **(3)** from the display enclosure.

5. Release the webcam/microphone module **(1)** from the display enclosure as far as the webcam/microphone module cable allows.
6. Disconnect the webcam/microphone module cable **(2)** from the webcam/microphone module.



7. Remove the webcam/microphone module.

Reverse this procedure to install the webcam/microphone module.

Optical drive

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

Description	Spare part number
Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer with LightScribe and bronze bezel	486525-002
Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer with LightScribe and silver bezel	486525-001
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with bronze bezel	483863-002
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe with bronze bezel for use only with computer models equipped with AMD processors	483864-003
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe with bronze bezel for use only with computer models equipped with Intel processors	483864-002
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe with silver bezel	483864-001
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with silver bezel	483863-001

Before removing the optical drive, follow these steps:

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

Remove the optical drive:

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

4. Use the disc tray frame to slide the optical drive **(3)** out of the computer.

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

Reverse this procedure to reassemble and install the optical drive.

TV tuner module

NOTE: The TV tuner module spare part kits do not include a TV tuner module cable. The TV tuner module cable is included in the Cable Kit, spare part number 501891-001.

NOTE: The TV tuner external antenna cables are available using spare part numbers 482900-001 (with F-PAL jack) and 482900-002 (with PAL jack).

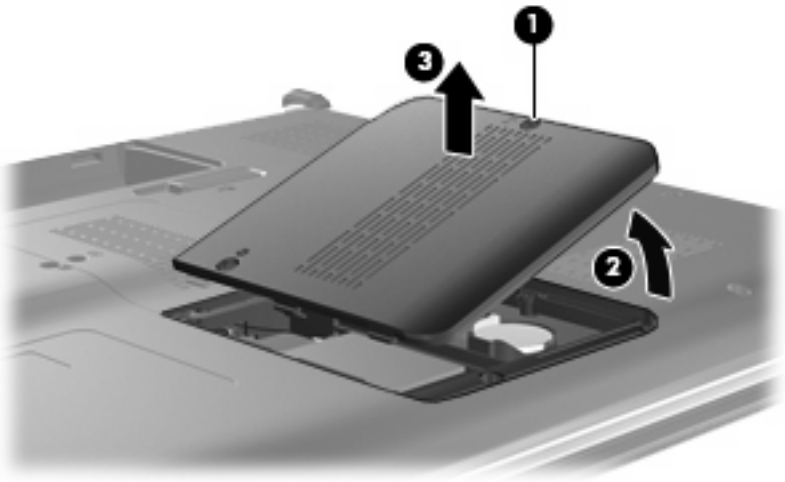
Description	Spare part number
DVB-T TV tuner module	482899-003
DVB-T/ANG TV tuner module	482899-002
NTSC/ATSC/ANG TV tuner module	482899-001

Before removing the TV tuner 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 52).

Remove the TV tuner module:

1. Position the computer with the front toward you
2. Loosen the Phillips PM2.5×6.0 captive screw **(1)** that secures the Mini Card module compartment cover to the computer.
3. Lift the right side of the Mini Card module compartment cover **(2)**, swing it to left, and remove the cover **(3)**. The Mini Card module compartment cover is included in the Plastics Kit, spare part number 486793-001.

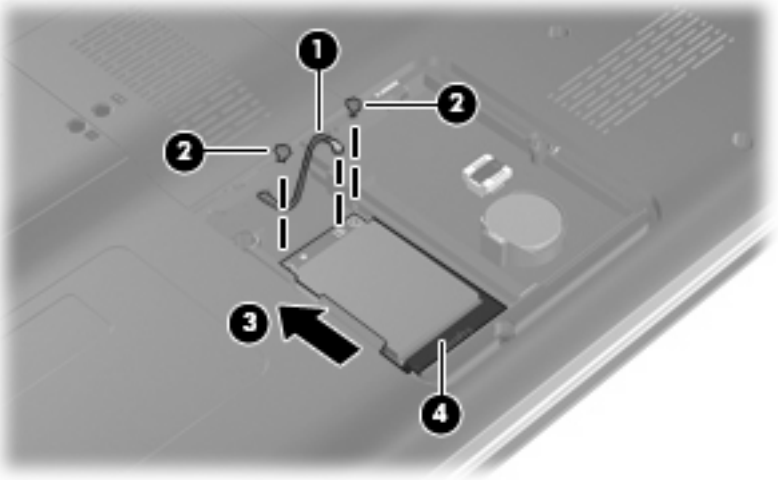


4. Disconnect the TV tuner module antenna cable **(1)** from the terminal on the TV tuner module.

5. Remove the two Phillips PM2.0×4.0 screws **(2)** that secure the TV tuner module to the computer. (The edge of the module opposite the slot rises away from the computer.)

6. Remove the TV tuner module **(3)** by pulling the module away from the slot at an angle.

NOTE: The TV tuner module is designed with a notch **(4)** to prevent incorrect insertion into the TV tuner module slot.



Reverse this procedure to install the TV tuner module.

RTC battery

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

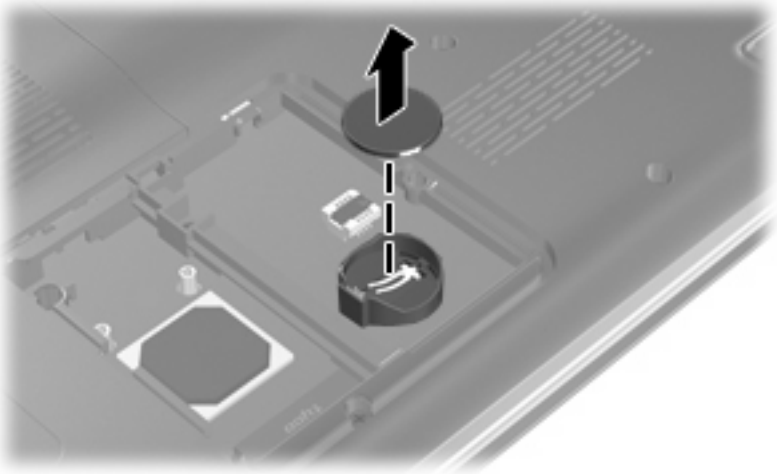
Description	Spare part number
RTC battery	491571-001

Before removing the RTC battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 52).
5. Remove the Mini Card module compartment cover (see TV tuner module on page 57).

Remove the RTC battery:

☐ Remove the RTC battery from the socket on the system board.



Reverse this procedure to install the RTC battery. Be sure that the RTC battery is installed with the “+” sign facing up.

Memory module

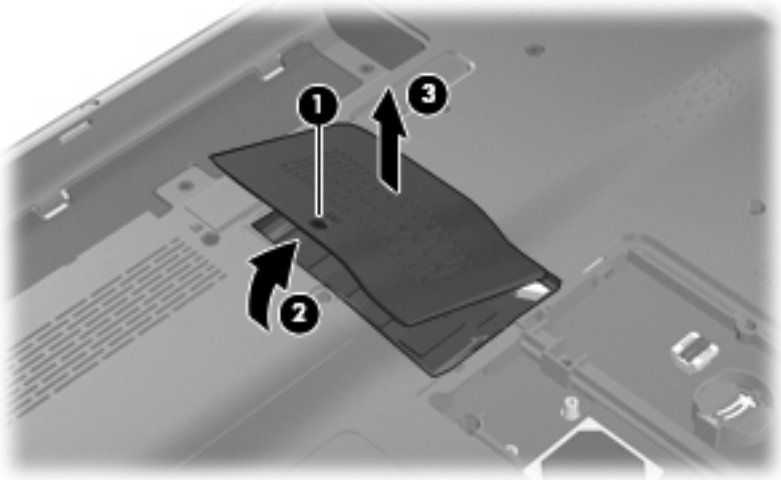
Description	Spare part number
For use only with computer models equipped with AMD processors (667-MHz, PC2-5300, 1-DIMM):	
2048-MB	484268-002
1024-MB	484267-002
For use only with computer models equipped with Intel processors (667-MHz, PC2-5300, 1-DIMM):	
2048-MB	484268-001
1024-MB	484267-001
512-MB	484266-001

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 52).

Remove the memory module:

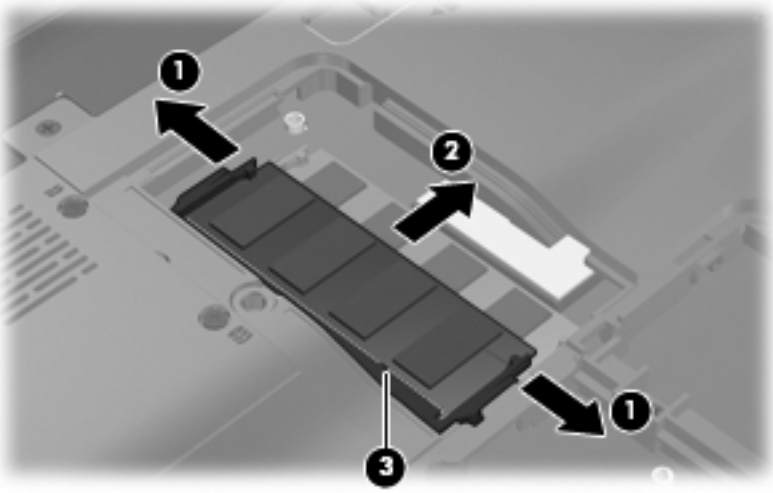
1. Position the computer with the front toward you.
2. Loosen the Phillips PM2.5×6.0 captive screw **(1)** that secures the memory module compartment cover to the computer.
3. Lift the left edge of the cover **(2)**, swing it up and to the right, and remove the cover **(3)**. The memory module compartment cover is included in the Plastics Kit, spare part number 486793-001.



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

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

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



Reverse this procedure to install a memory module.

Hard drive

NOTE: All hard drive spare part kits include left and right bracket rails, a connector cable, Mylar cover with tab, and 4 rubber isolators.

Description	Spare part number
Hard drives for use only with computer models equipped with AMD processors:	
320-GB, 5400-rpm	462355-002
250-GB, 5400-rpm	489819-002
160-GB, 5400-rpm	489818-002
120-GB, 5400-rpm	489817-002
Hard drives for use only with computer models equipped with Intel processors:	
320-GB, 5400-rpm	462355-001 and 489821-001
250-GB, 5400-rpm	489819-001
160-GB, 7200-rpm	489820-001
160-GB, 5400-rpm	489818-001
120-GB, 5400-rpm	489817-001
Hard Drive Hardware Kit (includes left and right bracket rails, connector cable, Mylar cover with tab, and 4 rubber isolators)	483862-001

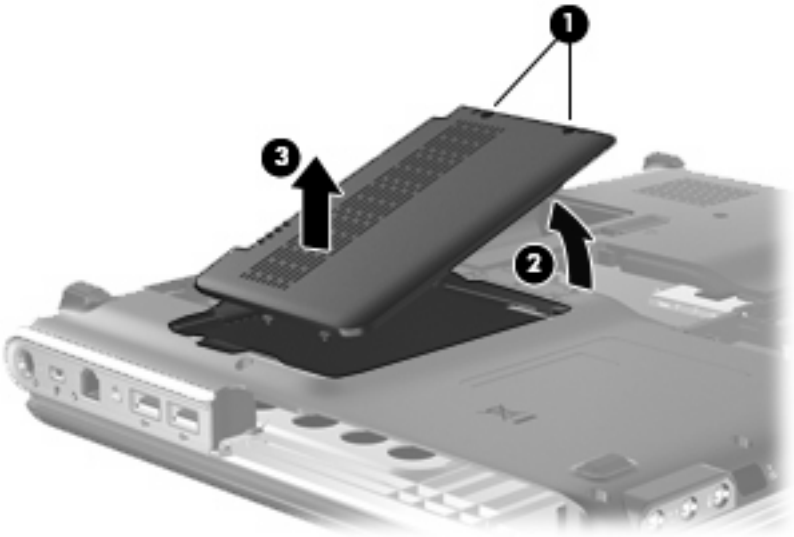
Before removing the hard drive, follow these steps:

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

Remove the hard drive:

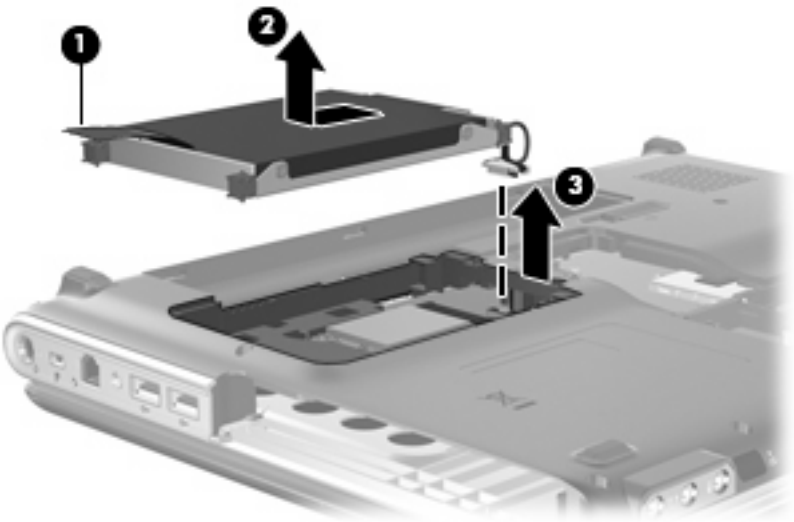
1. Position the computer with the front toward you.
2. Loosen the two Phillips PM2.5×6.0 captive screws **(1)** that secure the hard drive bay cover to the computer.

3. Lift the right side of the hard drive bay cover **(2)**, swing it up and to the left, and remove the cover **(3)**. The hard drive bay cover is included in the Plastics Kit, spare part number 486793-001.



4. Use the Mylar tab **(1)** to slide the hard drive to the left **(2)**, and then lift it to release it from the hard drive bay.

5. Disconnect the hard drive cable **(3)** from the system board.



6. Remove the hard drive from the hard drive bay.

7. If it is necessary to replace the hard drive bracket or any of the hard drive bracket components, remove the following:

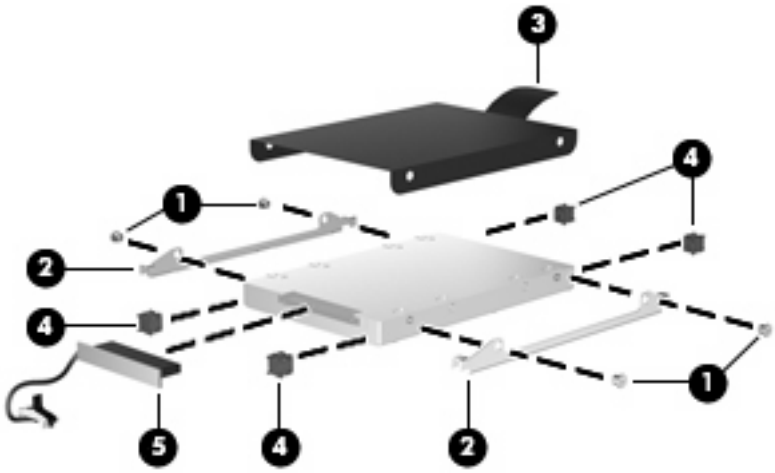
   (1) Four Phillips PM3.0×3.0 screws that secure the hard drive bracket rails and Mylar cover to the hard drive

   (2) Left and right hard drive bracket rails

   (3) Mylar cover with tab

   (4) Four rubber isolators

   (5) Hard drive connector cable



Reverse this procedure to reassemble and install the hard drive.

WLAN module

Description	Spare part number
For use only with computer models equipped with AMD processors:	
Atheros AR9280 802.11a/b/g/n WLAN module for use only with computer models equipped with AMD processors in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	482260-001
Atheros AR9280 802.11a/b/g/n WLAN module for use only with computer models equipped with AMD processors in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	482260-002
Broadcom 4321 802.11a/b/g/n WLAN module for use only with computer models equipped with AMD processors in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	453730-001
Broadcom 4321 802.11a/b/g/n WLAN module for use only with computer models equipped with AMD processors in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	453730-002

Description	Spare part number
Atheros AR2425 802.11b/g for use only with computer models equipped with AMD processors in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	459339-001
Atheros AR2425 802.11b/g for use only with computer models equipped with AMD processors in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	459339-002
For use only with computer models equipped with Intel processors:	
Intel Wi-Fi Link 5100 802.11a/b/g/n WLAN module for use only with computer models equipped with Intel processors in all countries and regions	480985-001
Intel Wi-Fi Link 5100 802.11a/b/g WLAN module for use only with computer models equipped with Intel processors in all countries and regions	482957-001
Broadcom 4322 802.11a/b/g/n WLAN module for use only with computer models equipped with Intel processors in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	487330-001
Broadcom 4322 802.11a/b/g/n WLAN module for use only with computer models equipped with Intel processors in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey,	487330-002

Description	Spare part number
Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	
Broadcom BCM4312 802.11b/g WLAN module for use only with computer models equipped with Intel processors in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	459263-001
Broadcom BCM4312 802.11b/g WLAN module for use only with computer models equipped with Intel processors in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, 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, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	459263-002

Before removing the WLAN module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 52).
5. Remove the hard drive (see Hard drive on page 62).

Remove the WLAN module:

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

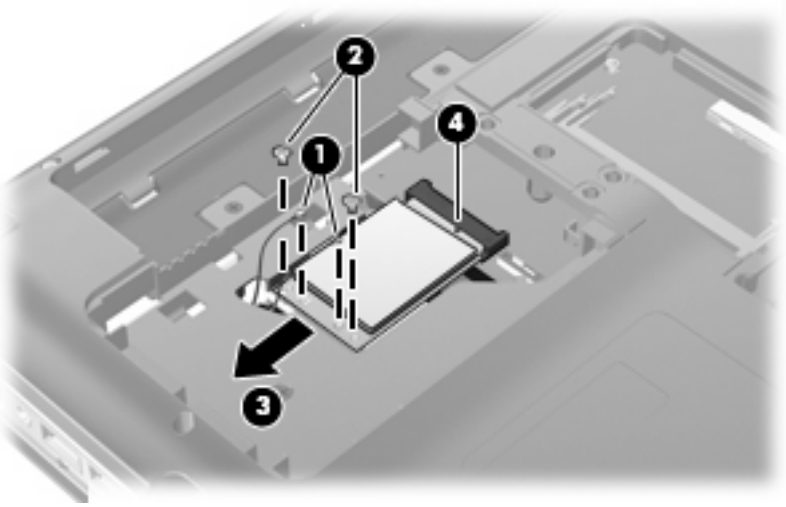
1. Disconnect the WLAN antenna cables **(1)** from the WLAN module.

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

2. Remove the two Phillips PM2.0×4.0 screws **(2)** that secure the WLAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)

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

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.

Switch cover and keyboard

Description	Spare part number
Switch cover (includes LED board and cable)	488316-001

Keyboards			
For use in country or region	**Spare part number**	**For use in country or region**	**Spare part number**
Belgium	488590-A41	The Netherlands	488590-
Brazil	488590-201	Portugal	488590-
Canada	488590-121	Russia	488590-
The Czech Republic	488590-221	Saudi Arabia	488590-
Denmark, Norway, and Sweden	488590-DH1	South Korea	488590-
France	488590-051	Spain	488590-
Germany	488590-041	Switzerland	488590-
Greece	488590-151	Taiwan	488590-
Hungary	488590-211	Thailand	488590-
Israel	488590-BB1	Turkey	488590-
Italy	488590-061	The United Kingdom	488590-
Japan	488590-291	The United States	488590-
Latin America	488590-161		

Before removing the switch cover and 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 52).

Remove the switch cover and keyboard:

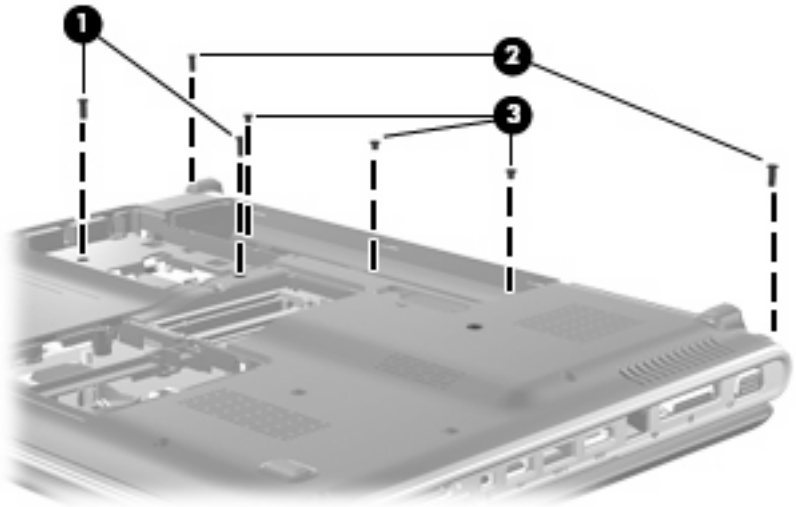
1. Position the computer with the front toward you.

