

HP G50 Notebook PC and Compaq Presario CQ50 Notebook PC Maintenance and Service Guide

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Safety warning notice

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

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1 Product description

Category	Description	HP G50 Notebook PC	Compaq Presario CQ50 Notebook PC
Product Name	HP G50 Notebook PC	√	
	Compaq Presario CQ50 Notebook PC		√
Processors	AMD processors:		
	Turion™ Ultra Dual-Core ZM-82 2.20-GHz processor (35W, 2-MB L2 cache)	√	√
	Turion Ultra Dual-Core ZM-80 2.10-GHz processor (35W, 2-MB L2 cache)	√	√
	Turion Dual-Core RM-70 2.00-GHz processor (35W, 1-MB L2 cache)	√	√
	Athlon™ X2 Dual-Core QL-60 1.90-GHz processor (35W, 1-MB L2 cache)	√	√
	Sempron™ Single Core SI-40 2.00-GHz processor (25W, 512-KB L2 cache)	√	√
	Intel processors:		
	Intel® Core™2 Duo T9600 2.80-GHz processor (6-MB L2 cache)	√	√
	Intel Core2 Duo T9400 2.53-GHz processor (6-MB L2 cache)	√	√
	Intel Core2 Duo P8600 2.40-GHz processor (3-MB L2 cache)	√	√
	Intel Core2 Duo P8400 2.26-GHz processor (3-MB L2 cache)	√	√
	Intel Core2 Duo P7350 2.00-GHz processor (3-MB L2 cache)	√	√
	Intel Core2 Duo T5900 2.20-GHz processor (2-MB L2 cache)	√	√
	Intel Core2 Duo T5800 2.00-GHz processor (2-MB L2 cache)	√	√
	Intel Pentium® Dual-Core T3400 2.16-GHz processor (1-MB L2 cache)	√	√
	Intel Pentium Dual-Core T3200 2.00-GHz processor (1-MB L2 cache)	√	√

Category	Description	HP G50 Notebook PC	Compaq Presario CQ50 Notebook PC
	Intel Celeron® 585 2.16-GHz processor (1-MB L2 cache)	√	√
	Intel Celeron 575 2.00-GHz processor (1-MB L2 cache)	√	√
Chipset	Northbridge and Southbridge: NVIDIA MCP77MV GeForce 8200M	√	√
Graphics	<p>Unified Memory Architecture (UMA) graphics subsystem integrated with shared system memory (dynamically allocated)</p> <ul style="list-style-type: none"> • Up to 256 MB of total available graphics subsystem memory when computer system memory equals or is greater than 2048 MB • Up to 128 MB of total available graphics subsystem memory when computer system memory equals or is greater than 1024 MB • Up to 64 MB of total available graphics subsystem memory when computer system memory equals 512 MB <p>NVIDIA Discrete GeForce 9200M GE with 256 MB of dedicated video memory</p>	√	√
Panel	15.4-inch WXGA BrightView display panel (1280 × 800)	√	√
	Typical brightness: 200 nits	√	√
	All display assemblies include 2 wireless local area network (WLAN) antennae	√	√
Memory	<p>2 customer-accessible/upgradable memory module slots</p> <p>Supports dual-channel memory</p> <p>Supports up to 4 GB of system RAM</p> <p>Supports PC2-6400, 800-MHz, DDR2 and PC2-5300, 667-MHz, DDR2</p>	√	√
	Supports the following configurations:	√	√
	<ul style="list-style-type: none"> • 4096-MB total system memory (2048 × 2, dual-channel) • 3072-MB total system memory (2048 + 1024) • 2048-MB total system memory (2048 × 1, 1024 × 2, dual-channel) • 1536-MB total system memory (1024 + 512) • 1024-MB total system memory (1024 × 1, 512 × 2, dual-channel) • 512-MB total system memory (512 × 1, only on computer models equipped with FreeDOS and Windows Vista® Basic) 		

Category	Description	HP G50 Notebook PC	Compaq Presario CQ50 Notebook PC
Hard drives	Supports 9.5-mm, 2.5-inch hard drives	√	√
	Customer accessible	√	√
	Serial ATA	√	√
	Supports the following drives:	√	√
	<ul style="list-style-type: none"> ● 250-GB, 5400-rpm ● 200-GB, 5400-rpm ● 160-GB, 5400-rpm ● 120-GB, 5400-rpm 		
Optical drives	Fixed (removal of 1 screw required)	√	√
	Customer accessible	√	√
	Parallel ATA	√	√
	12.7-mm tray load	√	√
	Supports the following drives:	√	√
	<ul style="list-style-type: none"> ● DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe ● DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive ● Blu-ray BD-ROM with SuperMulti DVD±RW and CD-RW Double-Layer Combo Drive 		
Diskette drive	Supports external USB diskette drive only	√	√
Webcam	VGA camera, 640 × 480 resolution, 22.5 frames per second, fixed angle, with activity light	√	√
Microphone	Single analog microphone	√	√
Audio	High-definition audio supports Microsoft premium requirements	√	√
	2 HP-branded Altec/Lansing speakers	√	
	2 Presario-branded Altec/Lansing speakers		√
Modem	56K V.92 1.5-inch data/fax modem	√	√
	Computer models not equipped with a modem will have a cover on the RJ-11 jack opening	√	√
	Supports all world-wide certification requirements	√	√
Ethernet	Integrated 10/100 network interface card (NIC)	√	√
Wireless	Integrated WLAN options by way of wireless module:		
	2 wireless antennae built into display assembly	√	√
	Support for no-WLAN option	√	√

Category	Description	HP G50 Notebook PC	Compaq Presario CQ50 Notebook PC
	Support for the following WLAN formats: <ul style="list-style-type: none">● Atheros AR9280 802.11a/b/g/n● Atheros AR2425 802.11b/g● Broadcom BCM4312 802.11b/g	√	√
External media card	Digital Media Slot supporting SD, MMC, MS, MSPro, xD. With adapter (not included), supports mini versions of SD, MMC, MS Duo.	√	√
Ports			
	Audio-in (mono microphone)	√	√
	Audio-out (stereo headphone)	√	√
	High-definition multimedia interface (HDMI) version 1.3 supporting 1080p with high-bandwidth digital content protection (HDCP) key	√	√
	RJ-11 (modem)	√	√
	RJ-45 (Ethernet, includes link and activity lights)	√	√
	USB (2)	√	√
	VGA (Dsub 15-pin) supporting 1920 × 1200 external resolution at 75-Hz, 1600 × 1200 external resolution at 75-Hz (hot plug/unplug with auto-detect)	√	√
	Multi-pin AC power	√	√
Docking	None	√	√
Keyboard/pointing devices	Spill-resistant 30.5-cm (12.0-inch) keyboard	√	√
	TouchPad with 2 TouchPad buttons	√	√
	Supports 4-way scroll	√	√
	Taps enabled as default	√	√
Power requirements	65-W AC adapter with localized cable plug support	√	√
	Supports the following batteries: <ul style="list-style-type: none">● 12-cell, 2.20-Ah, 95-Wh● 6-cell, 2.55-Ah, 55-Wh● 6-cell, 2.20-Ah, 47-Wh	√	√
Security	Security cable slot	√	√
Operating system	Preinstalled:		
	Windows Vista Business 32	√	√
	Windows Vista Premium 32	√	√
	Windows Vista Home Basic 32	√	√
	Windows Vista Starter Edition 32	√	√

Category	Description	HP G50 Notebook PC	Compaq Presario CQ50 Notebook PC
	FreeDOS	√	√
Serviceability	End-user replaceable parts:		
	AC adapter	√	√
	Battery (system)	√	√
	Hard drive	√	√
	Memory module	√	√
	Optical drive	√	√
	WLAN module	√	√

2 External component identification

Top components

Display components



Item	Component	Description
(1)	Wireless antennae (2, select models only)	<p>Send and receive signals from one or more wireless devices.</p> <p>NOTE: The antennae are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennae free from obstructions. To see wireless regulatory notices, refer to the section of the <i>Regulatory, Safety and Environmental Notices</i> that applies to your country or region. These notices are located in Help and Support.</p>
(2)	Integrated webcam light (select models only)	On: The webcam is in use.

