



HP Pavilion dm3 Entertainment PC

Maintenance and Service Guide

Document Part Number: 572521-001

September 2009

This guide is a troubleshooting reference used for maintaining and servicing the computer. It provides comprehensive information on identifying computer features, components, and spare parts; troubleshooting computer problems; and performing computer disassembly procedures.

© Copyright 2009 Hewlett-Packard Development Company, L.P.

AMD Athlon, AMD Turion, and ATI Mobility Radeon are trademarks of Advanced Micro Devices, Inc. Bluetooth is a trademark owned by its proprietor and used by Hewlett-Packard Company under license. Intel, Celeron, Core, and Pentium are trademarks of Intel Corporation in the U.S. and other countries. Microsoft and Windows 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: September 2009

Document Part Number: 572521-001

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).

1 Product description

2 External component identification

Top Components	2-1
Pointing devices	2-1
Lights	2-2
Keys	2-3
Front components	2-4
Right-side components	2-5
Left-side components	2-6
Bottom components	2-7
Display components	2-8
Wireless antennas	2-9
Additional hardware components	2-10

3 Illustrated parts catalog

Service tag	3-1
Computer major components	3-2
Plastics kit	3-5
Cable kit	3-6
Mass storage devices	3-7
Miscellaneous parts	3-8
Sequential part number listing	3-9

4 Removal and replacement procedures

Preliminary replacement requirements	4-1
Tools required	4-1
Service considerations	4-1
Grounding guidelines	4-2
Component replacement procedures	4-5
Service tag	4-5
Computer feet	4-6
Battery	4-6
SIM	4-8
Hard drive	4-9
WWAN module	4-11
WLAN module	4-12
Memory module	4-14
RTC battery	4-15
Keyboard	4-16
Top cover	4-19
Display assembly	4-22
Speakers	4-28

Front LED board	4-29
USB board	4-30
Fan	4-31
Bluetooth module	4-32
System board	4-33
Power and RJ-45 cable	4-35
Heat sink	4-36

5 Setup Utility (BIOS)

Starting the Setup Utility	5-1
Using the Setup Utility	5-1
Changing the language or the Setup Utility	5-1
Navigating and selecting in Computer Setup	5-2
Displaying system information	5-2
Restoring default settings in the Setup Utility	5-2
Exiting the Setup Utility	5-3
Setup Utility menus	5-4
Main menu	5-4
Security menu	5-4
System Configuration menu	5-5
Diagnostics menu	5-5

6 Specifications

Computer specifications	6-1
13.3-in LED HD display specifications	6-2
Hard drive specifications	6-3
Blu-ray ROM DVD±R/RW SuperMulti Double-Layer Drive specifications	6-4
DVD±RW and CD-RW SuperMulti Double-Layer Drive specifications	6-5
DVD-ROM Drive specifications	6-6
System DMA specifications	6-7
System memory map specifications	6-7
System interrupt specifications	6-8
System I/O address specifications	6-9

7 Screw listing

Phillips PM2.0×3.0 screw	7-1
Phillips PM2.0×3.0 broadhead screw	7-2
Phillips PM2.0×4.0 screw	7-3
Phillips PM2.0×6.0 screw	7-5
Phillips PM2.5×3.0 screw	7-6
Phillips PM2.5×4.0 screw	7-8
Phillips PM2.5×5.0 screw	7-10
Phillips PM2.5×6.0 screw	7-12

8 Backup and recovery

Backup and recovery	8-1
Overview	8-1
Creating recovery discs	8-2
Backing up your information	8-3
Using Windows Backup and Restore	8-4
Using system restore points	8-4

Performing a recovery	8-5
---------------------------------	-----

9 Connector pin assignments

Audio-in (microphone)	9-1
Audio-out (headphone)	9-1
External monitor	9-2
HDMI	9-3
RJ-45 (network)	9-4
Universal Serial Bus	9-4

10 Power cord set requirements

Requirements for all countries and regions	10-1
Requirements for specific countries and regions	10-2

11 Recycling

Battery	11-1
Display	11-1

Index

Product description

Category	Description	Systems with Intel processors	Systems with AMD processors
Product name	HP Pavilion dm3 Entertainment PC	✓	✓
Processors	Intel[®] Core™2 Duo processors: <ul style="list-style-type: none"> ■ SP9300 2.26-GHz processor, 6-MB L2 cache, 1066-MHz front side bus (FSB) ■ SU7300 1.3-GHz processor, 3-MB L2 cache, 800-MHz FSB 	✓	
	Intel Pentium [®] SU4100 1.3-GHz processor, 2-MB L2 cache, 800-MHz FSB	✓	
	Intel Celeron [®] SU2300 1.2-GHz processor, 1-MB L2 cache, 800-MHz FSB	✓	
	AMD Turion™ Neo X2 Dual Core 1.6-GHz processor, 1-MB L2 cache		✓
	AMD Athlon™ Neo X2 Dual Core 1.6-GHz processor, 512-K L2 cache		✓
	AMD Athlon Neo 1.6-GHz processor, 512-K L2 cache		✓

(Continued)

Category	Description	Systems with Intel processors	Systems with AMD processors
Chipset	Southbridge: Intel ICH-9M-SFF Enhanced GS45	✓	
	ATI RS780MN based low power: Southbridge: SB710 low power		✓
Graphics	nVidia GeForce 105M (N10M-LP) discrete graphics with Hypermemory support, 512 MB DDR3 (64 MB × 16 × 2) at 800-MHz	✓	
	Intel Unified Memory Allocation (UMA) graphics (Mobile Intel GMA X4500 HD) Integrated with shared video memory (dynamically allocated)	✓	
	ATI Mobility Radeon™ HD 4330 with 512-MB DDR3-600 display cache		✓
	ATI Mobility Radeon HD 3200 with 128-MB DDR2 display cache		✓
Panel	■ 13.3-in wide-aspect BrightView LED display assembly	✓	✓
	■ 13.3-in high-definition (HD) (1366 × 768), BrightView LED display assembly		
	■ 13.3-in thin with brushed aluminum display assembly		
Memory	2 customer-accessible/upgradable memory module slots Supports dual-channel memory Supports the following DDR2 configurations at 800 MHz: <ul style="list-style-type: none"> ■ 8192-MB total system memory (4096 × 2, dual-channel) ■ 6144-MB total system memory (4096 + 2048, dual-channel) ■ 4096-MB total system memory (2048 × 2, dual-channel) ■ 4096-MB total system memory (4096 × 1) ■ 3072-MB total system memory (2048 + 1024, dual-channel) ■ 2048-MB total system memory (1024 × 2, dual-channel) ■ 2048-MB total system memory (2048 × 1) ■ 1024-MB total system memory (1024 × 1) 	✓	✓

(Continued)

Category	Description	Systems with Intel processors	Systems with AMD processors
Hard drives	Supports 9.50-mm, 6.35-cm (2.50-in) hard drives HP ProtectSmart Hard Drive Protection Customer-accessible Serial ATA (SATA) Supports the following hard drives: ■ 500-GB, 7200- and 5400-rpm ■ 320-GB, 7200- and 5400-rpm ■ 250-GB, 7200- and 5400-rpm ■ 160-GB, 7200- and 5400-rpm	✓	✓
	Support for 160-GB solid-state drive (SSD) in single HDD configurations	✓	
	Support for 128-GB SSD in single HDD configurations		✓
Optical drives	12.7-mm tray load Serial ATA (SATA) Fixed (removal of 1 screw required) Customer-accessible DVD±RW SuperMulti Double-Layer Drive with LightScribe	✓	✓
	External USB: Blu-ray ROM DVD±R/RW SuperMulti Double-Layer Drive with LightScribe	✓	✓
Diskette drive	Supports external USB drive only Supports boot from USB device	✓	✓
Microphone	Single digital microphone	✓	✓

(Continued)

Category	Description	Systems with Intel processors	Systems with AMD processors
Audio	2 Altec/Lansing stereo speakers with enclosures Headphone jack Microphone jack	✓	✓
Webcam	Low-light VGA camera with fixed focus	✓	✓
Modem	No modem	✓	✓
Ethernet	Integrated 10/100 network interface card (NIC) Ethernet cable not included	✓	✓
Wireless	Integrated wireless local-area network (WLAN) options via Half-Mini Card. 2.4- & 5-GHz antennas in display enclosure	✓	✓
	Atheros wireless modules <ul style="list-style-type: none"> ■ 802.11b/g WLAN with 2 antennas ■ 802.11b/g + Bluetooth® with 2 antennas ■ 802.11a/b/g/n WLAN ■ 802.11a/b/g/n WLAN + Bluetooth with 2 antennas 	✓	✓
	Non-Intel wireless. 2nd source non-Intel (electromagnetic (EM) only) <ul style="list-style-type: none"> ■ 802.11b/g ■ 802.11b/g (low cost) + Bluetooth with 2 antennas ■ 802.11a/b/g/n (draft 802.11n) WLAN ■ 802.11a/b/g/n (draft 802.11) WLAN + Bluetooth 	✓	✓
	Intel wireless: <ul style="list-style-type: none"> ■ Intel WiFi Link 5100 Wireless AGN w/2 antennas ■ Intel WiFi Link 5100 Wireless AGN + Bluetooth w/2 antennas ■ Intel WiFi Link 5100 Wireless ABG w/2 antennas ■ Intel WiFi Link 5100 Wireless ABG + Bluetooth w/2 antennas 	✓	
	Mini Card slot with USB support	✓	✓
	SIM card option for universal mobile telecommunications system (UMTS) module	✓	✓
	Wireless wide area network (WWAN) powered by Gobi technology	✓	✓

(Continued)

Category	Description	Systems with Intel processors	Systems with AMD processors
External media cards	Digital Media Slot, supporting the following optional digital card formats: <ul style="list-style-type: none"> ■ MultiMediaCard (MMC) ■ MultiMediaCard Plus (MMCplus) ■ Secure Digital (SD) Memory Card ■ Secure Digital High Capacity (SDHC) Memory Card ■ Memory Stick (MS) ■ Memory Stick Pro (MSP) ■ xD-Picture Card (XD) (also types H and M) 	✓	✓
Ports	<ul style="list-style-type: none"> ■ Audio-in (stereo microphone) ■ Audio-out (stereo headphone) ■ Hot Plug/Unplug and auto detector for correct output to wide-aspect vs. standard-aspect video ■ HDMI v.1.3b supporting 1080p with HDCP key ■ Multi-pin AC power (non-smart pin) ■ RJ-45 (Ethernet, includes link and activity lights) ■ USB 2.0 (4) ■ VGA (Dsub 15-pin) supporting 1600 × 1200 external resolution at 75 GHz and 1920 × 1200 external resolution at 60Hz 	✓	✓
Keyboard/ pointing devices	<ul style="list-style-type: none"> Full size keyboard TouchPad with TouchPad buttons Supports 2-way scroll with legend Taps enabled by default 	✓	✓
Power requirements	65-W AC adapter (Non-smart ID Pin supported) with localized cable plug support	✓	✓
	6-cell, 2.58-Ah (57-Wh) polymer battery	✓	✓
Security	Kensington Security Lock	✓	✓

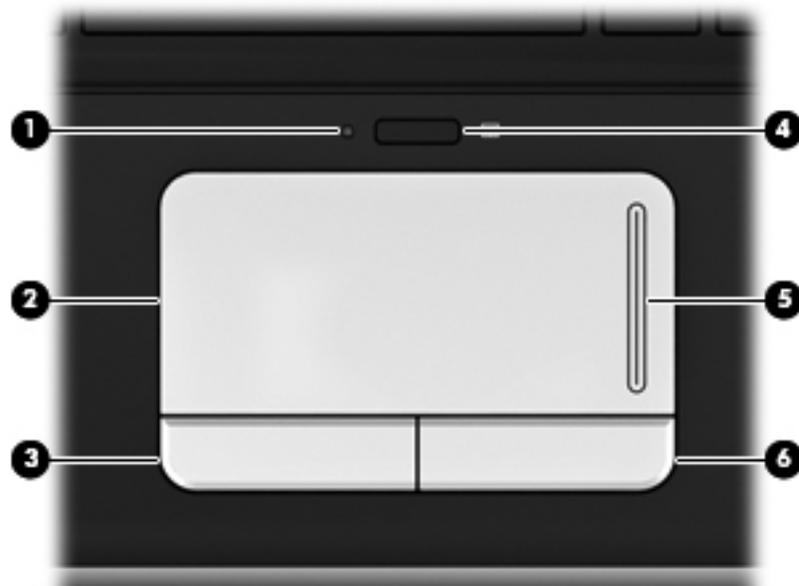
(Continued)

Category	Description	Systems with Intel processors	Systems with AMD processors			
Operating system	Preinstalled: ■ Windows [®] 7 Basic (32-bit) ■ Windows 7 Basic (64-bit) ■ Windows 7 Premium (32-bit) ■ Windows 7 Premium (64-bit) ■ Windows 7 Professional (32-bit) ■ Windows 7 Professional (64-bit)	✓	✓			
	Microsoft[®] Office preinstalled on: ■ Windows 7 Home Basic (32-bit and 64-bit) ■ Windows 7 Home Premium (32-bit and 64-bit) ■ Windows 7 Professional (32-bit and 64-bit)					
	Serviceability			End-user replaceable parts: AC adapter Battery (system) Hard drive Memory modules Wireless modules RTC battery	✓	✓

External component identification

Top Components

Pointing devices



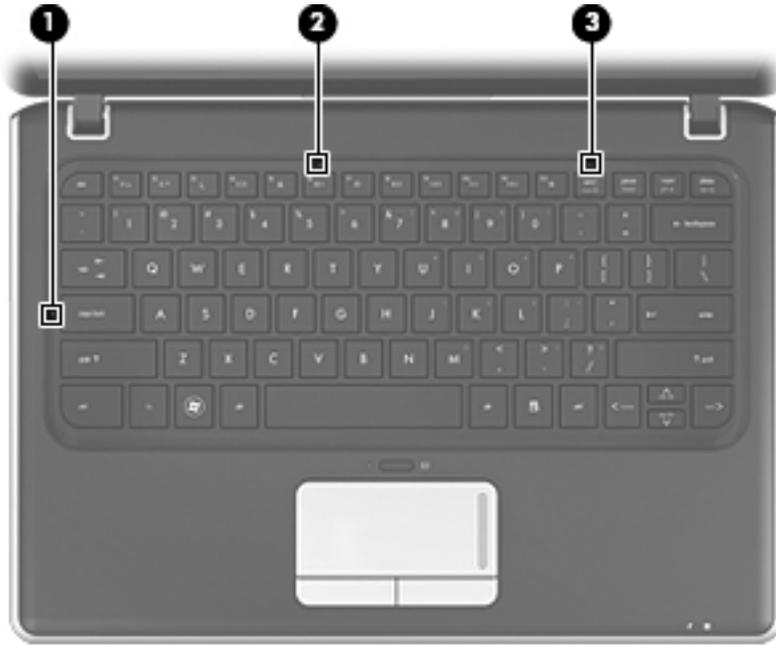
Item	Component	Description
❶	TouchPad light	<ul style="list-style-type: none"> ■ White: TouchPad is enabled. ■ Amber: TouchPad is disabled.
❷	TouchPad*	Moves the pointer and selects or activates items on the screen.
❸	Left TouchPad button*	Functions like the left button on an external mouse.
❹	TouchPad on/off button	Enables/disables the TouchPad.
❺	TouchPad scroll zone	Scrolls up or down.
❻	Right TouchPad button*	Functions like the right button on an external mouse.

*This table describes factory settings. To view or change pointing device preferences, select **Start > Devices and Printers**. Then, right-click the device representing your computer, and click **Mouse settings**.

Lights



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

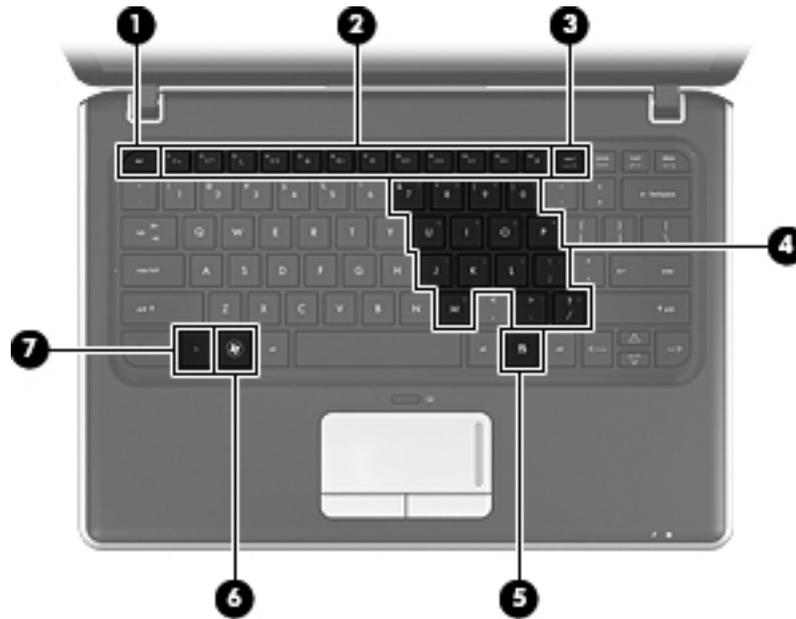


Item	Component	Description
❶	Caps lock light	On: Caps lock is on.
❷	Mute light	On: Computer sound is off.
❸	Num lock light	On: The embedded numeric keypad is enabled or num lock is on for an optional external numeric keypad.

Keys



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



Item	Component	Description
❶	esc key	Displays system information when pressed in combination with the fn key.
❷	Action keys	Execute frequently used system functions.
❸	num lk key	Enables/disables the embedded numeric keypad when pressed in combination with the fn key.
❹	Embedded numeric keypad keys	When the keypad has been enabled, the keys can be used like the keys on an external numeric keypad.
❺	Windows applications key	Displays a shortcut menu for items beneath the pointer.
❻	Windows logo key	Displays the Windows Start menu.
❼	fn key	Executes frequently used system functions when pressed in combination with an arrow key, the num lk key or the esc key.

Front components



Item	Component	Description
❶	Speakers (2)	Produce sound.
❷	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.
❸	Drive light	<ul style="list-style-type: none"> ■ White: The hard drive is being accessed. ■ Blinking: The hard drive or an optional external optical drive is being accessed. ■ Amber: HP ProtectSmart has temporarily parked the drive.

Right-side components



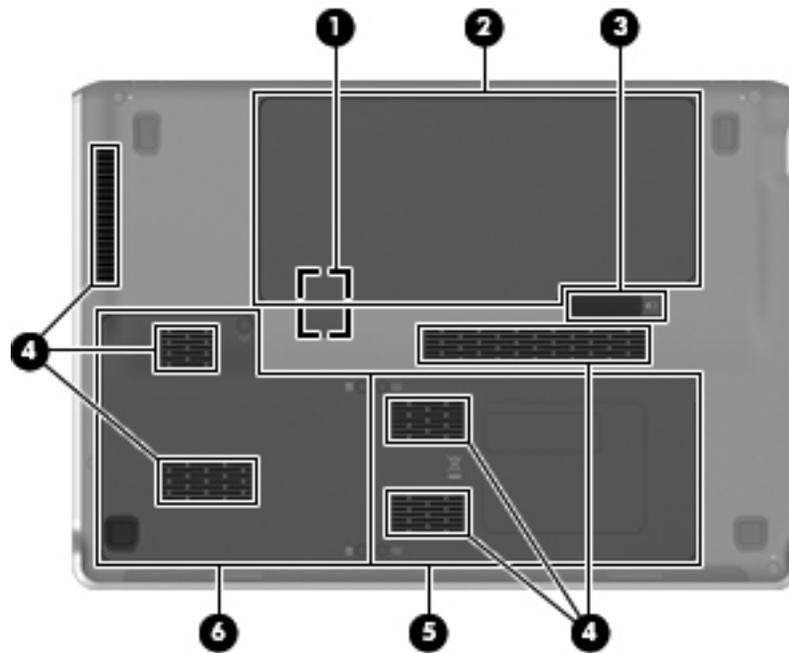
Item	Component	Description
❶	Power light	<ul style="list-style-type: none"> ■ On: The computer is on. ■ Blinking: The computer is in the Sleep state. ■ Off: The computer is off or in Hibernation.
❷	Power switch	<ul style="list-style-type: none"> ■ When the computer is off, slide the switch to turn on the computer. ■ When the computer is on, slide the switch briefly to initiate Sleep. ■ When the computer is in the Sleep state, slide the switch briefly to exit Sleep. ■ When the computer is in Hibernation, slide the switch briefly to exit Hibernation. <p>If the computer has stopped responding and Windows[®] shutdown procedures are ineffective, slide and hold the power switch 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 Security > Power Options.</p>
❸	Wireless light	<ul style="list-style-type: none"> ■ Blue: An integrated wireless device, such as a wireless local area network (WLAN) device, a wireless wide area network (WWAN) device, and/or a Bluetooth[®] device, is on. ■ Amber: All wireless devices are off.
❹	Wireless button	Turns the wireless feature on or off, but does not create a wireless connection.
❺	USB ports (2)	Connect optional USB devices.
❻	Vent	<p>Enables airflow to cool internal components.</p> <p> The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p>
❼	Security cable slot	<p>Attaches an optional security cable to the computer.</p> <p> The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.</p>

Left-side components



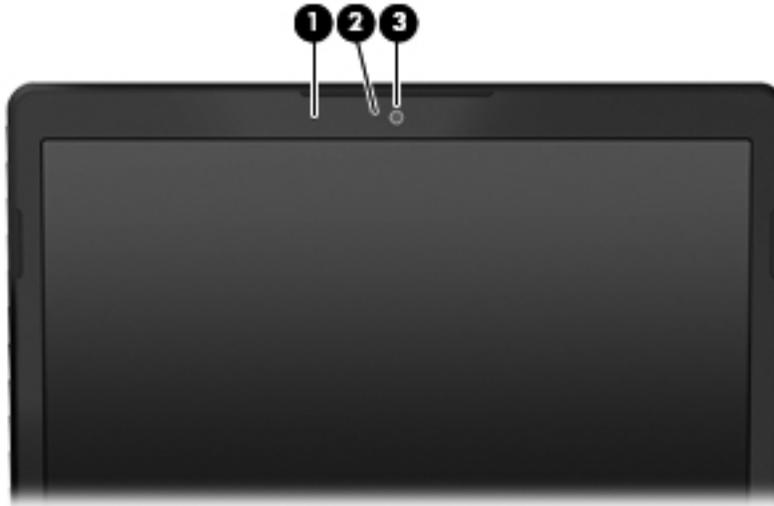
Item	Component	Description
❶	Power connector	Connects an AC adapter.
❷	AC adapter light	<ul style="list-style-type: none"> ■ On: The computer is connected to external power. ■ Off: The computer is not connected to external power.
❸	RJ-45 (network) jack	Connects a network cable.
❹	External monitor port	Connects an external VGA monitor or projector.
❺	HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component.
❻	USB ports (2)	<p>Connect optional USB devices.</p> <p> Select models can be configured with an optional external USB optical disc drive. For more information, refer to the printed Quick Setup poster.</p>
❼	Digital Media Slot	<p>Supports the following digital card formats:</p> <ul style="list-style-type: none"> ■ Memory Stick ■ Memory Stick Pro ■ MultiMediaCard ■ Secure Digital Memory Card ■ Secure Digital High Capacity Memory Card ■ xD-Picture Card ■ xD-Picture Card Type H ■ xD-Picture Card Type M
❽	Audio-out (headphone) jack	<p>Produces sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.</p> <p> When a device is connected to the headphone jack, the computer speakers are disabled.</p>
❾	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.

