



Compaq Presario CQ40 Notebook PC Maintenance and Service Guide

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Safety warning notice

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- ⚠ **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).
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1 Product description

Category	Description
Product Name	Compaq Presario CQ40 Notebook PC
Processors	Intel® Core™2 Duo mobile processors
	T9550 2.66 GHz, 6-MB L2 cache, 1066-MHz front-side bus (FSB)
	P8700 2.53 GHz, 3-MB L2 cache, 1066-MHz FSB
	P8600 2.4 GHz, 3-MB L2 cache, 1066-MHz FSB
	P8400 2.26 GHz, 3-MB L2 cache, 1066-MHz FSB
	P7450 2.13 GHz, 3-MB L2 cache, 1066-MHz FSB
	T5800 2.0 GHz, 2-MB L2 cache, 800-MHz FSB
	T6400 2.0 GHz, 2-MB L2 cache, 800-MHz FSB
	T6600 2.2 GHz, 2-MB L2 cache, 800-MHz FSB
	Intel Pentium® processor for mobile
	T3400 2.16 GHz, 1-MB L2 cache, 800-MHz FSB
	T4200 2.0 GHz, 1-MB L2 cache, 800-MHz FSB
Chipset	Northbridge: Intel PM45
	Southbridge: Intel ICH9M
Graphics	Discrete graphics
	nVIDIA N10M-GE2-S with 512 MB of dedicated video memory
Panel	14.1-in, WXGA BrightView (1280 × 800) display panel
	16:10 Wide Aspect Ratio
Memory	2 SODIMM slots
	Customer-accessible and upgradable
	Supports up to 4 GB of system RAM
	PC2-6400 800-MHz, DDR2

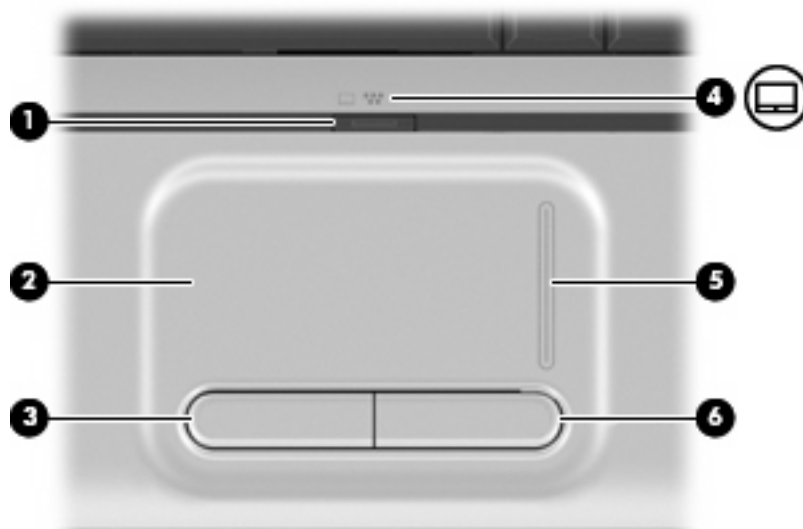
Category	Description
	<p>Supports the following configurations:</p> <ul style="list-style-type: none"> • 4096 MB total system memory (2048 × 2) • 3072 MB total system memory (2048 + 1024) • 2048 MB total system memory (2048 × 1) • 2048 MB total system memory (1024 × 2) • 1024 MB total system memory (1024 × 1)
Hard drives	<p>Supports 9.5-mm, 6.35-mm (2.5-in) SATA hard drives</p> <p>Supports the following configurations:</p> <ul style="list-style-type: none"> • 500 GB, 5400 rpm • 320 GB, 5400 rpm • 250 GB, 5400 rpm • 160 GB, 5400 rpm
Optical drives	<p>Fixed (removal of one screw required)</p> <p>Serial ATA (SATA)</p> <p>12.7-mm tray load</p> <p>Supports the following drives:</p> <ul style="list-style-type: none"> • DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe • Blu-ray ROM with LightScribe DVD±RW SuperMulti Double-Layer Drive
Diskette drive	Supports external USB drive only
Webcam	<p>VGA camera</p> <p>Fixed (no tilt)</p> <p>640 × 480 at 24 frames per second</p>
Microphone	Single analog microphone
Audio	<p>High Definition (HD) audio</p> <p>Supports Windows Vista® Premium Logo requirements</p> <p>Presario-branded Altec Lansing speakers</p>
Modem	56K MDC V.92 data/fax modem (select models only)
Ethernet	Integrated 10/100/1000M network interface card (NIC)
Wireless	<p>Integrated wireless local area network (WLAN) options by way of wireless module:</p> <p>Broadcom 4322 802.11a/b/g/n WLAN module</p> <p>Broadcom 4312 802.11b/g WLAN module</p> <p>Intel Wi-Fi Link 5100 802.11a/b/g/n WLAN module</p> <p>Intel Wi-Fi Link 5100 802.11a/b/g WLAN module</p>

Category	Description
External media card	Digital Media Slot, supports SD, MMC, MS, MSP, xD
Internal media card	One full-sized Mini Card slot
Ports	Audio-in (stereo microphone)
	Audio-out (stereo headphone)
	RJ-11 (Modem, select models only)
	RJ-45 (Ethernet, includes link and activity lights)
	USB 2.0 (3 ports)
	Smart-pin AC adapter plug
	VGA (Dsub 15-pin) supporting 1920 × 1200 external resolution at 75-Hz, 1600 × 1200 external resolution at 75-Hz (hot plug/unplug with autodetect)
Keyboard/pointing devices	HDMI v1.3 supporting 1080p with HDCP key
	Full-sized 14.1-in keyboard
	TouchPad with 2 buttons and 2-way scroll (taps enabled by default)
Power requirements	6-cell Li-Ion battery (2.2-Ah, 47-Wh)
	90-W AC adapter with localized cable support (Smart-Pin DC connector)
Security	Security cable slot
Operating system	Preinstalled:
	Windows Vista Home Basic (32 bit)
	Windows Vista Home Premium (32 bit)
	Windows Vista Business (32 bit)
	FreeDOS
Serviceability	End-user replaceable parts:
	AC adapter
	Battery (system)
	Memory module
	Optical drive
	Mini Card

2 External component identification

Top components

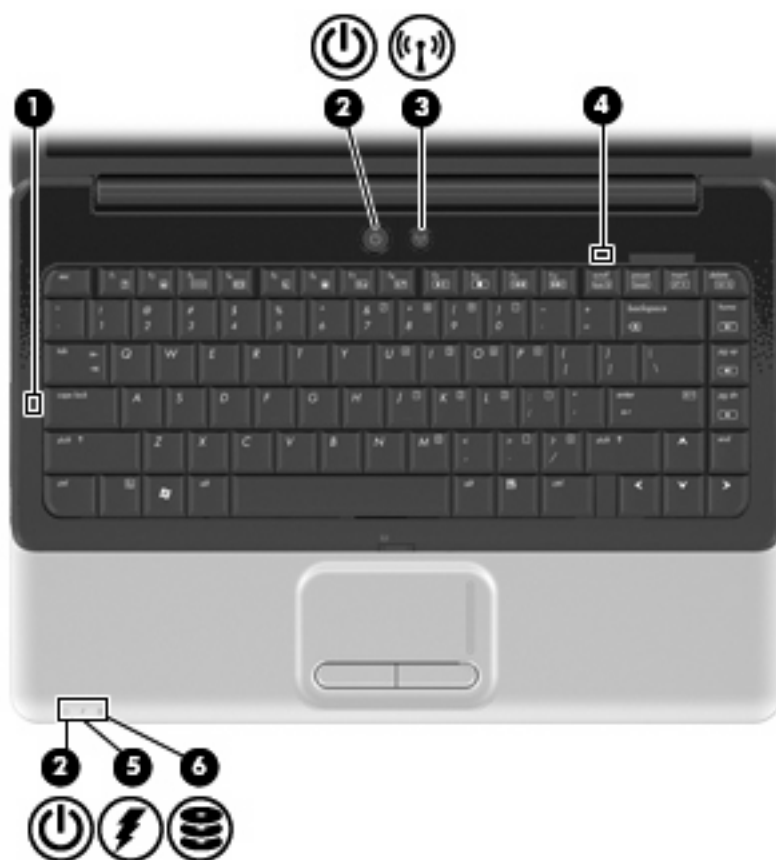
TouchPad



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

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

Lights



Component	Description
(1) Caps lock light	On: Caps lock is on.
(2) Power lights (2)*	<ul style="list-style-type: none"> On: The computer is on. Blinking: The computer is in the Sleep state. Off: The computer is off or in Hibernation.
(3) Wireless light	<ul style="list-style-type: none"> Blue: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. Amber: All wireless devices are off.
(4) Num lock light	On: Num lock is on or the embedded numeric keypad is enabled.
(5) Battery light	<ul style="list-style-type: none"> On: A battery is charging. Blinking: A battery that is the only available power source has reached a low battery level or a critical battery level. Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.

Component	Description
(6) Drive light	<ul style="list-style-type: none"> <li data-bbox="817 222 1417 252">• Blinking: The hard drive or optical drive is being accessed. <li data-bbox="817 273 1433 323">• On: HP ProtectSmart Hard Drive Protection has temporarily parked the internal hard drive.
<p>*The 2 power lights display the same information. The light on the power button is visible only when the computer is open. The power light on the front of the computer is visible whether the computer is open or closed.</p>	

Buttons and speakers



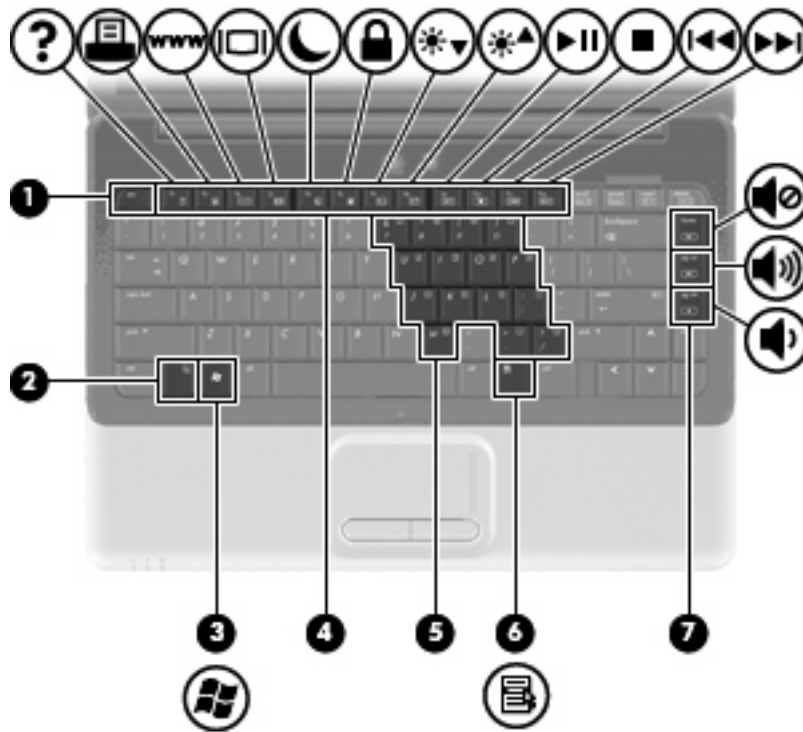
Component		Description
(1)	Speakers (2)	Produce sound.
(2)	Power button*	<ul style="list-style-type: none">When the computer is off, press the button to turn on the computer.When the computer is on, briefly press the button to initiate Sleep.When the computer is in the Sleep state, briefly press the button to exit Sleep.When the computer is in Hibernation, briefly press the button to exit Hibernation. <p>If the computer has stopped responding and Windows® shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer.</p> <p>To learn more about your power settings, select Start > Control Panel > System and Maintenance > Power Options.</p>
(3)	Wireless button	<p>Turns the wireless feature on or off but does not establish a wireless connection.</p> <p>NOTE: A wireless network must be set up in order to establish a wireless connection.</p>

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

Keys




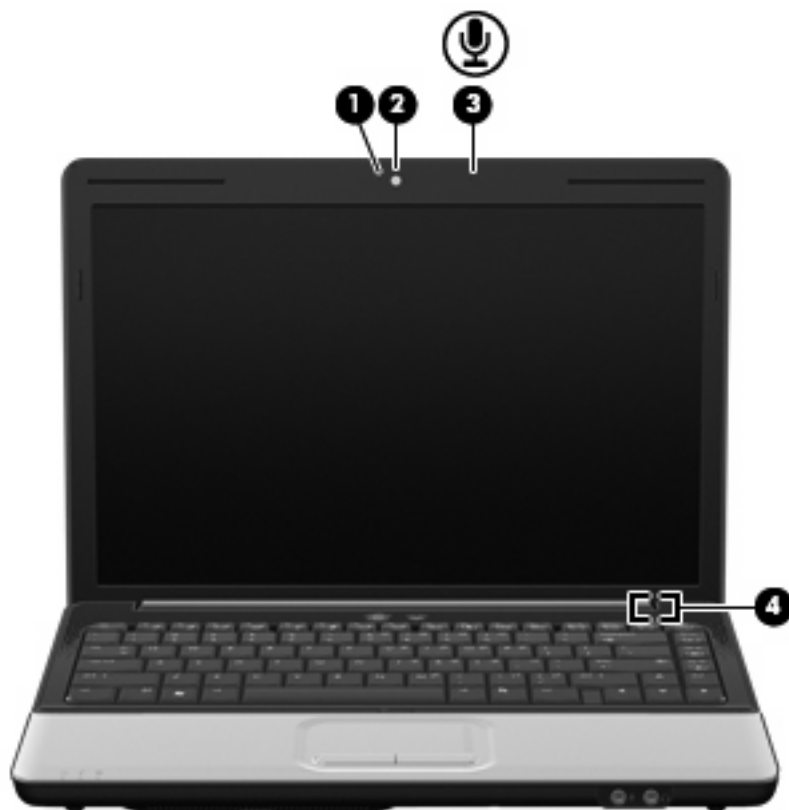
NOTE: Your computer may look slightly different from the illustration in this section.



Component	Description
(1) esc key	Displays system information when pressed in combination with the fn key.
(2) fn key	Executes frequently used system functions when pressed in combination with a function key or the esc key.
(3) Windows logo key	Displays the Windows Start menu.
(4) Function keys	Execute frequently used system functions when pressed in combination with the fn key.
(5) Embedded numeric keypad keys	Can be used like the keys on an external numeric keypad.
(6) Windows applications key	Displays a shortcut menu for items beneath the pointer.
(7) Navigation keys (home, pg up, pg down)	Execute volume mute, volume up, or volume down when pressed in combination with the fn key.

Display

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




Component		Description
(1)	Integrated webcam light	On: The integrated webcam is in use.
(2)	Integrated webcam	Records video and captures still photographs.
(3)	Internal microphone	Records sound. NOTE: If there is a microphone icon next to each microphone opening, your computer has internal microphones.
(4)	Internal display switch	Turns off the display if the display is closed while the computer is turned on.

Wireless antennas


On select computer models, at least 2 antennas send and receive signals from one or more wireless devices.



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

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


Front components

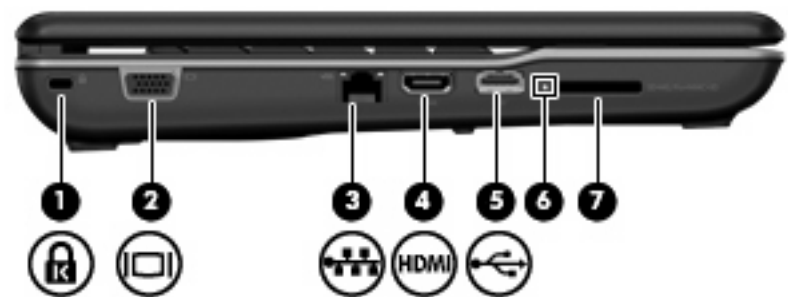
 **NOTE:** Your computer may look slightly different from the illustration in this section.



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

Left-side components

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




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

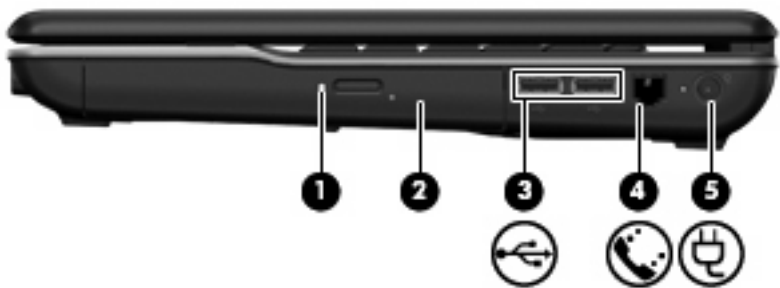
Rear component



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

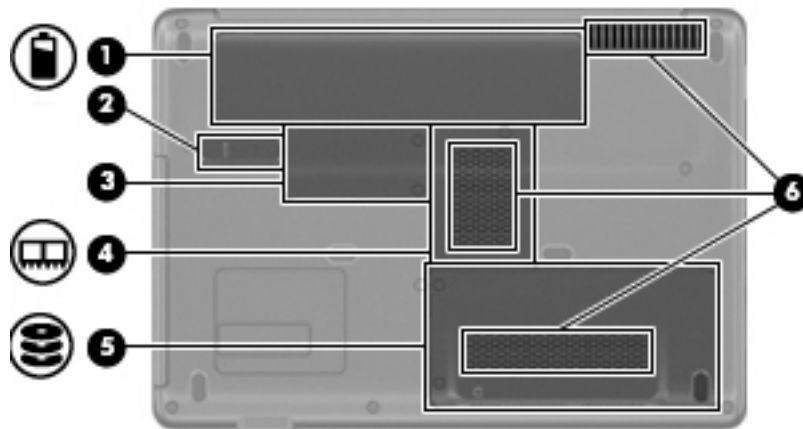
Right-side components

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



Component	Description
(1) Optical drive light	Blinking: The optical drive is being accessed.
(2) Optical drive	Reads optical discs and, on select models, also writes to optical discs.
(3) USB ports (2)	Connect optional USB devices.
(4) RJ-11 (modem) jack (select models only)	Connects a modem cable.
(5) Power connector	Connects an AC adapter.

Bottom components



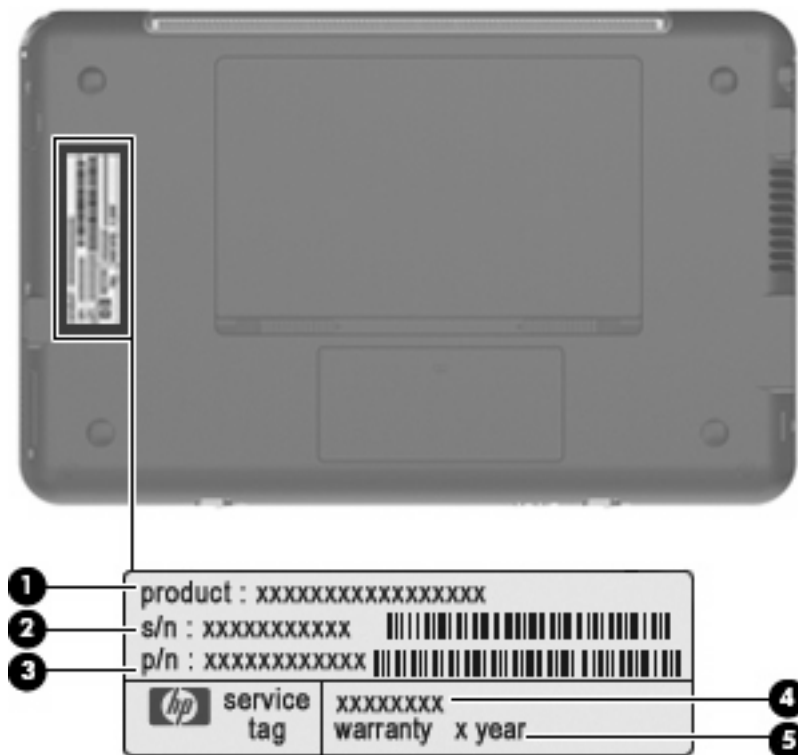
Component		Description
(1)	Battery bay	Holds the battery.
(2)	Battery release latch	Releases the battery from the battery bay.
(3)	RTC battery compartment	Holds the RTC battery.
(4)	Memory module compartment	Contains the 2 memory module slots.
(5)	Hard drive and WLAN module compartment	Holds the hard drive and the wireless LAN (WLAN) device. 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.
(6)	Vents (3)	Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.

3 Illustrated part numbers catalog

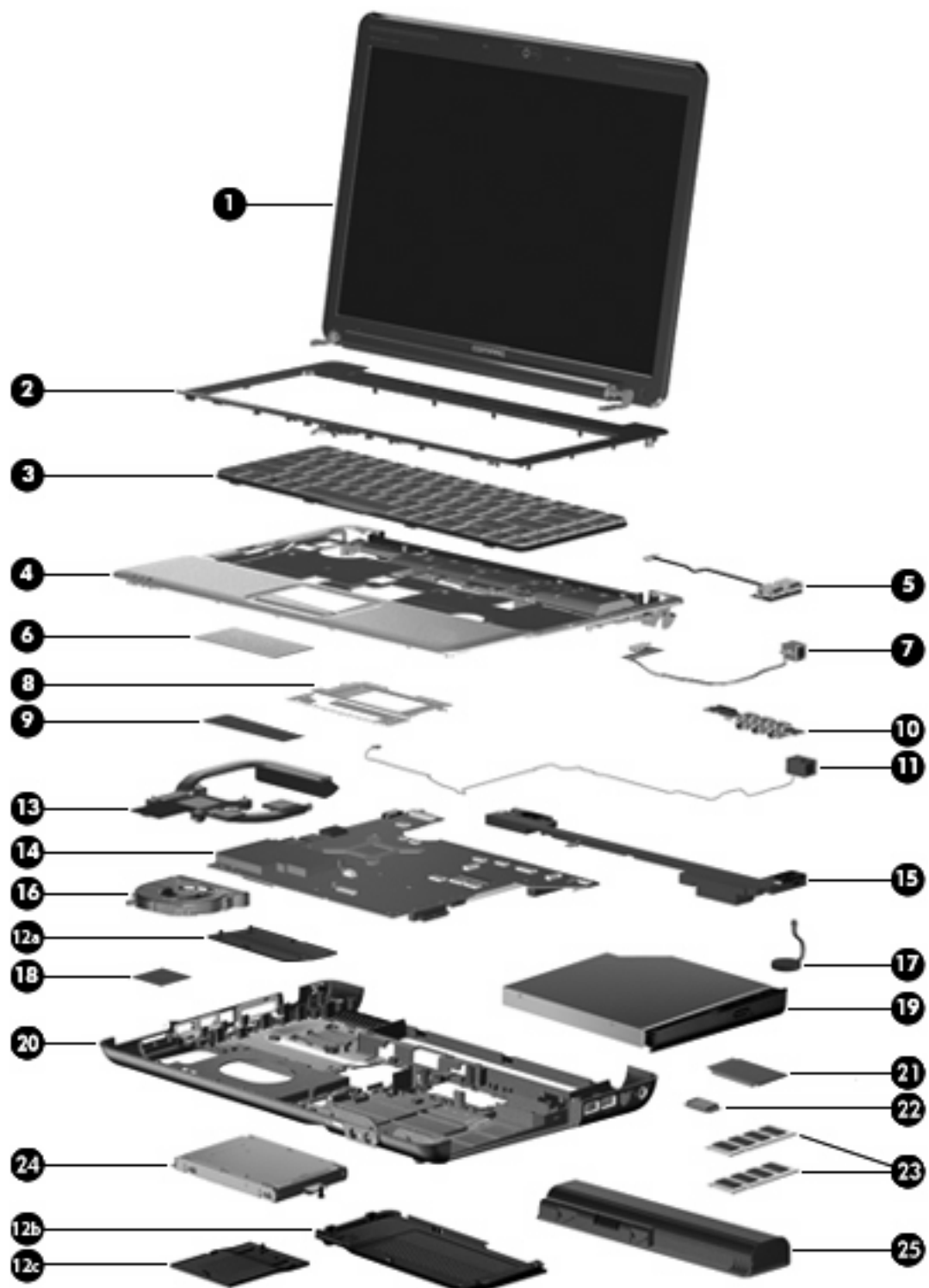
Service tag

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

- (1) Product name: This is the product name affixed to the front of the device.
- (2) Serial number (s/n): This is an alphanumeric identifier that is unique to each product.
- (3) Part number/Product number (p/n): This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.
- (4) Model description: This is the alphanumeric identifier used to locate documents, drivers, and support for the device.
- (5) Warranty period: This number describes the duration of the warranty period for the device.



