



HP Pavilion dv7 Entertainment PC

Maintenance and Service Guide

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

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

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

First Edition: August 2008

Document Part Number: 469058-001

MSG revision history

Revision	Publication date	Description
A	October 2009	The audio/infrared board spare part kit does not include an audio/infrared board cable. The audio/infrared board cable is included in the Cable Kit, spare part number 480474-001. The information was updated in the following locations: Computer major components on page 18 , Sequential part number listing on page 37 , and Removal and replacement procedures on page 47 .

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 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	29
AntiGlare display assembly spare parts	29
BrightView display assembly spare parts	31
Plastics Kit	33
Cable Kit	34
Mass storage devices	35
Miscellaneous parts	36
Sequential part number listing	37

4 Removal and replacement procedures

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

Grounding guidelines	49
Electrostatic discharge damage	49
Packaging and transporting guidelines	50
Workstation guidelines	50
Equipment guidelines	51
Unknown user password	52
Component replacement procedures	53
Service tag	53
Computer feet	54
Battery	54
Webcam/microphone module	56
Optical drive	57
Hard drive	59
TV tuner module	61
RTC battery	63
WLAN module	64
Memory module	67
Switch cover	69
Keyboard	71
Bluetooth module	74
Speaker assembly	75
Display assembly	76
Top cover	85
Fingerprint reader board	88
TouchPad on/off button board	89
TouchPad button board	90
Bluetooth module cable	91
Modem module	93
System board	94
Audio/infrared board	97
USB board	98
Fan	99
Subwoofer	100
Power connector cable	102
Modem module cable	103
TV tuner module cable	104
Heat sink	105
Processor	109
5 Setup Utility	
Starting the Setup Utility	111
Using the Setup Utility	112
Changing the language of the Setup Utility	112

Display system information	112
Restoring default settings in the Setup Utility	113
Exiting the Setup Utility	113
Setup Utility menus	114
Main menu	114
Security menu	114
System Configuration menu	114
Diagnostics menu	115

6 Specifications

Computer specifications	116
17.0-inch, SXGA+ display specifications	117
17.0-inch WXGA display specifications	118
Hard drive specifications	119
Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer	120
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive specifications	121
System DMA specifications, AMD	122
System DMA specifications, Intel	122
System interrupt specifications, AMD with graphics subsystems with discrete memory	123
System interrupt specifications, AMD with graphics subsystems with UMA memory	124
System interrupt specifications, Intel	125
System I/O address specifications, AMD	126
System I/O address specifications, Intel	128
System memory map specifications, AMD with graphics subsystems with discrete memory	130
System memory map specifications, AMD with graphics subsystems with UMA memory	131
System memory map specifications, Intel	132

7 Screw listing

Phillips PM2.5×6.0 captive screw	133
Phillips PM2.5×5.0 screw	134
Phillips PM2.0×4.0 screw	135
Phillips PM2.5×4.0 screw	138
Phillips PM3.0×4.0 screw	143
Phillips PM2.5×13.0 captive screw	144
Phillips PM2.0×3.0 broad-head screw	146
Phillips PM2.5×6.0 screw	147
Phillips PM2.5×4.0 broad-head screw	149
Phillips PM2.0×10.0 captive screw	150

8 Backup and Recovery

Recovering system information	152
Creating recovery discs	153
Backing up your information	154

When to back up	154
Backup suggestions	154
Using system restore points	154
When to create restore points	155
Create a system restore point	155
Restore to a previous date and time	155
Performing a recovery	156
Recovering from the recovery discs	156
Recovering from the dedicated recovery partition (select models only)	156

9 Connector pin assignments

1394	157
Audio-in (microphone)	158
Audio-out (headphone)	158
External monitor	159
HDMI	160
RJ-11 (modem)	161
RJ-45 (network)	161
Universal Serial Bus	162

10 Power cord set requirements

Requirements for all countries or regions	163
Requirements for specific countries or regions	164

11 Recycling

Battery	165
Display	165

Index	171
--------------------	------------

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 dv7 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:		√	
	<ul style="list-style-type: none"> 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			√
	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 17.0-inch, WSXGA+ (1680 × 1050) AntiGlare 	√	√	√
	<ul style="list-style-type: none"> 17.0-inch, WSXGA+ (1680 × 1050) BrightView 	√	√	√
	<ul style="list-style-type: none"> 17.0-inch, WXGA+ (1440 × 900) AntiGlare 	√	√	√
	<ul style="list-style-type: none"> 17.0-inch, WXGA+ (1440 × 900) BrightView 	√	√	√
	<ul style="list-style-type: none"> AntiGlare glass panel cover support 	√	√	√
	<ul style="list-style-type: none"> Support for lighted logo on display enclosure 	√	√	√
	<ul style="list-style-type: none"> 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	√	√	√
	<ul style="list-style-type: none"> 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:	√	√	√
	<ul style="list-style-type: none"> 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:	√	√	√
	<ul style="list-style-type: none"> 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:	√	√	√
	<ul style="list-style-type: none"> 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

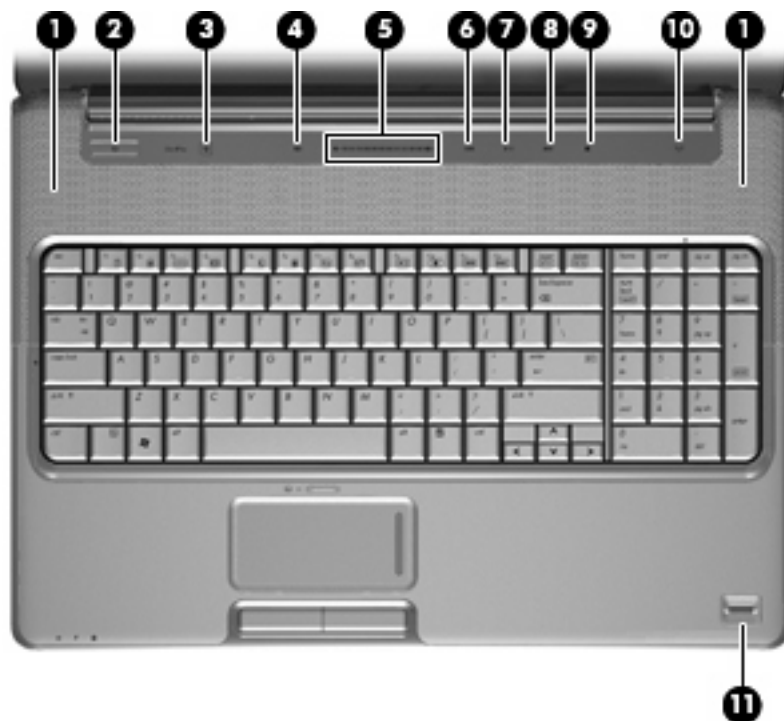
Display components



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)	<p>Send and receive signals from one or more wireless devices. These antennae are not visible from the outside of the computer.</p> <p>NOTE: For optimal transmission, keep the areas immediately around the antennae free from obstructions.</p> <p>NOTE: To see wireless regulatory notices, refer to the section of the <i>Regulatory, Safety and Environmental Notices</i> that applies to your country or region. These notices are located in Help and Support.</p>

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.

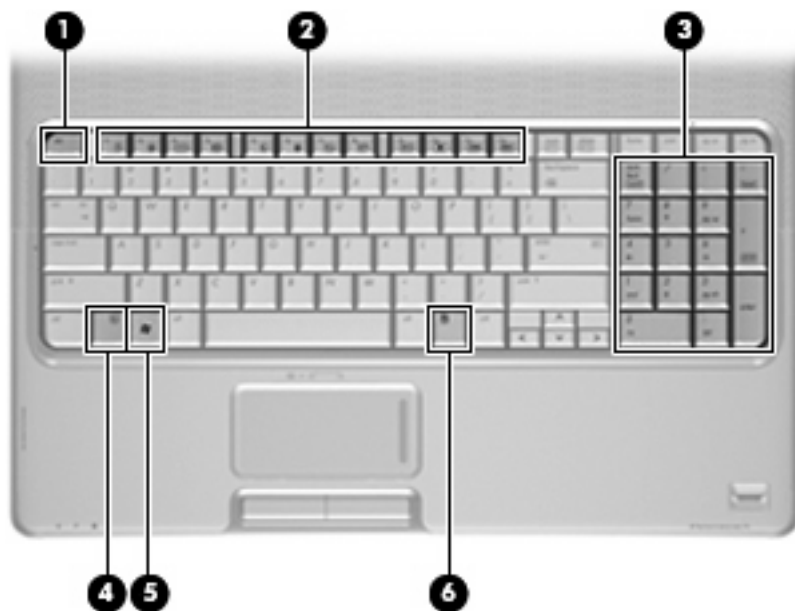
Buttons, fingerprint reader, and speakers



Item	Component	Description
(1)	Speakers (2)	Produce sound.
(2)	Power button	<ul style="list-style-type: none">When the computer is off, press the button to turn on the computer.When the computer is on, press the button 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. <p>If the computer has stopped responding and Windows® shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer.</p> <p>To learn more about your power settings, select Start > Control Panel > System and Maintenance > Power Options.</p>
(3)	Media button	<ul style="list-style-type: none">Launches the QuickPlay program (for models with QuickPlay preinstalled).Launches the DVDPlay program (for models with DVDPlay preinstalled). <p>NOTE: If the computer has been set up to require a logon password, you may be asked to log on to Windows. QuickPlay launches after you log on. Refer to the QuickPlay software Help for more information.</p>

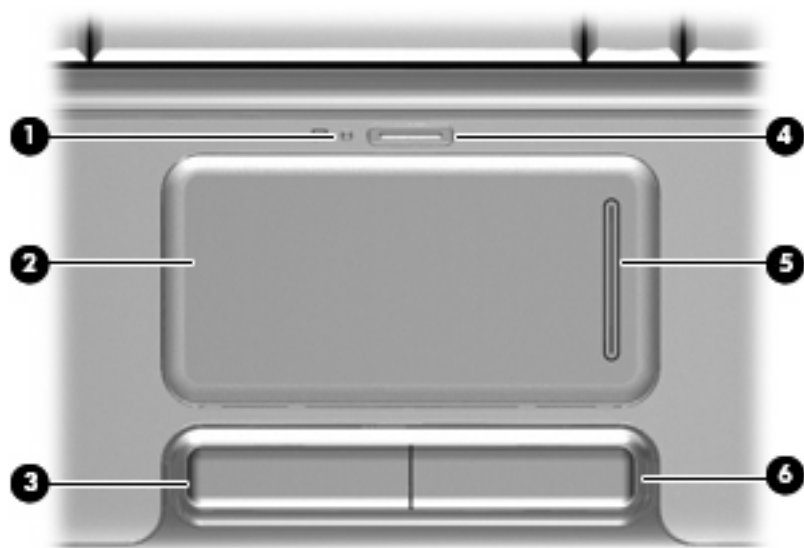
Item	Component	Description
(4)	Volume mute button	Mutes and restores speaker sound.
(5)	Volume scroll zone	Adjusts speaker volume. Slide your finger to the left to decrease volume and to the right to increase volume. You can also tap the minus sign on the scroll zone to decrease volume, or tap the plus sign on the scroll zone to increase volume.
(6)	Previous/rewind button	<ul style="list-style-type: none"> Plays the previous track or chapter when the button is pressed once. Rewinds media when the button is pressed simultaneously with the fn key.
(7)	Play/pause button	Plays or pauses the disc.
(8)	Next/fast forward button	<ul style="list-style-type: none"> Plays the next track or chapter when the button is pressed once. Fast forwards media when pressed simultaneously with the fn key.
(9)	Stop button	Stops playback.
(10)	Wireless button	<p>Turns the wireless feature on or off, but does not create a wireless connection.</p> <p>NOTE: A wireless network must be set up in order to establish a wireless connection.</p>
(11)	Fingerprint reader	Allows a fingerprint logon to Windows, instead of a password logon.

Keys



Item	Component	Description
(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)	Integrated 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	Description
(1)	TouchPad light	<ul style="list-style-type: none">• White: TouchPad is enabled.• Amber: TouchPad is disabled.
(2)	TouchPad*	Moves the pointer and selects or activates items on the screen.
(3)	TouchPad left button*	Functions like the left button on an external mouse.
(4)	TouchPad on/off button	Enables/disables the TouchPad.
(5)	TouchPad scroll zone	Scrolls up or down.
(6)	TouchPad right button*	Functions like the right button on an external mouse.
*This table describes factory settings. To view and change TouchPad preferences, select Start > Control Panel > Hardware and Sound > Mouse .		

Front components



Item	Component	Description
(1)	Power light	<ul style="list-style-type: none"> On: The computer is on. Blinking: The computer is in the Sleep state. Off: The computer is off or in Hibernation.
(2)	Battery light	<ul style="list-style-type: none"> On: A battery is charging. Blinking: A battery that is the only available power source has reached a low battery level. 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.

Rear components



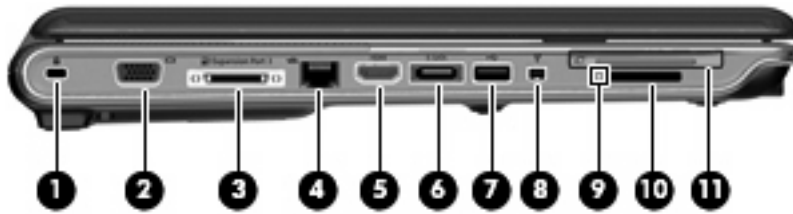
Component	Function
Vents (2)	Enables airflow to cool internal components.
NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.	

Right-side components



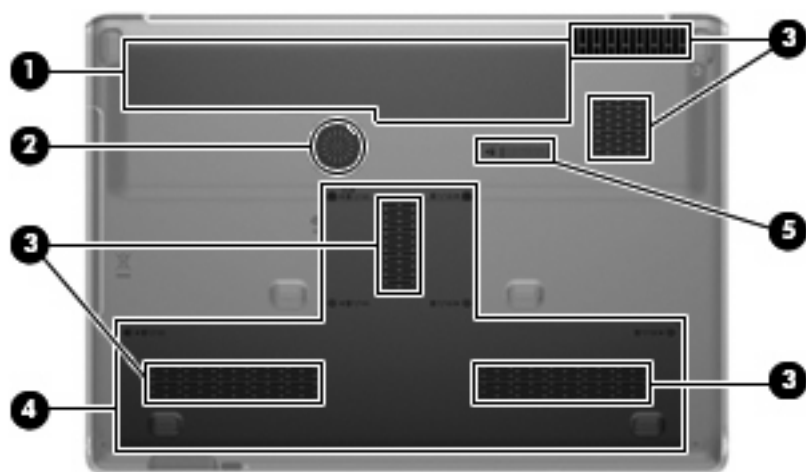
Item	Component	Description
(1)	USB ports (2)	Connect optional USB devices.
(2)	Optical drive light	Blinking: The optical drive is being accessed.
(3)	Optical drive	Reads optical discs and, on select models, also writes to optical discs.
(4)	TV antenna jack (select models only)	Connects a TV antenna, 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)	Power connector	Connects an AC adapter.

Left-side components



Item	Component	Description
(1)	Security cable slot	Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)	External monitor port	Connects an external VGA monitor or projector.
(3)	Expansion port 3	Connects the computer to an optional docking device or an optional expansion product. NOTE: The computer has only one expansion port. The term expansion port 3 describes the type of expansion port.
(4)	RJ-45 (network) jack	Connects a network cable.
(5)	HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component.
(6)	eSATA/USB port	Connects an optional high-performance eSATA component, such as an eSATA external hard drive, or an optional USB device.
(7)	USB port	Connects an optional USB device.
(8)	1394 port (select models only)	Connects an optional IEEE 1394 or 1394a device, such as a camcorder.
(9)	Digital Media Slot light	On: A digital card is being accessed.
(10)	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.
(11)	ExpressCard slot	Supports optional ExpressCard/54 cards.

Bottom components



Item	Component	Description
(1)	Battery bay	Holds the battery.
(2)	Integrated subwoofer	Contains the subwoofer speaker.
(3)	Vents (5)	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.
(4)	Hard drive, memory module, and WLAN module compartment	Holds the hard drive, the memory module slots, and the WLAN module (select models only). 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.
(5)	Battery release latch	Releases the battery from the battery bay.

3 Illustrated parts catalog

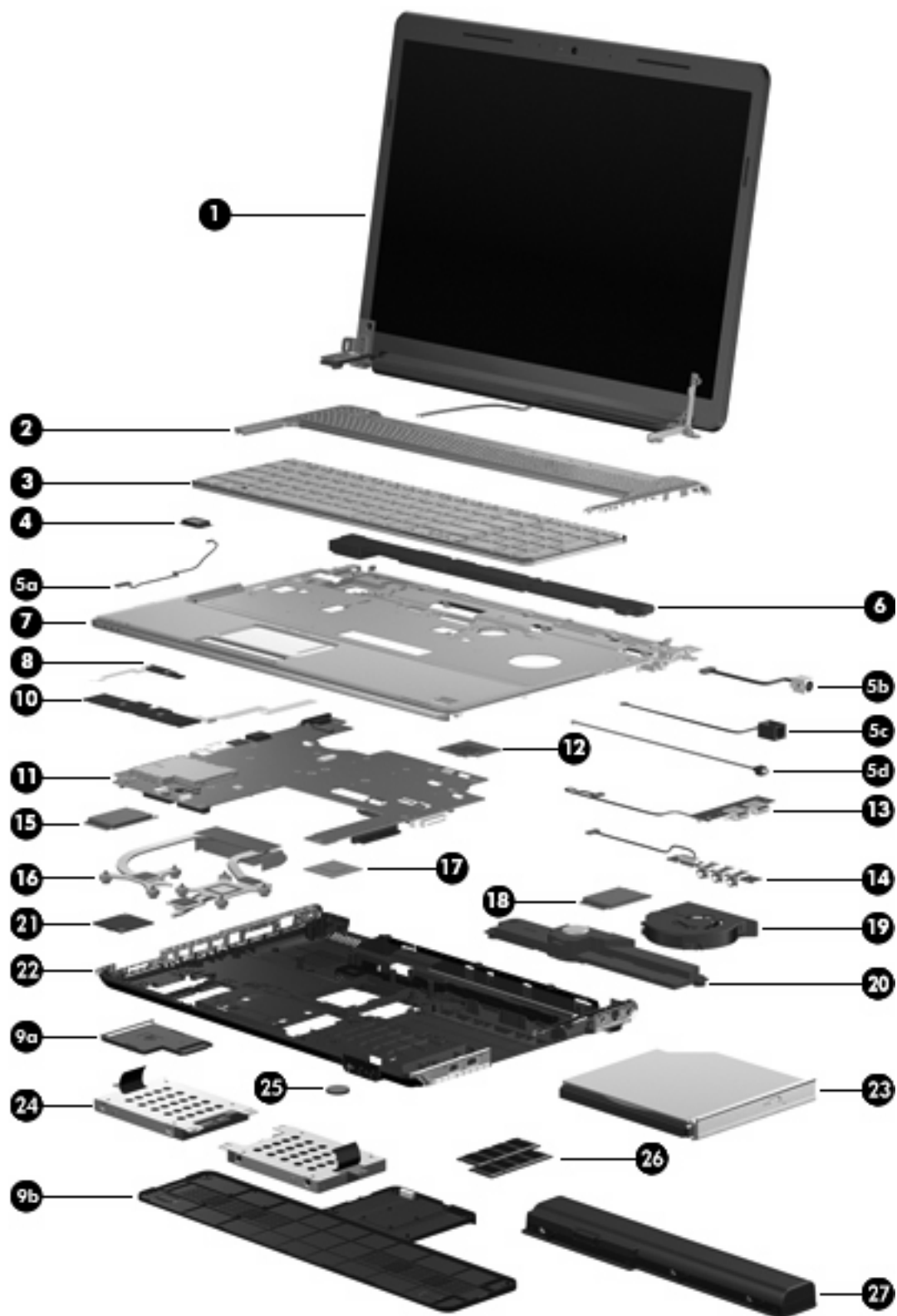
Service tag

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)	17.0-inch display assemblies (include webcam, microphone, and wireless antenna transceivers and cables):	
	For use only with computer models equipped with AMD processors:	
	• WSXGA+ AntiGlare display assembly with webcam and 2 microphones	497104-001
	• WXGA AntiGlare display assembly with webcam and 2 microphones	497103-001
	• WSXGA+ BrightView display assembly with webcam and 2 microphones	488881-001
	• WXGA BrightView display assembly with webcam and 2 microphones	488880-001
	For use only with computer models equipped with Intel processors:	
	• WSXGA+ AntiGlare display assembly with webcam and 2 microphones	480378-001
	• WXGA AntiGlare display assembly with webcam and 2 microphones	480377-001
	• WSXGA+ BrightView display assembly with webcam and 2 microphones	480376-001
	• WXGA BrightView display assembly with webcam and 2 microphones	480375-001
	NOTE: See Display assembly components on page 29 for more information on display assembly spare part numbers.	
(2)	Switch covers (include power button board and cable and LED board and cable)	
	For use only with computer models equipped with AMD processors	480469-001
	For use only with computer models equipped with Intel processors	485605-001
(3)	Keyboards:	
	For use only with computer models equipped with AMD processors:	
	• For use in Denmark, Norway, and Sweden	483275-DH1
	• For use in France	483275-051
	• For use in French Canada	483275-121
	• For use in Germany	483275-041
	• For use in Italy	483275-061
	• For use in the Netherlands	483275-B31
	• For use in Portugal	483275-131
	• For use in Saudi Arabia	483275-171
	• For use in Spain	483275-071
	• For use in Switzerland	483275-111
	• For use in Turkey	483275-141
	• For use in the United Kingdom	483275-031
	• For use in the United States	483275-001
	For use with all computer models:	
	• For use in Asia/Pacific countries and regions	483275-371
	• For use in Belgium	483275-A41

Item	Description	Spare part number
	<ul style="list-style-type: none"> For use in Brazil 	483275-201
	<ul style="list-style-type: none"> For use in the Czech Republic 	483275-221
	<ul style="list-style-type: none"> For use in Europe, the Middle East, and Africa 	483275-021
	<ul style="list-style-type: none"> For use in Greece 	483275-151
	<ul style="list-style-type: none"> For use in Hong Kong 	483275-AC1
	<ul style="list-style-type: none"> For use in Israel 	483275-BB1
	<ul style="list-style-type: none"> For use in Japan 	483275-291
	<ul style="list-style-type: none"> For use in Latin America 	483275-161
	<ul style="list-style-type: none"> For use in the People's Republic of China 	483275-AA1
	<ul style="list-style-type: none"> For use in Russia 	483275-251
	<ul style="list-style-type: none"> For use in Thailand 	483275-281
(4)	Bluetooth® module NOTE: The Bluetooth module spare part kit does not include a Bluetooth module cable. The Bluetooth module cable is included in the Cable Kit, spare part number 480474-001.	483113-001
	Cable Kit , includes: NOTE: See Cable Kit on page 34 for more Cable Kit spare part information.	480474-001
(5a)	Bluetooth module cable	
(5b)	Power connector cable	
(5c)	Modem module cable (includes an RJ-11 jack)	
(5d)	TV tuner module cable	
(6)	Speaker assembly	480470-001
(7)	Top covers:	
	For use only with computer models equipped with a fingerprint reader	480466-001
	For use only with computer models not equipped with a fingerprint reader	480465-001
(8)	TouchPad on/off button board (includes cable)	481392-001
	Plastics Kit , includes: NOTE: See Plastics Kit on page 33 for more Plastics Kit spare part information.	480467-001
(9a)	ExpressCard slot bezel	
(9b)	Accessory cover	
(10)	TouchPad button board (includes 2 cables)	491972-001
(11)	System boards (include replacement thermal material): For use only with computer models equipped with AMD processors:	
	<ul style="list-style-type: none"> With RX781 Northbridge and ATI HD3450 discrete graphics subsystem memory 	486541-001
	<ul style="list-style-type: none"> With M780G Northbridge and UMA graphics subsystem memory 	486542-001

Item	Description	Spare part number
	For use only with computer models equipped with Intel processors:	
	<ul style="list-style-type: none"> With PM45 Northbridge and nVidia NB9P-GS discrete graphics subsystem memory and 512-GB of graphics subsystem memory 	480365-001
	<ul style="list-style-type: none"> With PM45 Northbridge and nVidia NB9M-GE discrete graphics subsystem memory and 256-GB of graphics subsystem memory 	480366-001
(12)	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 480474-001.	
	For use in all countries and regions except Australia and New Zealand	461749-001
	For use only in Australia and New Zealand	461749-011
(13)	USB boards (includes cable):	
	For use only with computer models equipped with AMD processors	488886-001
	For use only with computer models equipped with Intel processors	480479-001
(14)	Audio/infrared board	480477-001
	NOTE: The audio/infrared board spare part kit does not include an audio/infrared board cable. The audio/infrared board cable is included in the Cable Kit, spare part number 480474-001.	
(15)	WLAN modules:	
	For use only with computer models equipped with AMD processors:	
	<ul style="list-style-type: none"> 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

Item	Description	Spare part number
•	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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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

Item	Description	Spare part number
•	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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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
•	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

Item	Description	Spare part number
	<ul style="list-style-type: none"> 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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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:	
	<ul style="list-style-type: none"> Intel Wi-Fi Link 5100 802.11a/b/g WLAN module for use only in Pakistan, Russia, and the Ukraine 	482957-001
	<ul style="list-style-type: none"> Intel Wi-Fi Link 5100 802.11a/b/g/n WLAN module for use in all countries and regions except Pakistan, Russia, and the Ukraine 	480985-001
	<ul style="list-style-type: none"> 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

Item	Description	Spare part number
•	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, 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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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	487330-002
•	Broadcom 4322 802.11a/b/g/n WLAN module for use in Japan	487330-291
•	Broadcom 4322 802.11a/b/g/n WLAN module for use in South Korea	464382-AD1
•	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

Item	Description	Spare part number
	<ul style="list-style-type: none"> 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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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
(16)	Heat sinks (include replacement thermal material):	
	For use only with computer models equipped with AMD processors:	
	<ul style="list-style-type: none"> For use only with computer models equipped with graphics subsystems with discrete memory 	488879-001
	<ul style="list-style-type: none"> For use only with computer models equipped with graphics subsystems with UMA memory 	490503-001
	For use only with computer models equipped with Intel processors:	
	<ul style="list-style-type: none"> For use only with computer models equipped graphics subsystems with 512-MB of discrete memory 	480472-001 and 481144-001
	<ul style="list-style-type: none"> For use only with computer models equipped graphics subsystems with 256-MB of discrete memory 	480473-001
(17)	Fingerprint reader board (includes cable)	480476-001
(18)	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 480474-001.	
	DVB-T TV tuner module	482899-003
	DVD-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	482900-002

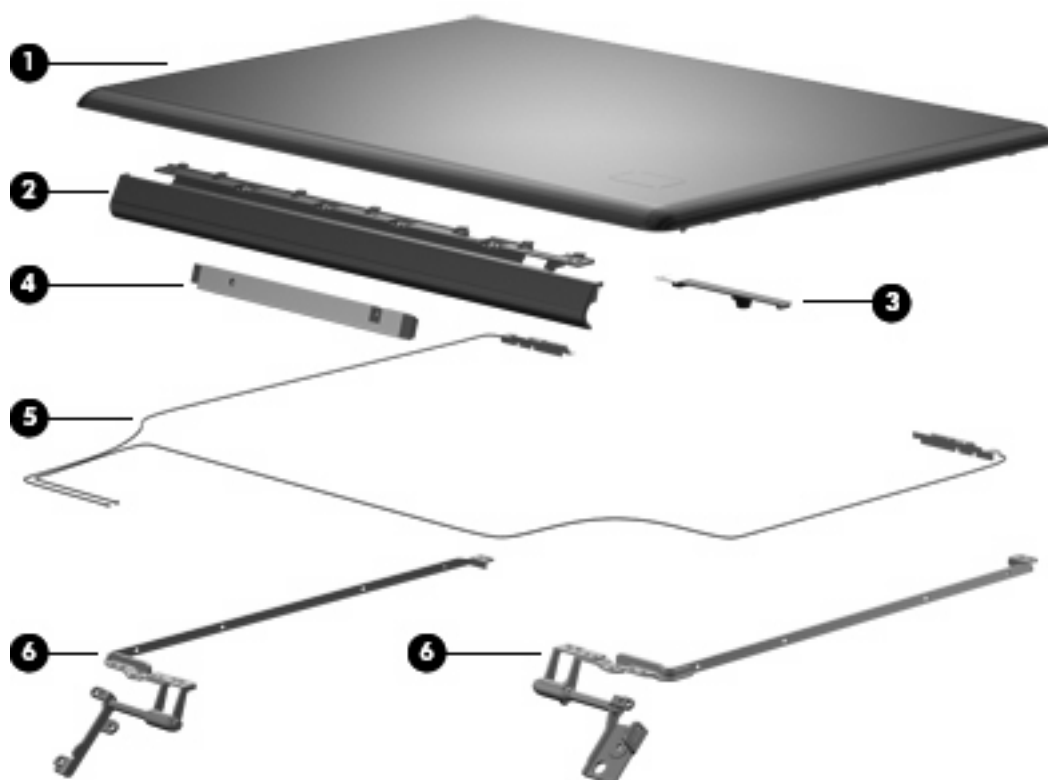
Item	Description	Spare part number
	With PAL jack	482900-001
(19)	Fans:	
	For use only with computer models equipped with AMD processors	488885-001
	For use only with computer models equipped with Intel processors	480481-001
(20)	Subwoofer (includes 2 mounting grommets)	480471-001
(21)	Processors (include replacement thermal material):	
	AMD processors:	
	• Turion Ultra ZM86 2.40-GHz	480854-001
	• Turion Ultra ZM82 2.20-GHz	480852-001
	• Turion Ultra ZM80 2.10-GHz	480851-001
	• Turion RM70 2.00-GHz	480857-001
	• Athlon QL60 1.90-GHz	480856-001
	Intel processors:	
	• Intel Core2 Duo 2.80-GHz	481377-001
	• Intel Core2 Duo 2.53-GHz	481374-001
	• Intel Core2 Duo 2.40-GHz	481375-001
	• Intel Core2 Duo 2.26-GHz	481376-001
	• Intel Core2 Duo 2.00-GHz	491000-001
(22)	Base enclosures (include 6 rubber feet):	
	For use with all computer models:	
	For use only with computer models equipped with a 1394 port, modem module, and TV tuner module	490038-001
	For use only with computer models equipped with a 1394 port and modem module, but not a TV tuner module	490040-001
	For use only with computer models equipped with a 1394 port and TV tuner module, but not a modem module	490039-001
	For use only with computer models equipped with a 1394 port, but not a modem module or a TV tuner module	480464-001
	For use only with computer models equipped with AMD processors:	
	For use only with computer models equipped with a 1394 port, modem module, and TV tuner module	490030-001 and 490034-001
	For use only with computer models equipped with a 1394 port and modem module, but not a TV tuner module	490032-001 and 490036-001
	For use only with computer models equipped with a 1394 port and TV tuner module, but not a modem module	490031-001 and 490035-001
	For use only with computer models equipped with a 1394 port, but not a modem module or a TV tuner module (include 6 rubber feet)	490033-001 and 492546-001
	Rubber Kit (not illustrated, includes 6 base enclosure rubber feet)	480480-001

Item	Description	Spare part number
(23)	Optical drives (include a bezel and an optical drive bracket):	
	Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer	480461-001
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	480459-001
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive	480458-001
(24)	Hard drives (include bracket):	
	320-GB, 5400-rpm	480456-001
	250-GB, 5400-rpm	480455-001
	160-GB, 7200-rpm	480454-001
	160-GB, 5400-rpm	480453-001
	120-GB, 5400-rpm	480452-001
	Hard Drive Hardware Kit (not illustrated, includes bracket and screws)	480457-001
(25)	RTC battery	480468-001
(26)	Memory modules (667-MHz, PC2-6400, 1-DIMM):	
	2048-MB memory module	480382-001
	1024-MB memory module	480381-001
	512-MB memory module	480380-001
(27)	Batteries:	
	8-cell, 73-Wh, 2.55-Ah Li-ion battery for use with all computer models	480385-001
	6-cell, 47-Wh, 2.55-Ah Li-ion battery for use only with computer models equipped with AMD processors	486766-001

Display assembly components

The HP Pavilion dv7 Entertainment PC offers 2 types of display assemblies. Component spare parts are listed in this section for AntiGlare display assemblies and BrightView display assemblies.