Bottom components



Item	Component	Description
❶	Subscriber identity module (SIM) slot (select models only)	Located inside the battery bay.
❷	Battery bay	Holds the battery.
❸	Battery release latch	Releases the battery from the battery bay.
❹	Vents (6)	Enable airflow to cool internal components.  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.
❺	Memory module compartment	Contains the memory module slot (2 slots on select models) and a wireless LAN module.  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.
❻	Hard drive bay	Holds the hard drive and wireless wide area network (WWAN) module (select models only).  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.

Display components

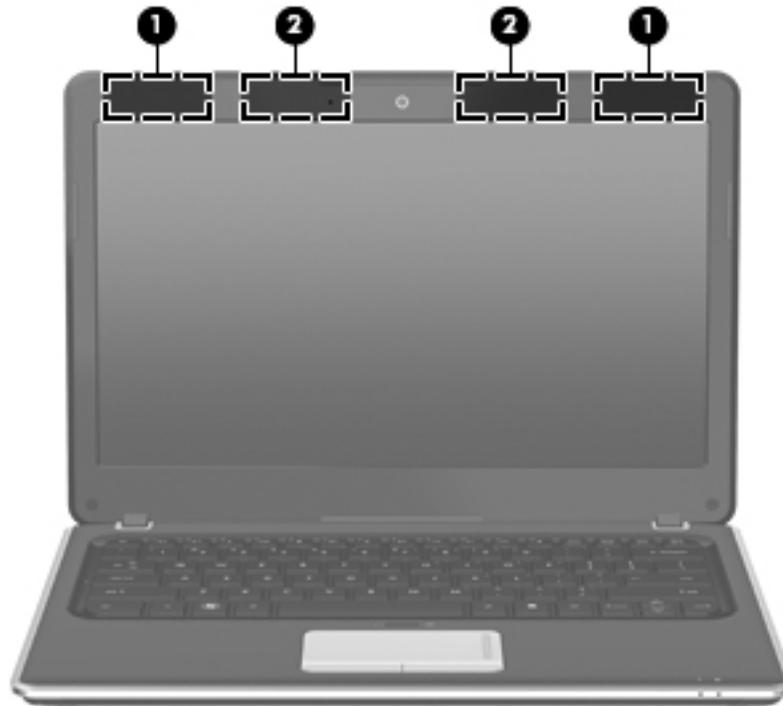


Item	Component	Description
❶	Internal microphone	Records sound.
❷	Webcam light	On: The webcam is in use.
❸	Webcam	Records video and captures still photographs.

Wireless antennas



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



Item	Component	Description
❶	WWAN antennas (2)* (select models only)	Send and receive wireless signals to communicate with wireless wide-area networks (WWAN).
❷	WLAN antennas (2)*	Send and receive wireless signals to communicate with wireless local area networks (WLAN).

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

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

Additional hardware components



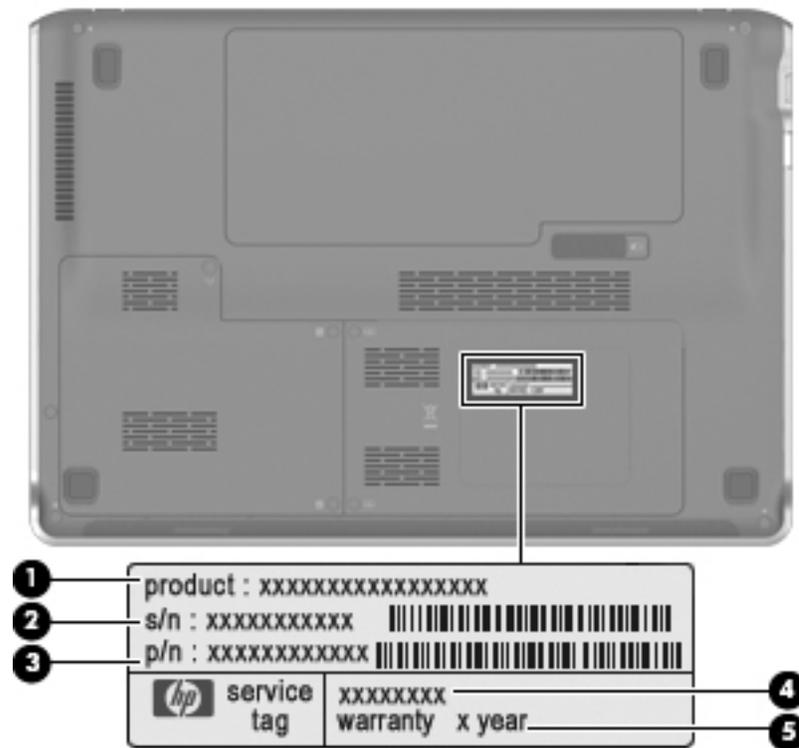
Item	Component	Description
❶	Power cord*	Connects the AC adapter.
❷	AC adapter	Converts AC power to DC power.
❸	Battery*	Powers the computer when the computer is not plugged into external power.

*Batteries and power cords vary in appearance by region or country.

Illustrated parts catalog

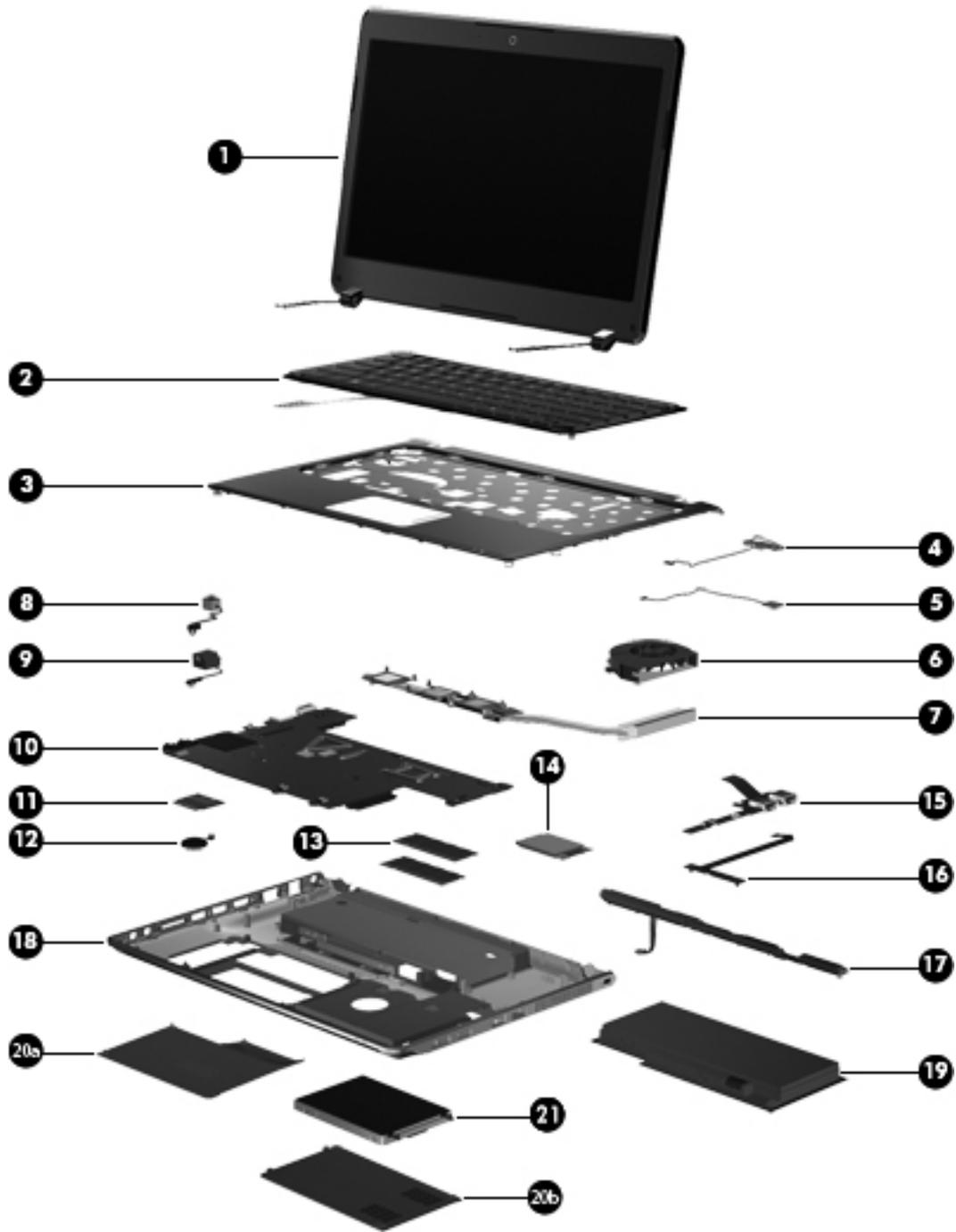
Service tag

When ordering parts or requesting information, provide the computer serial number and model number provided on the service tag.



Item	Component	Description
❶	Product name	This is the product name affixed to the front of the computer.
❷	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.
❸	Part number/Product number (p/n)	This number provides specific information about the product's hardware components. The part number helps a service technician determine what components and parts are needed.
❹	Model description	This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.
❺	Warranty period	This number describes the duration of the warranty period for the computer.

Computer major components



Item	Description	Spare part number
❶	13.3-in, LED, HD display assembly (includes 2 WLAN antenna transceivers and cables, nameplate, and logo):	
	13.3-in, LED, HD BrightView (1366x768) (Intel systems)	580664-001
	13.3-in, LED, HD BrightView (1366x768) MA (AMD systems)	581177-001
	13.3-in, HD BrightView (1366x768) WWAN (AMD systems)	591222-001
	Display assembly internal components (not illustrated):	
	Display bezel	580666-001
	Display hinges	580667-001
	13.3in Display panel	588159-001
	13.3in Display panel, WWAN	591223-001
❷	Keyboard (includes keyboard cable):	
	For use in the United States	575926-001
	For use in the United Kingdom	575926-031
	For use in Germany	575926-041
	For use in France	575926-051
	For use in Italy	575926-061
	For use in Spain	575926-071
	French Canada	575926-121
	For use in Portugal	575926-131
	For use in Turkey	575926-141
	For use in Latin American	575926-161
	For use in Saudi Arabia	575926-171
	For use in Brazil	575926-201
	For use in the Czech Republic	575926-221
	For use in Russia	575926-251
	For use in Thailand	575926-281
	For use in Japan	575926-291
	For use in Belgium	575926-A41
	For use in Taiwan	575926-AB1
	For use in South Korea	575926-AD1
	For use in the Netherlands	575926-B31
	For use in Switzerland	575926-BG1
	For use in Denmark, Norway, Sweden	575926-DH1
❸	Top cover	
	AMD systems	583925-001
	Intel systems	580692-001
❹	Bluetooth module	537921-001
❺	Front LED board	580843-001
❻	Fan	580696-001

Item	Description	Spare part number
7	Heat sink	
	UMA (AMD systems)	581186-001
	Discrete (AMD systems)	581187-001
	UMA (Intel systems)	580694-001
	Discrete (AMD systems)	580695-001
8	USB board (with cable)	580700-001
9	RJ-45 connector cable	580843-001
10	System board (includes embedded processor and replacement thermal)	
	AMD Athlon™ Neo Processor MV-40 (1.6-GHz, 512K L2 cache), UMA	581171-001
	AMD Athlon™ Neo X2 Dual Core Processor L335 (1.6-GHz, 512K L2 cache), UMA	581172-001
	AMD Turion™ Neo X2 Dual Core Processor L625(1.6-GHz, 1M L2 cache), UMA	581173-001
	AMD Athlon™ Neo X2 Dual Core Processor L335 (1.6-GHz, 512K L2 cache), discrete	581175-001
	AMD Turion™ Neo X2 Dual Core Processor L625(1.6-GHz, 1M L2 cache), discrete	581176-001
	Intel Celeron Processor (1.2-GHz, 800-MHz front side bus (FSB), 1MB L2 cache), UMA	580660-001
	Intel Pentium Processor (1.3-GHz, 800-MHz FSB, 2MB L2 cache), UMA	580661-001
	Intel Pentium Processor (1.3-GHz, 800-MHz FSB, 2MB L2 cache), discrete	580662-001
	Intel Core2Duo Processor (2.26-GHz, 1066-MHz FSB, 6MB L2 cache), discrete	580663-001
	Intel Core2Duo Processor (1.3-GHz, 800-MHz FSB, 3MB L2 cache), UMA	584078-001
11	WLAN module	
	WLAN 802.11ABGN MD2020 MOW	518437-001
	WLAN 802.11ABGN MD2020 ROW	518437-002
	WLAN 802.11BGN MEDOC MOW	518436-001
	WLAN 802.11BGN MEDOC ROW	518436-002
	WLAN 802.11ABGN 2X2 CLARET-2 MOW	518434-001
	WLAN 802.11ABGN 2X2 CLARET-2 ROW	518434-002
	WLAN 802.11BG DEMI-2 MOW	504593-003
	WLAN 802.11BG DEMI-2 ROW	504593-004
12	RTC battery	580845-001
13	Memory modules	
	1-GB 800-MHz DDR2	580673-001
	2-GB 800-MHz DDR2	580674-001
	4-GB 800-MHz DDR2	580675-001
14	WWAN module	531993-001
15	Webcam	580669-001
16	Display cable	580668-001
17	Speakers	580699-001
18	Base enclosure	580689-001
19	Battery 6-cell, 2.58-Ah (57-Wh) polymer battery	580686-001
20a	Hard drive bay access cover	580691-001

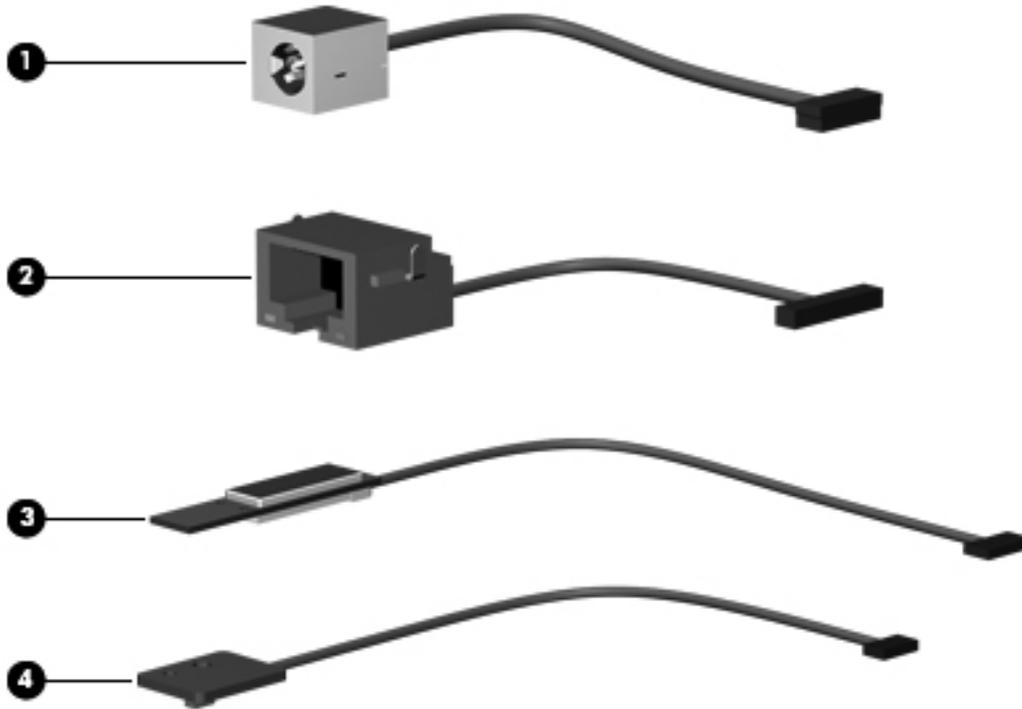
Item	Description	Spare part number
Ⓐb	Memory module compartment access cover	580691-001
Ⓐ	Hard drive	
	Hard drive hardware kit	580683-001

Plastics kit



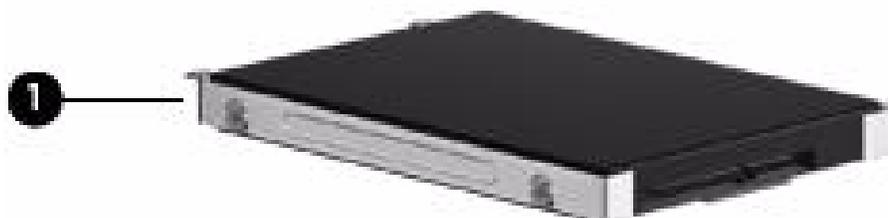
Item	Description	Spare part number
	Plastics kit:	580691-001
Ⓐ	Hard drive bay access cover	
Ⓐb	Memory module compartment access cover	

Cable kit



Item	Description	Spare part number
❶	Cable kit:	580843-001
	Power DC cable	
	RJ-45 cable	
	Lid sensor cable	
	LED board with cable	

Mass storage devices



Item	Description	Spare part number
①	Hard drive (includes hard drive connector):	
	250GB,INTERNAL, 5400RPM	580677-001
	320GB,INTERNAL, 5400RPM	580678-001
	500GB,INTERNAL, 5400RPM	580679-001
	250GB,INTERNAL, 7200RPM	580680-001
	320GB,INTERNAL, 7200RPM	580681-001
	500GB,INTERNAL, 7200RPM	580682-001
	160GB,INTERNAL, 7200RPM	581181-001
	SSD 128GB (AMD systems)	581182-001
	SSD 160GB (Intel systems)	582077-001

Miscellaneous parts

Description	Spare part number
HP 65-W slim adapter	417220-001
Power cords:	
■ For use in Argentina	490371-D01
■ For use in Australia	490371-011
■ For use in Brazil	490371-201
■ 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 Japan	490371-291
■ For use in South Africa	490371-AR1
■ For use in South Korea	490371-AD1
■ For use in Switzerland	490371-111
■ For use in Taiwan	490371-AB1
■ For use in the People's Republic of China	490371-AA1
■ For use in the United Kingdom and Singapore	490371-031
■ For use in the United States	490371-001
Rubber kit:	580697-001
Screw kit:	580698-001
■ Phillips PM2.5×2.5 screw	
■ Phillips PM2.0×2.5 screw	
■ Phillips PM2.0×5.0 screw	
■ Phillips PM2.0×3.5 screw	
■ Phillips PM2.5×4.0 screw	
■ Phillips PM2.5×6.0 screw	
■ Phillips PM2.5×10.0 screw	
■ Phillips PM2.5×3.0 screw	
■ Phillips PM2.0×3.0 broadhead screw	
■ Phillips PM2.0×2.0 broadhead screw	
■ Phillips PM2.5×5.0 screw	

Sequential part number listing

Spare part number	Description
417220-001	AC power adapter
490371-D01	Power cord for use in Argentina
490371-011	Power cord for use in Australia
490371-201	Power cord for use in Brazil
490371-081	Power cord for use in Denmark
490371-021	Power cord for use in Europe, the Middle East, and Africa
490371-D61	Power cord for use in India
490371-BB1	Power cord for use in Israel
490371-061	Power cord for use in Italy
490371-291	Power cord for use in Japan
490371-AR1	Power cord for use in South Africa
490371-AD1	Power cord for use in South Korea
490371-111	Power cord for use in Switzerland
490371-AB1	Power cord for use in Taiwan
490371-AA1	Power cord for use in the People's Republic of China
490371-031	Power cord for use in the United Kingdom and Singapore
490371-001	Power cord for use in the United States
504593-003	WLAN 802.11BG DEMI-2 MOW
504593-004	WLAN 802.11BG DEMI-2 ROW
518434-001	WLAN 802.11ABGN 2X2 CLARET-2 MOW
518434-002	WLAN 802.11ABGN 2X2 CLARET-2 ROW
518436-001	WLAN 802.11BGN MEDOC MOW
518436-002	WLAN 802.11BGN MEDOC ROW
518437-001	WLAN 802.11ABGN MD2020 MOW
518437-002	WLAN 802.11ABGN MD2020 ROW
531993-001	WWAN module
537921-001	Bluetooth module
575926-001	Keyboard for use in the United States
575926-031	Keyboard for use in the United Kingdom
575926-041	Keyboard for use in Germany
575926-051	Keyboard for use in France
575926-061	Keyboard for use in Italy
575926-071	Keyboard for use in Spain
575926-121	Keyboard for use in French Canada
575926-131	Keyboard for use in Portugal
575926-141	Keyboard for use in Turkey
575926-161	Keyboard for use in Latin American

Spare part number	Description
575926-171	Keyboard for use in Saudi Arabia
575926-201	Keyboard for use in Brazil
575926-221	Keyboard for use in the Czech Republic
575926-251	Keyboard for use in Russia
575926-281	Keyboard for use in Thailand
575926-291	Keyboard for use in Japan
575926-A41	Keyboard for use in Belgium
575926-AB1	Keyboard for use in Taiwan
575926-AD1	Keyboard for use in South Korea
575926-B31	Keyboard for use in the Netherlands
575926-BG1	Keyboard for use in Switzerland
575926-DH1	Keyboard for use in Denmark, Norway, Sweden
580666-001	LCD bezel
580667-001	LCD hinges
580668-001	Display cable
580669-001	Webcam
580673-001	Memory 1-GB 800-MHz DDR2
580674-001	Memory 2-GB 800-MHz DDR2
580675-001	Memory 4-GB 800-MHz DDR2
580677-001	Hard drive, 250GB,INTERNAL, 5400RPM
580678-001	Hard drive, 320GB,INTERNAL, 5400RPM
580679-001	Hard drive, 500GB,INTERNAL, 5400RPM
580680-001	Hard drive, 250GB,INTERNAL, 7200RPM
580681-001	Hard drive, 320GB,INTERNAL, 7200RPM
580682-001	Hard drive, 500GB,INTERNAL, 7200RPM
580683-001	Hard drive hardware kit
580686-001	RTC battery 6C
580689-001	Base enclosure
580691-001	Plastics kit
580692-001	Top cover (Intel systems)
580694-001	Heat sink (UMA, Intel systems)
580695-001	Heat sink (discrete, AMD systems)
580696-001	System fan
580697-001	Rubber kit
580698-001	Screw kit
580699-001	Speakers
580700-001	Power connector cable
580843-001	Cable kit
580845-001	RTC battery

Spare part number	Description
581171-001	System board, MV40 FF 1.6G Neo UMA
581172-001	System board, L335 FF 1.6G Althon 512K L2 UMA
581173-001	System board, L625 FF 1.6G Turion 1M L2 UMA
581175-001	System board, L335 FF+ 1.6G Althon
581176-001	System board, L625 FF+ 1.6 Turion
581177-001	Display 13.3 HD BV MA
581181-001	160-GB, hard drive, internal, 7200RPM
581182-001	SSD 128GB (AMD systems)
581186-001	Heat sink UMA (AMD systems)
581187-001	Heat sink discrete (AMD systems)
582077-001	Hard drive SSD 160GB (Intel systems)
583925-001	Top cover (AMD systems)
588159-001	Display, 13.3 HD BrightView LED
591223-001	Display, 13.3 HD BrightView WWAN

Removal and replacement procedures

Preliminary replacement requirements

Tools required

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

- Phillips P0 screwdriver
- Tweezers

Service considerations

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



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, and then degrade in the internal layers, reducing its life expectancy.