Computer major components

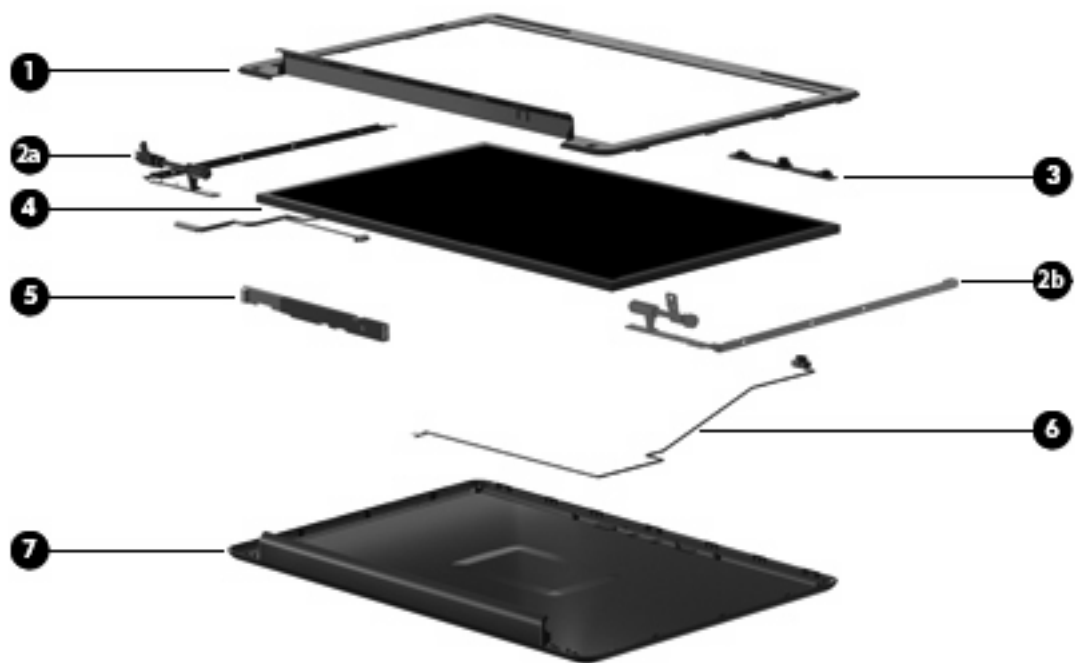


Item	Description	Spare part number
(1)	14.1-in, WXGA BrightView display assembly NOTE: See Display assembly componentson page 20 for more display assembly internal component spare part information.	487281-001
(2)	Keyboard cover (includes power button board and cable)	487299-001
	Power button board (not illustrated)	492249-001
(3)	Keyboard	
	South Korea	486904-AD1
	Taiwan	486904-AB1
	Thailand	486904-281
	The United States	486904-001
(4)	Top cover	487300-001
(5)	USB board	486842-001
	USB board cable (not illustrated)	486843-001
(6)	TouchPad	494960-001
(7)	Power connector cable (includes power connector and cable)	486864-001
(8)	TouchPad bracket	494962-001
(9)	TouchPad button board	494965-001
(10)	Audio board (includes audio connectors and audio board cable)	487344-001
	Audio board cable (not illustrated)	486841-001
(11)	Modem module (select models only)	
	For use in all countries and regions except Australia and New Zealand	461749-001
	For use in Australia and New Zealand	461749-011
	Modem module cable (includes RJ-11 connector, not illustrated)	494981-001
	Plastics Kit	486862-001
(12a)	Real time clock (RTC) battery compartment cover	
(12b)	Hard drive cover	
(12c)	Memory module compartment cover	
(13)	Heat sink (includes thermal material)	530614-001
(14)	System board (includes thermal material)	532327-001
(15)	Speaker assembly	486865-001
(16)	Fan	486844-001
(17)	RTC battery (includes two-sided tape)	486835-001
(18)	WLAN module	
	Intel Wi-Fi Link 5100 802.11a/b/g/n WLAN module for use in all countries and regions	480985-001

Item	Description	Spare part number
	Intel Wi-Fi Link 5100 802.11a/b/g WLAN module for use in all countries and regions	482957-001
	Broadcom 4312 802.11 WLAN b/g module for use in Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	459263-001
	Broadcom 4322 802.11 a/b/g/n WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei, Bulgaria, Burkina, Faso Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Chile, People's Republic of China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Zaire, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Martinique, British Virgin Islands, French Guiana, Guadeloupe, Nether Antilles, Aruba, Bermuda, Syria, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, East Timor, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, The United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, and Zimbabwe	487330-002
(19)	Optical drive (includes bezel)	
	• DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	532342-001
	• Blu-ray ROM with LightScribe DVD±RW SuperMulti Double-Layer Drive	532341-001
(20)	Base enclosure	
	For use in computer models with a modem module	492248-001
	For use in computer models without a modem module	487359-001
(21)	Processor (includes thermal material)	
	Intel Core2 Duo mobile processor:	
	• T9550 (2.66 GHz, 6-MB L2 cache)	507953-001
	• P8700 (2.53 GHz, 3-MB L2 cache)	507960-001
	• P8600 (2.40 GHz, 3-MB L2 cache)	507963-001
	• P8400 (2.26 GHz, 3-MB L2 cache)	507964-001
	• P7450 (2.13 GHz, 3-MB L2 cache)	507965-001
	• T5800 (2.06 GHz, 2-MB L2 cache)	515040-001
	• T6400 (2.00 GHz, 2-MB L2 cache)	513592-001
	• T6600 (2.20 GHz, 2-MB L2 cache)	513593-001
	Intel Pentium processor for mobile:	

Item	Description	Spare part number
	<ul style="list-style-type: none"> T3400 (2.16 GHz, 1-MB cache) 	509549-001
	<ul style="list-style-type: none"> T4200 (2.00 GHz, 1-MB cache) 	513599-001
(22)	Bluetooth module	483113-001
	Bluetooth module cable (not illustrated)	488130-001
(23)	Memory modules (PC2-6400, 800-MHz, DDR2)	
	<ul style="list-style-type: none"> 1024 MB 	532331-001
	<ul style="list-style-type: none"> 2048 MB 	532332-001
(24)	Hard drive (includes hard drive bracket)	
	<ul style="list-style-type: none"> 160 GB, 5400 rpm 	532337-001
	<ul style="list-style-type: none"> 250 GB, 5400 rpm 	532338-001
	<ul style="list-style-type: none"> 320 GB, 5400 rpm 	532339-001
	<ul style="list-style-type: none"> 500 GB, 5400 rpm 	532340-001
	Hard Drive Hardware Kit (contains screws and hard drive bracket; not illustrated)	482158-001
(25)	Battery, 6-cell Li-Ion (2.2-Ah, 47-Wh)	487296-001

Display assembly components



Item	Description	Spare part number
(1)	Display bezel	487286-001
	Display Hinge Kit	486737-001
(2a)	Left/right display panel brackets	
(2b)	Left/right display hinges	
(3)	Camera module	487287-001
(4)	14.1-in, WXGA TFT BrightView display panel (includes display panel cable)	487279-001
(5)	Display inverter (includes Mylar™ shield)	486736-001
(6)	Microphone module and cable	517629-001
(7)	Display enclosure	487284-001
	Display cable (not illustrated)	486735-001
	Display Screw Kit (not illustrated)	486730-001
	Display Rubber Kit (not illustrated; includes rubber screw covers and LCD rubber pads)	487283-001

Plastics Kit



Item	Description	Spare part number
	Plastics Kit	486862-001
(1)	Hard drive cover (includes 2 screws)	
(2)	Memory module compartment cover (includes 1 screw)	
(3)	RTC battery compartment cover	

Mass storage devices



Item	Description	Spare part number
(1)	Hard drive (includes hard drive bracket)	
	<ul style="list-style-type: none">• 160 GB, 5400 rpm	532337-001
	<ul style="list-style-type: none">• 250 GB, 5400 rpm	532338-001
	<ul style="list-style-type: none">• 320 GB, 5400 rpm	532339-001
	<ul style="list-style-type: none">• 500 GB, 5400 rpm	532340-001
	Hard Drive Hardware Kit (contains screws and hard drive bracket; not illustrated)	482158-001
(2)	Optical drive (includes bezel)	
	<ul style="list-style-type: none">• DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	532342-001
	<ul style="list-style-type: none">• Blu-ray ROM with LightScribe DVD±RW SuperMulti Double-Layer Drive	532341-001

Miscellaneous parts

Description	Spare part number
90-W PFC AC adapter	463955-001
Internal display switch module	489862-001
Power cord:	
Australia	490371-011
Brazil	490371-201
India	490371-D61
North America	490371-001
South Korea	490371-AD1
Taiwan	490371-AB1
The People's Republic of China	490371-AA1
The United Kingdom and Singapore	490371-031
Screw Kit	487298-001
<ul style="list-style-type: none"> • Phillips PM2.0×2.0 broadhead screws • Phillips PM2.0×3.0 screws • Phillips PM2.0×4.0 screws • Phillips PM2.0×10.0 captive screws • Phillips PM2.5×3.0 screws • Phillips PM2.5×4.0 screws • Phillips PM2.5×5.0 screws • Phillips PM2.5×5.0 captive screws • Phillips PM2.5×6.0 screws • Phillips PM2.5×7.0 captive screws • Phillips PM2.5×10.0 screws • Phillips PM2.5×18.0 screws • Phillips PM3.0×3.0 screws 	
Rubber Kit (includes 6 rubber computer feet)	486863-001

Sequential part number listing

Spare part number	Description
459263-001	Broadcom 4312 802.11 WLAN b/g module for use in Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States
461749-001	Modem module for use in all countries and regions except Australia and New Zealand (select models only)
461749-011	Modem module for use in Australia and New Zealand (select models only)
463955-001	90-W PFC AC adapter
480985-001	Intel Wi-Fi Link 5100 802.11a/b/g/n WLAN module for use in all countries and regions
482158-001	Hard Drive Hardware Kit (contains screws and hard drive bracket)
482957-001	Intel Wi-Fi Link 5100 802.11a/b/g WLAN module for use in all countries and regions
483113-001	Bluetooth module
486730-001	Display Screw Kit
486735-001	Display assembly cable
486736-001	Display inverter (includes Mylar shield and bracket)
486737-001	Display Hinge Kit (includes left and right display hinges and display switch module)
486835-001	RTC battery (includes two-sided tape)
486841-001	Audio board cable
486842-001	USB board
486843-001	USB board cable
486844-001	Fan
486862-001	Plastics Kit (see Plastics Kit on page 21 for more information)
486863-001	Rubber Kit (includes 6 rubber computer feet)
486864-001	Power connector cable (includes power connector)
486865-001	Speaker assembly
488130-001	Bluetooth module cable
486904-001	Keyboard for use in the United States
486904-281	Keyboard for use in Thailand
486904-AB1	Keyboard for use in Taiwan
486904-AD1	Keyboard for use in South Korea
487281-001	14.1-in, WXGA TFT BrightView display panel (includes display panel cable)
487283-001	Display Rubber Kit (includes rubber screw covers and LCD rubber pads)
487284-001	Display enclosure
487286-001	Display bezel
487287-001	Camera module

Spare part number	Description
487298-001	Screw Kit
487299-001	Keyboard cover (includes power button board and cable)
487300-001	Top cover
487330-002	Broadcom 4322 802.11 a/b/g/n WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei, Bulgaria, Burkina, Faso Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Chile, People's Republic of China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Zaire, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Martinique, British Virgin Islands, French Guiana, Guadeloupe, Nether Antilles, Aruba, Bermuda, Syria, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, East Timor, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, The United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, and Zimbabwe
487344-001	Audio board (includes audio connectors and audio board cable)
487359-001	Base enclosure for use only in computer models without a modem module (includes wireless on/off switch)
489862-001	Internal display switch module
490371-001	Power cord for use in the United States
490371-011	Power cord for use in Australia
490371-031	Power cord for use in the United Kingdom and Singapore
490371-201	Power cord for use in Brazil
490371-281	Power cord for use in Thailand
490371-AA1	Power cord for use in the People's Republic of China
490371-AB1	Power cord for use in Taiwan
490371-AD1	Power cord for use in South Korea
490371-D61	Power cord for use in India
491832-001	Intel T7350 Core2 Duo mobile processor (2.00 GHz, 3-MB L2 cache)
492248-001	Base enclosure for use only in computer models with a modem module (select models only)
492249-001	Power button board
494960-001	TouchPad
494962-001	TouchPad bracket
494965-001	TouchPad button board
494981-001	Modem module cable (includes RJ-11 connector)

Spare part number	Description
504781-001	320 GB, 5400-rpm hard drive (includes hard drive bracket)
507953-001	Intel T9550 Core2 Duo mobile processor (2.66 GHz, 6-MB L2 cache)
507960-001	Intel P8700 Core2 Duo mobile processor (2.53 GHz, 3-MB L2 cache)
507963-001	Intel P8600 Core2 Duo mobile processor (2.40 GHz, 3-MB L2 cache)
507964-001	Intel P8400 Core2 Duo mobile processor (2.26 GHz, 3-MB L2 cache)
507965-001	Intel P7450 Core2 Duo mobile processor (2.13 GHz, 3-MB L2 cache)
509549-001	Intel T3400 Pentium processor for mobile (2.16 GHz, 1-MB L2 cache)
513592-001	Intel T6400 Core2 Duo mobile processor (2.00 GHz, 2-MB L2 cache)
513593-001	Intel T6600 Core2 Duo mobile processor (2.20 GHz, 2-MB L2 cache)
513599-001	Intel T4200 Pentium processor for mobile (2.00 GHz, 1-MB L2 cache)
515040-001	Intel T5800 Core2 Duo mobile processor (2.06 GHz, 2-MB L2 cache)
517629-001	Microphone module and cable
530614-001	Heat sink (includes thermal material)
532327-001	System board (includes thermal material)
532331-001	1024-MB memory module (PC2-6400, 800-MHz, DDR2)
532332-001	2048-MB memory module (PC2-6400, 800-MHz, DDR2)
532337-001	160 GB, 5400-rpm hard drive (includes bracket)
532338-001	250 GB, 5400-rpm hard drive (includes bracket)
532339-001	320 GB, 5400-rpm hard drive (includes bracket)
532340-001	500 GB, 5400-rpm hard drive (includes bracket)
532341-001	Blu-ray ROM with LightScribe DVD±RW SuperMulti Double-Layer Drive (includes bezel)
532342-001	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe (includes bezel)
536436-001	6-cell Li-Ion battery (2.2-Ah, 47-Wh)

4 Removal and replacement procedures

Preliminary replacement requirements


Tools required

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

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

Service considerations

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

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

Plastic parts

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

Cables and connectors

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

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

Drive handling

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

Use nonmagnetic tools.

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

Component replacement procedures

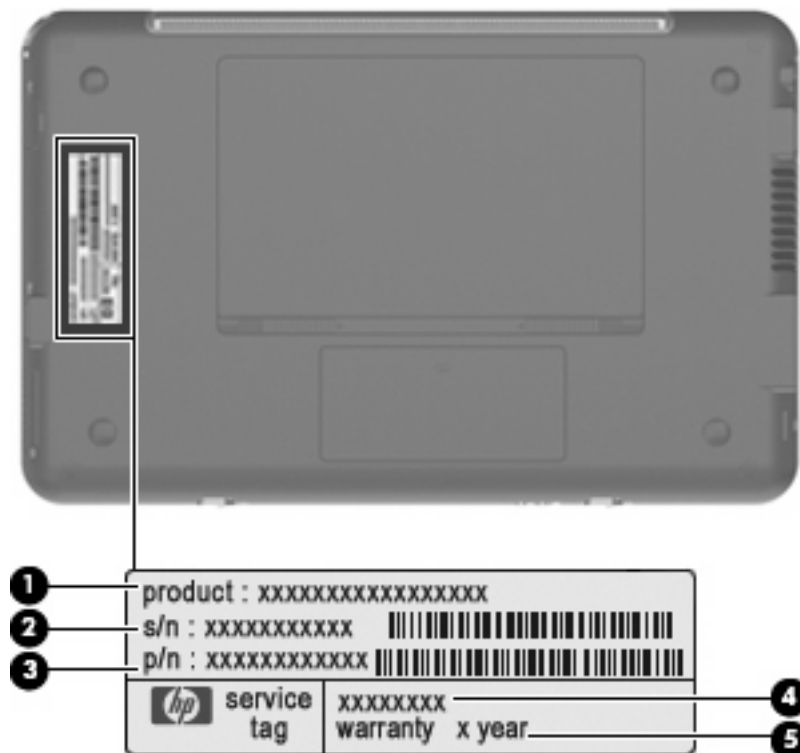
This chapter provides removal and replacement procedures.

There are as many as 80 screws, in 13 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

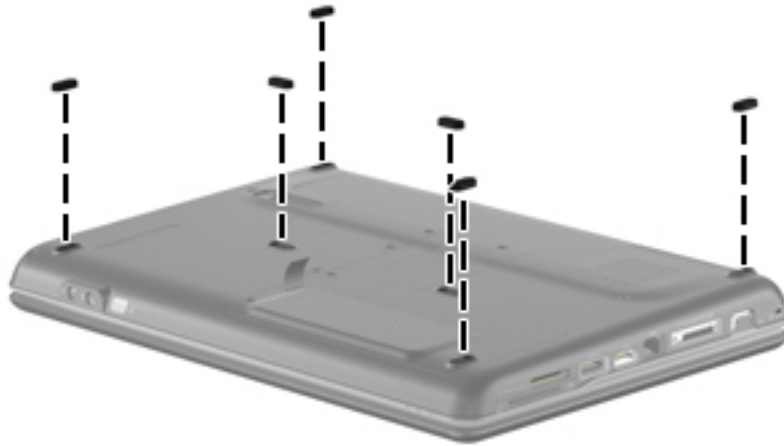
When ordering parts or requesting information, provide the computer serial number and model description provided on the service tag.

- (1) Product name: This is the product name affixed to the front of the device.
- (2) Serial number (s/n): This is an alphanumeric identifier that is unique to each product.
- (3) Part number/Product number (p/n): This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.
- (4) Model description: This is the alphanumeric identifier used to locate documents, drivers, and support for the device.
- (5) Warranty period: This number describes the duration of the warranty period for the device.



Computer feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Rubber Kit, spare part number 486863-001. There are 6 rubber feet that attach to the base enclosure in the locations illustrated below.



Battery

Description	Spare part number
6-cell Li-Ion battery (2.2-Ah, 47-Wh)	536436-001

Before disassembling the computer, follow these steps:

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

Remove the battery:

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



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

Optical drive



NOTE: The optical drive spare part kit includes an optical drive bezel.

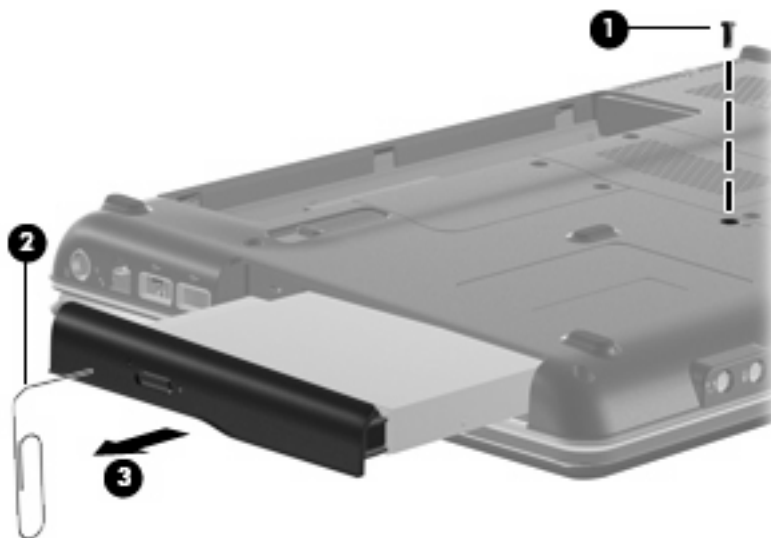
Description	Spare part number
Blu-ray ROM with LightScribe DVD±RW SuperMulti Double-Layer Drive	532341-001
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	532342-001

Before removing the optical drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).

Remove the optical drive:

1. Position the computer with the right side toward you.
2. Remove the Phillips PM2.5×5.0 screw (1) that secures the optical drive to the computer.
3. Insert a thin tool, such as a paper clip, into the release access (2). (The optical drive media tray is partially ejected from the optical drive.)
4. Use the media tray frame to remove the optical drive (3).



5. If it is necessary to replace the optical drive bracket, position the optical drive with the optical drive bracket toward you.

Reverse this procedure to reassemble and install the optical drive.

Hard drive



NOTE: The hard drive spare part kit includes a hard drive bracket.

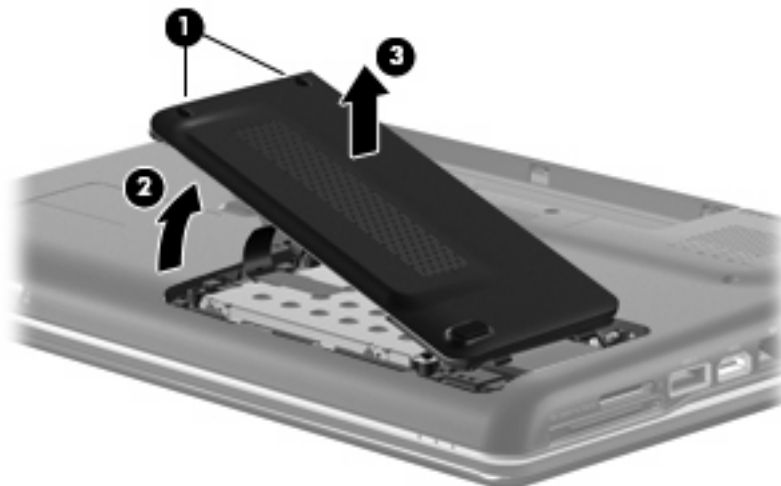
Description	Spare part number
160 GB, 5400 rpm	532337-001
250 GB, 5400 rpm	532338-001
320 GB, 5400 rpm	532339-001
500 GB, 5400 rpm	532340-001

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 34](#)).

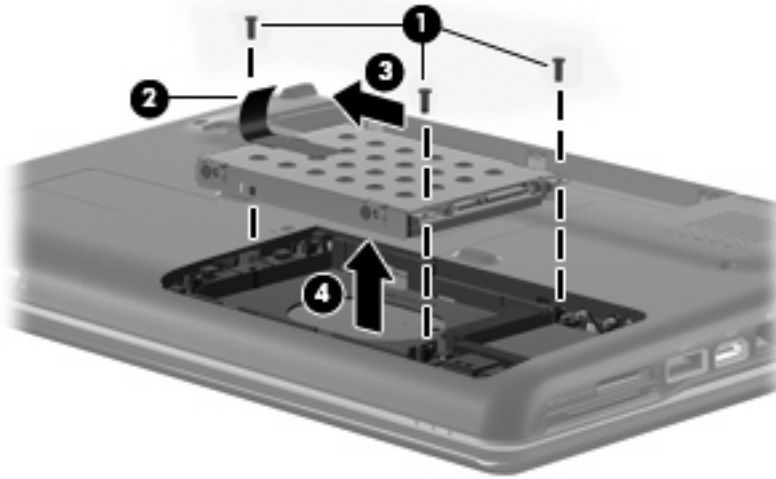
Remove the hard drive:

1. Position the computer with the front toward you.
2. Loosen the two Phillips PM2.5×5.0 captive screws **(1)** that secure the hard drive cover to the computer.
3. Lift the left side **(2)** of the hard drive cover, swing it to the right, and remove the cover **(3)**. The hard drive cover is included in the Plastics Kit, spare part number 486862-001.