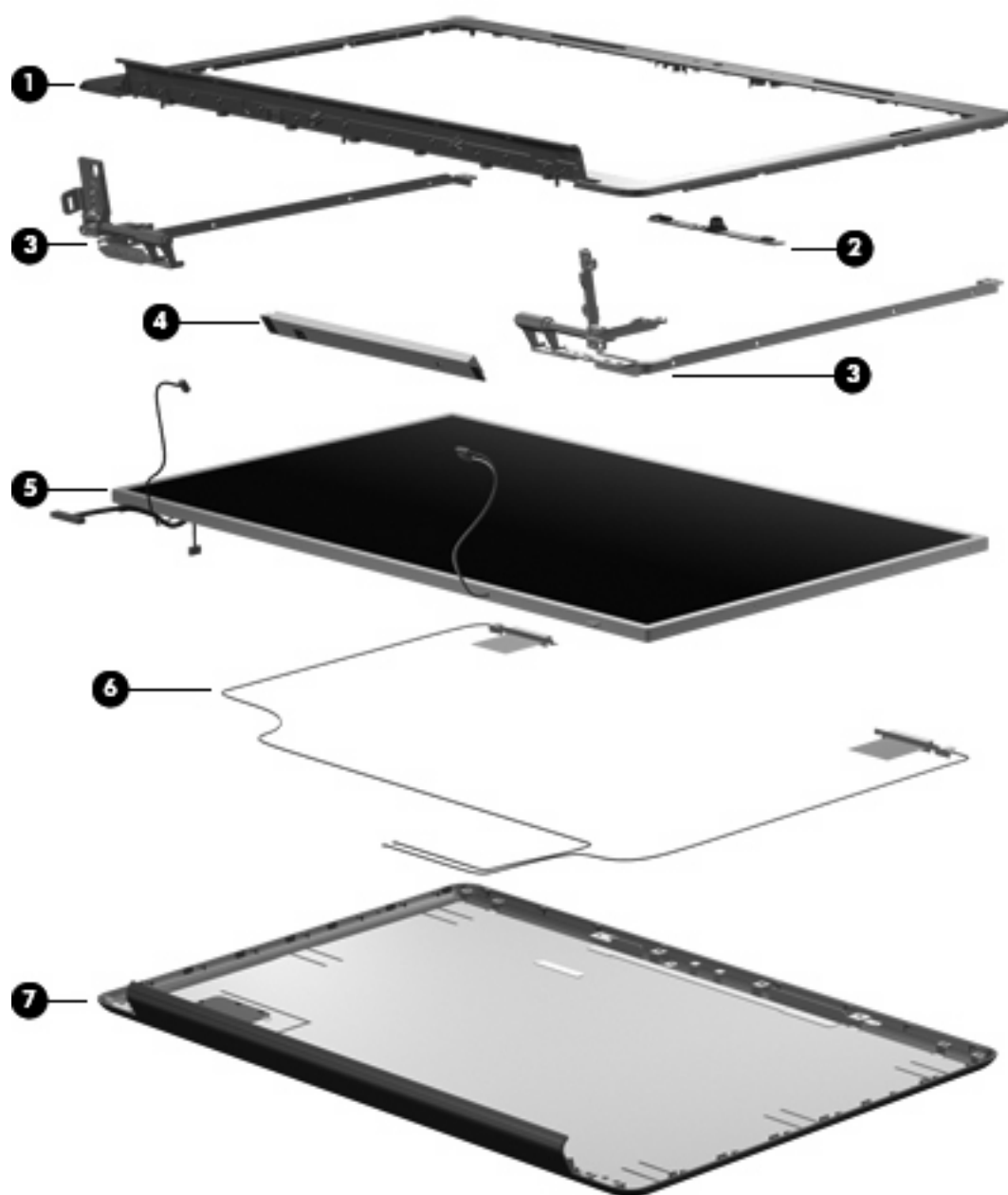
AntiGlare display assembly spare parts



Item	Description	Spare part number
(1)	Display enclosures (include 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)	490504-001
	For use with computer models equipped with 802.11a/b/g and 802.11b/g WLAN modules (includes 2 wireless antenna transceivers and cables)	480490-001
(2)	Display inverter cover	485606-001
(3)	Webcam/microphone module	480446-001
(4)	Display inverter	480447-001
(5)	Wireless antenna transceiver and cable sets:	
	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
(6)	Display hinges (includes left and right hinges)	498136-001
	Display Cable Kit (includes display panel cable)	480449-001

Item	Description	Spare part number
	Display Rubber Kit (not illustrated, includes display bezel rubber screw covers)	495896-001
	Display Screw Kit (not illustrated)	490502-001

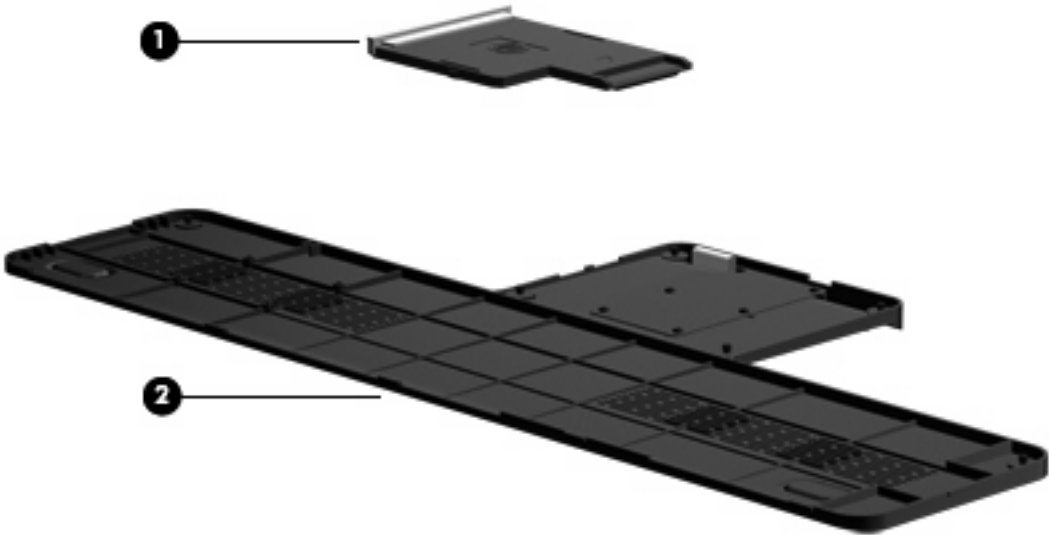
BrightView display assembly spare parts



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)	Display hinges (includes left and right hinges)	480448-001
(4)	Display inverter	480447-001
(5)	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

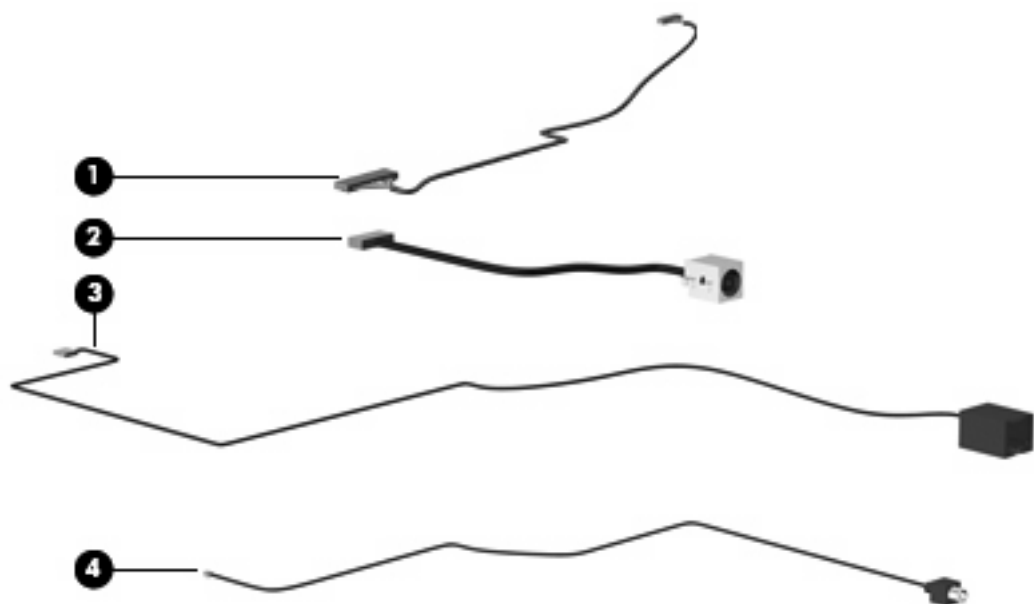
Item	Description	Spare part number
(6)	Wireless antenna transceivers and cables:	
	For use with computer models equipped with 802.11a/b/g/n WLAN modules (includes 3 wireless antenna transceivers and cables)	489804-001
	For use with computer models equipped with 802.11a/b/g and 802.11b/g WLAN modules (includes 2 wireless antenna transceivers and cables)	487748-001
(7)	Display 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 Cable Kit (not illustrated, includes display panel cable)	480474-001
	Display Rubber Kit (not illustrated, includes display bezel rubber screw covers)	480442-001
	Display Screw Kit (not illustrated)	480443-001

Plastics Kit



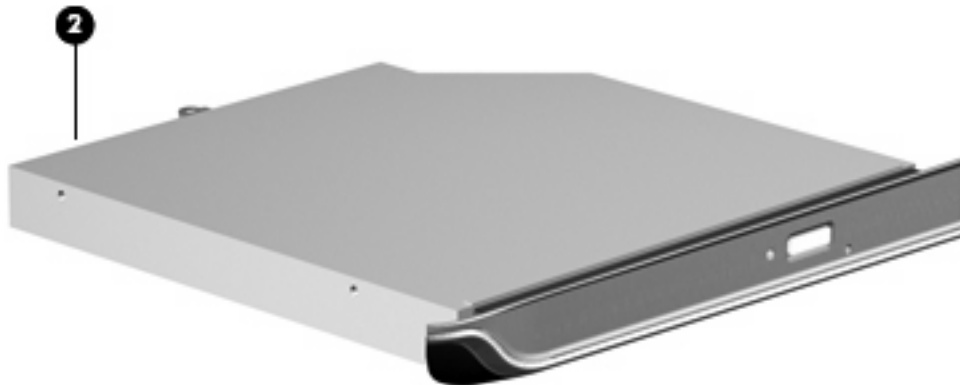
Item	Description	Spare part number
	Plastics Kit	480467-001
(1)	ExpressCard slot bezel	
(2)	Accessory cover (includes 6 captive screws, secured by C-clips)	

Cable Kit



Item	Description	Spare part number
	Cable Kit	480474-001
(1)	Bluetooth module cable	
(2)	Power connector cable	
(3)	Modem module cable (includes an RJ-11 connector)	
(4)	TV tuner module cable	
(5)	Audio/infrared board cable (not illustrated)	

Mass storage devices



Item	Description	Spare part number
(1)	Hard drives (include bracket):	
	320-GB, 5400-rpm	480456-001
	250-GB, 5400-rpm	480455-001
	160-GB, 7200-rpm	480454-001
	160-GB, 5400-rpm	480453-001
	120-GB, 5400-rpm	480452-001
(2)	Optical drives (include a bezel and an optical drive bracket):	
	Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer	480461-001
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	480459-001
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive	480458-001

Miscellaneous parts

Description	Spare part number
AC adapters	
90-W AC adapter (for use only with computer models equipped with graphics subsystems with discrete memory)	463955-001
65-W AC adapter (for use only with computer models equipped with graphics subsystems with UMA memory)	463958-001
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:	
For use in Argentina	490371-D01
For use in Australia and New Zealand	490371-011
For use in Denmark	490371-081
For use in Europe, the Middle East, and Africa	490371-021
For use in India	490371-D61
For use in Israel	490371-BB1
For use in Italy	490371-061
For use in Switzerland	490371-291
For use in the People's Republic of China	490371-AA1
For use in South Africa	490371-AR1
For use in South Korea	490371-AD1
For use in Switzerland	490371-111
For use in the United Kingdom	490371-031
For use in the United States	490371-001
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 , includes:	480475-001
<ul style="list-style-type: none"> • Phillips PM3.0×4.0 screw • Phillips PM2.5×13.0 screw • Phillips PM2.5×6.0 captive screw • Phillips PM2.5×6.0 screw • Phillips PM2.5×5.0 screw • Phillips PM2.5×4.0 broad-head screw • Phillips PM2.5×4.0 screw • Phillips PM2.0×10.0 captive screw • Phillips PM2.0×4.0 screw • Phillips PM2.0×3.0 broad-head screw 	

Sequential part number listing

Spare part number	Description
371693-001	Wired headset with volume control
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

Spare part number	Description
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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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
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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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

Spare part number	Description
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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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
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 480474-001.
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 480474-001.
463955-001	90-W AC adapter (for use only with computer models equipped with graphics subsystems with discrete memory)
463958-001	65-W AC adapter (for use only with computer models equipped with graphics subsystems with UMA memory)
464382-AD1	Broadcom 4322 802.11a/b/g/n WLAN module for use only with computer models equipped with Intel processors in South Korea
464793-001	Full-function remote control with teletext
465540-001	Full-function remote control
465541-001	Thin profile remote control (fits into ExpressCard slot)
480365-001	System board with PM45 Northbridge and nVidia NB9P-GS discrete graphics subsystem memory and 512-GB of graphics subsystem memory for use only with computer models equipped with Intel processors (includes replacement thermal material)
480366-001	System board with PM45 Northbridge and nVidia NB9M-GE discrete graphics subsystem memory and 256-GB of graphics subsystem memory for use only with computer models equipped with Intel processors (includes replacement thermal material)
480375-001	17.0-inch WXGA BrightView display assembly with webcam and 2 microphones for use only with computer models equipped with an Intel processor (includes webcam, microphone, and wireless antenna transceivers and cables)
480376-001	17.0-inch WSXGA+ BrightView display assembly with webcam and 2 microphones for use only with computer models equipped with an Intel processor (includes webcam, microphone, and wireless antenna transceivers and cables)

Spare part number	Description
480377-001	17.0-inch WXGA AntiGlare display assembly with webcam and 2 microphones for use only with computer models equipped with an Intel processor (includes webcam, microphone, and wireless antenna transceivers and cables)
480378-001	17.0-inch WSXGA+ AntiGlare display assembly with webcam and 2 microphones for use only with computer models equipped with an Intel processor (includes webcam, microphone, and wireless antenna transceivers and cables)
480380-001	512-MB memory module (667-MHz, PC2-6400, 1-DIMM)
480381-001	1024-MB memory module (667-MHz, PC2-6400, 1-DIMM)
480382-001	2048-MB memory module (667-MHz, PC2-6400, 1-DIMM)
480385-001	8-cell, 73-Wh, 2.55-Ah Li-ion battery for use with all computer models
480440-001	WXGA BrightView display panel for use only with computer models equipped with BrightView display assemblies (includes display panel cable)
480441-001	WSXGA+ BrightView display panel for use only with computer models equipped with BrightView display assemblies (includes display panel cable)
480442-001	Display Rubber Kit for use only with computer models equipped with BrightView display assemblies (includes display bezel rubber screw covers)
480443-001	Display Screw Kit for use only with computer models equipped with BrightView display assemblies
480444-001	Display bezel for use only with computer models equipped with BrightView display assemblies (includes logo and display lid switch actuator magnet)
480445-001	Display enclosure for use only with computer models equipped with BrightView display assemblies
480446-001	Webcam/microphone module
480447-001	Display inverter
480448-001	Display hinges for use only with computer models equipped with BrightView display assemblies (includes left and right hinges)
480449-001	Display Cable Kit (includes display panel cable)
480452-001	120-GB, 5400-rpm hard drive (includes bracket)
480453-001	160-GB, 5400-rpm hard drive (includes bracket)
480454-001	160-GB, 7200-rpm hard drive (includes bracket)
480455-001	250-GB, 5400-rpm hard drive (includes bracket)
480456-001	320-GB, 5400-rpm hard drive (includes bracket)
480457-001	Hard Drive Hardware Kit (includes bracket and screws)
480458-001	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive
480459-001	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe
480461-001	Blu-ray Disc ROM Drive with SuperMulti DVD±R/RW Double-Layer
480464-001	Base enclosure for use with all computer models equipped with a 1394 port, but not a modem module or a TV tuner module (includes 6 rubber feet)
480465-001	Top cover for use only with computer models not equipped with a fingerprint reader
480466-001	Top cover for use only with computer models equipped with a fingerprint reader

Spare part number	Description
480467-001	Plastics Kit NOTE: See Plastics Kit on page 33 for more Plastics Kit spare part information.
480468-001	RTC battery
480469-001	Switch cover for use only with computer models equipped with AMD processors (includes power button board and cable and LED board and cable)
480470-001	Speaker assembly
480471-001	Subwoofer (includes 2 mounting grommets)
480472-001	Heat sink for use only with computer models equipped with Intel processors and graphics subsystems with 512-MB of discrete memory (includes replacement thermal material)
480473-001	Heat sink for use only with computer models equipped with Intel processors and graphics subsystems with 256-MB of discrete memory (includes replacement thermal material)
480474-001	Cable Kit NOTE: See Cable Kit on page 34 for more Cable Kit spare part information.
480475-001	Screw Kit
480476-001	Fingerprint reader board (includes cable)
480477-001	Audio/infrared board NOTE: <i>The audio/infrared board spare part kit does not include an audio/infrared board cable. The audio/infrared board cable is included in the Cable Kit, spare part number 480474-001.</i>
480479-001	USB board for use only with computer models equipped with Intel processors (includes cable)
480480-001	Rubber Kit (includes 6 base enclosure rubber feet)
480481-001	Fan for use only with computer models equipped with Intel processors
480490-001	Display enclosure for use only with computer models equipped with AntiGlare display assemblies and 802.11a/b/g and 802.11b/g WLAN modules (includes 2 wireless antenna transceivers and cables)
480851-001	AMD Turion Ultra ZM80 2.10-GHz processor (includes replacement thermal material)
480852-001	AMD Turion Ultra ZM82 2.20-GHz processor (includes replacement thermal material)
480854-001	AMD Turion Ultra ZM86 2.40-GHz processor (includes replacement thermal material)
480856-001	AMD Athlon QL60 1.90-GHz processor (includes replacement thermal material)
480857-001	AMD Turion RM70 2.00-GHz processor (includes replacement thermal material)
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 except Pakistan, Russia, and the Ukraine
481144-001	Heat sink for use only with computer models equipped with Intel processors and graphics subsystems with 512-MB of discrete memory (includes replacement thermal material)
481374-001	Intel Core2 Duo 2.53-GHz processor (includes replacement thermal material)
481375-001	Intel Core2 Duo 2.40-GHz processor (includes replacement thermal material)
481376-001	Intel Core2 Duo 2.26-GHz processor (includes replacement thermal material)
481377-001	Intel Core2 Duo 2.80-GHz processor (includes replacement thermal material)
481392-001	TouchPad on/off button board (includes cable)

Spare part number	Description
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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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
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 480474-001.
482899-002	DVD-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 480474-001.
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 480474-001.
482900-001	TV tuner external antenna cable with PAL jack
482900-002	TV tuner external antenna cable with F-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 only in Pakistan, Russia, and the Ukraine
483113-001	Bluetooth module NOTE: The Bluetooth module spare part kit does not include a Bluetooth module cable. The Bluetooth module cable is included in the Cable Kit, spare part number 480474-001. See Cable Kit on page 34 for more Cable Kit spare part information.
483275-001	Keyboard for use only with computer models equipped with AMD processors in the United States
483275-021	Keyboard for use with all computer models in Europe, the Middle East, and Africa
483275-031	Keyboard for use only with computer models equipped with AMD processors in the United Kingdom
483275-041	Keyboard for use only with computer models equipped with AMD processors in Germany

Spare part number	Description
483275-051	Keyboard for use only with computer models equipped with AMD processors in France
483275-061	Keyboard for use only with computer models equipped with AMD processors in Italy
483275-071	Keyboard for use only with computer models equipped with AMD processors in Spain
483275-111	Keyboard for use only with computer models equipped with AMD processors in Switzerland
483275-121	Keyboard for use only with computer models equipped with AMD processors in French Canada
483275-131	Keyboard for use only with computer models equipped with AMD processors in Portugal
483275-141	Keyboard for use only with computer models equipped with AMD processors in Turkey
483275-151	Keyboard for use with all computer models in Greece
483275-161	Keyboard for use with all computer models in Latin America
483275-171	Keyboard for use only with computer models equipped with AMD processors in Saudi Arabia
483275-201	Keyboard for use with all computer models in Brazil
483275-221	Keyboard for use with all computer models in the Czech Republic
483275-251	Keyboard for use with all computer models in Russia
483275-281	Keyboard for use with all computer models in Thailand
483275-291	Keyboard for use with all computer models in Japan
483275-371	Keyboard for use with all computer models in Asia/Pacific countries and regions
483275-A41	Keyboard for use with all computer models in Belgium
483275-AA1	Keyboard for use with all computer models in the People's Republic of China
483275-AC1	Keyboard for use with all computer models in Hong Kong
483275-B31	Keyboard for use only with computer models equipped with AMD processors in the Netherlands
483275-BB1	Keyboard for use with all computer models in Israel
483275-DH1	Keyboard for use only with computer models equipped with AMD processors in Denmark, Norway, and Sweden
485605-001	Switch cover for use only with computer models equipped with Intel processors (includes power button board and cable and LED board and cable)
485606-001	Display inverter cover
486541-001	System board with RX781 Northbridge and ATI HD3450 graphics subsystem with discrete memory for use only with computer models equipped with AMD processors (includes replacement thermal material)
486542-001	System board with M780G Northbridge and UMA graphics subsystem memory for use only with computer models equipped with AMD processors (includes replacement thermal material)
486766-001	6-cell, 47-Wh, 2.55-Ah Li-ion battery for use only with computer models equipped with AMD processors
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

Spare part number	Description
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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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
487330-291	Broadcom 4322 802.11a/b/g/n WLAN module for use only with computer models equipped with Intel processors in Japan
487748-001	Wireless antenna transceivers and cables for use with computer models equipped with 802.11a/b/g and 802.11b/g WLAN modules (includes 2 wireless antenna transceivers and cables)
488879-001	Heat sink for use only with computer models equipped with AMD processors and graphics subsystems with discrete memory (includes replacement thermal material)
488880-001	17.0-inch WXGA BrightView display assembly with webcam and 2 microphones for use only with computer models equipped with AMD processors (includes webcam, microphone, and wireless antenna transceivers and cables)
488881-001	17.0-inch WSXGA+ BrightView display assembly with webcam and 2 microphones for use only with computer models equipped with AMD processors (includes webcam, microphone, and wireless antenna transceivers and cables)
488884-001	Display enclosure for use with computer models equipped with a BrightView display assembly and 802.11a/b/g and 802.11b/g WLAN modules (includes 2 wireless antenna transceivers and cables and logo LED board and cable)
488885-001	Fan for use only with computer models equipped with AMD processors
488886-001	USB board for use only with computer models equipped with AMD processors (includes cable)
489804-001	Wireless antenna transceiver and cable sets
490030-001	Base enclosure for use only with computer models equipped with AMD processors and a 1394 port, modem module, and TV tuner module (includes 6 rubber feet)
490031-001	Base enclosure for use only with computer models equipped with AMD processors and a 1394 port and TV tuner module, but not a modem module (includes 6 rubber feet)
490032-001	Base enclosure for use only with computer models equipped with AMD processors and a 1394 port and modem module, but not a TV tuner module (includes 6 rubber feet)
490033-001	Base enclosure for use only with computer models equipped with AMD processors and a 1394 port, but not a modem module or a TV tuner module (includes 6 rubber feet)

Spare part number	Description
490034-001	Base enclosure for use only with computer models equipped with AMD processors and a 1394 port, modem module, and TV tuner module (includes 6 rubber feet)
490035-001	Base enclosure for use only with computer models equipped with AMD processors and a 1394 port and TV tuner module, but not a modem module (includes 6 rubber feet)
490036-001	Base enclosure for use only with computer models equipped with AMD processors and a 1394 port and modem module, but not a TV tuner module (includes 6 rubber feet)
490038-001	Base enclosure for use with all computer models equipped with AMD processors and a 1394 port, modem module, and TV tuner module (includes 6 rubber feet)
490039-001	Base enclosure for use with all computer models equipped with AMD processors and a 1394 port and TV tuner module, but not a modem module (includes 6 rubber feet)
490040-001	Base enclosure for use with all computer models equipped with AMD processors and a 1394 port and modem module, but not a TV tuner module (includes 6 rubber feet)
490371-001	Power cord for use in the United States
490371-011	Power cord for use in Australia and New Zealand
490371-021	Power cord for use in Europe, the Middle East, and Africa
490371-031	Power cord for use in the United Kingdom
490371-061	Power cord for use in Italy
490371-081	Power cord for use in Denmark
490371-111	Power cord for use in Switzerland
490371-291	Power cord for use in Japan
490371-AA1	Power cord for use in the People's Republic of China
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
490502-001	Display Screw Kit for use only with computer models equipped with AntiGlare display assemblies
490503-001	Heat sink for use only with computer models equipped with AMD processors and graphics subsystems with UMA memory (includes replacement thermal material)
490504-001	Display enclosure for use only with computer models equipped with an AntiGlare display assembly and an 802.11a/b/g/n WLAN modules (includes 3 wireless antenna transceivers and cables) (includes wireless antenna transceivers and cables)
491000-001	Intel Core2 Duo 2.00-GHz processor (includes replacement thermal material)
491972-001	TouchPad button board (includes 2 cables)
492546-001	Base enclosure for use only with computer models equipped with AMD processors and a 1394 port, but not a modem module or a TV tuner module (includes 6 rubber feet)
495896-001	Display Rubber Kit for use only with computer models equipped with an AntiGlare display assembly (includes display bezel rubber screw covers)

Spare part number	Description
497103-001	17.0-inch WXGA AntiGlare display assembly for use only with computer models equipped with AMD processors (include webcam, microphone, and wireless antenna transceivers and cables)
497104-001	17.0-inch WXGA AntiGlare display assembly for use only with computer models equipped with AMD processors (include webcam, microphone, and wireless antenna transceivers and cables)
498136-001	Display hinges for use only with computer models equipped with an AntiGlare display assembly (includes left and right hinges)

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.

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

Unknown user password

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



NOTE: These steps also clear CMOS.