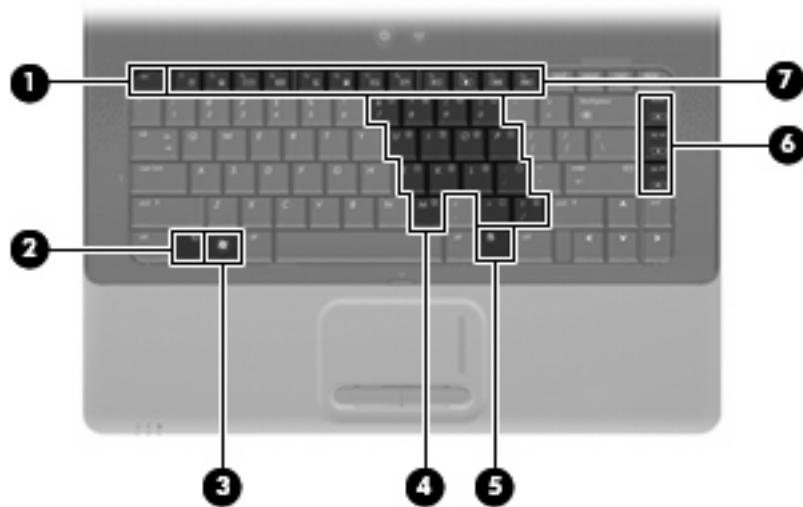
Item	Component	Description
(3)	Integrated webcam (select models only)	Records audio and video and captures still photographs.
(4)	Internal microphone	Records sound.

Buttons and speakers



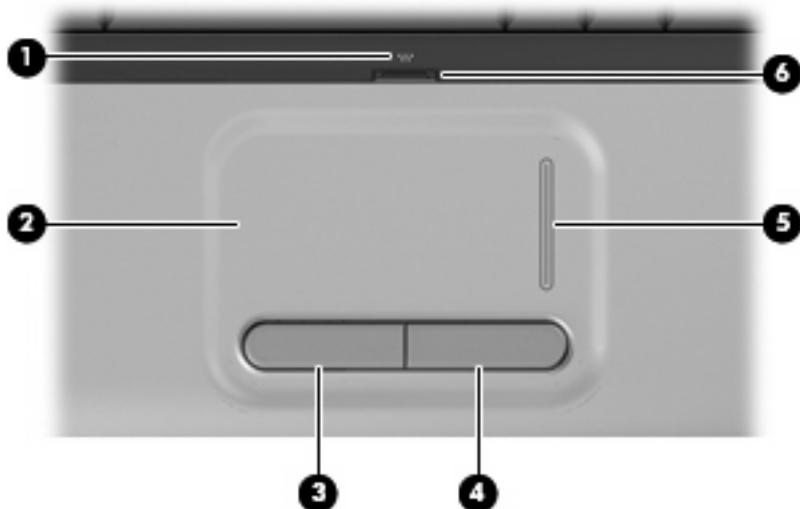
Item	Component	Description
(1)	Speakers (2)	Produce sound.
(2)	Power button	<ul style="list-style-type: none"> When the computer is off, press the button to turn on the computer. When the computer is on, press the button briefly to initiate Sleep. When the computer is in the Sleep state, press the button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

Keys



Item	Component	Function
(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)	Embedded numeric keypad keys	Can be used like the keys on an external numeric keypad.
(5)	Windows applications key	Displays a shortcut menu for items beneath the pointer.
(6)	Volume keys	Adjusts system volume when pressed in combination with the fn key.
(7)	Function keys	Execute frequently used system functions when pressed in combination with the fn key.

TouchPad



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

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

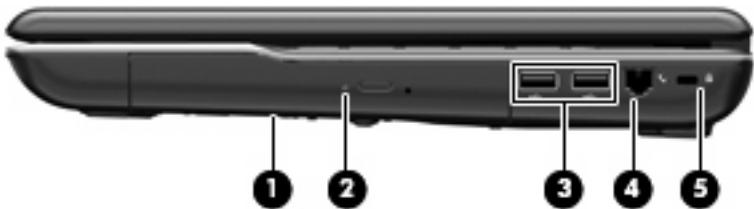
Front components



Item	Component	Function
(1)	Power light	<ul style="list-style-type: none">On: The computer is on.Blinking: The computer is in the Sleep state.Off: The computer is off or in Hibernation.
(2)	Battery light	<ul style="list-style-type: none">On: A battery is charging.Blinking: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly.Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
(3)	Drive light	Blinking: The hard drive or optical drive is being accessed.
(4)	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.

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

Right-side components



Item	Component	Function
(1)	Optical drive	Reads optical discs and, on select models, also writes to optical discs.
(2)	Optical drive light	Blinking: The optical drive is being accessed.
(3)	USB ports (2)	Connect an optional USB devices.
(4)	RJ-11 (modem) jack	Connects a modem cable.
(5)	Security cable slot	Attaches an optional security cable to the computer.

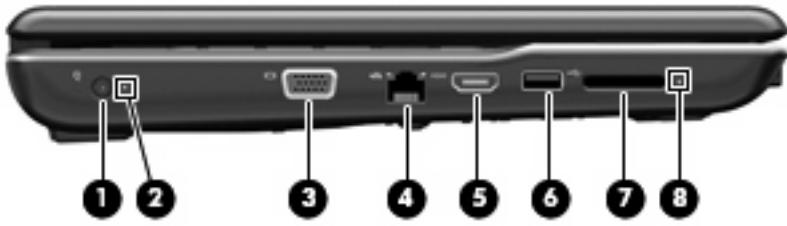
NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.

Rear component



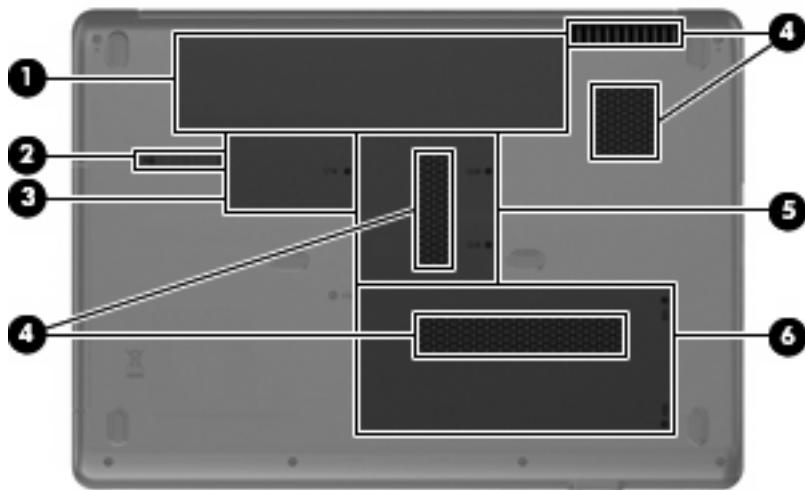
Component	Function
Vent	Enables airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.

Left-side components



Item	Component	Function
(1)	Power connector	Connects an AC adapter.
(2)	AC adapter light	<ul style="list-style-type: none">On: The computer is connected to external power.Off: The computer is not connected to external power.
(3)	External monitor port	Connects an external VGA monitor or projector.
(4)	RJ-45 (network) jack	Connects a network cable.
(5)	HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component.
(6)	USB port	Connects an optional USB device.
(7)	Digital Media Slot	Supports the following optional digital card formats: <ul style="list-style-type: none">Memory Stick (MS)Memory Stick Pro (MSP)MultiMediaCard (MMC)Secure Digital (SD) Memory CardxD-Picture Card (XD)xD-Picture Card (XD) Type HxD-Picture Card (XD) Type M
(8)	Digital Media Slot light	On: A digital card is being accessed.