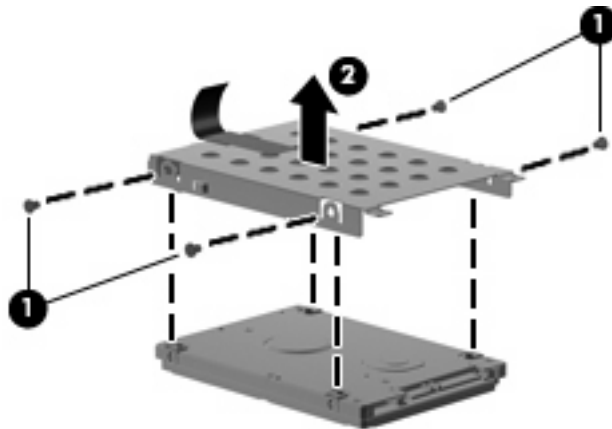


4. Remove the three Phillips PM2.0×4.0 screws **(1)** that secure the hard drive to the computer.

5. Use the Mylar tab **(2)** to slide the hard drive **(3)** to the left until it disconnects from the connector, and then lift the hard drive up and out of the computer **(4)**.



6. If it is necessary to replace the hard drive bracket, remove the four Phillips PM3.0×3.0 screws **(1)** that secure the hard drive bracket to the hard drive.
7. Lift the bracket **(2)** straight up to remove it from the hard drive.



Reverse this procedure to reassemble and install the hard drive.

WLAN module

Description	Spare part number
Intel Wi-Fi Link 5100 802.11a/b/g/n WLAN module for use in all countries and regions	480985-001
Intel Wi-Fi Link 5100 802.11a/b/g WLAN module for use in all countries and regions	482957-001
Broadcom 4312 802.11 WLAN b/g module for use in Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	459263-001
Broadcom 4322 802.11 a/b/g/n WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei, Bulgaria, Burkina, Faso Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Chile, People's Republic of China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, Czech Republic, Zaire, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Martinique, British Virgin Islands, French Guiana, Guadeloupe, Nether Antilles, Aruba, Bermuda, Syria, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, East Timor, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, The United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, and Zimbabwe	487330-002

Before removing the WLAN module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the hard drive cover (see [Hard drive on page 36](#)).

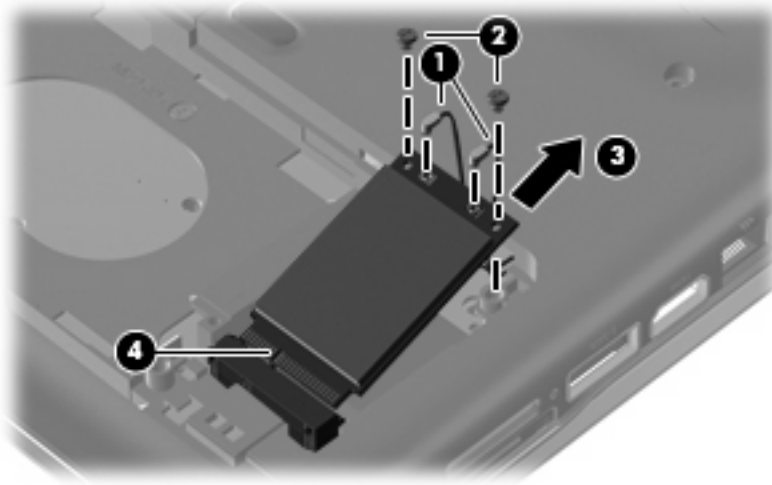
Remove the WLAN module:

1. Position the computer with the front toward you.
2. Disconnect the two WLAN antenna cables **(1)** from the WLAN module.
3. Remove the two Phillips PM2.0×4.0 screws **(2)** that secure the WLAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)

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

△ **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.

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



Reverse this procedure to install a WLAN module.

RTC battery

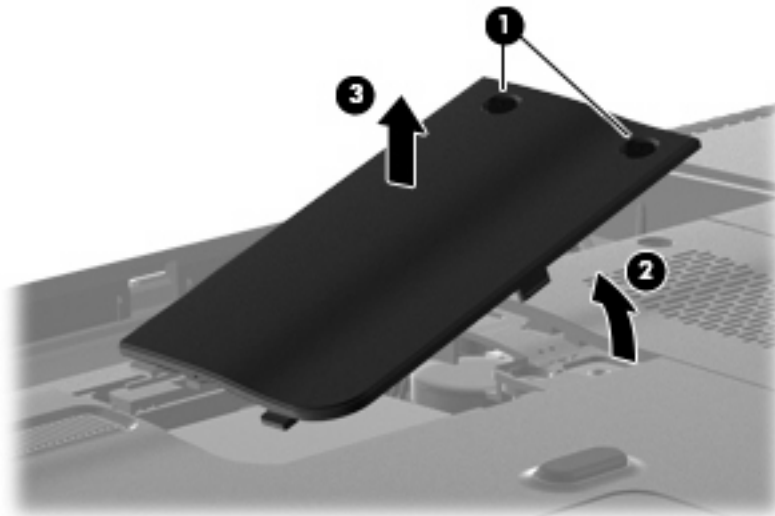
Description	Spare part number
RTC battery (includes two-sided tape)	486835-001

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 34](#)).

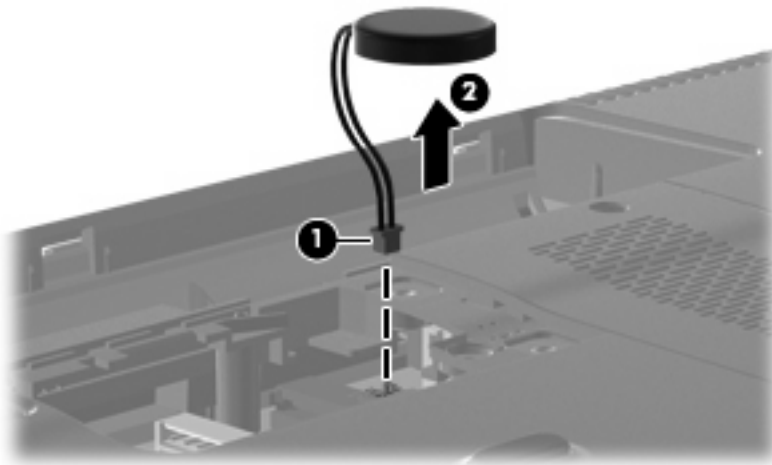
Remove the RTC battery:

1. Loosen the two Phillips PM2.5×5.0 captive screws (1) that secure the RTC battery compartment cover to the computer.
2. Lift the right side of the RTC battery compartment cover (2), swing it to left, and remove the cover (3).



3. Disconnect the RTC battery cable (1) from the system board.

4. Remove the RTC battery (2).



Reverse this procedure to install the RTC battery.

Memory module

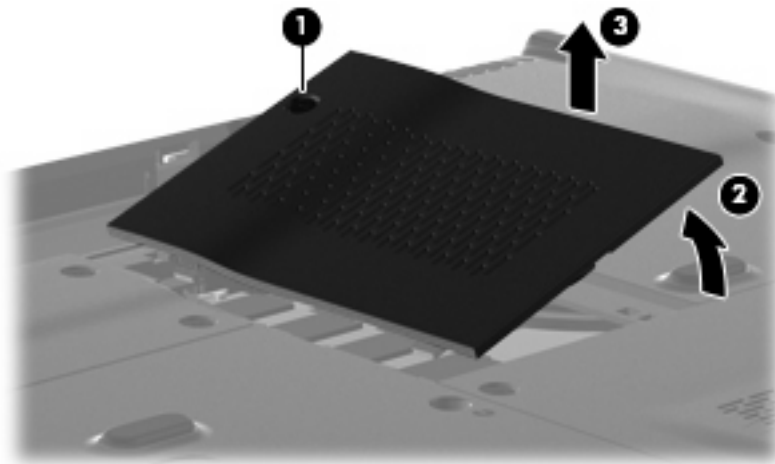
Description	Spare part number
1024 MB (PC2-6400, 800-MHz, DDR2)	532331-003
2048 MB (PC2-6400, 800-MHz, DDR2)	532332-003

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 34](#)).


Remove the memory module:

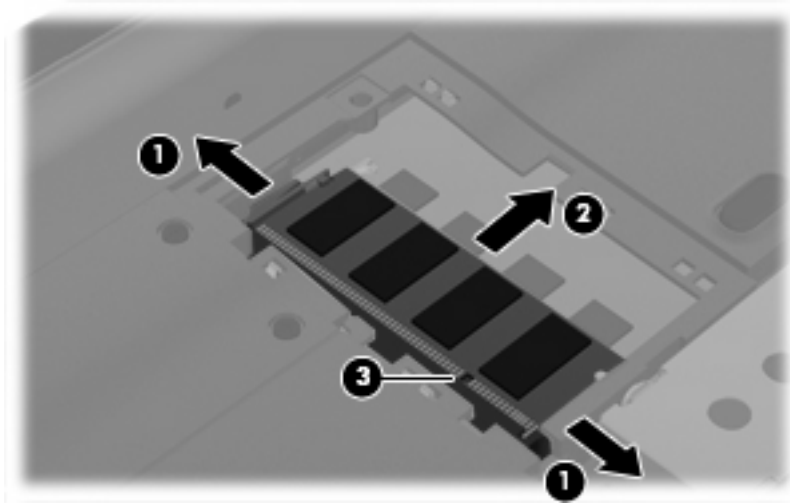
1. Position the computer with the front toward you.
2. Loosen the Phillips PM2.5×7.0 captive screw **(1)** that secures the memory module compartment cover to the computer.
3. Lift the right side of the cover **(2)**, swing it to the left, and lift the cover off the computer **(3)**. The memory module compartment cover is included in the Plastics Kit, spare part number 486862-001.



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

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

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



Reverse this procedure to install a memory module.

Keyboard

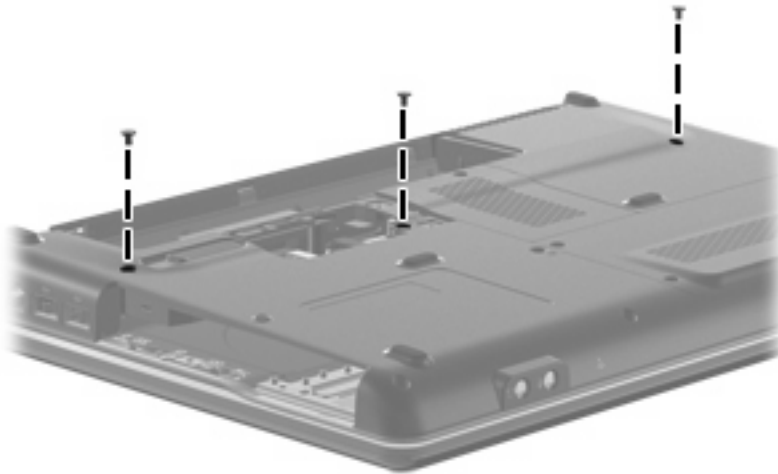
For use in:	Spare part number
South Korea	486904-AD1
Taiwan	486904-AB1
Thailand	486904-281
The United States	486904-001

Before removing the keyboard, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the RTC battery compartment cover.

Remove the keyboard:

1. Remove the three Phillips PM2.5×18.0 screws that secure the keyboard to the computer.

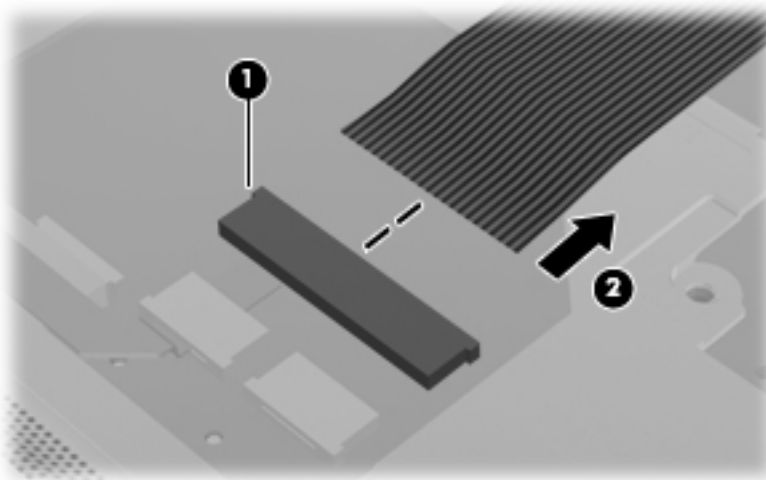


2. Turn the computer display-side up, with the front toward you.
3. Open the computer as far as possible.
4. Release the top edge of the keyboard by lifting it up to disengage the keyboard from the tabs on the keyboard cover.
5. Lift the top edge (1) of the keyboard until it rests at an angle.

6. Lift the keyboard **(2)** up until the tabs on the bottom of the keyboard are clear of the keyboard cover.



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



8. Remove the keyboard.

Reverse this procedure to install the keyboard.

Keyboard cover

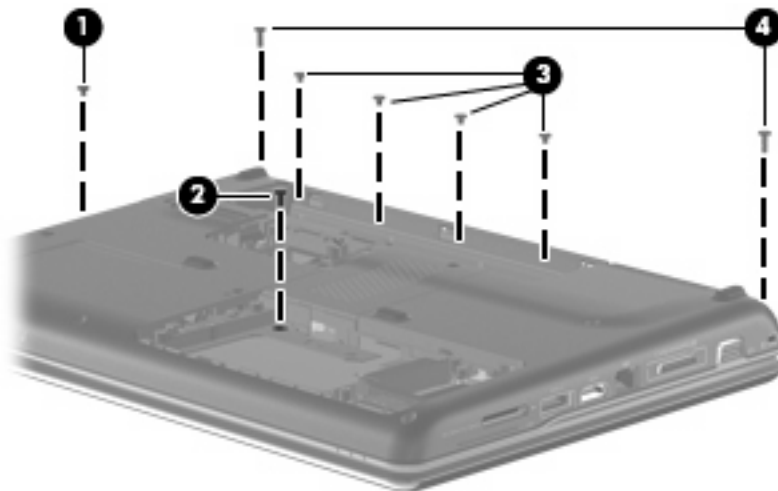
Description	Spare part number
Keyboard cover (includes power button board and cable)	487299-001

Before removing the keyboard cover, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the following components:
 - a. Optical drive (see [Optical drive on page 35](#))
 - b. Hard drive (see [Hard drive on page 36](#))
 - c. Keyboard (see [Keyboard on page 44](#))

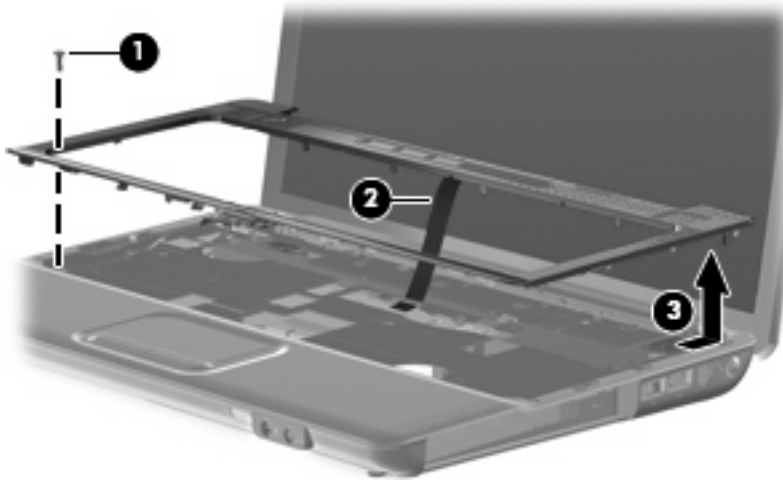
Remove the keyboard cover:

1. Turn the computer upside down, with the rear toward you.
2. Remove the Phillips PM2.0×2.0 broadhead screw **(1)** from the optical drive bay, the Phillips PM2.5×5.0 screw **(2)** from the hard drive bay, the four Phillips PM2.0×3.0 screws **(3)** from the battery bay, and the two Phillips PM2.5×10.0 screws **(4)** from the base enclosure rear corners that secure the keyboard cover to the computer.



3. Turn the computer display-side up, with the front toward you.
4. Remove the Phillips PM2.5×6.0 screw **(1)** from the front left corner of the keyboard cover.
5. Open the computer as far as possible.

6. Release the ZIF connector to which the power button board cable (2) is connected and disconnect the cable from the system board.
7. Lift the front edge of the keyboard cover to disengage it from the computer, pull the keyboard cover toward the display until the light pipe on the front of the keyboard cover clears the top cover, and then lift the cover up and out of the computer (3).



Reverse this procedure to install the keyboard cover.

Power button board

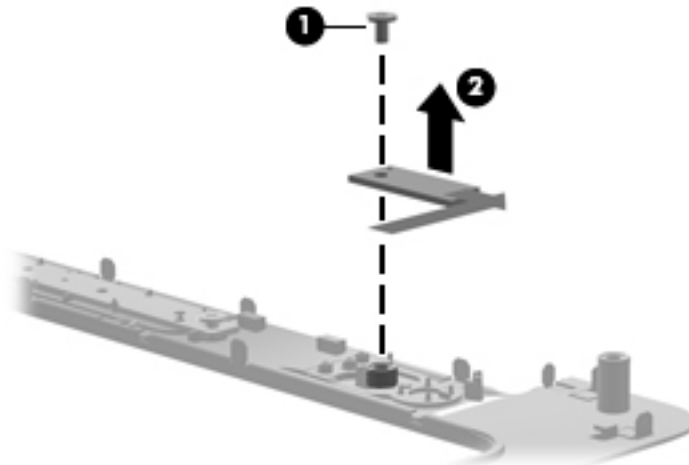
Description	Spare part number
Power button board	492249-001

Before removing the power button board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the following components:
 - a. Optical drive (see [Optical drive on page 35](#))
 - b. Hard drive (see [Hard drive on page 36](#))
 - c. Keyboard (see [Keyboard on page 44](#))
 - d. Keyboard cover (see [Keyboard cover on page 46](#))

Remove the power button board:

1. Turn the keyboard cover display-side down.
2. Remove the Phillips PM2.5×3.0 screw **(1)** from the power button board.
3. Lift the power button board **(2)** up and away from the keyboard cover.



Reverse this procedure to install the power button board.

Speaker assembly

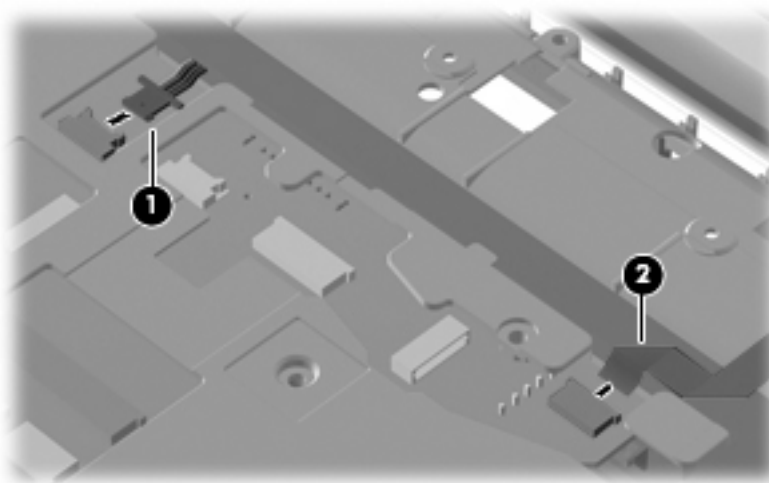
Description	Spare part number
Speaker assembly	486865-001

Before removing the speaker assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the following components:
 - a. Optical drive (see [Optical drive on page 35](#))
 - b. Keyboard (see [Keyboard on page 44](#))
 - c. Keyboard cover (see [Keyboard cover on page 46](#))

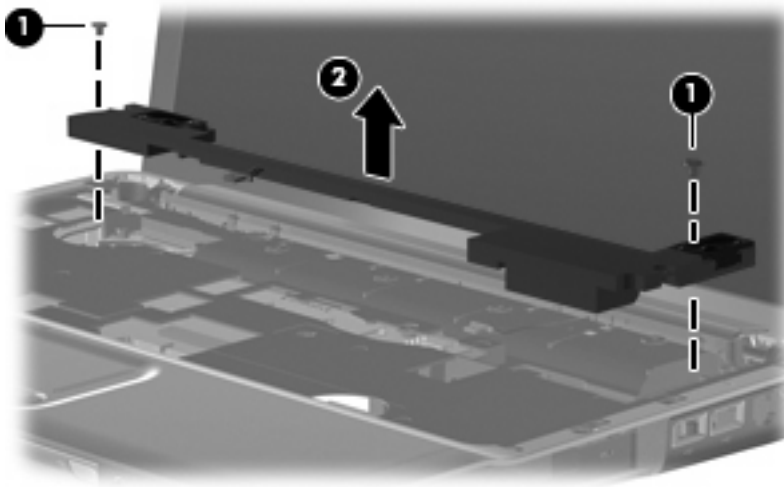
Remove the speaker assembly:

1. Disconnect the speaker cable (1) from the system board.
2. Release the zero insertion force (ZIF) connector for the num lock cable (2) from the system board.



3. Remove the two Phillips PM2.5×3.0 screws (1) that secure the speaker assembly to the computer.

4. Lift the speaker assembly **(2)** straight up to remove it from the computer.



Reverse this procedure to install the speaker assembly.

Display assembly

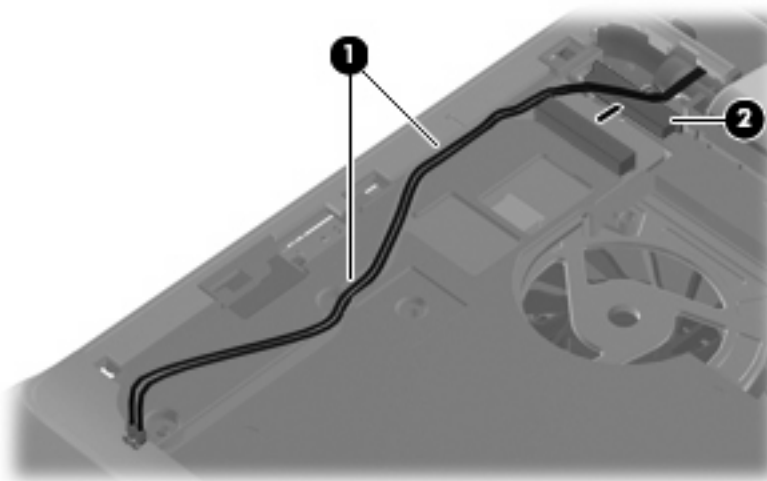
Description	Spare part number
14.1-in, WXGA BrightView display (includes display panel cable)	487281-001

Before removing the display assembly, follow these steps:

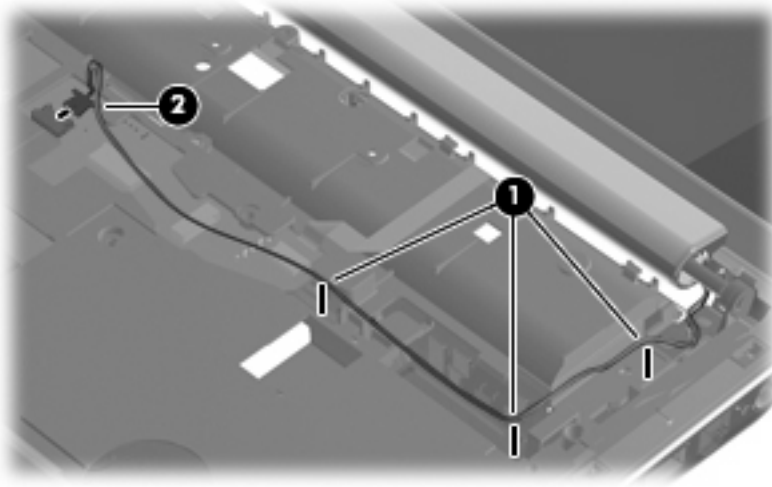
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Disconnect the wireless antenna cables from the WLAN module (see [WLAN module on page 38](#)).
6. Remove the following components:
 - a. Optical drive (see [Optical drive on page 35](#))
 - b. Keyboard (see [Keyboard on page 44](#))
 - c. Keyboard cover (see [Keyboard cover on page 46](#))
 - d. Speaker assembly (see [Speaker assembly on page 49](#))

Remove the display assembly:

1. Turn the computer display-side up, with the front toward you.
2. Open the display as far as possible.
3. Remove the wireless antenna cable **(1)** from the hole in the system board and the routing channels and clips built into the top cover.
4. Disconnect the display panel cable **(2)** that runs along the left side.