Before disassembling the computer, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 54](#)).
5. Remove the RTC battery (see [RTC battery on page 63](#)).
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 115 screws, in 10 different sizes, that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Service tag

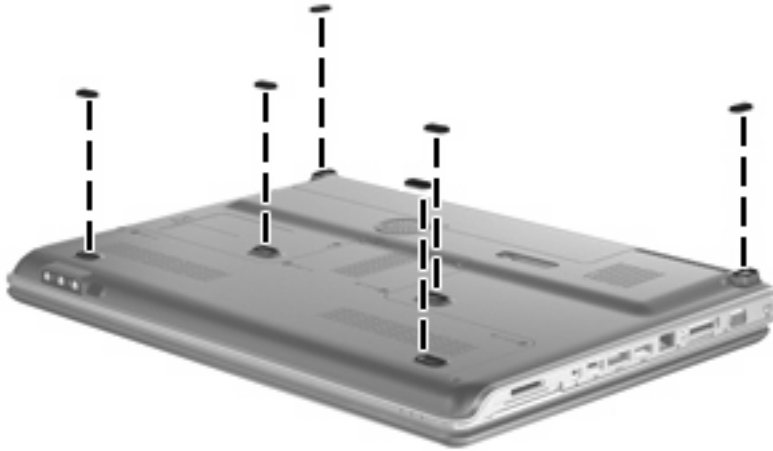
The service tag, affixed to the bottom of the computer, provides information that may be needed when troubleshooting system problems. The service tag provides the following information:

- (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 Kit, spare part number 480480-001. There are 6 rubber feet that attach to the base enclosure in the locations shown in the following illustration.



Battery

Description	Spare part number
8-cell, 73-Wh, 2.55-Ah Li-ion battery for use with all computer models	480385-001
6-cell, 47-Wh, 2.55-Ah Li-ion battery for use only with computer models equipped with AMD processors	486766-001

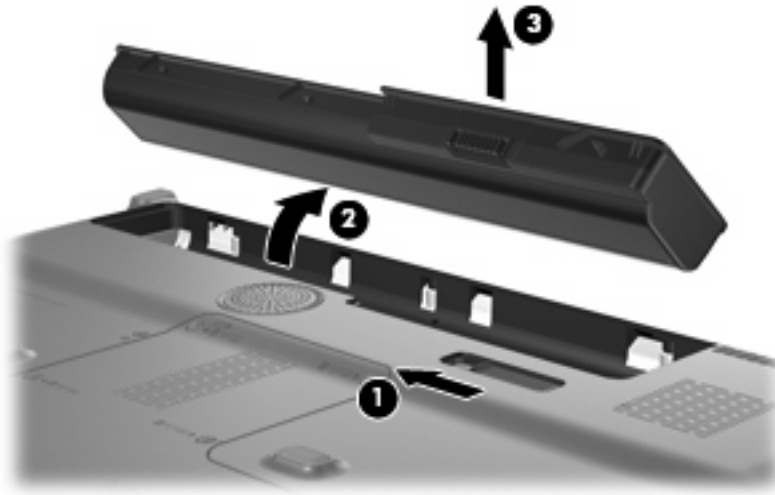
Before disassembling the computer, follow these steps:

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

Remove the battery:


1. Turn the computer upside down on a flat surface.
2. Slide the battery release latch **(1)** to release the computer.

3. Pivot the battery **(2)** upward and remove it **(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.

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	480446-001

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

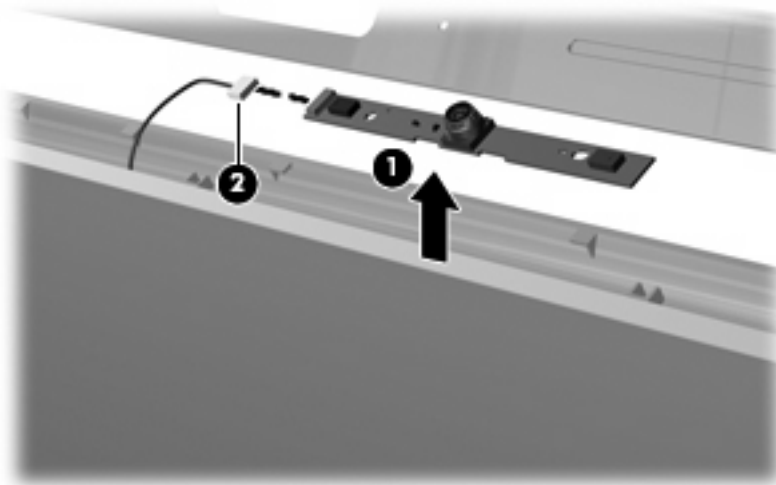
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord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

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	480461-001
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	480459-001
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive	480458-001

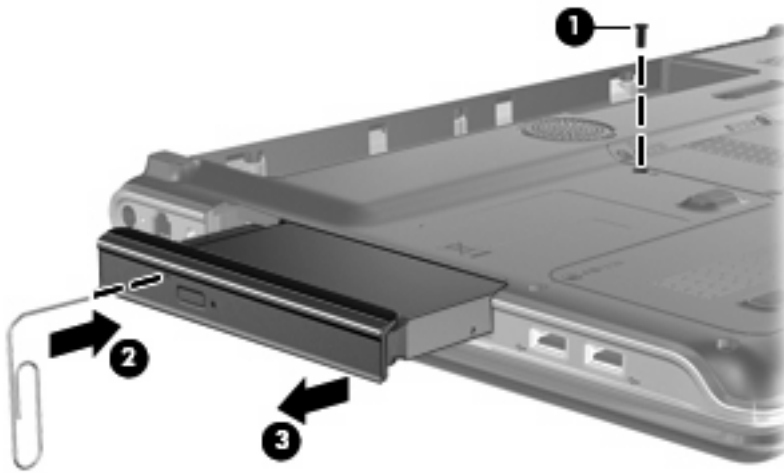
Before removing the optical drive, follow these steps:

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 54](#)).

Remove the optical drive:

1. Position the computer with the front toward you.
2. Remove the Phillips PM2.5×5.0 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.

Hard drive



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

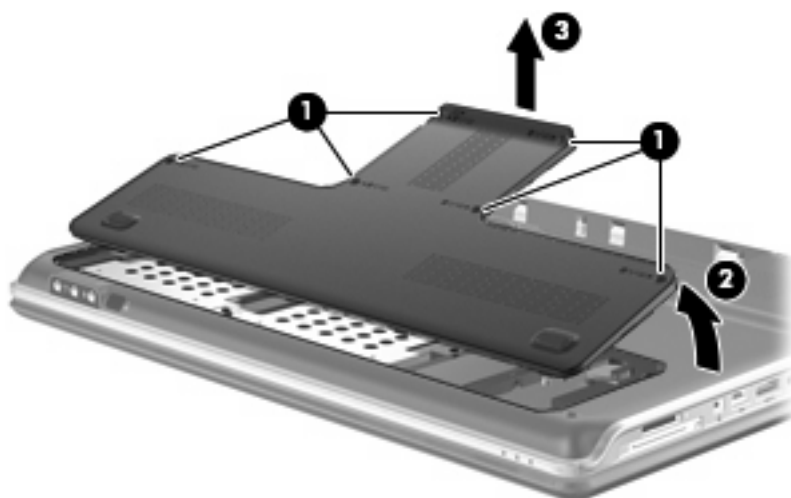
Description	Spare part number
320-GB, 5400-rpm	480456-001
250-GB, 5400-rpm	480455-001
160-GB, 7200-rpm	480454-001
160-GB, 5400-rpm	480453-001
120-GB, 5400-rpm	480452-001
Hard Drive Hardware Kit (includes bracket and screws)	480457-001

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 54](#)).

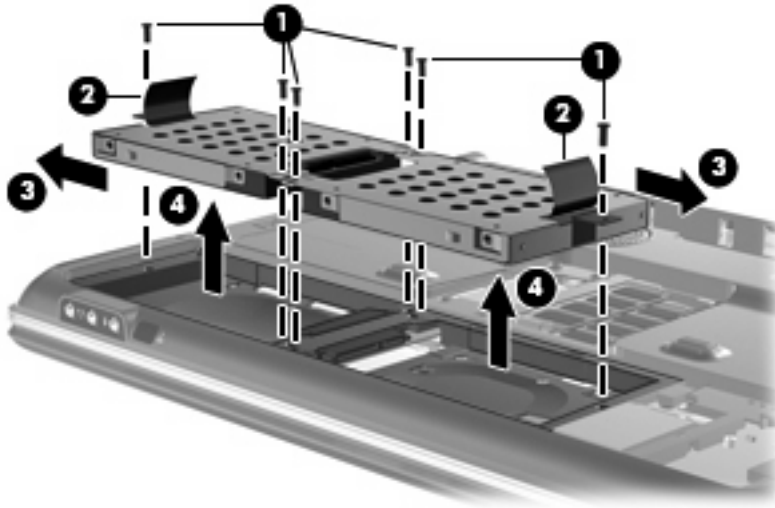
Remove the hard drive:

1. Position the computer with the front toward you.
2. Loosen the six Phillips PM2.5×6.0 captive screws (1) that secure the accessory cover to the computer.
3. Lift the rear edge of the accessory cover (2), swing it up and forward, and then remove the cover (3). The accessory cover is included in the Plastics Kit, spare part number 480467-001.

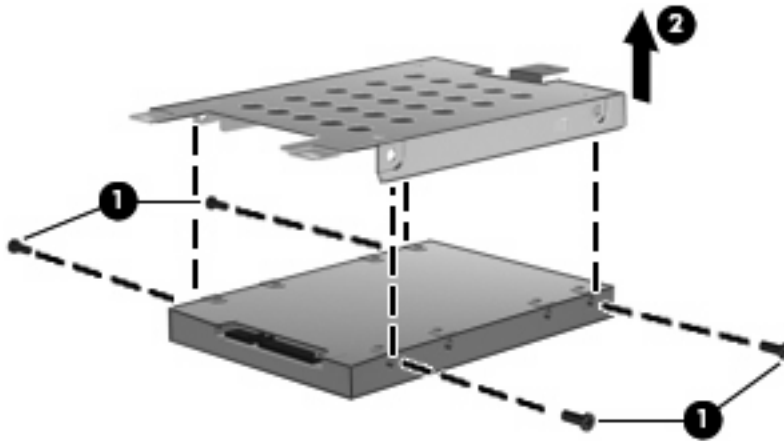


4. Remove the three Phillips PM2.5×4.0 screws (1) that secure each hard drive to the computer.

5. Use the Mylar tabs (2) to disconnect the hard drives (3) from the computer.
6. Remove the hard drives (4) from the computer by lifting them straight up.



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



Reverse this procedure to reassemble and install the hard drive.

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 480474-001.

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
DVD-T/ANG TV tuner module	482899-002
NTSC/ATSC/ANG TV tuner module	482899-001


Before removing the TV tuner module, follow these steps:

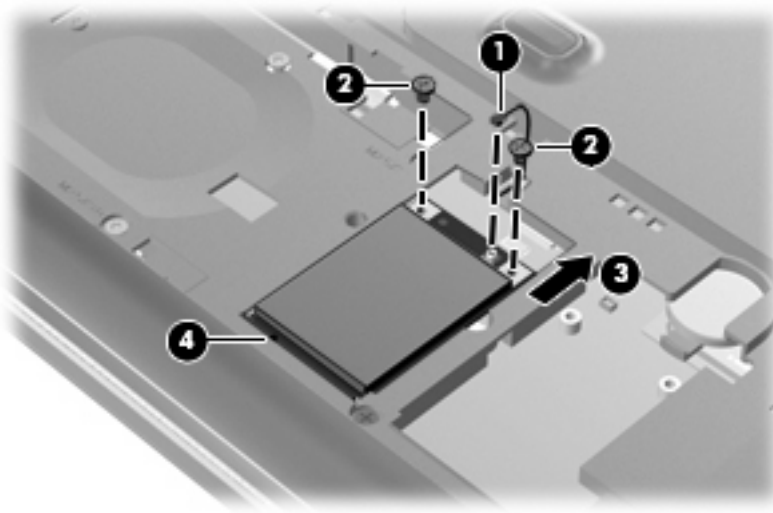
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 54](#)).
5. Remove the accessory cover (see [Hard drive on page 59](#)).

Remove the TV tuner module:

1. Disconnect the TV tuner module antenna cable **(1)** from the terminal on the TV tuner module.
2. 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.)


3. 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.

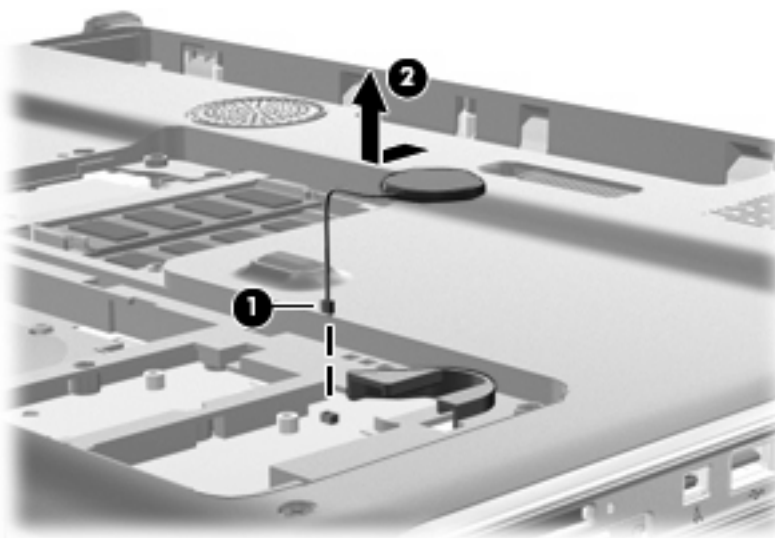
Description	Spare part number
RTC battery	480468-001

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 54](#)).
5. Remove the accessory cover (see [Hard drive on page 59](#)).

Remove the RTC battery:

1. Disconnect the RTC battery cable (1) from the system board.
2. Remove the RTC battery (2) from the rubber clip built into the system board.



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

WLAN module

Description	Spare part number
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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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 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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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 only in Pakistan, Russia, and the Ukraine	482957-001
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 except Pakistan, Russia, and the Ukraine	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


Description	Spare part number
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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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	487330-002
Broadcom 4322 802.11a/b/g/n WLAN module for use only with computer models equipped with Intel processors in Japan	487330-291
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, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, 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
Broadcom 4322 802.11a/b/g/n WLAN module for use in South Korea	464382-AD1

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 54](#)).
5. Remove the accessory cover (see [Hard drive on page 59](#)).

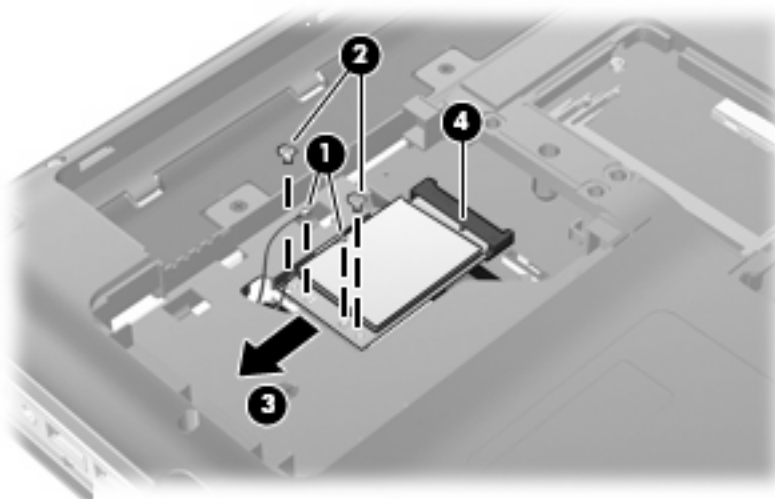
Remove the WLAN module:

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.

Memory module


Description	Spare part number
2048-MB memory module (667-MHz, PC2-6400, 1-DIMM)	480382-001
1024-MB memory module (667-MHz, PC2-6400, 1-DIMM)	480381-001
512-MB memory module (667-MHz, PC2-6400, 1-DIMM)	480380-001

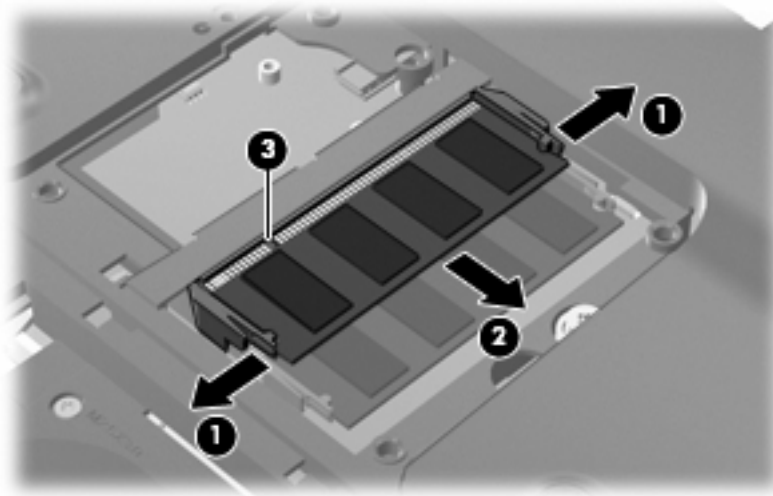
Before removing the memory module, follow these steps:

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 54](#)).
5. Remove the accessory cover (see [Hard drive on page 59](#)).

Remove the memory module:

1. 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.)
2. 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.

Switch cover



NOTE: The switch cover includes the power button board and cable and LED board and cable.

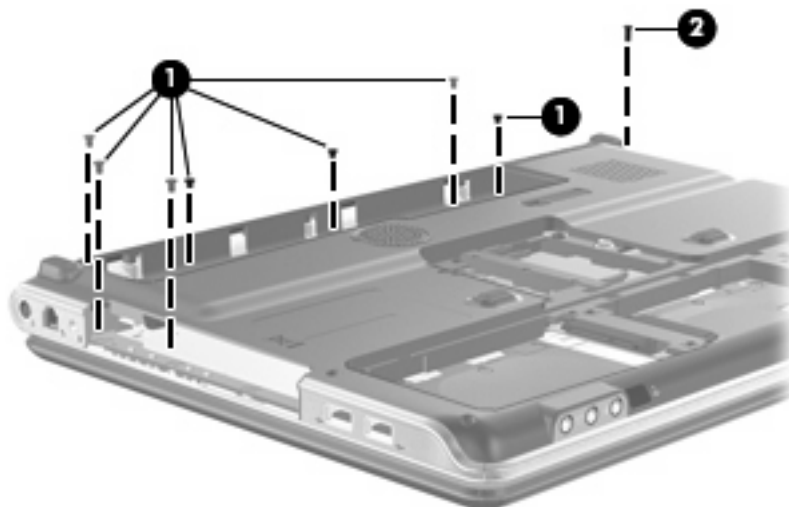
Description	Spare part number
For use only with computer models equipped with AMD processors	480469-001
For use only with computer models equipped with Intel processors	485605-001

Before removing the switch cover, follow these steps:

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

Remove the switch cover:

1. Remove the following screws:
 - (1) Seven Phillips PM2.5×4.0 screws
 - (2) One Phillips PM2.5×13.0 screw

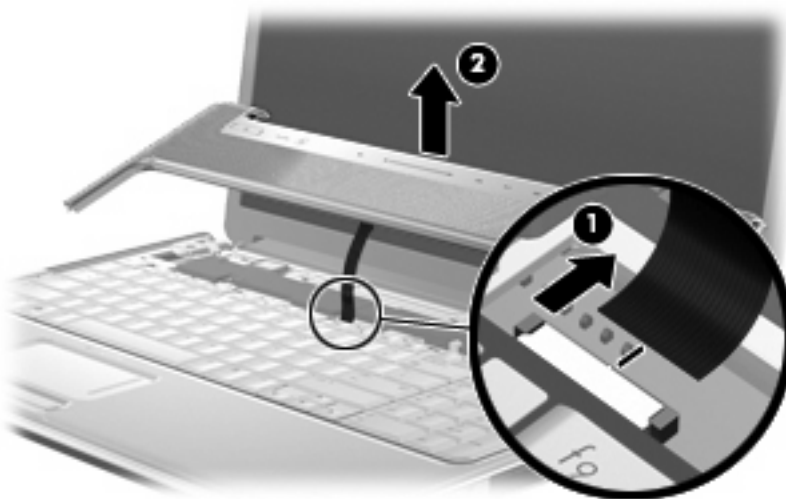


2. Turn the computer display-side up, with the front toward you.
3. Open the computer as far as possible.
4. Lift the rear edge of the switch cover (1) until it rests at an angle.

5. Slide the switch cover **(2)** back until it rests on the display.



6. Release the zero insertion force (ZIF) connector **(1)** to which the LED board cable is connected and disconnect the cable from the LED board.
7. Remove the switch cover **(2)**.



Reverse this procedure to install the switch cover.

Keyboard

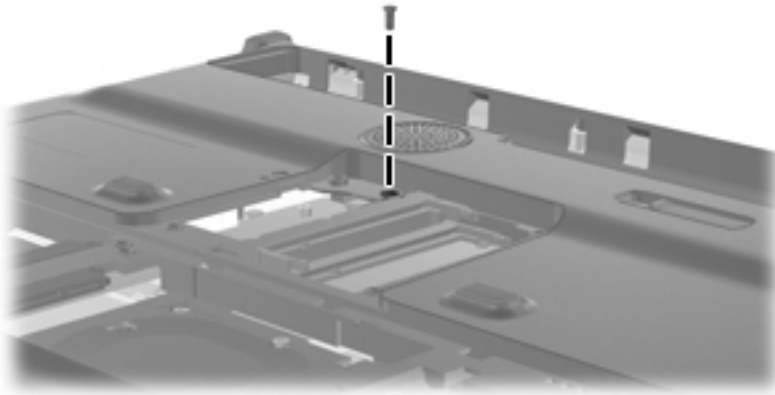
For use in country or region	Spare part number	For use in country or region	Spare part number
For use with all computer models:			
Denmark, Norway, and Sweden	483275-DH1	Saudi Arabia	483275-171
France	483275-051	Spain	483275-071
French Canada	483275-121	Switzerland	483275-111
Germany	483275-041	Turkey	483275-141
Italy	483275-061	The United Kingdom	483275-031
The Netherlands	483275-B31	The United States	483275-001
Portugal	483275-131		
For use only with computer models equipped with AMD processors:			
Asia Pacific countries and regions	483275-371	Japan	483275-291
Belgium	483275-A41	Latin America	483275-161
Brazil	483275-201	The Netherlands	483275-B31
The Czech Republic	483275-221	The People's Republic of China	483275-AA1
Denmark, Norway, and Sweden	483275-DH1	Portugal	483275-131
Europe, the Middle East, and Africa	483275-021	Russia	483275-251
France	483275-051	Saudi Arabia	483275-171
French Canada	483275-121	Spain	483275-071
Germany	483275-041	Switzerland	483275-111
Greece	483275-151	Thailand	483275-281
Hong Kong	483275-AC1	Turkey	483275-141
Italy	483275-061	The United Kingdom	483275-031
Israel	483275-BB1	The United States	483275-001

Before removing the keyboard, follow these steps:

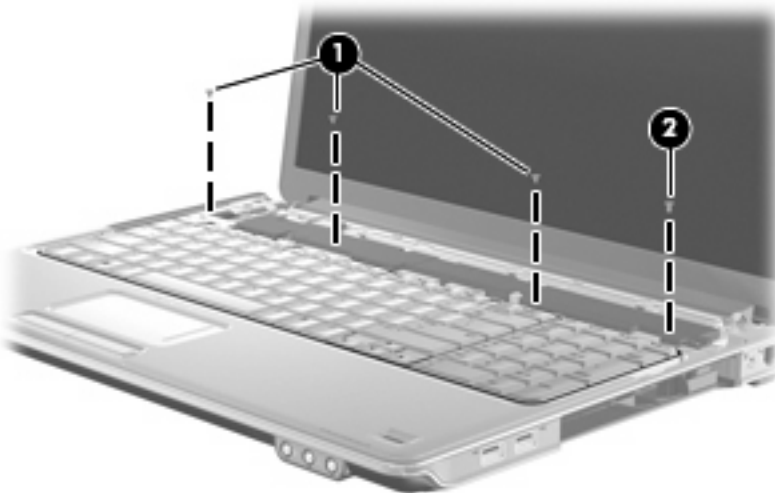
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 54](#)).
5. Remove the accessory cover (see [Hard drive on page 59](#)).
6. Remove the switch cover (see [Switch cover on page 69](#)).

Remove the keyboard:

1. Turn the computer upside down, with the front toward you.
2. Remove the Phillips PM2.5×13.0 screw that secures the keyboard to the computer.



3. Turn the computer display-side up, with the front toward you.
4. Open the computer as far as possible.
5. Remove the three Phillips PM2.0×4.0 screws **(1)** and the Phillips PM2.0×3.0 broad-head screw **(2)** that secure the keyboard to the computer.

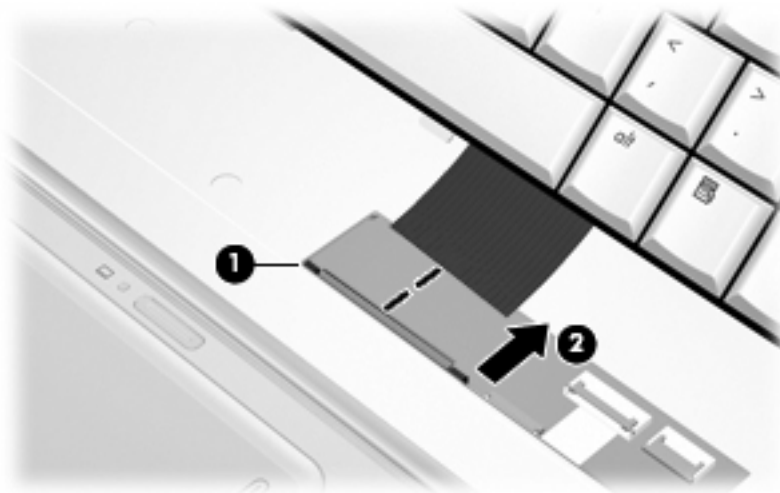


6. Lift the rear edge of the keyboard **(1)** until it rests at an angle.

7. Slide the keyboard **(2)** back to disengage the tabs on the front edge of the keyboard from the top cover and rest it on the display.




8. Release the ZIF connector **(1)** to which the keyboard cable is attached and disconnect the keyboard cable **(2)**.



9. Remove the keyboard.

Reverse this procedure to install the keyboard.

Bluetooth module

 **NOTE:** The Bluetooth module spare part kit does not include a Bluetooth module cable. The Bluetooth module cable is included in the Cable Kit, spare part number 480474-001.

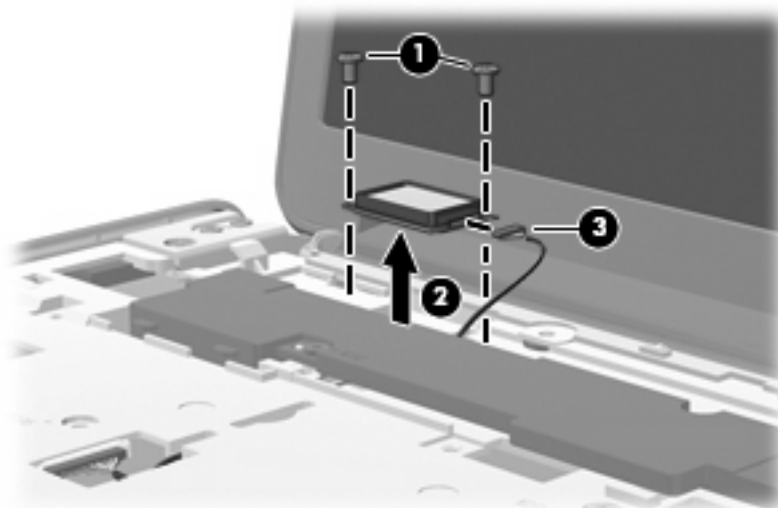
Description	Spare part number
Bluetooth module	483113-001

Before removing the Bluetooth module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 54](#)).
5. Remove the switch cover (see [Switch cover on page 69](#)).
6. Remove the keyboard (see [Keyboard on page 71](#)).
7. Remove the following components:

Remove the Bluetooth module:

1. Remove the two Phillips PM2.0×4.0 screws **(1)** that secure the Bluetooth module to the top cover.
2. Release the Bluetooth module **(2)** as far 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.

Speaker assembly

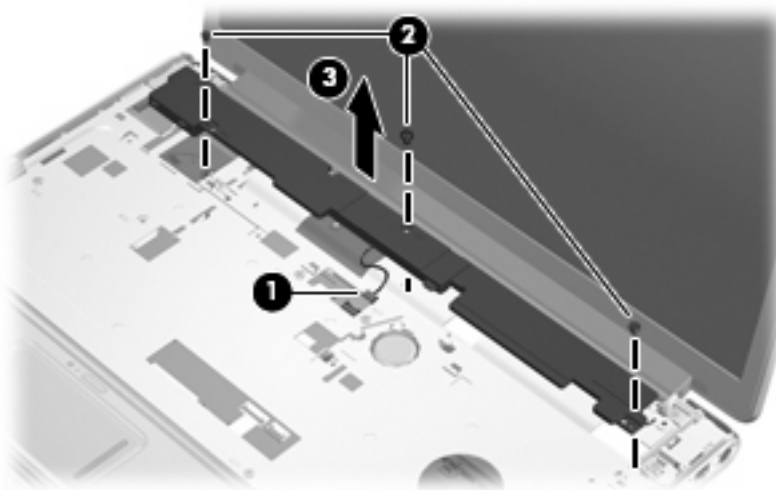
Description	Spare part number
Speaker assembly	480470-001

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 54](#)).
5. Remove the switch cover (see [Switch cover on page 69](#)).
6. Remove the keyboard (see [Keyboard on page 71](#)).