Bottom components

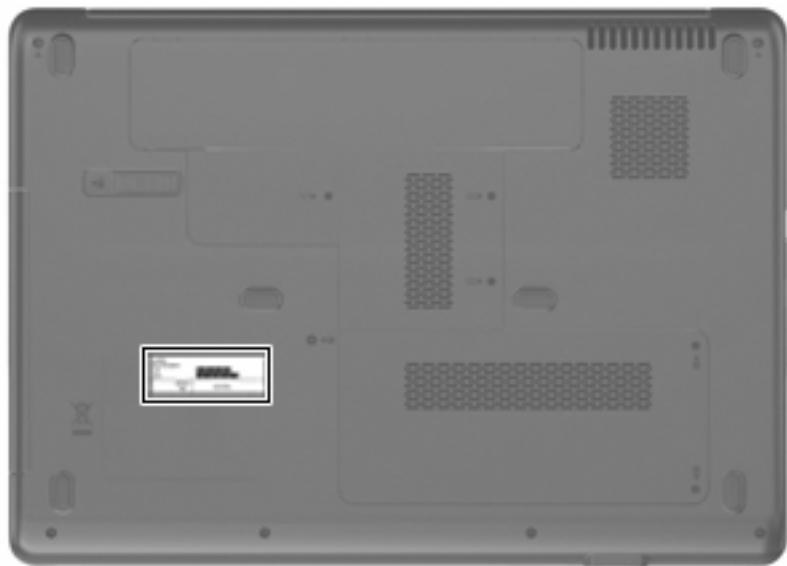


Item	Component	Function
(1)	Battery bay	Holds the battery.
(2)	Battery release latch	Releases the battery from the battery bay.
(3)	WLAN module compartment	Holds the WLAN module. CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact technical support through Help and Support.
(4)	Vents (4)	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.
(5)	Memory module compartment	Contains the memory module slots.
(6)	Hard drive bay	Holds the hard drive.

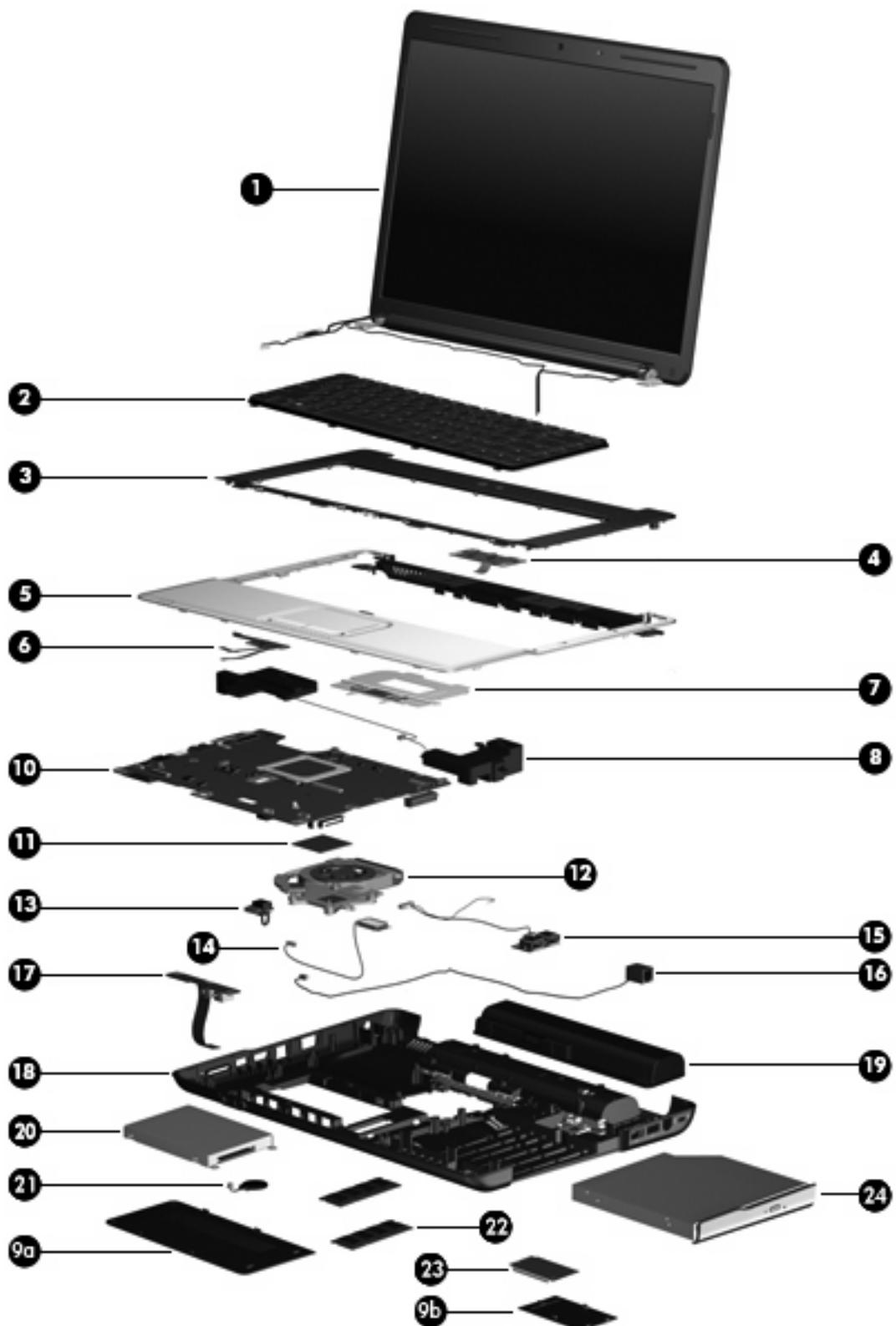
3 Illustrated parts catalog

Serial number location

When ordering parts or requesting information, provide the computer serial number and model number located on the bottom of the computer.



Computer major components



Item	Description	Spare part number
(1)	15.4-inch, WXGA+BrightView display assemblies (include 2 WLAN antenna transceivers and cables, microphones and cables, and logo)	
	For use only with HP G50 computer models	
	Includes webcam module and cable	487603-001
	Does not include webcam module and cable	487602-001
	For use only with Compaq CQ50 computer models	
	Includes webcam module and cable	485047-001
	Does not include webcam module and cable	485046-001
	Refer to Display assembly components on page 22 , for more display assembly component spare part information.	
(2)	Keyboards (include keyboard cable)	
	For use in Belgium	486654-A41
	For use in Canada	486654-121
	For use in the Czech Republic	486654-221
	For use in France	486654-051
	For use in Denmark, Finland, and Norway	486654-DH1
	For use in Germany	486654-041
	For use in Greece	486654-151
	For use in Israel	486654-BB1
	For use in Italy	486654-061
	For use in Latin America	486654-161
	For use in the Netherlands	486654-B31
	For use in Portugal	486654-131
	For use in Russia	486654-251
	For use in Saudi Arabia	486654-171
	For use in South Korea	486654-AD1
	For use in Spain	486654-071
	For use in Switzerland	486654-111
	For use in Taiwan	486654-AB1
	For use in Thailand	486654-281
	For use in Turkey	486654-141
	For use in the United Kingdom	486654-031
	For use in the United States	486654-001
(3)	Keyboard cover	486626-001
(4)	Power button board (includes power button board cable)	486627-001

Item	Description	Spare part number
(5)	Top cover (includes TouchPad board)	486628-001
(6)	TouchPad on/off button board (includes cables)	486630-001
(7)	TouchPad button board and bracket	486629-001
(8)	Speakers (includes left and right speakers and cables)	486632-001
	Plastics Kit (see Plastics Kit on page 23 for more Plastics Kit spare part information)	486621-001
(9a)	Hard drive cover	
(9b)	WLAN module compartment cover	
(10)	System boards (include UMA graphics subsystem memory, built-in modem, and replacement thermal material)	
	Equipped with AMD processors:	
	For use only with HP G50 and Compaq CQ50 computer models equipped with a Digital Media Slot and an HDMI port	489810-001
	For use only with HP G50 and Compaq CQ50 computer models equipped only with a Digital Media Slot	486550-001
	For use only with Compaq CQ50 computer models equipped with an HDMI port	490828-001
	For use only with Compaq CQ50 computer models not equipped with an HDMI port	494182-001
	Equipped with Intel processors:	
	For use only with HP G50 and Compaq CQ50 computer models equipped with a GM45 chipset, Digital Media Slot, and HDMI port	485218-001
	For use only with HP G50 and Compaq CQ50 computer models equipped with a GM45 chipset and Digital Media Slot	494281-001
	For use only with HP G50 and Compaq CQ50 computer models equipped with a GL40 chipset, Digital Media Slot, and HDMI port	485219-001
	For use only with HP G50 and Compaq CQ50 computer models equipped with a GL40 chipset and Digital Media Slot	494282-001
	For use only with HP G50 and Compaq CQ50 computer models equipped with NVIDIA GeForce 9200M graphics, a Digital Media Slot, and an HDMI port	488338-001
	For use only with HP G50 and Compaq CQ50 computer models equipped with NVIDIA GeForce 9200M graphics and a Digital Media Slot	494283-001
(11)	Processors (include replacement thermal material)	
	• AMD Turion Ultra Dual-Core ZM-82 2.20-GHz processor (35W, 2-MB L2 cache)	480852-006
	• AMD Turion Ultra Dual-Core ZM-80 2.10-GHz processor (35W, 2-MB L2 cache)	480851-006
	• AMD Turion Dual-Core RM-70 2.00-GHz processor (35W, 1-MB L2 cache)	480857-005
	• AMD Sempron Single Core SI-40 2.00-GHz processor (25W, 512-KB L2 cache)	487350-003
	• AMD Athlon X2 Dual-Core QL-60 1.90-GHz processor (35W, 1-MB L2 cache)	480856-005
	• Intel Core2 Duo T9600 2.80-GHz processor (6-MB L2 cache)	489157-006
	• Intel Core2 Duo T9400 2.53-GHz processor (6-MB L2 cache)	483260-006
	• Intel Core2 Duo P8600 2.40-GHz processor (3-MB L2 cache)	483259-005
	• Intel Core2 Duo P8400 2.26-GHz processor (3-MB L2 cache)	483258-006