2. Remove the following screws:

   (1) Two Phillips PM2.5×7.0 screws that secure the keyboard to the computer

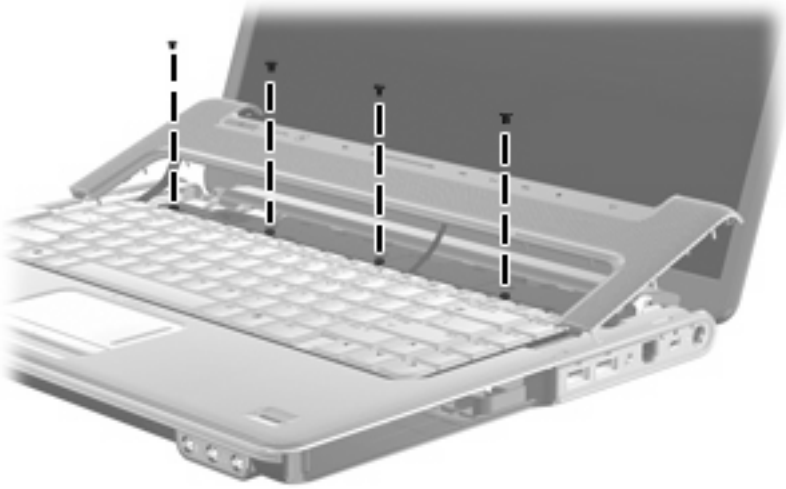
   (2) Two Phillips PM2.5×7.0 screws that secure the switch cover to the computer

   (3) Three Phillips PM2.0×4.0 screws that secure the switch cover to the computer



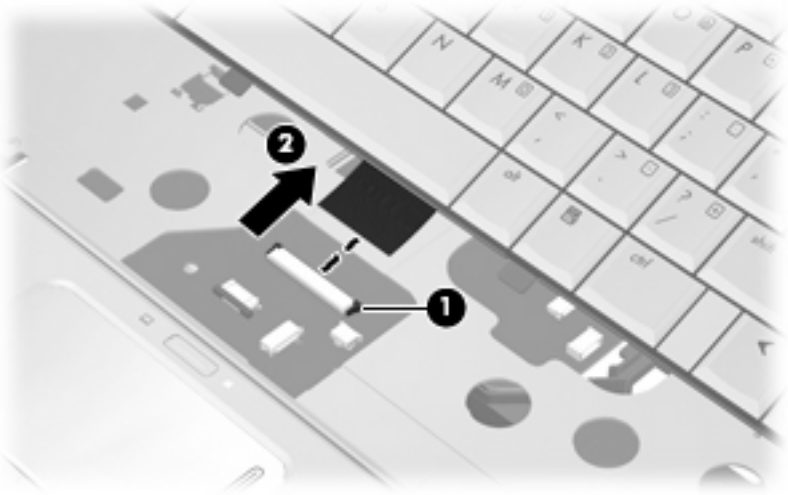
3. Turn the computer display-side up, with the front toward you.
4. Open the computer as far as possible.
5. Lift the rear edge of the switch cover **(1)** until it detaches from the computer.
6. Slide the switch cover **(2)** back until it rests on the display.

7. Remove the four Phillips PM2.0×4.0 screws that secure the keyboard to the computer.

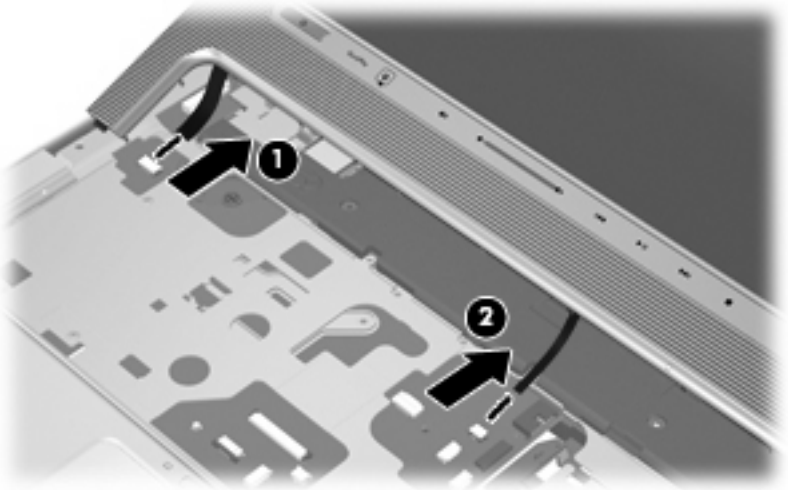


8. Lift the rear edge of the keyboard **(1)** until it rests at an angle.
9. Slide the keyboard **(2)** back until the keyboard connector on the system board is accessible.

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



11. Remove the keyboard.
12. Disconnect the power button board cable **(1)** from the low insertion force (LIF) connector on the system board.
13. Disconnect the LED board cable **(2)** from the LIF connector on the system board.



14. Remove the switch cover.

Reverse this procedure to install the switch cover and keyboard.

Power button board

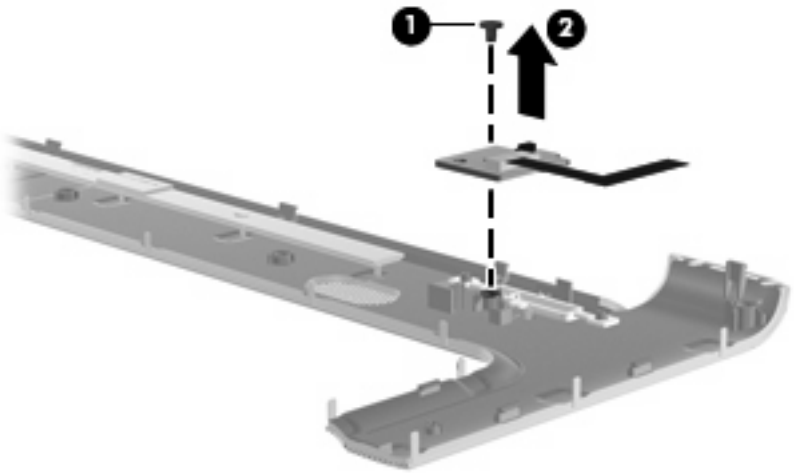
Description	Spare part number
Power button board (includes cable)	486796-001

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 52).
5. Remove the switch cover and keyboard (see Switch cover and keyboard on page 69).

Remove the power button board:

1. Turn the switch cover upside down with the front toward you.
2. Remove the Phillips PM2.0×4.0 screw **(1)** that secures the power button board to the switch cover.
3. Remove the power button board **(2)** and cable.



Reverse this procedure to install the power button board.

Speaker assembly

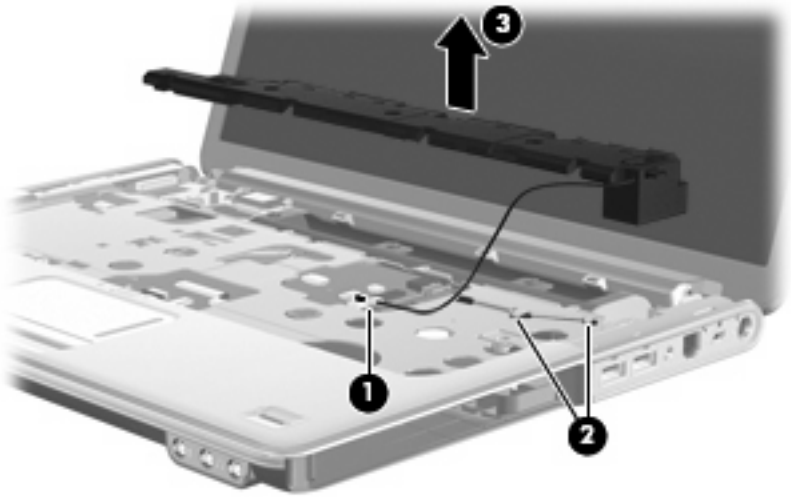
Description	Spare part number
Speaker assembly	486801-001

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 52).
5. Remove the switch cover and keyboard (see Switch cover and keyboard on page 69).

Remove the speaker assembly:

1. Disconnect the speaker assembly cable **(1)** from the system board.
2. Remove the speaker assembly cable from the clips **(2)** in the top cover.
3. Remove the speaker assembly **(3)**.



Reverse this procedure to install the speaker assembly.

Bluetooth module

NOTE: The Bluetooth module spare part kits do not include a Bluetooth module cable. The Bluetooth module cable is available using spare part number 489822-001.

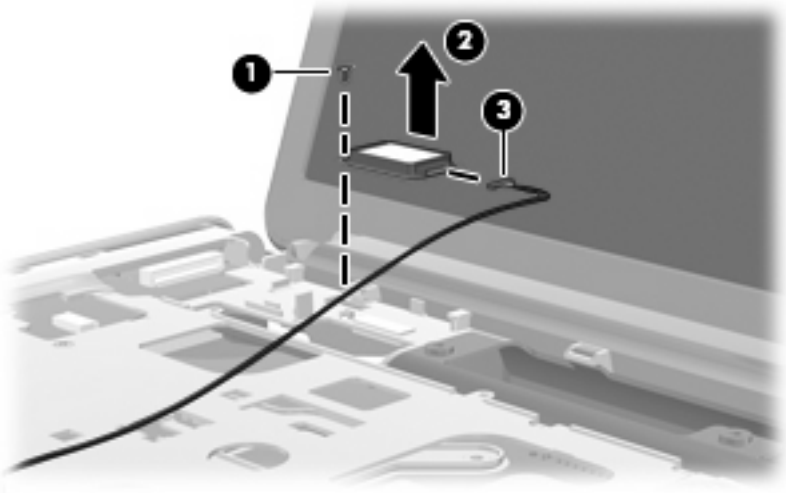
Description	Spare part number
For use only with computer models equipped with AMD processors	412766-002
For use only with computer models equipped with Intel processors	483113-001

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 52).
5. Remove the switch cover and keyboard (see Switch cover and keyboard on page 69).
6. Remove the speaker assembly (see Speaker assembly on page 74).

Remove the Bluetooth module:

1. Remove the Phillips PM2.0×4.0 screw **(1)** that secures the Bluetooth module to the top cover.
2. Release the Bluetooth module **(2)** as far from the top cover as the Bluetooth module cable allows.
3. Disconnect the Bluetooth module cable **(3)** from the Bluetooth module.



4. Remove the Bluetooth module.

Reverse this procedure to install the Bluetooth module.

Display assembly

NOTE: All display assemblies include a webcam, 2 microphones, and 2 wireless antenna transceivers and cables.

Description	Spare part number
15.4-inch WSXGA+ AntiGlare display assembly	484372-001
15.4-inch WSXGA+ BrightView display assembly	484368-001
15.4-inch WXGA AntiGlare display assembly	484371-001
15.4-inch WXGA Brightview display assembly	484367-001

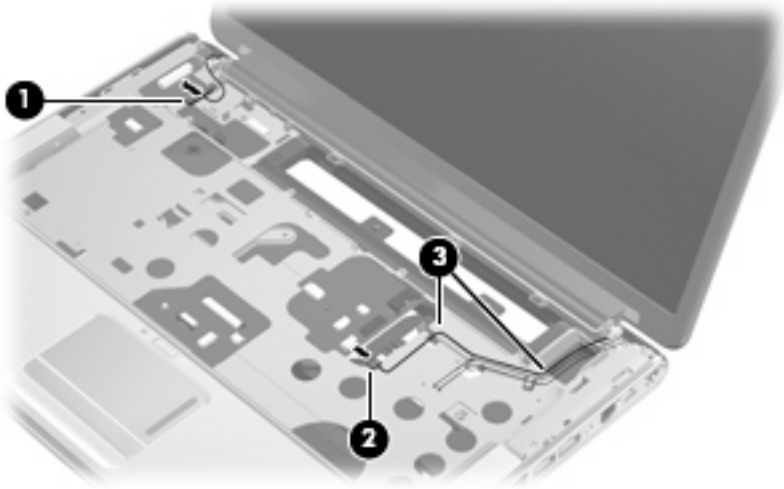
Before removing the display assembly, follow these steps:

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 52).
5. Disconnect the wireless antenna cables from the WLAN module (see WLAN module on page 65).
6. Remove the switch cover and keyboard (see Switch cover and keyboard on page 69).
7. Remove the speaker assembly (see Speaker assembly on page 74).

Remove the display assembly:

1. Disconnect the display panel cable **(1)** and the webcam/microphone cable **(2)** from the system board.

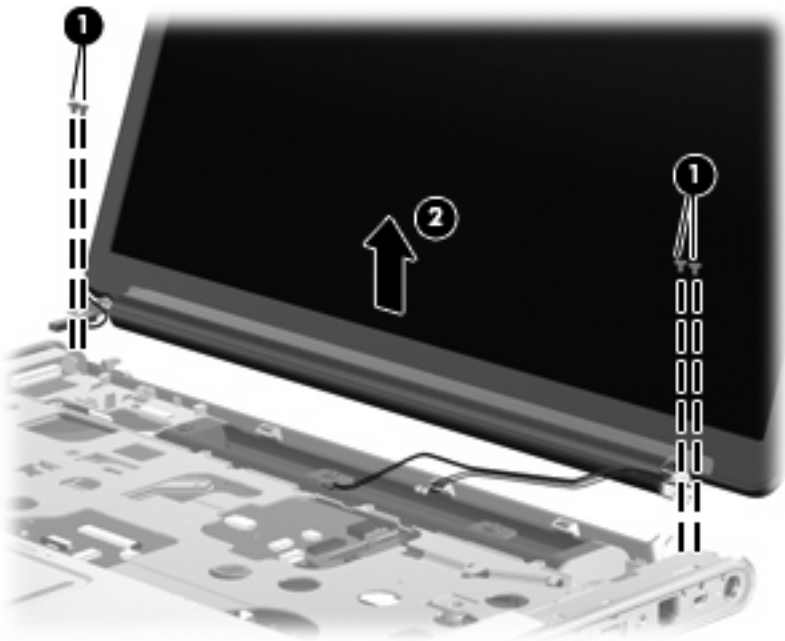
2. Remove the WLAN antenna cables from the clips **(3)** built into the top cover.



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

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

4. Remove the display assembly **(2)**.



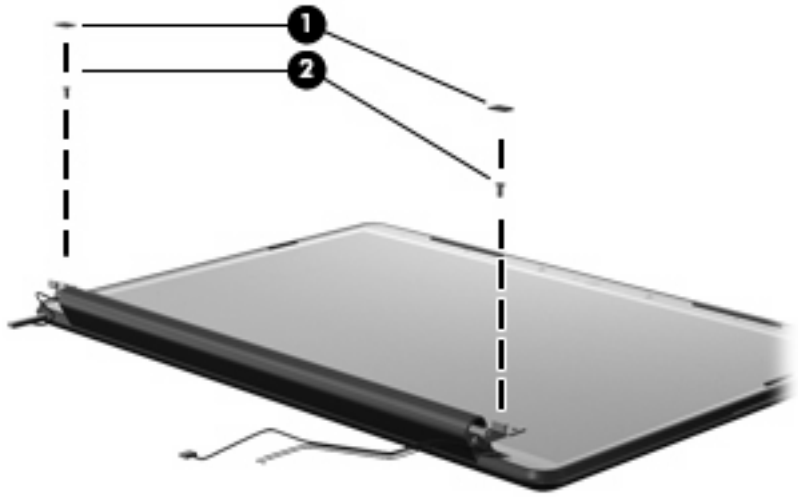
NOTE: Steps 5 through 22 provide display assembly internal component removal information for computer models equipped with AntiGlare display assemblies. See steps 23 through 32 for display assembly internal component removal information for computer models equipped with BrightView display assemblies.

NOTE: See Webcam/microphone module on page 53 for webcam/microphone module replacement instructions for computer models equipped with BrightView display assemblies.

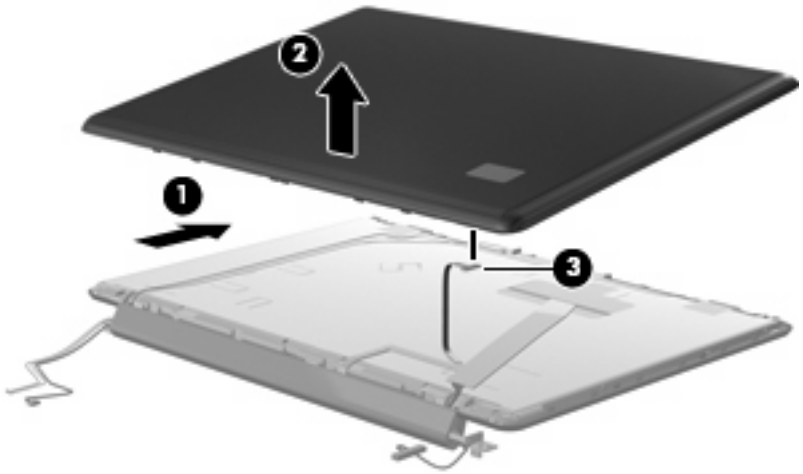
5. If it is necessary to replace the display enclosure or any of the display assembly internal components, remove the following screw covers and screws:

   (1) Two rubber screw covers on the display bezel bottom edge. The display rubber screw covers are included in the Display Rubber Kit, spare part number 486537-001.

   (2) Two Phillips PM2.5×7.0 screws.

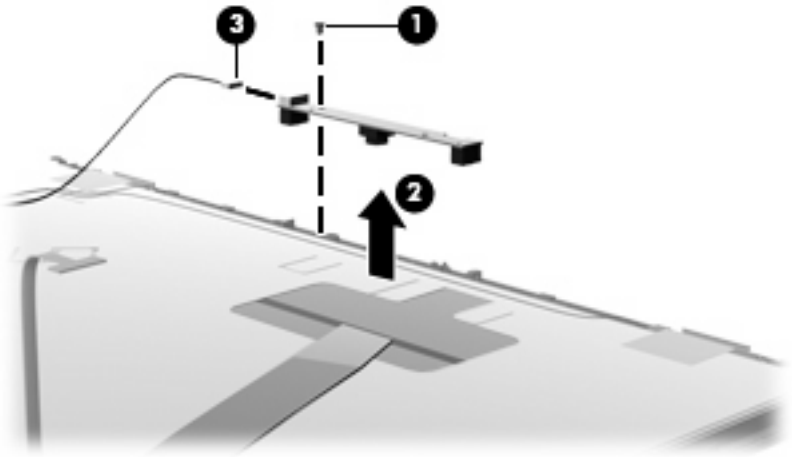


6. Turn the display assembly upside down, with the bottom toward you.
7. Release the display enclosure **(1)** by sliding the enclosure toward the top of the display assembly.
8. Lift the display enclosure **(2)** as far as the display logo cable allows.
9. Disconnect the display logo cable **(3)** from the display panel cable.

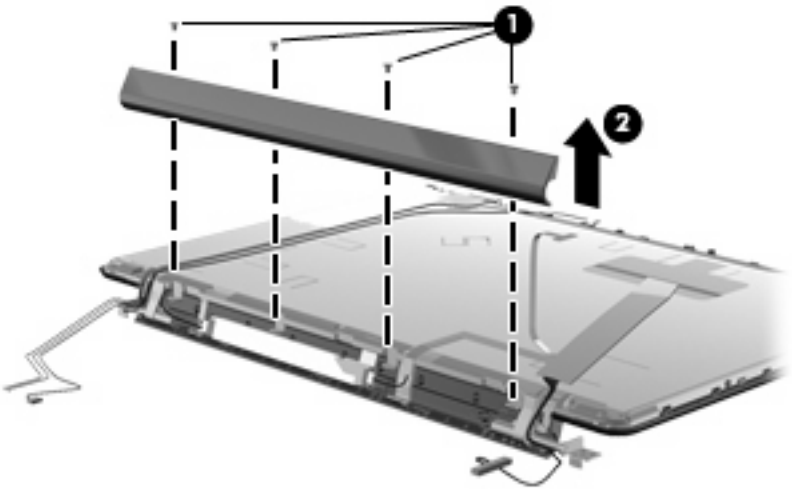


10. Remove the display enclosure. The display enclosure is available using spare part number 485345-001, and includes the display logo LED board and the wireless antenna transceivers and cables.
11. If it is necessary to replace the webcam/microphone module, remove the Phillips PM2.0×4.0 screw **(1)** that secures the module to the display bezel.

12. Release the webcam/microphone module **(2)** as far as the webcam/microphone module cable allows.
13. Disconnect the webcam/microphone module cable **(3)** from the webcam/microphone module.

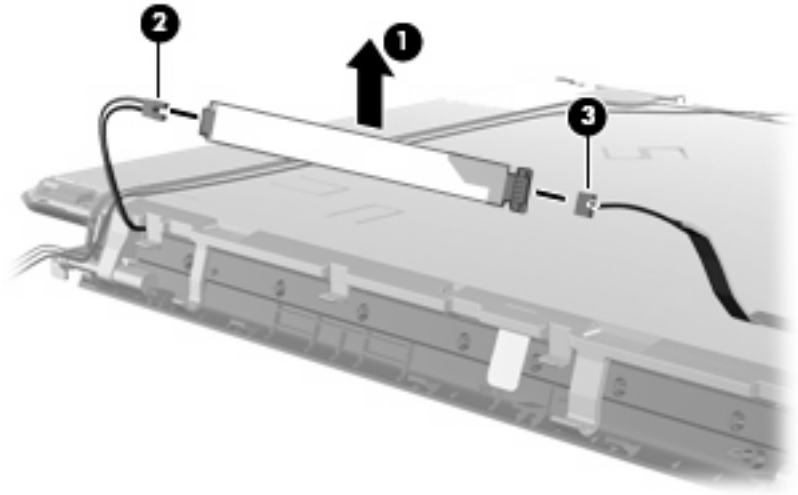


14. Remove the webcam/microphone module. The webcam/microphone module is available using spare part number 485345-001.
15. If it is necessary to replace the display inverter, remove the four Phillips PM2.5×4.0 screws **(1)** that secure the display inverter cover to the display bezel.
16. Remove the display inverter cover **(2)** by lifting it straight up. The display inverter cover is available using spare part number 486792-001.



17. Release the display inverter **(1)** as far from the display bezel as far as the display panel cable and backlight cable allow.