-  **CAUTION:** To prevent damage to the computer when you are removing or installing internal components, observe these precautions:
- Keep components in their electrostatic-safe containers until you are ready to install them.
 - Use nonmagnetic tools.
 - Before touching an electronic component, discharge static electricity by using the guidelines described in this section.
 - Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.
 - If you remove a component, place it in an electrostatic-safe container.
-

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



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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

- To avoid hand contact, transport products in static-safe tubes, bags, or boxes.
- Protect ESD-sensitive parts and assemblies with conductive or approved containers or packaging.
- Keep ESD-sensitive parts in their containers until they arrive at static-free workstations.
- Place items on a grounded surface before them 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 workstation grounding 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

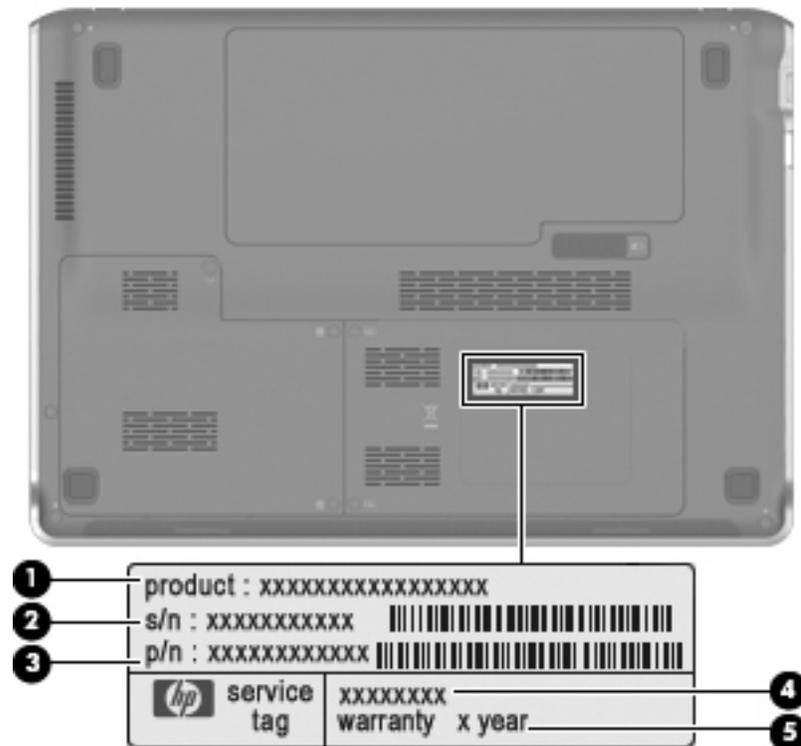
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many screws of 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

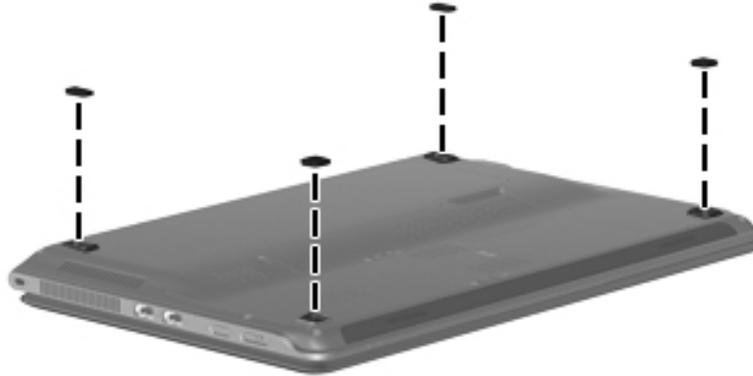
When ordering parts or requesting information, provide the computer serial number and model number provided on the service tag.



Item	Component	Description
❶	Product name	This is the product name affixed to the front of the computer.
❷	Serial number (s/n)	This is an alphanumeric identifier that is unique to each product.
❸	Part number/Product number (p/n)	This number provides specific information about the product's hardware components. The part number helps a service technician determine what components and parts are needed.
❹	Model description	This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.
❺	Warranty period	This number 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 580697-001. There are 4 rubber feet that attach to the base enclosure in the locations shown in the following illustration.



Battery

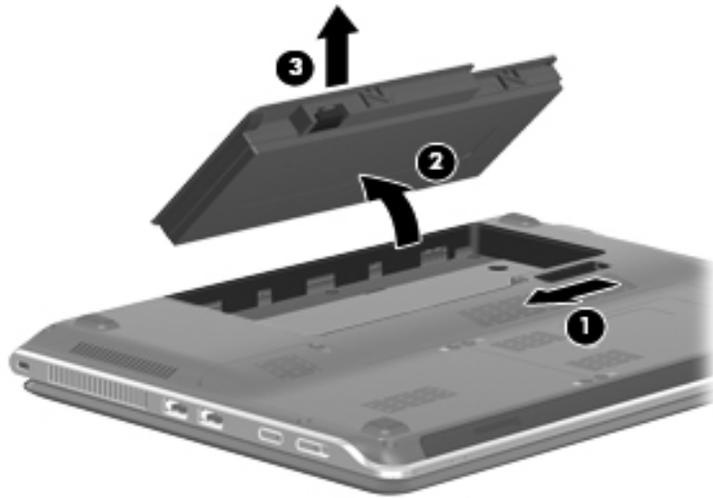
Description	Spare part number
Battery, 6-cell, 2.58-Ah (57-Wh)	580686-001

Before removing the 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.

Remove the battery:

1. Turn the computer upside down on a flat surface, with the battery bay toward you.
2. Slide the battery release latch ❶ to release the battery.
3. Rotate the battery toward you and up ❷.
4. Remove the battery ❸.



Install the battery by inserting it into the battery bay and pressing down on it until you hear a click.

SIM



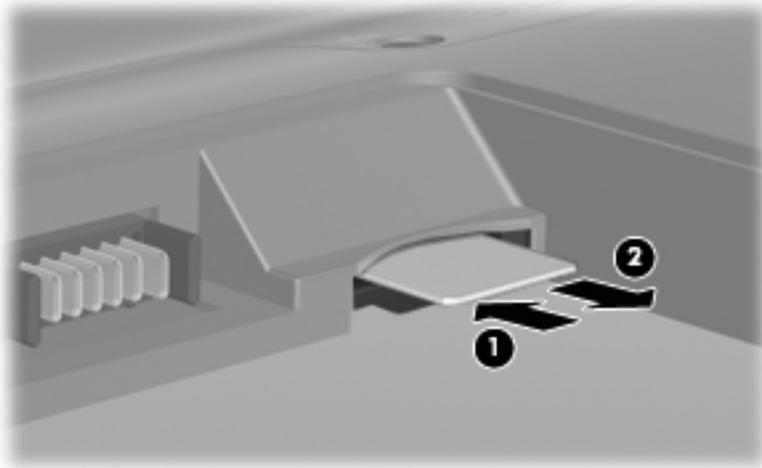
The SIM is provided by the end user as a security measure for the WWAN module. The SIM should be removed, placed into a static-dissipative container, and then replaced when the computer is reassembled.

Before removing the SIM, follow these steps:

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

Remove the SIM:

1. Press in on the SIM **1** to release it from the SIM slot.
2. Remove the SIM **2** from the computer.



Install the SIM by inserting it into the SIM slot until locks into position.

Hard drive



The hard drive hardware spare part kit, 580683-001, includes a hard drive connector and hard drive bracket.

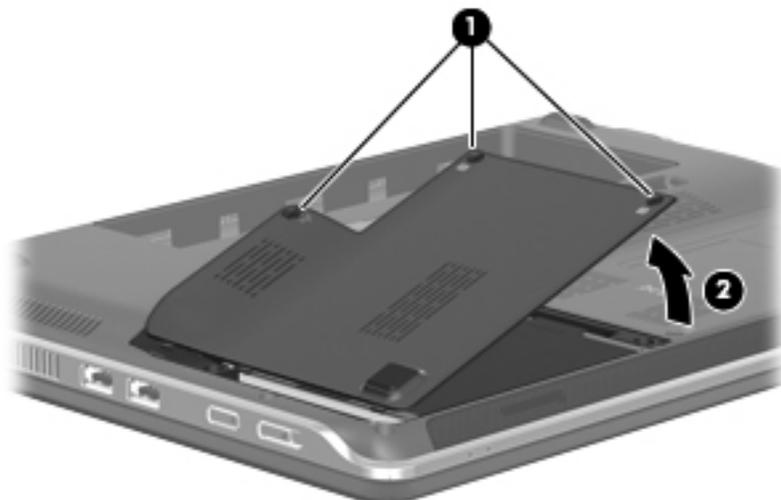
Description	Spare part number
128-GB SSD (AMD systems)	581182-001
160-GB SSD (Intel systems)	582077-001
Hard drive hardware kit	580683-001
500-GB, 7200-rpm hard drive	580682-001
500-GB, 5400-rpm hard drive	580679-001
320-GB, 7200-rpm hard drive	580681-001
320-GB, 5400-rpm hard drive	580678-001
250-GB, 7200-rpm hard drive	580680-001
250-GB, 5400-rpm hard drive	580677-001
160-GB, 7200-rpm hard drive	581181-001
160-GB, 5400-rpm hard drive	581181-001

Before removing the hard drive, follow these steps:

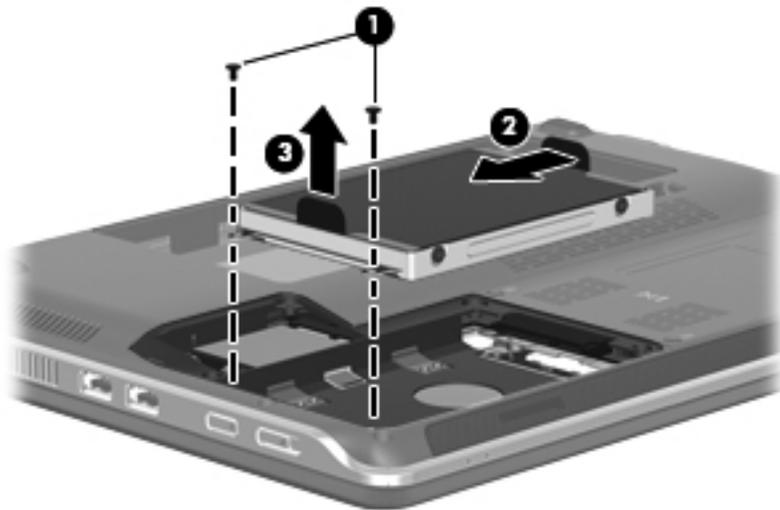
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord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

Remove the hard drive:

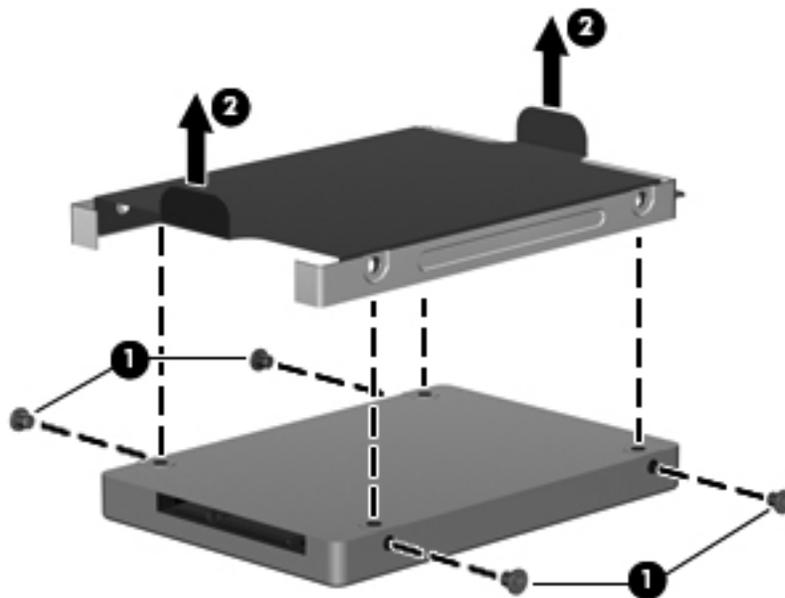
1. Position the computer with the front toward you.
2. Loosen the three Phillips PM2.5x5.0 captive screws ❶ that secure the hard drive cover to the computer.
3. Lift the right side ❷ of the hard drive cover to detach it from the computer. The hard drive cover is included in the Plastics Kit, spare part number 580691-001.



4. Loosen the two Phillips PM2.0x4.0 screws ❶ that secure the hard drive to the computer.
5. Grasp the Mylar tab ❷ in the hard drive bay, and pull it to the left to disconnect the drive from the system.
6. Grasp the Mylar tab ❸ on the hard drive and pull it up to remove the hard drive from the system.



7. If it is necessary to replace the hard drive bracket or connector, follow these steps:
 - a. Remove the four Phillips PM3.0x4.0 screws ❶ that secure the hard drive bracket to the hard drive.
 - b. Grasp the Mylar tabs on the bracket and lift the bracket ❷ straight up to remove it from the hard drive.



Reverse this procedure to reassemble and install the hard drive.

WWAN module

Description	Spare part number
WWAN module with Gobi technology	531993-001

Before removing the WWAN module, follow these steps:

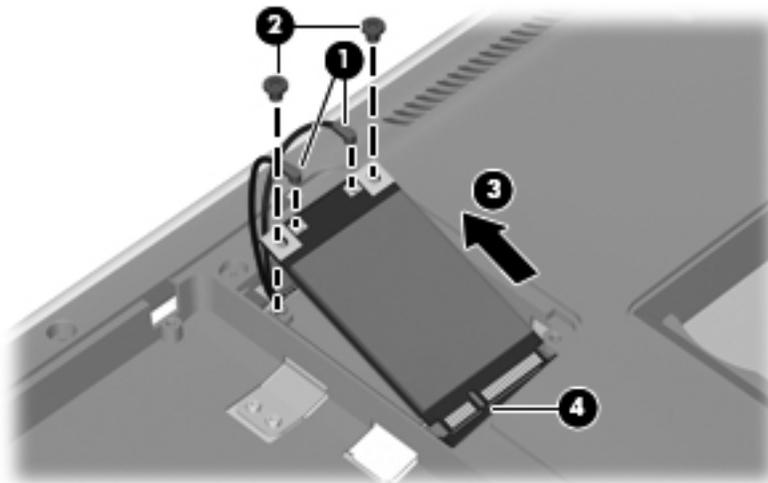
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the battery (see “Battery” on page 4-6).
5. Remove the hard drive bay access cover (see “Hard drive” on page 4-9).

Remove the WWAN module:



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

1. Position the computer with the front toward you.
2. Disconnect the WWAN antenna cables ❶ from the terminals on the WWAN module.
 - ✎ The red WWAN antenna cable is connected to the WWAN module “Main” terminal. The blue WWAN antenna cable is connected to the WWAN module “Aux” terminal.
3. Remove the two Phillips PM2.5x3.0 screws ❷ that secure the WWAN module to the computer. (The WWAN module tilts up.)
4. Remove the WWAN module ❸ by pulling it away from the slot at an angle.
 - ✎ WWAN modules are designed with a notch ❹ to prevent incorrect insertion of the WWAN module into the WWAN module slot.



Reverse this procedure to install the WWAN module.

WLAN module

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 4-6).

Remove the WLAN module:

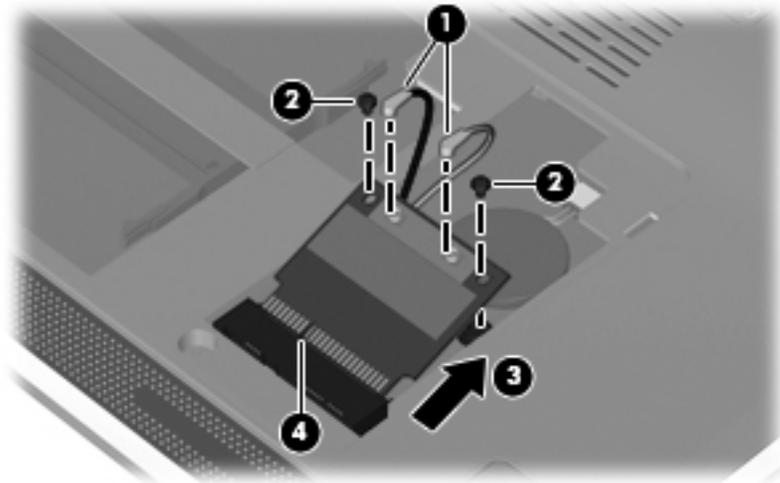
CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module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

1. Position the computer with the front toward you.
2. Loosen the two Phillips PM2.5x5.0 captive screws ❶ that secure the memory module compartment access cover to the computer.
3. Lift the left side of the cover ❷ to detach it from the computer.

 The memory/wireless module compartment cover is included in the Plastics Kit, spare part number 580691-001



4. Disconnect the WLAN antenna cables ❶ from the terminals on the WLAN module.
 - ✎ 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.
5. Remove the two Phillips PM2.5x3.0 screws ❷ that secure the WLAN module to the computer. (The WLAN module tilts up.)
6. Remove the WLAN module ❸ by pulling it away from the slot at an angle.
 - ✎ WLAN modules are designed with a notch ❹ to prevent incorrect insertion of the WLAN module into the WLAN module slot.



Reverse this procedure to install the WLAN module.

Memory module

Description	Spare part number
1-GB memory module (800-MHz, DDR2)	580673-001
2-GB memory module (800-MHz, DDR2)	580674-001
4-GB memory module (800-MHz, DDR2)	580675-001

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 4-6](#)).
5. Remove the memory/wireless module compartment cover (see [“WLAN module” on page 4-12](#)).

Remove the memory module:



The slot nearest the front edge of the computer is for primary memory. The slot next to it is for expansion memory.

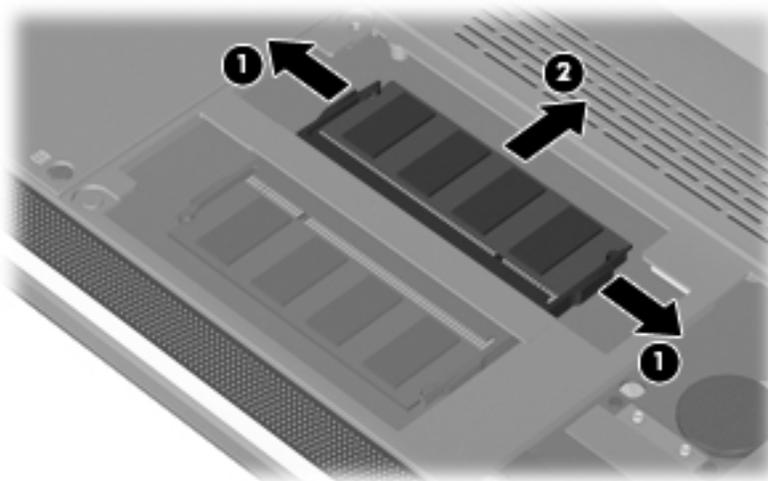
1. Pull away the retention clips ❶ on each side of the memory module to release the memory module. (The memory module tilts up.)



CAUTION: To prevent damage to the memory module, hold it by the edges only. Do not touch the components on the memory module.

2. Grasp the edge of the memory module ❷, and then pull it out of the memory module slot.

 Memory modules are designed with a notch to prevent incorrect insertion into the memory module slot.



Reverse this procedure to install a memory module.

RTC battery

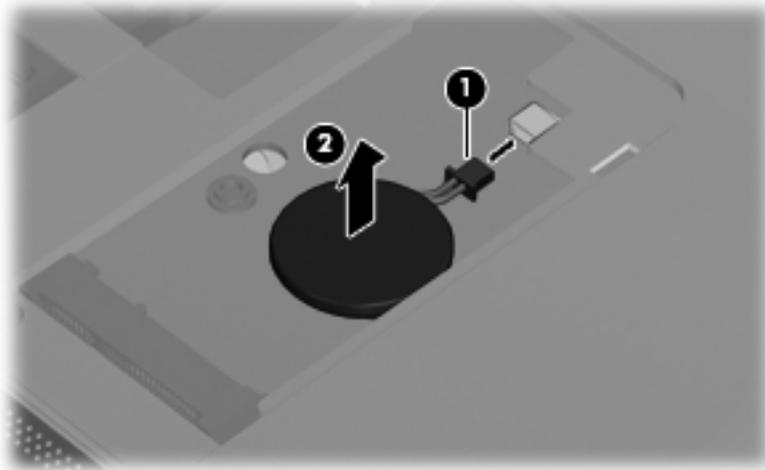
Description	Spare part number
RTC battery	580845-001

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 4-6](#)).
5. Remove the memory/wireless module compartment cover (see [“WLAN module” on page 4-12](#)).
6. Remove the WLAN module (see [“WLAN module” on page 4-12](#)).