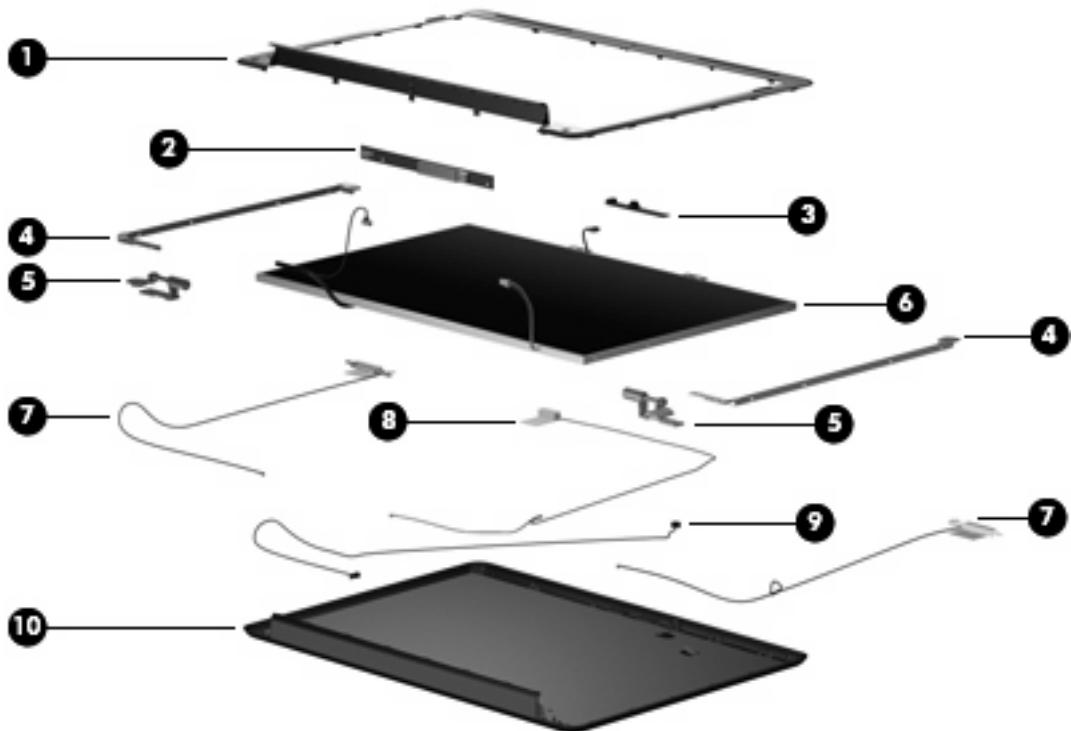
Item	Description	Spare part number
	• Intel Core2 Duo P7350 2.00-GHz processor (3-MB L2 cache)	501520-001
	• Intel Core2 Duo T5900 2.20-GHz processor (2-MB L2 cache)	501522-001
	• Intel Core2 Duo T5800 2.00-GHz processor (2-MB L2 cache)	501521-001
	• Intel Pentium Dual-Core T3400 2.16-GHz processor (1-MB L2 cache)	501523-001
	• Intel Pentium Dual-Core T3200 2.00-GHz processor (1-MB L2 cache)	501519-001
	• Intel Celeron 585 2.16-GHz processor (1-MB L2 cache)	494285-001
	• Intel Celeron 575 2.00-GHz processor (1-MB L2 cache)	494284-001
	Processor bracket (not illustrated)	486635-001
(12)	Fan/heat sink assembly (includes replacement thermal material)	486636-001
(13)	Power connector cable	486637-001
(14)	Bluetooth® module (does not include Bluetooth module cable)	483113-001
	Bluetooth module cable	486640-001
(15)	USB board (does not include USB board cable)	486633-001
	USB board cable (includes num lock LED)	486639-001
(16)	RJ-11 connector cable	486638-001
(17)	Audio board (includes audio board cable)	486634-001
(18)	Base enclosures (include rubber feet)	
	For use only with computer models equipped with a Digital Media Slot and an HDMI port	486625-001
	For use only with computer models equipped with a Digital Media Slot, but not an HDMI port	492300-001
	For use only with computer models equipped with an HDMI port, but not a Digital Media Slot	492301-001
	For use only with computer models not equipped with a Digital Media Slot or an HDMI port	494183-001
	Rubber Kit (not illustrated, includes 8 computer feet)	486623-001
(19)	Batteries	
	12-cell, 2.20-Ah, 95-Wh battery	484172-001
	6-cell, 2.55-Ah, 55-Wh battery	484171-001
	6-cell, 2.20-Ah, 47-Wh battery	485041-001
(20)	Hard drives (include hard drive bracket and connector)	
	For models equipped with AMD processors:	
	250-GB, 5400-rpm	485036-001
	200-GB, 5400-rpm	490829-001
	160-GB, 5400-rpm	485035-001
	120-GB, 5400-rpm	485034-001
	For models equipped with Intel processors:	
	250-GB, 5400-rpm	485036-002

Item	Description	Spare part number
	160-GB, 5400-rpm	485035-002
	120-GB, 5400-rpm	485034-002
	Hard Drive Hardware Kit (includes hard drive bracket, connector, and screws)	485037-001
(21)	RTC battery	486624-001
(22)	Memory modules	
	For models equipped with AMD processors:	
	PC2-6400, 667-MHz, DDR2	
	2048-MB	485033-001
	1024-MB	485032-001
	512-MB	485031-001
	PC2-5300, 667-MHz, DDR2	
	2048-MB	485030-001
	1024-MB	485029-001
	512-MB	485028-001
	For models equipped with Intel processors:	
	PC2-6400, 667-MHz, DDR2	
	2048-MB	485033-002
	1024-MB	485032-002
	512-MB	485031-002
	PC2-5300, 667-MHz, DDR2	
	2048-MB	485030-002
	1024-MB	485029-002
	512-MB	485028-002
(23)	WLAN modules	
	Atheros AR9280 802.11a/b/g/n WLAN modules:	
	<ul style="list-style-type: none"> • For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States 	482260-001
	<ul style="list-style-type: none"> • For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, 	482260-002

Item	Description	Spare part number
	Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	
•	For use in Antigua & Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, Uruguay, the United States, Venezuela, and Vietnam	480985-001
	802.11a/b/g WLAN module for use in the United States and Canada	482957-001
Atheros AR2425 802.11b/g WLAN modules:		
•	For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States	459339-001
•	For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominican, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	459339-002
Broadcom BCM4312 802.11b/g WLAN modules:		
•	For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States	459263-001
•	For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria,	459263-002

Item	Description	Spare part number
	Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	
(24)	Optical drives (include optical drive bezel and bracket)	
	For models equipped with AMD processors:	
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	485039-001
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive	485038-001
	For models equipped with Intel processors:	
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	485039-002
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive	485038-002
	Blu-ray BD-ROM with SuperMulti DVD±RW and CD-RW Double-Layer Combo Drive	485040-002