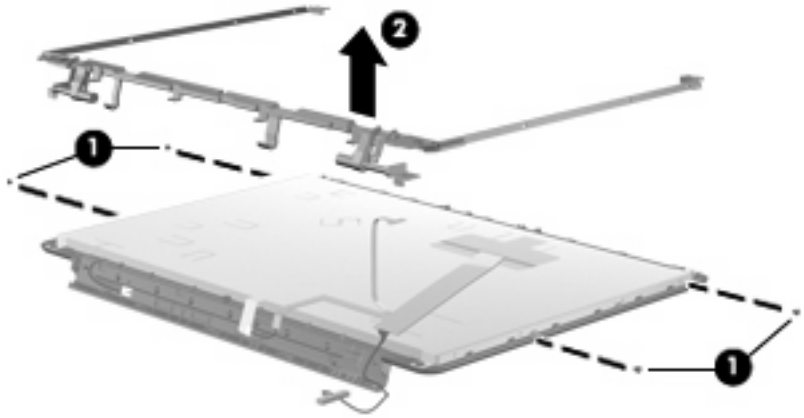
18. Disconnect the display panel cable **(2)** and backlight cable **(3)** from the display inverter.



19. Remove the display inverter. The display inverter is available using spare part number 488317-001.

20. If it is necessary to replace the display hinges, remove the four Phillips PM2.5×4.0 screws **(1)** that secure the display hinges to the display panel.

21. Remove the display hinge **(2)** by lifting it straight up. The display hinge is available using spare part number 485340-001.



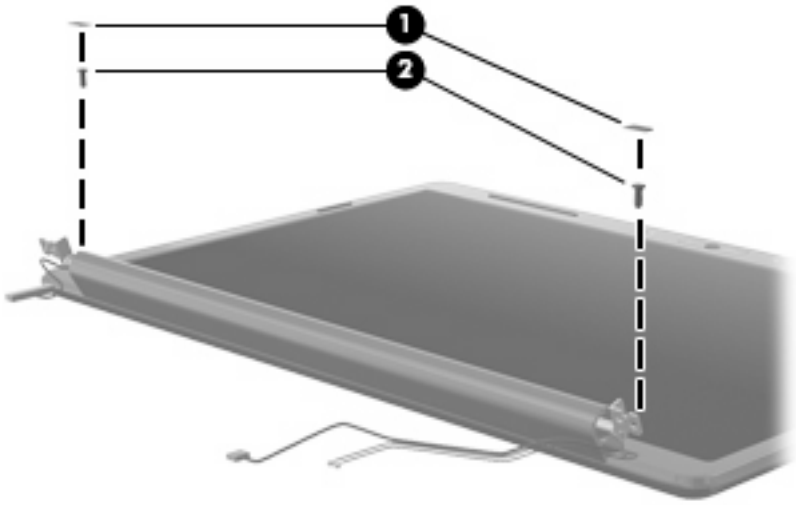
NOTE: Steps 23 through 32 provide display assembly internal component removal information for computer models equipped with BrightView display assemblies. See steps 5 through 22 for display assembly internal component removal information for computer models equipped with AntiGlare display assemblies.

NOTE: See Webcam/microphone module on page 53 for webcam/microphone module replacement instructions for computer models equipped with BrightView display assemblies.

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

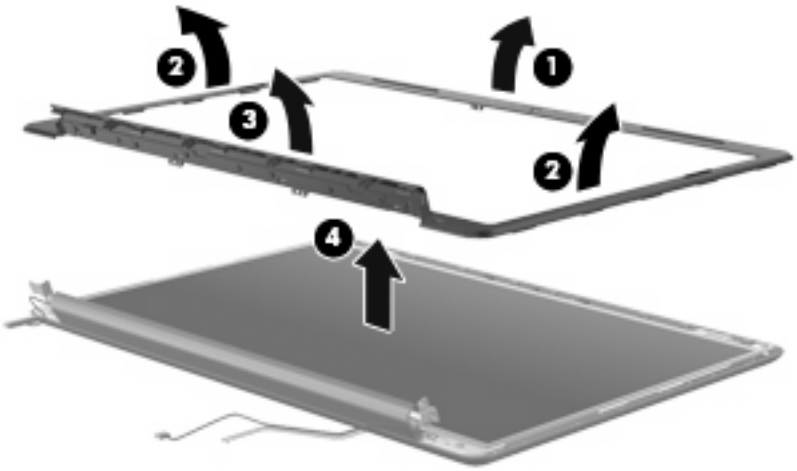
    (1) Two rubber screw covers on the display bezel bottom edge. The display rubber screw covers are included in the Display Rubber Kit, spare part number 480442-001.

    (2) Two Phillips PM2.5×7.0 screws.



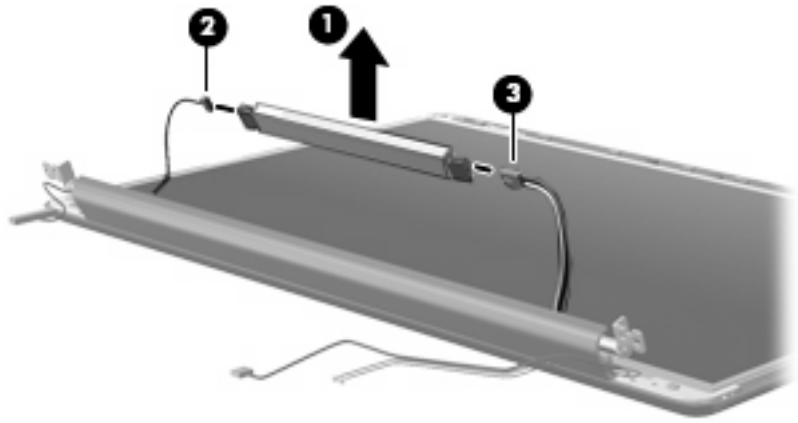
23. Flex the inside edges of the top edge **(1)**, the left and right sides **(2)**, and the bottom edge of the display bezel **(3)** until the bezel disengages from the display enclosure.

24. Remove the display bezel **(4)**. The display bezel is available using the spare part number 486532-001.



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

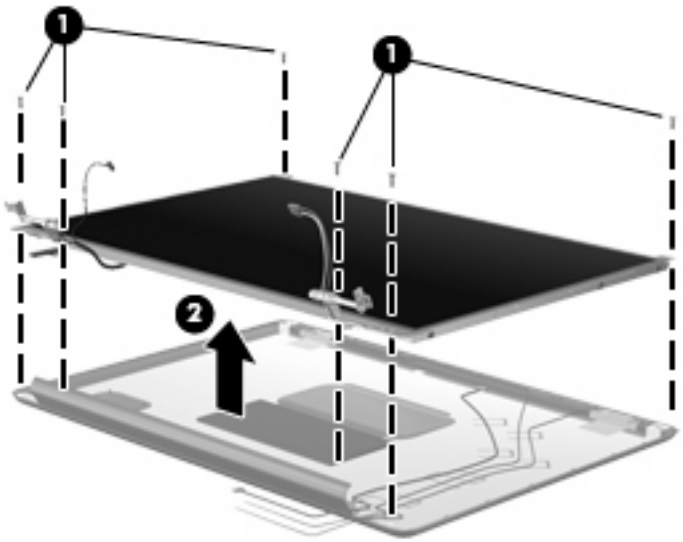
26. Disconnect the display panel cable **(2)** and the backlight cable **(3)** from the display inverter.



27. Remove the display inverter. The display inverter is available using spare part number 488317-001.

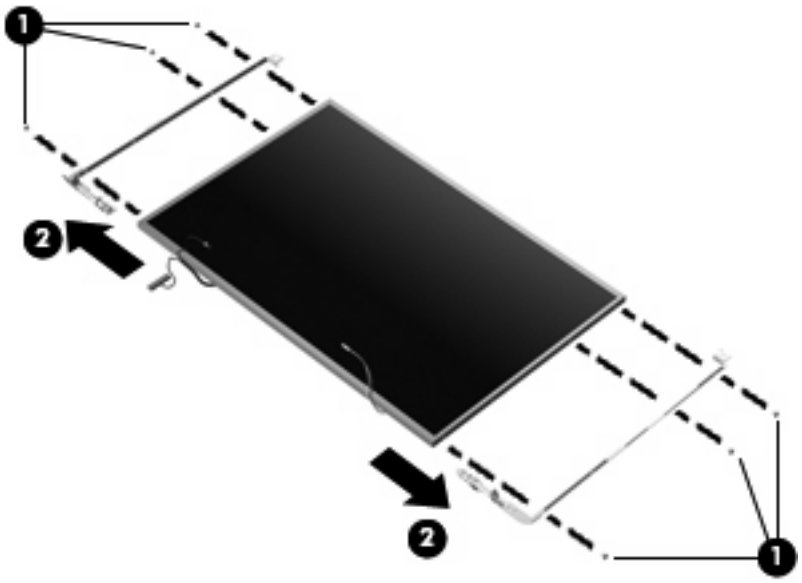
28. If it is necessary to replace the display panel, remove the six Phillips PM2.5×4.0 screws **(1)** that secure the display panel to the display enclosure.

29. Remove the display panel **(2)**. Display panels are available using spare part numbers 484363-001 (WSXGA+ BrightView display panel) and 484364-001 (WXGA BrightView display panel).



30. If it is necessary to replace the display hinges, remove the six Phillips PM2.0×4.0 screws **(1)** that secure each display hinge to the display panel.

31. Remove the display hinges **(2)**. The display hinges are available in the Display Hinge Kit, spare part 486534-001. The display hinge screws are available in the Display Hinge Kit Screw Kit, spare part number 485344-001.



Reverse this procedure to reassemble and install the display assembly.

Top cover

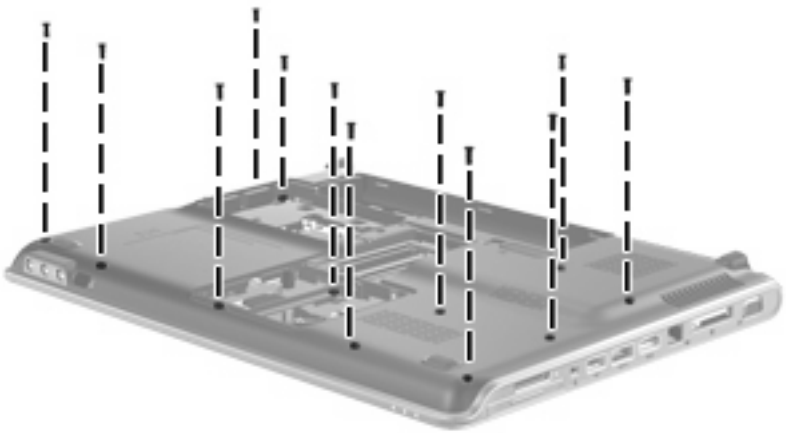
Description	Spare part number
For use only with computer models equipped with a fingerprint reader	486527-001
For use only with computer models not equipped with a fingerprint reader	486526-001

Before removing the top cover, follow these steps:

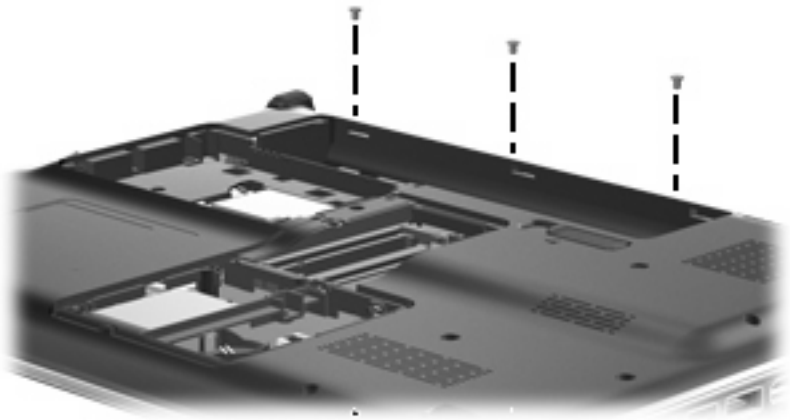
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 52).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 62)
   b. Optical drive (see Optical drive on page 55)
   c. Switch cover and keyboard (see Switch cover and keyboard on page 69)
   d. Speaker assembly (see Speaker assembly on page 74)
   e. Display assembly (see Display assembly on page 76)

Remove the top cover:

1. Turn the computer upside down, with the front toward you.
2. Remove the 12 Phillips PM2.5×7.0 screws that secure the top cover to the computer.



3. Remove the three Phillips PM2.5×4.0 screws secure the top cover to the computer.



4. Turn the computer right-side up, with the front toward you.
5. Disconnect the following cables from the system board:

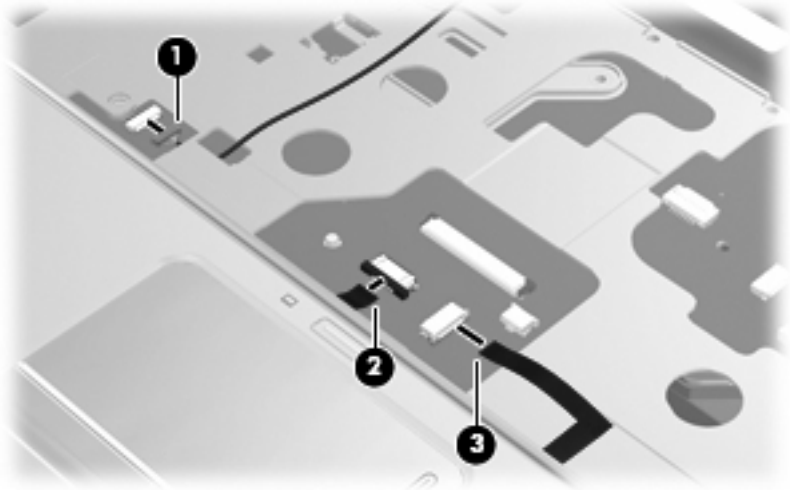
   (1) Bluetooth module cable

   (2) TouchPad cable

NOTE: On computer models equipped with a standard display assembly, this cable connects to a ZIF connector on the system board. On computer models equipped with a Flush Glass display assembly, this cable connects to a LIF connector on the system board.

   (3) Fingerprint reader board cable

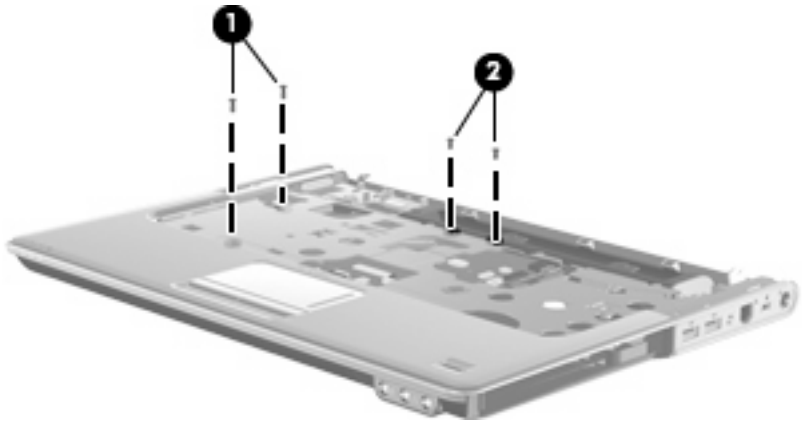
NOTE: This cable connects to a LIF connector on the system board.



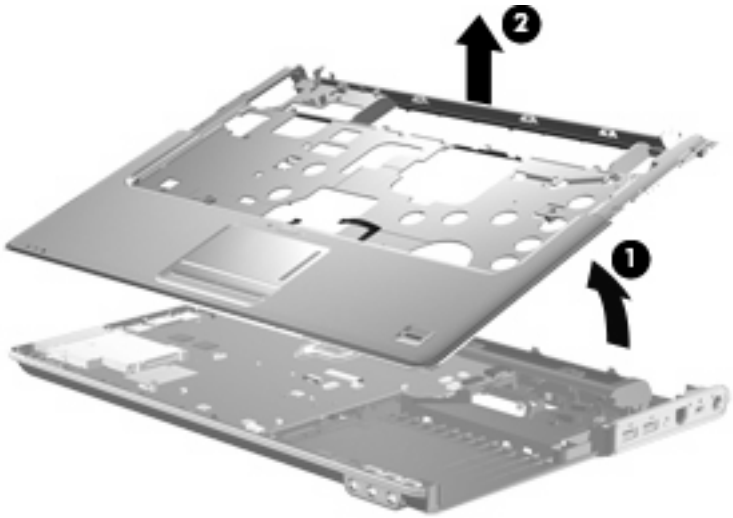
NOTE: Step 6 applies only to computer models equipped with standard display assemblies.

6. Remove the two Phillips PM2.5×7.0 screws **(1)** that secure the top cover to the computer.

7. Remove the two Phillips PM2.5×6.0 screws **(2)** that secure the top cover to the computer.



8. Lift the rear edge of the top cover **(1)** until it rests at an angle.
9. Remove the top cover **(2)** by lifting it straight up.



Reverse this procedure to install the top cover.

Modem module

NOTE: The modem module spare part kits do not include a modem module cable. The modem module cable is included in the Cable Kit, spare part number 501891-001. See Cable Kit on page 31 for more Cable Kit spare part number information.

Description	Spare part number
Modem module for use in all countries and regions except Australia and New Zealand	461749-001
For use only in Australia and New Zealand	461749-011

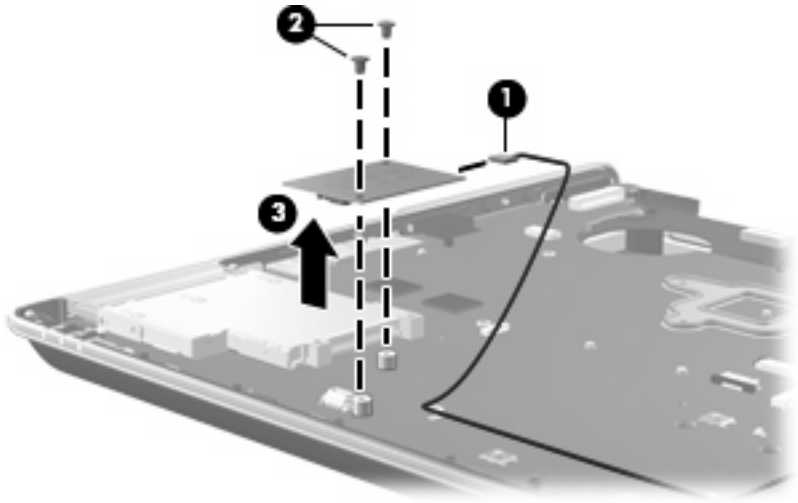
Before removing the modem module, follow these steps:

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 52).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 62).
   b. Optical drive (see Optical drive on page 55).
   c. Switch cover and keyboard (see Switch cover and keyboard on page 69).
   d. Speaker assembly (see Speaker assembly on page 74).
   e. Display assembly (see Display assembly on page 76).
   f. Top cover (see Top cover on page 84).

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 the modem module **(3)** straight up to disconnect it from the system board.



Reverse this procedure to install the modem module.

Audio/infrared board

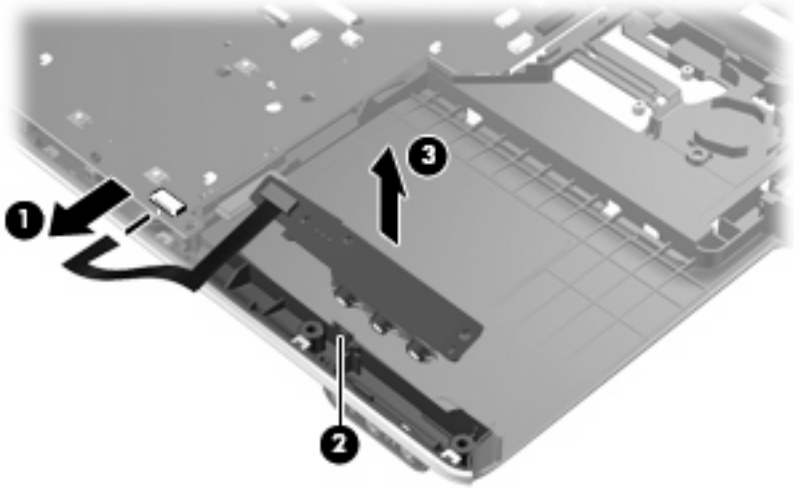
Description	Spare part number
Audio/infrared board (includes cable)	486797-001

Before removing the audio/infrared 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 52).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 62).
   b. Optical drive (see Optical drive on page 55).
   c. Switch cover and keyboard (see Switch cover and keyboard on page 69).
   d. Speaker assembly (see Speaker assembly on page 74).
   e. Display assembly (see Display assembly on page 76).
   f. Top cover (see Top cover on page 84).

Remove the audio/infrared board:

1. Disconnect the audio/infrared board cable **(1)** from the LIF connector on the system board.
2. Release the clip **(2)** built into the base enclosure that secures the audio/infrared board.
3. Lift the audio/infrared board **(3)** straight up to remove it from the base enclosure.



Reverse this procedure to install the audio/infrared board.

USB board

Description	Spare part number
USB board (includes cable)	486798-001

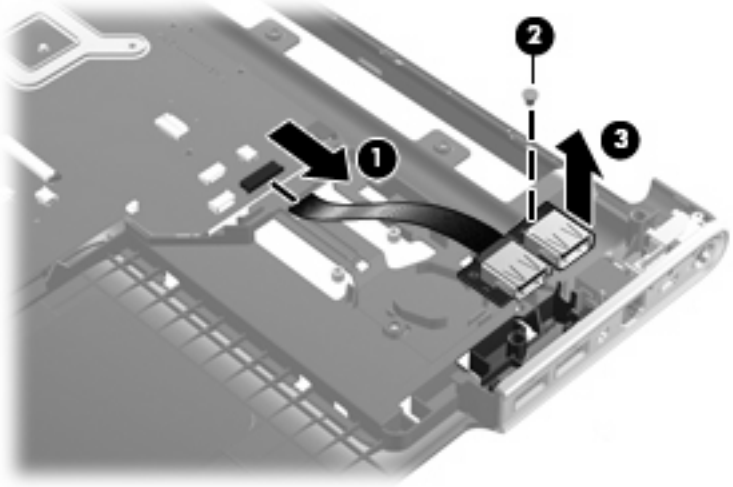
Before removing the USB board, follow these steps:

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 52).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 62).
   b. Optical drive (see Optical drive on page 55).
   c. Switch cover and keyboard (see Switch cover and keyboard on page 69).
   d. Speaker assembly (see Speaker assembly on page 74).
   e. Display assembly (see Display assembly on page 76).
   f. Top cover (see Top cover on page 84).