5. Remove the microphone cable (1) from the hole in the system board and the routing channels and clips built into the top cover.
6. Disconnect the microphone cable from the system board (2).



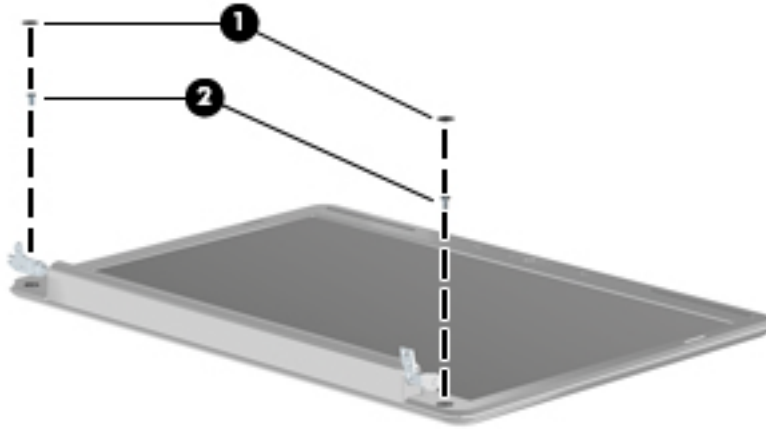
△ **CAUTION:** Support the display assembly when removing the following screws. Failure to support the display assembly can result in damage to the display assembly and other computer components.

7. Remove the four black Phillips PM2.5×6.0 screws (1) that secure the display assembly to the computer.
8. Remove the display assembly (2).

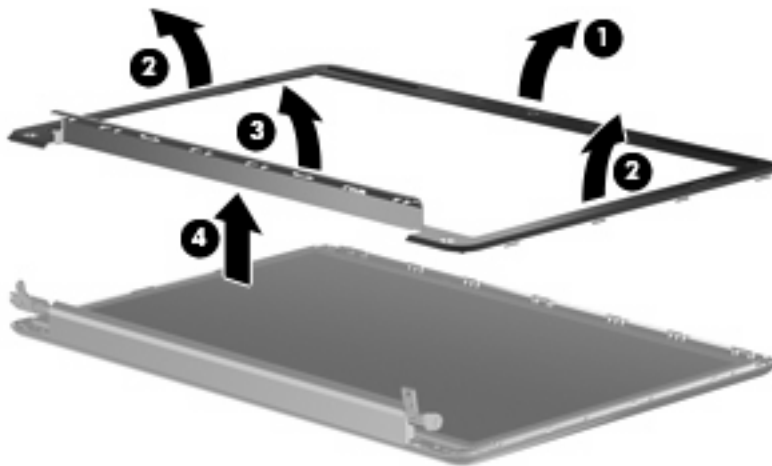


9. If it is necessary to replace any of the display assembly internal components, remove the following screw covers and screws. The display rubber screw covers are included in the Display Rubber Kit, spare part number 487283-001.

- (1) Two Mylar screw covers on the display bezel bottom edge
(2) Two Phillips PM2.5×5.0 screws

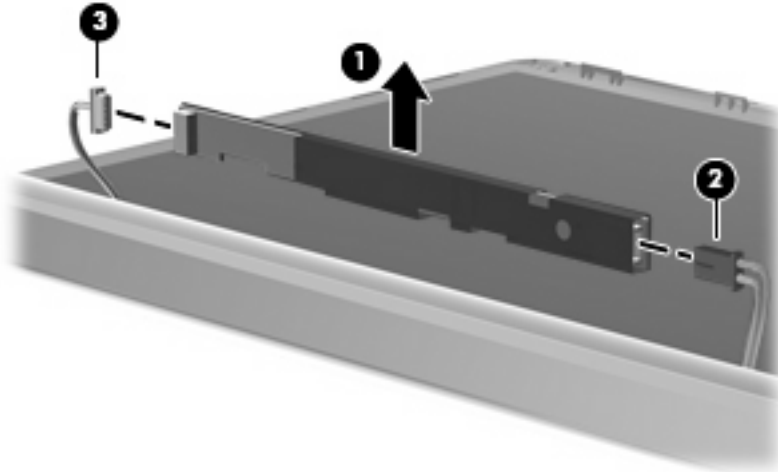


10. Flex the top side (1), the left and right sides (2), and the bottom (3) of the display bezel until the bezel disengages from the display enclosure.
11. Remove the display bezel (4). The display bezel is available using spare part number 487286-001.

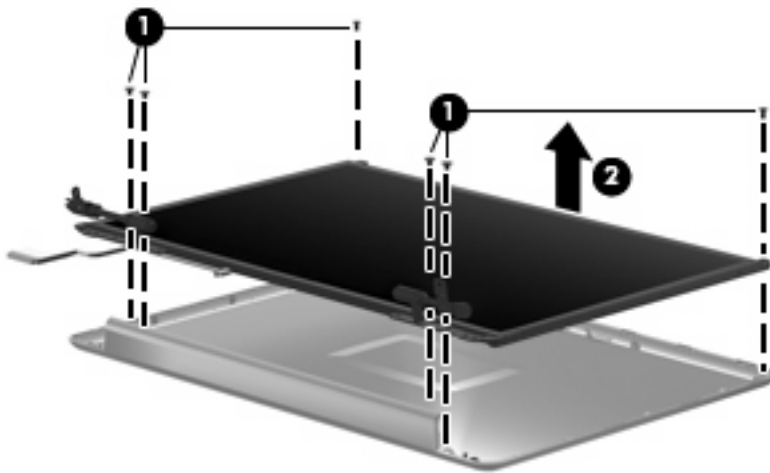


12. If it is necessary to replace the inverter, release the inverter (1) from the clips in the display enclosure as far as the display panel cable and the backlight cable will allow.

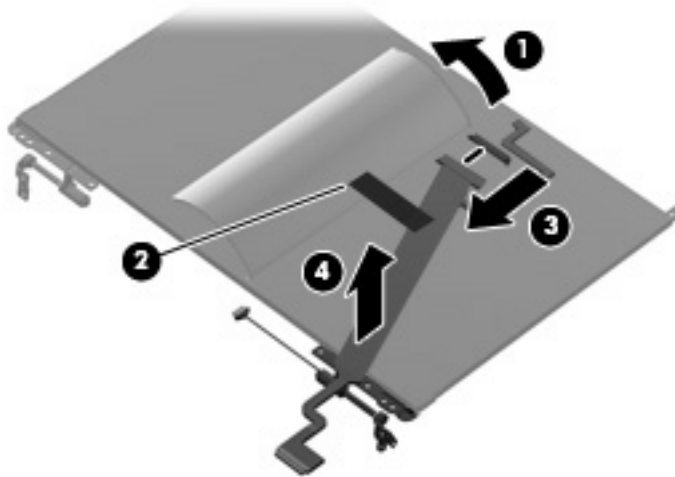
13. Disconnect the backlight cable (2) and the display panel cable (3) from the display inverter. The display inverter is available using spare part number 486736-001.



14. Remove the inverter.
15. If it is necessary to replace the display panel, remove the six black Phillips PM2.5×5.0 screws (1) that secure the display panel to the display enclosure, and then lift the panel from the enclosure (2). The display panel is available using the spare part number 487279-001.

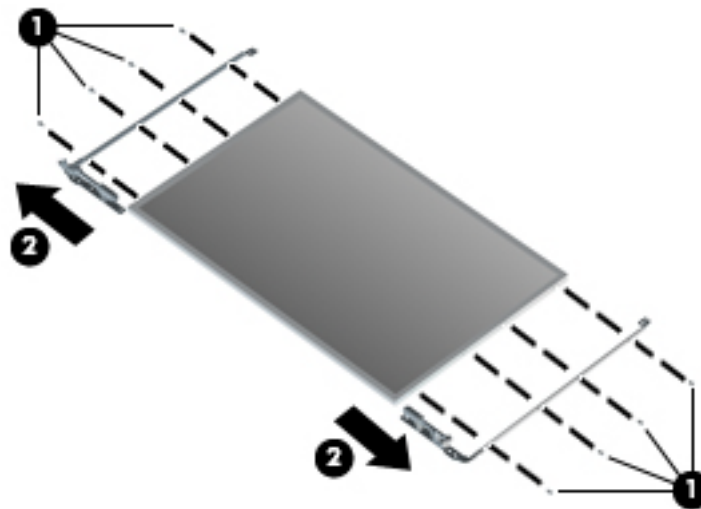


16. If it is necessary to replace the display cable, follow these steps:
- Peel back the plastic (1) that covers the cable.
 - Remove the tape (2) that secures the cable to the display.
 - Unplug the cable (3) from the display.
 - Remove the cable from the display (4).



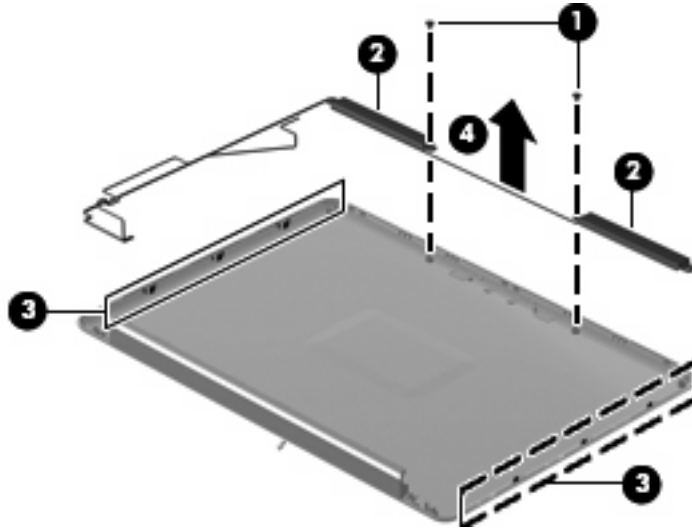
The display cable is available using spare part number 486735-001.

17. If it is necessary to replace the display hinges, remove the four silver Phillips PM2.0×3.0 screws **(1)** that secure each hinge to the display.
18. Remove the display hinges **(2)** from the display. The display hinges are available using spare part number 486737-001.



19. If it is necessary to replace the wireless antenna transceivers and cables, remove the Phillips PM2.5×3.0 screw **(1)** that secures each transceiver to the display enclosure.
20. Detach the wireless antenna transceivers **(2)** from the display enclosure. The transceivers are secured by a foil wrapping.
21. Remove the wireless antenna cables from the clips **(3)** built into the display enclosure.

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



Reverse this procedure to reassemble and install the display assembly.

Camera module

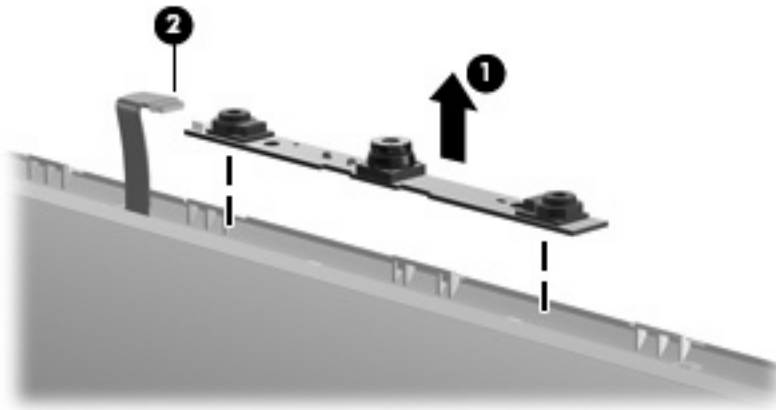
Description	Spare part number
Camera module	487287-001

Before removing the camera module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the following components:
 - a. Optical drive (see [Optical drive on page 35](#))
 - b. Keyboard (see [Keyboard on page 44](#))
 - c. Keyboard cover (see [Keyboard cover on page 46](#))
 - d. Speaker assembly (see [Speaker assembly on page 49](#))
 - e. Display assembly (see [Display assembly on page 51](#))

Remove the camera module:

1. Disconnect the cable **(2)** and remove the camera module from the display enclosure.
2. Release the camera module **(1)** from the display enclosure.



Reverse this procedure to install the camera module.

Microphone module

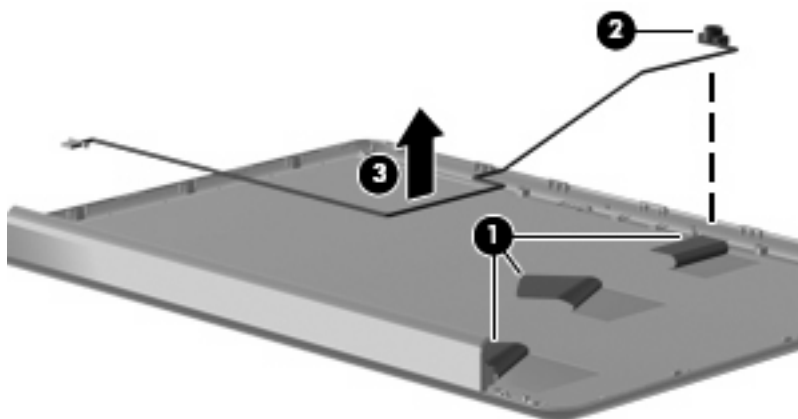
Description	Spare part number
Microphone module and cable	517629-001

Before removing the microphone module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the following components:
 - a. Optical drive (see [Optical drive on page 35](#))
 - b. Keyboard (see [Keyboard on page 44](#))
 - c. Keyboard cover (see [Keyboard cover on page 46](#))
 - d. Speaker assembly (see [Speaker assembly on page 49](#))
 - e. Display assembly (see [Display assembly on page 51](#))

Remove the microphone module:

1. Release the tabs **(1)** built into the display enclosure.
2. Release the microphone receiver **(2)** from the display enclosure. The microphone receiver is secured by two-sided tape.
3. Remove the microphone cable **(3)** and receiver from the display enclosure.



Reverse this procedure to install the microphone module.

Top cover

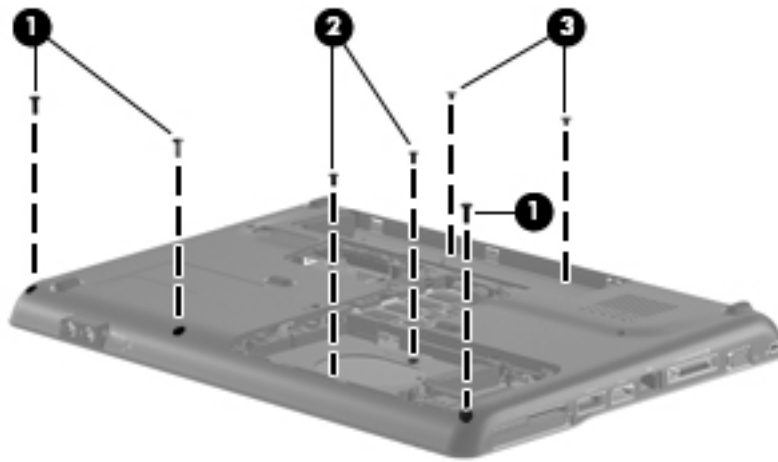
Description	Spare part number
Top cover (includes TouchPad and cable)	487300-001

Before removing the top cover, follow these steps:

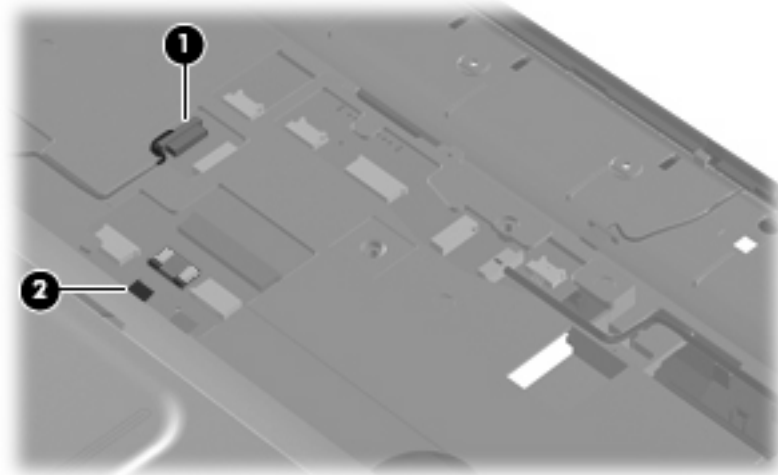
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 36](#))
 - b. Optical drive (see [Optical drive on page 35](#))
 - c. Keyboard (see [Keyboard on page 44](#))
 - d. Keyboard cover (see [Keyboard cover on page 46](#))
 - e. Speaker assembly (see [Speaker assembly on page 49](#))
 - f. Display assembly (see [Display assembly on page 51](#))

Remove the top cover:

1. Turn the computer upside down, with the front toward you.
2. Remove the seven screws that secure the top cover to the computer.
 - (1) Three Phillips PM2.5×10.0 screws
 - (2) Two Phillips PM2.5×5.0 screws
 - (3) Two Phillips PM2.0×3.0 screws

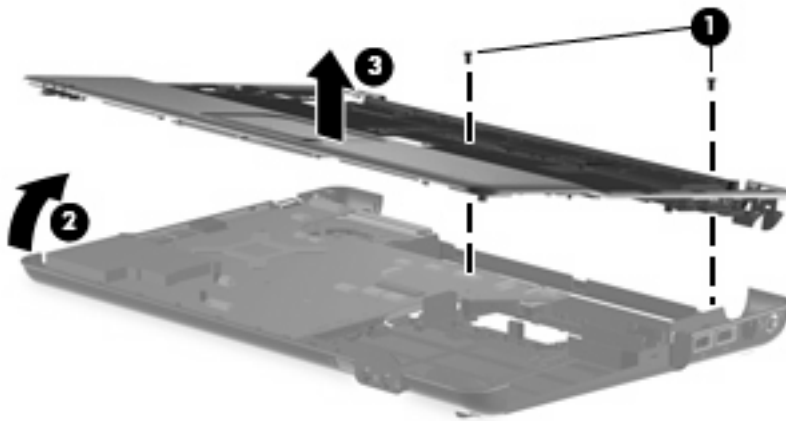


3. Turn the computer right-side up, with the front toward you.
4. Disconnect the following cables from the system board:
 - Bluetooth module cable (1)
 - TouchPad cable (2) with zero insertion force (ZIF) connector



5. Remove the two Phillips PM2.5×6.0 screws (1) that secure the top cover to the computer.
6. Lift up the rear edge of the top cover until it releases from the base (2).

7. Remove the top cover (3).



Reverse this procedure to install the top cover.

TouchPad button board

Description	Spare part number
TouchPad bracket	494962-001
TouchPad button board	494965-001

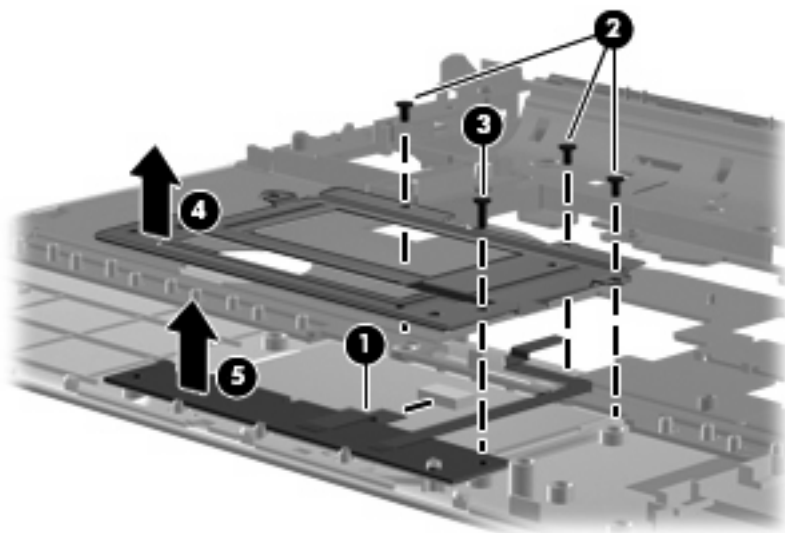
Before removing the TouchPad button board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 36](#))
 - b. Optical drive (see [Optical drive on page 35](#))
 - c. Keyboard (see [Keyboard on page 44](#))
 - d. Keyboard cover (see [Keyboard cover on page 46](#))
 - e. Speaker assembly (see [Speaker assembly on page 49](#))
 - f. Display assembly (see [Display assembly on page 51](#))
 - g. Top cover (see [Top cover on page 59](#))

Remove the TouchPad button board:

1. Turn the top cover upside down with the front toward you.
2. Release the zero insertion force (ZIF) connector for the TouchPad button board cable **(1)**.
3. Remove the three black Phillips PM2.5×3.0 screws **(2)** and one silver Phillips PM2.5×4.0 screw **(3)** that secure the TouchPad assembly to the top cover.
4. Remove the TouchPad bracket **(4)** from the top cover.

5. Remove the TouchPad button board (5) from the TouchPad bracket.



Reverse this procedure to reassemble and install the TouchPad button board.

Bluetooth module

Description	Spare part number
Bluetooth module	483113-001

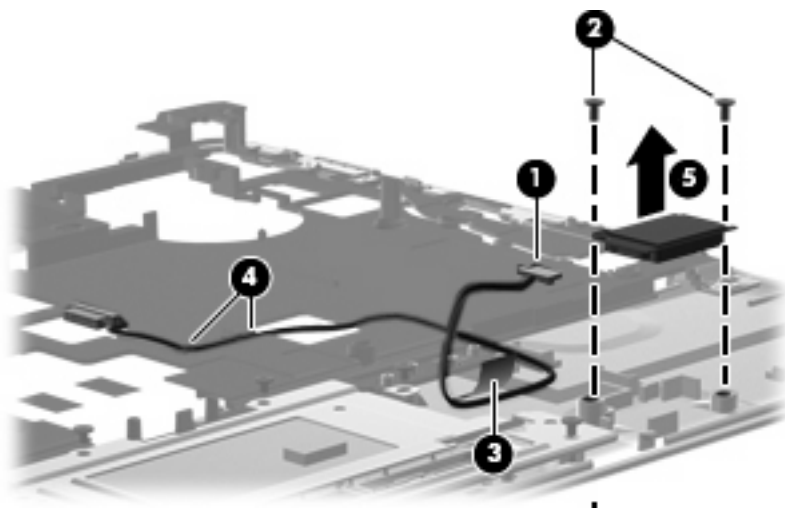
Before removing the Bluetooth module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 36](#))
 - b. Optical drive (see [Optical drive on page 35](#))
 - c. Keyboard (see [Keyboard on page 44](#))
 - d. Keyboard cover (see [Keyboard cover on page 46](#))
 - e. Speaker assembly (see [Speaker assembly on page 49](#))
 - f. Display assembly (see [Display assembly on page 51](#))
 - g. Top cover (see [Top cover on page 59](#))

Remove the Bluetooth module:

1. Turn the top cover upside down with the front toward you.
2. Disconnect the Bluetooth module cable **(1)** from the system board.
3. Remove the two silver PM2.0×3.0 screws **(2)** and the tab **(3)** that secure the Bluetooth module to the top cover.
4. Release the cable from the routing channels built into the system board **(4)**.