Remove the speaker assembly:

1. Disconnect the speaker assembly cable **(1)** from the power button board.
2. Remove the three Phillips PM2.5×4.0 screws **(2)** that secure the speaker assembly to the computer.
3. Remove the speaker assembly **(3)**.



Reverse this procedure to install the speaker assembly.

Display assembly



NOTE: All display assembly spare part include a webcam, microphone, and wireless antenna transceivers and cables.

17.0-inch WSXGA+ AntiGlare display assembly for use only with computer models equipped with AMD processors	497104-001
17.0-inch WXGA AntiGlare display assembly for use only with computer models equipped with AMD processors	497103-001
17.0-inch WSXGA+ BrightView display assembly with webcam and 2 microphones for use only with computer models equipped with AMD processors	488881-001
17.0-inch WXGA BrightView display assembly with webcam and 2 microphones for use only with computer models equipped with AMD processors	488880-001
17.0-inch WSXGA+ AntiGlare display assembly with webcam and 2 microphones for use only with computer models equipped with Intel processors	480378-001
17.0-inch WXGA AntiGlare display assembly with webcam and 2 microphones for use only with computer models equipped with Intel processors	480377-001
17.0-inch WSXGA+ BrightView display assembly with webcam and 2 microphones for use only with computer models equipped with Intel processors	480376-001
17.0-inch WXGA BrightView display assembly with webcam and 2 microphones for use only with computer models equipped with Intel processors	480375-001

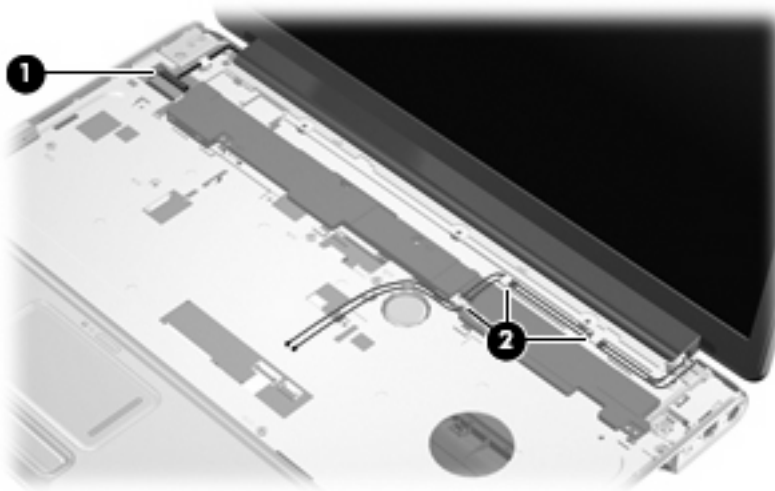
Before removing the display assembly, follow these steps:

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 54](#)).
5. Remove the memory/WLAN module compartment cover (see [Memory module on page 67](#)).
6. Disconnect the wireless antenna cables from the WLAN module (see [WLAN module on page 64](#)).
7. Remove the following components:
 - a. Switch cover (see [Switch cover on page 69](#))
 - b. Keyboard (see [Keyboard on page 71](#))
 - c. Speaker assembly (see [Speaker assembly on page 75](#))

Remove the display assembly:

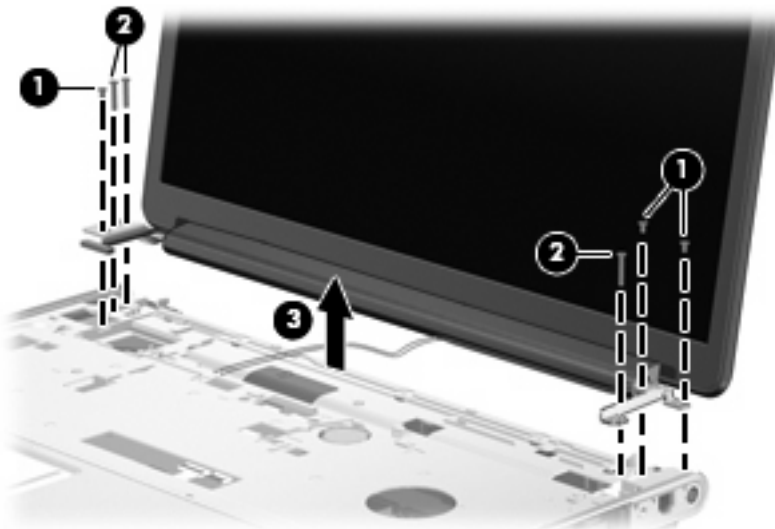
1. Disconnect the display panel cable **(1)** from the system board.


2. Remove the wireless antenna cables (2) from the routing channels in the top cover.



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

3. Remove the three Phillips PM2.5×13.0 screws (1) and the three Phillips PM2.5×6.0 screws (2) that secure the display assembly to the computer.
4. Remove the display assembly (3).

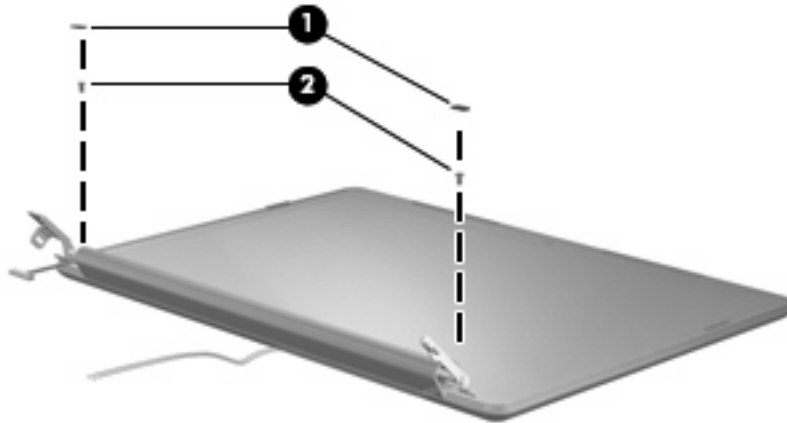


 **NOTE:** Steps 5 through 24 provide display assembly internal component removal information for computer models equipped with AntiGlare display assemblies. See steps 25 through 40 for display assembly internal component removal information for computer models equipped with BrightView display assemblies.

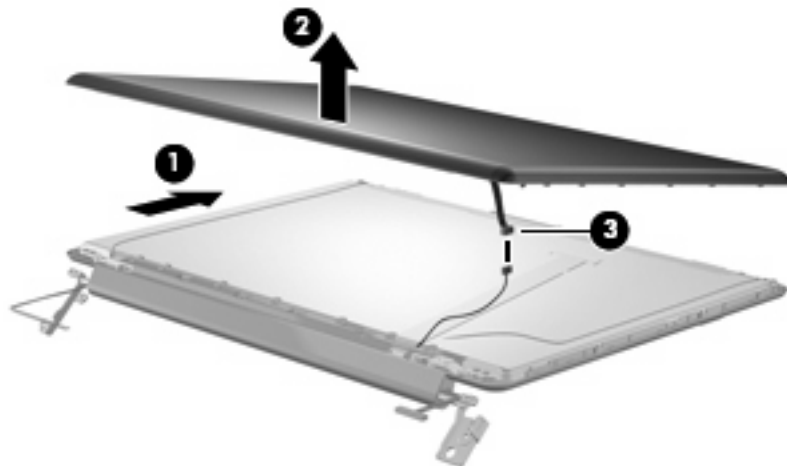
NOTE: See [Webcam/microphone module on page 56](#) for webcam/microphone module replacement instructions for computer models equipped with BrightView display assemblies.

5. If it is necessary to replace the display enclosure or any of the display assembly internal components, remove the two rubber screw covers (1) on the display bezel lower edge. The rubber screw covers are available in the Display Rubber Kit, spare part number 495896-001.

6. Remove the two Phillips PM2.5×5.0 screws **(2)** that secure the display enclosure to the display assembly.

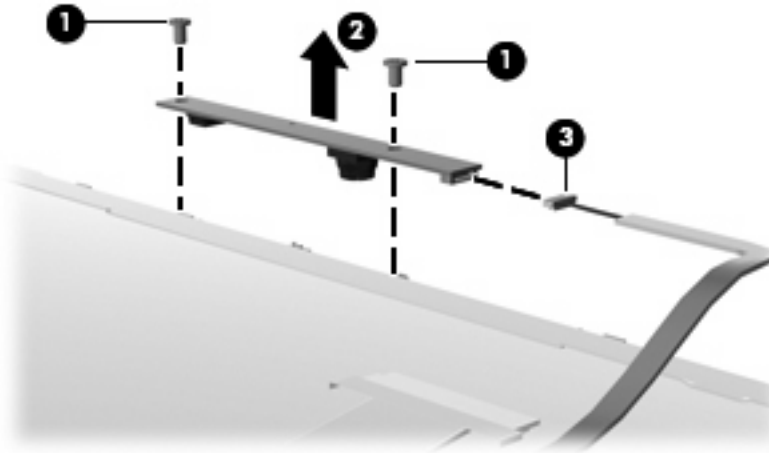


7. Turn the display enclosure upside down, with the hinges toward you.
8. Release the display enclosure **(1)** by sliding it toward the top of the display assembly until it detaches from the display assembly.
9. Lift the bottom edge of the display enclosure **(2)** until the display enclosure logo LED cable is accessible.
10. Disconnect the display enclosure logo LED cable **(3)** from the display panel cable.

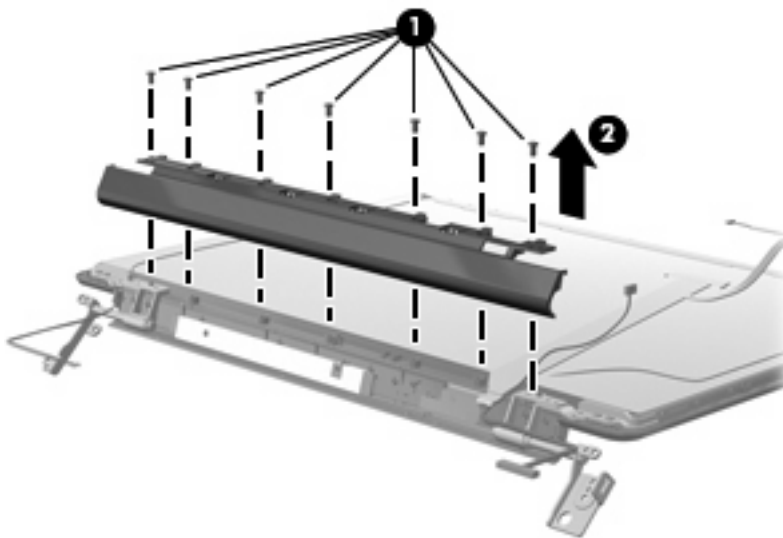


11. Remove the display enclosure. The display enclosure is available using spare part number 480445-001.
12. If it is necessary to replace the webcam/microphone module, remove the two Phillips PM2.5×3.0 screws **(1)** that secure the webcam/microphone module to the display bezel.
13. Release the webcam/microphone module **(2)** as far from the display bezel as the webcam/microphone module cable allows.

14. Disconnect the webcam/microphone module cable (3) from the webcam/microphone module.

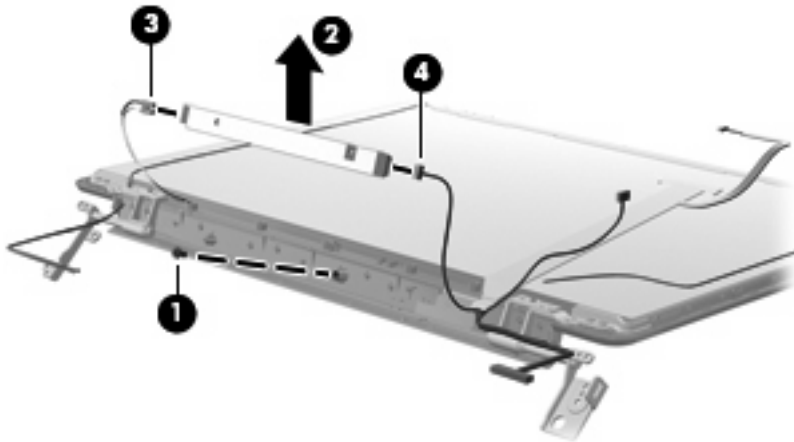


15. Remove the webcam/microphone module. The webcam/microphone module is available using spare part number 480446-001.
16. If it is necessary to replace the display inverter, remove the 7 Phillips PM2.5×5.0 screws (1) that secure the display inverter cover to the display bezel.
17. Remove the display inverter cover (2) by lifting it straight up. The display inverter cover is available using spare part number 485606-001.

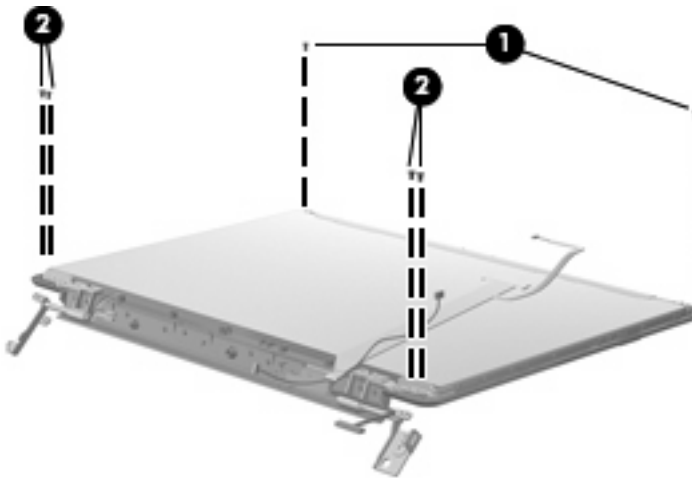


18. Remove the Phillips PM2.5×5.0 screw (1) that secures the display inverter to the display bezel.
19. Release the inverter (2) as far from the display bezel as the display panel cable and backlight cables allow.

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

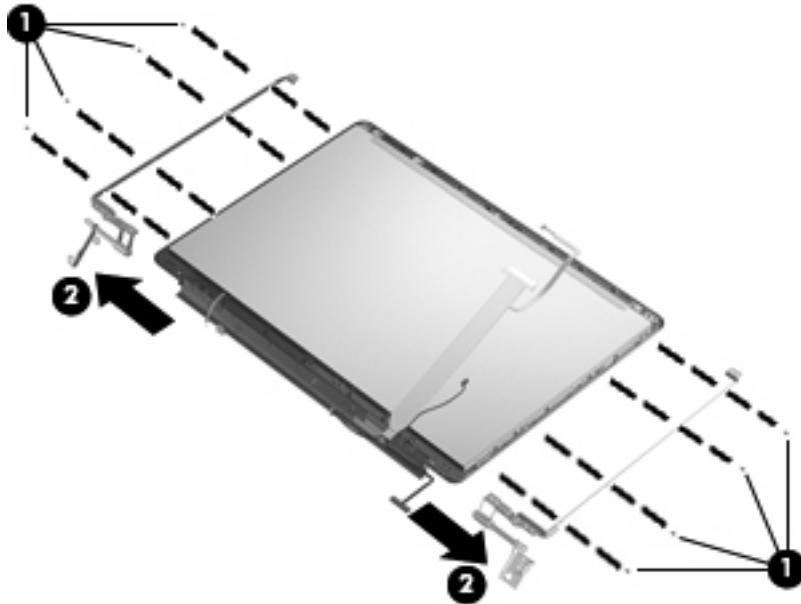



21. Remove the display inverter. The display inverter is available using spare part number 480447-001.
22. If it is necessary to replace the display hinges, remove the two Phillips PM2.5×5.0 screws (1) and the four Phillips PM2.5×4.0 screws (2) that secure the display hinges to the display panel.



23. Remove the eight Phillips PM2.0×4.0 screws (1) that secure the display hinges to the display panel.

24. Remove the display hinges (2). The display hinges are available using spare part number 498136-001.

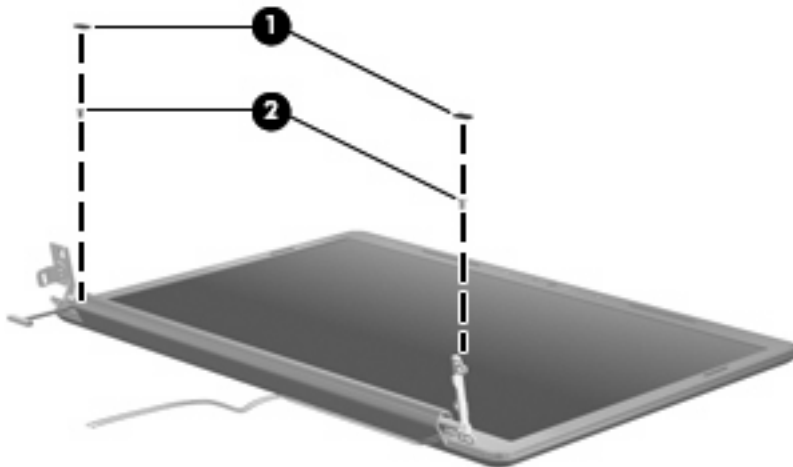


 **NOTE:** Steps 25 through 40 provide display internal component removal information for computer models equipped with BrightView display assemblies. See steps 5 through 24 for display internal component removal information for computer models equipped with AntiGlare display assemblies.

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

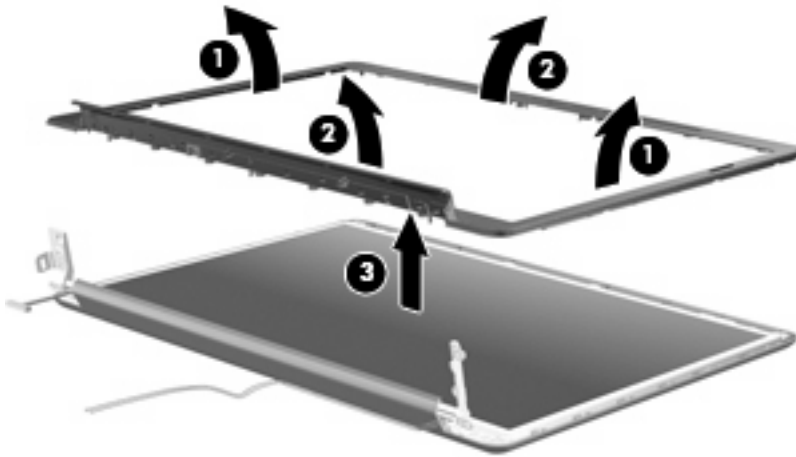
(1) Two rubber screw covers on the display bezel bottom edge. The display rubber screw covers are included in the Rubber Kit, spare part number 480442-001.

(2) Two Phillips PM2.5×6.0 screws.

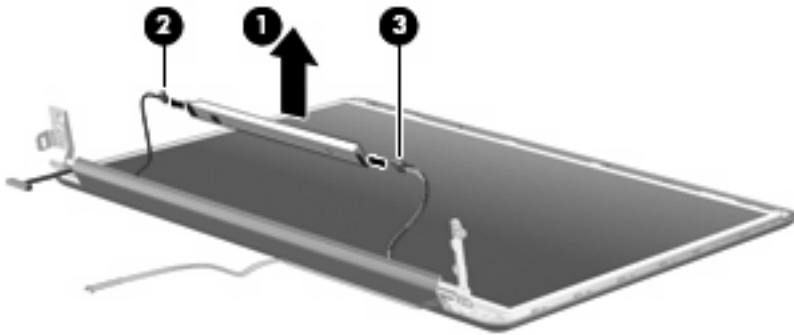


26. Flex the inside edges of the left and right sides (1) and the top and bottom sides (2) of the display bezel until the bezel disengages from the display enclosure.

27. Remove the display bezel (3). The display bezel is available using spare part number 480444-001.

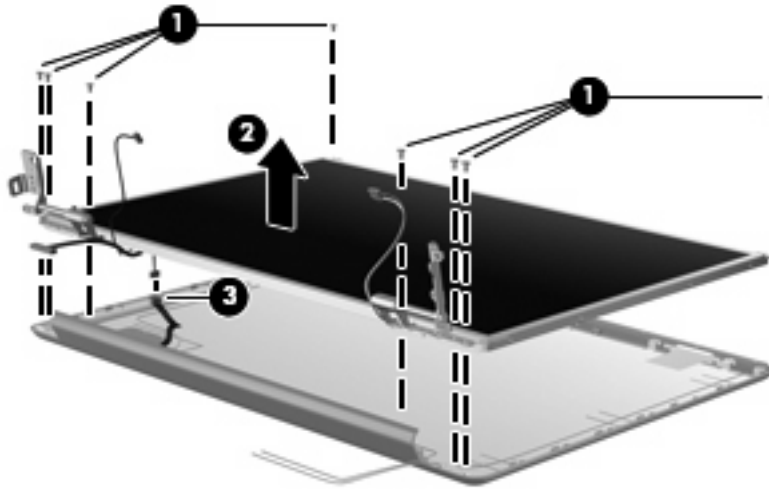


28. If it is necessary to replace the display inverter, release the display inverter (1) as far as the display panel cable and backlight cable allow.
29. Disconnect the display panel cable (2) and the backlight cable (3) from the display inverter.



30. Remove the display inverter. The display inverter is available using spare part number 480447-001.
31. If it is necessary to replace the display panel, remove the eight Phillips PM2.5×4.0 screws (1) that secure the display panel to the display enclosure.
32. Release the display panel (2) as far as the display logo LED board cable allows.

33. Disconnect the display logo LED board cable (3) from the display panel cable.

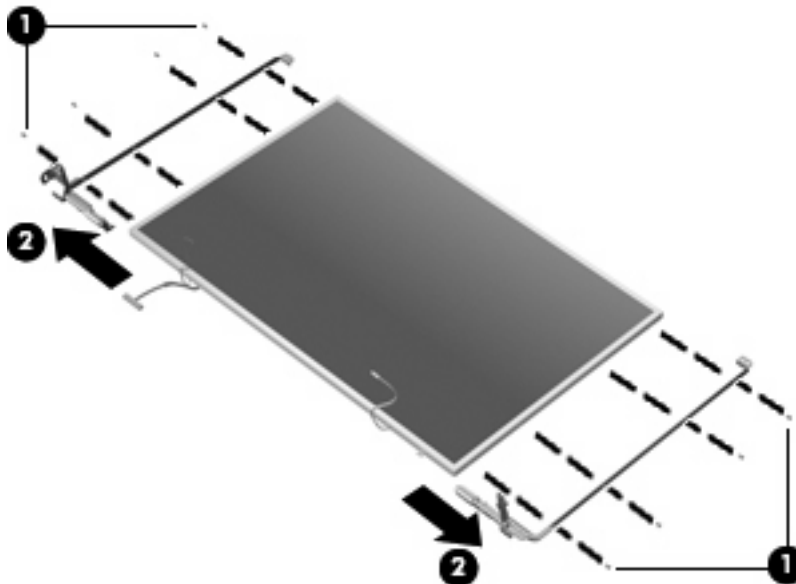


34. Remove the display panel. The display panel is available using the following spare part numbers:

- 480441-001 (17.0-inch, WSXGA+ BrightView display panel)
- 480440-001 (17.0-inch, WXGA BrightView display panel)

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

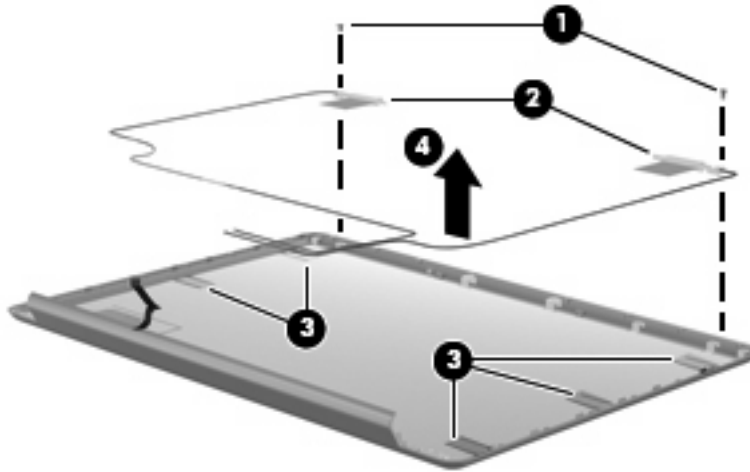
36. Remove the display hinges (2). The display hinges are available using spare part number 480448-001.



37. If it is necessary to replace the wireless antenna transceivers and cables, remove the Phillips PM2.5×4.0 screw (1) that secures each transceiver to the display enclosure.

38. Detach the wireless antenna transceivers (2) from the display enclosure.

39. Remove the wireless antenna cables from the tabs **(3)** built into the display enclosure shielding.
40. Remove the wireless antenna cables **(4)**. The wireless antenna transceivers and cables are available using the following spare part numbers:
- 489804-001 (for use with computer models equipped with an 802.11a/b/g/n WLAN module)
 - 487748-001 (for use with computer models equipped with an 802.11a/b/g or 802.11b/g WLAN module)



Reverse this procedure to reassemble and install the display assembly.

Top cover

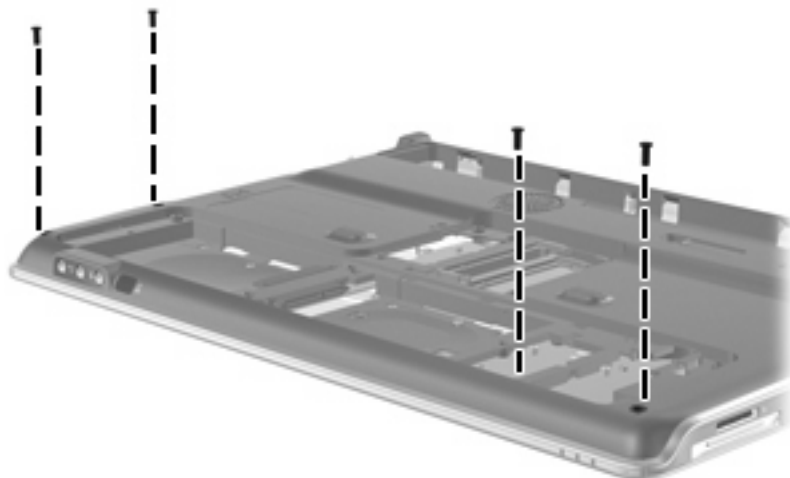
Description	Spare part number
For use only with computer models equipped with a fingerprint reader	480466-001
For use only with computer models not equipped with a fingerprint reader	480465-001

Before removing the top cover, follow these steps:

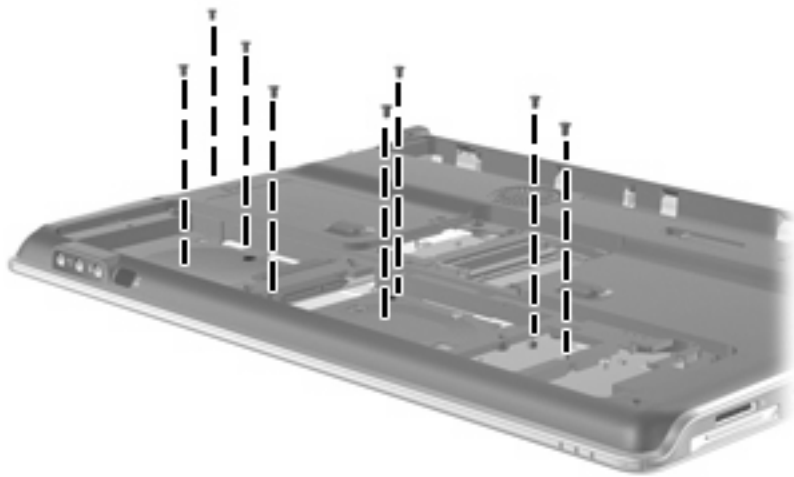
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Keyboard (see [Keyboard on page 71](#))
 - d. Switch cover (see [Switch cover on page 69](#))
 - e. Speaker assembly (see [Speaker assembly on page 75](#))
 - f. Display assembly (see [Display assembly on page 76](#))

Remove the top cover:

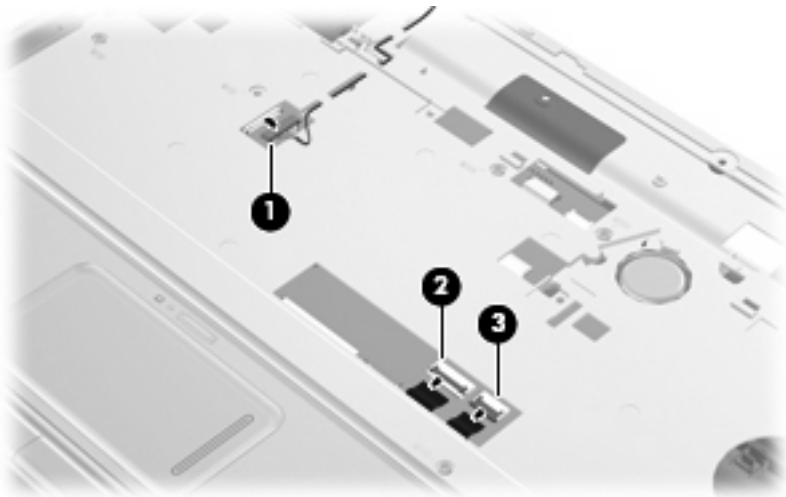
1. Turn the computer upside down, with the front toward you.
2. Remove the four Phillips PM2.5×13.0 screws that secure the top cover to the computer.