Remove the USB board:

1. Disconnect the USB board cable **(1)** from the LIF connector on the system board.
2. Remove the Phillips PM2.5×7.0 screw **(2)** that secures the USB board to the base enclosure.

3. Remove the USB board **(3)** from the base enclosure.



Reverse this procedure to install the USB board.

System board

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

Description	Spare part number
For use only with computer models equipped with AMD processors:	
With RX781 Northbridge and ATI-M82-S discrete graphics subsystem memory	482324-001
With RS780 Northbridge and ATI-M UMA graphics subsystem memory	482325-001
For use only with computer models equipped with Intel processors:	
With PM45 Northbridge and nVidia NB9P-GS discrete graphics subsystem memory	482870-001
With PM45 Northbridge and nVidia NB9M-GE discrete graphics subsystem memory	482867-001
With GM45 Northbridge and UMA graphics subsystem memory	482869-001
With ICH9M Northbridge and UMA graphics subsystem memory	482868-001

Before removing the system board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 52).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 62)
   b. Optical drive (see Optical drive on page 55)
   c. Switch cover (see Switch cover and keyboard on page 69)
   d. Speaker assembly (see Speaker assembly on page 74)
   e. Display assembly (see Display assembly on page 76)
   f. Top cover (see Top cover on page 84)

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:

- TV tuner module (see TV tuner module on page 57)
- RTC battery (see RTC battery on page 59)
- Memory modules (see Memory module on page 60)
- WLAN module (see Bluetooth module on page 75)
- Modem module (see Modem module on page 87)

- Fan/heat sink assembly (see System board on page 92)
- Processor (see System board on page 92)

Remove the system board:

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

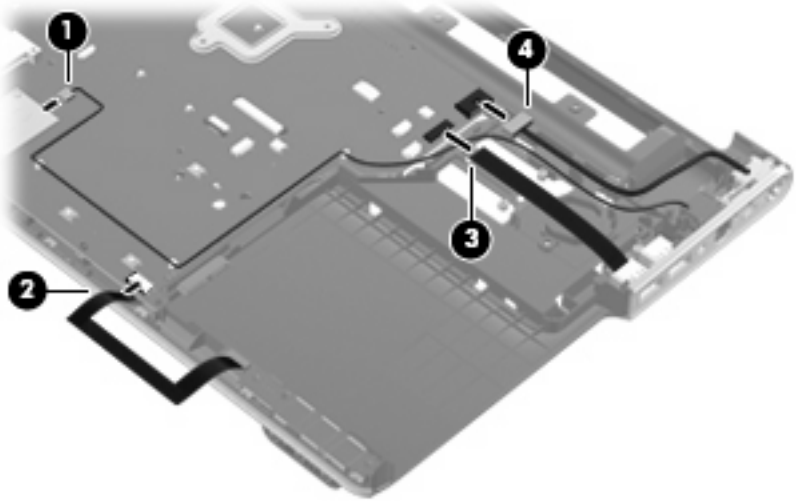
   (2) Audio/infrared board cable

   NOTE: The audio/infrared board cable connects to a LIF connector on the system board.

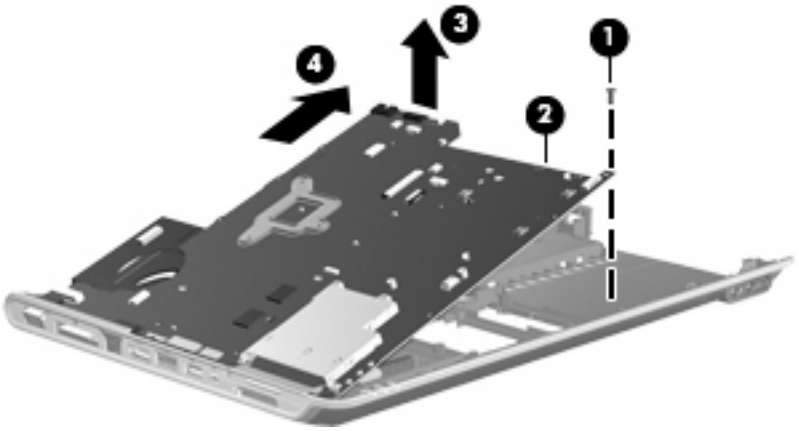
   (3) USB board cable

   NOTE: The USB board cable connects to a LIF connector on the system board.

   (4) Power connector cable



3. Remove the Phillips PM2.5×7.0 screw **(1)** that secures the system board to the base enclosure.
4. Use the optical drive connector **(2)** to lift the right side of the system board **(3)** until it rests at an angle.
5. Remove the system board **(4)** by sliding it up and to the right at an angle.



Reverse the preceding procedure to install the system board.

TV tuner module cable

NOTE: The TV tuner module cable is available in the Cable Kit, spare part number 501891-001.

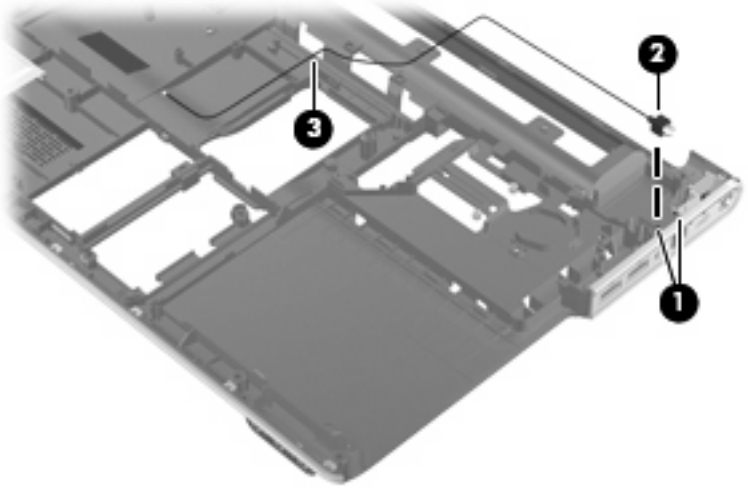
Before removing the TV tuner module cable, follow these steps:

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 52).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 62).
   b. Optical drive (see Optical drive on page 55).
   c. Switch cover and keyboard (see Switch cover and keyboard on page 69).
   d. Speaker assembly (see Speaker assembly on page 74).
   e. Display assembly (see Display assembly on page 76).
   f. Top cover (see Top cover on page 84).
   g. USB board (see USB board on page 90).
   h. System board (see System board on page 92).

Remove the TV tuner module cable:

1. Release the clips **(1)** built into the base enclosure that secure the TV tuner antenna connector.
2. Remove the TV tuner antenna connector **(2)** from the clip built into the base enclosure.

3. Remove the TV tuner module cable **(3)** from the clips and routing channel built into the base enclosure.



Reverse this procedure to install the TV tuner module cable.

Modem module cable

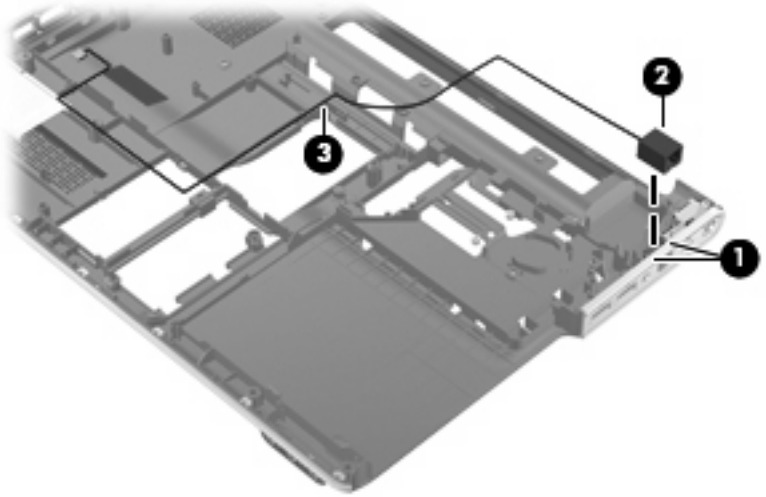
NOTE: The modem module cable is available in the Cable Kit, spare part number 501891-001. The modem module cable includes the RJ-11 jack.

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 52).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 62).
   b. Optical drive (see Optical drive on page 55).
   c. Switch cover and keyboard (see Switch cover and keyboard on page 69).
   d. Speaker assembly (see Speaker assembly on page 74).
   e. Display assembly (see Display assembly on page 76).
   f. Top cover (see Top cover on page 84).
   g. USB board (see USB board on page 90).
   h. System board (see System board on page 92).

Remove the modem module cable:

1. Release the clips **(1)** built into the base enclosure that secure the RJ-11 jack.
2. Remove the RJ-11 jack **(2)** from the clip built into the base enclosure.
3. Remove the modem module cable **(3)** from the clips and routing channel built into the base enclosure.



Reverse this procedure to install the modem module cable.

Power connector cable

NOTE: The power connector cable is available in the Cable Kit, spare part number 501891-001.

Before removing the power connector cable, follow these steps:

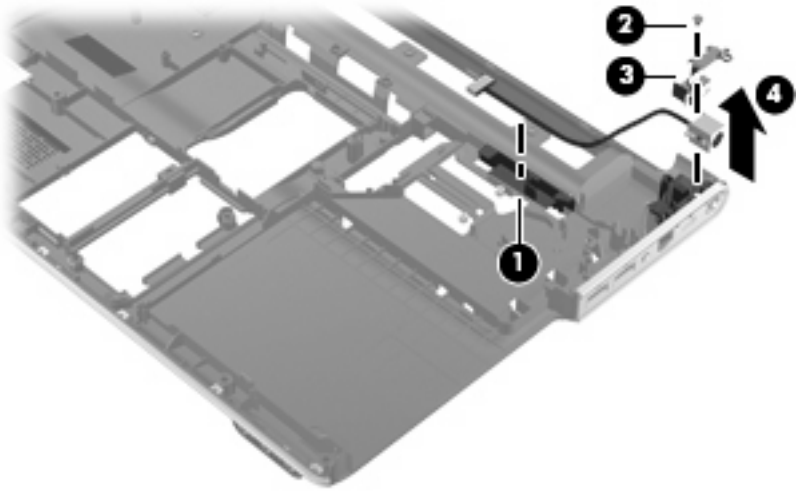
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see Battery on page 52).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 62).
   b. Optical drive (see Optical drive on page 55).
   c. Switch cover and keyboard (see Switch cover and keyboard on page 69).
   d. Speaker assembly (see Speaker assembly on page 74).
   e. Display assembly (see Display assembly on page 76).
   f. Top cover (see Top cover on page 84).

g. USB board (see USB board on page 90).

h. System board (see System board on page 92).

Remove the power connector cable:

1. Remove the power connector cable **(1)** from the clips and routing channel built into the base enclosure.
2. Remove the Phillips PM2.5×7.0 screw **(2)** that secures the power connector and bracket to the base enclosure.
3. Remove the power connector bracket **(3)**.
4. Remove the power connector cable **(4)**.



Reverse this procedure to install the power connector cable.

Fan/heat sink assembly

NOTE: All fan/heat sink assembly spare kits include replacement thermal material.

Description	Spare part number
For use only with computer models equipped with AMD processors and graphics subsystems with discrete memory	493001-001
For use only with computer models equipped with AMD processors and graphics subsystems with UMA memory	491572-001
For use only with computer models equipped with Intel processors and graphics subsystems with discrete memory	486799-001
For use only with computer models equipped with Intel processors and graphics subsystems with UMA memory	492314-001

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

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

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 52).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 62).
   b. Optical drive (see Optical drive on page 55).
   c. Switch cover and keyboard (see Switch cover and keyboard on page 69).
   d. Speaker assembly (see Speaker assembly on page 74).
   e. Display assembly (see Display assembly on page 76).
   f. Top cover (see Top cover on page 84).
   g. USB board (see USB board on page 90).
   h. System board (see System board on page 92).

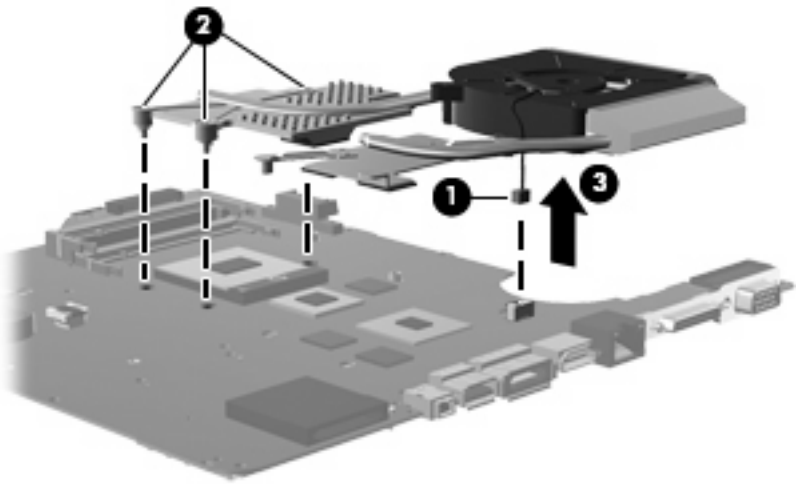
Remove the fan/heat assembly:

1. Turn the system board upside down, with the expansion port 3 and external monitor port toward you.

NOTE: Steps 2 through 4 apply only to computer models equipped with graphics subsystems with discrete memory.

2. Disconnect the fan cable **(1)** from the system board.
3. Loosen the three Phillips PM2.0×10.0 captive screws **(2)** that secure the fan/heat sink assembly to the system board.
4. Remove the fan/heat sink assembly **(3)**.

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.

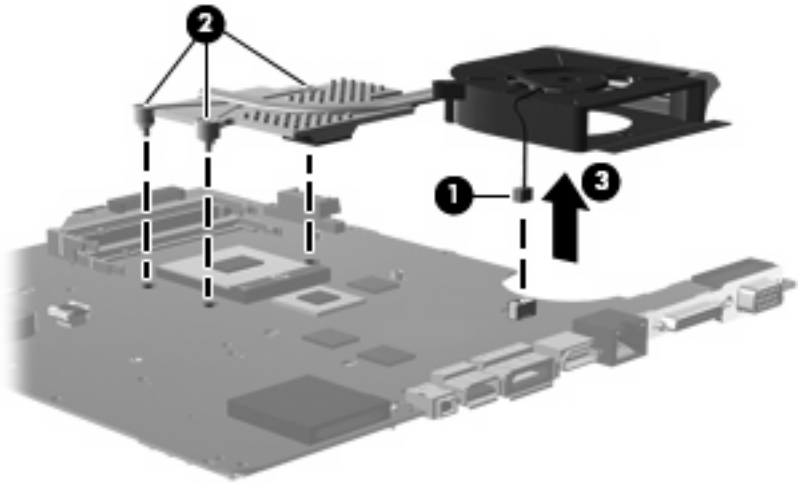


NOTE: Steps 5 through 7 apply only to computer models equipped with graphics subsystems with UMA memory.

5. Disconnect the fan cable **(1)** from the system board.
6. Loosen the three Phillips PM2.0×10.0 captive screws **(2)** that secure the fan/heat sink assembly to the system board.

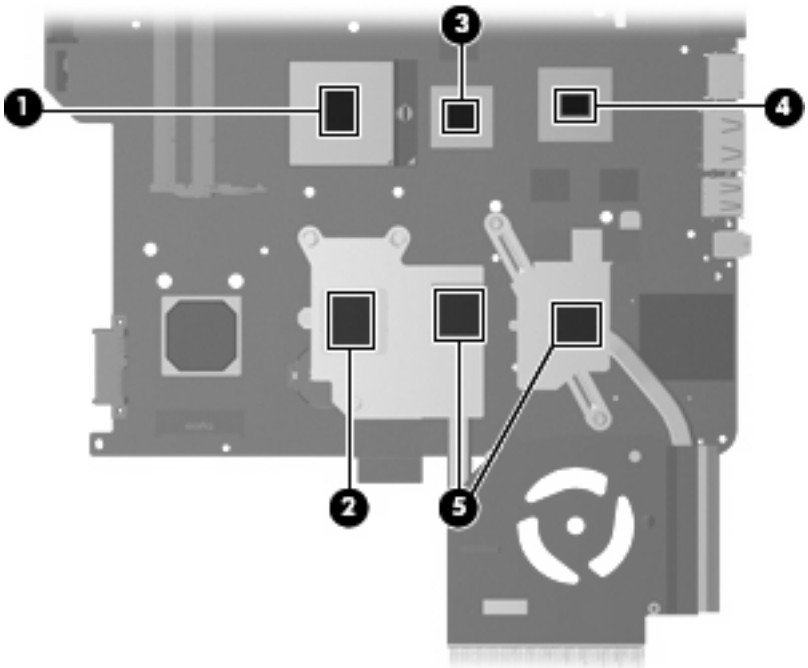
7. Remove the fan/heat sink assembly **(3)**.

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



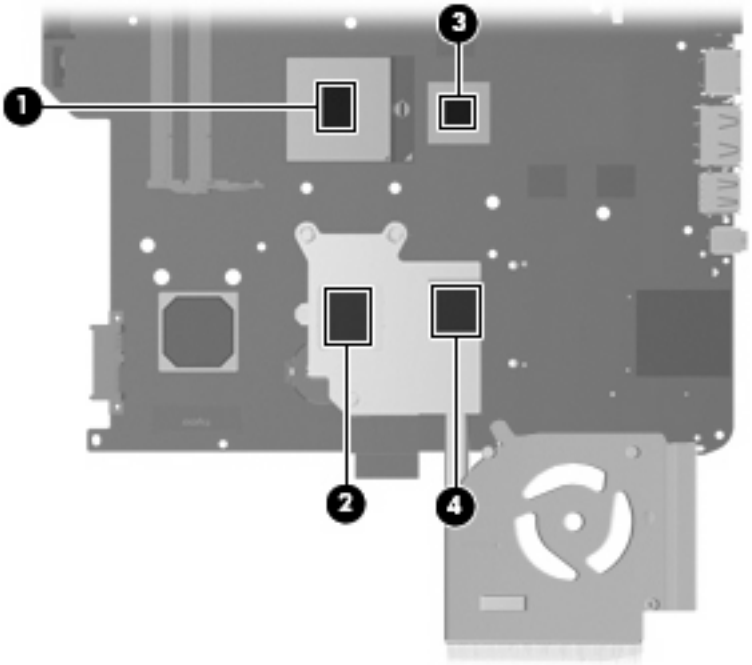
NOTE: The thermal material must be thoroughly cleaned from the surfaces of the fan/heat sink assembly and the system board each time the fan/heat sink assembly is removed. Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it. Thermal pads are used on the Northbridge chip **(3)**, the graphics subsystem chip **(4)**, and the sections of the heat sink **(5)** that service them. Replacement thermal material is included with all fan/heat sink assembly, system board, and processor spare part kits.

The following illustration shows the replacement thermal material locations for computer models equipped with graphics subsystems with discrete memory.



NOTE: The thermal material must be thoroughly cleaned from the surfaces of the fan/heat sink assembly and the system board each time the fan/heat sink assembly is removed. Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it. Thermal pads are used on the Northbridge chip **(3)** and the section of the heat sink **(4)** that services it. Replacement thermal material is included with all fan/heat sink assembly, system board, and processor spare part kits.

The following illustration shows the replacement thermal material locations for computer models equipped with graphics subsystems with UMA memory.



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

Processor

NOTE: All processor spare part kits include thermal material.

Description	Spare part number
AMD Turion Ultra Dual-Core 35W ZM-86 2.40-GHz processor with 2-MB L2 cache	484260-001
AMD Turion Ultra Dual-Core 35W ZM-82 2.20-GHz, processor with 2-MB L2 cache	484261-001
AMD Turion Ultra Dual-Core 35W ZM-80 2.10-GHz, processor with 2-MB L2 cache	484262-001
AMD Turion Dual-Core 35W RM-70 2.00-GHz with 1-MB L2 cache processor	484263-001
AMD Athlon X2 Dual-Core 35W QL-60 1.90-GHz with 1-MB L2 cache processor	484264-001
Intel Core2 Duo T9600 2.80-GHz processor with 6-MB L2 cache and 1066-MHz FSB	483859-001
Intel Core2 Duo T9400 2.53-GHz processor with 6-MB L2 cache and 1066-MHz FSB	483860-001
Intel Core Duo T8600 2.40-GHz processor with 3-MB L2 cache and 1066-MHz FSB	483861-001
Intel Core Duo T8400 2.26-GHz processor with 3-MB L2 cache and 1066-MHz FSB	486523-001

Before removing the processor, follow these steps:

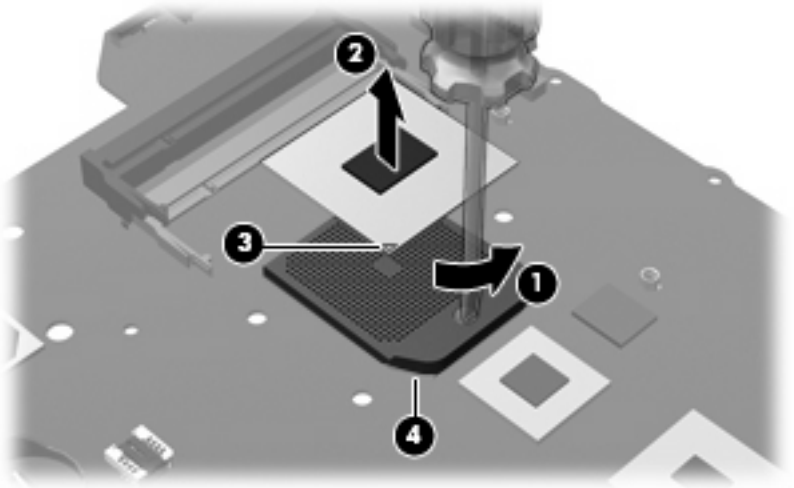
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 52).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 62).
   b. Optical drive (see Optical drive on page 55).
   c. Switch cover and keyboard (see Switch cover and keyboard on page 69).
   d. Speaker assembly (see Speaker assembly on page 74).
   e. Display assembly (see Display assembly on page 76).
   f. Top cover (see Top cover on page 84).
   g. USB board (see USB board on page 90).
   h. System board (see System board on page 92).
   i. Fan/heat sink assembly (see Fan/heat sink assembly on page 98).