5. Remove the Bluetooth module (5) from the top cover.



Reverse this procedure to install the Bluetooth module.

Modem module (select models only)

Description	Spare part number
Modem module for use in all countries and regions except Australia and New Zealand	461749-001
Modem module for use only in Australia and New Zealand	461749-011
Modem module cable (includes RJ-11 connector)	494981-001

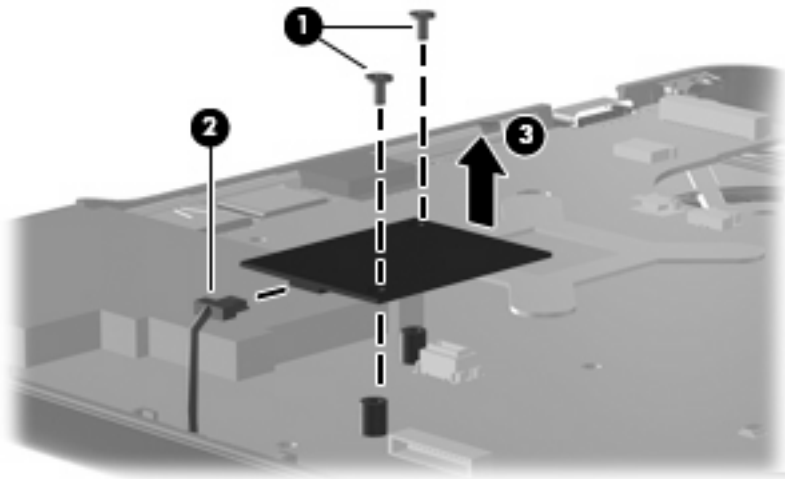
Before removing the modem module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 36](#))
 - b. Optical drive (see [Optical drive on page 35](#))
 - c. Keyboard (see [Keyboard on page 44](#))
 - d. Keyboard cover (see [Keyboard cover on page 46](#))
 - e. Speaker assembly (see [Speaker assembly on page 49](#))
 - f. Display assembly (see [Display assembly on page 51](#))
 - g. Top cover (see [Top cover on page 59](#))

Remove the modem module:


1. Turn the computer display-side up, with the front toward you.
2. Remove the two Phillips PM2.0×4.0 screws **(1)** that secure the modem module to the system board.
3. Disconnect the modem module cable **(2)** from the modem module.

4. Lift up on the front of the modem module (3) to disconnect it from the system board.



5. Remove the modem module.

Reverse this procedure to install the modem module.

 **NOTE:** When replacing the modem module, be sure that the connector on the bottom of the modem module connects firmly into the system board.

Audio board

Description	Spare part number
Audio board (includes audio connectors and audio board cable)	487344-001

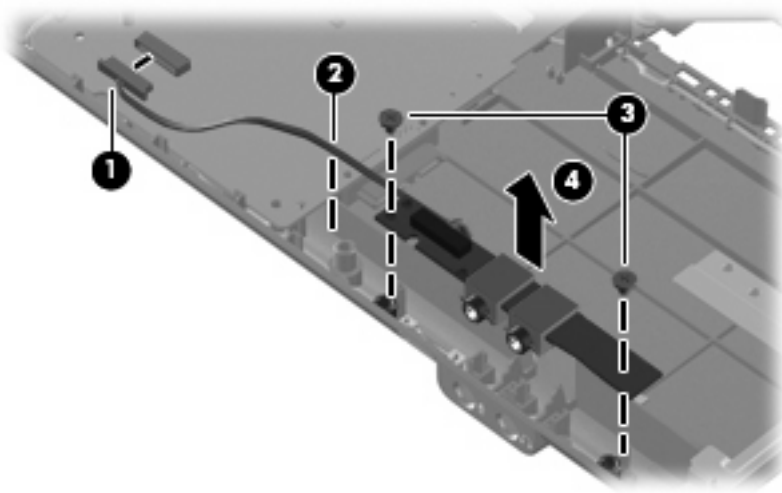
Before removing the audio board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 36](#))
 - b. Optical drive (see [Optical drive on page 35](#))
 - c. Keyboard (see [Keyboard on page 44](#))
 - d. Keyboard cover (see [Keyboard cover on page 46](#))
 - e. Speaker assembly (see [Speaker assembly on page 49](#))
 - f. Display assembly (see [Display assembly on page 51](#))
 - g. Top cover (see [Top cover on page 59](#))

Remove the audio board:

1. Turn the computer display-side up, with the front toward you.
2. Disconnect the audio board cable **(1)** from the system board.
3. Remove the cable from between the components that secure it in the base **(2)**.
4. Remove the two Phillips PM2.5×3.0 screws **(3)** that secure the audio board to the computer.
5. Lift the rear edge of the audio board and raise it until the audio connectors disengage from the base enclosure.

6. Remove the audio board (4).



Reverse this procedure to install the audio board.

USB board

Description	Spare part number
USB board	486842-001
USB board cable	486843-001

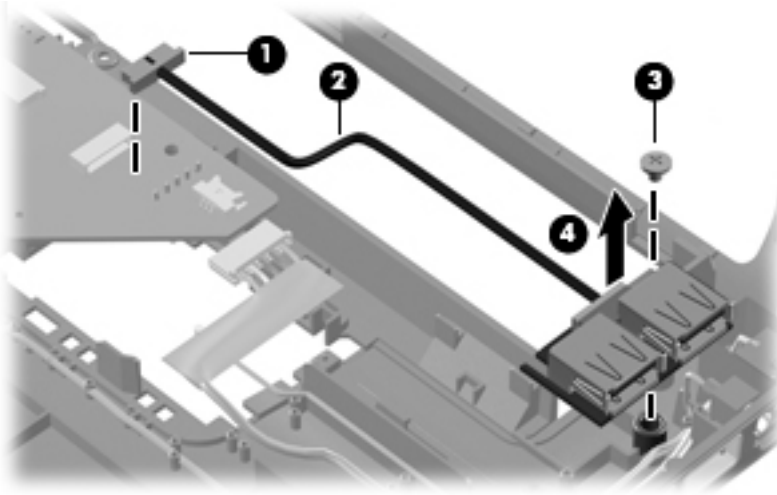
Before removing the USB board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 36](#))
 - b. Optical drive (see [Optical drive on page 35](#))
 - c. Keyboard (see [Keyboard on page 44](#))
 - d. Keyboard cover (see [Keyboard cover on page 46](#))
 - e. Speaker assembly (see [Speaker assembly on page 49](#))
 - f. Display assembly (see [Display assembly on page 51](#))
 - g. Top cover (see [Top cover on page 59](#))

Remove the USB board:

1. Turn the computer display-side up, with the right side toward you.
2. Disconnect the USB board cable **(1)** from the system board.
3. Remove the cable from the base enclosure clips **(2)**.
4. Remove the Phillips PM2.5×3.0 screw **(3)** that secures the USB board to the computer.

5. Lift the USB board (4) straight up to remove it from the computer.



Reverse this procedure to install the USB board.

Power connector cable

Description	Spare part number
Power connector cable (includes power connector)	486864-001

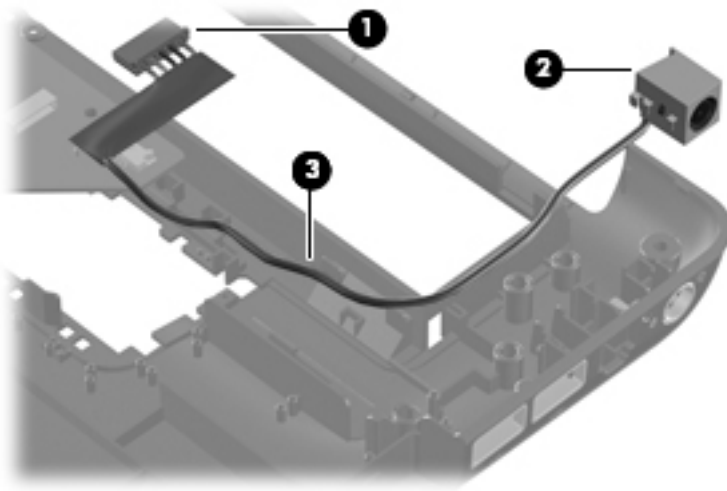
Before removing the power connector cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 36](#))
 - b. Optical drive (see [Optical drive on page 35](#))
 - c. Keyboard (see [Keyboard on page 44](#))
 - d. Keyboard cover (see [Keyboard cover on page 46](#))
 - e. Speaker assembly (see [Speaker assembly on page 49](#))
 - f. Display assembly (see [Display assembly on page 51](#))
 - g. Top cover (see [Top cover on page 59](#))

Remove the power connector cable:

1. Turn the computer display-side up, with the right side toward you.
2. Disconnect the power connector cable **(1)** from the bottom of the system board.
3. Remove the power connector **(2)** from the clip built into the base enclosure. The power connector is secured by two-sided tape.

4. Remove the cable from the base enclosure clips (3).



Reverse this procedure to install the power connector cable.

System board

Description	Spare part number
System board (includes thermal material)	532327-001

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

- RTC battery (see [RTC battery on page 40](#))
- Memory module (see [Memory module on page 42](#))
- WLAN module (see [WLAN module on page 38](#))
- Modem module (select models only, see [Modem module \(select models only\) on page 66](#))

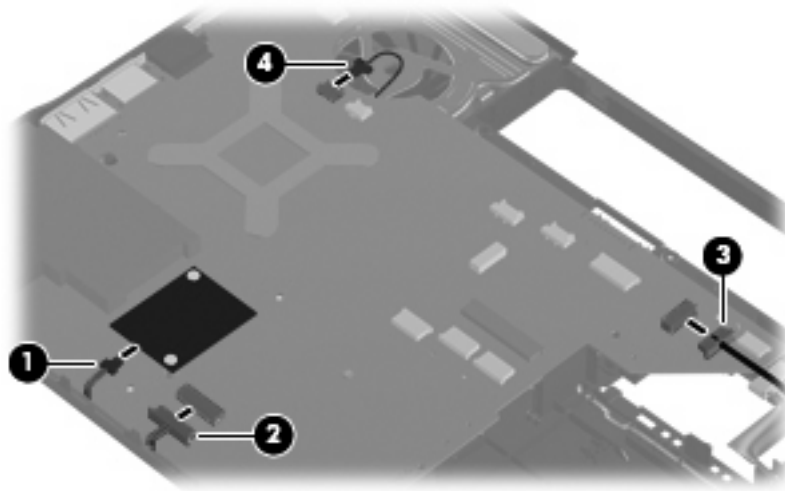
Before removing the system board, follow these steps:

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 34](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 36](#))
 - b. Optical drive (see [Optical drive on page 35](#))
 - c. Keyboard (see [Keyboard on page 44](#))
 - d. Keyboard cover (see [Keyboard cover on page 46](#))
 - e. Speaker assembly (see [Speaker assembly on page 49](#))
 - f. Display assembly (see [Display assembly on page 51](#))
 - g. Top cover (see [Top cover on page 59](#))

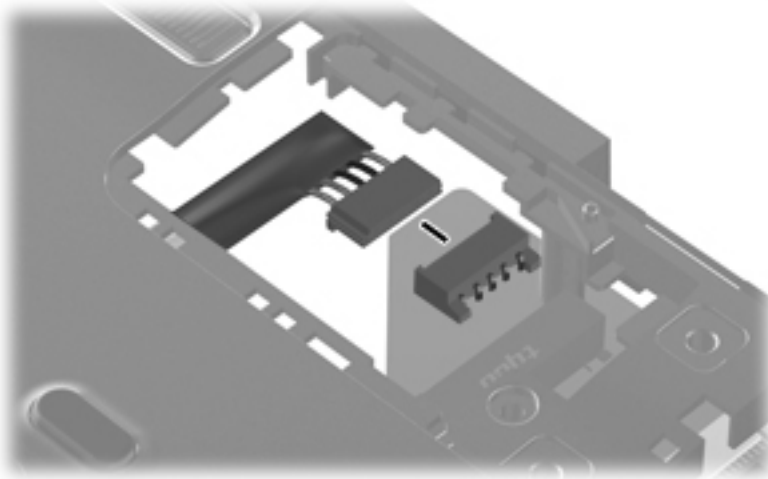
Remove the system board:

1. Turn the computer display-side up, with the right side toward you.
2. Disconnect the following cables from the system board:
 - (1) Modem cable (see [Modem module \(select models only\) on page 66](#))
 - (2) Audio board cable (see [Audio board on page 68](#))
 - (3) Fan cable (see [Fan on page 81](#))

- (4) USB board cable (see [USB board on page 70](#))



3. Disconnect the power connector cable.

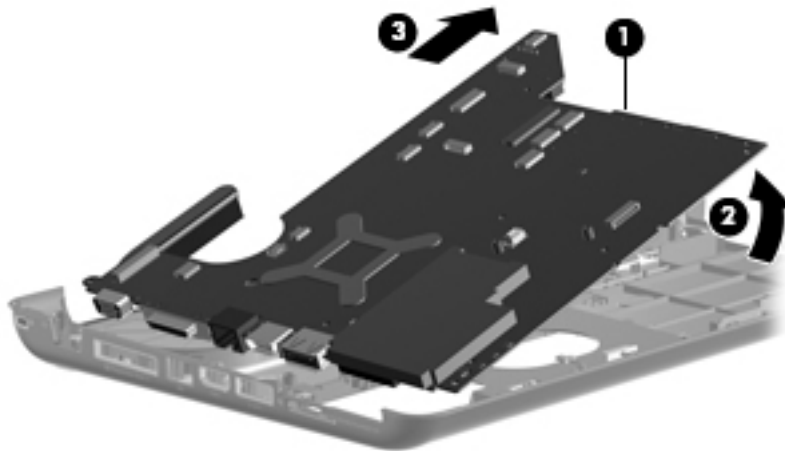


4. Remove the two black Phillips PM2.5×5.0 screws that secure the system board to the computer.

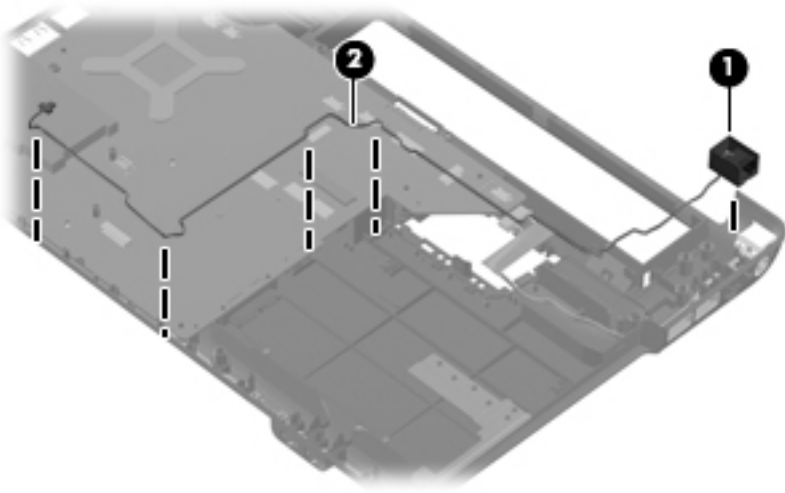


5. Lift the right side of the system board (1) until it rests at an angle (2).

6. Release the system board by sliding it to the right at an angle (3) until the connectors on the left side of the system board disengage from the base enclosure, and then remove the system board.



7. If it is necessary to replace the modem module cable, remove the RJ-11 connector (1) from the clip built into the base enclosure.
8. Remove the modem module cable (2) from the routing channel built into the base enclosure. The modem module cable is available using spare part number 494981-001.




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

- Heat sink (see [Heat sink on page 77](#))
- Processor (see [Processor on page 79](#))

Reverse this procedure to install the system board.

Heat sink

Description	Spare part number
Heat sink (includes thermal material)	530614-001

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


NOTE: Thermal pads and thermal paste are included with all heat sink, system board, and processor spare part kits.

Before removing the heat sink, follow these steps:

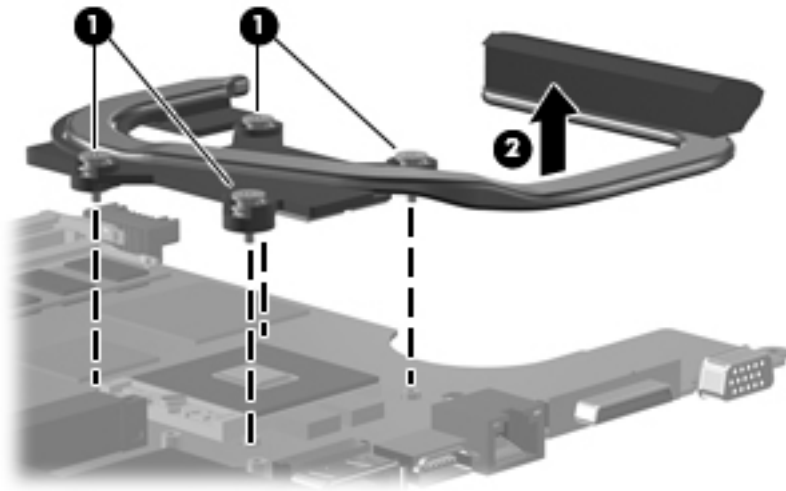
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 36](#))
 - b. Optical drive (see [Optical drive on page 35](#))
 - c. Keyboard (see [Keyboard on page 44](#))
 - d. Keyboard cover (see [Keyboard cover on page 46](#))
 - e. Speaker assembly (see [Speaker assembly on page 49](#))
 - f. Display assembly (see [Display assembly on page 51](#))
 - g. Top cover (see [Top cover on page 59](#))
 - h. System board (see [System board on page 74](#))

Remove the heat sink:

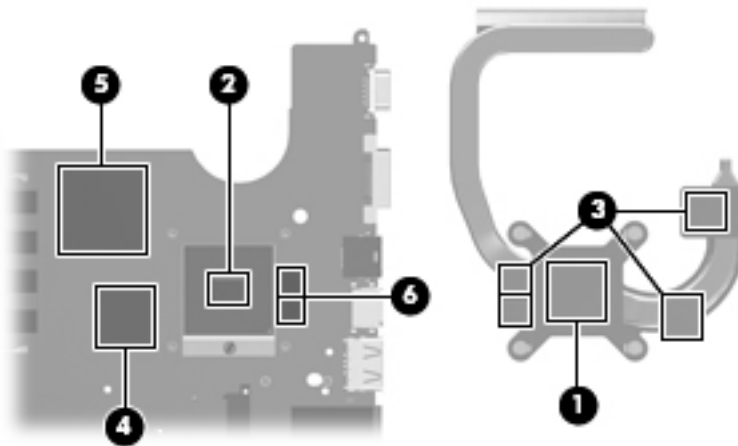
1. Turn the system board upside down with the external monitor port toward you.
2. Loosen the four Phillips PM2.0×10.0 captive screws **(1)** that secure the heat sink to the system board.

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

3. Remove the heat sink (2).



NOTE: The thermal material must be thoroughly cleaned from the surface of the heat sink (1) and the processor (2) each time the heat sink is removed. Thermal pads and thermal paste must also be installed on all surfaces before the heat sink is reinstalled. Thermal pads must be placed in all of the following locations on the heat sink: the four specifically marked areas (3), the nVIDIA video chip (4), the Northbridge chip (5), and the capacitors (6).



Reverse this procedure to install the heat sink.

Processor



NOTE: The processor spare part kit includes thermal material.

Description	Spare part number
Intel T9550 Core2 Duo mobile processor (2.66 GHz, 6-MB L2 cache)	507953-001
Intel P8700 Core2 Duo mobile processor (2.53 GHz, 3-MB L2 cache)	507960-001
Intel P8600 Core2 Duo mobile processor (2.40 GHz, 3-MB L2 cache)	507963-001
Intel P8400 Core2 Duo mobile processor (2.26 GHz, 3-MB L2 cache)	507964-001
Intel P7450 Core2 Duo mobile processor (2.13 GHz, 3-MB L2 cache)	507965-001
Intel T5800 Core2 Duo mobile processor (2.06 GHz, 2-MB L2 cache)	515040-001
Intel T6400 Core2 Duo mobile processor (2.00 GHz, 2-MB L2 cache)	513592-001
Intel T6600 Core2 Duo mobile processor (2.20 GHz, 2-MB L2 cache)	513593-001
Intel T3400 Pentium processor for mobile (2.16 GHz, 1-MB cache)	509549-001
Intel T4200 Pentium processor for mobile (2.00 GHz, 1-MB cache)	513599-001


Before removing the processor, follow these steps:

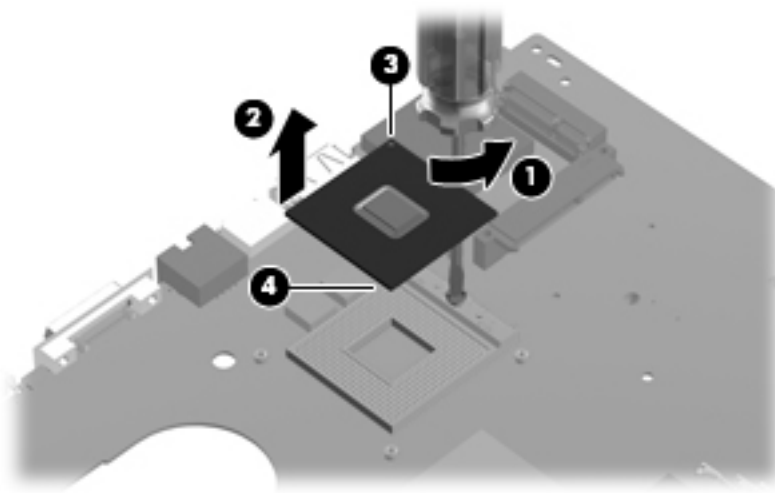
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 34](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 36](#))
 - b. Optical drive (see [Optical drive on page 35](#))
 - c. Keyboard (see [Keyboard on page 44](#))
 - d. Keyboard cover (see [Keyboard cover on page 46](#))
 - e. Speaker assembly (see [Speaker assembly on page 49](#))
 - f. Display assembly (see [Display assembly on page 51](#))
 - g. Top cover (see [Top cover on page 59](#))
 - h. System board (see [System board on page 74](#))
 - i. Heat sink (see [Heat sink on page 77](#))

Remove the processor:

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

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

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



Reverse this procedure to install the processor.

Fan

Description	Spare part number
Fan	486844-001

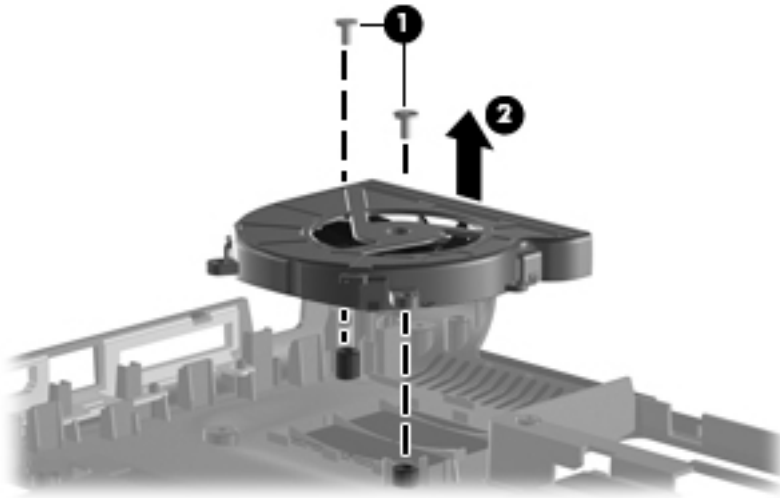
Before removing the fan, follow these steps:

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 34](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 36](#))
 - b. Optical drive (see [Optical drive on page 35](#))
 - c. Keyboard (see [Keyboard on page 44](#))
 - d. Keyboard cover (see [Keyboard cover on page 46](#))
 - e. Speaker assembly (see [Speaker assembly on page 49](#))
 - f. Display assembly (see [Display assembly on page 51](#))
 - g. Top cover (see [Top cover on page 59](#))
 - h. System board (see [System board on page 74](#))

Remove the fan:

1. Position the base enclosure with the front toward you.
2. Remove the two black Phillips PM2.5×5.0 screws **(1)** that secure the fan to the computer.