Remove the RTC battery:

1. Turn the system board upside down, with the audio connectors toward you.
2. The RTC battery has adhesive holding it down. Lift up slightly on the battery to break the adhesion.
3. Disconnect the RTC battery cable ❶ from the system board.
4. Remove the RTC battery ❷ from the unit.



Reverse this procedure to install the RTC battery.

Keyboard



The keyboard spare part kit includes a keyboard cable.

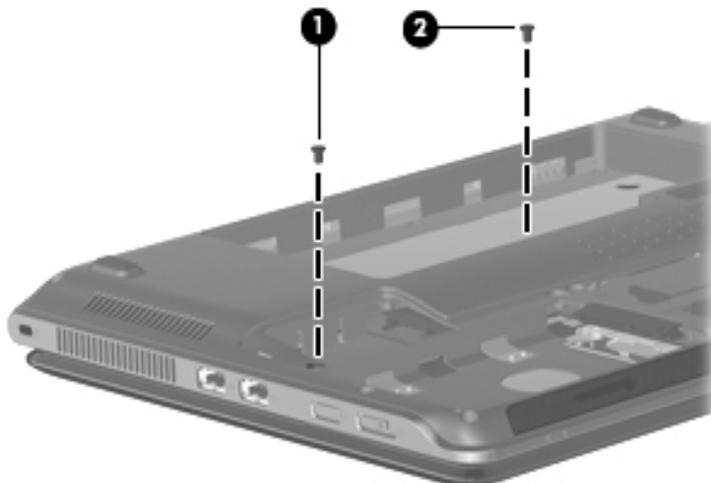
Country or region	Spare part number	Country or region	Spare part number
■ Belgium	580687-A41	■ Russia	580687-251
■ Brazil	580687-201	■ Saudi Arabia	580687-171
■ The Czech Republic	580687-221	■ South Korea	580687-AD1
■ France	580687-051	■ Spain	580687-071
■ French Canada	580687-121	■ Switzerland	580687-BG1
■ Germany	580687-041	■ Taiwan	580687-AB1
■ Italy	580687-061	■ Thailand	580687-281
■ Japan	580687-291	■ Turkey	580687-141
■ Latin America	580687-161	■ The United Kingdom	580687-031
■ The Netherlands	580687-B31	■ The United States	580687-001
■ Portugal	580687-131		

Before removing the keyboard, follow these steps:

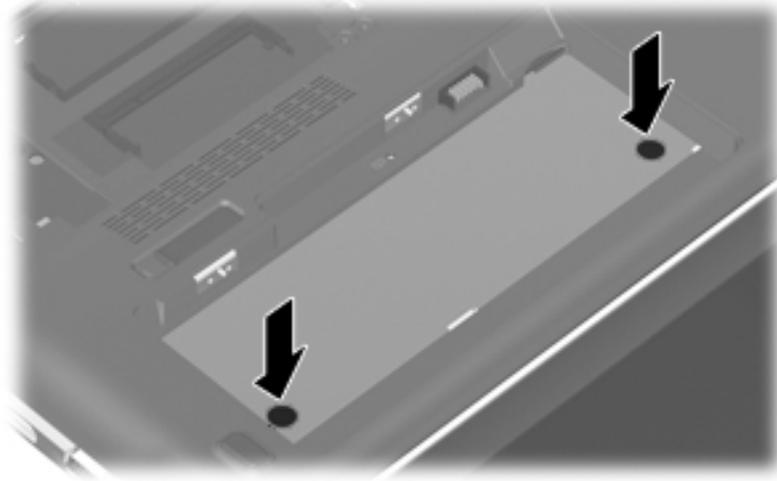
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord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

Remove the keyboard:

1. Position the computer with the front toward you.
2. Remove the following screws:
 - ❑ The Phillips PM2.0x6.0 screw ① that is near the hard drive bay
 - ❑ The Phillips PM2.0x4.0 screw ② in the battery bay



3. Turn the computer right-side, up and open the display to a 90-degree angle.
4. Then position the computer so that the display is its base and the keyboard is in the upright position.
5. On the bottom of the computer, press in on the keyboard release tabs.



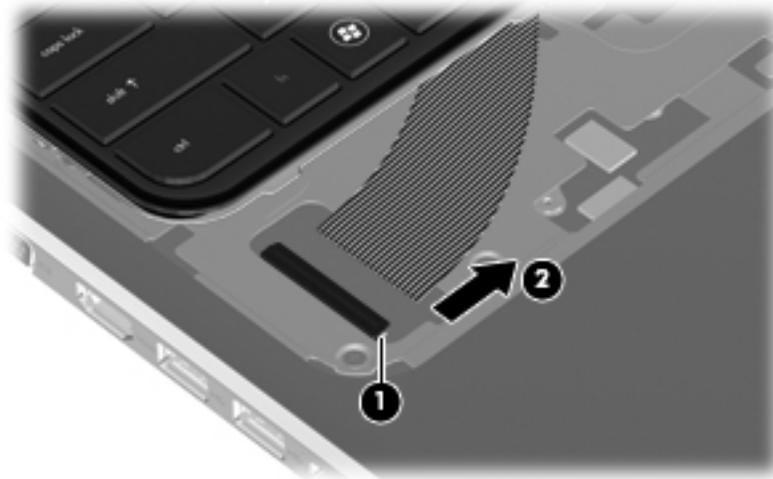
6. Return the computer to its upright position.
7. Lift the rear edge of the keyboard until it rests at an angle.
8. Slide the keyboard back until it rests on the switch cover and display.



- Carefully release the zero insertion force (ZIF) connector ❶ to which the keyboard cable is attached, and then disconnect the keyboard cable ❷ from the system board.



CAUTION: Take care when releasing the ZIF connector. The connector can be easily damaged if handled incorrectly.



- Remove the keyboard.
Reverse this procedure to install the keyboard.

Top cover



The top cover spare part kit includes a palm rest, TouchPad and cable, and TouchPad button board and cable.

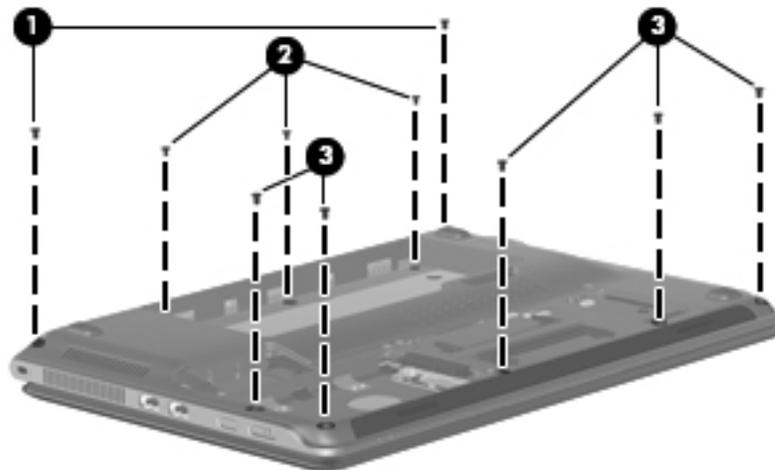
Description	Spare part number
Top cover (AMD systems)	583925-001
Top cover (Intel systems)	580692-001

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 4-6](#)).
5. Remove the following components:
 - a. Hard drive (see [“Hard drive” on page 4-9](#))
 - b. Memory/wireless module compartment cover (see [“WLAN module” on page 4-12](#))
 - c. Keyboard (see [“Keyboard” on page 4-16](#))

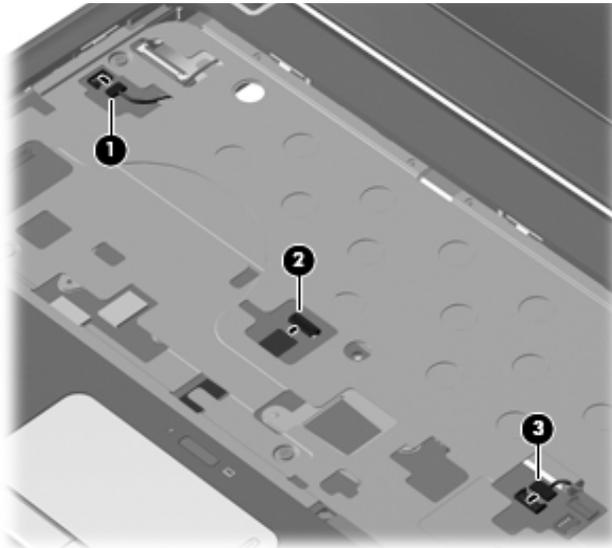
Remove the top cover:

1. Turn the unit upside down with the front facing you.
2. Remove the following screws:
 - ❑ Two Phillips PM2.5x10.0 screws ❶ on the top right and left hand corners
 - ❑ Three Phillips PM2.0x4.0 screws ❷ in the battery bay
 - ❑ Five Phillips PM2.5x6.0 screws on the front edge

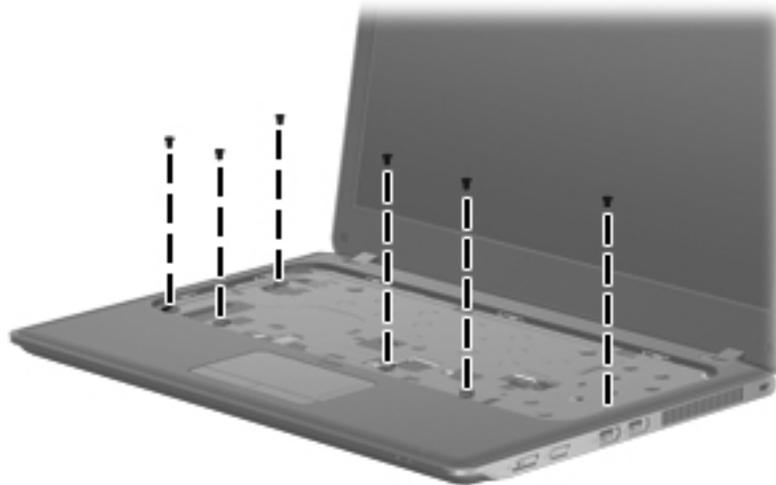


3. Turn the computer right-side up, and disconnect the following cables:

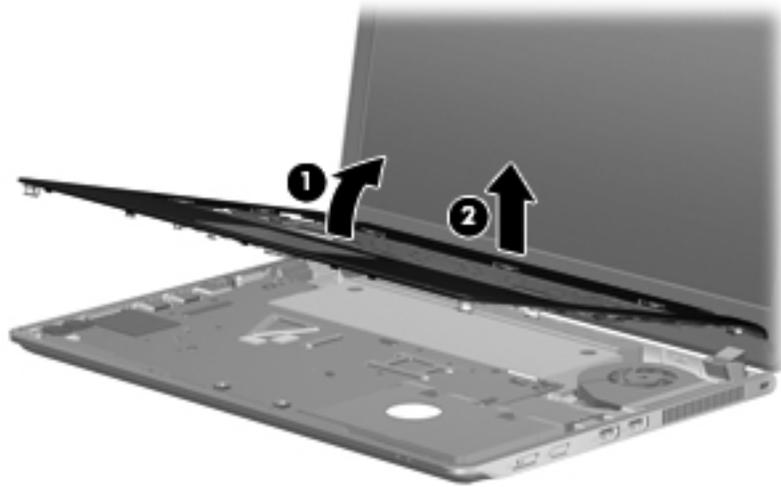
- ❑ Top cover cable ❶ from the board
- ❑ Touch pad cable ❷ from the board
- ❑ Bluetooth module cable ❸ from the board



4. Remove the six Phillips PM2.5x6.0 screws from the sheet metal.



5. Lift up on the front edge ❶ of the top cover.
6. Pull up on the back edge ❷ of the top cover to remove from the unit.



Reverse this procedure to install the top cover.

Display assembly



The display assembly spare part kit includes cables, nameplate, and logo.

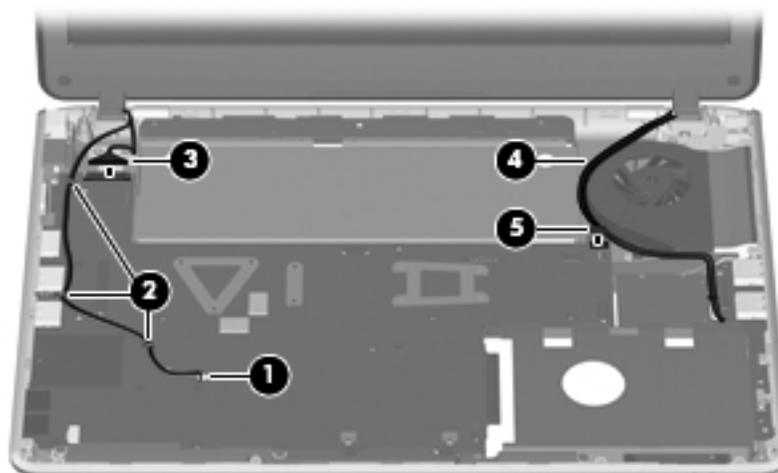
Description	Spare part number
13.3-in, LED, HD BrightView (1366x768) display assembly (AMD systems)	581177-001
13.3-in, LED, HD BrightView (1366x768) display assembly, WWAN (AMD systems)	591222-001
13.3-in, LED, HD BrightView (1366x768) display assembly (Intel systems)	580664-001

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 4-6](#)).
5. Disconnect the wireless antenna cables from the WLAN module (see [“WLAN module” on page 4-12](#)) and WWAN module (see [“WWAN module” on page 4-11](#)).
6. Remove the keyboard (see [“Keyboard” on page 4-16](#)).
7. Remove the top cover (see [“Top cover” on page 4-19](#)).

Remove the display assembly:

1. Close the computer.
2. Turn the computer display-side up, with the front toward you.
3. Disconnect and remove the WLAN cables ❶ from the clips ❷ built into the base enclosure.
4. Disconnect the display panel cable ❸ from the system board.
5. Disconnect and remove the WWAN cables ❹ from the system board.
6. Disconnect and remove the camera cable ❺ from the system board.

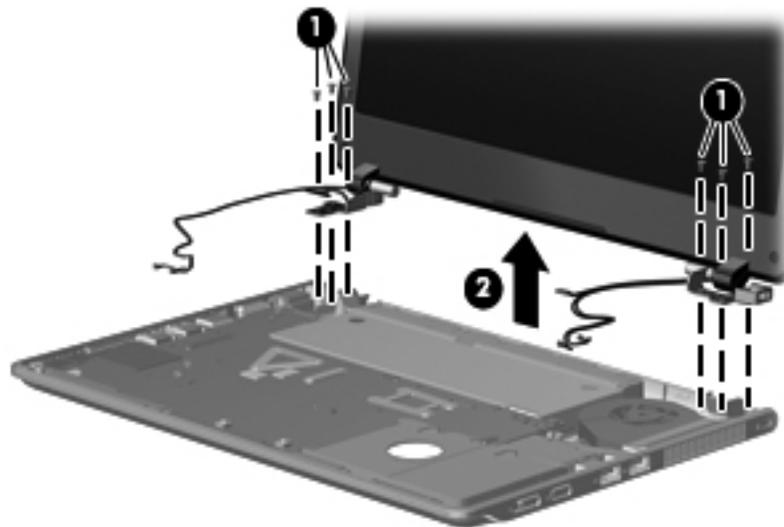


 **CAUTION:** Support the display assembly when removing the following screws. Failure to support the display assembly can result in damage to the display assembly and other computer components.

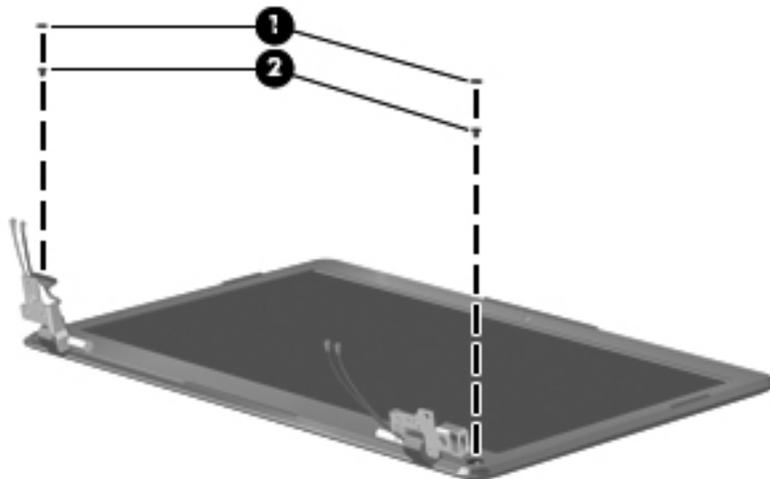
7. Release the hinges by removing the six Phillips PM2.5x5.0 screws ❶ that secure it to the base enclosure. First remove the left hinge and then the right.

 On the left side, one of the screws secures a display support strap. On the right side, the left-most screw secures a ground strap for the wireless cables.

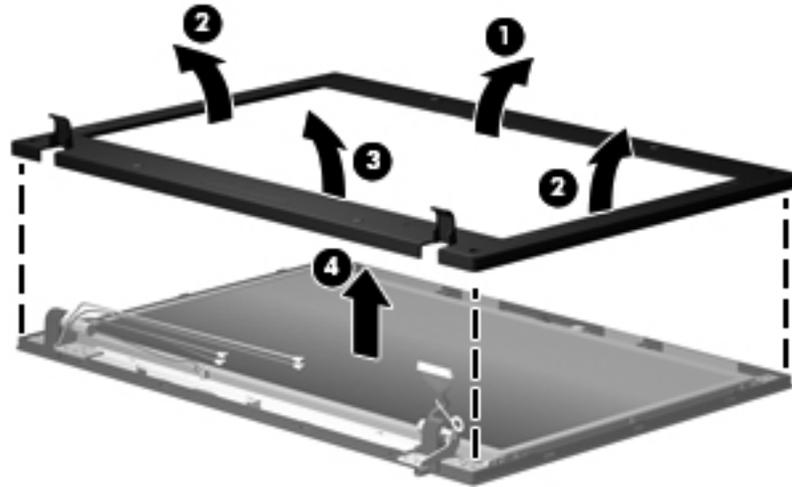
After removing all six screws, note that the power cable on the left hinge may interfere with the removal of the display. Simply move the panel around the cable and then lift. On the right side, there is a metal plate that you must work around to remove the display.



8. If it is necessary to replace the display bezel or any of the display assembly internal components:
 - a. Remove the two rubber screw covers ❶ and the two Phillips 2.0x5.0 screws ❷ that secure the display bezel to the display assembly.



- b. Flex the inside edges of the top ❶, the left and right sides ❷, and the bottom ❸ of the display bezel until the bezel disengages from the display enclosure.
- c. Remove the display bezel ❹.

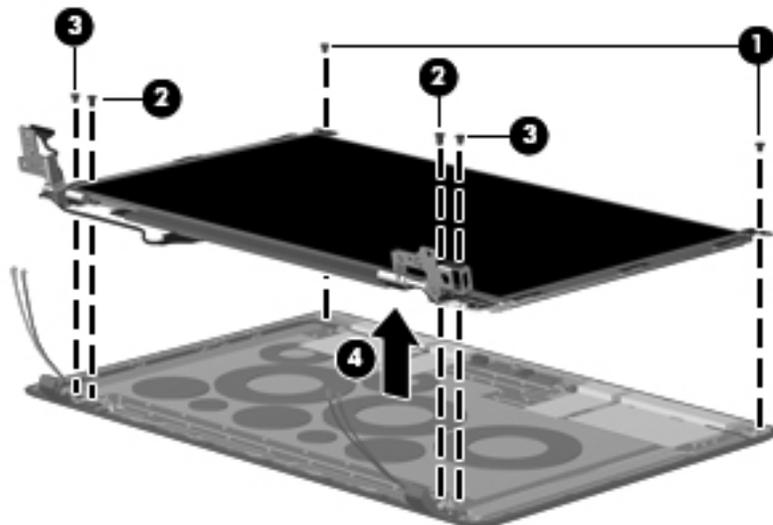


9. To remove the panel:

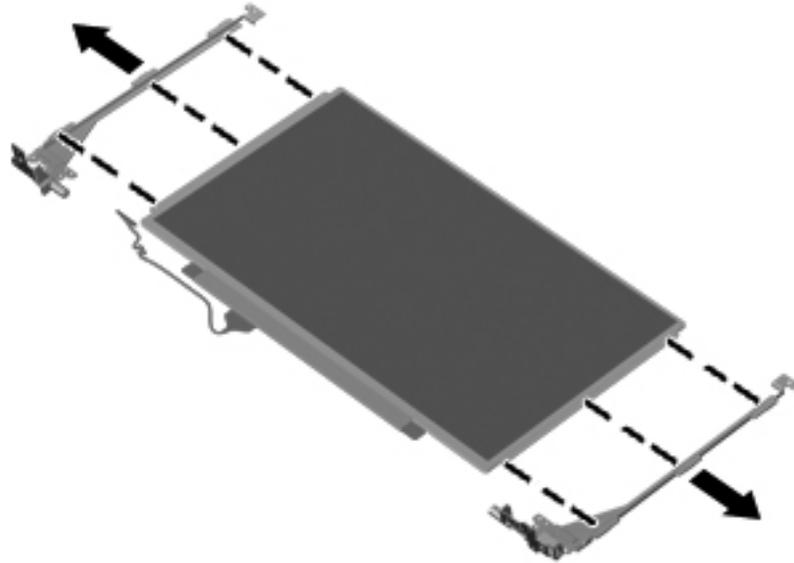
a. Remove the following six screws:

- ❶ Two Phillips 2.5×3.0 screws on top that secure the display panel to the display enclosure
- ❷ Two Phillips 2.5×5.0 screws on top of each hinge
- ❸ Two Phillips 2.5×4.0 screws on the bottom of each hinge

10. Remove the panel ❹ from the enclosure.

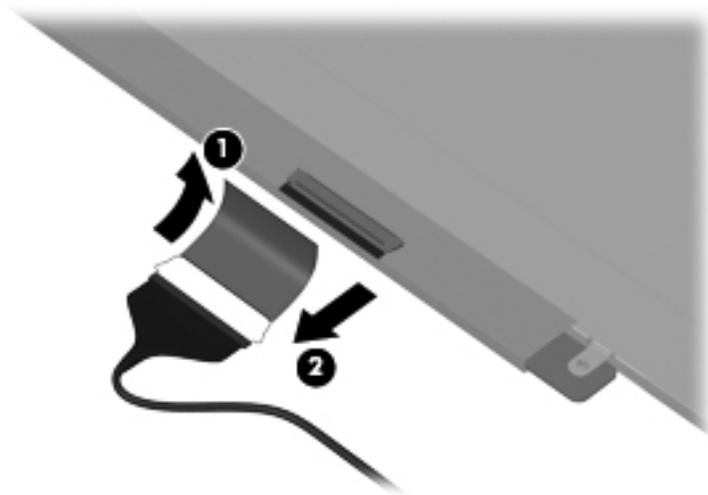


11. If it is necessary to replace the display hinges, slide them outward from the panel.



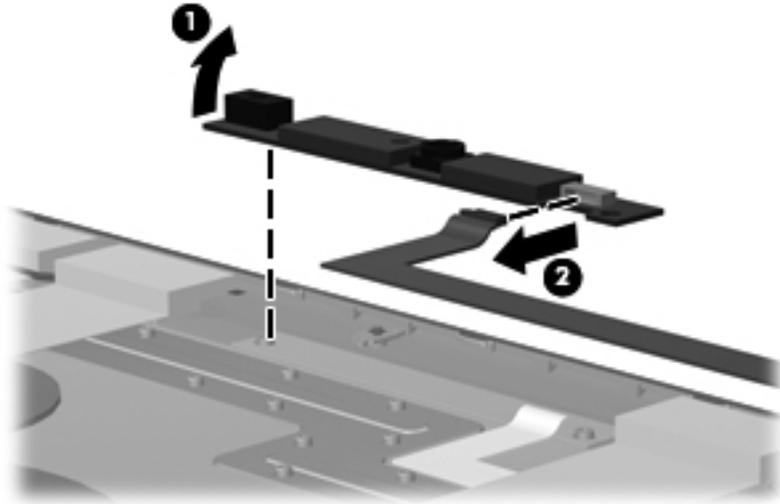
12. If it is necessary to replace the display panel cable:

- a. Turn the display panel upside down, with the bottom edge toward you.
- b. Release the adhesive support strip ❶.
- c. Disconnect the display panel cable ❷ from the connector on the back of the display panel. The display panel cable is available using the spare part number 580668-001.