Remove the processor:

NOTE: Steps 1 and 2 apply only to computer models equipped with AMD processors. See steps 3 and 4 for processor removal information for computer models equipped with Intel processors.

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.

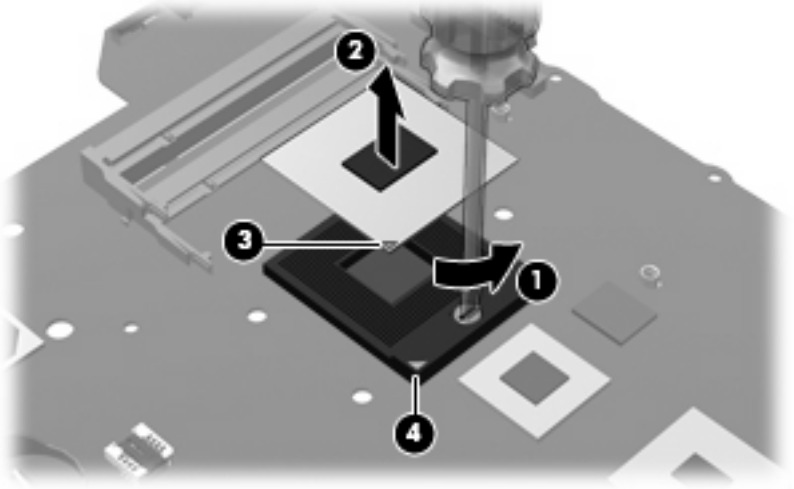
NOTE: The gold triangle **(3)** on the processor must be aligned with the triangle icon **(4)** embossed on the processor socket when you install the processor.



NOTE: Steps 3 and 4 apply only to computer models equipped with Intel processors. See steps 1 and 2 for processor removal information for computer models equipped with AMD processors.

3. Turn the processor locking screw **(1)** one-half turn counterclockwise until you hear a click.
4. 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.

Using the Setup Utility

Changing the language of the Setup Utility

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

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

   – or –

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

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

3. Use the arrow keys to select a language, and then press enter.

4. When a confirmation prompt with your language selected is displayed, press enter.

5. To save your change and exit the Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

Your change goes into effect immediately.

Display 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	• 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	Enable/disable the processor Virtualization Technology.
Processor C4 State (select models only)	Enable/disable the processor C4 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. When enabled, saves power when the computer is in DC mode.
Fan Always On	Enabled/disable Fan Always On. When enabled, the computer fan will always be on.
Boot Options	Set the following boot options: • 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.

Select	To do this
	• Internal Network Adapter boot—Enable/disable boot from Internal Network Adapter. • Boot Order—Set the boot order for: ◦ USB Floppy ◦ Internal 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	Run a comprehensive self-test on the hard drive. **NOTE:** On models with two hard drives, this menu option is called the Primary Hard Disk Self Test.
Secondary Hard Disk Self Test (select models only)	Run a comprehensive self-test on a secondary hard drive.
Memory Test	Run a diagnostic test on the system memory.

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	35.70 cm	14.06 in
Depth	25.94 cm	10.21 in
Height (front to back)	3.49 to 4.19 cm	1.37 to 1.65 in
Weight (with optical drive, hard drive, and battery)	2.82 kg	6.82 lbs
Second hard drive adds:	0.13 kg	0.28 lbs
Camera adds:	0.009 kg	0.02 lbs
Input power		
Operating voltage	18.5 V dc @ 3.5 A - 65 W	
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
Shock		
Operating	125 g, 2 ms, half-sine	
Nonoperating	200 g, 2 ms, half-sine	
Random vibration		

	Metric	U.S.
Operating	0.75 g zero-to-peak, 10 Hz to 500 Hz, 0.25 oct/min sweep rate	
Nonoperating	1.50 g zero-to-peak, 10 Hz to 500 Hz, 0.5 oct/min sweep rate	
NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures.		

15.4-inch, SXGA+ display specifications

	Metric	U.S.
Dimensions		
Height	20.7 cm	8.15 in
Width	33.1 cm	13.03 in
Diagonal	39.1 cm	15.39 in
Number of colors	Up to 16.8 million	
Contrast ratio	200:1 (typical)	
Brightness	180 nits (typical)	
Pixel resolution		
Pitch	0.197 × 0.197 mm	
Format	1680 × 1050	
Configuration	RGB vertical stripe	
Backlight	Edge lit	
Character display	80 × 25	
Total power consumption	4 W	
Viewing angle	+/-65° horizontal, +/-50° vertical (typical)	

15.4-inch WXGA display specifications

	Metric	U.S.
Dimensions		
Height	20.7 cm	8.15 in
Width	33.1 cm	13.03 in
Diagonal	39.1 cm	15.39 in
Number of colors	Up to 16.8 million	
Contrast ratio	200:1	
Brightness	150 nits typical	
Pitch resolution		
Pitch	0.259 × 0.259 mm	
Format	1280 × 800	
Configuration	RGB vertical stripe	
Backlight	Edge lit	
Character display	80 × 25	
Total power consumption	4 W	
Viewing angle	+/-65° horizontal, +/–50° vertical typical	

Hard drive specifications

	320-GB*	250-GB*	160-GB*	120-GB*
Dimensions				
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm	70 mm
Weight	101 g	101 g	101 g	101 g
Interface type	ATA-7	ATA-7	ATA-7	ATA-7
Transfer rate				
Synchronous (maximum)	100 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec
Security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)				
Single track	3 ms	3 ms	3 ms	3 ms
Average	13 ms	13 ms	13 ms	13 ms
Maximum	24 ms	24 ms	24 ms	24 ms
Logical blocks	625,141,400	488,397,168	312,581,808	234,441,648
Disc rotational speed	5400-rpm	5400-rpm	7200-rpm and 5400-rpm	5400-rpm
Operating temperature	5°C to 55°C (41°F to 131°F)			
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.				
NOTE: Certain restrictions and exclusions apply. Contact technical support for details.				

Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer

Applicable disc	Read:	Write:	
	CD-DA, CD+(E)G, CD-MIDI, CDTEXT, 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, DVDROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM, HD-ROM (Single Layer), HD-ROM (Dual Layer), HD DVD-R, HD DVD-R for Dual Layer, HD DVD-RW	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**	**HD**
Random	170 ms	170 ms	230 ms
Cache buffer	8 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		
1X BD-ROM	4,500 KB/sec		
1X BD-R read	4,500 KB/sec		
1X 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:** 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	**Write:** CD-R and CD-RW DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM
Center hole diameter	1.5 cm (0.59 in)	
Disc diameter		
Standard disc	12 cm (4.72 in)	
Mini disc	8 cm (3.15 in)	
Disc thickness	1.2 mm (0.047 in)	
Track pitch	0.74 µm	
Access time	**CD**	**DVD**
Random	< 175 ms	< 230 ms
Full stroke	< 285 ms	< 335 ms
Audio output level	Audio-out, 0.7 Vrms	
Cache buffer	2 MB	
Data transfer rate		
24X CD-ROM	3,600 KB/sec	
8X DVD	10,800 KB/sec	
24X CD-R	3,600 KB/sec	
16X CD-RW	2,400 KB/sec	
8X DVD+R	10,800 KB/sec	
4X DVD+RW	5,400 KB/sec	
8X DVD-R	10,800 KB/sec	
4X DVD-RW	5,400 KB/sec	
2.4X DVD+R(9)	2,700 KB/sec	
5X DVD-RAM	6,750 KB/sec	
Transfer mode	Multiword DMA Mode	
Startup time	< 15 seconds	
Stop time	< 6 seconds	

System DMA specifications, AMD

Hardware DMA	System function
DMA4	Direct memory access controller

System DMA specifications, Intel

Hardware DMA	System function
DMA0	Not applicable
DMA1*	Not applicable
DMA2*	Not applicable
DMA3	Not applicable
DMA4	Direct memory access controller
DMA5*	Available for PC Card
DMA6	Not assigned
DMA7	Not assigned
*PC Card controller can use DMA 1, 2, or 5.	

System interrupt specifications, AMD discrete graphics

Hardware	IRQ System function
IRQ0	High precision event timer
IRQ1	Standard 101-/102-Key or Microsoft® Natural PS/2 Keyboard
IRQ5	RICOH OHCI Compliant IEEE 1394 Host Controller
IRQ7	Ricoh Memory Stick Controller
	Ricoh SD/MMC Host Controller
	Ricoh XD-Picture Card Controller
	SDA Standard Compliant SD Host Controller
IRQ8	High precision event timer
IRQ10	nVidia nForce PCI System Management
IRQ11	nVidia nForce System Management Controller
IRQ12	Synaptics PS/2 Port TouchPad
IRQ13	Numeric data processor
IRQ14	ATA Channel 0
IRQ15	ATA Channel 1
IRQ16	Broadcom WLAN adapter
IRQ17	Standard Enhanced PCI to USB Host Controller
IRQ18	Standard OpenHCD USB Host Controller
IRQ19	nVidia GeForce8400M GS
IRQ20	nVidia nForce Networking Controller
IRQ21	HDA Controller
IRQ23	Standard Dual Channel PCI IDE Controller

System interrupt specifications, AMD UMA graphics

Hardware	IRQ System function
IRQ0	High precision event timer
IRQ1	Standard 101-/102-Key or Microsoft® Natural PS/2 Keyboard
IRQ5	RICOH OHCI Compliant IEEE 1394 Host Controller
IRQ7	Ricoh Memory Stick Controller
	Ricoh SD/MMC Host Controller
	Ricoh XD-Picture Card Controller
	SDA Standard Compliant SD Host Controller
IRQ8	High precision event timer
IRQ10	nVidia nForce PCI System Management
IRQ11	nVidia nForce System Management Controller
IRQ12	Synaptics PS/2 Port TouchPad
IRQ13	Numeric data processor
IRQ14	ATA Channel 0
IRQ15	ATA Channel 1
IRQ16	nVidia MCP67M
IRQ18	Standard OpenHCD USB Host Controller
	Standard OpenHCD USB Host Controller
IRQ19	Broadcom WLAN adapter
IRQ21	HDA Controller
IRQ22	Standard Enhanced PCI to USB Host Controller
	Standard Enhanced PCI to USB Host Controller
IRQ23	Standard Dual Channel PCI IDE Controller

System interrupt specifications, Intel

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 I/O address specifications, AMD

I/O address (hex)	System function (shipping configuration)
0000 - 0008	DMA controller
000A - 000F	DMA controller
0020 - 0021	Programmable interrupt controller
0040 - 0043	System timer
0060 - 0060	Standard 101-/102-Key or Microsoft® Natural PS/2 Keyboard
0061 - 0061	System speaker
0062 - 0062	Microsoft ACPI-Compliant Embedded Controller
0064 - 0064	Standard 101-/102-Key or Microsoft® Natural PS/2 Keyboard
0066 - 0066	Microsoft ACPI-Compliant Embedded Controller
0070 - 0071	System CMOS/real time clock
0081 - 0083	DMA controller
0087 - 0087	DMA controller
0089 - 008B	DMA controller
008F - 008F (UMA only)	DMA controller
00A0 - 00A1	Programmable interrupt controller
00C0 - 00D1	DMA controller
00D4 - 00DF	DMA controller
00F0 - 00F1	Numeric data processor
0170 - 0177	ATA Channel 1
01F0 - 01F7	ATA Channel 0
0376 - 0376	ATA Channel 1
03B0 - 03BB	nVidia GeForce8400M GS (discrete) nVidia MCP67M (UMA)
03B0 - 03BB (discrete only)	PCI standard PCI-to-PCI bridge
03C0 - 03DF	nVidia GeForce8400M GS (discrete) nVidia MCP67M (UMA)
03C0 - 03DF (discrete only)	PCI standard PCI-to-PCI bridge
03F6 - 03F6	ATA Channel 0
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

I/O address (hex)	System function (shipping configuration)
30E0 - 30E3 (UMA only)	Standard Dual Channel PCI IDE Controller
30E8 - 30EB	Standard Dual Channel PCI IDE Controller
30EC - 30EF	Standard Dual Channel PCI IDE Controller
30F0 - 30F7	Standard Dual Channel PCI IDE Controller
30F8 - 30FF (discrete only)	Standard Dual Channel PCI IDE Controller
4000 - 407F (discrete only)	nVidia GeForce8400M GS
4000 - 4FFF	PCI standard PCI-to-PCI bridge
5000 - 5FFF (discrete only)	PCI standard PCI-to-PCI bridge

System I/O address specifications, Intel

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 memory map specifications, AMD discrete graphics

Size	Memory address	System function
128 KB	000A0000-000BFFFF	nVidia GeForce8400M GS
16 KB	B0000000-B0003FFF	HDA Controller
8 KB	B0004000-B0005FFF	Standard Dual Channel PCI IDE Controller
4 KB	B0006000-B0006FFF	Standard OpenHCD USB Host Controller
256 B	B0007000-B00070FF	Standard Enhanced PCI to USB Host Controller
4 KB	B0008000-B0008FFF	nVidia nForce Networking Controller
512 KB	B0080000-B00FFFFF	nVidia nForce System Management Controller
2 KB	B0100000-B01007FF	RICOH OHCI Compliant IEEE 1394 Host Controller
256 B	B0100800-B01008FF	SDA Standard Compliant SD Host Controller
256 B	B0100C00-B0100CFF	Ricoh SD/MMC Host Controller
256 B	B0101000-B01010FF	Ricoh Memory Stick Controller
256 B	B0101400-B01014FF	Ricoh XD-Picture Card Controller
16 KB	B0200000-B0203FFF	Broadcom WLAN adapter
16 MB	B1000000-B1FFFFFF	nVidia GeForce8400M GS
32 MB	B2000000-B3FFFFFF	nVidia GeForce8400M GS
1 MB	B6000000-B60FFFFF	Broadcom WLAN adapter
256 MB	C0000000-CFFFFFFF	nVidia GeForce8400M GS
1 KB	FED00000-FED003FF	High precision event timer

System memory map specifications, AMD UMA graphics

Size	Memory address	System function
128 KB	000A0000-000BFFFF	nVidia MCP67M
16 KB	B0000000-B0003FFF	HDA Controller
8 KB	B0004000-B0005FFF	Standard Dual Channel PCI IDE Controller
4 KB	B0006000-B0006FFF	Standard OpenHCD USB Host Controller
256 B	B0007000-B00070FF	Standard Enhanced PCI to USB Host Controller
256 B	B0007400-B00074FF	Standard Enhanced PCI to USB Host Controller
16 B	B0007800-B000780F	nVidia nForce Networking Controller
256 B	B0007C00-B0007CFF	nVidia nForce Networking Controller
4 KB	B0008000-B0008FFF	Standard OpenHCD USB Host Controller
4 KB	B0009000-B0009FFF	nVidia nForce Networking Controller
512 KB	B0080000-B00FFFFF	nVidia nForce System Management Controller
16 MB	B1000000-B1FFFFFF	nVidia MCP67M
16 MB	B2000000-B2FFFFFF	nVidia MCP67M
2 KB	B3000000-B30007FF	RICOH OHCI Compliant IEEE 1394 Host Controller
256 B	B3000800-B30008FF	SDA Standard Compliant SD Host Controller
256 B	B3000C00-B3000CFF	Ricoh SD/MMC Host Controller
256 B	B3001000-B30010FF	Ricoh Memory Stick Controller
256 B	B3001400-B30014FF	Ricoh XD-Picture Card Controller
16 KB	B6000000-B6003FFF	Broadcom WLAN adapter
256 KB	C0000000-CFFFFFFF	nVidia MCP67M
1 KB	FED00000-FED003FF	High precision event timer

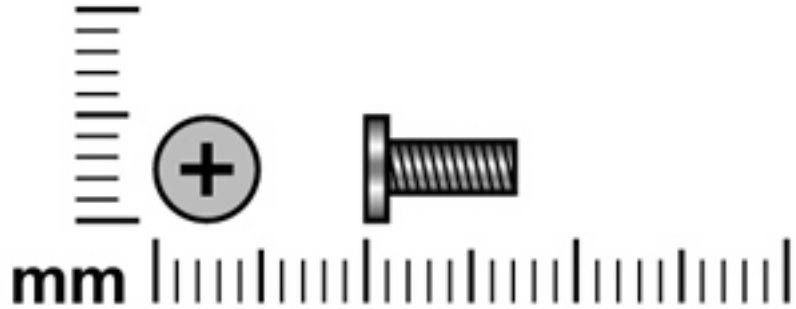
System memory map specifications, Intel

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

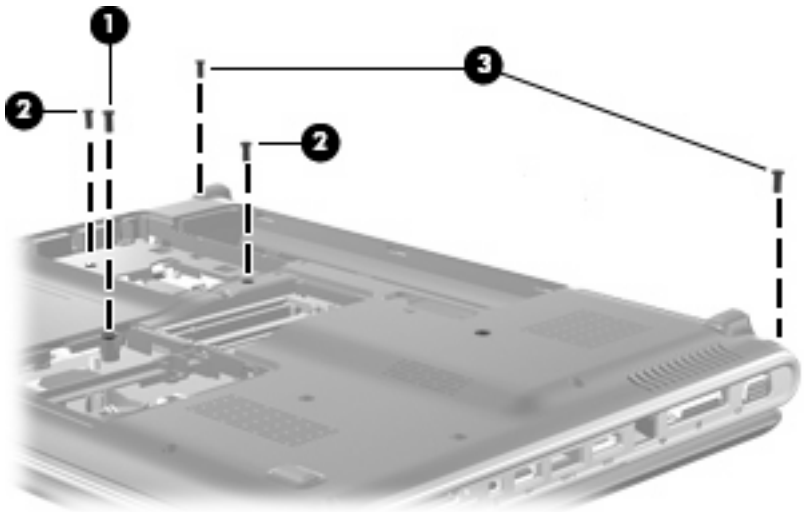
7 Screw listing

This section provides specification and reference information for the screws and screw locks used in the computer. All screws and screw locks listed in this section are available in the Screw Kit, spare part numbers 486795-001 and 493002-001, and the Display Screw Kit, spare part number 485343-001.