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



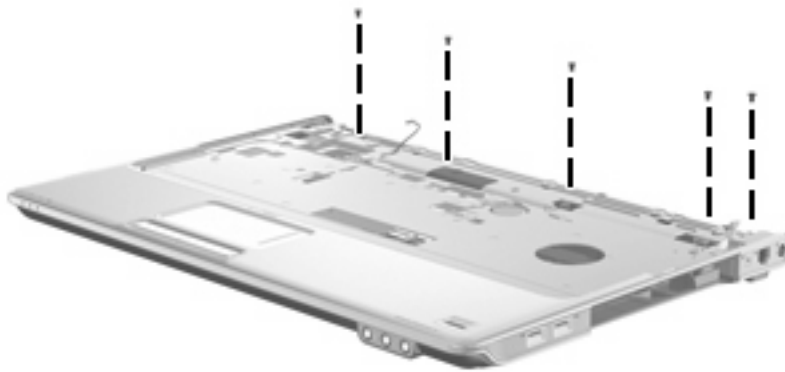
4. Disconnect the Bluetooth module cable **(1)** from the system board.
5. Release the ZIF connector to which the TouchPad cable **(2)** is attached and disconnect the cable from the system board.
6. Release the ZIF connector to which the fingerprint reader board cable **(3)** is attached and disconnect the cable from the system board.



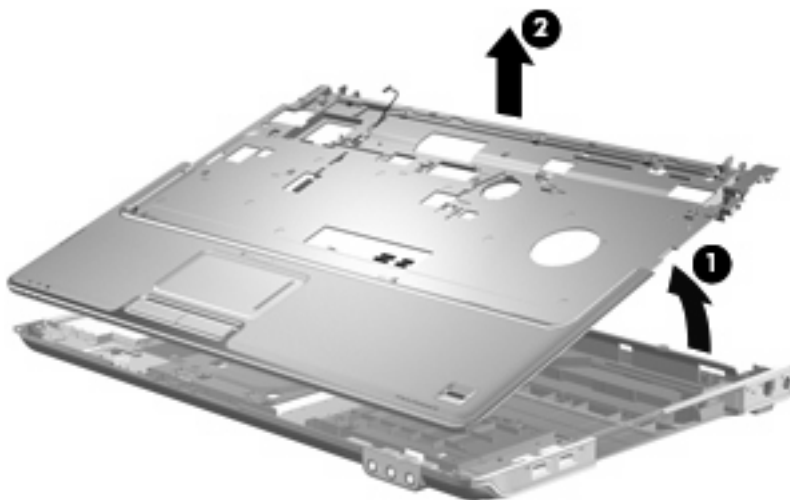
7. Remove the six Phillips PM2.5×6.0 screws that secure the top cover to the base enclosure.



8. Remove the five Phillips PM2.5×4.0 screws that secure the top cover to the base enclosure.



9. Lift the rear edge of the top cover (1) until it disengages from the computer, and then lift the top cover (2) up and remove it.



Reverse this procedure to install the top cover.

Fingerprint reader board

Description	Spare part number
Fingerprint reader board (includes cable)	480476-001

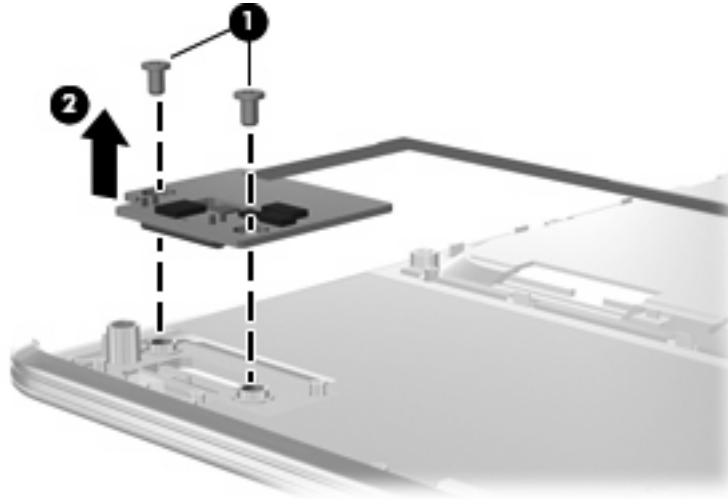
Before removing the fingerprint reader board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Switch cover (see [Switch cover on page 69](#))
 - d. Keyboard (see [Keyboard on page 71](#))
 - e. Speaker assembly (see [Speaker assembly on page 75](#))
 - f. Display assembly (see [Display assembly on page 76](#))
 - g. Top cover (see [Top cover on page 85](#))

Remove the fingerprint reader board:

1. Turn the top cover upside down, with the front toward you.
2. Remove the two Phillips PM2.0×3.0 broad-head screws **(1)** that secure the fingerprint reader board to the top cover.

3. Remove the fingerprint reader board (2) and cable from the top cover.



Reverse this procedure to install the fingerprint reader board.

TouchPad on/off button board

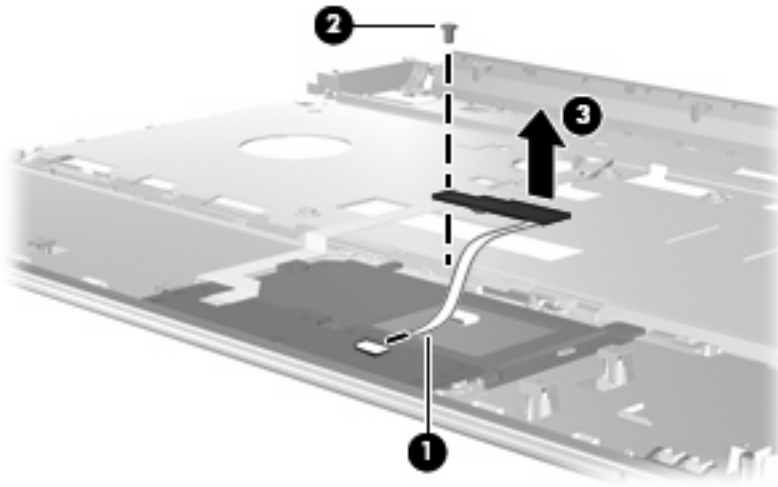
Description	Spare part number
TouchPad on/off button board (includes cable)	481392-001

Before removing the TouchPad on/off 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 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Switch cover (see [Switch cover on page 69](#))
 - d. Keyboard (see [Keyboard on page 71](#))
 - e. Speaker assembly (see [Speaker assembly on page 75](#))
 - f. Display assembly (see [Display assembly on page 76](#))
 - g. Top cover (see [Top cover on page 85](#))

Remove the TouchPad on/off button board:

1. Turn the top cover upside down, with the front toward you.
2. Release the ZIF connector to which the TouchPad on/off button board cable (1) is attached, and then disconnect the cable from the TouchPad button board.
3. Remove the Phillips PM2.5×4.0 screw (2) that secures the TouchPad on/off button board to the top cover.
4. Remove the TouchPad on/off button board (3) and cable from the top cover.



Reverse this procedure to install the TouchPad on/off button board.

TouchPad button board

Description	Spare part number
TouchPad button board (includes 2 cables)	491972-001

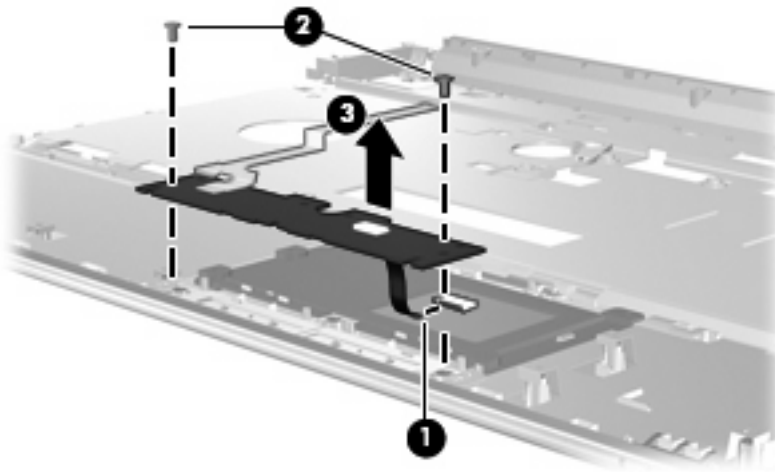
Before removing the TouchPad button board, follow these steps:

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 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Switch cover (see [Switch cover on page 69](#))

- d. Keyboard (see [Keyboard on page 71](#))
- e. Speaker assembly (see [Speaker assembly on page 75](#))
- f. Display assembly (see [Display assembly on page 76](#))
- g. Top cover (see [Top cover on page 85](#))


Remove the TouchPad on/off button board:

1. Turn the top cover upside down, with the front toward you.
2. Release the ZIF connector to which the TouchPad button board cable (1) is attached, and then disconnect the cable from the TouchPad board.
3. Remove the two Phillips PM2.5×4.0 screws (2) that secure the TouchPad button board to the top cover.
4. Remove the TouchPad button board (3) and cables from the top cover.



Reverse this procedure to install the TouchPad button board.

Bluetooth module cable

 **NOTE:** The Bluetooth module cable is included in the Cable Kit, spare part number 480474-001. See [Cable Kit on page 34](#) for more Cable Kit spare part number information.

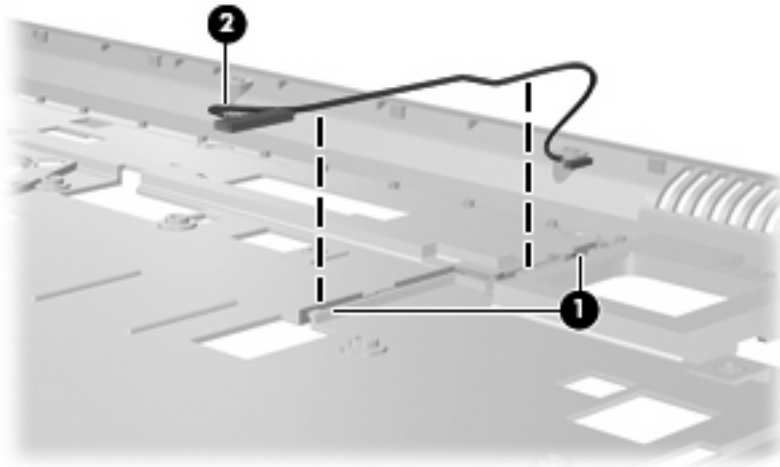
Before removing the Bluetooth module cable, follow these steps:

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 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Switch cover (see [Switch cover on page 69](#))
 - d. Keyboard (see [Keyboard on page 71](#))
 - e. Speaker assembly (see [Speaker assembly on page 75](#))
 - f. Display assembly (see [Display assembly on page 76](#))
 - g. Top cover (see [Top cover on page 85](#))

Remove the Bluetooth module cable:

1. Turn the top cover upside down, with the front toward you.
2. Remove the Bluetooth module cable (1) from the clips built into the top cover.
3. Remove the Bluetooth module cable (2).



Reverse this procedure to install the Bluetooth module cable.

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 480474-001.

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

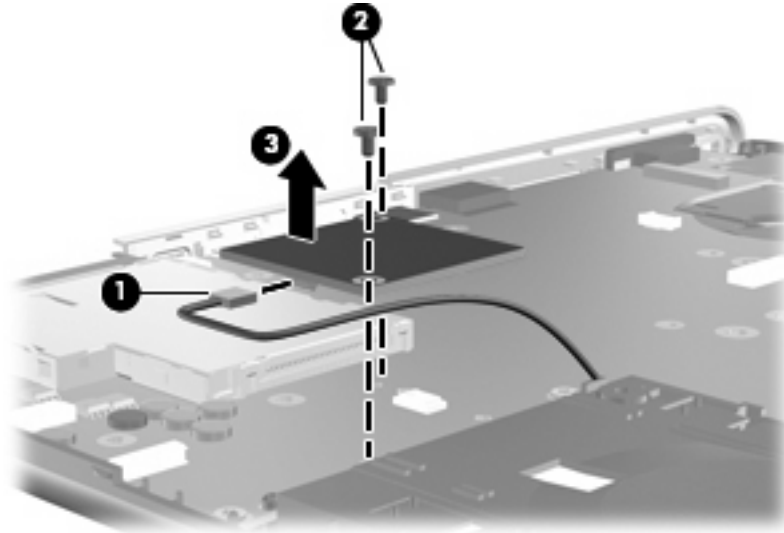
Before removing the modem module, follow these steps:

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 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Switch cover (see [Switch cover on page 69](#))
 - d. Keyboard (see [Keyboard on page 71](#))
 - e. Speaker assembly (see [Speaker assembly on page 75](#))
 - f. Display assembly (see [Display assembly on page 76](#))
 - g. Top cover (see [Top cover on page 85](#))

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.

System board

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

Description	Spare part number
System board with RX781 Northbridge and ATI HD3450 graphics subsystem with discrete memory for use only with computer models equipped with AMD processors	486541-001
System board with M780G Northbridge and UMA graphics subsystem memory for use only with computer models equipped with AMD processors	486542-001
System board with PM45 Northbridge and nVidia NB9M-GE discrete graphics subsystem memory and 256-GB of graphics subsystem memory for use only with computer models equipped with Intel processors	480366-001
System board with PM45 Northbridge and nVidia NB9P-GS discrete graphics subsystem memory and 512-GB of graphics subsystem memory for use only with computer models equipped with Intel processors	480365-001

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 54](#)).
5. Remove the following components:
 - a. Optical drive (see [Optical drive on page 57](#))
 - b. Hard drive (see [Hard drive on page 59](#))
 - c. Switch cover (see [Switch cover on page 69](#))
 - d. Keyboard (see [Keyboard on page 71](#))
 - e. Bluetooth module (see [Bluetooth module on page 74](#))
 - f. Speaker assembly (see [Speaker assembly on page 75](#))
 - g. Display assembly (see [Display assembly on page 76](#))
 - h. Top cover (see [Top cover on page 85](#))

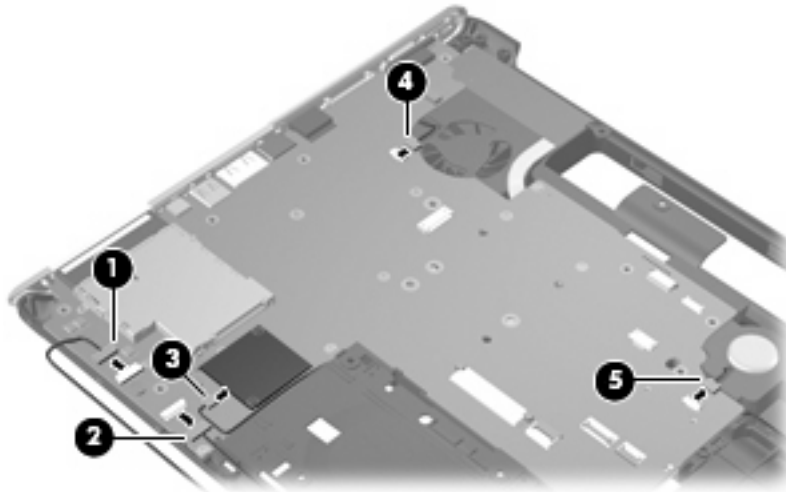
When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- TV tuner module (see [TV tuner module on page 61](#))
- RTC battery (see [RTC battery on page 63](#))
- WLAN module (see [WLAN module on page 64](#))
- Memory module (see [Memory module on page 67](#))
- Modem module (see [Modem module on page 93](#))
- Heat sink (see [Heat sink on page 105](#))
- Processor (see [Processor on page 109](#))

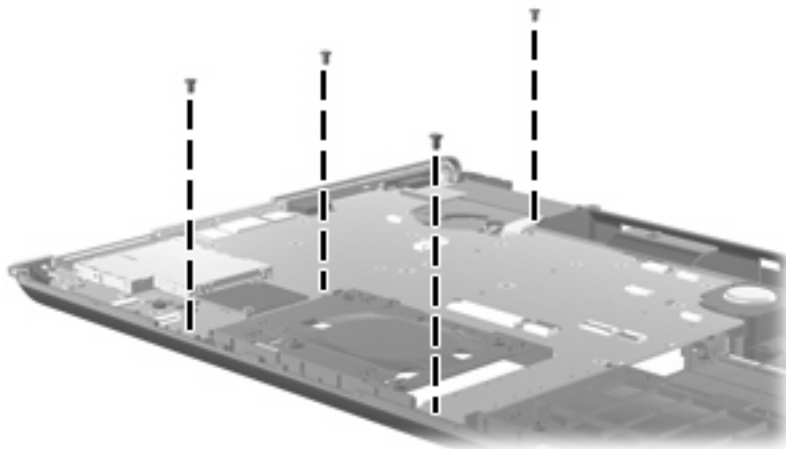
Remove the system board:

1. Disconnect the following cables:

- (1) USB board cable
- (2) Audio/infrared board cable
- (3) Modem module cable
- (4) Fan cable
- (5) Subwoofer cable

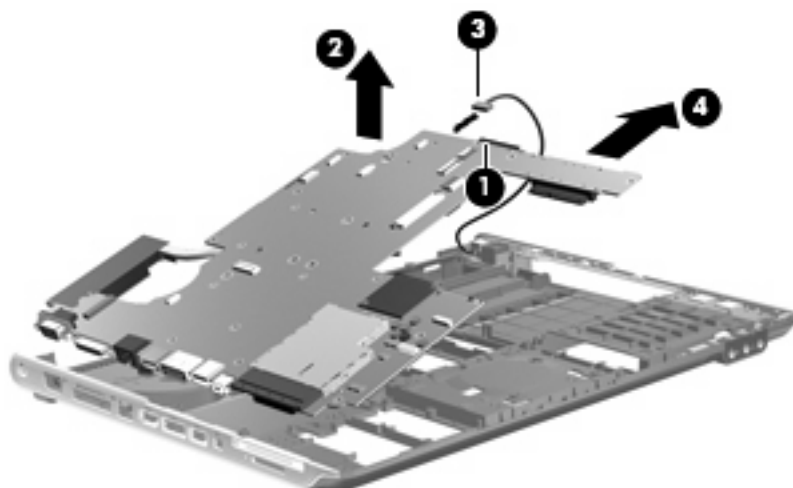


2. Remove the four Phillips PM2.5×4.0 screws that secure the system board to the base enclosure.



3. Use the optical drive connector (1) to lift the system board (2) until it rests at an angle.
4. Disconnect the power connector cable (3) from the system board.

5. Remove the system board (4) by sliding it away from the base enclosure at an angle.



Reverse this procedure to install the system board.

Audio/infrared board

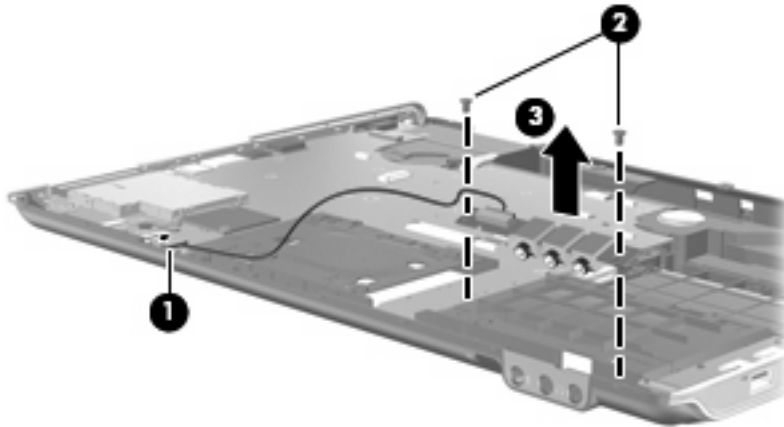
Description	Spare part number
Audio/infrared board	480477-001
NOTE: The audio/infrared board spare part kit does not include an audio/infrared board cable. The audio/infrared board cable is included in the Cable Kit, spare part number 480474-001.	

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 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Switch cover (see [Switch cover on page 69](#))
 - d. Keyboard (see [Keyboard on page 71](#))
 - e. Speaker assembly (see [Speaker assembly on page 75](#))
 - f. Display assembly (see [Display assembly on page 76](#))
 - g. Top cover (see [Top cover on page 85](#))

Remove the audio/infrared board:

1. Disconnect the audio/infrared board cable (1) from the system board.
2. Remove the two Phillips PM2.5×4.0 screws (2) that secure the audio/infrared board to the base enclosure.
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 for use only with computer models equipped with AMD processors	488886-001
USB board for use only with computer models equipped with Intel processors	480479-001

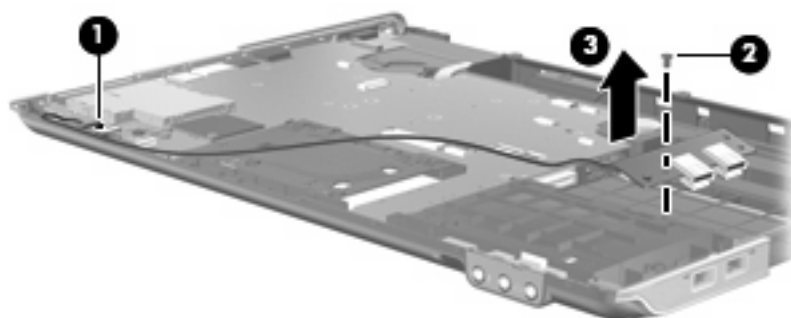
Before removing the USB board, follow these steps:

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 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Switch cover (see [Switch cover on page 69](#))
 - d. Keyboard (see [Keyboard on page 71](#))
 - e. Speaker assembly (see [Speaker assembly on page 75](#))

- f. Display assembly (see [Display assembly on page 76](#))
- g. Top cover (see [Top cover on page 85](#))

Remove the USB board:

1. Disconnect the USB board cable (1) from the system board.
2. Remove the Phillips PM2.5×4.0 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.

Fan

Description	Spare part number
For use only with computer models equipped with AMD processors	488885-001
For use only with computer models equipped with Intel processors	480481-001

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.

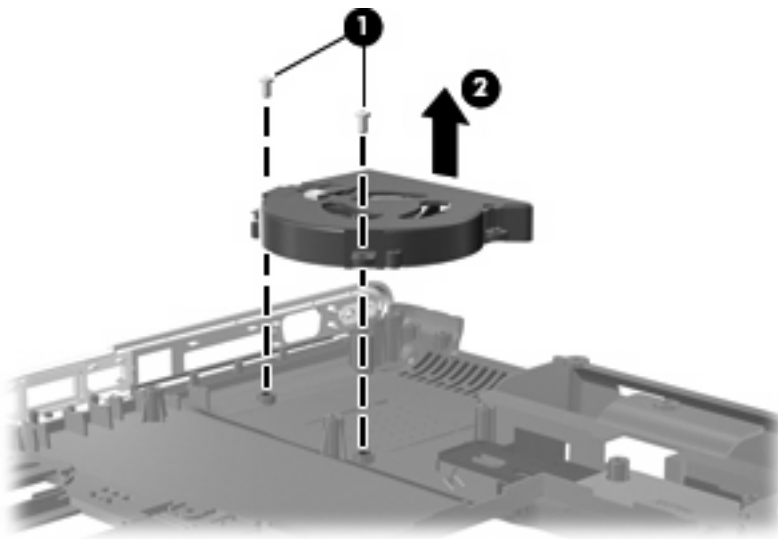
Before removing the fan, follow these steps:

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 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))

- c. Switch cover (see [Switch cover on page 69](#))
- d. Keyboard (see [Keyboard on page 71](#))
- e. Speaker assembly (see [Speaker assembly on page 75](#))
- f. Display assembly (see [Display assembly on page 76](#))
- g. Top cover (see [Top cover on page 85](#))
- h. System board (see [System board on page 94](#))

Remove the fan:

1. Remove the two Phillips PM2.5×5.0 screws (1) that secure the fan to the base enclosure.
2. Remove the fan (2) from the base enclosure.



Reverse this procedure to install the fan.

Subwoofer

Description	Spare part number
Subwoofer (includes 2 mounting grommets)	480471-001


Before removing the subwoofer, 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.

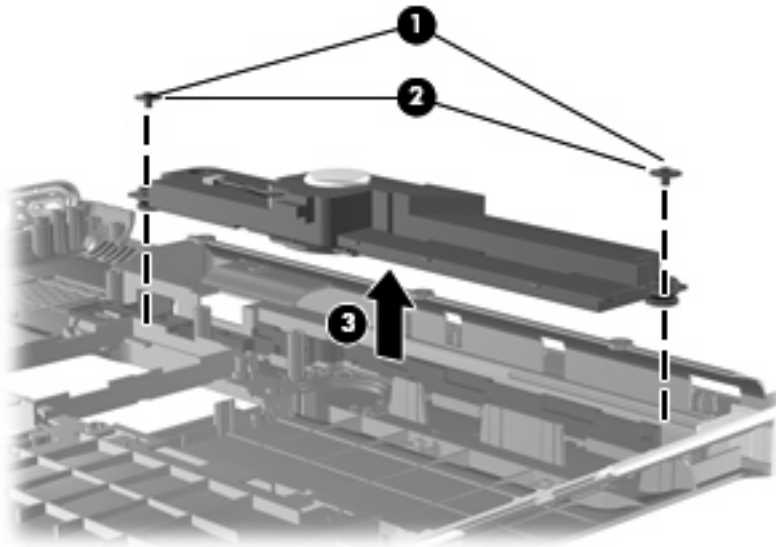
4. Remove the battery (see [Battery on page 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Switch cover (see [Switch cover on page 69](#))
 - d. Keyboard (see [Keyboard on page 71](#))
 - e. Speaker assembly (see [Speaker assembly on page 75](#))
 - f. Display assembly (see [Display assembly on page 76](#))
 - g. Top cover (see [Top cover on page 85](#))
 - h. System board (see [System board on page 94](#))

Remove the subwoofer:

1. Remove the two Phillips PM2.5×4.0 broad-head screws (1) that secure the subwoofer to the base enclosure.


 **NOTE:** When removing the subwoofer screws, make note of the location and orientation of the rubber grommets (2). Failure to properly install these grommets can lead to decreased subwoofer performance.

2. Remove the subwoofer (3) from the base enclosure.



Reverse this procedure to install the subwoofer.

Power connector cable

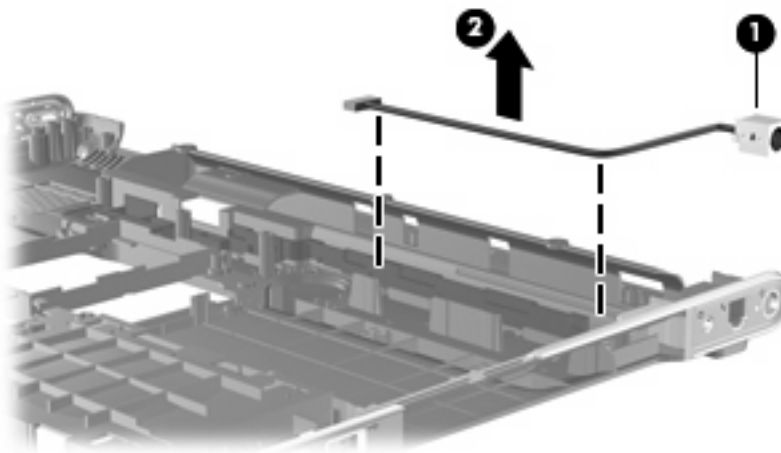
 **NOTE:** The power connector cable is included in the Cable Kit, spare part number 480474-001.

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 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Switch cover (see [Switch cover on page 69](#))
 - d. Keyboard (see [Keyboard on page 71](#))
 - e. Speaker assembly (see [Speaker assembly on page 75](#))
 - f. Display assembly (see [Display assembly on page 76](#))
 - g. Top cover (see [Top cover on page 85](#))
 - h. System board (see [System board on page 94](#))


Remove the power connector cable:

1. Remove the power connector (1) from the clip built into the base enclosure.
2. Remove the power connector cable (2) from the routing channel built into the base enclosure.



Reverse this procedure to install the power connector cable.

Modem module cable

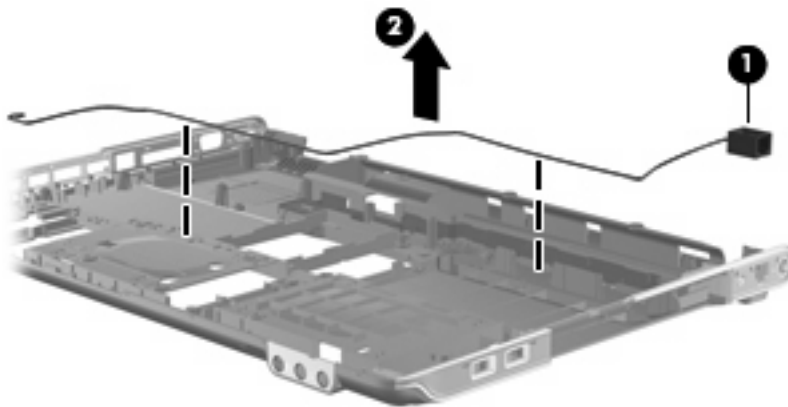
 **NOTE:** The modem module cable is included in the Cable Kit, spare part number 480474-001. The modem module cable includes the RJ-11 jack.