Reverse the procedure to replace the display cable.

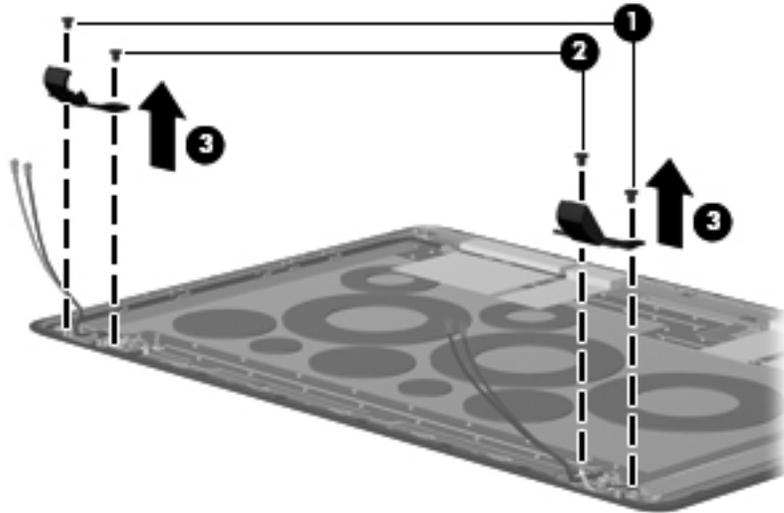
13. If it is necessary to replace the webcam, which is spared as 580669-001 and includes the cable:
 - a. Place the panel enclosure flat on the table with the webcam furthest away from you.
 - b. Loosen the webcam ❶ up by pulling on it to break the adhesive bond and pull up.
 - c. Disconnect the camera module ❷ from the camera cable.



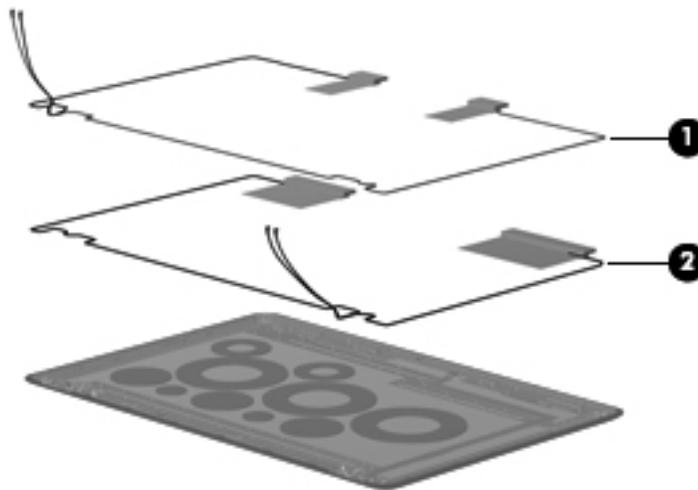
Reverse the procedure to install the webcam module.

14. If it is necessary to replace the wireless antennas:

- a. Remove the hinge covers from the enclosure by removing the two silver broadhead Phillips 2.0×3.0 screws **1** and the two black broadhead Phillips 2.0×3.0 screws **2**.
- b. Lift up on the hinge covers **3**.



- c. Remove the WLAN **1** and the WWAN **2** antennas from the enclosure.



Reverse this procedure to install the wireless antennas.

Speakers

Description	Spare part number
Speakers (include cables)	580699-001

Before removing the speakers, 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 4-6).
5. Remove the keyboard (see “Keyboard” on page 4-16).
6. Remove the top cover (see “Top cover” on page 4-19).

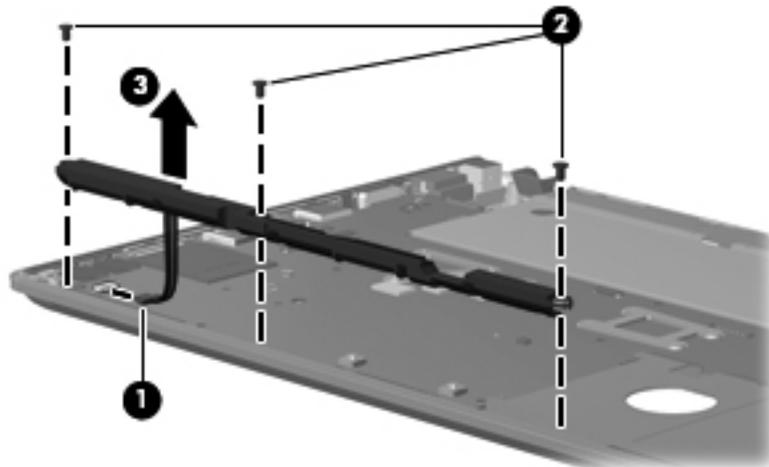
Remove the speakers:

1. Position the base enclosure with the front edge toward you.
2. Disconnect the speaker cable ❶ from the system board.
3. Remove the three silver Phillips 2.0×6.0 screws ❷ that secure the speakers to the enclosure.



There are rubber grommets on each of the three screw holes. If you need to replace the speakers, confirm that these rubber grommets are also replaced before installing another speakers.

4. Remove the speakers ❸.



Reverse this procedure to install the speakers.

Front LED board

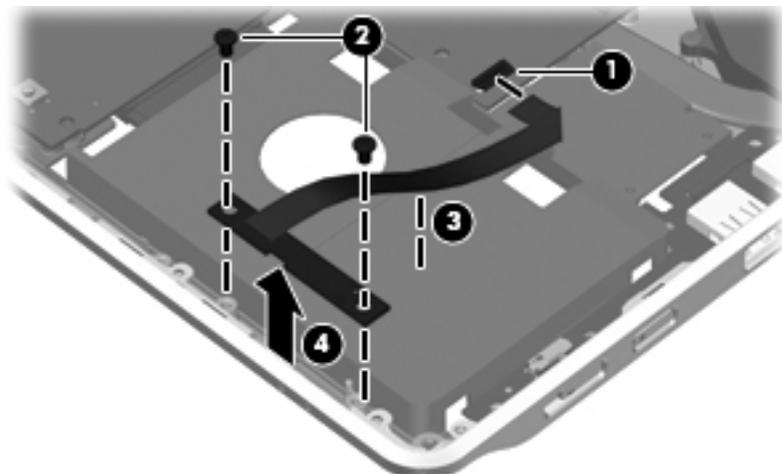
Description	Spare part number
Front LED board with cable (part of cables kit)	580843-001

Before removing the front LED 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 4-6](#)).
5. Remove the keyboard (see [“Keyboard” on page 4-16](#)).
6. Remove the top cover (see [“Top cover” on page 4-19](#)).

Remove the front LED board:

1. Position the base enclosure with the front edge toward you.
2. Disconnect the LED board cable ❶ from the system board.
3. Remove the two Phillips 2.5×4.0 screws ❷ that secure the LED board to the enclosure.
4. Lift the cable ❸ to disengage the adhesive bond between the cable and the enclosure.
5. Remove the speakers ❹.



Reverse this procedure to install the front LED board.

USB board

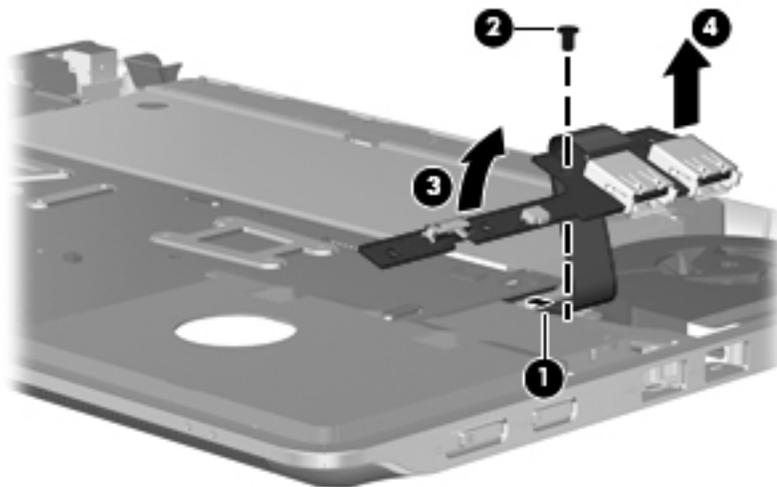
Description	Spare part number
USB board (includes cable)	580700-001

Before removing the USB/power switch board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the following components:
 - a. Hard drive (see [“Hard drive” on page 4-9](#))
 - b. Memory module compartment access cover (see [“WLAN module” on page 4-12](#))
 - c. Keyboard (see [“Keyboard” on page 4-16](#))
 - d. Display assembly (see [“Display assembly” on page 4-22](#))
 - e. Top cover (see [“Top cover” on page 4-19](#))

Remove the USB board:

1. Disconnect the USB board cable ❶ from the system board.
2. Remove the Phillips 2.5×4.0 screw ❷ to disengage the USB board from the system board.
3. Remove the USB board ❸ and cable.



Reverse this procedure to install the USB board.



When replacing the USB board, make sure that the wireless and power actuators on the board, line up with the wireless and power switches on the base enclosure.

Fan

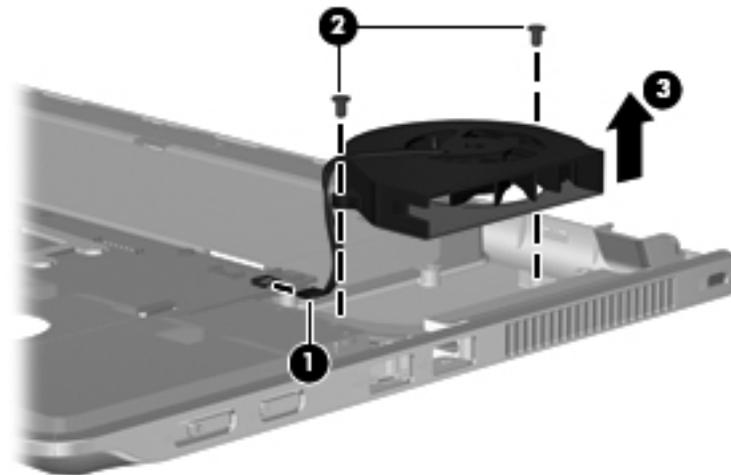
Description	Spare part number
Fan	580696-001

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 4-6).
5. Remove the following components:
 - a. Hard drive (see “[Hard drive](#)” on page 4-9)
 - b. Memory module compartment cover (see “[WLAN module](#)” on page 4-12)
 - c. Keyboard (see “[Keyboard](#)” on page 4-16)
 - d. Display assembly (see “[Display assembly](#)” on page 4-22)
 - e. Top cover (see “[Top cover](#)” on page 4-19)

Remove the fan:

1. Disconnect the fan cable ❶ from the system board.
2. Remove the two Phillips 2.5×6.0 screws ❷.
3. Remove the fan ❸ from the enclosure.



Reverse this procedure to install the fan.



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

Bluetooth module



The Bluetooth module spare part kit does not include a Bluetooth module cable. The Bluetooth module cable is available as spare part number 580702-001.

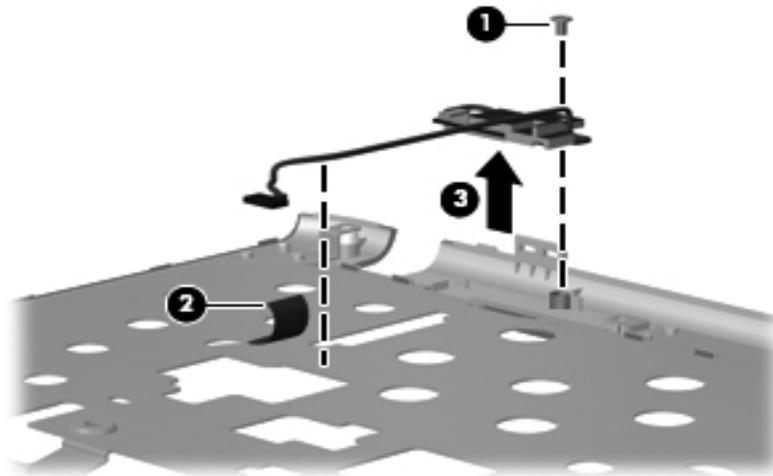
Description	Spare part number
Bluetooth module	537921-001

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 4-6).
5. Remove the top cover (see “[Top cover](#)” on page 4-19)

Remove the Bluetooth module and cable:

1. Remove the Phillips 2.0×4.0 screw ❶ to release the Bluetooth module.
2. Lift the cable tape ❷ to release the Bluetooth cable.
3. Remove the Bluetooth module ❸.
4. If you are replacing the Bluetooth cable, disconnect the Bluetooth module cable from the Bluetooth module.



Reverse this procedure to install the Bluetooth module and cable.

System board



The system board spare part kit includes replacement thermal material and an embedded processor.

Description	Spare part number
AMD Athlon™ Neo Processor MV-40 (1.6-GHz, 512K L2 cache), UMA	581171-001
AMD Athlon™ Neo X2 Dual Core Processor L335 (1.6-GHz, 512K L2 cache), UMA	581172-001
AMD Turion™ Neo X2 Dual Core Processor L625(1.6-GHz, 1M L2 cache), UMA	581173-001
AMD Athlon™ Neo X2 Dual Core Processor L335 (1.6-GHz, 512K L2 cache), discrete	581175-001
AMD Turion™ Neo X2 Dual Core Processor L625(1.6-GHz, 1M L2 cache), discrete	581176-001
Intel Celeron Processor (1.2-GHz, 800-MHz front side bus (FSB), 1MB L2 cache), UMA	580660-001
Intel Pentium Processor (1.3-GHz, 800-MHz FSB, 2MB L2 cache),UMA	580661-001
Intel Pentium Processor (1.3-GHz, 800-MHz FSB, 2MB L2 cache), discrete	580662-001
Intel Core2Duo Processor (2.26-GHz, 1066-MHz FSB, 6MB L2 cache), discrete	580663-001
Intel Core2Duo Processor (1.3-GHz, 800-MHz FSB, 3MB L2 cache), UMA	584078-001

Before removing the system board, follow these steps:

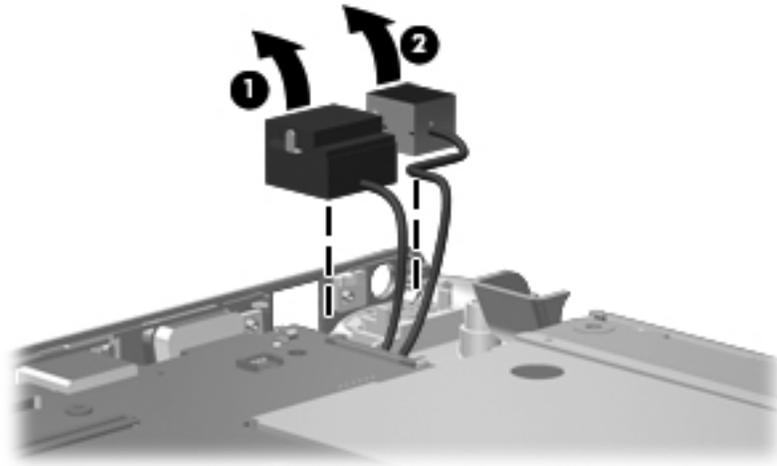
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
4. Remove the battery (see [“Battery” on page 4-6](#)).
5. Remove the following components:
 - a. Hard drive (see [“Hard drive” on page 4-9](#))
 - b. Memory/wireless module compartment cover (see [“WLAN module” on page 4-12](#))
 - c. Keyboard (see [“Keyboard” on page 4-16](#))
 - d. Display assembly (see [“Display assembly” on page 4-22](#))
 - e. Top cover (see [“Top cover” on page 4-19](#))

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

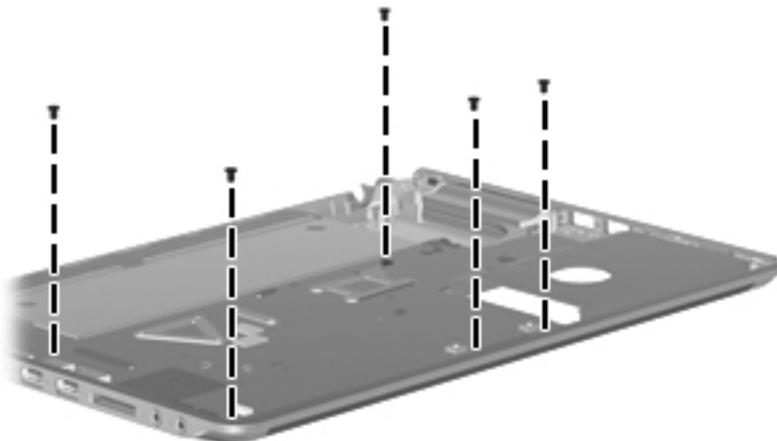
- SIM (see [“SIM” on page 4-8](#))
- WLAN module (see [“WLAN module” on page 4-12](#))
- Memory modules (see [“Memory module” on page 4-14](#))
- WWAN module (see [“WWAN module” on page 4-11](#))
- Fan (see [“Fan” on page 4-31](#))
- RTC battery (see [“RTC battery” on page 4-15](#))

Remove the system board:

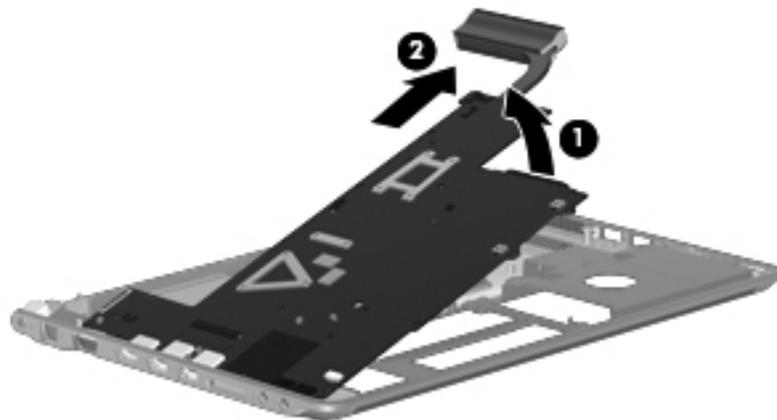
1. Disconnect the RJ-45 connector ❶ from the enclosure.
2. Disconnect the power connector ❷ from the enclosure.



3. Remove the five Phillips 2.5×4.0 screws that secure the system board to the base enclosure.



4. Lift up ❶ on the right side of the system board, and then pull it to the right ❷ to remove the system board from the base enclosure.



Reverse this procedure to install the system board.

Power and RJ-45 cable



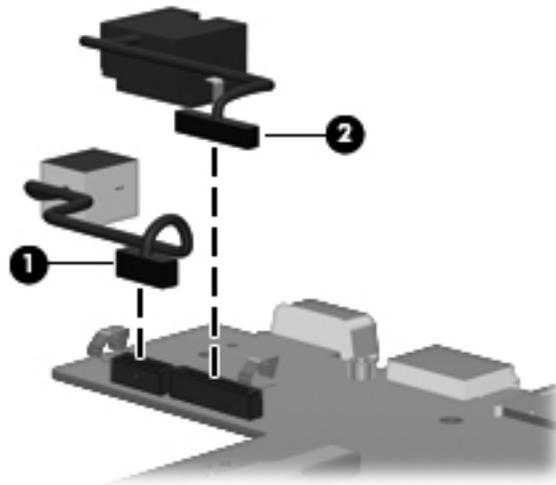
The power and RJ-45 cables are included in the Cable Kit, spare part number 580843-001.

Before removing the power and RJ-45 cables, 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 4-6](#)).
5. Remove the following components:
 - a. Hard drive (see [“Hard drive” on page 4-9](#))
 - b. Memory module compartment cover (see [“WLAN module” on page 4-12](#))
 - c. Keyboard (see [“Keyboard” on page 4-16](#))
 - d. Display assembly (see [“Display assembly” on page 4-22](#))
 - e. Top cover (see [“Top cover” on page 4-19](#))
 - f. System board (see [“System board” on page 4-33](#))

Remove the power and RJ-45 cables:

1. Release the power connector from the clip built into the system board, and then remove it **1**.
2. Release the RJ-45 connector from the clip built into the system board, and then remove it **2**.