Phillips PM2.5×7.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	30	7.0 mm	2.5 mm	5.0 mm

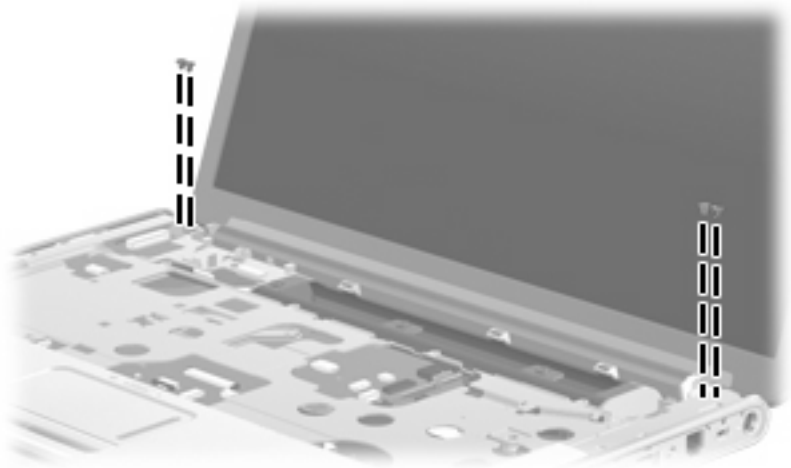


Where used:

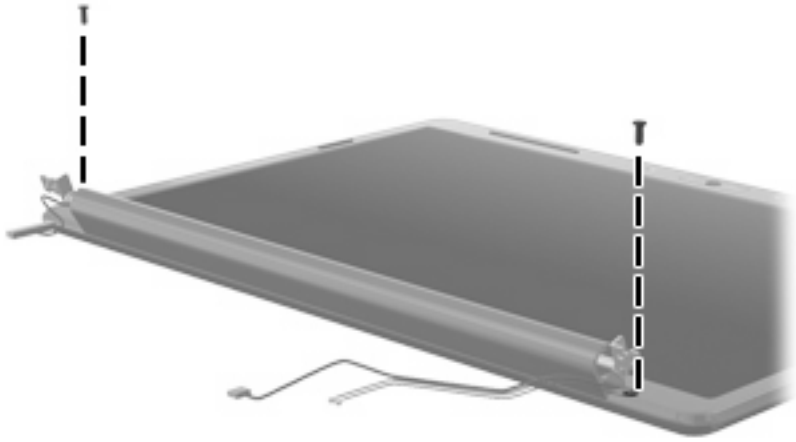
(1) One screw that secures the optical drive to the computer

(2) Two screws that secure the keyboard to the computer

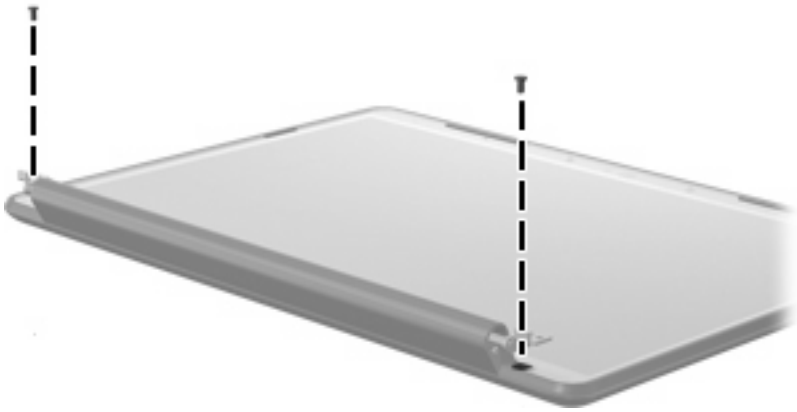
(3) Two screws that secure the switch cover to the computer



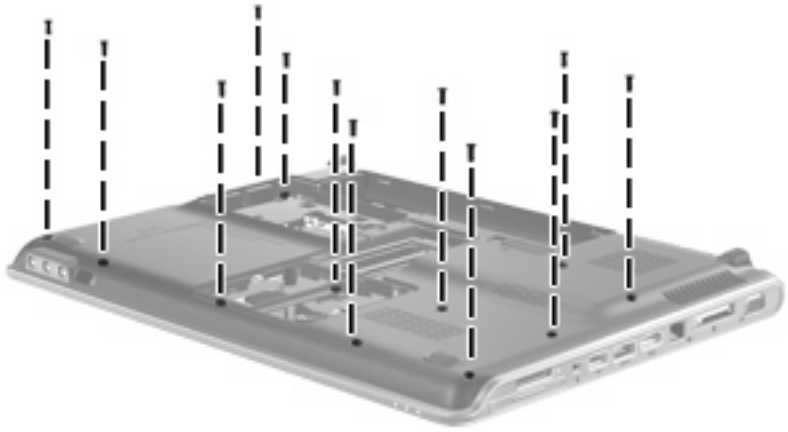
Where used: 4 screws that secure the display assembly to the computer



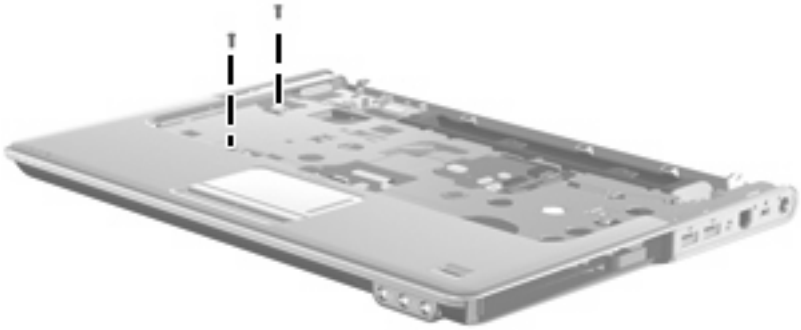
Where used: 2 screws that secure the display bezel to the display enclosure on computer models equipped with BrightView display assemblies



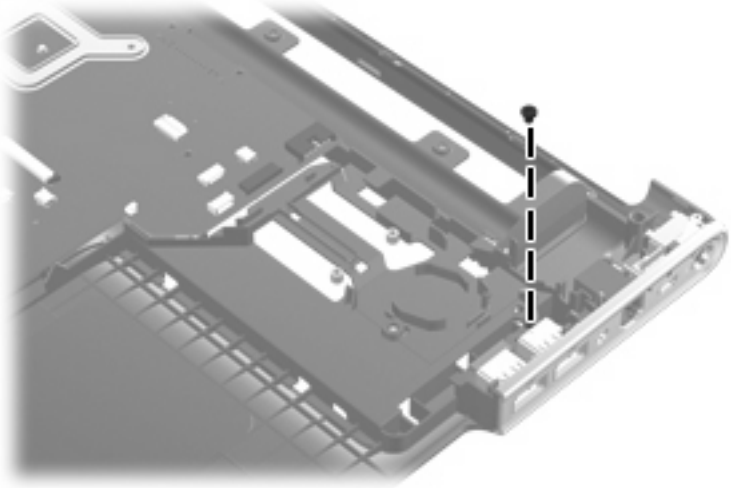
Where used: 2 screws that secure the display bezel to the display enclosure on computer models equipped with AntiGlare display assemblies



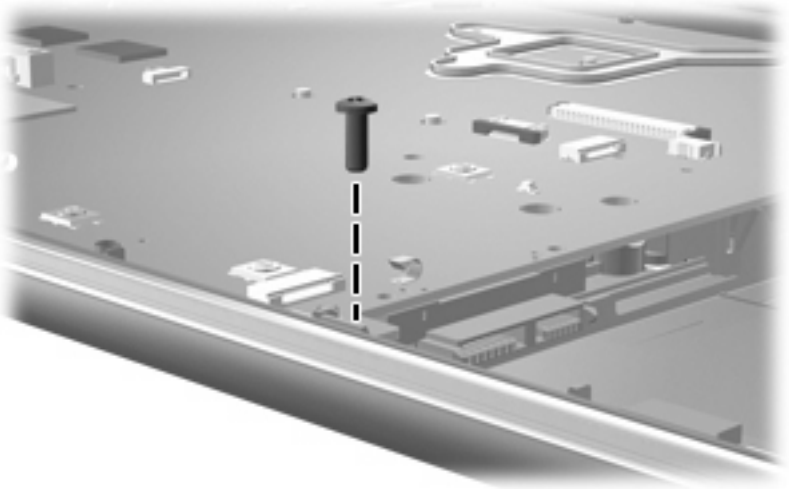
Where used: 12 screws that secure the top cover to the base enclosure



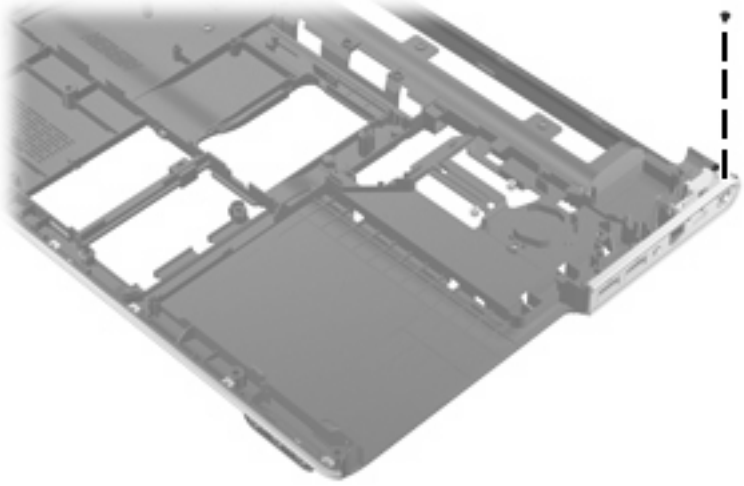
Where used: 2 screws that secure the top cover to the base enclosure (only on computer models equipped with a standard display assembly)



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

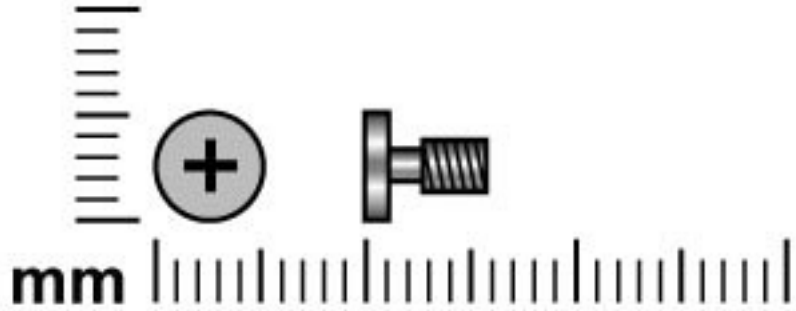


Where used: One screw that secures the system board to the base enclosure

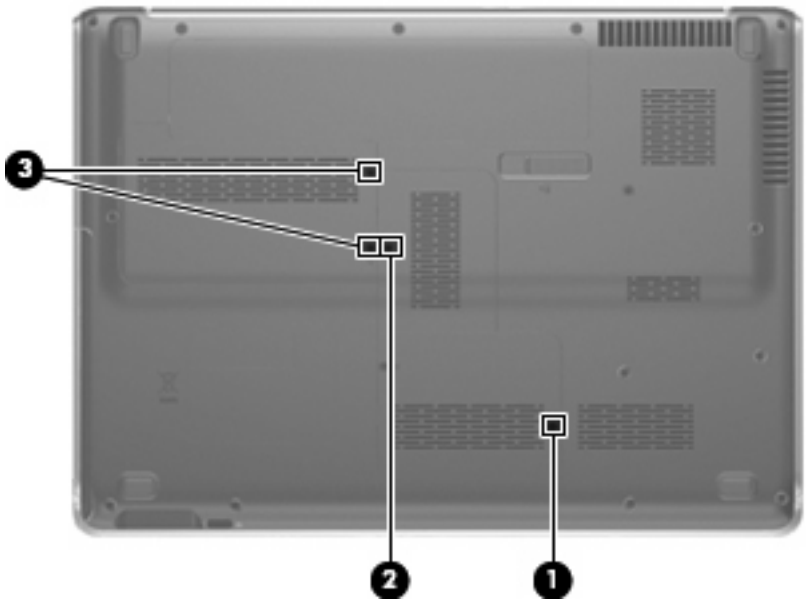


Where used: One screw that secures the power connector and bracket to the base enclosure

Phillips PM2.5×6.0 captive screw



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



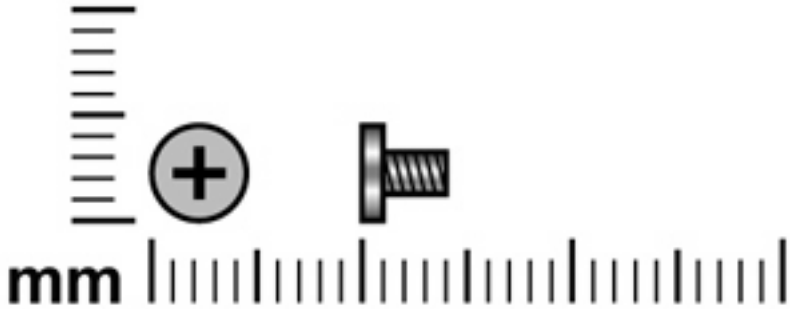
Where used:

(1) One captive screw that secures the Mini Card module compartment cover to the computer (screw is secured by a C-clip)

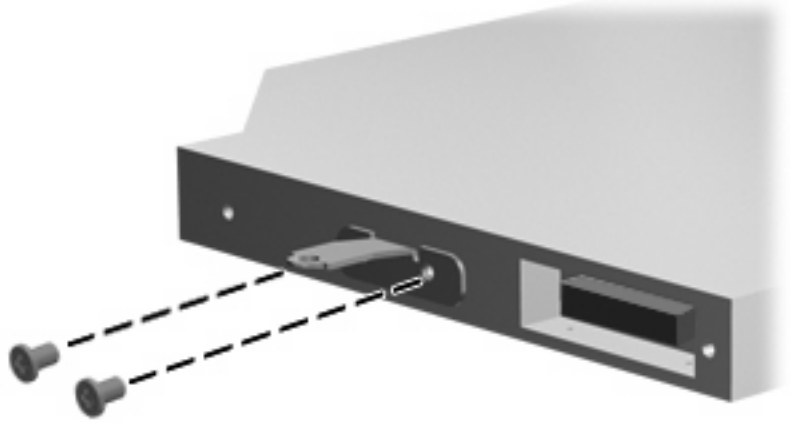
(2) One captive screw that secures the memory module compartment cover to the computer (screw is secured by a C-clip)

(3) Two captive screws that secure the hard drive bay compartment cover to the computer (screws are secured by C-clips)

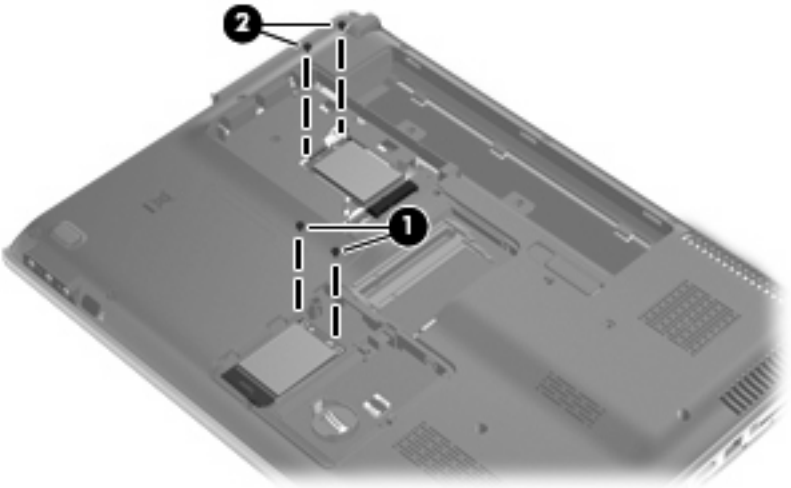
Phillips PM2.0×4.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	18	4.0 mm	2.0 mm	4.5 mm



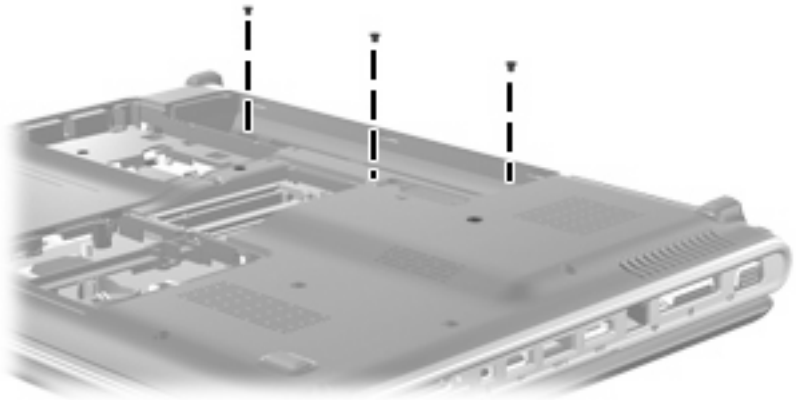
Where used: 2 screws that secure the optical drive bracket to the optical drive



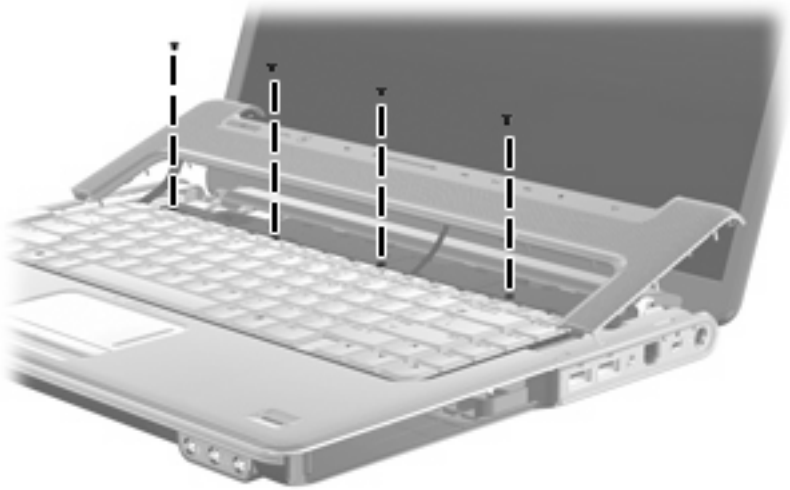
Where used:

(1) Two screws that secure the TV tuner module to the system board

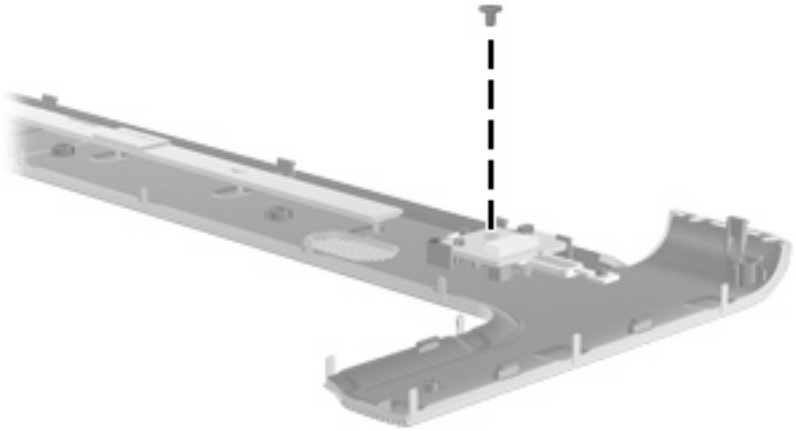
(2) Two screws that secure the WLAN module to the system board



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

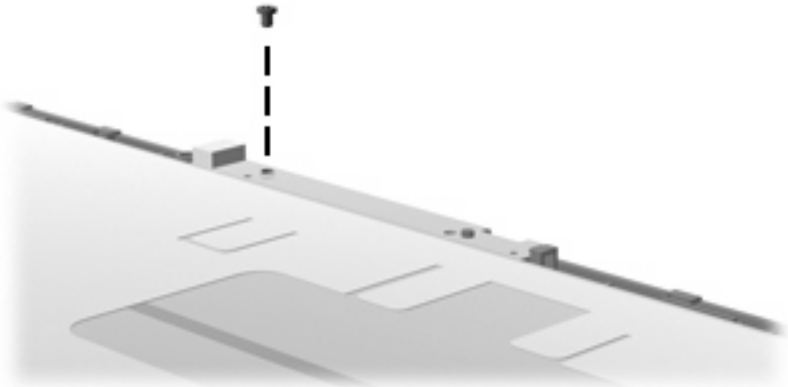


Where used: 4 screws that secure the keyboard to the computer

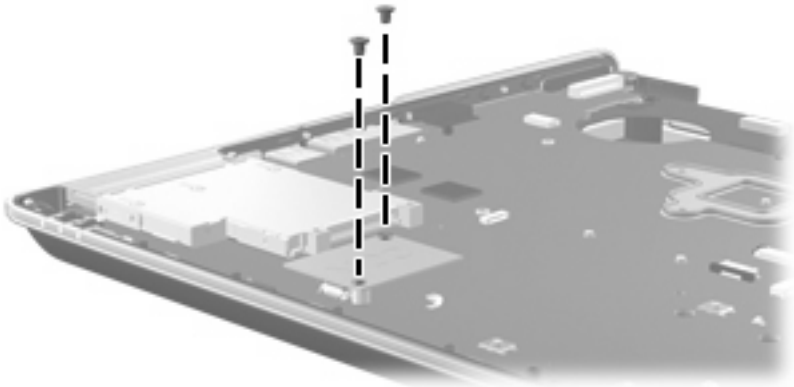


Where used: One screw that secures the power button board to the switch cover

Where used: One screw that secures the Bluetooth module to the top cover

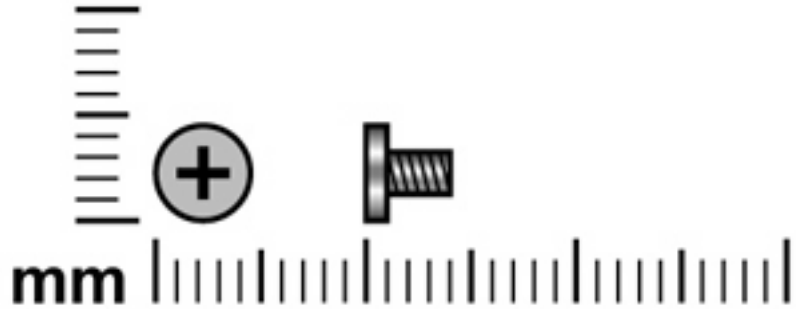


Where used: One screw that secures the webcam/microphone module to the display bezel on computer models equipped with AntiGlare display assemblies