3. Lift the fan from the base enclosure (2).



Reverse this procedure to install the fan.

5 Setup Utility

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

Starting the Setup Utility

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

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

To start the Setup Utility:

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

– or –

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

Changing the language of the Setup Utility

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

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

– or –

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

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

Your change goes into effect immediately.

Navigating and selecting in the Setup Utility

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

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

Displaying system information

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

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

– or –

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

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

Restoring default settings in the Setup Utility

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

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

– or –

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

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

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



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

Exiting the Setup Utility

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

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

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

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

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

After either choice, the computer restarts in Windows.

Setup Utility menus

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



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

Main menu

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

Security menu

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

System Configuration menu

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

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

Diagnostics menu

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

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Height (front to back)	3.33 to 3.97 cm	1.31 to 1.56 in
Width	33.40 cm	13.15 in
Depth	23.70 cm	9.33 in
Weight (with optical drive, hard drive, panel, battery, and 1 DIMM)	2.30 kg	5.07 lb
Input power		
Operating voltage	18.5 V dc to 19.0 V dc	
Operating current	3.5 A or 4.74 A	
Temperature		
Operating (not writing to optical disc)	0°C to 35°C	32°F to 95°F
Operating (writing to optical disc)	5°C to 35°C	41°F to 95°F
Non-operating	-20°C to 60°C	-4°F to 140°F
Relative humidity		
Operating	10% to 90%	
Non-operating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Non-operating	-15 m to 12,192 m	-50 ft to 40,000 ft
NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures.		

14.1-in, WXGA BrightView display specifications

	Metric	U.S.
Dimensions		
Height	30.37 cm	11.96 in
Width	18.98 cm	7.47 in
Diagonal	35.82 cm	14.10 in
Number of colors	More than 262,144	
Contrast ratio	More than 300:1	
Brightness	200 nits (typical)	
Pixel resolution		
Pitch	0.2373 × 0.2373 mm	
Format	1280 × 800	
Configuration	RGB vertical stripe	
Backlight	Edge lit	
Character display	80 × 25	
Total power consumption	5.2 W	
Viewing angle	+/-40° horizontal, +15/-35° 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	102 g	102 g
Interface type	SATA	SATA	SATA	SATA
Transfer rate				
Synchronous (maximum)	300 MB/sec	300 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	1.5 ms	1.5 ms	3 ms	3 ms
Average	12 ms	12 ms	13 ms	13 ms
Maximum	22 ms	22 ms	24 ms	24 ms
Logical blocks	976,773,168	625,142,448	488,397,168	312,581,808
Disk rotational speed	5400 rpm			
Operating temperature	5°C to 55°C (41°F to 131°F)			
NOTE: Certain restrictions and exclusions apply. Consult technical support for details.				
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Accessible capacity is less. Actual drive specifications may differ slightly.				

DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive specifications

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

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

Applicable disc	Read:	Write:	
	CD-DA, CD+(E)G, CD-MIDI, CDTEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), MultiSession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM, HD-ROM (Single Layer), HD-ROM (Dual Layer), HD DVD-R, HD DVD-R for Dual Layer, HD DVD-RW, BD-ROM, BD-R, BD-RE	CD-R and CD-RW, DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM	
Access time	CD	DVD	HD
Random	< 170 ms	< 170 ms	< 230 ms
Cache buffer	8 MB		
Data transfer rate			
24X CD-ROM	3,600 KB/sec		
8X DVD	10,800 KB/sec		
24X CD-R	3,600 KB/sec		
16X CD-RW	2,400 KB/sec		
8X DVD+R	10,800 KB/sec		
4X DVD+RW	5,400 KB/sec		
8X DVD-R	10,800 KB/sec		
4X DVD-RW	5,400 KB/sec		
2.4X DVD+R(9)	2,700 KB/sec		
5X DVD-RAM	6,750 KB/sec		
1X BD-ROM	4,500 KB/sec		
1X BD-R read	4,500 KB/sec		
1X BD-RE read	4,500 KB/sec		
Transfer mode	MultiWord DMA Mode		

System DMA specifications

Hardware DMA	System function
DMA0	Not applicable
DMA1	Not applicable
DMA2	Not applicable
DMA3	Not applicable
DMA4	Direct memory access controller
DMA5	Available for PC Card
DMA6	Not assigned
DMA7	Not assigned
NOTE: The Compaq Presario CQ40 does not include a PC card.	

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
IRQ9	Microsoft ACPI-compliant system
IRQ11	Intel (ICH9 Family) SMBus Controller
IRQ12	Alps PS/2 TouchPad pointing device (2-way) for 14-in LCD
IRQ13	Numeric data processor
IRQ16	Intel (ICH9 Family) USB Universal Host Controller—2937
	Intel (ICH9 Family) PCI Express Port 1—2940
	Intel (ICH9 Family) PCI Express Port 5—2948
	Mobile Intel 4 Series Express Chipset PCI Express Port 2—2A41
	nVIDIA GeForce G103 M
IRQ17	Intel (ICH9 Family) PCI Express Port 2—2942
	Intel (ICH9 Family) PCI Express Port 6—294A
	Intel (ICH9 Family) USB Universal Host Controller—2938
IRQ18	Intel (ICH9 Family) USB Universal Host Controller—2936
	Intel (ICH9 Family) USB2 Enhanced Host Controller—293C
IRQ19	Intel (ICH9 Family) PCI Express Port 4—2946
	Intel (ICH9 Family) USB Universal Host Controller—2939
	Realtek RTL8168C(P)/8111C(P) Family PCI-E Gigabit Ethernet NIC (NIDS 6.0)
IRQ20	Intel (ICH9 Family) USB2 Enhanced Host Controller—293A
IRQ21	Intel (ICH9MM/M-E Family) 4-port SATA AHCI Controller—2929
IRQ22	Intel (ICH9 Family) USB Universal Host Controller—2935
	High-definition audio controller

System I/O address specifications

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

I/O address (hex)	System function (shipping configuration)
0B4 – 0B5	Programmable interrupt controller
0B8 – 0B9	Programmable interrupt controller
0BC – 0BD	Programmable interrupt controller
0C0 – 0DF	Direct memory access controller
0F0 – 0F0	Numeric data processor
200 – 27F	Motherboard resources
3B0 – 3BB	Mobile Intel 4 Series Express Chipset PCI Express Port 1—2A41
3B0 – 3BB	nVIDIA GeForce G 103M
3C0 – 3DF	Mobile Intel 4 Series Express Chipset PCI Express Port 1—2A41
3C0 – 3DF	nVIDIA GeForce G 103M
CF8 – CFB	PCI configuration index register (PCIDIVO-1)
CFC – CFF	PCI configuration data register (PCIDIVO-1)

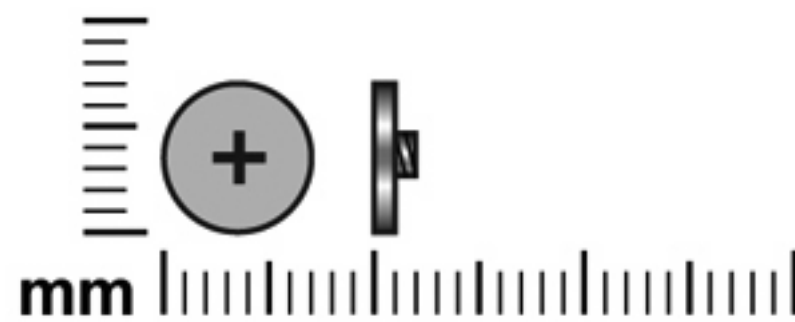
System memory map specifications

Size	Memory address	System function
640 KB	00000000-0009FFFF	Base memory
128 KB	000A0000-000BFFFF	Video memory
64 KB	000C0000-000CFFFF	Video BIOS
64 MB	000E8000-00FFFFFF	System BIOS
	01000000-FFFFFFFF	Extended memory (based on memory installed)
	(X+1)00000000-FEDFFFFF	PCI bus and motherboard resources
64 KB	FFFF0000-FFFFFFFF	System BIOS

7 Screw listing

This section provides specification and reference information for the screws used in the computer. All screws listed in this section are available in the Screw Kit (spare part number 487298-001) and the Display Screw Kit (spare part number 486730-001).

Phillips PM2.0×2.0 broadhead screw



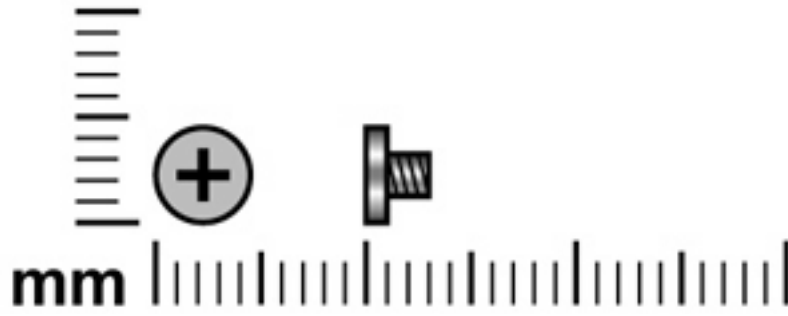
Technical drawing of a Phillips PM2.0×2.0 broadhead screw. The drawing includes a top view showing the Phillips cross symbol, a side view showing the thread, and a millimeter scale. The scale indicates a length of 2.0 mm.

Color	Quantity	Length	Thread	Head diameter
Black	1	2.0 mm	2.0 mm	7.0 mm

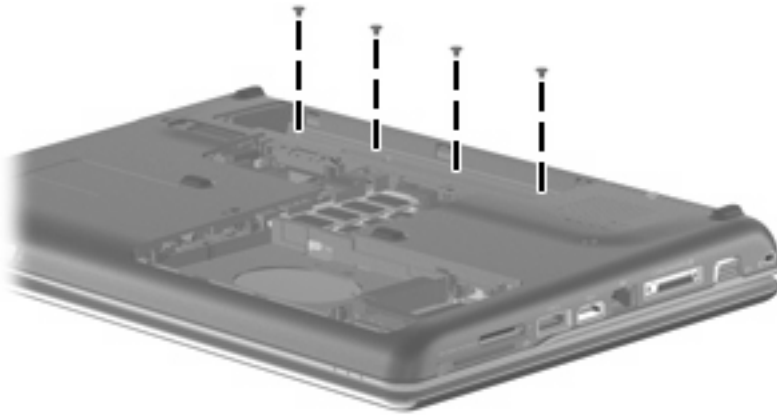


Where used: One broadhead screw that secures the keyboard cover to the base enclosure.

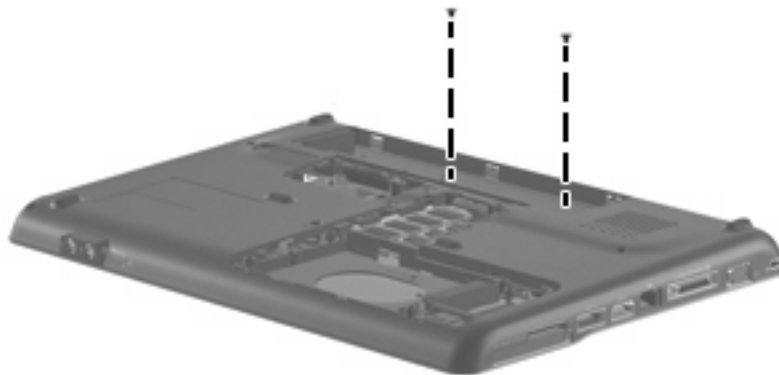
Phillips PM2.0×3.0 screw (black)



Color	Quantity	Length	Thread	Head diameter
Black	6	3.0 mm	2.0 mm	4.6 mm

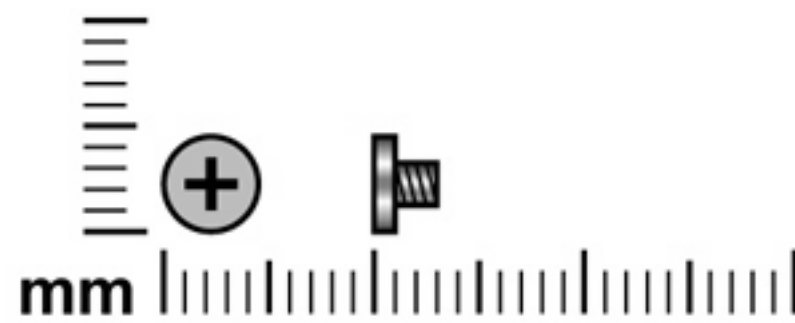


Where used: 4 screws that secure the keyboard cover to the base enclosure.

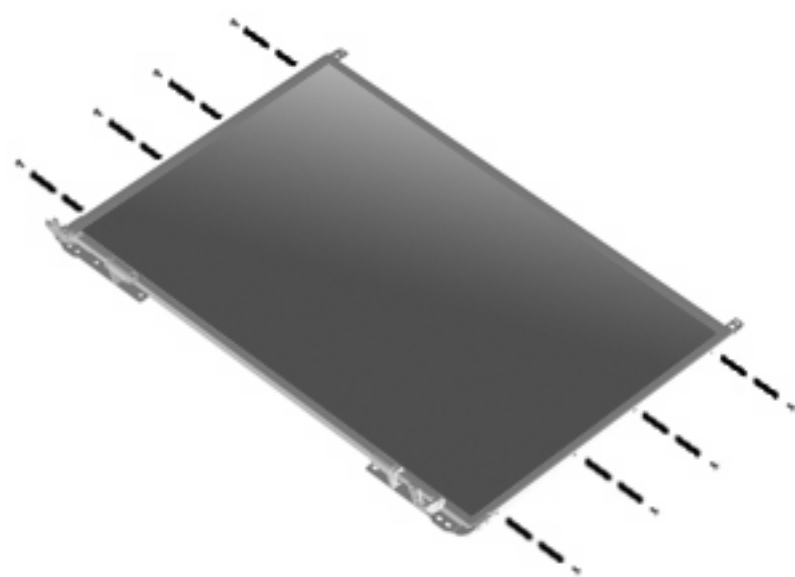


Where used: 2 screws that secure the top cover to the base enclosure.

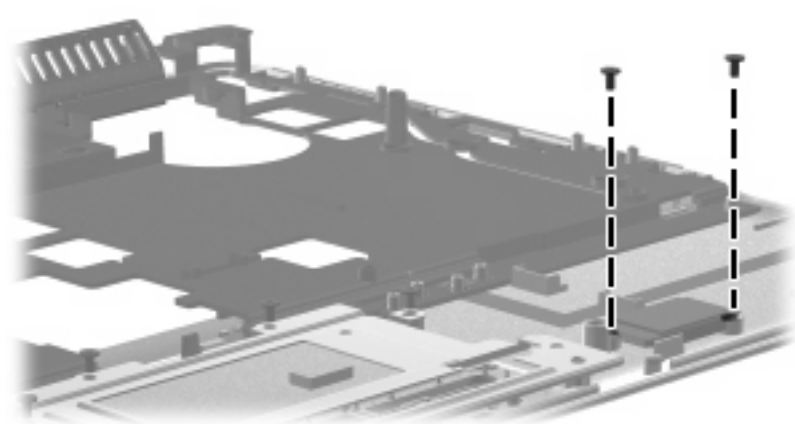
Phillips PM2.0×3.0 screw (silver)

A diagram showing the screw's dimensions. A vertical scale on the left indicates the head diameter. A horizontal scale below the screw indicates the length. The screw is shown in profile and from the top view, which features a Phillips cross symbol.

Color	Quantity	Length	Thread	Head diameter
Silver	10	3.0 mm	2.0 mm	4.6 mm

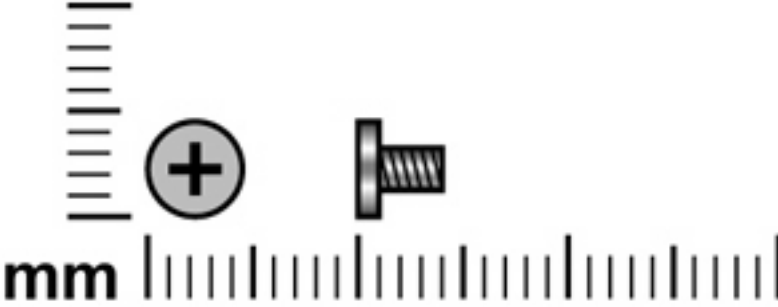


Where used: 8 screws that secure the display panel hinges and brackets to the display panel.

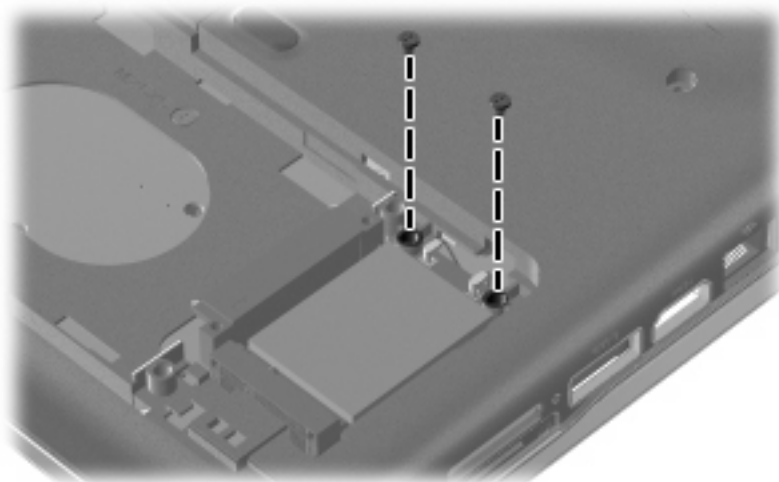


Where used: 2 screws that secure the Bluetooth module to the top cover.

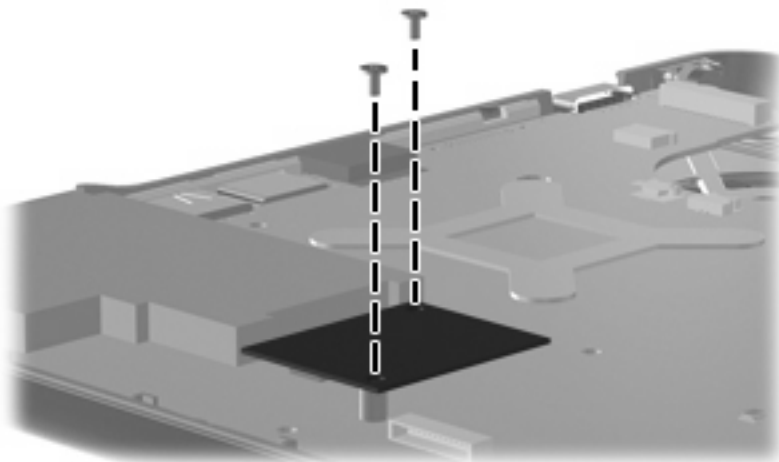
Phillips PM2.0×4.0 screw



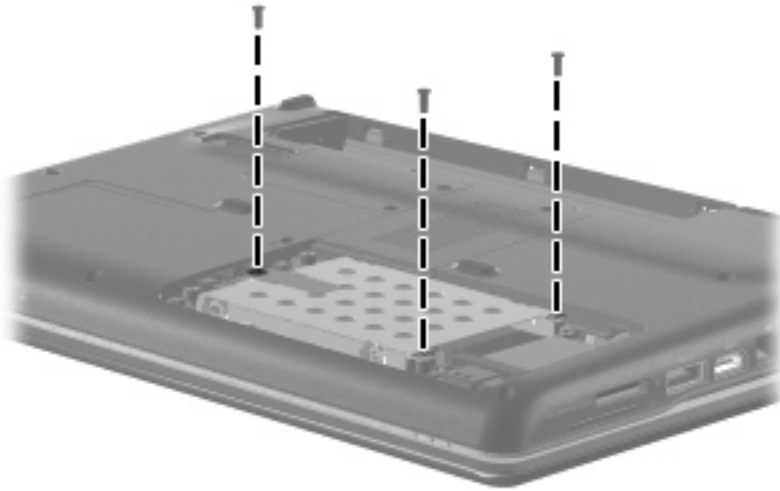
Color	Quantity	Length	Thread	Head diameter
Black	7	4.0 mm	2.0 mm	4.6 mm



Where used: 2 screws that secure the WLAN module to the base enclosure.

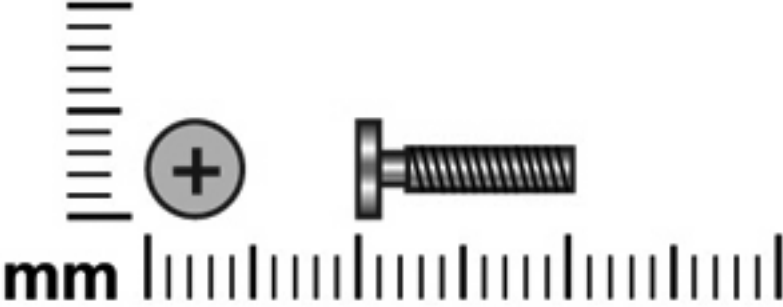


Where used: 2 screws that secure the modem module (select models only) to the system board.



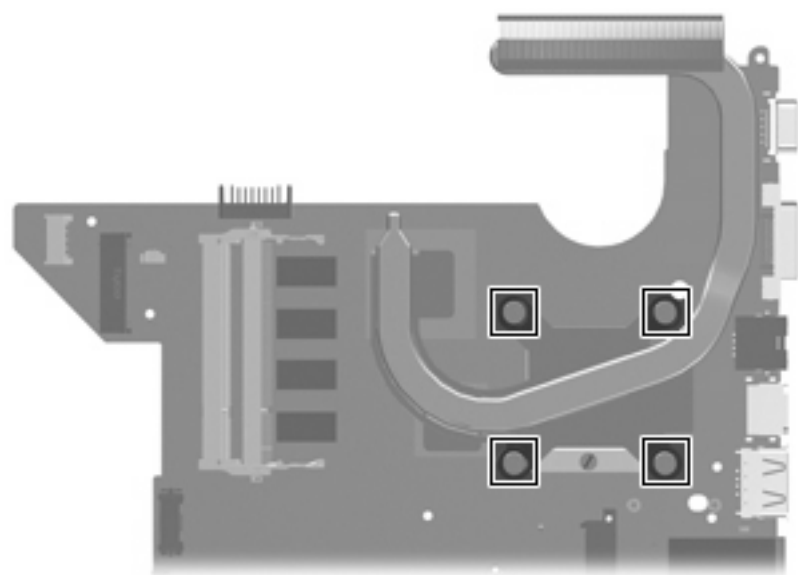
Where used: 3 screws that secure the hard drive to the base enclosure.