Reverse this procedure to install the power and RJ-45 cable.

Heat sink



The processor is soldered onto the system board. Thermal grease has been applied between the heat sink and the processor, chipset, and graphics chipset.

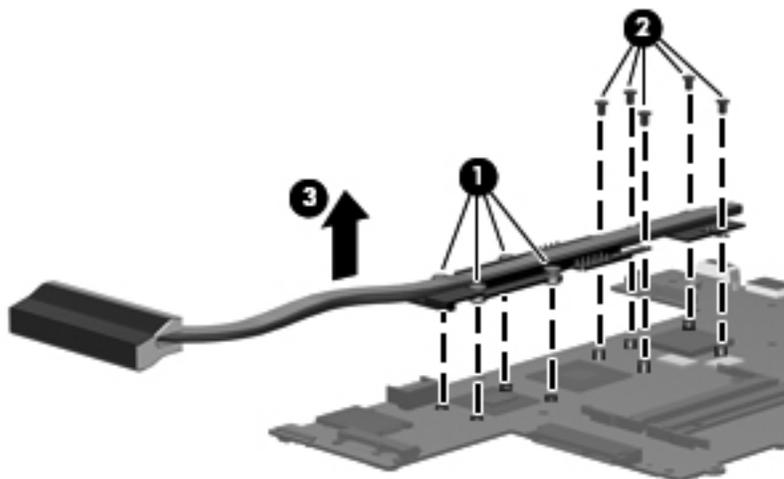
Description	Spare part number
Heat sink for use only on computer models equipped with a graphics subsystem with discrete memory	581187-001
Heat sink for use only on computer models equipped with a graphics subsystem with UMA memory	581186-001

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 4-6).
5. Remove the following components:
 - a. Hard drive (see [“Hard drive”](#) on page 4-9)
 - b. Memory/wireless module compartment cover (see [“WLAN module”](#) on page 4-12)
 - c. Keyboard (see [“Keyboard”](#) on page 4-16)
 - d. Display assembly (see [“Display assembly”](#) on page 4-22)
 - e. Top cover (see [“Top cover”](#) on page 4-19)
 - f. System board (see [“System board”](#) on page 4-33)

Remove the heat sink:

1. Loosen the four captive Phillips 2.0×8.0 screws ❶ in the order sequence noted on the heat sink.
2. Remove the five Phillips 2.0×4.0 screws ❷ holding the heat sink to the system board.
3. Remove the heat sink ❸.



Reverse this procedure to install the heat sink.

Setup Utility (BIOS)

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.

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 on 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 on the screen, press **esc**.

When the Startup Menu is displayed, press **f10**.

Using the Setup Utility

Changing the language or 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 on 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 on 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, 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**, then press **enter**.

Your change goes into effect immediately.

Navigating and selecting in Computer Setup

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

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

Displaying system information

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

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

When the Startup Menu is displayed, press **f10**.

2. Select **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**, 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 on 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 on 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 changes and exit the Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, then press **enter**.

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



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**, 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**, the press **enter**.

After either choice, the computer restarts in Windows.

Setup Utility menus

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



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 for the computer.■ View specification information for 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 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.k
Virtualization Technology (select models only)	Enable/disable the processor Virtualization Technology.
Processor C6 State (select models only)	Enable/disable the processor C6 sleep state.
LAN Power Saving (select models only)	Enable/disable LAN Power Saving. When enabled, saves power when the computer is in DC mode.
Card Reader/1394 Power Saving (select models only)	Enable/disable Card Reader/1394 Power Saving.
Fan Always On	Enable/disable Fan Always On. When enabled the computer fan will always be on.
Action Key Mode	Enable/disable the Action Key Mode.
Boot Options	<p>Set the following boot options:</p> <ul style="list-style-type: none"> ■ f10 and f12 Delay (seconds) - Set the delay for the f10 and f12 functions of the Setup Utility in intervals of 5 seconds. (0,5,10,15, or 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"> <input type="checkbox"/> Hard Drive <input type="checkbox"/> Internal CD/DVD ROM Drive <input type="checkbox"/> USB Diskette on Key USB Hard Drive <input type="checkbox"/> USB CD/DVD ROM Drive <input type="checkbox"/> USB Floppy <input type="checkbox"/> Network Adapter

(Continued)

Diagnostics menu

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

Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Length	23.0 cm	9.06 in
Width	32.6 cm	12.83 in
Height (front to back)	2.29 to 2.99 cm	0.90 to 1.18 in
Weight		
	1.9 kg	4.19 lbs
Input power		
Operating voltage	16.5 V dc @ 3.5 A - 65 W	
Operating current	3.5 A or 4.74 A	
Temperature		
Operating (not writing to optical disc)	0°C to 35°C	32°F to 95°F
Operating (writing to optical disc)	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
 Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures.		

13.3-in LED HD display specifications

	Metric	U.S.
Dimensions		
Height	17.8 cm	7.0 in
Width	28.4 cm	11.2 in
Diagonal	33.6 cm	13.3 in
Number of colors	Up to 16.8 million	
Contrast ratio	250:1 (typical)	
Brightness	200 nits (typical)	
Pixel resolution		
Pitch	0.279 × 0.279 mm	
Format	1366 × 768 or 1280 × 720	
Configuration	RGB vertical stripe	
Backlight	LED	
Character display	80 × 25	
Total power consumption	4.0 W	
Viewing angle	±40° horizontal, +120°/-40° vertical (typical)	

Hard drive specifications

	500-GB*	320-GB*	250-GB*	160-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				
	SATA	SATA	SATA	SATA
Transfer rate				
	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	1.0 ms	1.5 ms	2.0 ms	2.0 ms
Average	14.0 ms	12.0 ms	12.0 ms	12.0 ms
Maximum	22.0 ms	22.0 ms	22.0 ms	22.0 ms
Logical blocks				
	976,773,168	625,142,448	488,397,168	312,581,808
Disc rotational speed				
	7200 and 5400 rpm	7200 and 5400 rpm	7200 and 5400 RPM	7200 and 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. Actual drive specifications may differ slightly.				
 Certain restrictions and exclusions apply. Contact technical support for details.				

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

Applicable disc	Read:	Write:
	BD-ROM, BD-ROM-DL, BD-R, BD-R-DL, BD-RE, BD-RE-DL, DVD-ROM, DVD+R, DVD+R-DL, DVD+RW, DVD-R, DVD-R-DL, DVD-RW, DVD-RAM (Ver.2), CD-DA, CD-ROM (mode 1 and mode 2), CD-ROM XA (mode 2, form 1 and form 2), Photo CD (single and multiple sessions), CD Extra, CD-R, CD-RW, and CD-TEXT	DVD-RAM (Ver.2), DVD+R, DVD-R, CD-R, and CD-ROM
Access time	BD	DVD
Random	< 230 ms	< 180 ms
Cache buffer	4.5 MB	
Data transfer rate		
2X BD-RAM	9 MB/sec	
8X DVD	2,400 KB/sec	
16X CD-R	2,400 KB/sec	
16X CD-RW	2,400 KB/sec	

DVD±RW and CD-RW SuperMulti Double-Layer 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, and DVD-RAM	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, and DVD-RAM
Access time	CD	DVD
Random	< 175 ms	< 230 ms
Cache buffer	2.5 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	

DVD-ROM 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, CDEXTRA, Portfolio, CD-R, CD-RW), CDR, 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
Access time	CD	DVD
Random	< 110 ms	< 130 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	
24X CD-RW	3,600 KB/sec	

System DMA specifications

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

*ExpressCard controller can use DMA 1, 2, or 5.

System memory map specifications

Size	Memory address	System function
640 KB	00000000–0009FFFF	Base memory
128 KB	000A0000–000BFFFF	Video memory
64 KB	000C0000–000CFFFF	Video BIOS
64 KB	000E8000–000FFFFF	System BIOS
	00100000–XFFFFFFFF	Extended memory (based on memory installed)
	(X+1)0000000–FEDFFFFFF	PCI bus
	FED00000–FED003FF	High-precision event timer
	FEE01000–FFFFFFFF	PCI bus

System interrupt specifications

Hardware IRQ	System function
IRQ0	System timer
IRQ1	Standard 101-/102-key or Microsoft natural keyboard
IRQ8	System CMOS/real-time clock
IRQ12	Synaptics PS/2 TouchPad
IRQ13	Numeric data processor
IRQ16	Intel ICH9 family USB universal host controller 2937 Mobile Intel 4 Series express chipset family
IRQ17*	High-definition audio controller Intel ICH9 family USB universal host controller 2938 Marvell Yukon 88E8072 PCIE-gigabit Ethernet controller
IRQ18	Intel ICH9 family USB universal host controller 2939 Intel ICH9 family USB universal host controller 2936
IRQ19	Intel ICH9 family USB2 enhanced controller 293C
IRQ20	Intel ICH9 family USB2 enhanced controller 293A Intel ICH9 family USB universal host controller 2934
IRQ21	Intel ICH9M-E/M SATA AHCI controller
IRQ22	Intel ICH9 family USB universal host controller 2935

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

 ExpressCards may assert IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, or IRQ15. Either the infrared or the serial port may assert IRQ3 or IRQ4.

 For operating systems after Windows 2000, APIC (Advanced programming interrupt controller) is used.

System I/O address specifications

I/O address (hex)	System function (shipping configuration)
000–01F	DMA controller
020–021	Program interrupt controller
024–025	Program interrupt controller
028–029	Program interrupt controller
02C–03D	Program interrupt controller
02E–02F	Motherboard resources
030–031	Program interrupt controller
034–035	Program interrupt controller
038–039	Program interrupt controller
03C–03D	Program interrupt controller
040–043	System timer
04E–04F	Motherboard resources
050–053	System timer
060	Standard 101-/102-key or Microsoft natural keyboard
061	Motherboard resources
062	Microsoft ACPI-compliant embedded controller
063	Motherboard resources
064	Standard 101-/102-key or Microsoft natural keyboard
065	Motherboard resources
066	Microsoft ACPI-compliant embedded controller
067	Motherboard resources
070	Motherboard resources
071–077	System CMOS/real-time clock
080	Motherboard resources
081–091	Direct memory access controller
092	Motherboard resources
093–09F	Direct memory access controller
0A0–0A1	Program interrupt controller
0A4–0A5	Program interrupt controller
0A8–0A9	Program interrupt controller
0AC–0AD	Program interrupt controller
0B0–0B1	Program interrupt controller
0B2–0B3	Motherboard resources
0B4–0B5	Program interrupt controller
0B8–0B9	Program interrupt controller
0BC–0BD	Program interrupt controller

(Continued)

I/O address (hex)	System function (shipping configuration)
0C0–0DF	Direct memory access controller
0F0–0F0	Numeric data processor
0200–027F	Motherboard resources
3B0–3BB	Mobile Intel 4 Series express chipset family
3C0–3DF	Mobile Intel 4 Series express chipset family
400–47F	Motherboard resources
4D0–4D1	Programmable interrupt controller
500–57F	Motherboard resources
1000–1003	Motherboard resources
1010–101F	Motherboard resources
2000–20FF	Marvell Yukon 88E8072 PCIe-gigabit Ethernet controller
2000–2FFF	ICH9 family PCI express root port6-294A
3000–4FFF	ICH9 family PCI express root port5-2948
5000–6FFF	ICH9 family PCI express root port3-2944
7000–701F	ICH9M-E/M SATA AHCI controller
7020–703F	ICH9 family USB universal host controller 2936
7040–705F	ICH9 family USB universal host controller 2935
7060–707F	ICH9 family USB universal host controller 2934
7080–709F	ICH9 family USB universal host controller 2939
70A0–70BF	ICH9 family USB universal host controller 2938
70C0–70DF	ICH9 family USB universal host controller 2937
70E0–70E7	ICH9M-E/M SATA AHCI controller
70E8–70EF	ICH9M-E/M SATA AHCI Controller
70F0–70F7	Mobile Intel 4 Series express chipset family
70F8–70FB	ICH9M-E/M SATA AHCI controller
70FC–70FF	ICH9M-E/M SATA AHCI controller
EF80–EF9F	Motherboard resources
FE00–FE0F	Motherboard resources
FE80–EF8F	Motherboard resources
FFFF	Motherboard resources

Screw listing

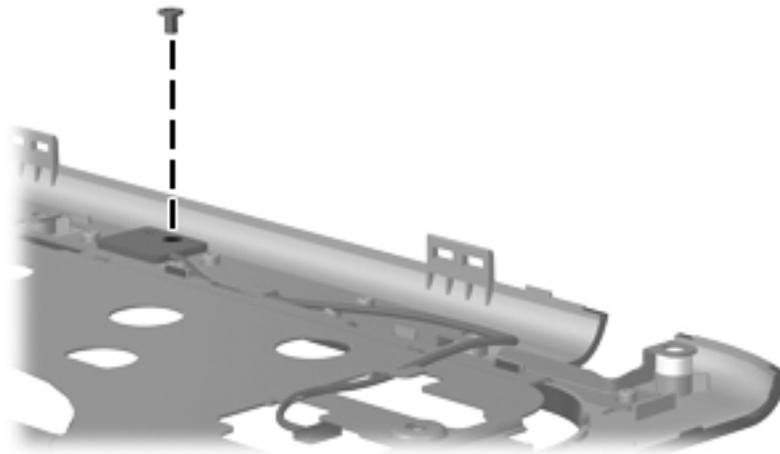
This chapter provides specification and reference information for the screws used in the computer. The screws listed in this chapter are available in the Screw Kit, spare part number 580698-001.

Phillips PM2.0×3.0 screw

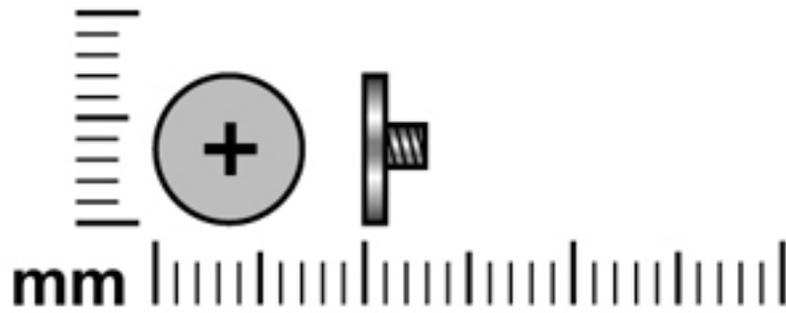


Color	Quantity	Length	Thread	Head diameter
Silver	1	3.0 mm	2.0 mm	5.0 mm

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

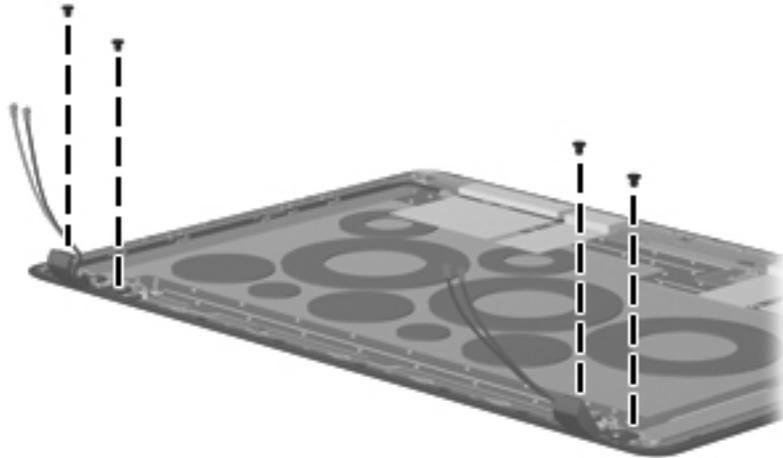


Phillips PM2.0×3.0 broadhead screw

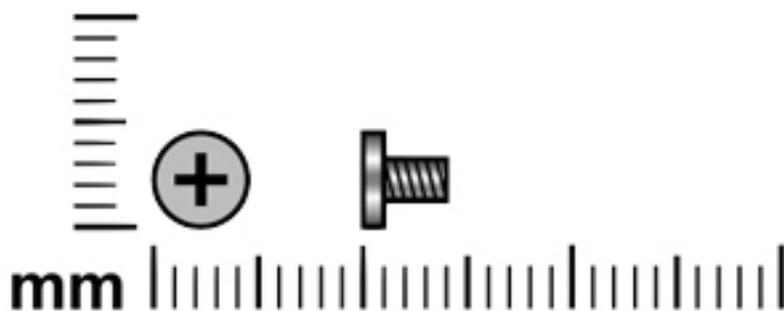


Color	Quantity	Length	Thread	Head diameter
Silver and Black	2 silver and 2 black	3.0 mm	2.0 mm	7.0 mm

Where used: Four screws that secures the hinge covers to the back LCD cover

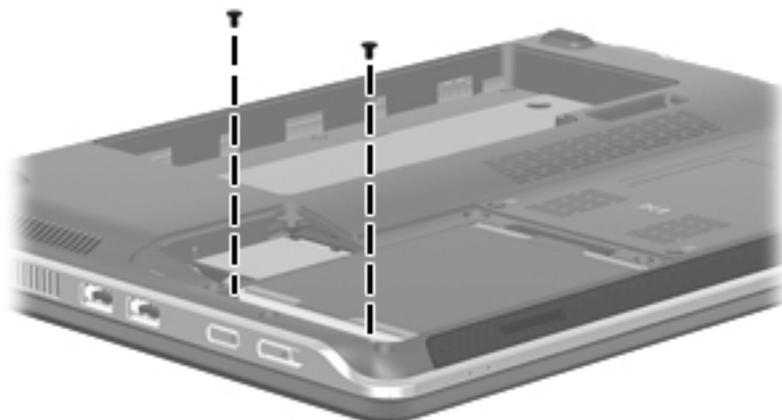


Phillips PM2.0×4.0 screw

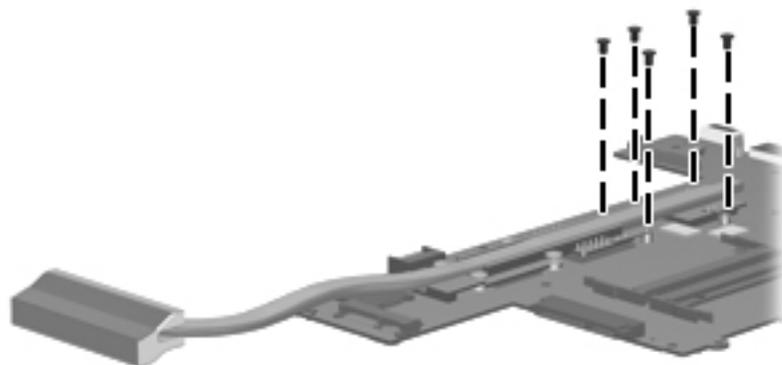


Color	Quantity	Length	Thread	Head diameter
Black	8	4.0 mm	2.0 mm	5.0 mm

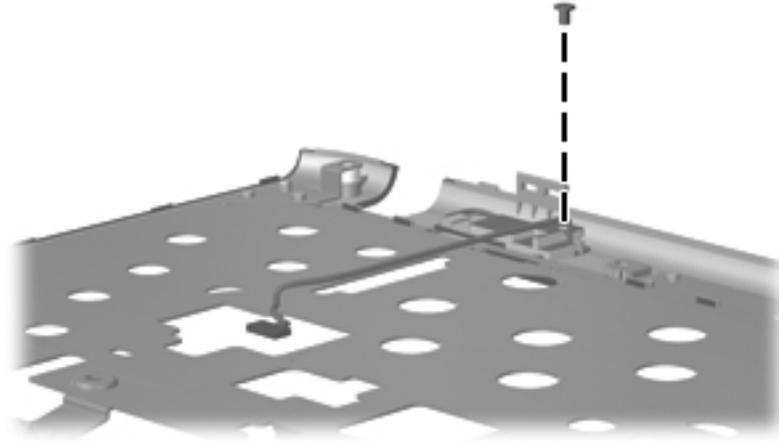
Where used: Two screws that secure the hard drive to the computer



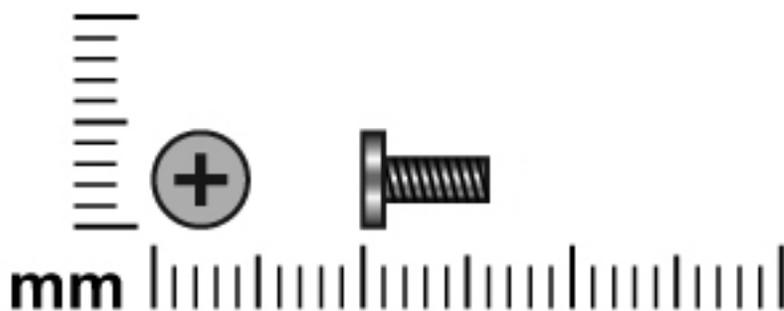
Where used: Five screws that secure the heat sink to the system board