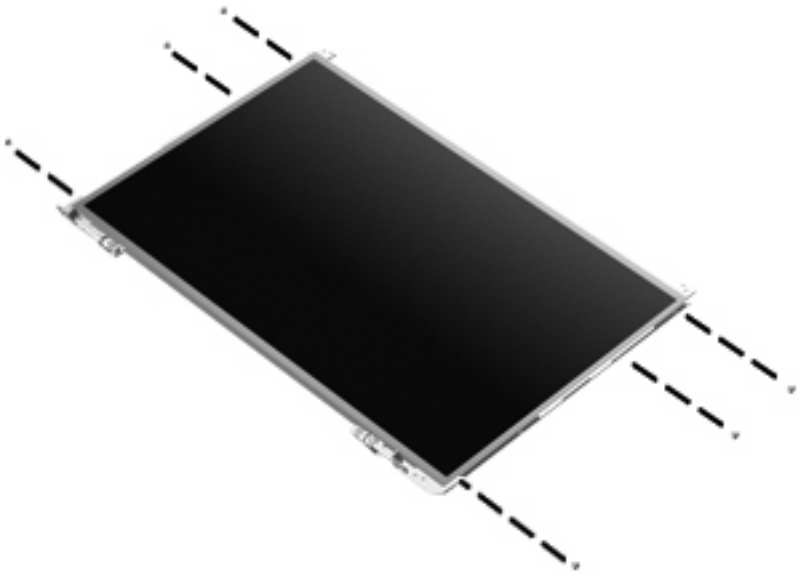


Where used: 2 screws that secure the modem module to the system board

Phillips PM2.0×4.0 screw

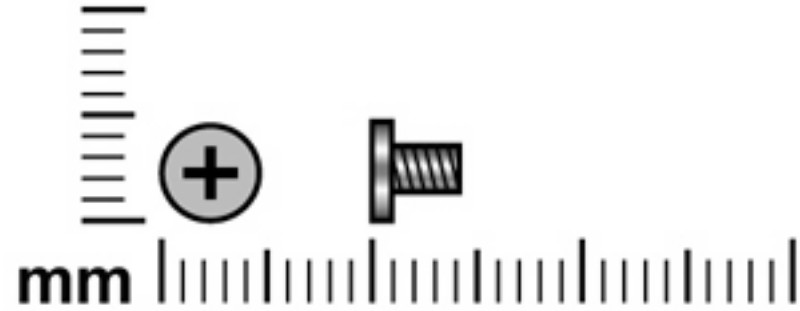


Color	Quantity	Length	Thread	Head diameter
Silver	6	4.0 mm	2.0 mm	4.5 mm

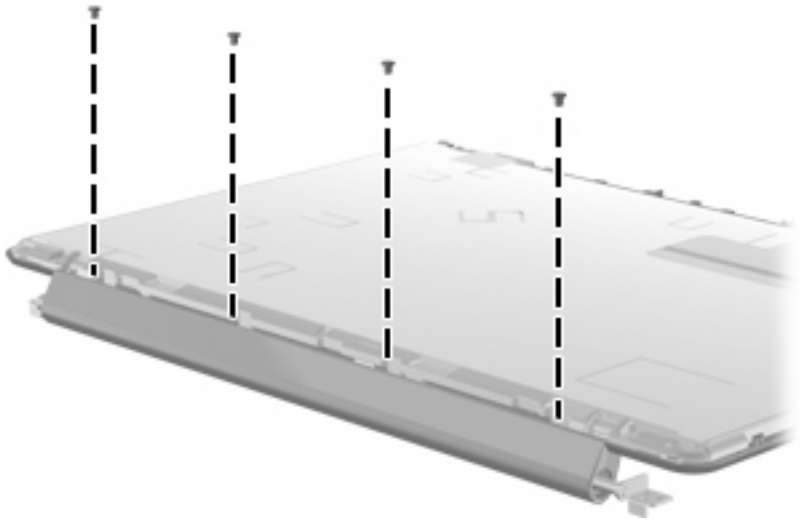


Where used: 6 screws that secure the display hinges to the display panel on computer models equipped with BrightView display assemblies

Phillips PM2.5×4.0 screw

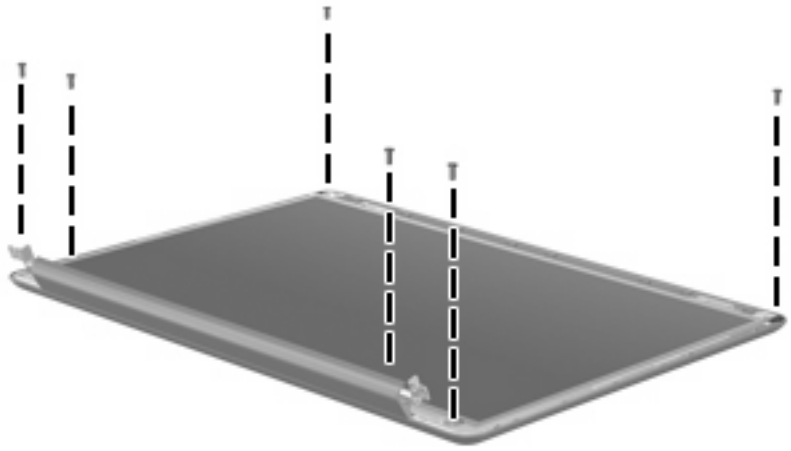


Color	Quantity	Length	Thread	Head diameter
Silver	19	4.0 mm	2.5 mm	5.0 mm

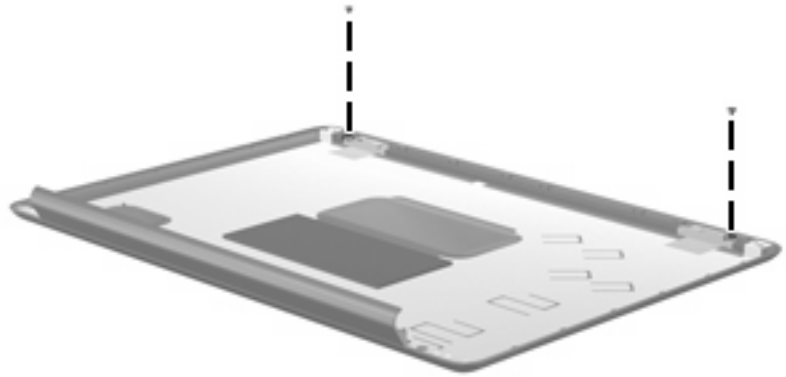


Where used: 4 screws that secure the display inverter cover to the display bezel on computer models equipped with AntiGlare display assemblies

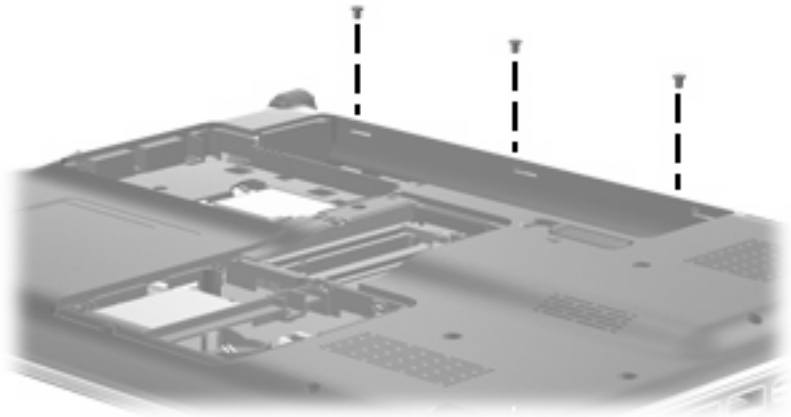
Where used: 4 screws that secure the display hinges to the display panel on computer models equipped with AntiGlare display assemblies



Where used: 6 screws that secure the display panel to the display enclosure on computer models equipped with BrightView display assemblies

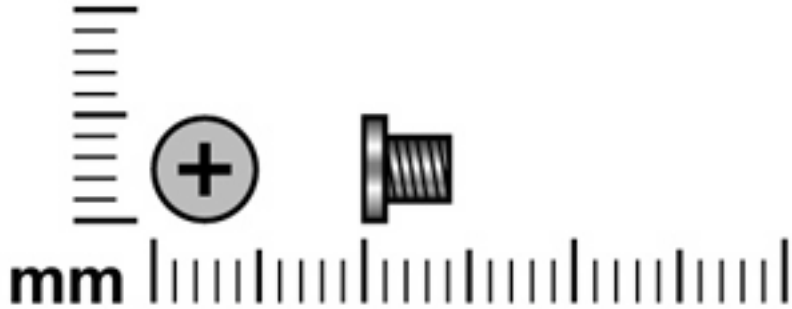


Where used: 2 screws that secure the wireless antenna transceivers to the display enclosure on computer models equipped with BrightView display assemblies

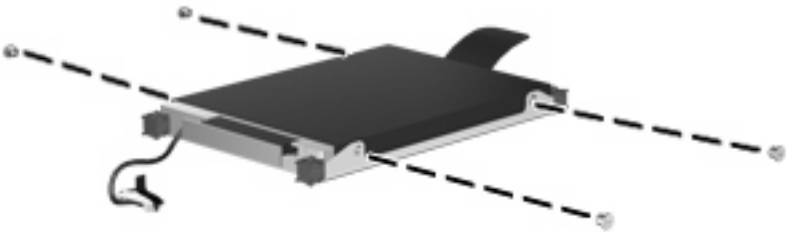


Where used: 3 screws that secure the top cover to the base enclosure

Phillips PM3.0×4.0 screw

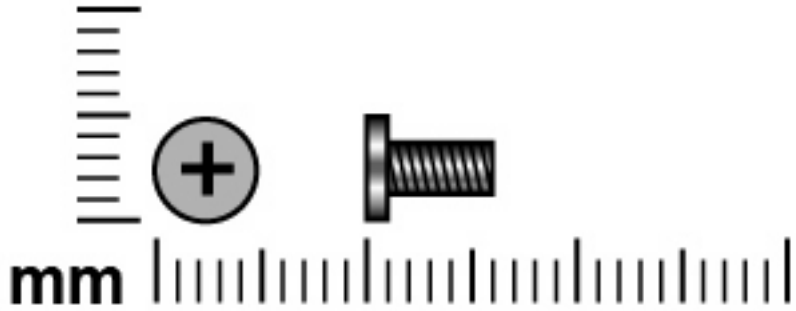


Color	Quantity	Length	Thread	Head diameter
Silver	4	4.0 mm	3.0 mm	5.0 mm

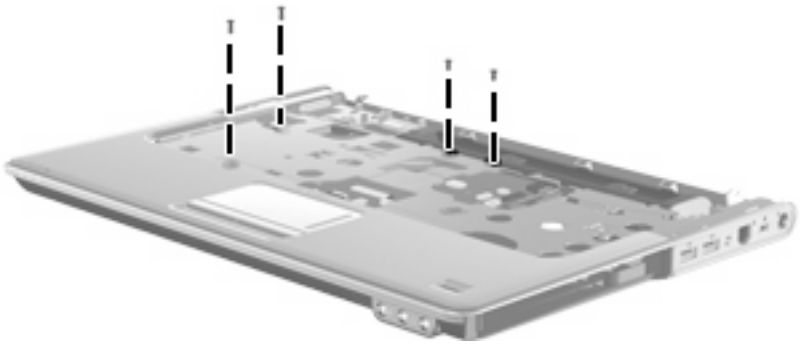


Where used: 4 screws that secure the hard drive bracket to the hard drive

Phillips PM2.5×6.0 screw

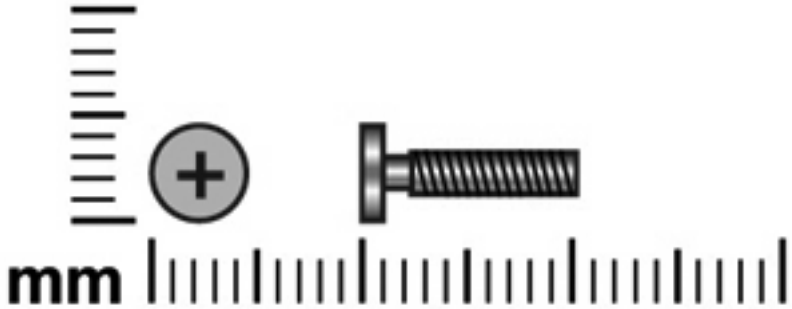


Color	Quantity	Length	Thread	Head diameter
Black	4	6.0 mm	2.5 mm	5.0 mm

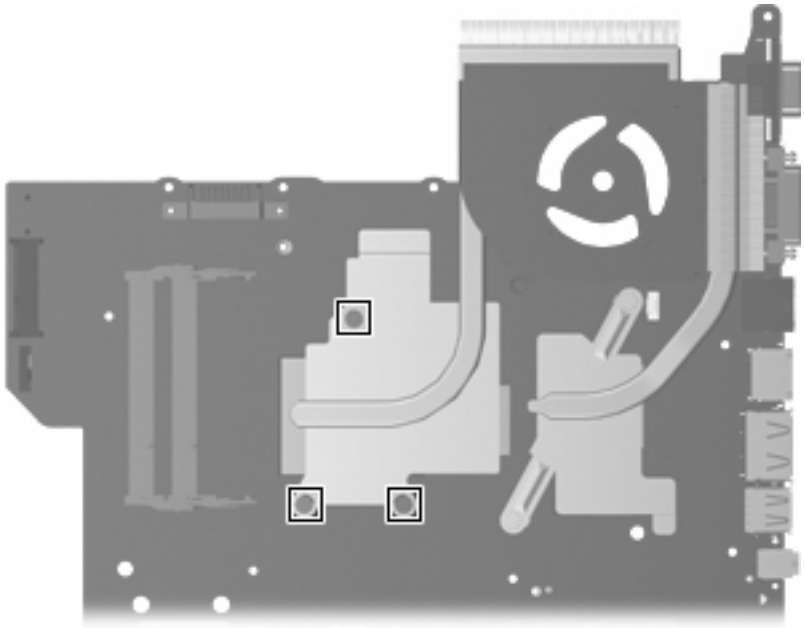


Where used: 4 screws that secure the top cover to the base enclosure

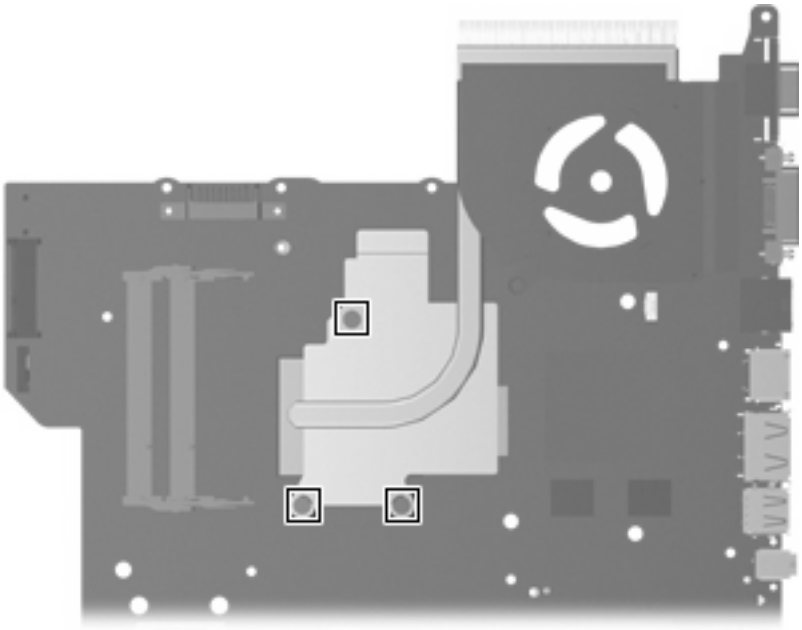
Phillips PM2.0×10.0 captive screw



Color	Quantity	Length	Thread	Head diameter
Silver	6	10.0 mm	2.0 mm	5.0 mm



Where used: 3 captive screws that secure the fan/heat sink assembly to the system board on computer models equipped with graphics subsystems with discrete memory



Where used: 3 captive screws that secure the fan/heat sink assembly to the system board on computer models equipped with graphics subsystems with UMA memory

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 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:

- Making 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.

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 CD-R, DVD-R, double-layer DVD-R, DVD+R, double-layer DVD+R, or BD-R (writable Blu-ray) discs. All these discs are purchased separately.

  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.

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 these folders periodically.
- Back up templates stored in their associated programs.
- Save customized settings in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time saver if you have to reset your preferences.

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

1. Display the screen.
2. Copy the screen:

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

   To copy the entire screen, press fn+prt sc.
3. 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.

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 a solid-state drive (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.

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

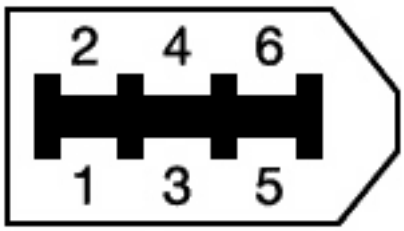
1. Access Recovery Manager in either of the following ways:
   - Select **Start > All Programs > Recovery Manager > Recovery Manager**.

     –or–

   - Restart the computer and press f11 while the “Press <F11> for recovery” message is displayed on the screen. Then select **Recovery Manager**.
2. Click **Advanced Options**.
3. Click **System recovery**, and then click **Next**.
4. Follow the on-screen instructions.

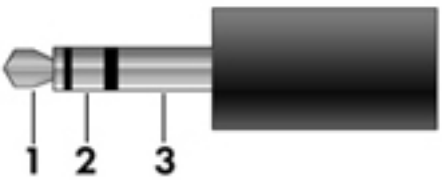
9 Connector pin assignments

1394



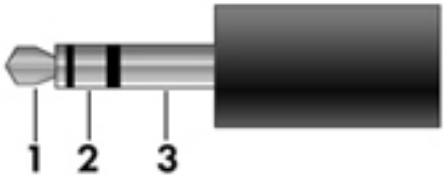
Pin	Signal
1	Power
2	Ground
3	TPB-
4	TPB+
5	TPA-
6	TPA+

Audio-in (microphone)



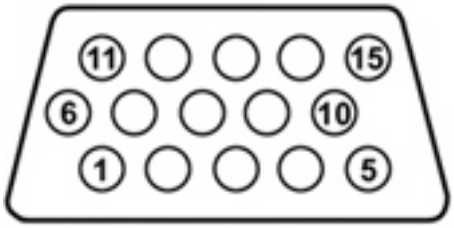
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

Audio-out (headphone)



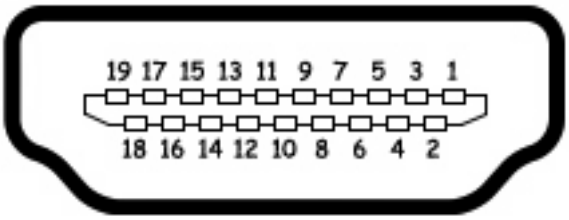
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

External monitor



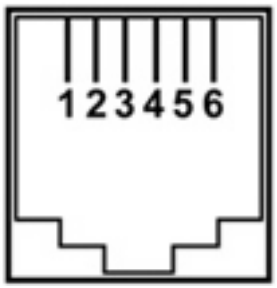
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

HDMI



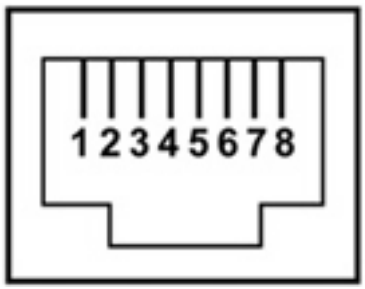
Pin	Signal
1	TMDS data 2+
2	TMDS data 2 shield
3	TMDS data 2–
4	TMDS data 1+
5	TMDS data 1 shield
6	TMDS data 1–
7	TMDS data 0+
8	TMDS data 0 shield
9	TMDS data 0–
10	TMDS clock+
11	TMDS clock shield
12	TMDS clock-
13	CEC
14	No connect
15	DDC clock
16	DDC data
17	Ground
18	+5V power
19	Hot plug detect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

RJ-11 (modem)



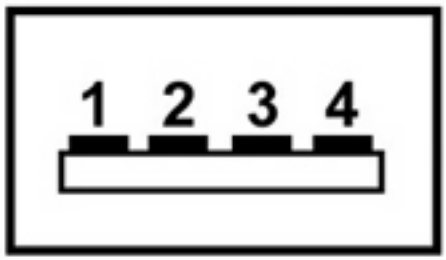
Pin	Signal
1	Unused
2	Tip
3	Ring
4	Unused
5	Unused
6	Unused

RJ-45 (network)



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

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 or 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.

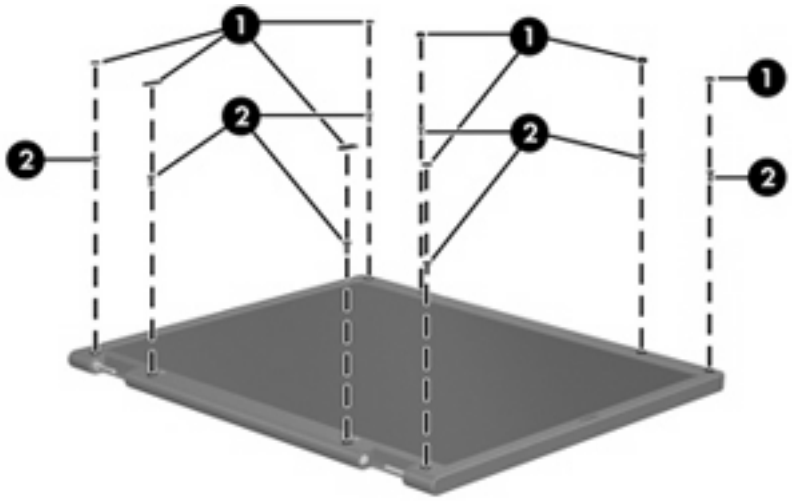
NOTE: **Materials Disposal**. This HP product contains mercury in the backlight in the display assembly that might require special handling at end-of-life. Disposal of mercury may be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities, 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)**.

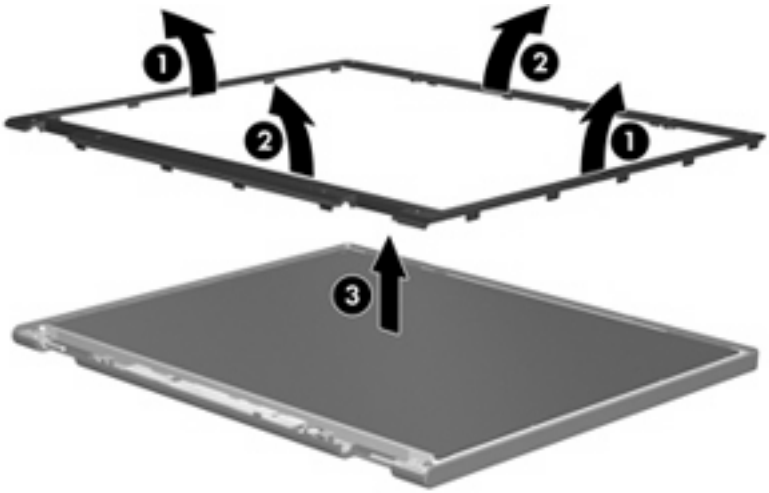
NOTE: The procedures provided in this appendix are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps to disassemble the display assembly:

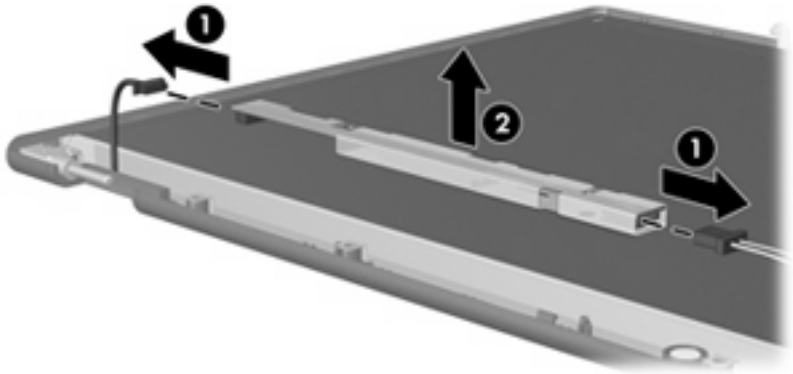
1. Remove all screw covers **(1)** and screws **(2)** that secure the display bezel to the display assembly.