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 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Switch cover (see [Switch cover on page 69](#))
 - d. Keyboard (see [Keyboard on page 71](#))
 - e. Speaker assembly (see [Speaker assembly on page 75](#))
 - f. Display assembly (see [Display assembly on page 76](#))
 - g. Top cover (see [Top cover on page 85](#))
 - h. System board (see [System board on page 94](#))


Remove the modem module cable:

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



Reverse this procedure to install the modem module cable.

TV tuner module cable

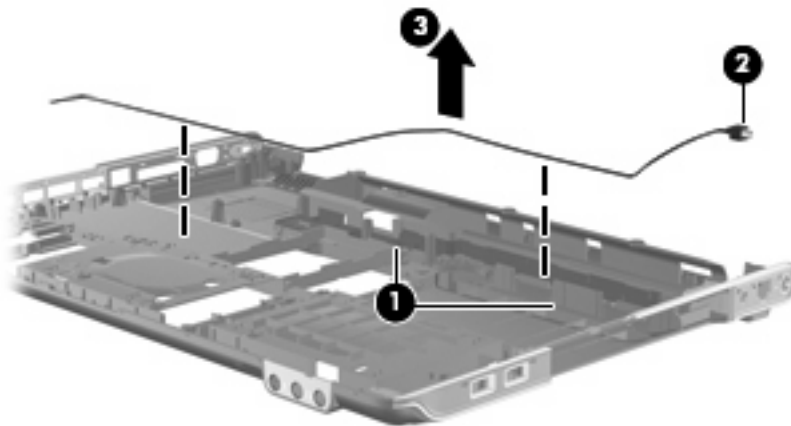
 **NOTE:** The TV tuner module cable is included in the Cable Kit, spare part number 480474-001.

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 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Switch cover (see [Switch cover on page 69](#))
 - d. Keyboard (see [Keyboard on page 71](#))
 - e. Speaker assembly (see [Speaker assembly on page 75](#))
 - f. Display assembly (see [Display assembly on page 76](#))
 - g. Top cover (see [Top cover on page 85](#))
 - h. System board (see [System board on page 94](#))

Remove the TV tuner module cable:

1. Remove the TV tuner module cable from the routing channel **(1)** built into the base enclosure.
2. Remove the TV tuner antenna connector **(2)** from the clip built into the base enclosure.
3. Remove the TV tuner module cable **(3)**.



Reverse this procedure to install the TV tuner module cable.

Heat sink



NOTE: All heat sink 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	488879-001
For use only with computer models equipped with AMD processors and graphics subsystems with UMA memory	490503-001
For use only with computer models equipped with Intel processors and graphics subsystems with 512-MB of discrete memory	480472-001 and 481144-001
For use only with computer models equipped with Intel processors and graphics subsystems with 256-MB of discrete memory	480473-001

Before removing the heat sink, 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 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Switch cover (see [Switch cover on page 69](#))
 - d. Keyboard (see [Keyboard on page 71](#))
 - e. Speaker assembly (see [Speaker assembly on page 75](#))
 - f. Display assembly (see [Display assembly on page 76](#))
 - g. Top cover (see [Top cover on page 85](#))
 - h. System board (see [System board on page 94](#))


Remove the heat assembly:

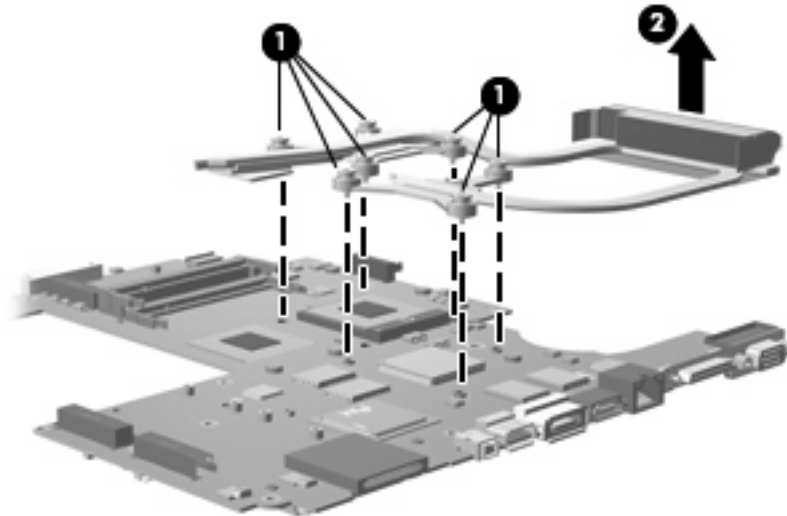



NOTE: Steps 1 through 3 apply only to computer models equipped with graphics subsystems with discrete memory. See steps 4 through 6 for heat sink removal instructions for computer models equipped with graphics subsystems with UMA memory.

1. Turn the system board upside down, with the expansion port 3 and external monitor port toward you.
2. Loosen the seven Phillips PM2.0×10.0 captive screws **(1)** that secure the heat sink assembly to the system board.

3. Remove the heat sink assembly (2).


 **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.

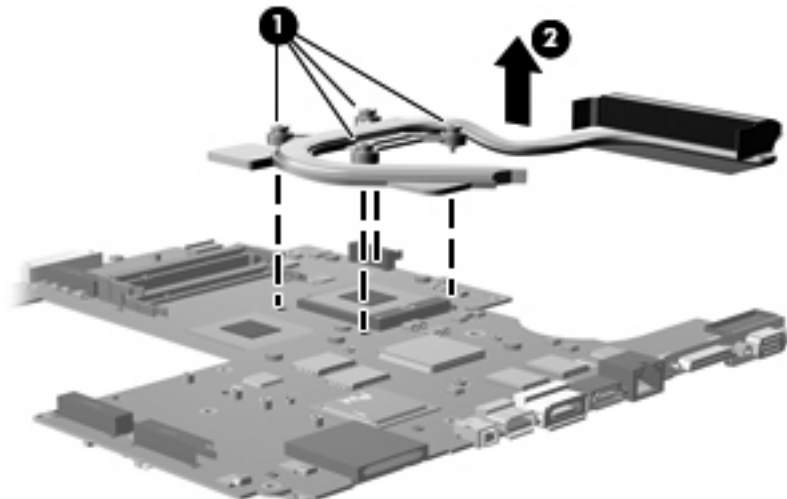



 **NOTE:** Steps 4 through 6 apply only to computer models equipped with graphics subsystems with UMA memory.

4. If it is necessary to replace the heat sink, loosen the four Phillips PM2.5×10.0 captive screws (1) that secure the heat sink to the system board.

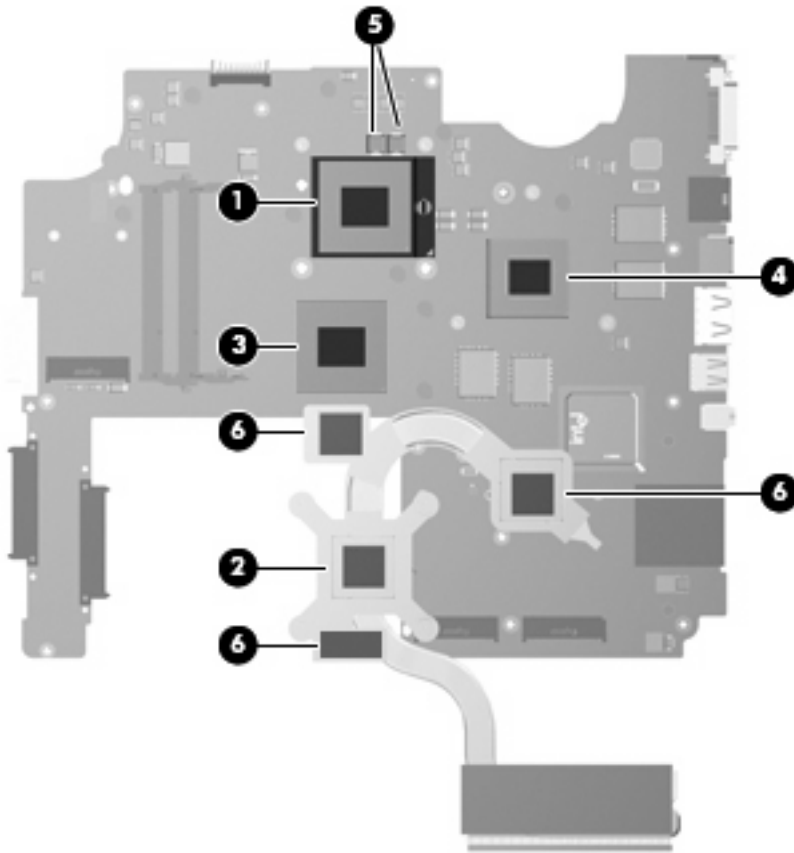
5. Remove the heat sink assembly (2).


 **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.



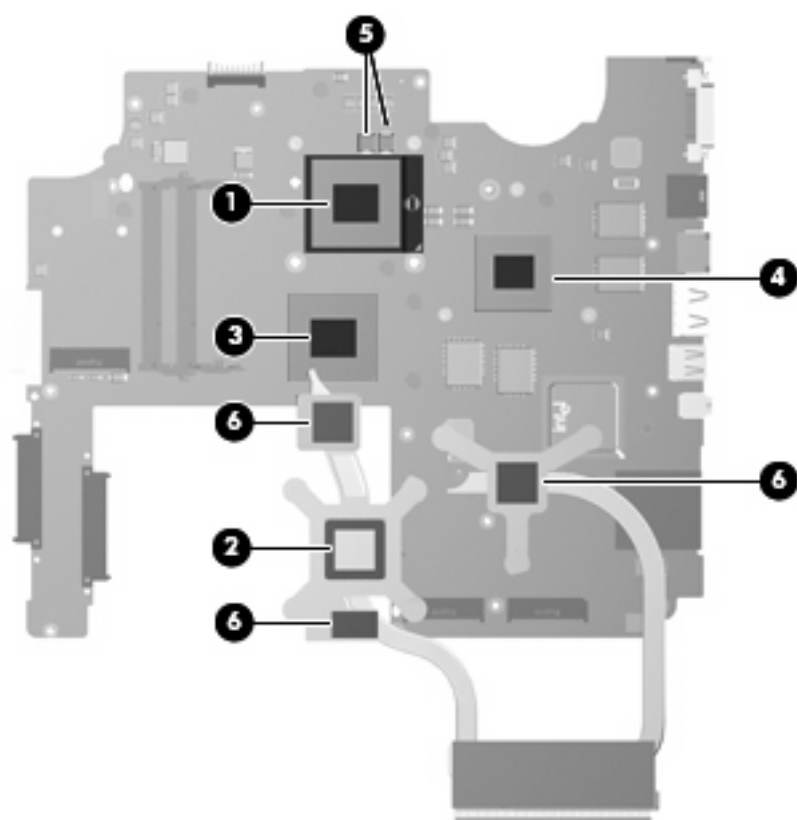
 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board each time the heat sink is removed. Thermal paste is used on the processor (1) and the heat sink section (2) that services it. Thermal pads are used on the Northbridge chip (3), the video memory chip (4), and the system board capacitors (5), and the sections of the heat sink (6) that service these components. Replacement thermal material is included with all heat sink assembly, system board, and processor spare part kits.

The following illustration shows the replacement thermal material locations for computer models equipped with an AMD processor.



 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board each time the heat sink 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 video memory chip (4), and the system board capacitors (5), and the sections of the heat sink (6) that service these components. Replacement thermal material is included with all heat sink assembly, system board, and processor spare part kits.

The following illustration shows the replacement thermal material locations for computer models equipped with an Intel processor.



Reverse this procedure to install the heat sink.

Processor



NOTE: All processor spare part kits include thermal material.

Description	Spare part number
AMD Turion Ultra ZM86 2.40-GHz processor	480854-001
AMD Turion Ultra ZM82 2.20-GHz processor	480852-001
AMD Turion Ultra ZM80 2.10-GHz processor	480851-001
AMD Turion RM70 2.00-GHz processor	480857-001
AMD Athlon QL60 1.90-GHz processor	480856-001
Intel Core2 Duo 2.80-GHz processor	481377-001
Intel Core2 Duo 2.53-GHz processor	481374-001
Intel Core2 Duo 2.40-GHz processor	481375-001
Intel Core2 Duo 2.26-GHz processor	481376-001
Intel Core2 Duo 2.00-GHz processor	491000-001


Before removing the processor, follow these steps:

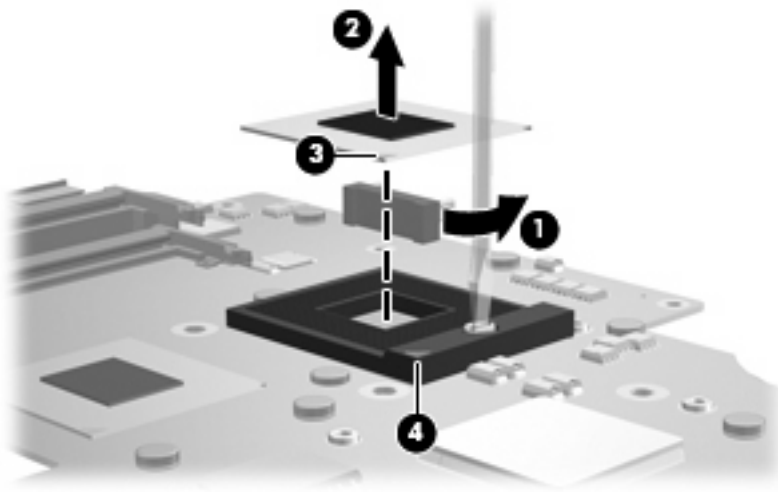
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 54](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 59](#))
 - b. Optical drive (see [Optical drive on page 57](#))
 - c. Switch cover (see [Switch cover on page 69](#))
 - d. Keyboard (see [Keyboard on page 71](#))
 - e. Speaker assembly (see [Speaker assembly on page 75](#))
 - f. Display assembly (see [Display assembly on page 76](#))
 - g. Top cover (see [Top cover on page 85](#))
 - h. System board (see [System board on page 94](#))
 - i. Heat sink (see [Heat sink on page 105](#))

Remove the processor:

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


2. Lift the processor (2) straight up and remove it.

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




Reverse this procedure to install the processor.

5 Setup Utility

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

Starting the Setup Utility

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

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

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

To start the Setup Utility:

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

– or –

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

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

Security menu

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

System Configuration menu

Select	To do this
Language Support	Change the Setup Utility language.
Button Sound (select models only)	Enable/disable the capacitive button tapping sound.
Virtualization Technology	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.

Select	To do this
Fan Always On	Enabled/disable Fan Always On. When enabled, the computer fan will always be on.
Boot Options	<p>Set the following boot options:</p> <ul style="list-style-type: none"> • f9 and f10 Delay (sec.)—Set the delay for the f9 and f10 functions of the Setup Utility in intervals of 5 seconds each (0, 5, 10, 15, 20). • CD-ROM boot—Enable/disable boot from CD-ROM. • Floppy boot—Enable/disable boot from diskette. • Internal Network Adapter boot—Enable/disable boot from Internal Network Adapter. • Boot Order—Set the boot order for: <ul style="list-style-type: none"> ◦ 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	<p>Run a comprehensive self-test on the hard drive.</p> <p>NOTE: On models with two hard drives, this menu option is called the Primary Hard Disk Self Test.</p>
Secondary Hard Disk Self Test (select models only)	Run a comprehensive self-test on a secondary hard drive.
Memory Test	Run a diagnostic test on the system memory.

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	39.59 cm	15.59 in
Depth	28.49 cm	11.22 in
Height (front to back)	3.34 to 4.21 cm	1.32 to 1.66 in
Weight (with optical drive, hard drive, and battery)	3.50 kg	7.72 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 or 18.5 V dc @ 4.74 A - 90 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.		

17.0-inch, SXGA+ display specifications

	Metric	U.S.
Dimensions		
Height	24.4 cm	9.6 in
Width	38.1 cm	15.0 in
Diagonal	43.2 cm	17.0 in
Number of colors	Up to 16.8 million	
Contrast ratio	200:1 (typical)	
Brightness	180 nits (typical)	
Pixel resolution		
Pitch	0.172 × 0.172 mm	
Format	1680 × 1050	
Configuration	RGB vertical stripe	
Backlight	CCFT	
Character display	80 × 25	
Total power consumption	7.0 W	
Viewing angle	+/-60° horizontal, +40/-50° vertical (typical)	

17.0-inch WXGA display specifications

	Metric	U.S.
Dimensions		
Height	24.4 cm	9.6 in
Width	38.1 cm	15.0 in
Diagonal	43.2 cm	17.0 in
Number of colors	Up to 16.8 million	
Contrast ratio	200:1	
Brightness	180 nits typical	
Pitch resolution		
Pitch	0.259 × 0.259 mm	
Format	1440 × 900	
Configuration	RGB vertical stripe	
Backlight	CCFT	
Character display	80 × 25	
Total power consumption	6.5 W	
Viewing angle	+/-45° horizontal, +15/-35° 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 SuperMulti Double-Layer Combo Drive specifications

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

System DMA specifications, 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 with graphics subsystems with discrete memory

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 with graphics subsystems with UMA memory

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 with graphics subsystems with discrete memory

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-B00FFFFFFF	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-B1FFFFFFF	nVidia GeForce8400M GS
32 MB	B2000000-B3FFFFFFF	nVidia GeForce8400M GS
1 MB	B6000000-B60FFFFFFF	Broadcom WLAN adapter
256 MB	C0000000-CFFFFFFF	nVidia GeForce8400M GS
1 KB	FED00000-FED003FF	High precision event timer

System memory map specifications, AMD with graphics subsystems with UMA memory

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-B00FFFFFF	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

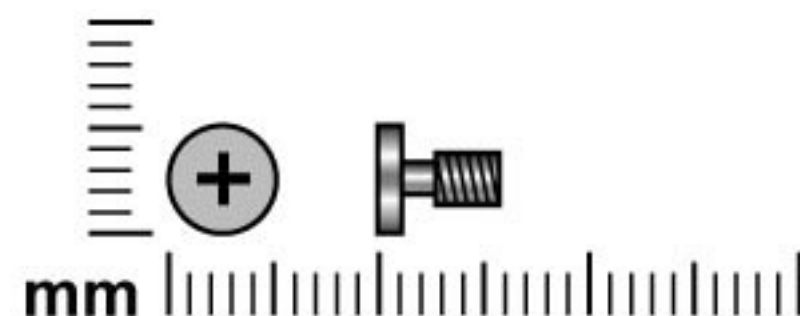
System memory map specifications, Intel

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

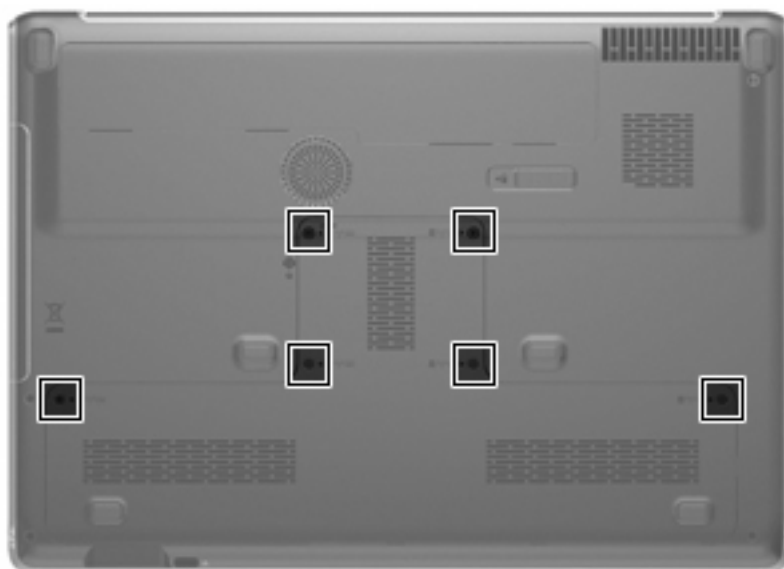
7 Screw listing

This section provides specification and reference information for the screws used in the computer. All screws listed in this section are available in the Screw Kit, spare part number 480475-001, and the Display Screw Kit, spare part number 480443-001.

Phillips PM2.5×6.0 captive screw

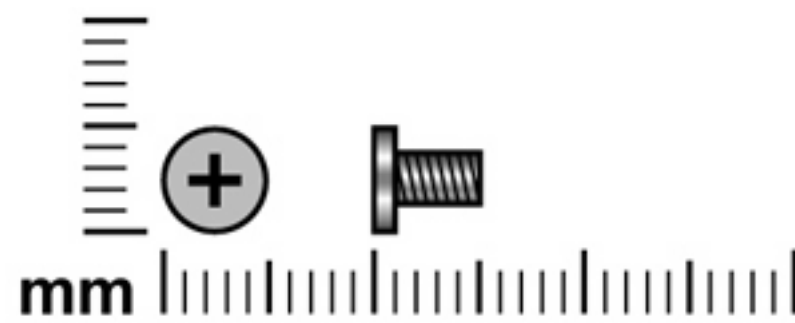


Color	Quantity	Length	Thread	Head diameter
Black	6	6.0 mm	2.5 mm	5.0 mm

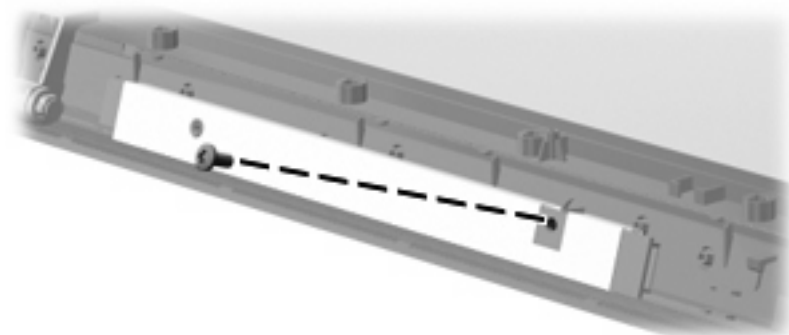


Where used: 6 screws that secure the accessory cover to the computer (screws are secured by C-clips)

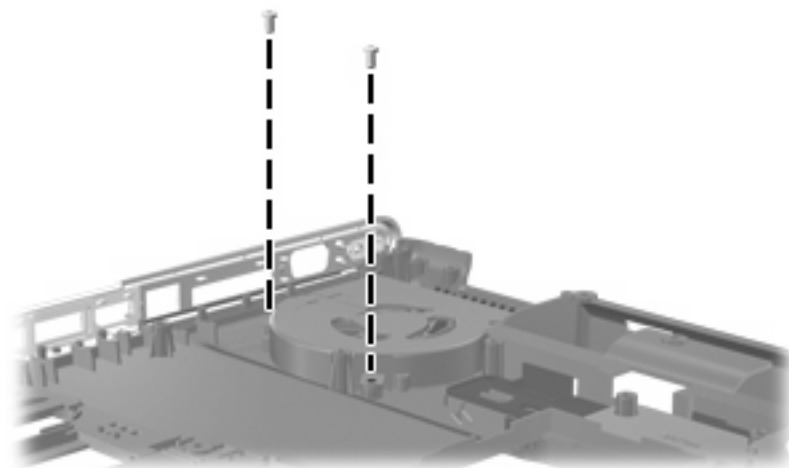
Phillips PM2.5×5.0 screw

A diagram showing a Phillips screw and a millimeter ruler. The ruler has markings for millimeters, with a vertical scale on the left and a horizontal scale below the screw. The screw is shown in profile, with its head and threaded shaft.

Color	Quantity	Length	Thread	Head diameter
Black	3	5.0 mm	2.5 mm	5.0 mm



Where used: One screw that secures the display inverter to the display enclosure on computer models equipped with an AntiGlare display assembly



Where used: 2 screws that secure the fan to the base enclosure

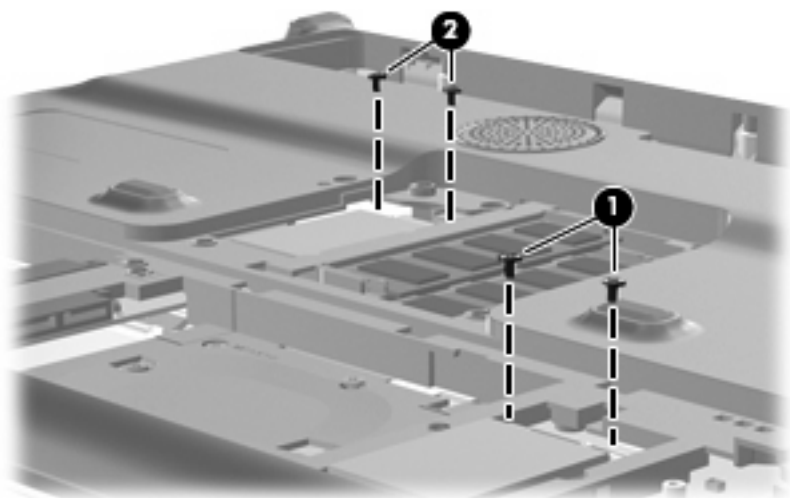
Phillips PM2.0×4.0 screw



Color	Quantity	Length	Thread	Head diameter
Silver	19	4.0 mm	2.0 mm	4.5 mm



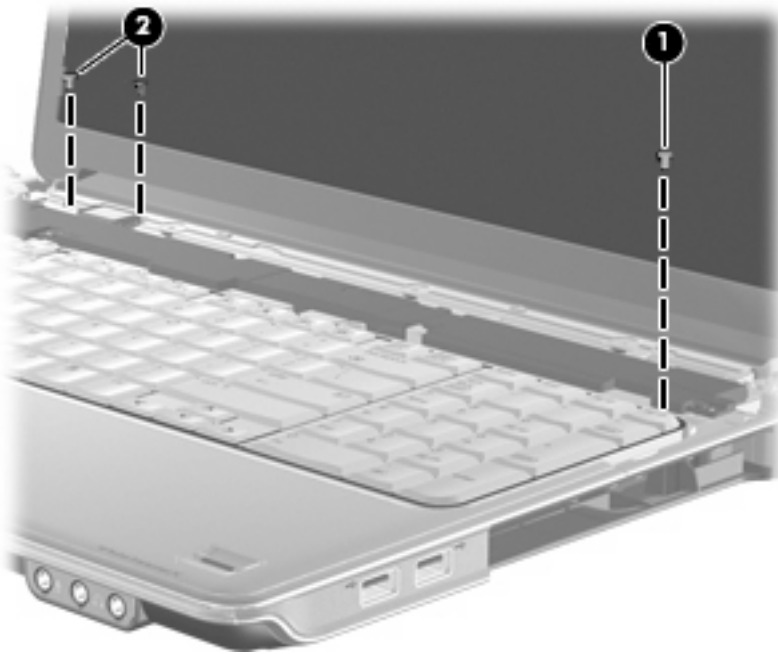
Where used: 2 screws that secure the optical drive bracket to the optical drive



Where used:

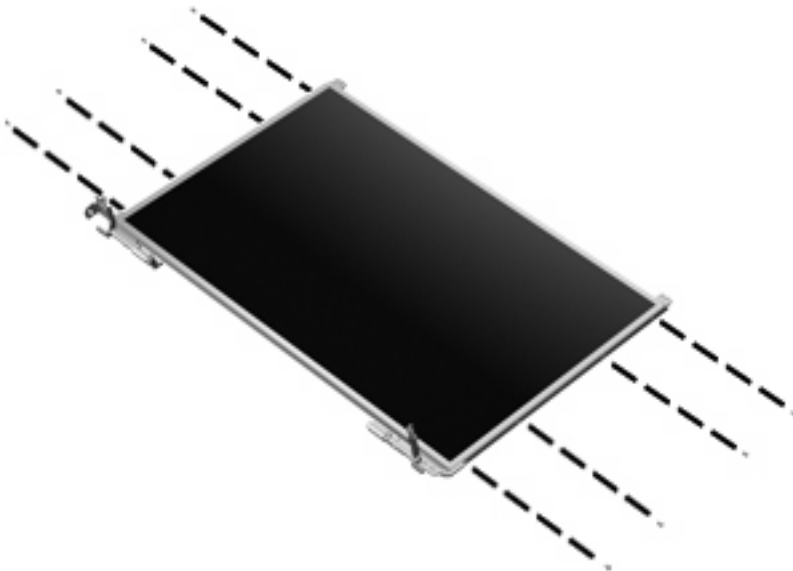
(1) Two screws that secure the TV tuner module to the system board