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

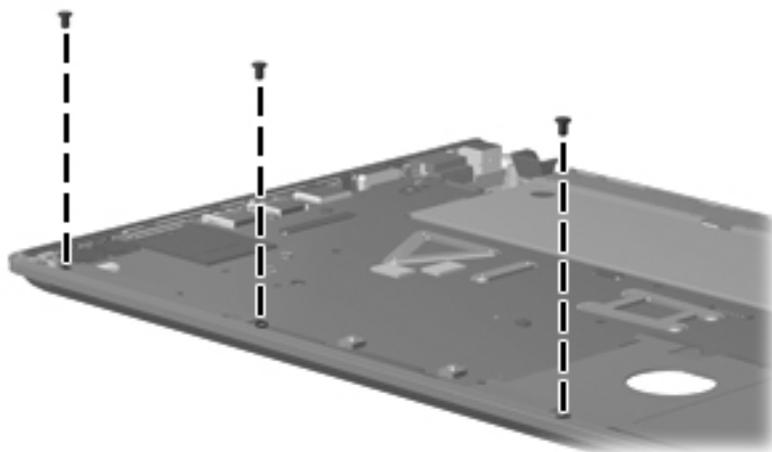


Phillips PM2.0×6.0 screw

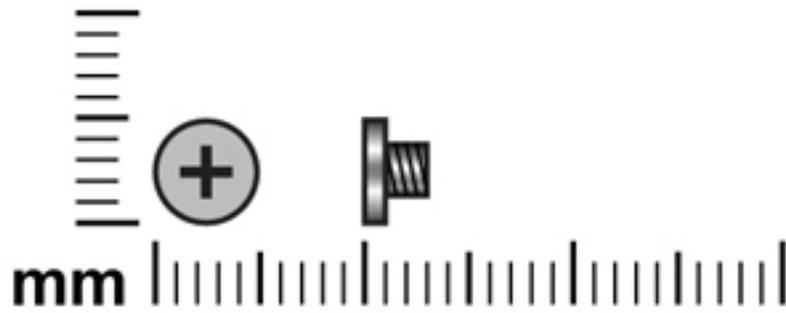


Color	Quantity	Length	Thread	Head diameter
Silver	3	6.0 mm	2.0 mm	5.0 mm

Where used: Three screws that secure the speakers to the base enclosure

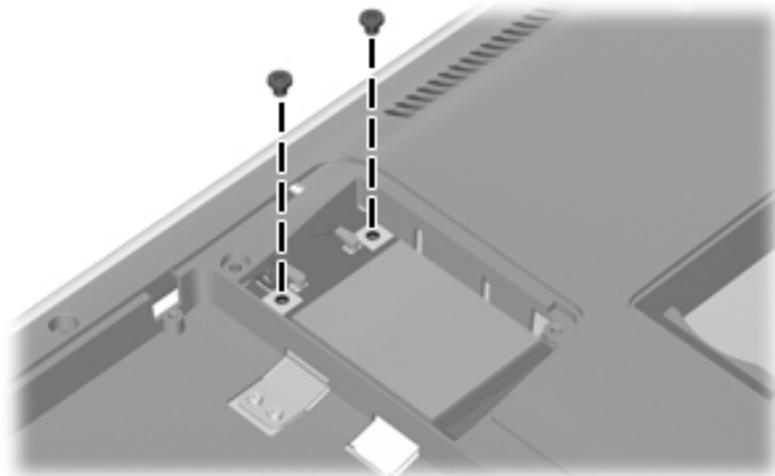


Phillips PM2.5×3.0 screw

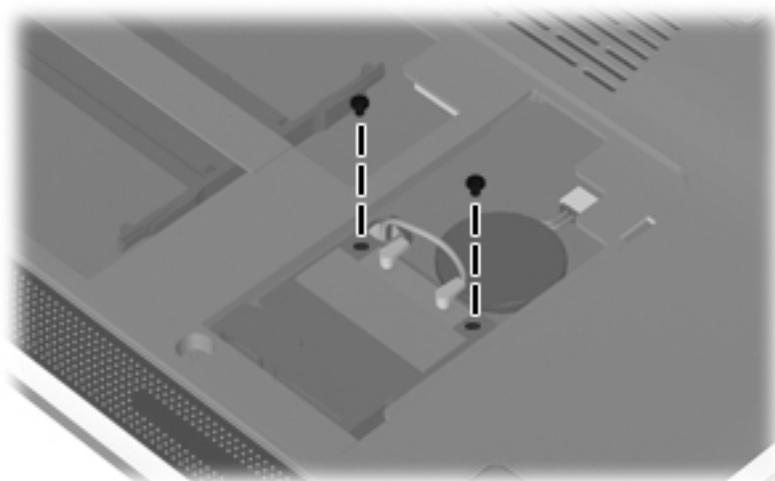


Color	Quantity	Length	Thread	Head diameter
Black	6	3.0 mm	2.5 mm	5.0 mm

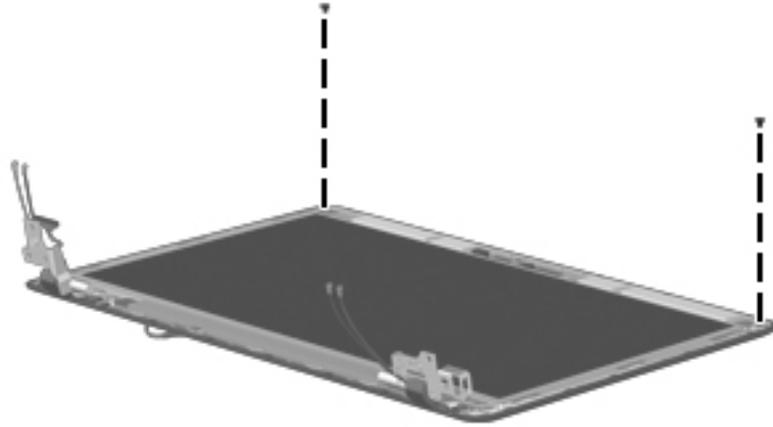
Where used: Two screws that secure the WWAN module to the computer



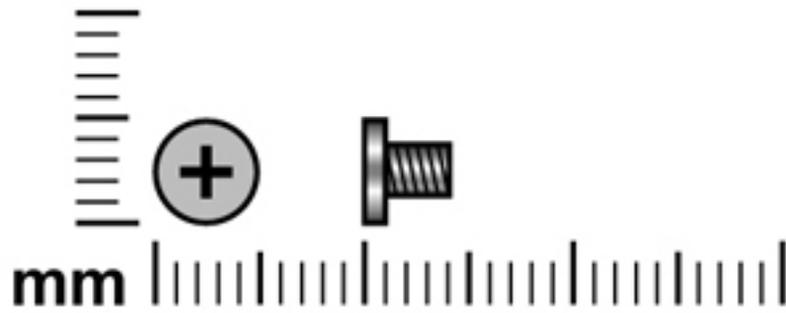
Where used: Two screws that secure the WLAN module to the computer



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

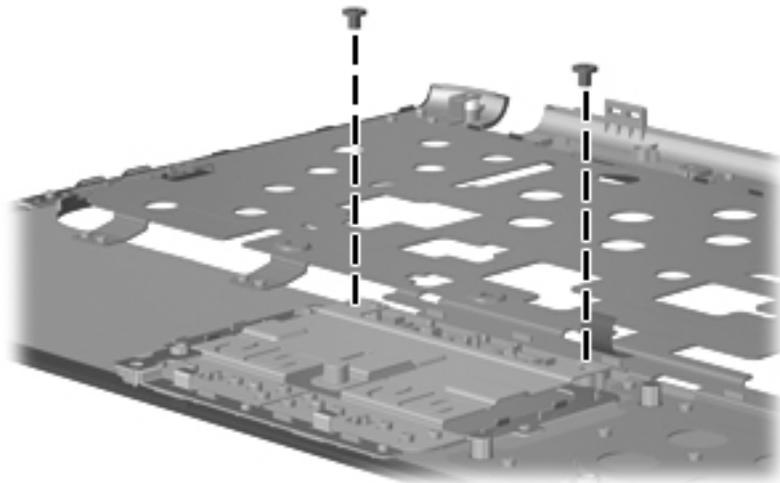


Phillips PM2.5×4.0 screw

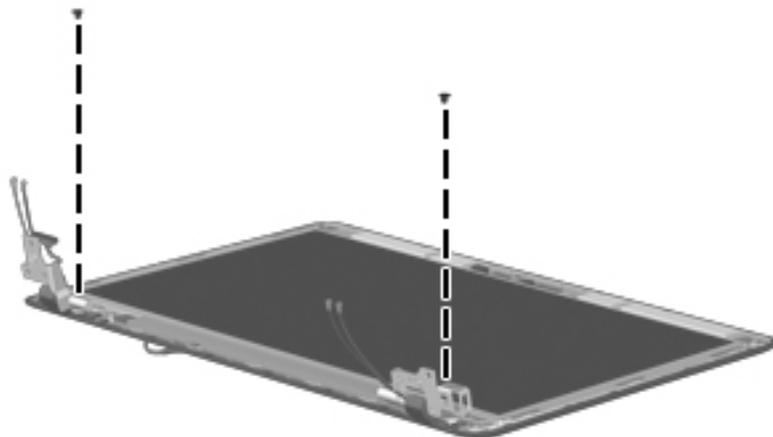


Color	Quantity	Length	Thread	Head diameter
Black	12	4.0 mm	2.5 mm	5.0 mm

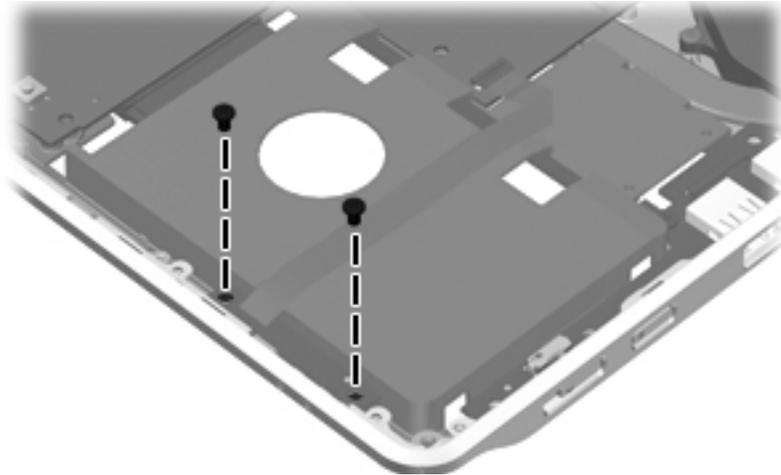
Where used: Two screws that secure the TouchPad to the top cover



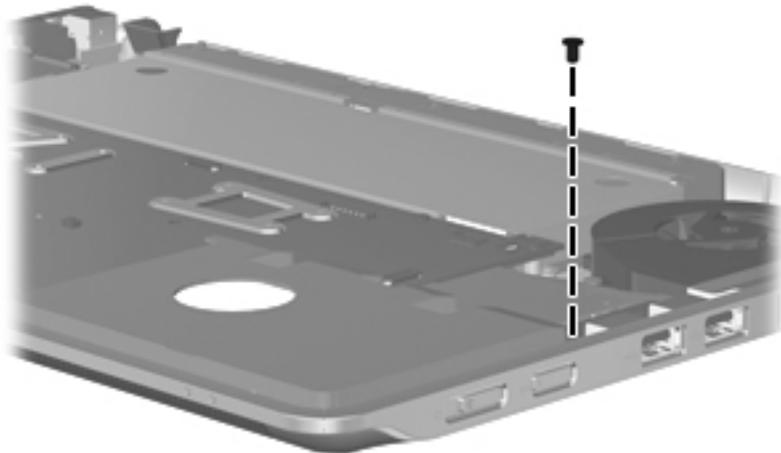
Where used: Two screws that secure the display panel to the display enclosure



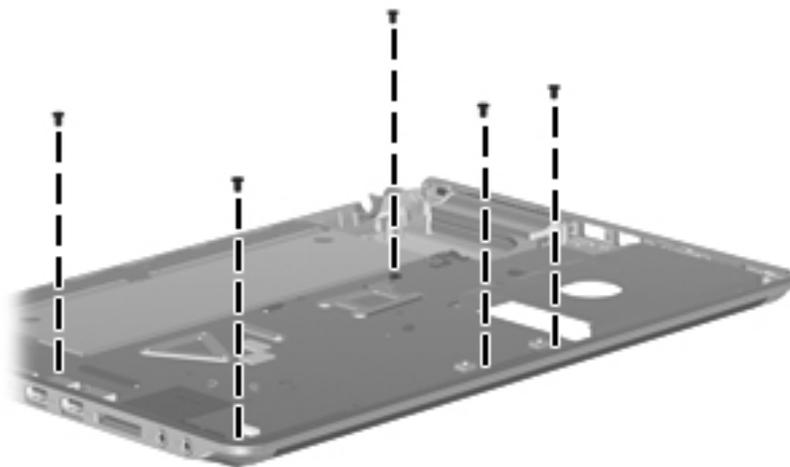
Where used: Two screws that secure the power LED to the base enclosure



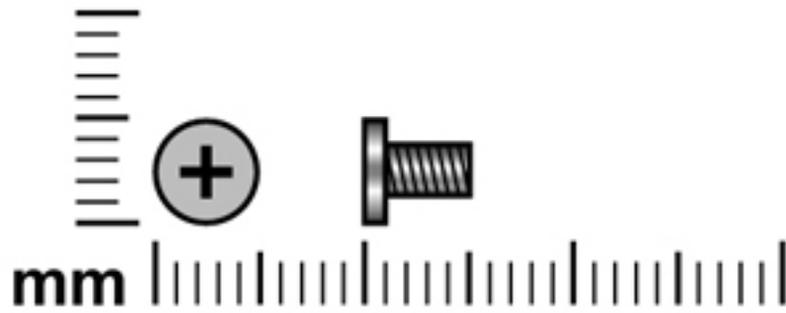
Where used: One screw that secures the USB board to the base enclosure



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



Phillips PM2.5×5.0 screw

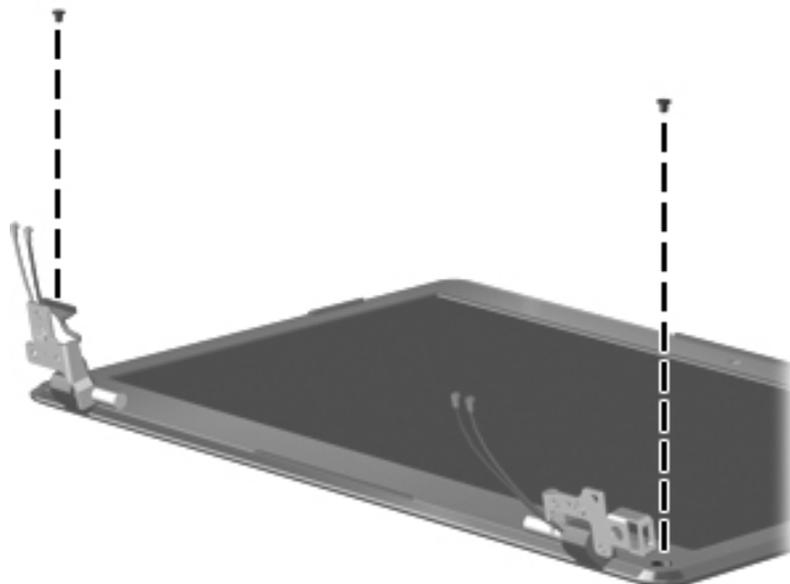


Color	Quantity	Length	Thread	Head diameter
Black	10	5.0 mm	2.5 mm	5.0 mm

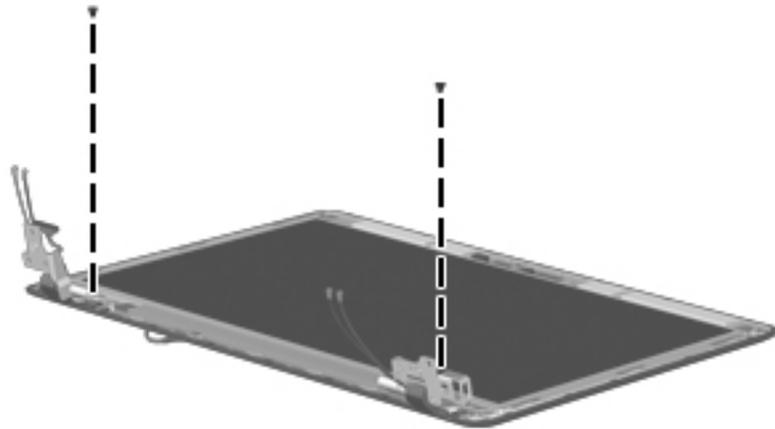
Where used: Six screws that secure the LCD panel to the computer



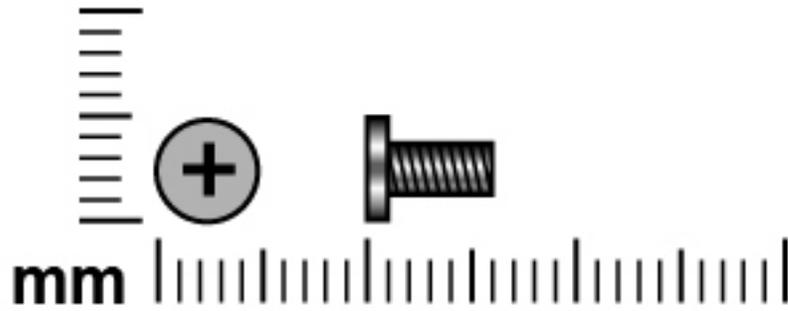
Where used: Two screws that secure the bezel to the display panel



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

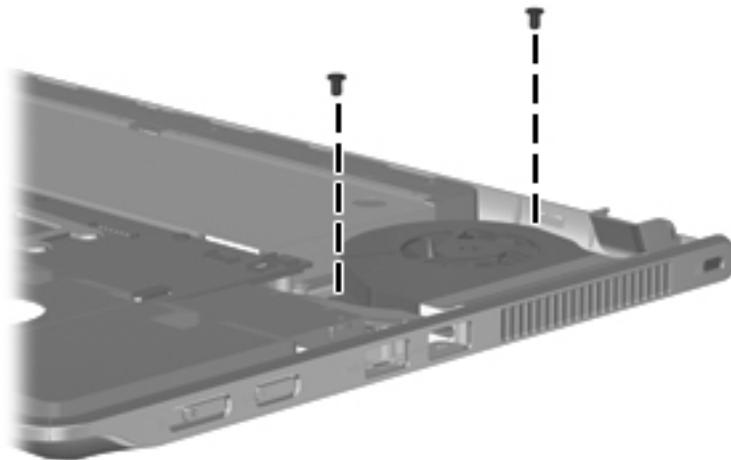


Phillips PM2.5×6.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	2	6.0 mm	2.5 mm	5.0 mm

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



Backup and recovery

Backup and recovery

Overview

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

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

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



Computers with a solid-state drive 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**, right-click **Computer**, click **Manage**, and then click **Disk Management**. If the partition is present, an HP Recovery drive is listed in the window.

Creating recovery discs

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

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



If your computer does not include an internal optical drive, you can use an optional external optical drive (select models only) to create the recovery discs, or you can purchase recovery discs for your computer from the HP Web site.

Note the following guidelines before creating recovery discs:

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



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 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 Disc Creation**.
Recovery Manager opens.
2. Follow the on-screen instructions.

Backing up your information

As you add new software and data files, you should back up your system on a regular basis to maintain a reasonably current backup. Back up your system at the following times:

- On a regular scheduled basis.



Set reminders to back up your information periodically.

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

Note the following when backing up:

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

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

1. Display the screen you want to save.
2. Copy the screen image:

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**.

The screen image is added to the document.

4. Save the document.

- You can back up your information to an external hard drive, a network drive, or discs.
- When backing up to discs, use any of the following types of discs (purchased separately): CD-R, CD-RW, DVD+R, DVD+R DL, DVD-R, DVD-R DL, or DVD+/-RW. The discs you use will depend on the type of optical drive installed in your computer.

 DVDs support store more information than CDs, so using them for backup reduces the number of recovery discs required.

- When backing up to discs, number each disc before inserting it into the optical drive of the computer.

Using Windows Backup and Restore

To create a backup using Windows Backup and Restore Center, follow these steps:



Be sure that the computer is connected to AC power before you start the backup process.

The backup process may take over an hour, depending on file size and the speed of the computer.

1. Select **Start > All Programs > Maintenance > Backup and Restore Center**.
2. Follow the on-screen instructions to set up and create a backup.



Windows® includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.

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 recover back to that point if you want to reverse subsequent changes made to your system.



Recovering to an earlier restore point does not affect saved data files 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.



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 Security > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Under Protection settings, select the disk for which you want to create a restore point.
5. Click **Create**.
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 Security > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Click the **System Restore** button.
5. Follow the on-screen instructions.

Performing a recovery



You can recover only files that you have previously backed up. HP recommends that you use HP Recovery Manager to create a set of discs (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 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.



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

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 using the dedicated recovery partition



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

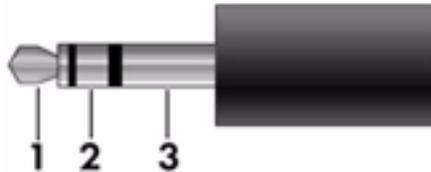
On some models, you can perform a recovery from the partition on the hard drive from either the Start button or **f11**. This restores the computer to its factory condition.

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

1. Access Recovery Manager in either of the following ways:
 - Select **Start > All Programs > Recovery Manager > Recovery Manager**, or
 - Turn on or restart the computer, then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen. Then press **f11** while the “Press <F11> for recovery” message is displayed on the screen.
2. Click **System Recovery** in the **Recovery Manager** window.
3. Follow the on-screen instructions.

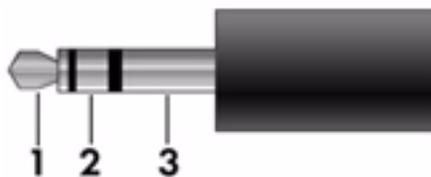
Connector pin assignments

Audio-in (microphone)



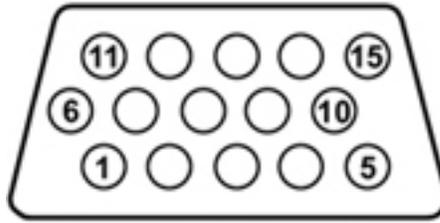
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

Audio-out (headphone)



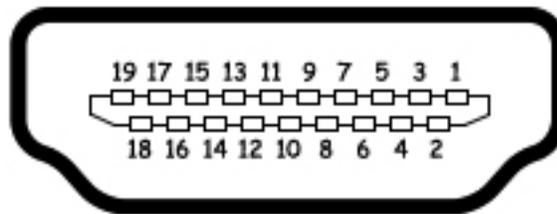
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

External monitor



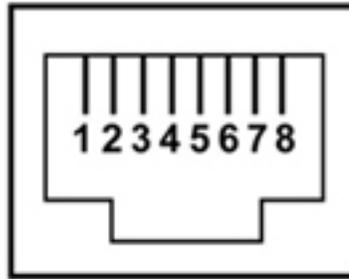
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

HDMI



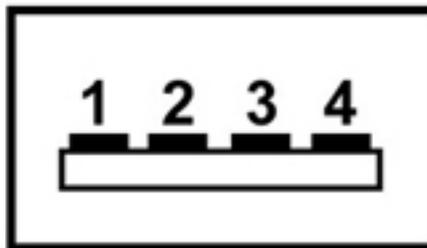
Pin	Signal
1	TMDS data 2+
2	TMDS data 2 shield
3	TMDS data 2-
4	TMDS data 1+
5	TMDS data 1 shield
6	TMDS data 1-
7	TMDS data 0+
8	TMDS data 0 shield
9	TMDS data 0-
10	TMDS clock+
11	TMDS clock shield
12	TMDS clock-
13	CEC
14	No connect
15	DDC clock
16	DDC data
17	Ground
18	+5V power
19	Hot plug detect

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

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 and regions must meet the requirements of the country or region where the computer is used.