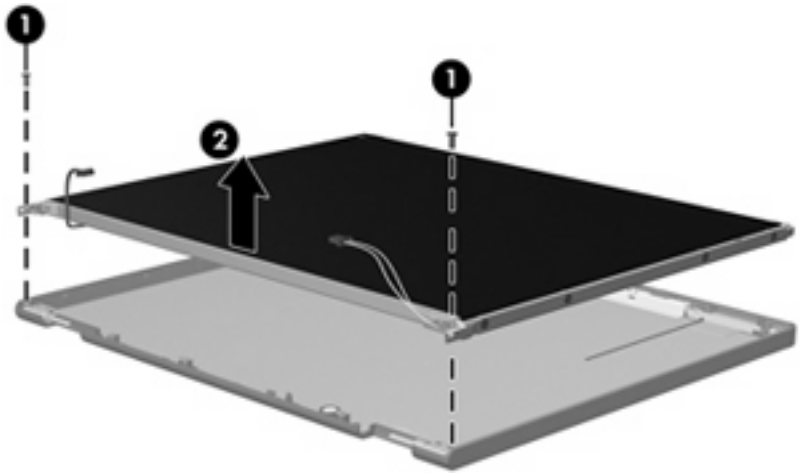
2. Lift up and out on the left and right inside edges **(1)** and the top and bottom inside edges **(2)** of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel **(3)**.



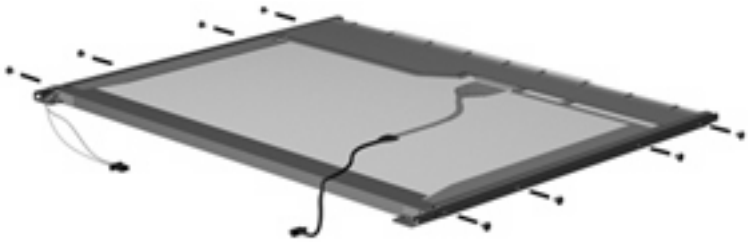
4. Disconnect all display panel cables **(1)** from the display inverter and remove the inverter **(2)**.



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.

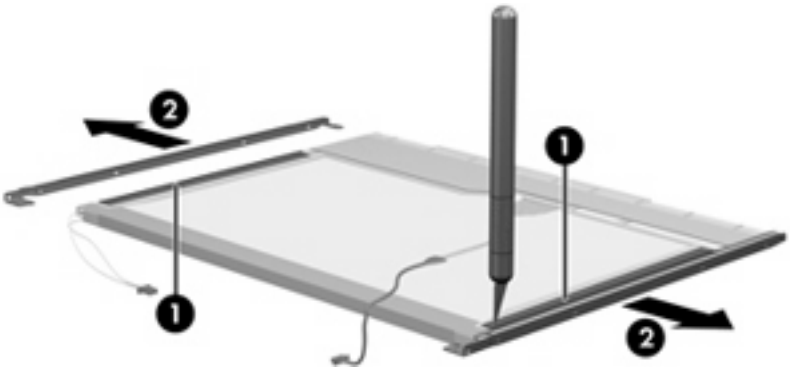


7. Turn the display panel assembly upside down.
8. Remove all screws that secure the display panel frame to the display panel.

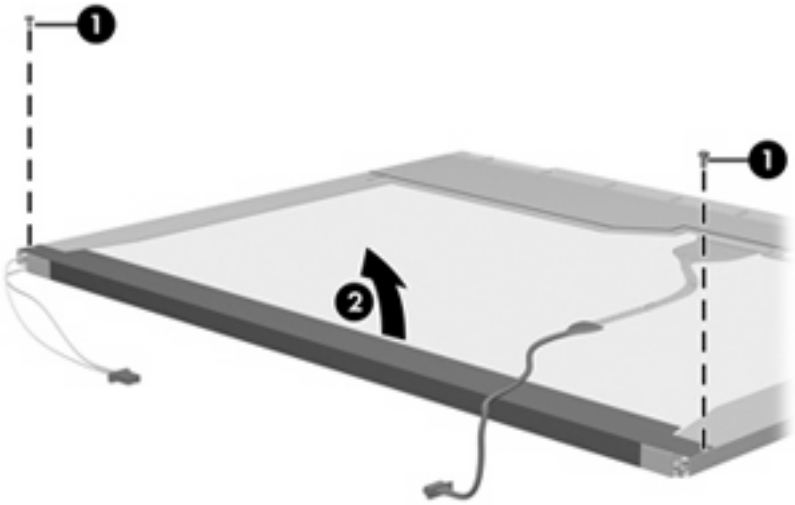


9. Use a sharp-edged tool to cut the tape **(1)** that secures the sides of the display panel to the display panel frame.

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

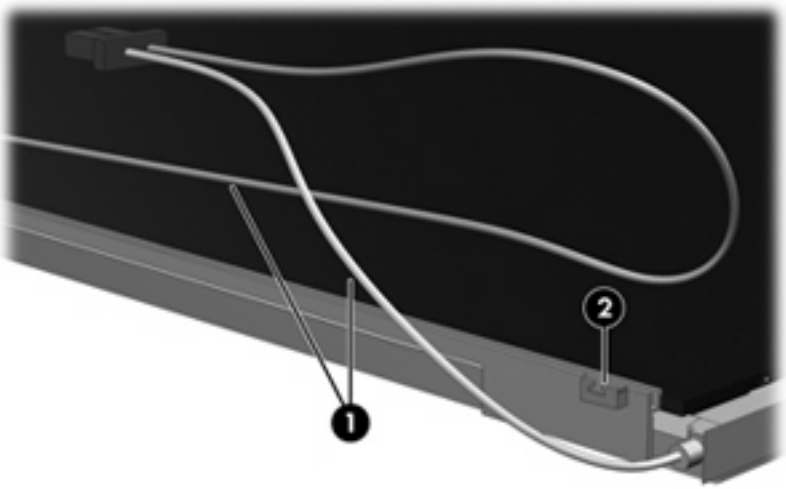


11. Remove the screws **(1)** that secure the backlight cover to the display panel.
12. Lift the top edge of the backlight cover **(2)** and swing it outward.



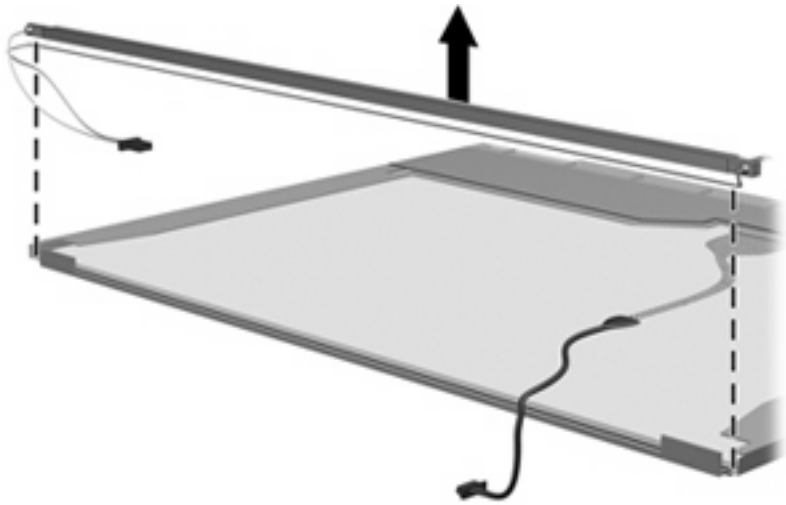
13. Remove the backlight cover.
14. Turn the display panel right-side up.

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



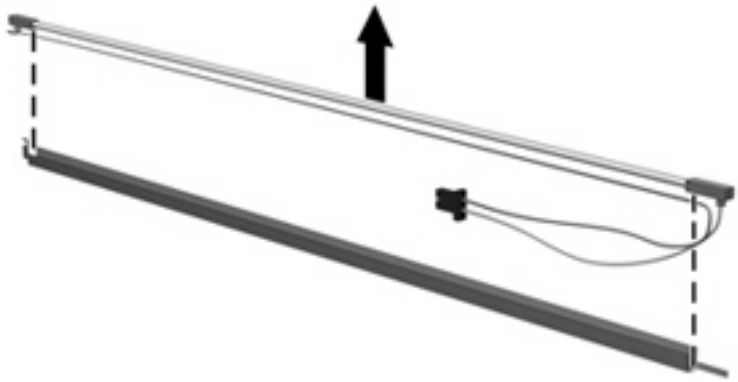
16. Turn the display panel upside down.

17. Remove the backlight frame from the display panel.

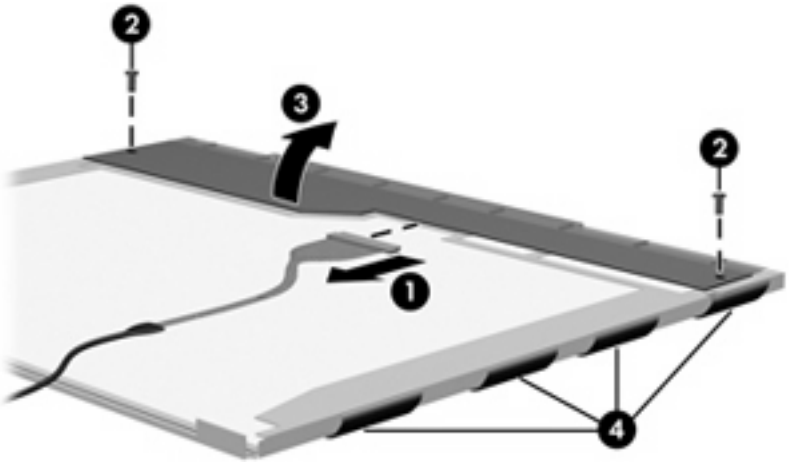


⚠ **WARNING!** The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

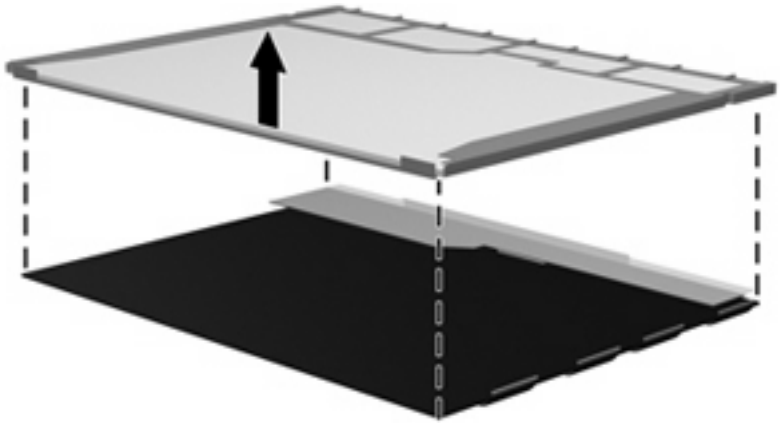
18. Remove the backlight from the backlight frame.



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 port
  location 15
  pin assignments 147
1394 Power Saving 107

A

AC adapter, spare part numbers 34, 35, 37
administrator password 107
antenna
  illustrated 29
  locations 7
  spare part numbers 29
applications key, Windows 11
audio, product description 4
audio-in jack
  location 13
  pin assignments 147
audio-out jack
  location 13
  pin assignments 148
audio/infrared board
  removal 89
  spare part number 20, 40, 89

B

backing up
  customized window, toolbar, and menu bar settings 144
  personal files 144
  templates 144
backup 142
backup suggestions 144
base enclosure, spare part numbers 21, 40
battery
  removal 52
  spare part numbers 22, 39, 52
battery bay 16
battery light 13
battery release latch 16
Blu-ray Disc ROM Drive
  precautions 45
  removal 55
  spare part numbers 22, 32, 40, 55
  specifications 113
Bluetooth module
  removal 75
  spare part numbers 19, 35, 38, 75
Bluetooth module cable
  illustrated 31
  spare part number 20, 42
boot options 107
boot order 107
bottom components 16
button components 9
button sound 107
buttons
  media 9
  next/fast forward 10
  play/pause 10
  power 9
  previous/rewind 10
  stop 10
  volume mute 9
  wireless 10

C

Cable Kit
  contents 31
  spare part number 20, 31, 43
cables, service considerations 45
Card Reader Power Saving 107
carrying case, spare part numbers 34, 35
CAT5E cable, spare part number 34, 36
changing the Setup Utility language 105
chipset, product description 1
CMOS clearing 49
components
  bottom 16
  buttons 9
  display 7
  fingerprint reader 9
  front 13
  keyboard 11
  left-side 15
  rear 14
  right-side 14
  speakers 9
  top 7
  TouchPad 12
computer feet
  locations 51
  spare part number 51
computer specifications 109
connectors, service considerations 45

D

Digital Media Slot 15
Digital Media Slot Light 15
diskette drive, precautions 45
display assembly
  removal 76
  spare part numbers 18, 39, 76
display bezel
  illustrated 28

release 53
spare part number 28, 40, 81
Display Cable Kit, spare part numbers 28, 43
display components
illustrated 27, 28
recycling 154
display enclosure
illustrated 27, 29
removal 78
spare part numbers 27, 29, 39, 40, 78
display hinge
illustrated 27, 28, 39
removal 80, 82
spare part numbers 27, 28, 39, 40, 80, 83
Display Hinge Kit, spare part numbers 27, 28, 39, 40, 80, 83
Display Hinge Screw Kit, spare part number 39
display inverter
illustrated 27, 29
removal 79, 81
spare part number 27, 29, 41, 80, 82
display inverter cover
illustrated 27, 40
removal 79
spare part number 27, 40, 79
display panel
illustrated 28
product description 2
removal 82
spare part numbers 28, 39, 82
display panel cable, spare part numbers 40
Display Rubber Kit, spare part number 27, 29, 40
Display Screw Kit, spare part number 27, 29, 39
display specifications 110, 111
display switch 7
displaying system information 105
docking support, product description 5
drive light 13
drives
boot order 107
preventing damage 45
DVD±RW and CD-RW Combo Drive
precautions 45
removal 55
spare part numbers 22, 33, 38, 55
specifications 114

E
electrostatic discharge 46
eSATA/USB port 15
esc key 11
Ethernet, product description 4
exiting the Setup Utility 106
expansion port 3 15
ExpressCard slot 15
ExpressCard slot bezel, illustrated 30
external media cards, product description 5
external monitor port
location 15
pin assignments 148

F
f11 146
fan always on 107
fan/heat sink assembly
removal 98
spare part numbers 21, 41, 43, 98
feet
locations 51
spare part number 51
fingerprint reader 10, 104
fingerprint reader components 9
fn key 11
front components 13
full system recovery 142
function keys 11

G
graphics, product description 2
grounding equipment and methods 48

H
hard drive
precautions 45
product description 3
removal 62
spare part numbers 25, 32, 37, 42, 62
specifications 112
hard drive bay 16
hard drive bay cover
illustrated 30
removal 63
Hard Drive Hardware Kit, spare part number 26, 32, 38, 62
hard drive self test 108
HDMI port
location 15
pin assignments 149
headphone jack
location 13
pin assignments 148
headset, spare part number 34, 35
hinge
illustrated 27, 28, 39
removal 80, 82
spare part numbers 27, 28, 39, 40, 80, 83

I
I/O address specifications 119, 121
infrared lens 13
interrupt specifications 116, 117, 118

J
jacks
audio-in 13
audio-out 13
headphone 13
microphone 13
modem 14
network 15
RJ-11 14
RJ-45 15
TV tuner antenna 14

K
keyboard
components 11

product description 6
removal 69
spare part numbers 19, 41, 69
keypad keys 11
keys
embedded numeric keypad 11
esc 11
fn 11
function 11
Windows applications 11
Windows logo 11

L
LAN Power Saving 107
language support 107
left-side components 15
lights
battery 13
Digital Media Slot 15
drive 13
optical drive 14
power 13

M
mass storage devices, spare part numbers 32
media button 9
memory map specifications 123, 124, 125
memory module
product description 2
removal 60
spare part numbers 22, 39, 60
memory module compartment 16
memory module compartment cover
illustrated 30
removal 60
memory test 108
microphone
locations 8
product description 4
microphone jack
location 13
pin assignments 147
Mini Card module compartment 16
Mini Card module compartment cover
illustrated 30
removal 57
model name 1
modem jack
location 14
pin assignments 150
modem module
removal 87
spare part numbers 20, 37, 87
modem module cable
illustrated 31
removal 95
modem, product description 4
monitor port
location 15
pin assignments 148
mouse, spare part numbers 34, 35

N
network jack
location 15
pin assignments 150
next/fast forward button 10

O
operating system, product description 6
optical drive
location 14
precautions 45
product description 3
removal 55
spare part numbers 22, 32, 55
specifications 113, 114
optical drive light 14

P
packing guidelines 47
password clearing 49
passwords 107
performing a system recovery 146
pin assignments
1394 147
audio-in 147
audio-out 148
external monitor 148
HDMI 149
headphone 148
microphone 147
modem 150
monitor 148
network 150
RJ-11 150
RJ-45 150
Universal Serial Bus (USB) 151
plastic parts 44
Plastics Kit
contents 30
spare part number 20, 30, 40
play/pause button 10
pointing device
components 12
product description 6
ports
1394 15
eSATA/USB 15
expansion port 3 15
external monitor 15
HDMI 15
monitor 15
product description 5
USB 14, 15
power button 9
power button board
removal 73
spare part number 19, 40, 73
power connector 14
power connector cable
illustrated 31
removal 96
power cord
set requirements 152
spare part numbers 34, 42
power light 13
power requirements, product description 6
power-on password 107
previous/rewind button 10
processor
product description 1

removal 102
spare part numbers 20, 38, 39, 102
Processor C4 State 107
product description
audio 4
chipset 1
display panel 2
docking support 5
Ethernet 4
external media cards 5
graphics 2
hard drives 3
keyboard 6
memory module 2
microphone 4
modem 4
operating system 6
optical drives 3
pointing device 6
ports 5
power requirements 6
processors 1
product name 1
security 6
serviceability 6
TV tuner 5
webcam 4
wireless 4
product name 1

R
rear components 14
recovering a program or driver 142
recovering from the dedicated recovery partition 146
recovering from the recovery discs 146
recovery 146
recovery discs 146
Recovery Manager 142
recovery partition 146
recovery, system 142
remote control, spare part numbers 34, 37
removal/replacement
preliminaries 44
procedures 50
restore points 144
right-side components 14
RJ-11 jack
location 14
pin assignments 150
RJ-45 jack
location 15
pin assignments 150
RTC battery
removal 59
spare part number 22, 43, 59
Rubber Feet Kit, spare part number 21, 40, 51

S
safeguarding information 142
Screw Kit
contents 126
spare part numbers 35, 40, 43
screw listing 126
secondary hard drive self test 108
security cable slot 14
security, product description 6
service considerations 44
service tag 17, 50
serviceability, product description 6
Setup Utility
changing the language 105
Diagnostics menu 108
display system information 105
exiting 106
Main menu 107
menus 107
restoring default settings 106
Security menu 107
starting 104
System Configuration memu 107
using 105
solid-state drive (SSD) 142
speaker assembly
removal 74
spare part number 19, 41, 74
speaker components 9
speakers, locations 9
specifications
Blu-ray Disc ROM Drive 113
computer 109
display 110, 111
DVD±RW and CD-RW Combo Drive 114
hard drive 112
I/O addresses 119, 121
interrupts 116, 117, 118
memory map 123, 124, 125
optical drive 113, 114
system DMA 115
static-shielding materials 48
stop button 10
supported discs 143
switch cover
removal 69
spare part number 19, 41, 69
system board
removal 92
spare part numbers 20, 37, 92
system DMA 115
system failure or instability 142
system information 107
system memory map 123, 124, 125
system recovery 142

T
thermal material, replacement 100, 101
tools required 44
top components 7
top cover
removal 84
spare part numbers 20, 40, 84
TouchPad components
left button 12
light 12
on/off button 12
right button 12
scroll zone 12
TouchPad 12
transporting guidelines 47
TV antenna jack 14
TV tuner external antenna cable, spare part numbers 22, 38, 57

TV tuner module
removal 57
spare part numbers 22, 38, 57
TV tuner module cable
illustrated 31
removal 94
TV tuner, product description 5

U

Universal Serial Bus (USB) port
location 14, 15
pin assignments 151
unknown password 49
USB board
removal 90
spare part number 20, 41, 90
using system restore points 144

V

vents 14, 16
Virtualization Technology 107
volume mute button 9
volume scroll zone 10

W

webcam
location 8
product description 4
webcam light 8
webcam/microphone module
illustrated 27, 28
removal 53, 54, 78
spare part numbers 27, 28, 39, 40, 53, 79
Windows applications key 11
Windows logo key 11
wireless antenna
illustrated 29
locations 7
spare part numbers 29
wireless button 10
wireless, product description 4
WLAN module
location 16
removal 65
spare part numbers 23, 35, 36, 37, 38, 41, 65
workstation guidelines 47