Display assembly components



Item	Description	Spare part number
(1) Display bezels:		
	For use only with HP G50 computer models equipped with a webcam module and a microphone	487607-001
	For use only with HP G50 computer models equipped only with a microphone	487606-001
	For use only with Compaq CQ50 computer models equipped with a webcam module and a microphone	486582-001
	For use only with Compaq CQ50 computer models equipped only with a microphone	486555-001
(2) Display inverter		486556-001
(3) Webcam module (does not include webcam module cable)		486581-001
(4) Display panel brackets (includes left and right brackets)		486559-001
(5) Display Hinge Kit (includes left and right display hinges)		486558-001
(6) 15.4-inch, WXGA+BrightView display panel (includes display panel and backlight cables)		485027-001
	Display panel cable (not illustrated)	486561-001
	Display screw kit (not illustrated)	489133-001
	15.4-inch, WXGA+BrightView display panel only (not illustrated, does not include cables)	488341-001
(7) Wireless Antenna Kit (includes left and right wireless antenna transceivers and cables)		486562-001
(8) Webcam module cable		486583-001
(9) Microphone (includes receiver and cable)		486560-001

Item	Description	Spare part number
(10)	Display enclosures (include logo)	
	For use only with HP G50 computer models	487605-001
	For use only with Compaq CQ50 computer models	486554-001
	Display Rubber Kit (not illustrated, includes display bezel rubber screw covers)	486584-001
	Display Screw Kit (not illustrated)	486557-001

Plastics Kit



Item	Description	Spare part number
	Plastics Kit:	486621-001
(1)	WLAN module compartment cover (includes 1 captive screw, secured by a C-clip)	
(2)	Hard drive cover (includes 2 captive screws, secured by C-clips)	

Mass storage devices



Item	Description	Spare part number
(1)	Hard drives (include connector and bracket)	
	250-GB, 5400-rpm	485036-001
	200-GB, 5400-rpm	490829-001
	160-GB, 5400-rpm	485035-001
	120-GB, 5400-rpm	485034-001
	Hard Drive Hardware Kit (includes connector, bracket, and screws)	485037-001
(2)	Optical drives (include bezel and bracket)	
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	485039-001
	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive	485038-001
	Blu-ray BD-ROM with SuperMulti DVD±RW and CD-RW Double-Layer Combo Drive	485040-002

Miscellaneous parts

Description	Spare part number
65-W PFC AC adapter	463958-001
Power cords:	
For use in Argentina	490371-D01
For use in Australia	490371-011
For use in Denmark	490371-081
For use in Europe	490371-021
For use in India	490371-D61
For use in Israel	490371-BB1
For use in Italy	490371-061
For use in South Africa	490371-AR1
For use in South Korea	490371-AD1
For use in Switzerland	490371-111
For use in Taiwan	490371-AB1
For use in the United Kingdom and Singapore	490371-031
For use in the United States	490371-001
Screw Kit	486622-001
● Phillips PM3.0×3.0 screw	
● Phillips PM2.5×10.0 captive screw	
● Phillips PM2.5×10.0 screw	
● Phillips PM2.5×8.0 screw	
● Phillips PM2.5×7.0 screw	
● Phillips PM2.5×6.0 captive screw	
● Phillips PM2.5×5.0 screw	
● Phillips PM2.0×10.0 captive screw	
● Phillips PM2.0×6.0 screw	
● Phillips PM2.0×3.0 screw	

Sequential part number listing

Spare part number	Description
459263-001	Broadcom BCM4312 802.11b/g WLAN module for use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States
459263-002	Broadcom BCM4312 802.11b/g WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
459339-001	Atheros AR2425 802.11b/g WLAN module for use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States
459339-002	Atheros AR2425 802.11b/g WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
463958-001	65-W PFC AC adapter
480851-006	AMD Turion Ultra Dual-Core ZM-80 2.10-GHz processor (35W, 2-MB L2 cache, includes replacement thermal material)
480852-006	AMD Turion Ultra Dual-Core ZM-82 2.20-GHz processor (35W, 2-MB L2 cache, includes replacement thermal material)

Spare part number	Description
480856-005	AMD Athlon X2 Dual-Core QL-60 1.90-GHz processor (35W, 512-KB L2 cache, includes replacement thermal material)
480857-005	AMD Turion Dual-Core RM-70 2.00-GHz processor (35W, 1-MB L2 cache, includes replacement thermal material)
480985-001	Atheros AR9280 802.11a/b/g/n WLAN module for use in Antigua & Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, Uruguay, the United States, Venezuela, and Vietnam
482260-001	Atheros AR9280 802.11a/b/g/n WLAN module for use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States
482260-002	Atheros AR9280 802.11a/b/g/n WLAN module for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
482957-001	802.11a/b/g WLAN module for use in the United States and Canada
483113-001	Bluetooth module (does not include Bluetooth module cable)
483258-006	Intel Core2 Duo P8400 2.26-GHz processor (3-MB L2 cache)
483259-005	Intel Core2 Duo P8600 2.40-GHz processor (3-MB L2 cache)
483260-006	Intel Core2 Duo T9400 2.53-GHz processor (6-MB L2 cache)
484171-001	Bluetooth module cable
484172-001	12-cell, 2.20-Ah, 95-Wh battery
485027-001	15.4-inch, WXGA+BrightView display panel (includes display panel and backlight cables)
485028-001	512-MB memory module (PC2-5300, 667-MHz, DDR2)
485028-002	512-MB memory module (PC2-5300, 667-MHz, DDR2)
485029-001	1024-MB memory module (PC2-5300, 667-MHz, DDR2)
485029-002	1024-MB memory module (PC2-5300, 667-MHz, DDR2)
485030-001	2048-MB memory module (PC2-5300, 667-MHz, DDR2)
485030-002	2048-MB memory module (PC2-5300, 667-MHz, DDR2)

Spare part number	Description
485031-001	512-MB memory module (PC2-6400, 667-MHz, DDR2)
485031-002	512-MB memory module (PC2-6400, 667-MHz, DDR2)
485032-001	1024-MB memory module (PC2-6400, 667-MHz, DDR2)
485032-002	1024-MB memory module (PC2-6400, 667-MHz, DDR2)
485033-001	2048-MB memory module (PC2-6400, 667-MHz, DDR2)
485033-002	2048-MB memory module (PC2-6400, 667-MHz, DDR2)
485034-001	120-GB, 5400-rpm hard drive (includes hard drive bracket and connector)
485034-002	120-GB, 5400-rpm hard drive (includes hard drive bracket and connector)
485035-001	160-GB, 5400-rpm hard drive (includes hard drive bracket and connector)
485035-002	160-GB, 5400-rpm hard drive (includes hard drive bracket and connector)
485036-001	250-GB, 5400-rpm hard drive (includes hard drive bracket and connector)
485036-002	250-GB, 5400-rpm hard drive (includes hard drive bracket and connector)
485037-001	Hard Drive Hardware Kit (includes hard drive bracket, connector, and screws)
485038-001	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive
485038-002	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive
485039-001	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe
485039-002	DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe
485040-002	Blu-ray BD-ROM with SuperMulti DVD±RW and CD-RW Double-Layer Combo Drive
485041-001	6-cell, 2.20-Ah, 47-Wh battery
485046-001	15.4-inch, WXGA+BrightView display assembly with webcam module and cable for use only with Compaq CQ50 computer models (includes 2 WLAN antenna transceivers and cables, microphones and cables, and logo)
485047-001	15.4-inch, WXGA+BrightView display assembly without webcam module and cable for use only with Compaq CQ50 computer models (includes 2 WLAN antenna transceivers and cables, microphones and cables, and logo)
485218-001	For use only with HP G50 and Compaq CQ50 computer models equipped with a GM45 chipset, Digital Media Slot, and HDMI port
485219-001	For use only with HP G50 and Compaq CQ50 computer models equipped with a GL40 chipset, Digital Media Slot, and HDMI port
486550-001	System board for use only with HP G50 and Compaq CQ50 computer models equipped only with a Digital Media Slot (includes UMA graphics subsystem memory, built-in modem, and replacement thermal material)
486554-001	Display enclosure for use only with Compaq CQ50 computer models (includes logo)
486555-001	Display bezel for use only with Compaq CQ50 computer models equipped only with a microphone
486556-001	Display inverter
486557-001	Display Screw Kit
486558-001	Display Hinge Kit (includes left and right display hinges)
486559-001	Display panel brackets (includes left and right brackets)