Requirements for all countries and regions

The following requirements are applicable to all countries and 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 the power system of each country or region.
- 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 and regions

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

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

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 chapter can result in damage to display components. The only components intended for recycling purposes are the liquid crystal display (LCD) panel and the backlight. When you remove these components, handle them carefully.

 **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>.

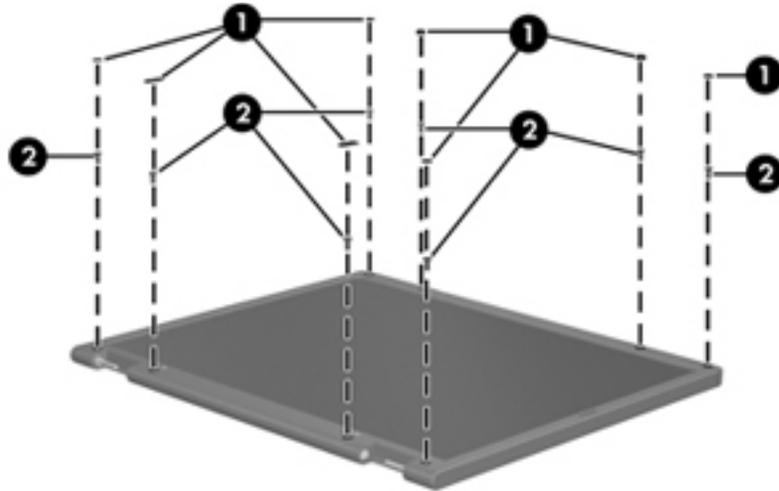
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight ❶ and the liquid crystal display (LCD) panel ❷.



 The procedures provided in this chapter 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 ❶ and screws ❷ that secure the display bezel to the display assembly.



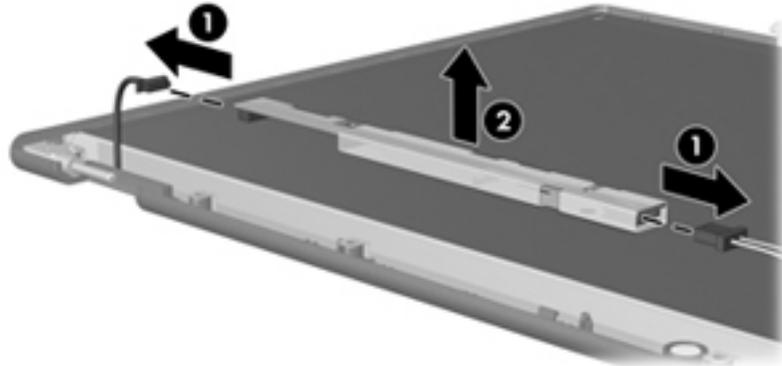
2. Lift up and out on the left and right inside edges ❶ and the top and bottom inside edges ❷ of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel ❸.



4. If installed, disconnect all display panel cables ❶ from the display inverter and remove the inverter ❷.

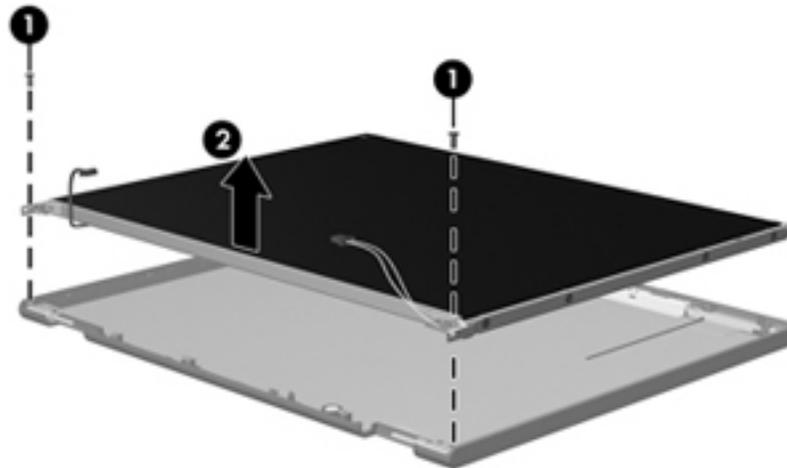


Some systems may not have a backlight assembly to remove.



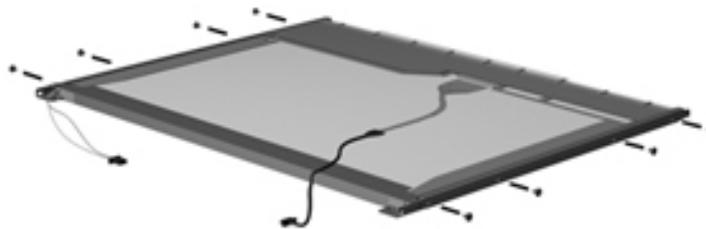
5. Remove all screws ❶ that secure the display panel assembly to the display enclosure.

6. Remove the display panel assembly ❷ from the display enclosure.

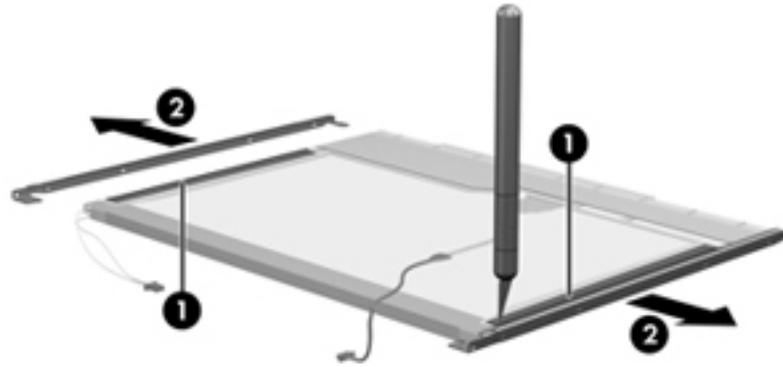


7. Turn the display panel assembly upside down.

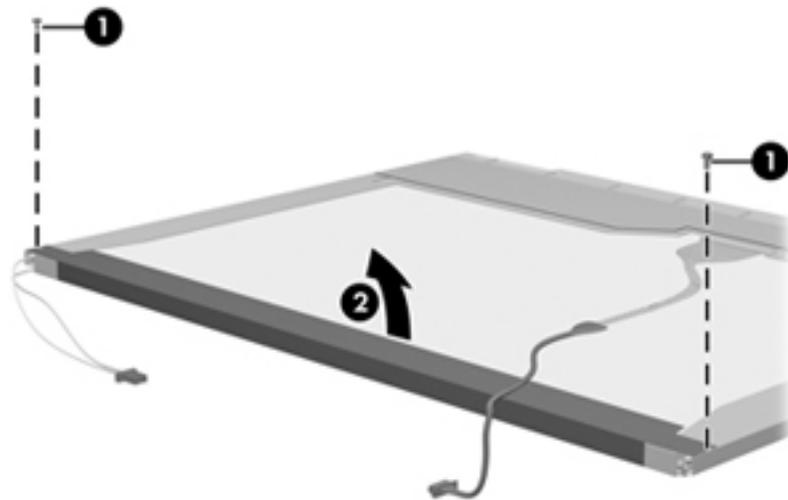
8. Remove all screws that secure the display panel frame to the display panel.



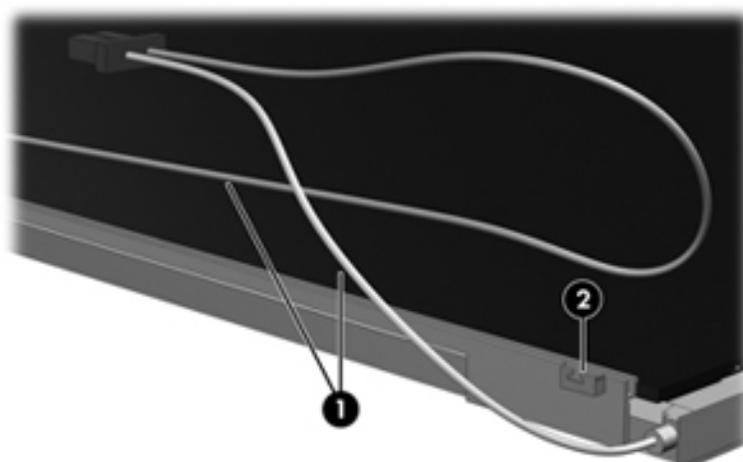
9. Use a sharp-edged tool to cut the tape ❶ that secures the sides of the display panel to the display panel frame.
10. Remove the display panel frame ❷ from the display panel.



11. Remove the screws ❶ that secure the backlight cover to the display panel.
12. Lift the top edge of the backlight cover ❷ and swing it outward.



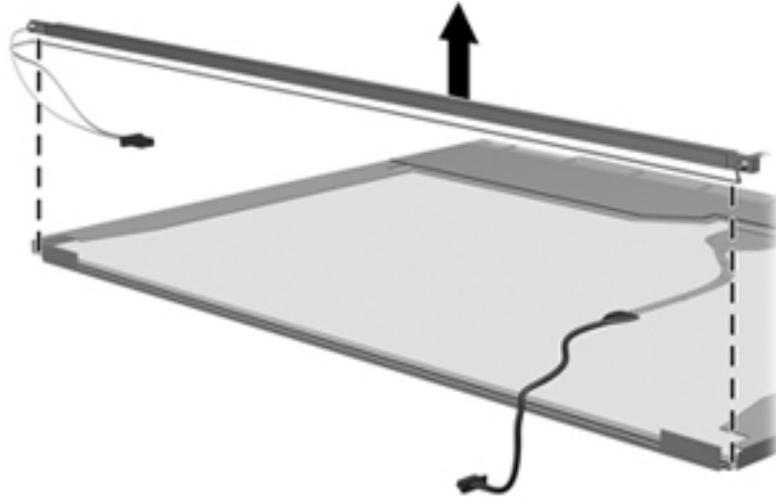
13. Remove the backlight cover.
14. Turn the display panel right-side up.
15. Remove the backlight cables ❶ from the clip ❷ in the display panel.



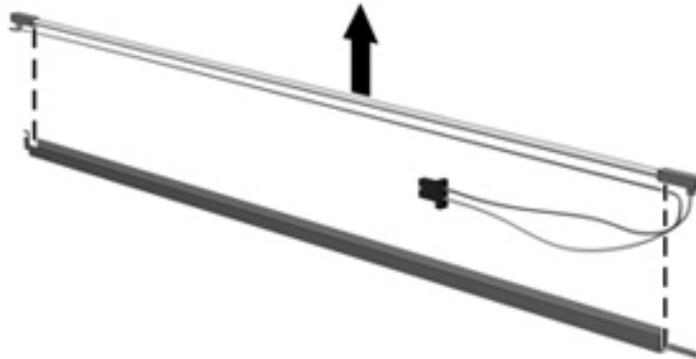
16. Turn the display panel upside down.
17. Remove the backlight frame from the display panel.



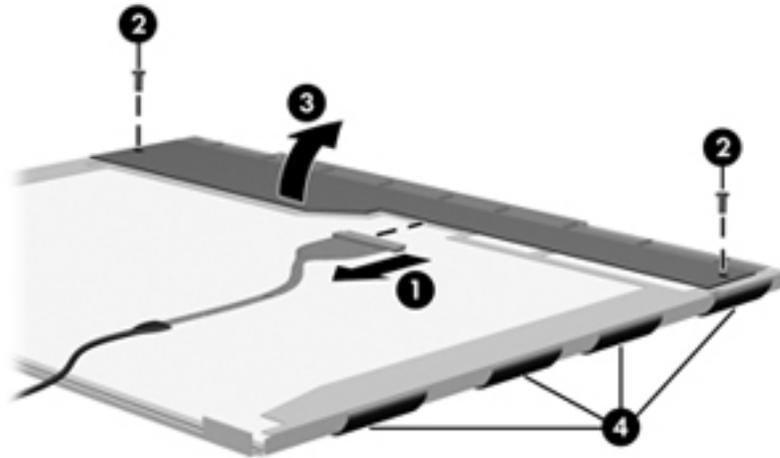
WARNING: The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.



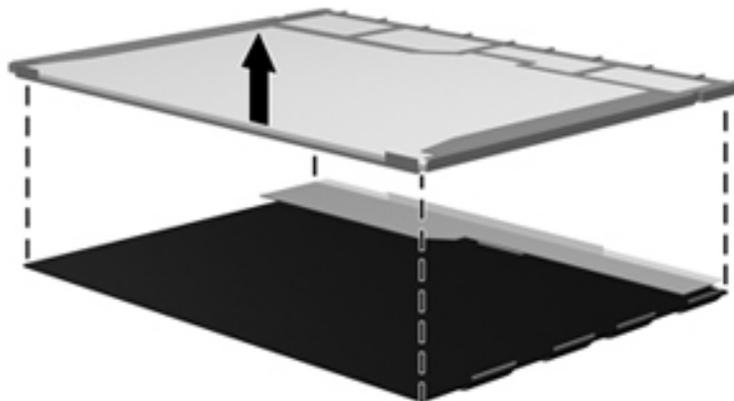
18. Remove the backlight from the backlight frame.



19. Disconnect the display cable ❶ from the LCD panel.
20. Remove the screws ❷ that secure the LCD panel to the display rear panel.
21. Release the LCD panel ❸ from the display rear panel.
22. Release the tape ❹ that secures the LCD panel to the display rear panel.



23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.

A

- AC adapter, spare part numbers 3–8
- action keys 2–3
- antennas
 - disconnecting 4–11, 4–13
 - locations 2–9
- audio, product description 1–4
- audio-in (microphone) jack
 - connector pinout 9–1
 - location 2–6
- audio-out (headphone) jack
 - connector pinout 9–1
 - location 2–6

B

- backing up files 8–3
- Backup and Restore Center 8–4
- battery
 - removal 4–6
 - spare part numbers 4–6
- battery bay 2–7
- battery light 2–4
- battery release latch 2–7
- BIOS administrator password 5–4
- Bluetooth module
 - removal 4–32
 - spare part number 4–32
- Blu-ray ROM DVD±R/RW SuperMulti Double-Layer Drive
 - precautions 4–2
 - specifications 6–4
- boot options 5–5
- boot order 5–5
- bottom components 2–7
- buttons
 - TouchPad 2–1
 - wireless 2–5

C

- cable kit, spare part numbers 3–6
- cables, service considerations 4–1
- caps lock light 2–2
- chipset, product description 1–2
- components
 - bottom 2–7
 - buttons 2–9
 - display 2–1
 - fingerprint reader 2–9
 - front 2–4
 - left-side 2–6
 - lights 2–2
 - pointing device 2–1
 - right-side 2–5
 - top 2–9
- computer feet
 - locations 4–6
 - spare part number 4–6
- Computer Setup
 - accessing 5–1
 - Diagnostics menu 5–5
 - navigating and selecting 5–1
 - restoring factory settings 5–2
 - Security menu 5–4
 - System Configuration menu 5–5
 - using 5–1
- computer specifications 6–1
- connector
 - audio-in (microphone) jack 2–6
 - audio-out (headphone) jack 2–6
 - display 2–6
- connector pinout
 - audio-in (microphone) jack 9–1
 - audio-out (headphone) jack 9–1
 - external monitor port 9–2
 - HDMI port 9–3
 - microphone jack 9–1
 - monitor port 9–2
 - network jack 9–4
 - RJ-45 (LAN) jack 9–4
 - RJ-45 jack 9–4
 - USB port 9–4
- connectors, service considerations 4–1

D

- Diagnostics menu 5–5
- Digital Media slot 2–6
- diskette drive, product description 1–3
- display
 - connector 2–6
 - port 2–6
- display assembly
 - removal 4–22
 - spare part numbers 3–3, 4–22
- display bezel
 - removal 4–23
 - spare part numbers 3–3
- display components
 - illustrated 2–1
 - recycling 11–1
- display hinges
 - removal 4–25
 - spare part numbers 3–3
- display panel 3–3
 - product description 1–2
- display panel cable
 - removal 4–25
 - spare part numbers 4–25
- drive, lights 2–4
- drives, boot order 5–5
- DVD±RW and CD-RW SuperMulti Double-Layer Drive
 - precautions 4–2
 - specifications 6–5
- DVD-ROM Drive
 - precautions 4–2
 - specifications 6–6

E

- electrostatic discharge 4–2
- equipment guidelines 4–4
- esc** key 2–3
- Ethernet, product description 1–4
- external media card, product description 1–5
- external monitor port
 - connector pinout 9–2
 - location 2–6

F

- fan
 - removal 4–31
 - spare part number 4–31
- feet
 - locations 4–6
 - spare part number 4–6
- fn** key 2–3
- front components 2–4

G

- graphics, product description 1–2
- grounding equipment and methods 4–2

H

- hard drive
 - precautions 4–2
 - product description 1–3
 - removal 4–9
 - spare part numbers 3–7, 4–9
 - specifications 6–3
- hard drive bay 2–7
- hard drive bracket, removal 4–10
- hard drive connector, removal 4–10
- hard drive cover
 - removal 4–9
 - spare part numbers 3–4
- HDMI port
 - connector pinout 9–3
 - location 2–6
- headhone, connector 2–6
- heat sink
 - removal 4–36
 - spare part numbers 4–36
- hinges
 - removal 4–25
 - spare part numbers 3–3

K

- keyboard
 - product description 1–5
 - removal 4–16
 - spare part numbers 3–3, 4–16
- keys
 - action 2–3
 - esc** 2–3
 - fn** 2–3
 - num lk** 2–3
 - numeric keypad 2–3
 - Windows applications 2–3
 - Windows logo 2–3

L

- language, changing in Computer Setup 5–5
- left-side components 2–6
- lights
 - AC adapter 2–6
 - battery 2–4
 - caps lock 2–2
 - drive 2–4
 - mute 2–2
 - num lock 2–2
 - power 2–5
 - TouchPad 2–1
 - webcam 2–8
 - wireless 2–5

M

- mass storage devices, spare part numbers 3–7
- memory module
 - removal 4–14
 - spare part numbers 4–14
- memory module compartment
 - cover removal 4–12
 - location 2–7
- microphone jack
 - connector 2–6
 - connector pinout 9–1
- microphone, internal
 - location 2–8
 - product description 1–3
- model name 3–1, 4–5
- modem, product description 1–4
- monitor port
 - connector pinout 9–2
 - location 2–6
- mute light 2–2

N

- network cable
 - removal 4–35
 - spare part numbers 3–4
- network jack
 - connector pinout 9–4
 - removal 4–34
 - spare part numbers 3–4
- num lk** key 2–3
- num lock light 2–2
- numeric keypad keys 2–3

O

- operating system, product description 1–6
- optical drive
 - precautions 4–2
 - product description 1–3
 - specifications 6–4, 6–5, 6–6

P

- packing guidelines 4–3
- passwords 5–4
- plastic parts 4–1
- pointing device
 - components 2–1
 - illustrated 2–1
 - product description 1–5
- ports
 - display 2–6
 - product description 1–5
 - USB 2–5, 2–6
- power cable
 - removal 4–35
 - spare part numbers 3–6
- power connector 2–6
 - removal 4–34
- power cord
 - set requirements 10–1
 - spare part numbers 3–8
- power light 2–5
- power requirements, product description 1–5
- power switch 2–5
- processor, product description 1–1
- product description
 - audio 1–4
 - chipset 1–2
 - diskette drive 1–3
 - display panel 1–2
 - Ethernet 1–4
 - external media card 1–5
 - graphics 1–2
 - hard drive 1–3
 - keyboard 1–5
 - microphone 1–3
 - modem 1–4
 - operating system 1–6
 - optical drive 1–3
 - pointing device 1–5
 - ports 1–5
 - power requirements 1–5
 - processor 1–1
 - security 1–5
 - serviceability 1–6
 - webcam 1–4
 - wireless 1–4
- product name 1–1, 3–1, 4–5

R

- recovery, system 8–1
- recycling
 - battery 11–1
 - display components 11–1
- removal/replacement
 - preliminaries 4–1
 - procedures 4–5
- restoring factory settings 5–2
- right-side components 2–5
- RJ-45 (LAN) jack
 - connector pinout 9–4
 - location 2–6
 - spare part numbers 3–6
- RTC battery
 - removal 4–15
 - spare part number 4–15
- Rubber Feet Kit, spare part number 4–6

S

- Screw Kit, spare part number 3–8
- screw listing 7–1
- security cable slot 2–5
- Security menu 5–4
- security, product description 1–5
- service considerations 4–1
- serviceability, product description 1–6
- SIM slot 2–7
- spare part numbers 3–3
- speakers
 - removal 4–28
 - spare part number 4–28
- specifications
 - Blu-ray ROM DVD±R/RW SuperMulti
 - Double-Layer Drive 6–4
 - computer 6–1
 - display assembly 6–2
 - DVD±RW and CD-RW SuperMulti Double-Layer
 - Drive 6–5
 - DVD-ROM Drive 6–6
 - hard drive 6–3
 - optical drive 6–4, 6–5, 6–6
 - system DMA 6–7
 - system I/O address 6–9
 - system interrupt 6–8
 - system memory map 6–7
- system board
 - removal 4–33
 - spare part numbers 4–33
- System Configuration menu 5–5
- system DMA specifications 6–7

- system I/O address specifications 6–9
- system interrupt specifications 6–8
- system memory map specifications 6–7
- system recovery 8–1

T

- tools required 4–1
- top components 2–9
- top cover
 - removal 4–19
 - spare part numbers 3–3, 4–19
- TouchPad buttons 2–1
- TouchPad light 2–1
- TouchPad scroll zone 2–1

U

- Universal Serial Bus (USB) port
 - connector pinout 9–4
 - location 2–5, 2–6
- USB board
 - removal 4–30
 - spare part number 4–30

V

- vents 2–5, 2–7

W

- warranty period 3–1, 4–5
- webcam
 - light 2–8
 - product description 1–4
 - removal 4–26
- Windows applications key 2–3
- Windows logo key 2–3
- wireless
 - button 2–5
 - lights 2–5
- wireless antennas
 - disconnecting 4–11, 4–13
 - locations 2–9
- wireless, product description 1–4
- WLAN module
 - removal 4–12
 - spare part numbers 4–12
- workstation guidelines 4–4
- WWAN module
 - removal 4–11
 - spare part numbers 4–11