Phillips PM2.0×10.0 captive screw



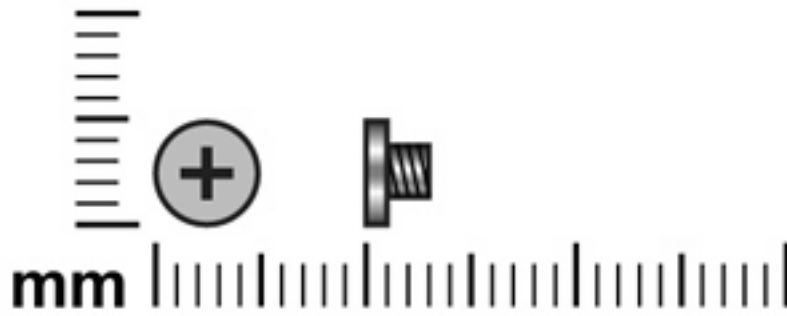
The diagram shows a side view of the screw and a top-down view of the head. A vertical scale bar on the left indicates 10 mm. A horizontal scale bar below the screw indicates 10 mm. The screw has a Phillips head and a threaded body.

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

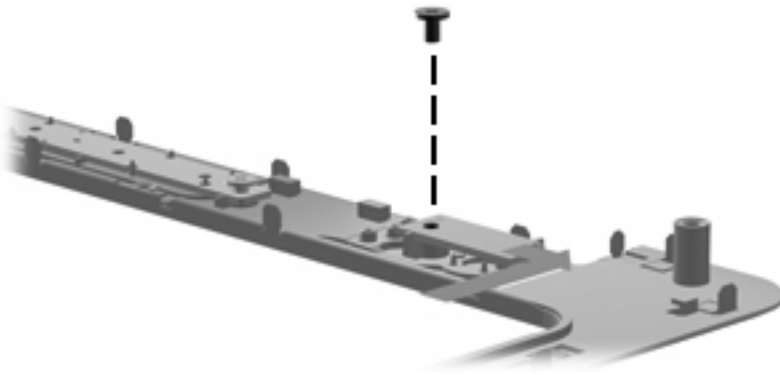


Where used: 4 captive screws (secured by C-clips) that secure the heat sink to the system board.

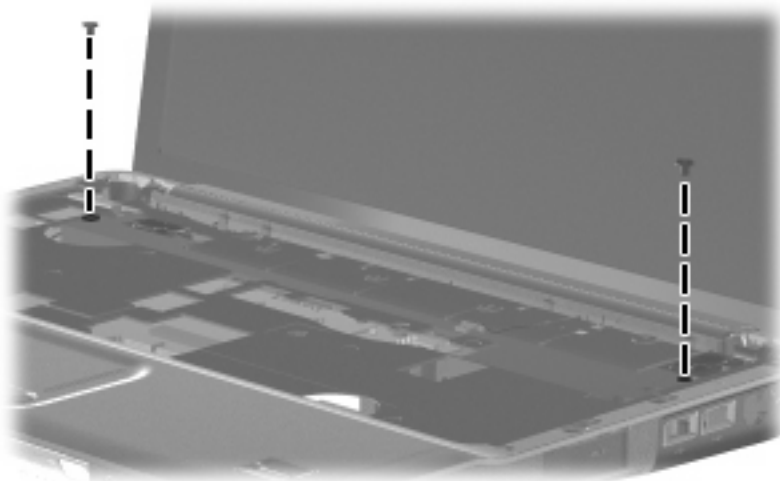
Phillips PM2.5×3.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	11	3.0 mm	2.5 mm	5.5 mm



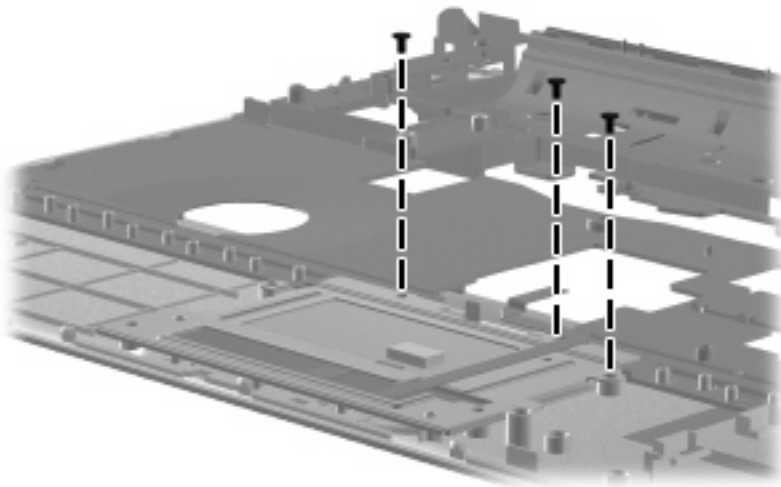
Where used: One screw that secures the power button board to the keyboard cover.



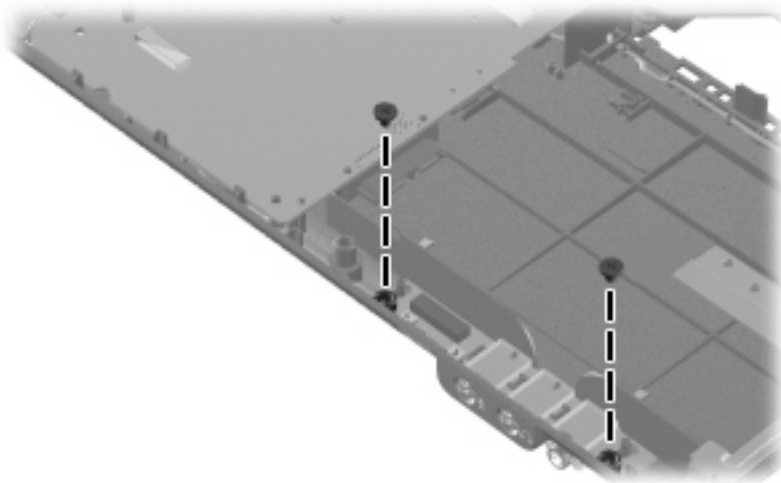
Where used: 2 screws that secure the speakers to the top cover.



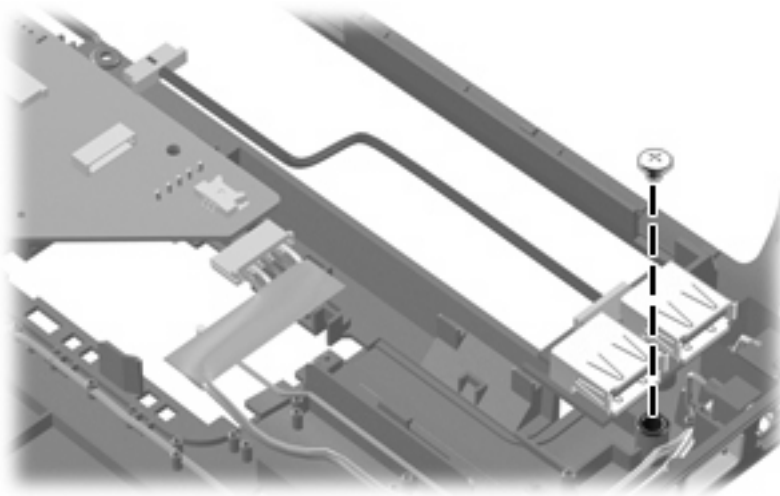
Where used: 2 screws that secure the wireless antenna transceivers and cables to the display enclosure.



Where used: 3 screws that secure the TouchPad button board to the TouchPad bracket.

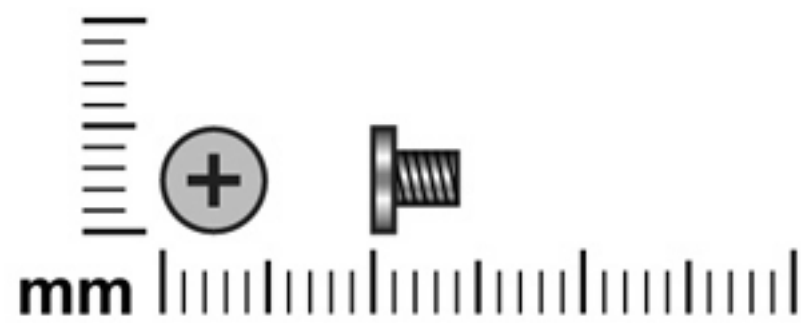


Where used: 2 screws that secure the audio board to the base enclosure.

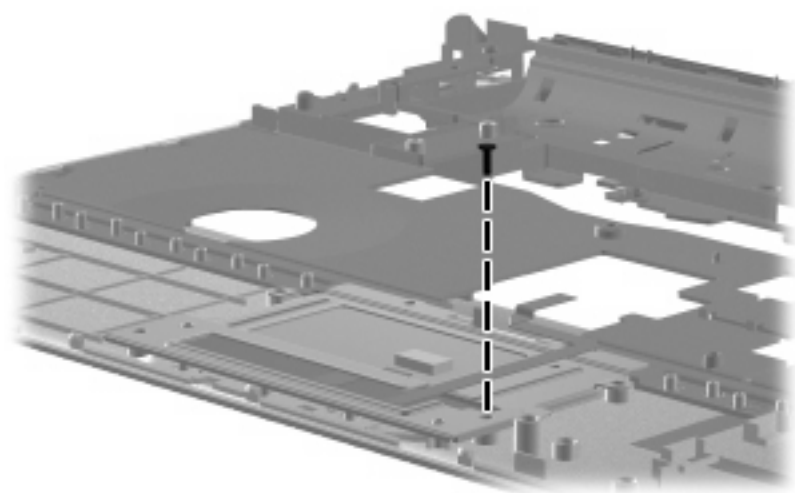


Where used: One screw that secures the USB board to the base enclosure.

Phillips PM2.5×4.0 screw

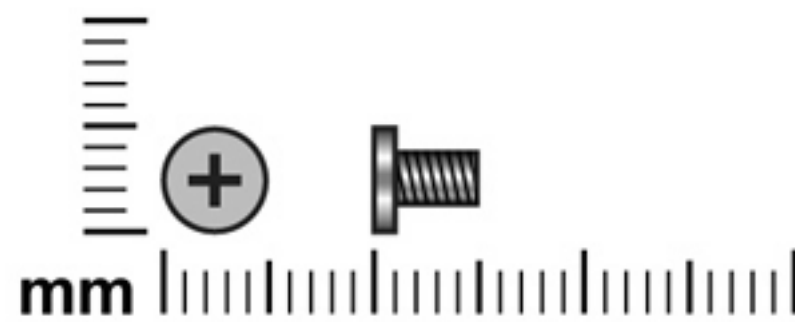


Color	Quantity	Length	Thread	Head diameter
Silver	1	4.0 mm	2.5 mm	5.5 mm



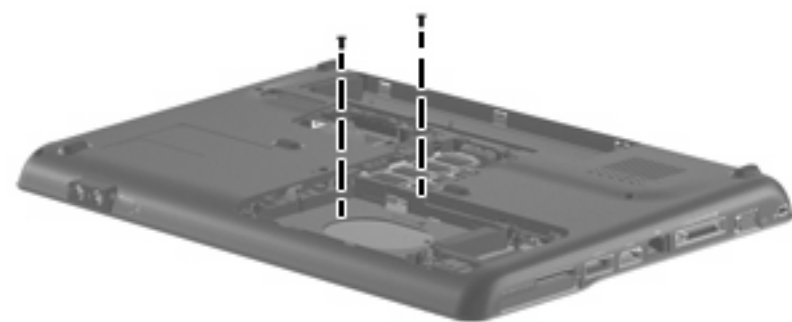
Where used: One screw that secures the TouchPad button board to the TouchPad bracket.

Phillips PM2.5×5.0 screw

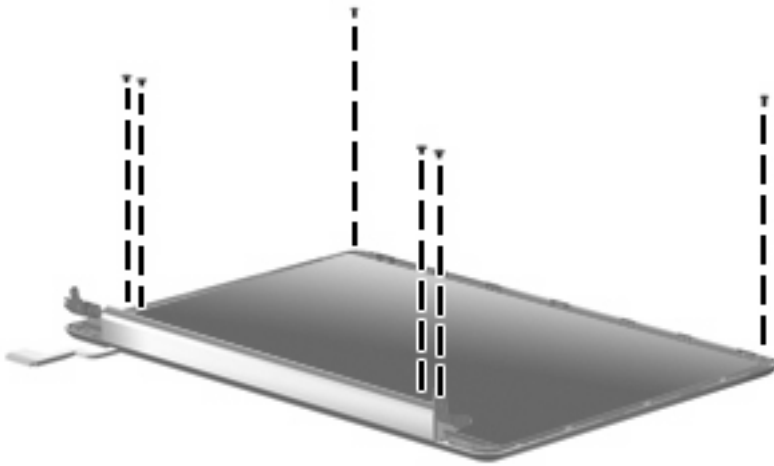
				
Color	Quantity	Length	Thread	Head diameter
Black	16	5.0 mm	2.5 mm	5.5 mm



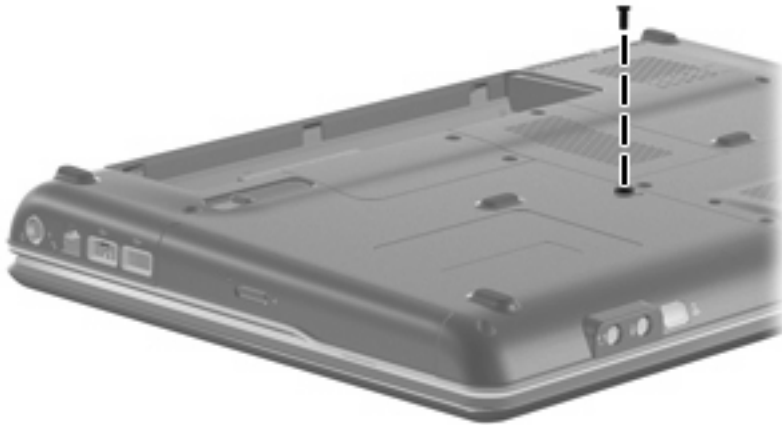
Where used: One screw that secures the keyboard cover to the base enclosure.



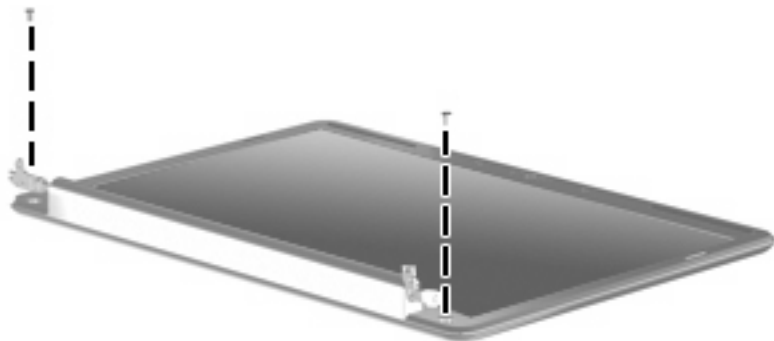
Where used: 2 screws that secure the top cover to the base enclosure.



Where used: 6 screws that secure the display panel to the display enclosure.



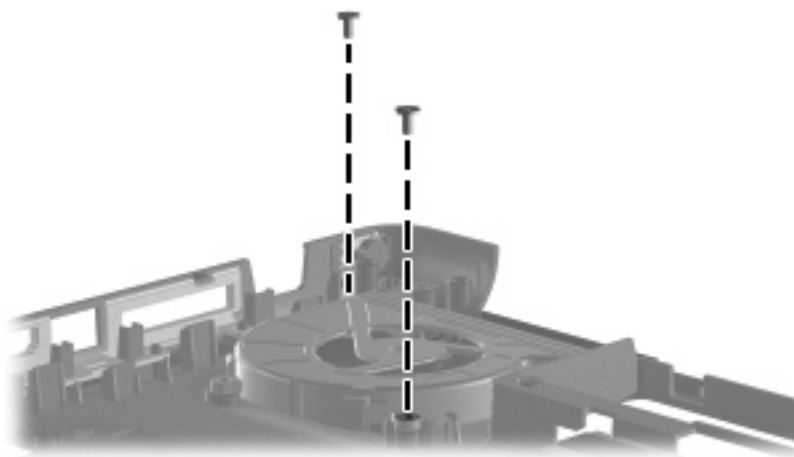
Where used: One screw that secures the optical drive to the base enclosure.



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

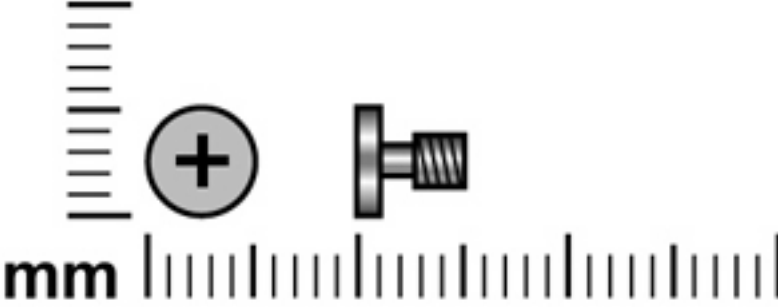


Where used: 2 screws that secure the system board to the base enclosure.

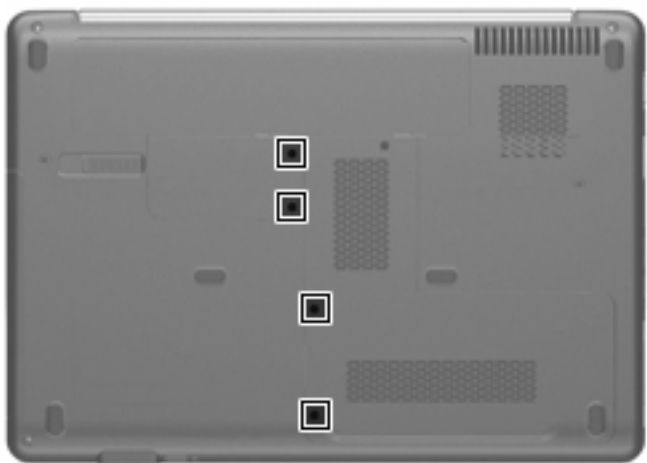


Where used: 2 screws that secure the fan to the base enclosure.

Phillips PM2.5×5.0 captive screw

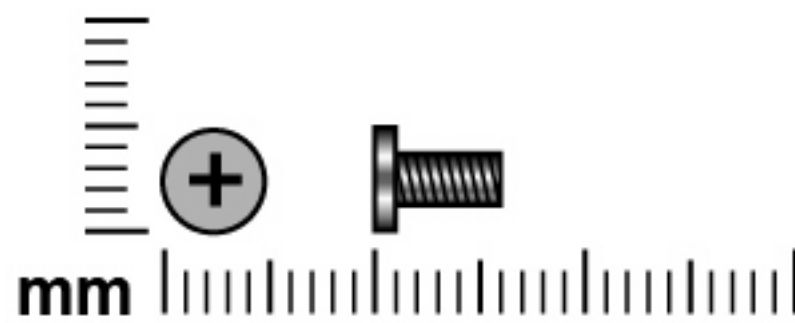


Color	Quantity	Length	Thread	Head diameter
Black	4	5.0 mm	2.5 mm	5.5 mm



Where used: 4 captive screws (secured by C-clips) that secure the hard drive and RTC battery compartment covers to the base enclosure.

Phillips PM2.5×6.0 screw

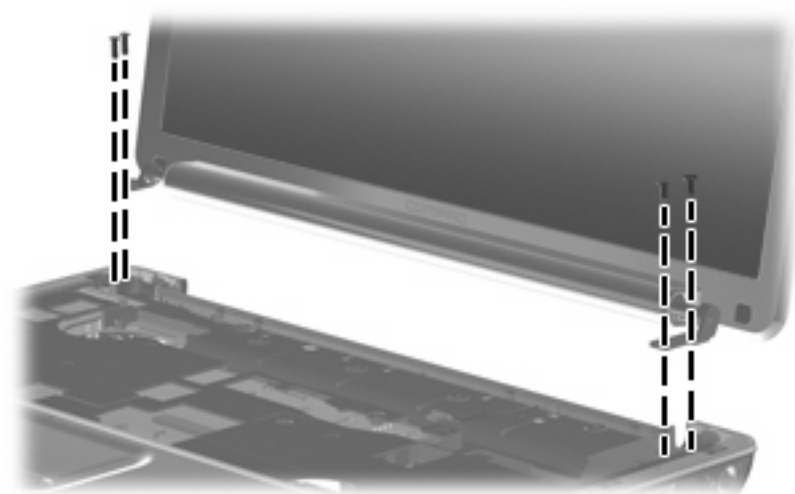


mm

Color	Quantity	Length	Thread	Head diameter
Black	7	6.0 mm	2.5 mm	5.5 mm



Where used: 2 screws that secure the top cover to the base enclosure.

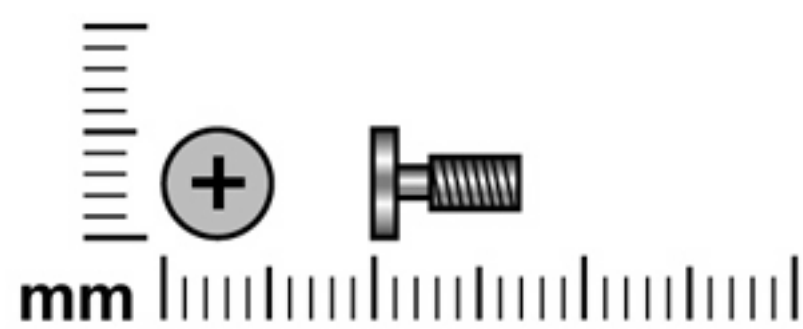


Where used: 4 screws that secure the display assembly to the base enclosure.

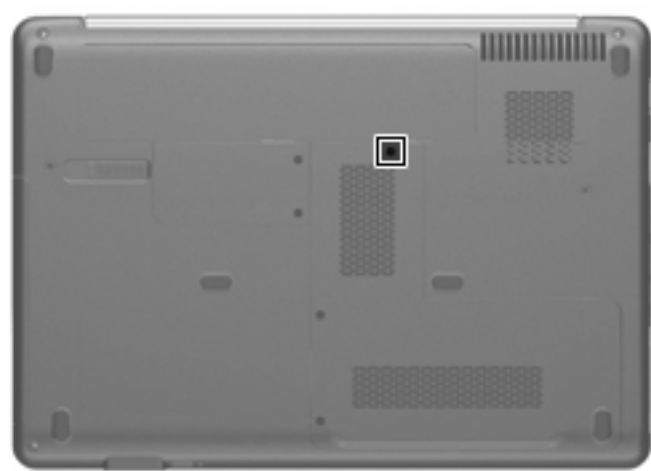


Where used: One screw that secures the keyboard cover to the base enclosure.