Spare part number	Description
486560-001	Microphone (includes receiver and cable)
486561-001	Display panel cable
486562-001	Wireless Antenna Kit (includes left and right wireless antenna transceivers and cables)
486581-001	Webcam module (does not include webcam module cable)
486582-001	Display bezel for use only with Compaq CQ50 computer models equipped with a webcam module and a microphone
486583-001	Webcam module cable
486584-001	Display Rubber Kit (includes display bezel rubber screw covers)
486621-001	Plastics Kit (see Plastics Kit on page 23 for more Plastics Kit spare part information)
486622-001	Screw Kit
486623-001	Rubber Kit (includes 8 computer feet)
486624-001	RTC battery
486625-001	Base enclosure for use only with computer models equipped with a Digital Media Slot and an HDMI port (includes rubber feet)
486626-001	Keyboard cover
486627-001	Power button board (includes cable)
486628-001	Top cover (includes TouchPad board)
486629-001	TouchPad button board and bracket
486630-001	TouchPad on/off button board (includes cables)
486632-001	Speakers (includes left and right speakers and cables)
486633-001	USB board (does not include USB board cable)
486634-001	Audio board (includes cable)
486635-001	Processor bracket
486636-001	Fan/heat sink assembly (includes replacement thermal material)
486637-001	Power connector cable
486638-001	RJ-11 connector cable
486639-001	USB board cable (includes num lock LED)
486640-001	Bluetooth module cable
486654-001	Keyboard for use in the United States
486654-031	Keyboard for use in the United Kingdom
486654-041	Keyboard for use in Germany
486654-051	Keyboard for use in France
486654-061	Keyboard for use in Italy
486654-071	Keyboard for use in Spain

Spare part number	Description
486654-111	Keyboard for use in Switzerland
486654-121	Keyboard for use in Canada
486654-131	Keyboard for use in Portugal
486654-141	Keyboard for use in Turkey
486654-151	Keyboard for use in Greece
486654-161	Keyboard for use in Latin America
486654-171	Keyboard for use in Saudi Arabia
486654-221	Keyboard for use in the Czech Republic
486654-251	Keyboard for use in Russia
486654-281	Keyboard for use in Thailand
486654-A41	Keyboard for use in Belgium
486654-AB1	Keyboard for use in Taiwan
486654-AD1	Keyboard for use in South Korea
486654-B31	Keyboard for use in the Netherlands
486654-BB1	Keyboard for use in Israel
486654-DH1	Keyboard for use in Denmark, Finland, and Norway
487350-003	AMD Sempron Single Core SI-40 2.0-GHz processor (25W, 512-KB L2 cache, includes replacement thermal material)
487602-001	15.4-inch, WXGA+BrightView display assembly without webcam module and cable for use only with HP G50 computer models (includes 2 WLAN antenna transceivers and cables, microphones and cables, and logo)
487603-001	15.4-inch, WXGA+BrightView display assembly with webcam module and cable for use only with HP G50 computer models (includes 2 WLAN antenna transceivers and cables, microphones and cables, and logo)
487605-001	Display enclosure for use only with Compaq CQ50 computer models (includes logo)
487606-001	Display bezel for use only with HP G50 computer models equipped only with a microphone
487607-001	Display bezel for use only with HP G50 computer models equipped with a webcam module and a microphone
488338-001	For use only with HP G50 and Compaq CQ50 computer models equipped with NVIDIA GeForce 9200M graphics, a Digital Media Slot, and an HDMI port
488341-001	15.4-inch, WXGA+BrightView display panel only (does not include cables)
489133-001	Display screw kit
489157-006	Intel Core2 Duo T9600 2.80-GHz processor (6-MB L2 cache)
489810-001	System board for use only with HP G50 and Compaq CQ50 computer models equipped with a Digital Media Slot and an HDMI port (includes UMA graphics subsystem memory, built-in modem, and replacement thermal material)
490371-001	Power cord for use in the United States
490371-011	Power cord for use in Australia
490371-021	Power cord for use in Europe

Spare part number	Description
490371-031	Power cord for use in the United Kingdom
490371-061	Power cord for use in Italy
490371-081	Power cord for use in Norway
490371-111	Power cord for use in Switzerland
490371-AB1	Power cord for use in Taiwan
490371-AD1	Power cord for use in South Korea
490371-AR1	Power cord for use in South Africa
490371-BB1	Power cord for use in Israel
490371-D01	Power cord for use in Argentina
490371-D61	Power cord for use in India
490828-001	System board for use only with Compaq CQ50 computer models equipped with an HDMI port (includes UMA graphics subsystem memory, built-in modem, and replacement thermal material)
490829-001	200-GB, 5400-rpm hard drive (includes hard drive bracket and connector)
492300-001	Base enclosure for use only with computer models equipped with a Digital Media Slot, but not an HDMI port (includes rubber feet)
492301-001	Base enclosure for use only with computer models equipped with an HDMI port, but not a Digital Media Slot (includes rubber feet)
494182-001	System board for use only with Compaq CQ50 computer models not equipped with an HDMI port (includes UMA graphics subsystem memory, built-in modem, and replacement thermal material)
494183-001	Base enclosure for use only with computer models not equipped with a Digital Media Slot or an HDMI port (includes rubber feet)
494281-001	For use only with HP G50 and Compaq CQ50 computer models equipped with a GM45 chipset and Digital Media Slot
494282-001	For use only with HP G50 and Compaq CQ50 computer models equipped with a GL40 chipset and Digital Media Slot
494283-001	For use only with HP G50 and Compaq CQ50 computer models equipped with NVIDIA GeForce 9200M graphics and Digital Media Slot
494284-001	Intel Celeron 575 2.00-GHz processor (1-MB L2 cache)
494285-001	Intel Celeron 585 2.16-GHz processor (1-MB L2 cache)
501519-001	Intel Pentium Dual-Core T3200 2.00-GHz processor (1-MB L2 cache)
501520-001	Intel Core2 Duo P7350 2.00-GHz processor (3-MB L2 cache)
501521-001	Intel Core2 Duo T5800 2.00-GHz processor (2-MB L2 cache)
501522-001	Intel Core2 Duo T5900 2.20-GHz processor (2-MB L2 cache)
501523-001	Intel Pentium Dual-Core T3400 2.16-GHz processor (1-MB L2 cache)

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

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.

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

Unknown user password

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

 **NOTE:** These steps also clear CMOS.

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 40](#)).
5. Remove the real-time clock (RTC) battery (see [RTC battery on page 46](#)).
6. Wait approximately 5 minutes.
7. Replace the RTC battery and reassemble the computer.
8. Connect AC power to the computer. Do not reinsert any batteries at this time.
9. Turn on the computer.

All passwords and all CMOS settings have been cleared.

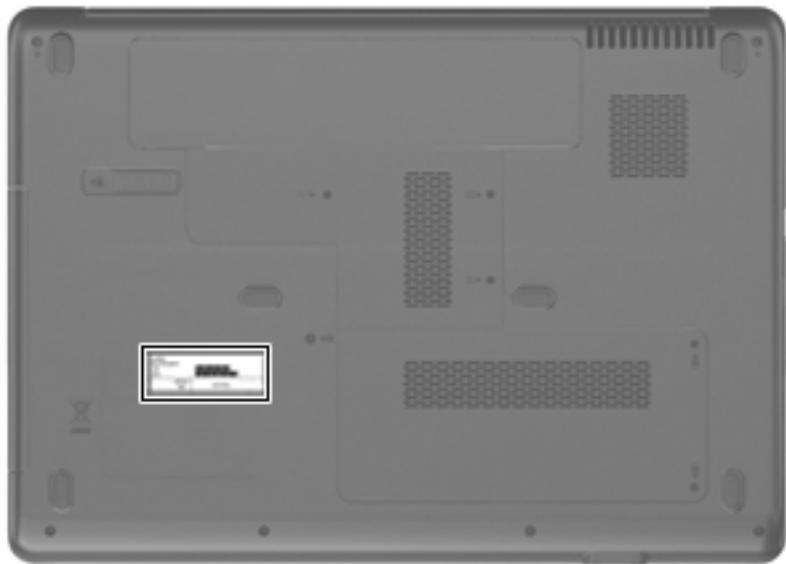
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 76 screws, in 10 different sizes, that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw and standoff size and location during removal and replacement.