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

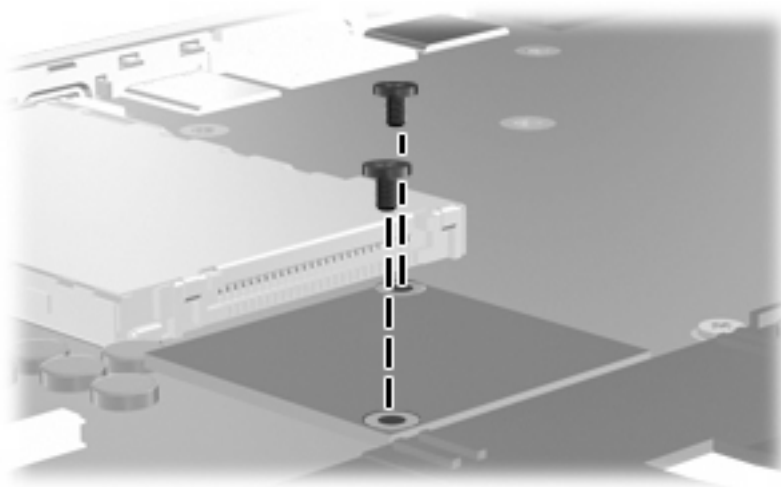


Where used:

- (1) One screw that secures the keyboard to the top cover
- (2) Two screws that secure the Bluetooth module to the top cover

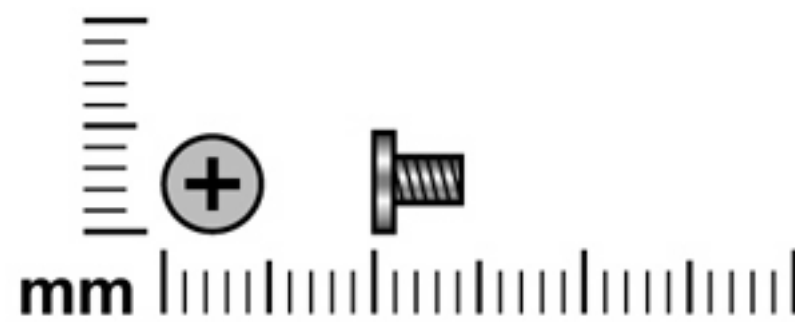


Where used: 8 screws that secure the display hinges to the display panel on BrightView display assemblies

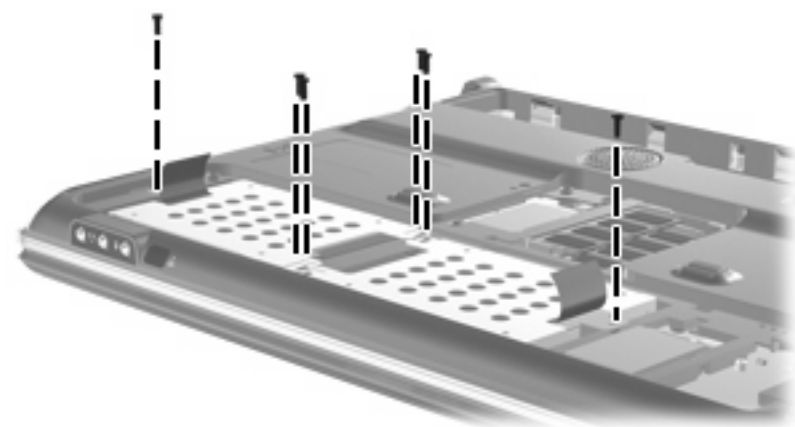


Where used: 2 screws that secure the modem module to the system board

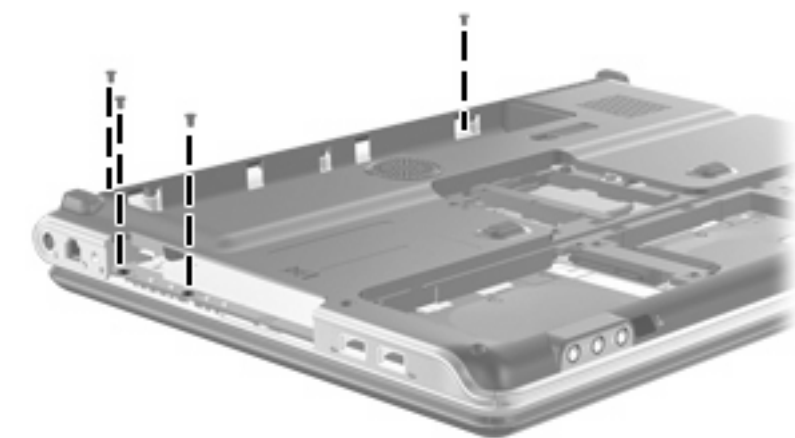
Phillips PM2.5×4.0 screw



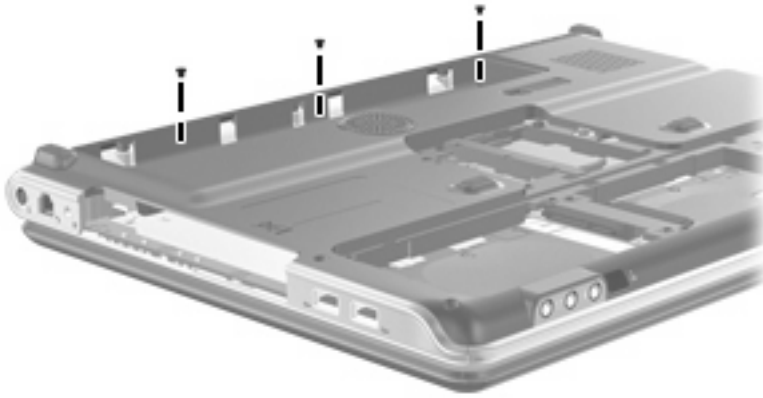
Color	Quantity	Length	Thread	Head diameter
Black	49	4.0 mm	2.5 mm	5.0 mm



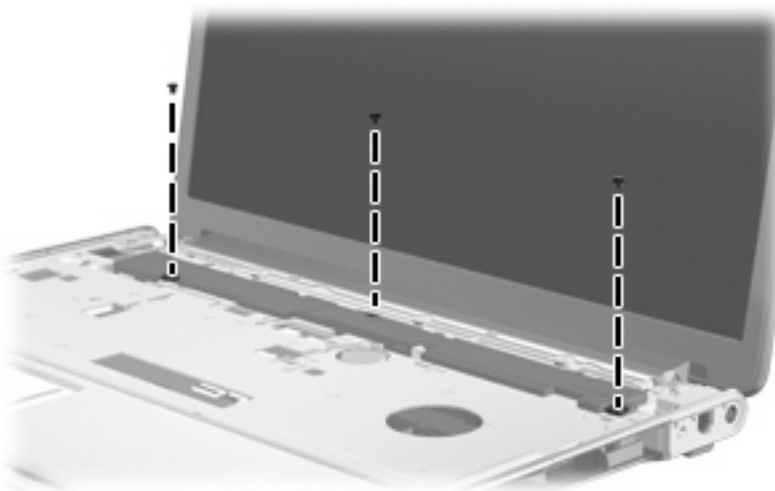
Where used: 6 screws that secure the hard drives to the computer



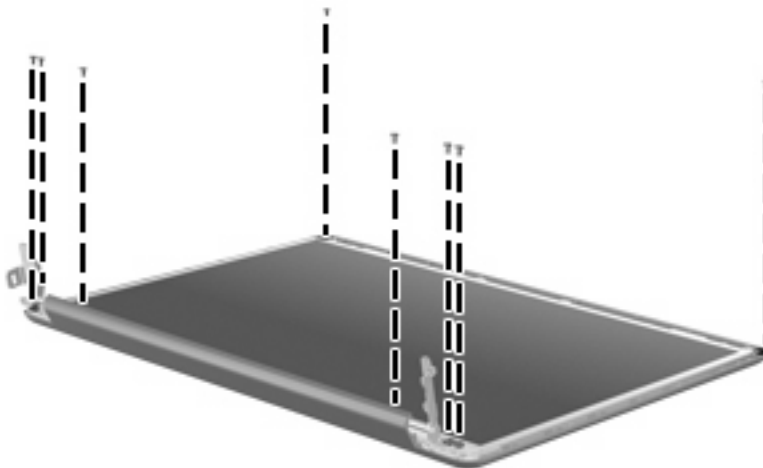
Where used: 4 screws that secure the switch cover to the computer



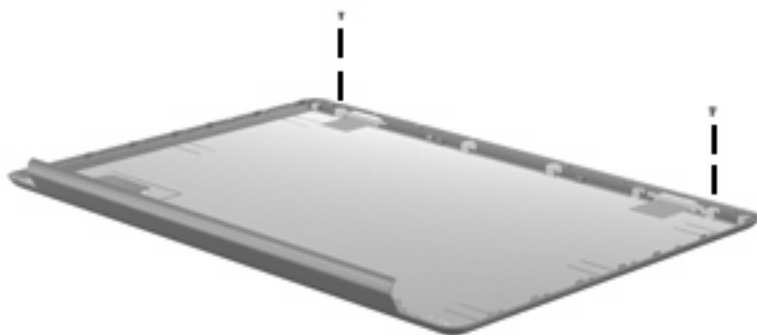
Where used: 3 screws that secure the switch cover to the computer



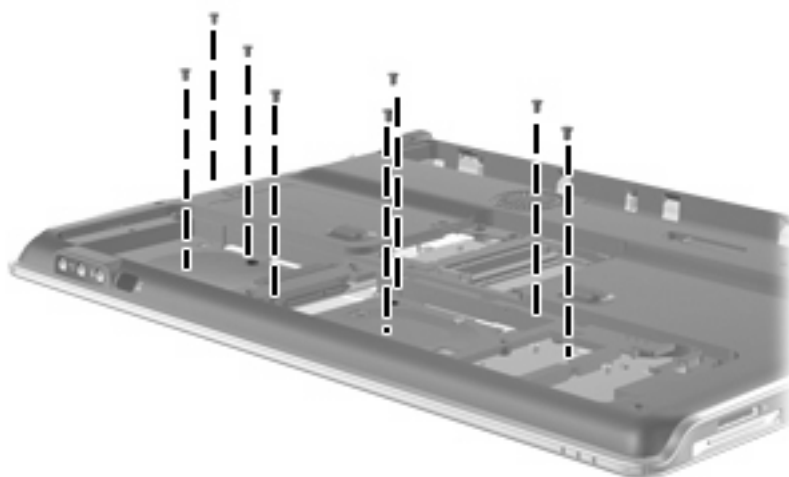
Where used: 3 screws that secure the keyboard to the top cover



Where used: 8 screws that secure the display panel to the display enclosure



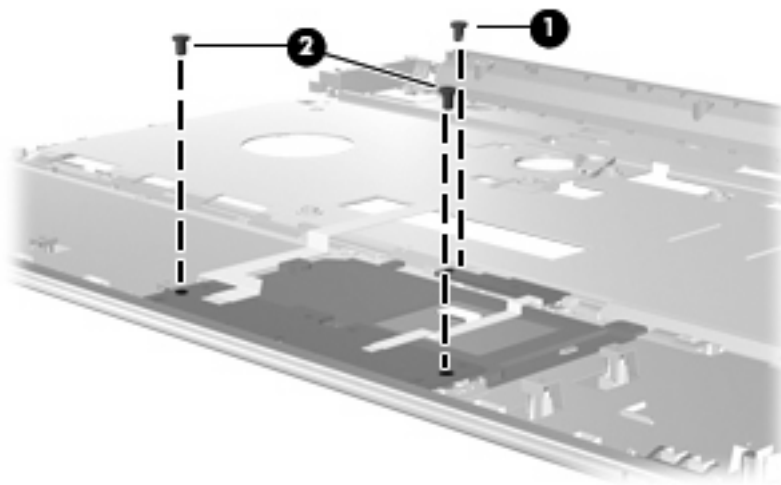
Where used: 2 screws that secure the wireless antenna transceivers to the display enclosure on BrightView display assemblies



Where used: 8 screws that secure the top cover to the base enclosure

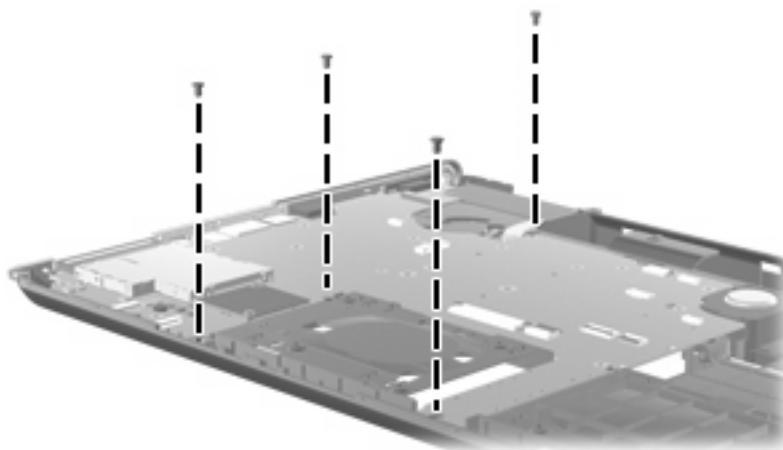


Where used: 5 screws that secure the top cover to the base enclosure

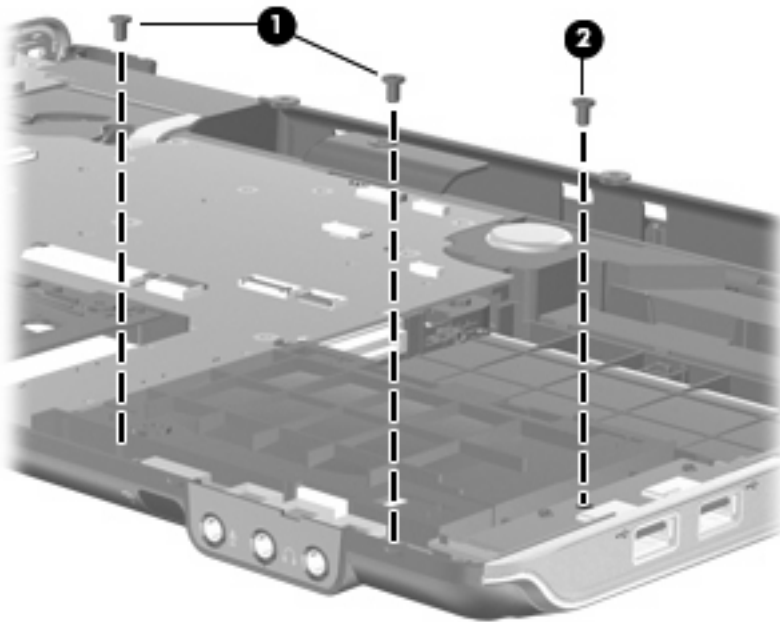


Where used:

- (1) One screw that secures the TouchPad on/off button board to the top cover
- (2) Two screws that secure the TouchPad button board to the top cover




Where used: 4 screws that secure the system board to the base enclosure

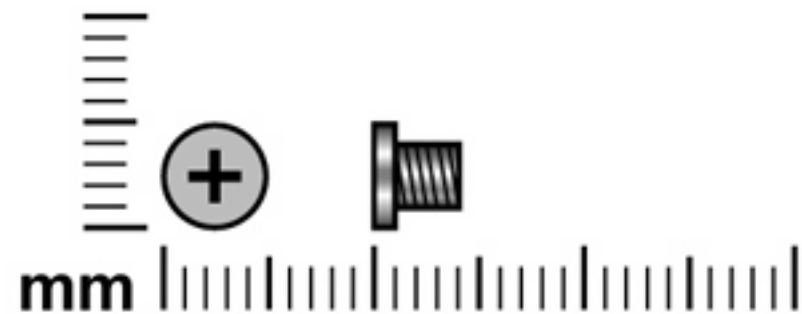


Where used:

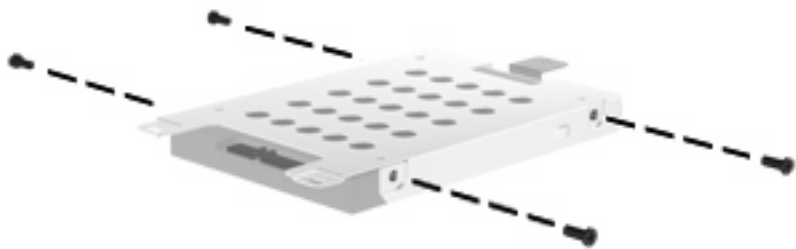
- (1) Two screws that secure the audio/infrared board to the base enclosure
- (2) One screw that secures the USB board to the base enclosure

Phillips PM3.0×4.0 screw

 **NOTE:** The Phillips PM3.0×4.0 screws are also available in the Hard Drive Hardware Kit, spare part number 480457-001.

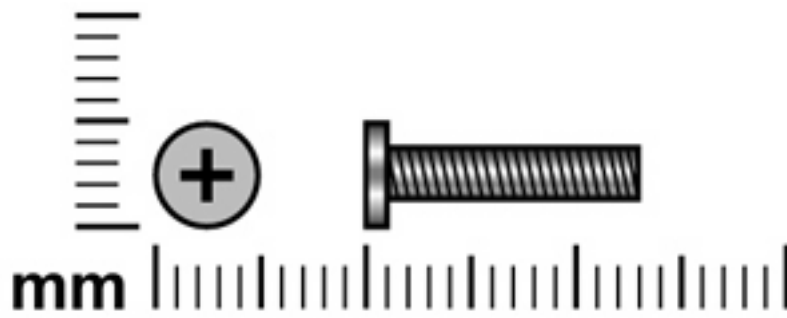


Color	Quantity	Length	Thread	Head diameter
Silver	4	4.0 mm	3.0 mm	5.0 mm

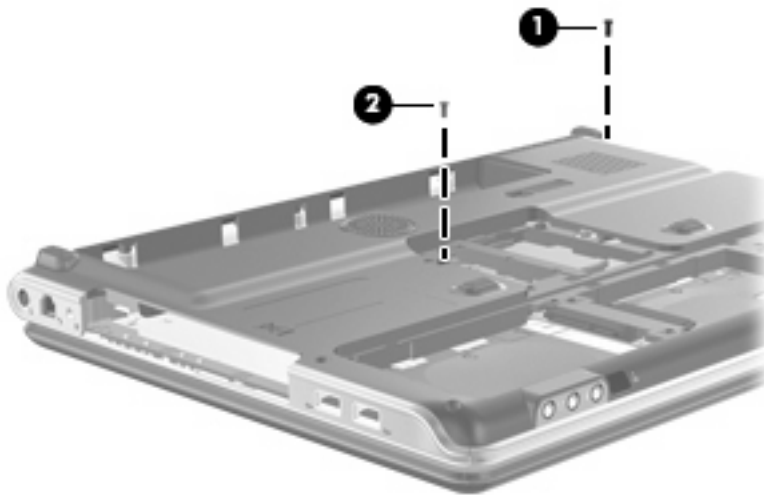


Where used: 4 screws that secure the hard drive bracket to the hard drive

Phillips PM2.5×13.0 captive screw



Color	Quantity	Length	Thread	Head diameter
Black	9	13.0 mm	2.5 mm	5.0 mm

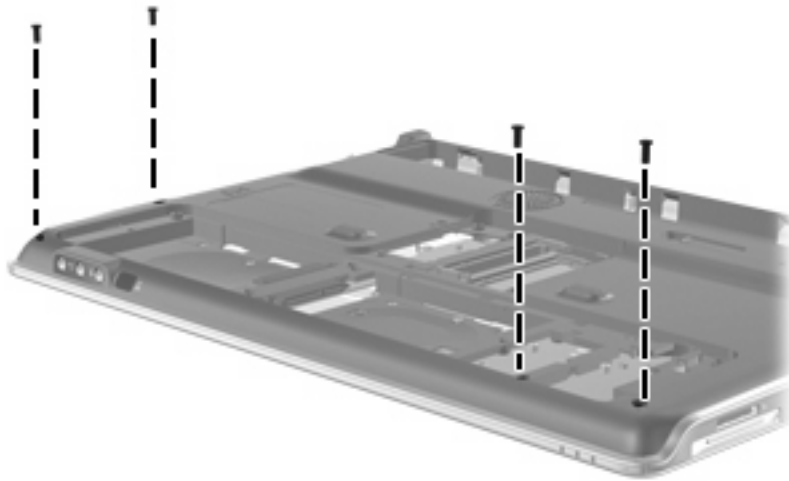


Where used:

- (1) One screw that secures the switch cover to the computer
- (2) One screw that secures the keyboard to the computer

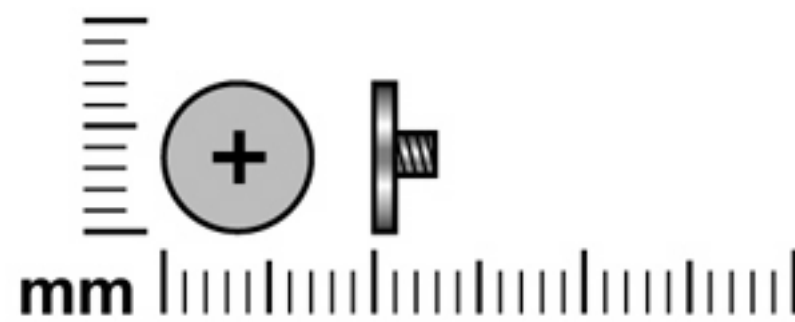


Where used: 3 screws that secure the display assembly to the computer



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

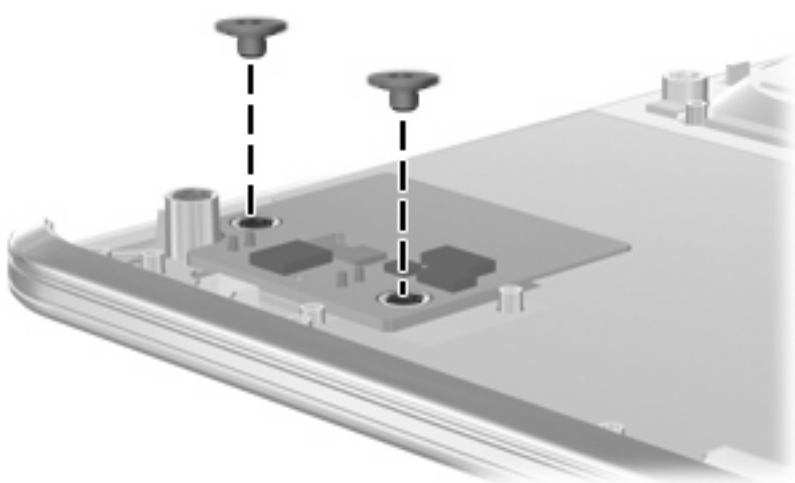
Phillips PM2.0×3.0 broad-head screw



Color	Quantity	Length	Thread	Head diameter
Black	5	3.0 mm	2.0 mm	7.0 mm





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



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

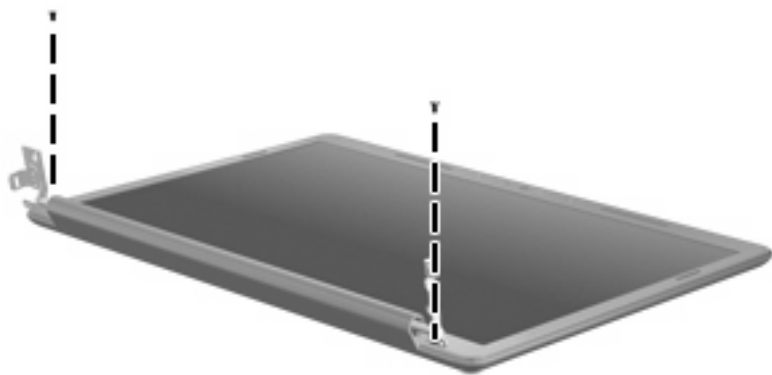
Phillips PM2.5×6.0 screw



Color	Quantity	Length	Thread	Head diameter
Silver	11	6.0 mm	2.5 mm	5.0 mm



Where used: 3 screws that secure the display assembly to the computer

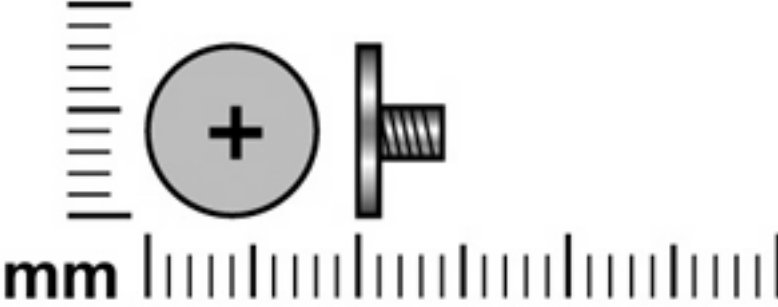


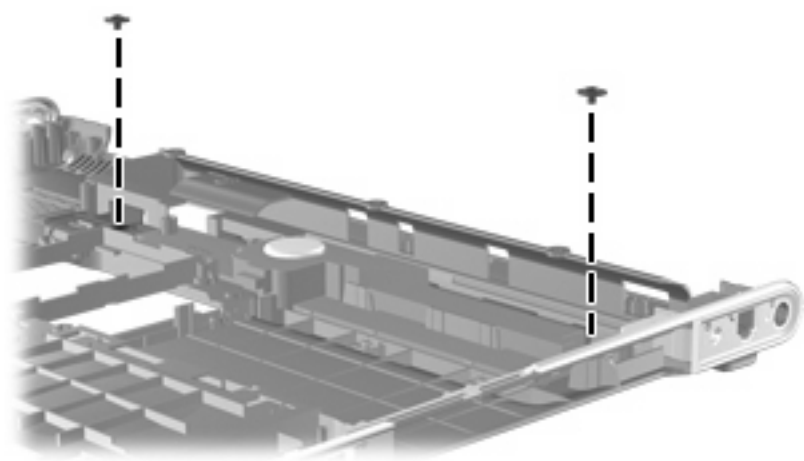
Where used: 2 screws that secure the display bezel to the display enclosure



Where used: 6 screws that secure the top cover to the base enclosure

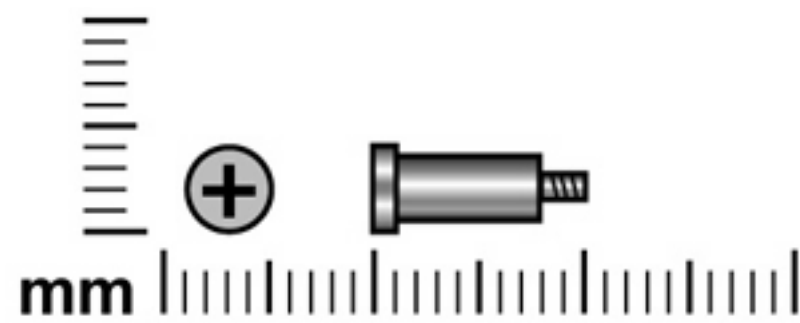
Phillips PM2.5×4.0 broad-head screw

				
Color	Quantity	Length	Thread	Head diameter
Silver	2	4.0 mm	2.5 mm	6.0 mm

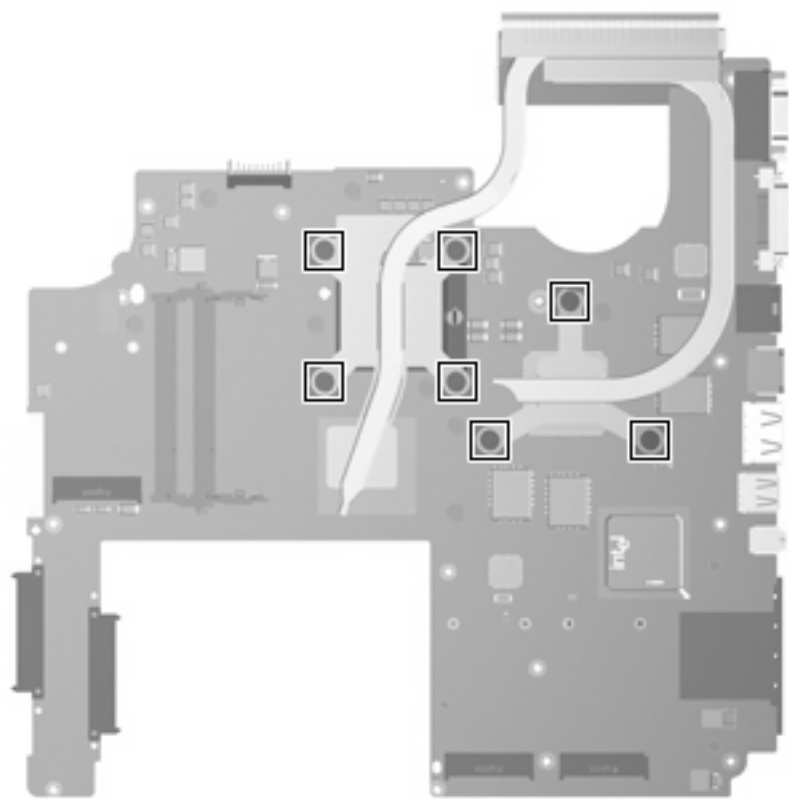


Where used: 2 screws that secure the subwoofer to the base enclosure

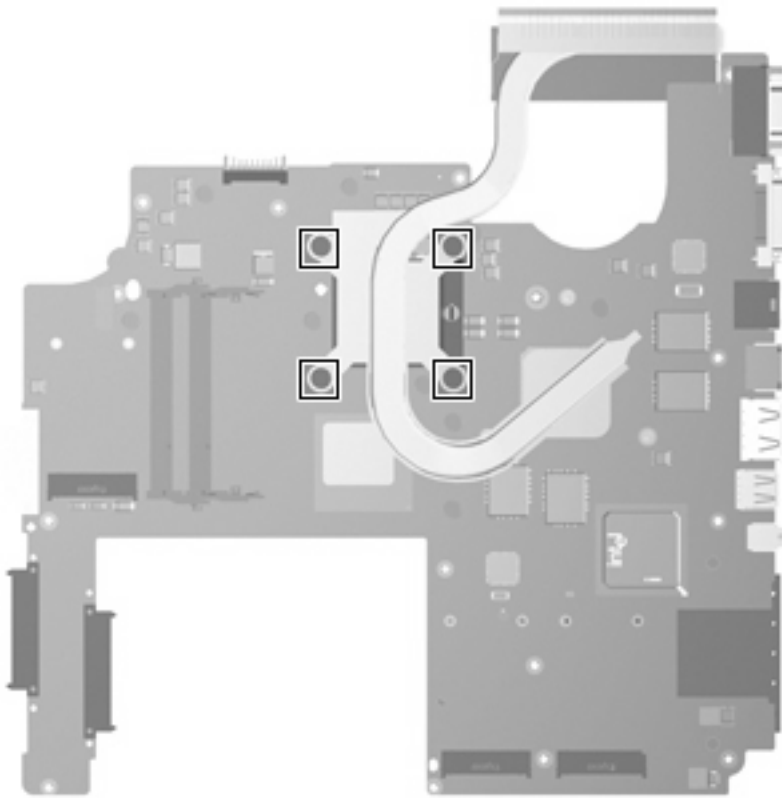
Phillips PM2.0×10.0 captive screw



Color	Quantity	Length	Thread	Head diameter
Silver	Up to 7	10.0 mm	2.0 mm	6.0 mm



Where used: 7 captive screws that secure the heat sink assembly to the system board on computer models equipped with graphics subsystems with discrete memory (screws are spring-loaded and secured by C-clips)



Where used: 4 captive screws that secure the heat sink assembly to the system board on computer models equipped with graphics subsystems with UMA memory (screws are spring-loaded and secured by C-clips)


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.