Phillips PM2.5×7.0 captive screw

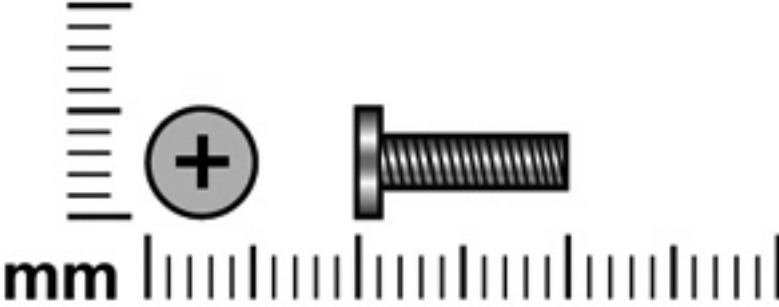


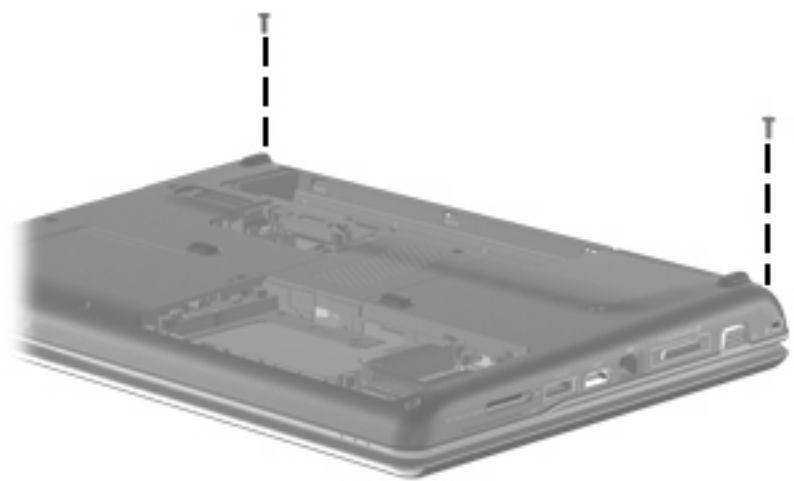
Color	Quantity	Length	Thread	Head diameter
Black	1	7.0 mm	2.5 mm	5.5 mm



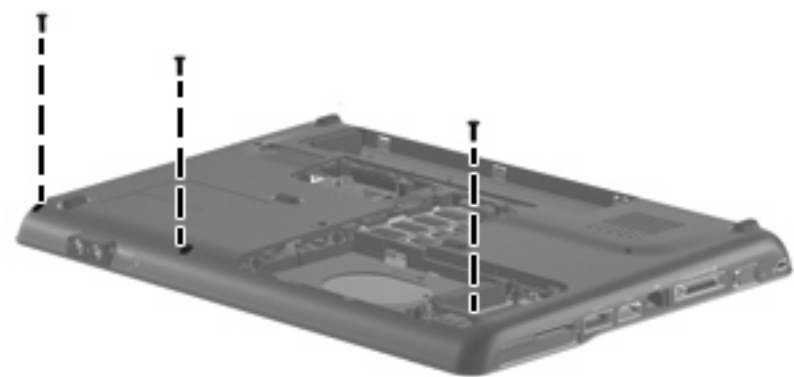
Where used: One captive screw (secured by a C-clip) that secures the memory module compartment cover to the base enclosure.

Phillips PM2.5×10.0 screw

				
Color	Quantity	Length	Thread	Head diameter
Black	5	10.0 mm	2.5 mm	5.5 mm

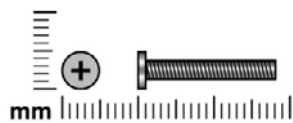


Where used: 2 screws that secure the keyboard cover to the base enclosure.

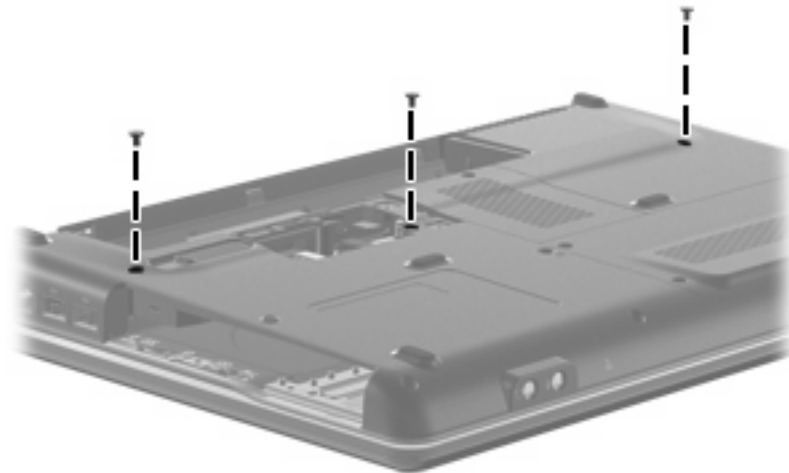


Where used: 3 screws that secure the top cover to the base enclosure.

Phillips PM2.5×18.0 screw

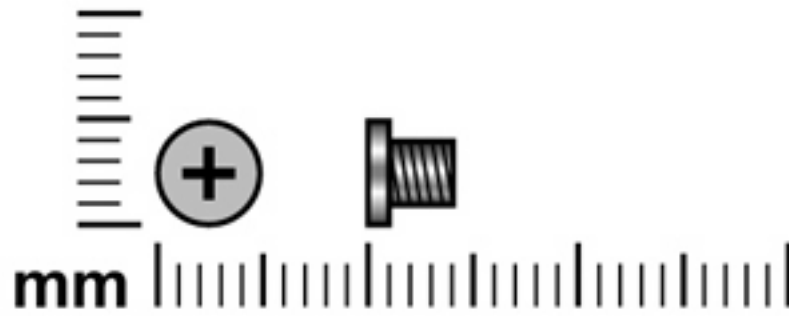


Color	Quantity	Length	Thread	Head diameter
Black	3	18.0 mm	2.5 mm	5.5 mm

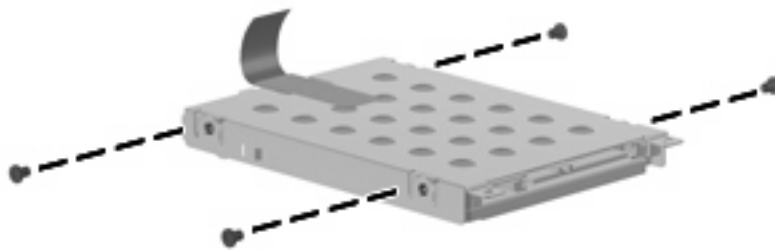


Where used: 3 screws that secure the keyboard to the base enclosure.

Phillips PM3.0×3.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	4	3.0 mm	3.0 mm	5.5 mm



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


8 Backup and recovery

Recovering system information


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

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

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

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


Creating recovery discs

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

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

Note the following guidelines before creating recovery discs:

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

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


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

To create a set of recovery discs:

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

Recovery Manager opens.

2. Click **Advanced Options**.


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

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

Backing up your information

When to back up

- On a regularly scheduled basis

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

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

Backup suggestions


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

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

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

Using system restore points


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

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

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

When to create restore points

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

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

Create a system restore point


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

Restore to a previous date and time


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

1. Select **Start > Control Panel > System and Maintenance > System**.
2. In the left pane, click **System protection**.
3. Click the **System Protection** tab.
4. Click the **System Restore** button, and then click **Next**.
The System Restore window opens.
5. Follow the on-screen instructions.

Performing a recovery

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

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

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


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

Recovering from the recovery discs

To restore the system from the recovery discs:

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

Recovering from the dedicated recovery partition (select models only)

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

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

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

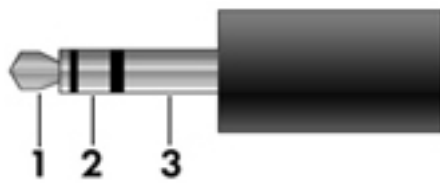
1. Access Recovery Manager in either of the following ways:
 - Select **Start > All Programs > Recovery Manager > Recovery Manager**.
 - or—
 - Restart the computer and press **f11** while the “Press <F11> for recovery” message is displayed on the screen. Then select **Recovery Manager**.

Recovery Manager opens.

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

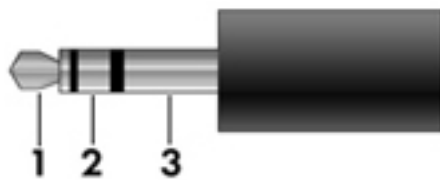
9 Connector pin assignments

Audio-in (microphone)



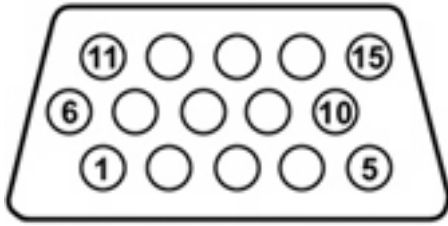
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

Audio-out (headphone)



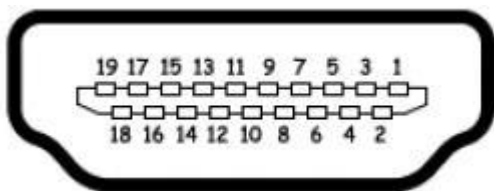
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

External monitor



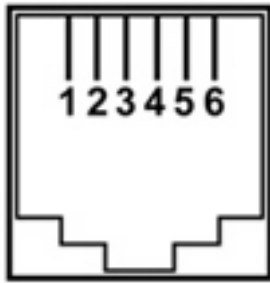
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

HDMI



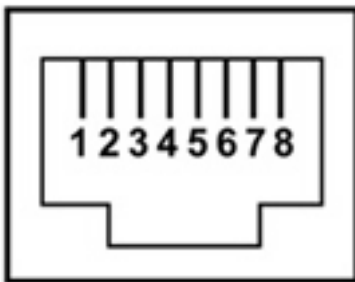
Pin	Signal
1	Transition minimized differential signal (TMDS) data 2+
2	TMDS data 2 shield
3	TMDS data 2-
4	TMDS data 1+
5	TMDS data 1shield
6	TMDS data 1-
7	TMDS data 0+
8	TMDS data 0 shield
9	TMDS data 0-
10	TMDS clock+
11	TMDS clock shield
12	TMDS clock-
13	Consumer electronic control (CEC)
14	Not connected
15	DDC clock
16	DDC data
17	Ground
18	+5V power
19	Hot plug detect

RJ-11 (modem) (select models only)



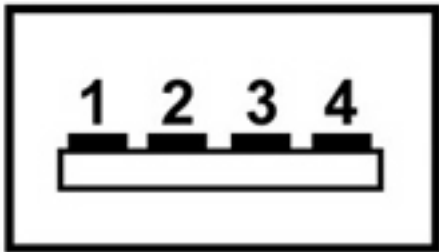
Pin	Signal
1	Unused
2	Tip
3	Ring
4	Unused
5	Unused
6	Unused

RJ-45 (network)



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

Universal Serial Bus



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

10 Power cord set requirements

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

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

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

Requirements for all countries or regions

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

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

Requirements for specific countries or regions

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

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

11 Recycling

Battery

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

Display

⚠ **WARNING!** The backlight contains mercury. Caution must be exercised when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

⚠ **CAUTION:** The procedures in this 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.

📝 **NOTE: Materials Disposal.** This HP product contains mercury in the backlight in the display assembly that might require special handling at end-of-life. Disposal of mercury may be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities, or see the Electronic Industries Alliance (EIA) Web site at <http://www.eiae.org>.

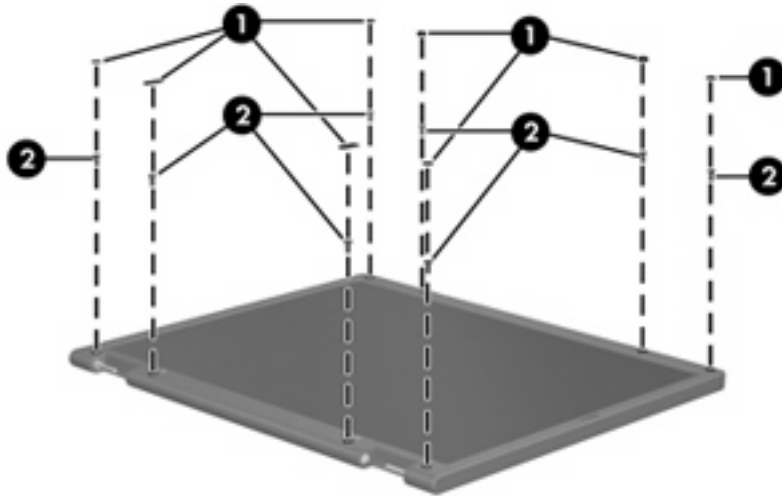
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.



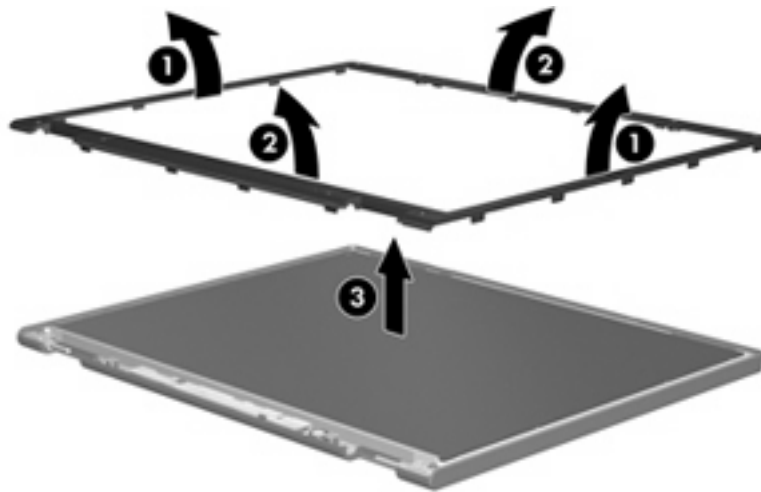
📝 **NOTE:** The procedures provided in this chapter are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps to disassemble the display assembly:

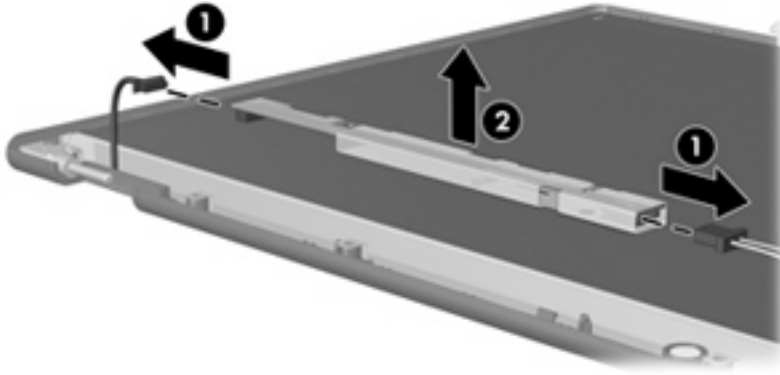
1. Remove all screw covers (1) and screws (2) that secure the display bezel to the display assembly.



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

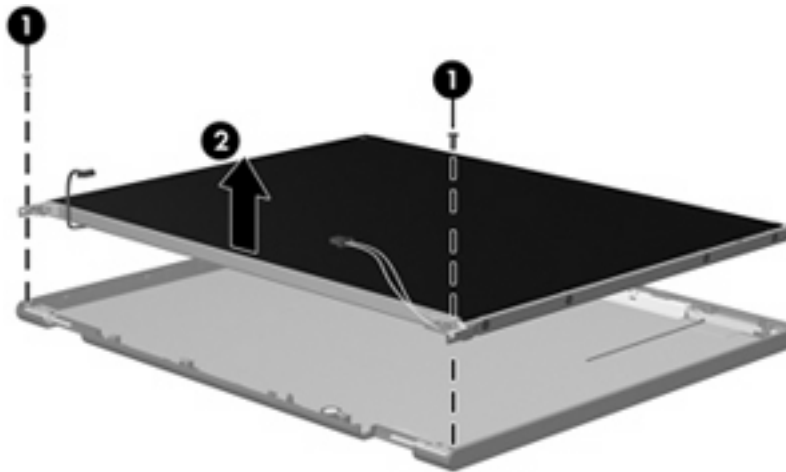


4. Disconnect all display panel cables (1) from the display inverter and remove the inverter (2).



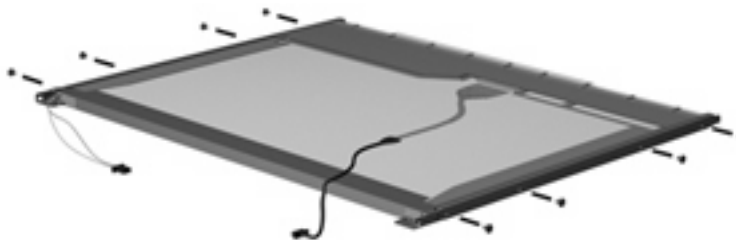
5. Remove all screws (1) that secure the display panel assembly to the display enclosure.

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



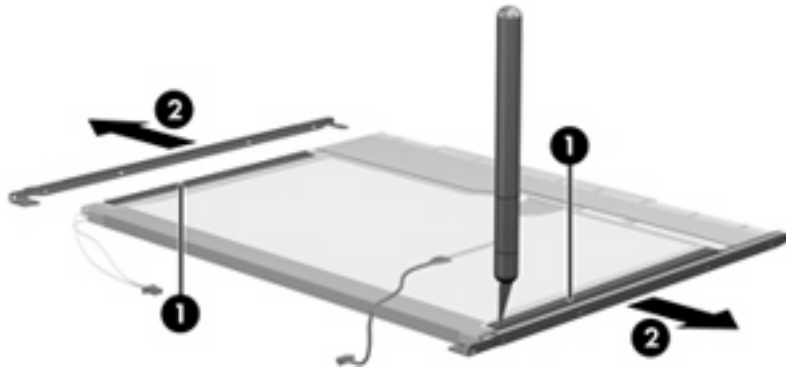
7. Turn the display panel assembly upside down.

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



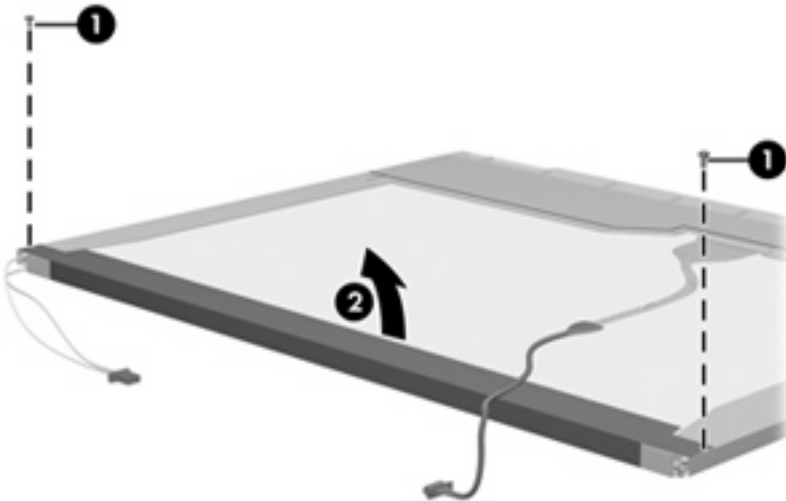
9. Use a sharp-edged tool to cut the tape (1) that secures the sides of the display panel to the display panel frame.

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



11. Remove the screws (1) that secure the backlight cover to the display panel.

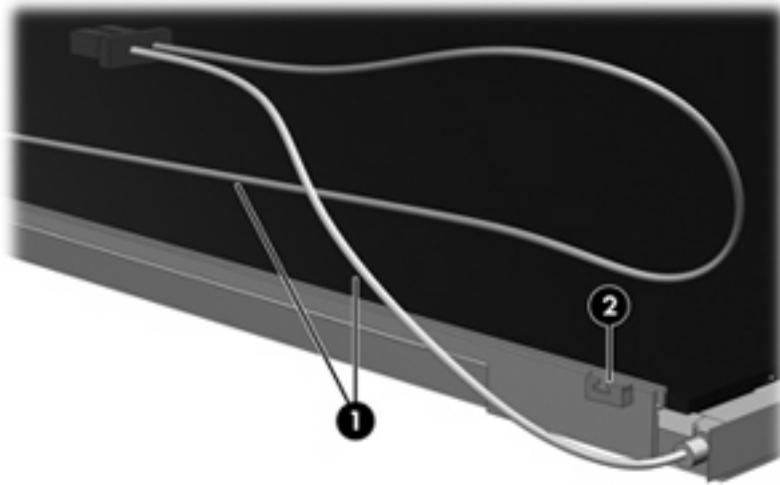
12. Lift the top edge of the backlight cover (2) and swing it outward.



13. Remove the backlight cover.

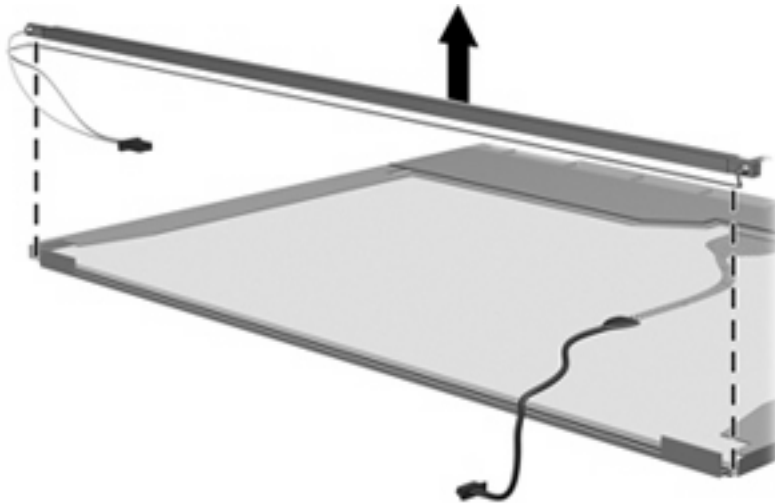
14. Turn the display panel right-side up.

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

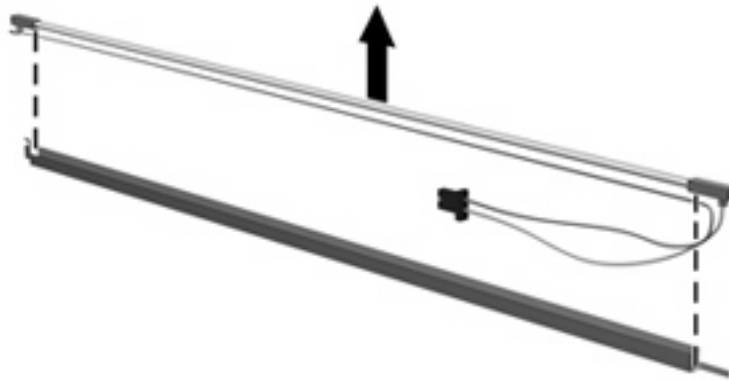


16. Turn the display panel upside down.
17. Remove the backlight frame from the display panel.

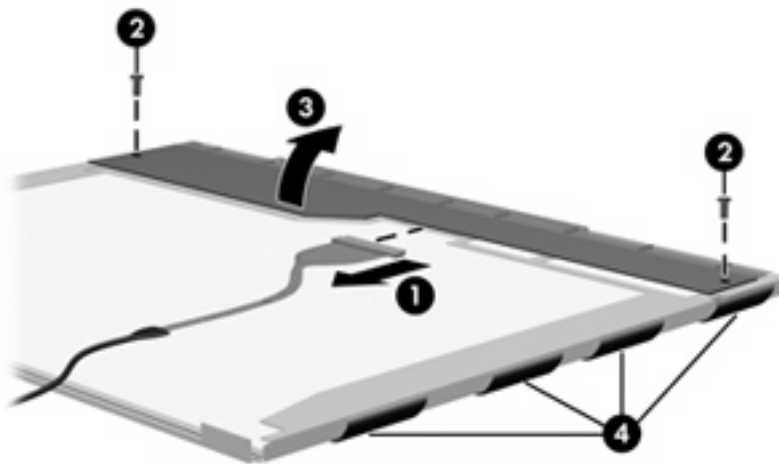
⚠ **WARNING!** The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.



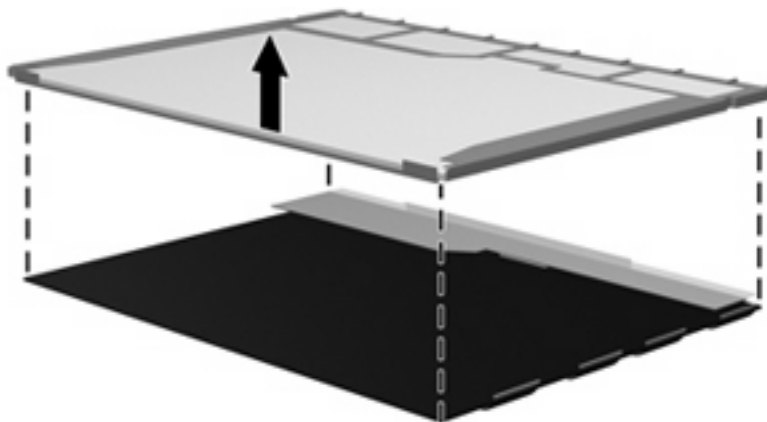
18. Remove the backlight from the backlight frame.



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



23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.

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