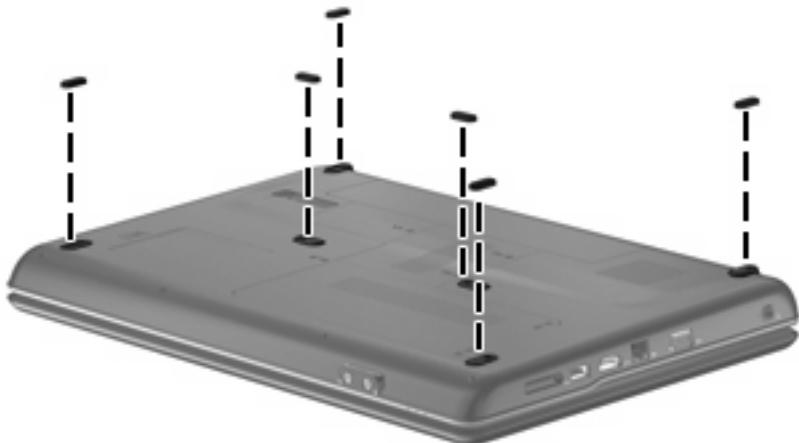
Serial number

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



Computer feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Rubber Kit, spare part number 486623-001. There are 6 rubber feet that attach to the base enclosure in the locations illustrated below.



Battery

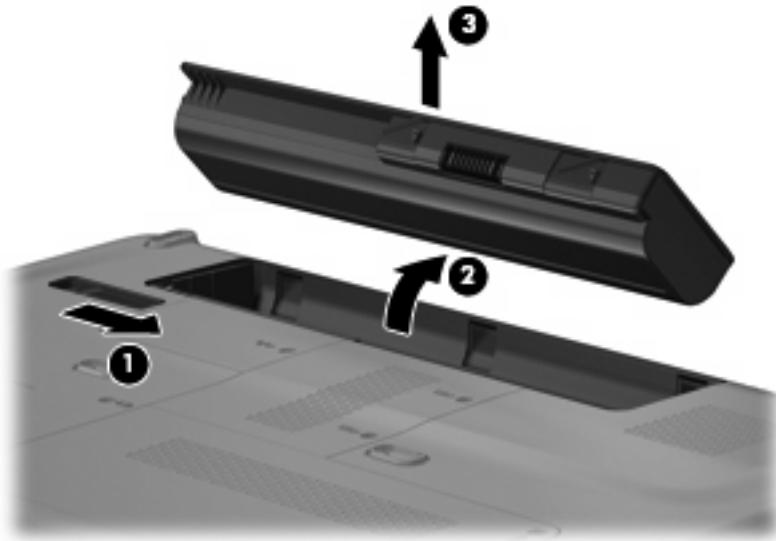
Description	Spare part number
12-cell, 2.20-Ah, 95-Wh Li-ion battery	484172-001
6-cell, 2.55-Ah, 55-Wh Li-ion battery	484171-001
6-cell, 2.20-Ah, 47-Wh Li-ion battery	485041-001

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, with the front toward you.
2. Slide the battery release latch **(1)** to release the battery.
3. Pivot the battery **(2)** upward and remove it **(3)** from the computer.



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

Optical drive

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

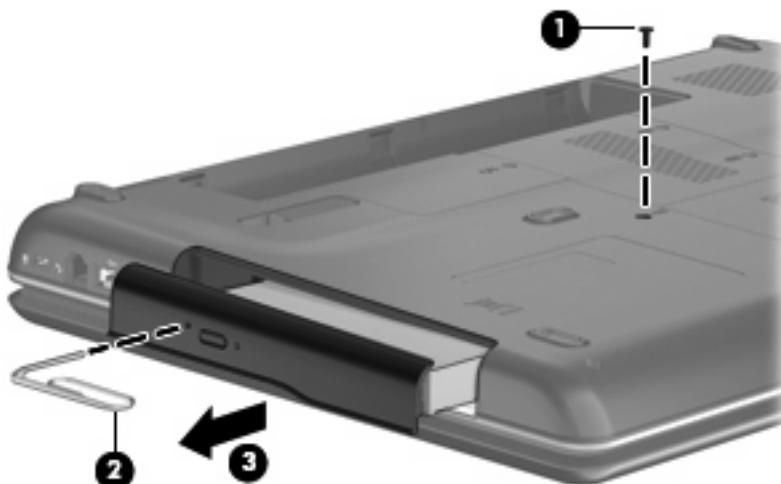
Description	Spare part number
For models equipped with AMD processors:	
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	485039-001
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive	485038-001
For models equipped with Intel processors:	
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	485039-002
DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive	485038-002
Blu-ray BD-ROM with SuperMulti DVD±RW and CD-RW Double-Layer Combo Drive	485040-002

Before removing the optical drive, follow these steps:

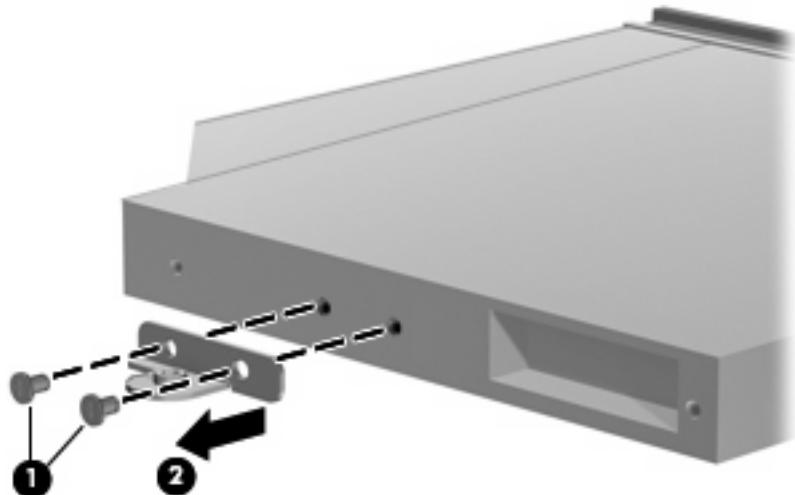
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).

Remove the optical drive:

1. Position the computer with the left side toward you.
2. Remove the Phillips PM2.5×9.0 screw (1) that secures the optical drive to the computer.
3. Insert a thin tool, such as a paper clip (2), into the release access. (The optical drive disc tray is partially ejected from the optical drive.)
4. Use the disc tray frame to slide the optical drive (3) out of the computer.



5. If it is necessary to replace the optical drive bracket, position the optical drive with the rear toward you.
6. Remove the two Phillips PM2.0×3.0 screws **(1)** that secure the optical drive bracket to the optical drive.
7. Remove the optical drive bracket **(2)**.



Reverse this procedure to reassemble and install an optical drive.

Hard drive

 **NOTE:** All hard drive spare part kits include a hard drive bracket and hard drive connector. The hard drive bracket and hard drive connector, as well as the hard drive bracket screws, are also available in the Hard Drive Hardware Kit, spare part number 485037-001.

Description	Spare part number
For models equipped with AMD processors:	
250-GB, 5400-rpm hard drive	485036-001
200-GB, 5400-rpm hard drive	490829-001
160-GB, 5400-rpm hard drive	485035-001
120-GB, 5400-rpm hard drive	485034-001
For models equipped with Intel processors:	
250-GB, 5400-rpm hard drive	485036-002
160-GB, 5400-rpm hard drive	485035-002
120-GB, 5400-rpm hard drive	485034-002

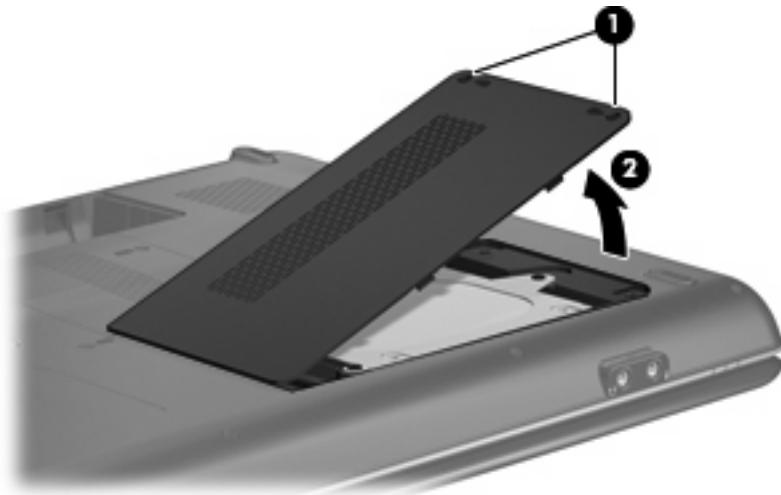
Before removing the hard drive, follow these steps:

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 40](#)).