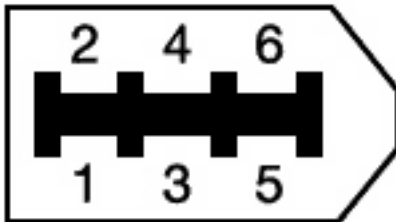
On some models, you can perform a recovery from the partition on the hard drive from either the Start button or [f11](#).

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.

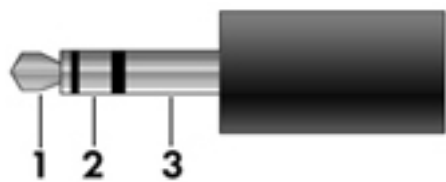
9 Connector pin assignments

1394



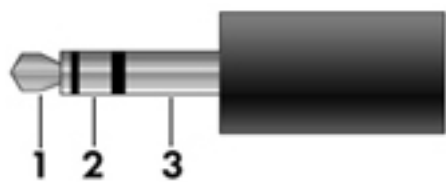
Pin	Signal
1	Power
2	Ground
3	TPB-
4	TPB+
5	TPA-
6	TPA+

Audio-in (microphone)



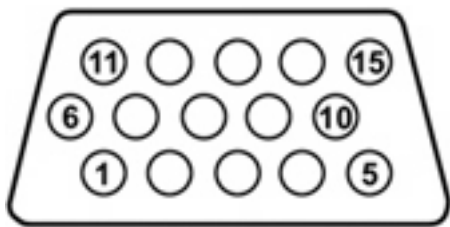
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

Audio-out (headphone)



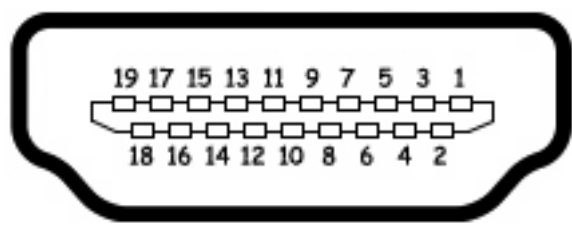
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

External monitor



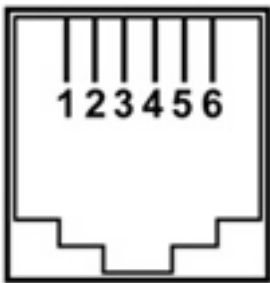
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

HDMI



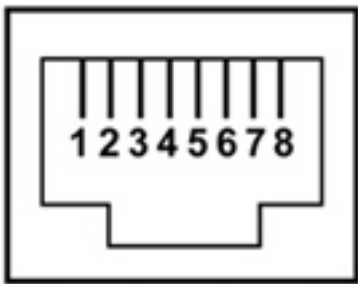
Pin	Signal
1	TMDS data 2+
2	TMDS data 2 shield
3	TMDS data 2–
4	TMDS data 1+
5	TMDS data 1 shield
6	TMDS data 1–
7	TMDS data 0+
8	TMDS data 0 shield
9	TMDS data 0–
10	TMDS clock+
11	TMDS clock shield
12	TMDS clock–
13	CEC
14	No connect
15	DDC clock
16	DDC data
17	Ground
18	+5V power
19	Hot plug detect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

RJ-11 (modem)



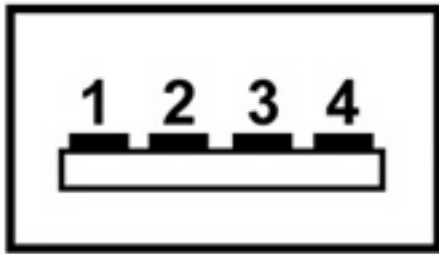
Pin	Signal
1	Unused
2	Tip
3	Ring
4	Unused
5	Unused
6	Unused

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>.

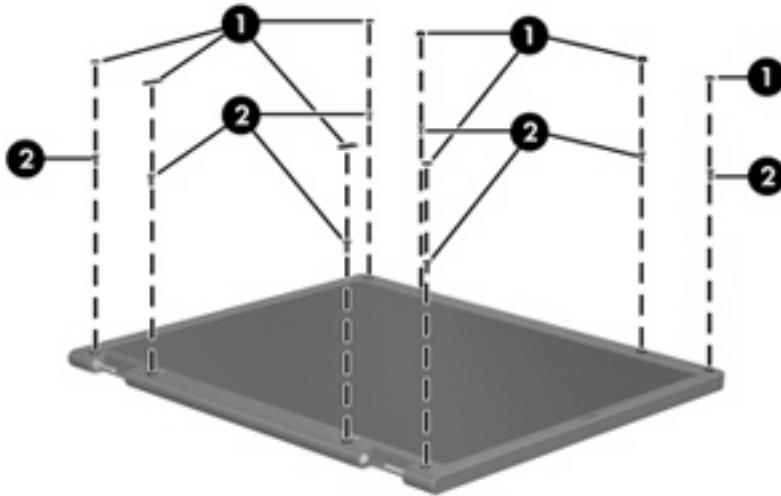
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.



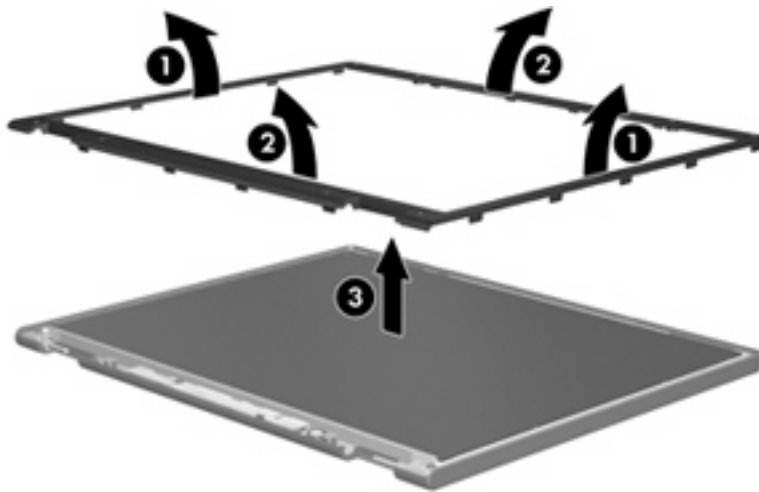
📄 **NOTE:** The procedures provided in this appendix are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps to disassemble the display assembly:

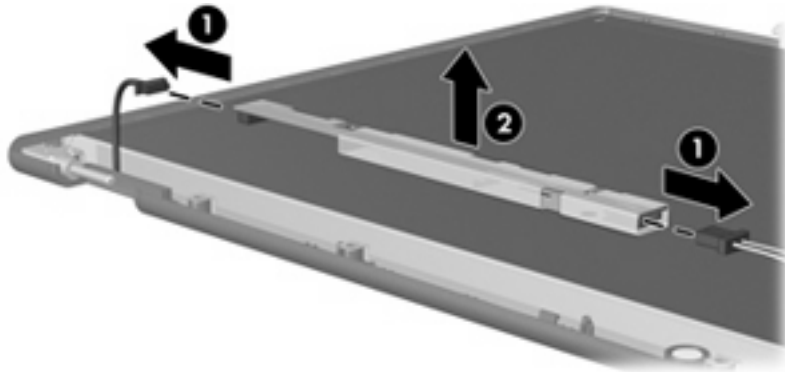
1. Remove all screw covers (1) and screws (2) that secure the display bezel to the display assembly.



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).

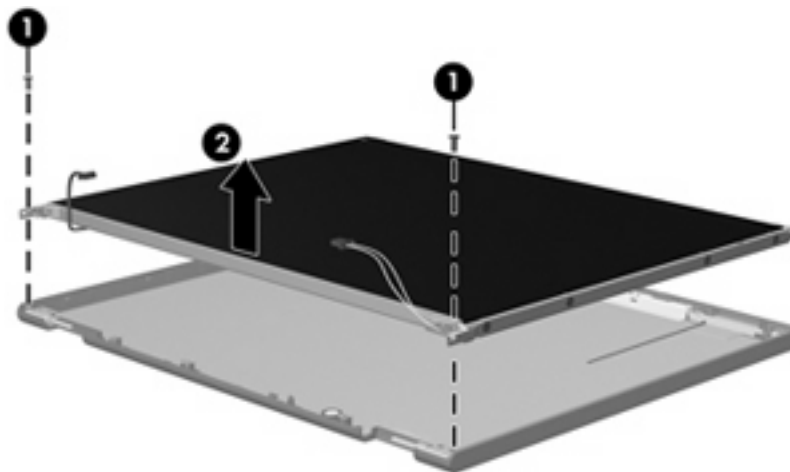


4. Disconnect all display panel cables (1) from the display inverter and remove the inverter (2).



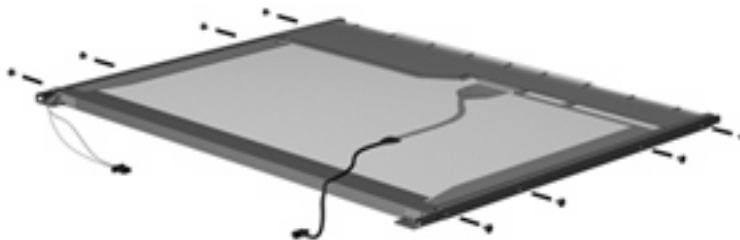
5. Remove all screws (1) that secure the display panel assembly to the display enclosure.

6. Remove the display panel assembly (2) from the display enclosure.



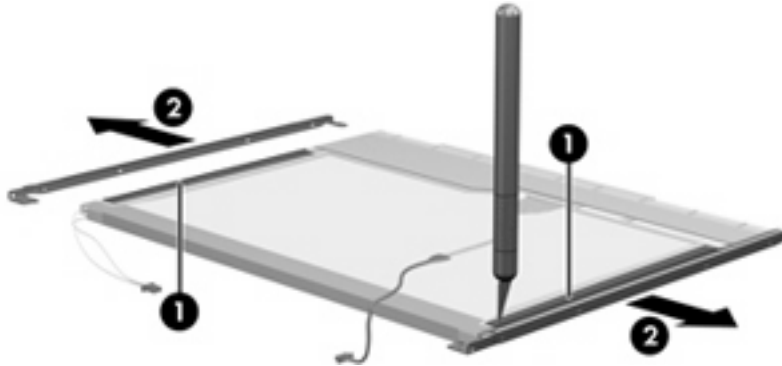
7. Turn the display panel assembly upside down.

8. Remove all screws that secure the display panel frame to the display panel.



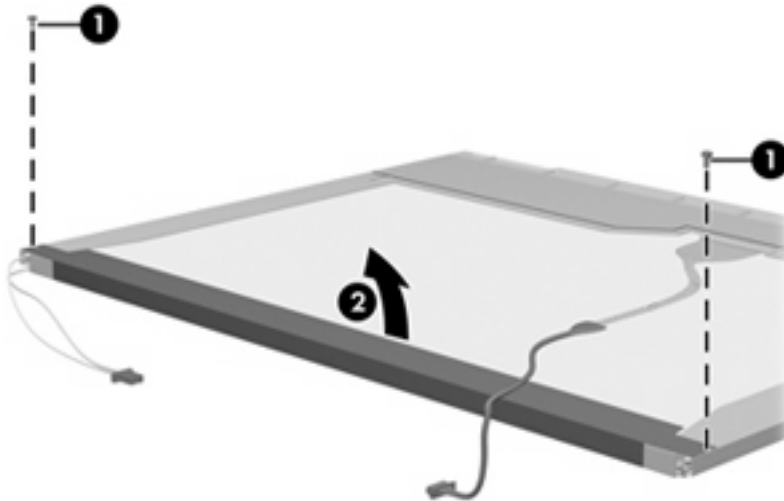
9. Use a sharp-edged tool to cut the tape (1) that secures the sides of the display panel to the display panel frame.

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.

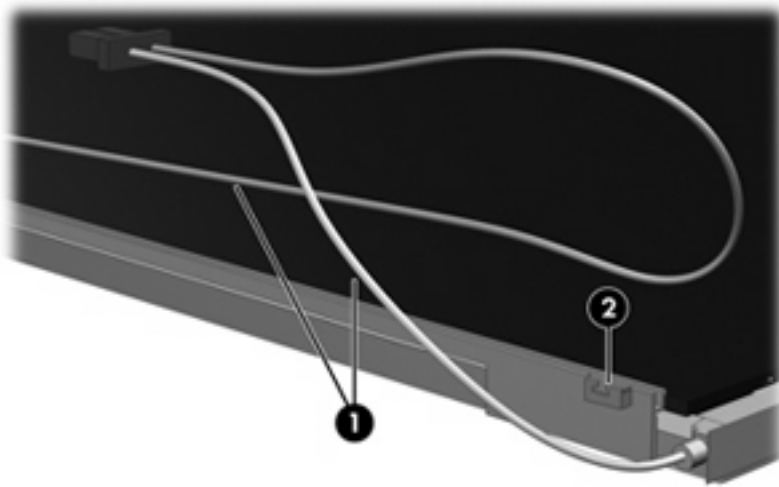
12. Lift the top edge of the backlight cover (2) and swing it outward.



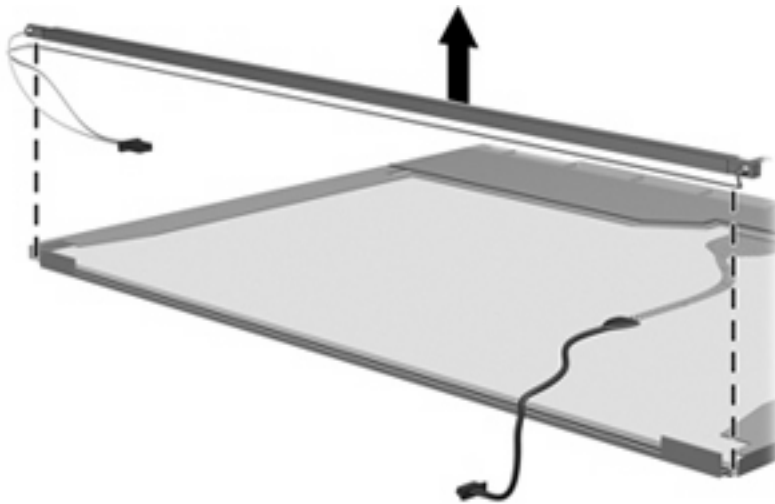
13. Remove the backlight cover.

14. Turn the display panel right-side up.

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

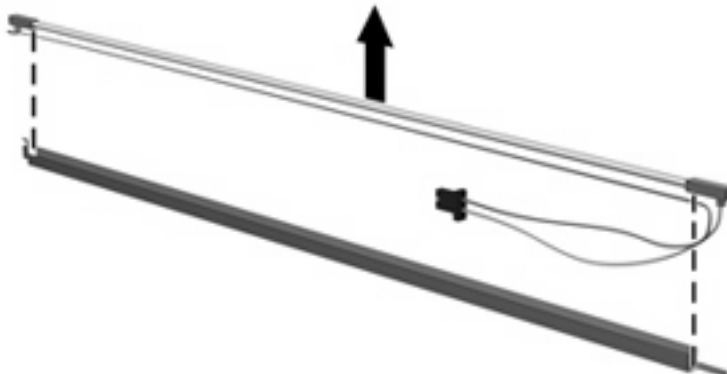


16. Turn the display panel upside down.
17. Remove the backlight frame from the display panel.

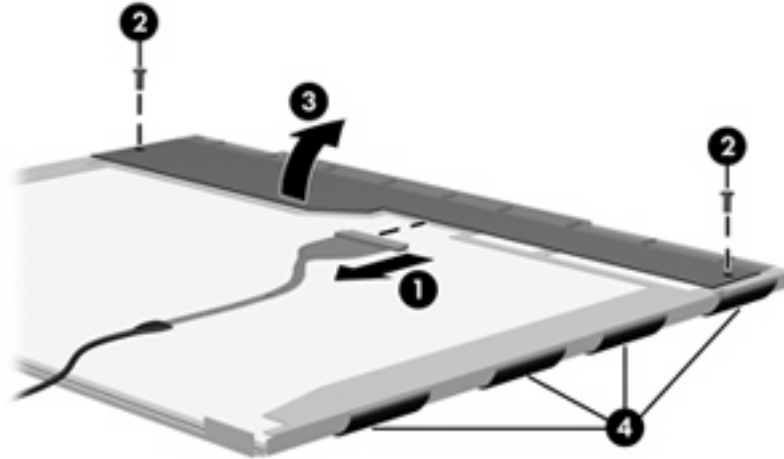


⚠ WARNING! The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

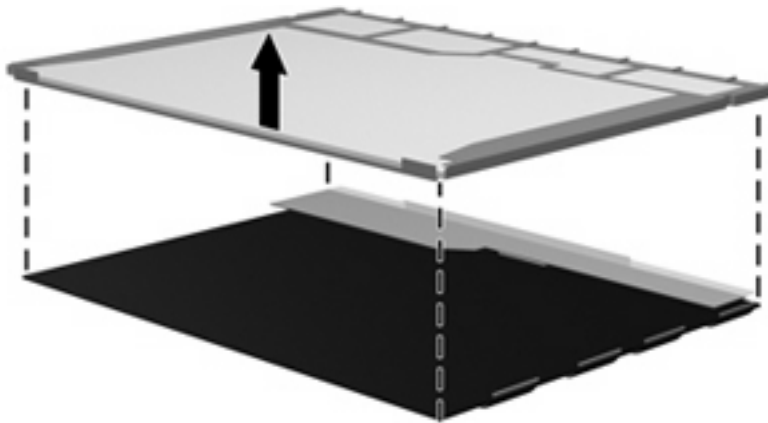
18. Remove the backlight from the backlight frame.



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 157
1394 Power Saving 114

A

AC adapter, spare part
 numbers 36, 39
accessory cover
 illustrated 33
 removal 59
administrator password 114
antenna
 illustrated 29, 32
 locations 7
 removal 83
 spare part numbers 29, 32,
 44, 84
applications key, Windows 11
audio, product description 4
audio-in jack
 location 13
 pin assignments 158
audio-out jack
 location 13
 pin assignments 158
audio/infrared board
 removal 97
 spare part number 21, 41,
 97

B

backing up
 customized window, toolbar,
 and menu bar settings 154
 personal files 154
 templates 154
backup 152
backup suggestions 154

base enclosure, spare part
 numbers 27, 40, 44, 45
battery
 removal 52
 spare part numbers 28, 40,
 43, 52
battery bay 16
battery light 13
battery release latch 16
Blu-ray Disc ROM Drive
 precautions 48
 removal 57
 spare part number 28, 35,
 40, 57
 specifications 120
Bluetooth module
 removal 74
 spare part number 20, 42,
 74
Bluetooth module cable
 illustrated 34
 removal 91
boot options 115
boot order 115
bottom components 16
button components 9
button sound 114
buttons
 media 9
 next/fast forward 10
 play/pause 10
 power 9
 previous/rewind 10
 stop 10
 volume mute 10
 wireless 10

C

Cable Kit
 contents 34
 spare part number 20, 34,
 41
cables, service considerations 48
Card Reader Power Saving 114
CAT5E cable, spare part
 number 36, 38
changing the Setup Utility
 language 112
chipset, product description 1
CMOS clearing 52
components
 bottom 16
 buttons 9
 display 7
 fingerprint reader 9
 front 13
 keyboard 11
 left-side 15
 rear 14
 right-side 14
 speakers 9
 TouchPad 12
computer feet
 locations 54
 spare part number 54
computer specifications 116
connectors, service
 considerations 48

D

Digital Media Slot 15
Digital Media Slot Light 15
diskette drive, precautions 48
display assembly
 removal 56
 spare part numbers 19, 39,
 44, 46, 56

- display bezel
 - illustrated 31
 - release 56
 - removal 81
 - spare part number 31, 40, 82
- Display Cable Kit, spare part number 29, 32, 40
- display components
 - illustrated 19, 31
 - recycling 165
- display enclosure
 - illustrated 29, 32
 - removal 77
 - spare part numbers 29, 32, 40, 41, 44, 45, 78
- display hinge
 - illustrated 29, 31
 - removal 80, 83
 - spare part numbers 29, 31, 40, 46, 81, 83
- display inverter
 - illustrated 29, 31
 - removal 79
 - spare part number 29, 31, 40, 80, 82
- display inverter cover
 - illustrated 29
 - removal 79
 - spare part number 29, 43, 79
- display panel
 - illustrated 31
 - product description 2
 - removal 82
 - spare part numbers 31, 40, 83
- Display Rubber Kit, spare part number 30, 32, 40, 45
- Display Screw Kit, spare part number 30, 32, 40, 45
- display specifications 117, 118
- display switch 7
- displaying system
 - information 112
- docking support, product description 5
- drive light 13

- drives
 - boot order 115
 - preventing damage 48
- DVD±RW and CD-RW Combo Drive
 - precautions 48
 - removal 57
 - spare part numbers 28, 35, 40, 57
 - specifications 121

E

- electrostatic discharge 49
- eSATA/USB port 15
- esc key 11
- Ethernet, product description 4
- exiting the Setup Utility 113
- expansion port 3 15
- ExpressCard slot 15
- ExpressCard slot bezel, illustrated 33
- external media cards, product description 5
- external monitor port
 - location 15
 - pin assignments 159

F

- f11 156
- fan
 - removal 99
 - spare part numbers 27, 41, 44, 99
- fan always on 115
- feet
 - locations 54
 - spare part number 54
- fingerprint reader 10, 111
- fingerprint reader board
 - removal 88
 - spare part number 26, 41, 88
- fingerprint reader components 9
- fn key 11
- front components 13
- full system recovery 152
- function keys 11

G

- graphics, product description 2

- grounding equipment and methods 51

H

- hard drive
 - location 16
 - precautions 48
 - product description 3
 - removal 59
 - spare part numbers 28, 35, 40, 59
 - specifications 119
- Hard Drive Hardware Kit, spare part number 28, 40, 59
- hard drive self test 115
- HDMI port
 - location 15
 - pin assignments 160
- headphone jack
 - location 13
 - pin assignments 158
- headset, spare part number 36, 37
- heat sink
 - removal 95
 - spare part numbers 26, 41, 44, 45, 95
- hinge
 - illustrated 29, 31
 - removal 80, 83
 - spare part numbers 29, 31, 40, 46, 81, 83

I

- I/O address specifications 126, 128
- infrared lens 13
- interrupt specifications 123, 124, 125

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 71
 spare part numbers 19, 42, 71
keypad keys 11
keys
 embedded numeric keypad 11
 esc 11
 fn 11
 function 11
 Windows applications 11
 Windows logo 11

L

LAN Power Saving 114
language support 114
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 35
media button 9
memory map specifications 130, 131, 132
memory module
 location 16
 product description 2
 removal 67
 spare part numbers 28, 40, 67
memory test 115
microphone
 locations 8
 product description 4
microphone jack
 location 13
 pin assignments 158
model name 1

modem jack
 location 14
 pin assignments 161
modem module
 removal 93
 spare part numbers 21, 39, 93
modem module cable
 illustrated 34
 removal 103
modem, product description 4
monitor port
 location 15
 pin assignments 159
mouse, spare part numbers 36, 37

N

network jack
 location 15
 pin assignments 161
next/fast forward button 10

O

operating system, product description 6
optical drive
 location 14
 precautions 48
 product description 3
 removal 57
 spare part numbers 28, 35, 57
 specifications 120, 121
optical drive light 14

P

packing guidelines 50
password clearing 52
passwords 114
performing a system recovery 156
pin assignments
 1394 157
 audio-in 158
 audio-out 158
 external monitor 159
 HDMI 160
 headphone 158
 microphone 158
 modem 161

monitor 159
network 161
 RJ-11 161
 RJ-45 161
 Universal Serial Bus (USB) 162
plastic parts 47
Plastics Kit
 content 33
 spare part number 20, 33, 41
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 connector 14
power connector cable
 illustrated 34
 removal 102
power cord set requirements 163
power cord, spare part numbers 36, 45
power light 13
power requirements, product description 6
power-on password 114
previous/rewind button 10
processor
 product description 1
 removal 95
 spare part numbers 27, 41, 45, 95
Processor C4 State 114
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 152
- recovering from the dedicated recovery partition 156
- recovering from the recovery discs 156
- recovery 156
- recovery discs 156
- Recovery Manager 152
- recovery partition 156
- recovery, system 152
- remote control, spare part numbers 36, 39
- removal/replacement
 - preliminaries 47
 - procedures 53
- restore points 154
- right-side components 14
- RJ-11 jack
 - location 14
 - pin assignments 161
- RJ-45 jack
 - location 15
 - pin assignments 161
- RTC battery
 - removal 52
 - spare part number 28, 41, 52

- Rubber Feet Kit, spare part number 27, 41, 54

S

- safeguarding information 152
- Screw Kit
 - contents 133
 - spare part number 37, 41
- screw listing 133
- secondary hard drive self test 115
- security cable slot 15
- security, product description 6
- service considerations 47
- service tag 17, 53
- serviceability, product description 6
- Setup Utility
 - changing the language 112
 - Diagnostics menu 115
 - display system information 112
 - exiting 113
 - Main menu 114
 - menus 114
 - restoring default settings 113
 - Security menu 114
 - starting 111
 - System Configuration menu 114
 - using 112
- solid-state drive (SSD) 152
- speaker assembly
 - removal 75
 - spare part number 20, 41, 75
- speaker components 9
- speakers 9
- specifications
 - Blu-ray Disc ROM Drive 120
 - computer 116
 - display 117, 118
 - DVD±RW and CD-RW Combo Drive 121
 - hard drive 119
 - I/O addresses 126, 128
 - interrupts 123, 124, 125
 - memory map 130, 131, 132
 - optical drive 120, 121
 - system DMA 122

- static-shielding materials 51
- stop button 10
- subwoofer
 - location 16
 - removal 100
 - spare part number 27, 41, 100
- supported discs 153
- switch cover
 - removal 69
 - spare part numbers 19, 41, 43, 69
- system board
 - removal 94
 - spare part numbers 20, 39, 43, 94
- system DMA 122
- system failure or instability 152
- system information 114
- system memory map 130, 131, 132
- system recovery 152

T

- thermal material, replacement 107
- tools required 47
- top cover
 - removal 85
 - spare part numbers 20, 40, 85
- TouchPad button board
 - removal 90
 - spare part number 20, 45, 90
- TouchPad components
 - left button 12
 - light 12
 - on/off button 12
 - right button 12
 - scroll zone 12
 - TouchPad 12
- TouchPad on/off button
 - spare part number 41
- TouchPad on/off button board
 - removal 89
 - spare part number 20, 89
- transporting guidelines 50
- TV antenna jack 14

- TV tuner external antenna cable,
 - spare part numbers 26, 42, 61
- TV tuner module
 - removal 61
 - spare part numbers 26, 42, 61
- TV tuner module cable
 - illustrated 34
 - removal 104
- TV tuner, product description 5

U

- Universal Serial Bus (USB) port
 - location 14, 15
 - pin assignments 162
- unknown password 52
- USB board
 - removal 98
 - spare part numbers 21, 41, 44, 98
- using system restore points 154

V

- vents 14, 16
- Virtualization Technology 114
- volume mute button 10
- volume scroll zone 10

W

- webcam
 - location 8
 - product description 4
- webcam light 8
- webcam/microphone module
 - illustrated 29, 31
 - removal 56, 57, 78
 - spare part number 29, 31, 40, 56, 79
- Windows applications key 11
- Windows logo key 11
- wireless antenna
 - illustrated 29, 32
 - locations 7
 - removal 83
 - spare part numbers 29, 32, 44, 84
- wireless button 10
- wireless, product description 4
- WLAN module
 - location 16

- removal 64
- spare part numbers 21, 37, 38, 39, 41, 42, 43, 64
- workstation guidelines 50