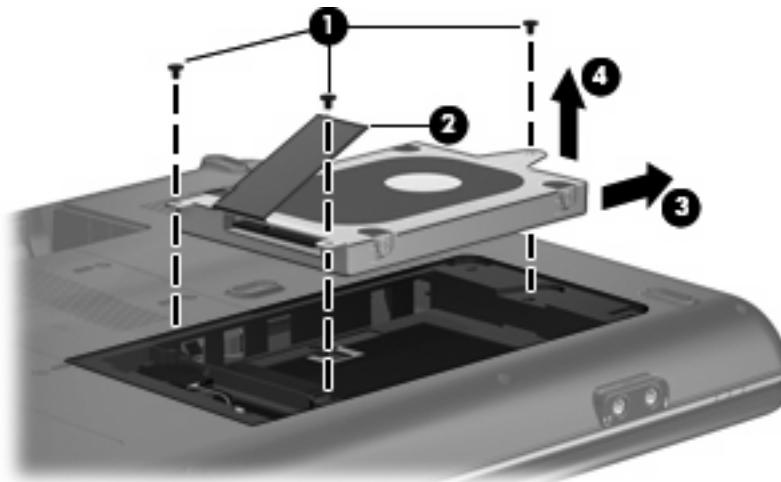
Remove the hard drive:

1. Loosen the two Phillips PM2.5×6.0 captive screws **(1)** that secure the hard drive cover to the computer.

2. Lift the right side of the hard drive cover (2), swing it up and to the left, and remove the cover. The hard drive cover is included in the Plastics Kit, spare part number 486621-001.

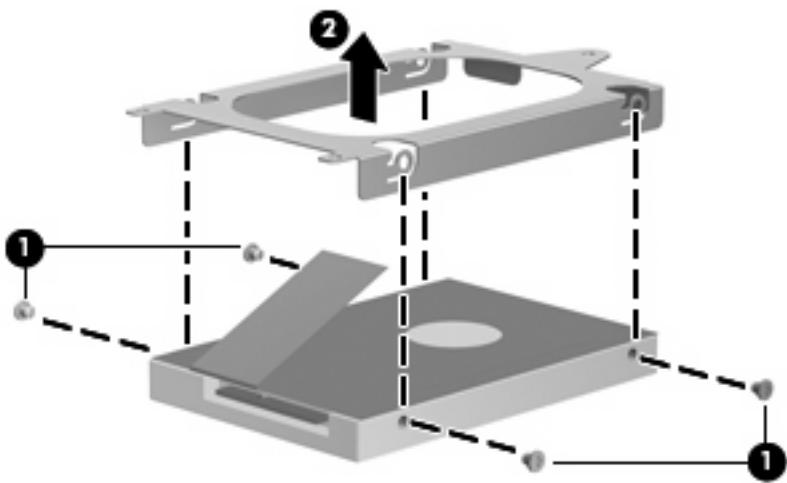


3. Remove the three Phillips PM2.5×5.0 screws (1) that secure the hard drive to the computer.
4. Grasp the Mylar tab (2) on the hard drive, and then slide the hard drive (3) to the right to disconnect it from the system board.
5. Remove the hard drive (4) from the hard drive bay.



6. If it is necessary to replace the hard drive bracket, remove the two Phillips PM3.0×4.0 hard drive bracket screws (1) from each side of 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.

RTC battery

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

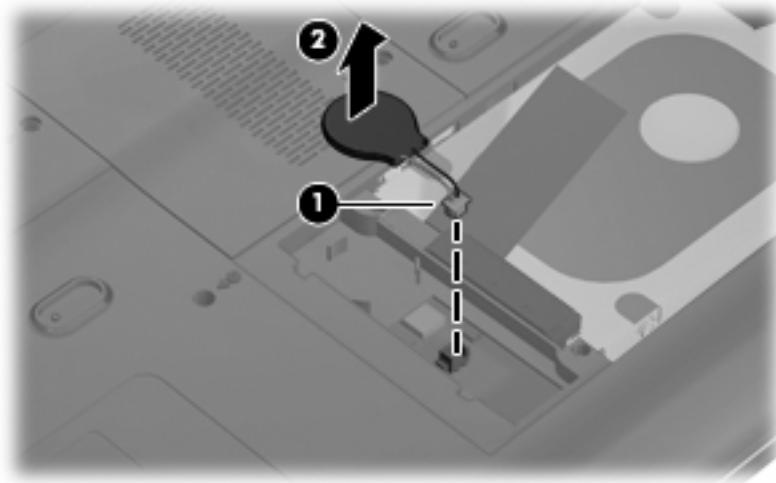
Description	Spare part number
RTC battery	486624-001

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 40](#)).
5. Remove the hard drive cover (see [Hard drive on page 43](#)).

Remove the RTC battery:

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



Reverse this procedure to install the RTC battery.

Memory module

Description	Spare part number
For models equipped with AMD processors:	
PC2-6400, 667-MHz, DDR2	
2048-MB	485033-001
1024-MB	485032-001
512-MB	485031-001
PC2-5300, 667-MHz, DDR2	
2048-MB	485030-001
1024-MB	485029-001
512-MB	485028-001
For models equipped with Intel processors:	
PC2-6400, 667-MHz, DDR2	
2048-MB	485033-002
1024-MB	485032-002
512-MB	485031-002
PC2-5300, 667-MHz, DDR2	
2048-MB	485030-002
1024-MB	485029-002
512-MB	485028-002

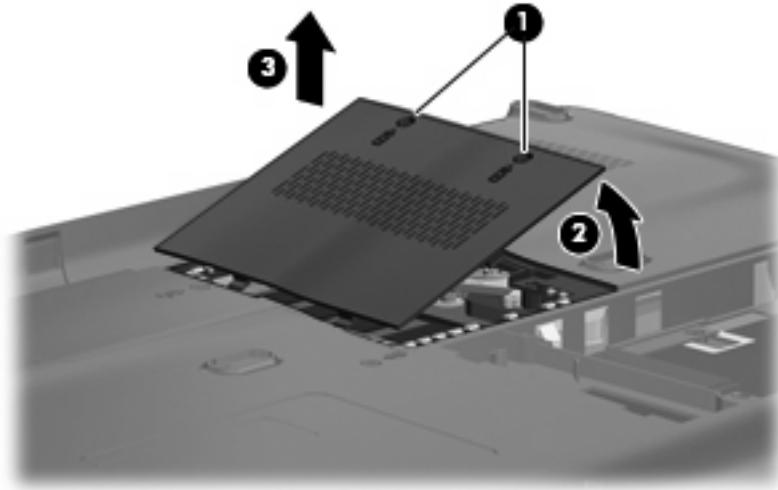
Before removing the memory module, follow these steps:

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 40](#)).

Remove the memory module:

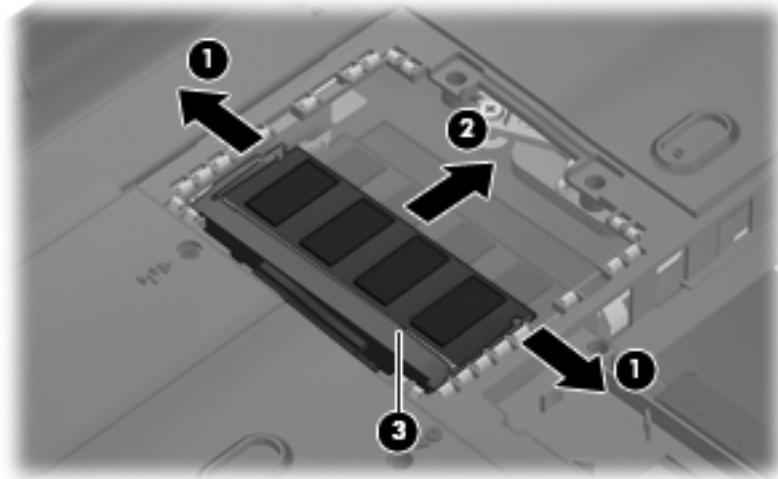
1. Loosen the two Phillips PM2.5×6.0 captive screws **(1)** that secure the memory module compartment cover to the computer.

2. Lift the right side of the cover (2), swing it up and to the left, and remove the cover (3). The memory module compartment cover is included in the base enclosure.



3. 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.)
4. Remove the memory module (2) by pulling the module away from the slot at an angle.

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



Reverse this procedure to install a memory module.

WLAN module

Description	Spare part number
Atheros AR9280 802.11a/b/g/n WLAN modules:	
For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States	482260-001
For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	482260-002
For use in Antigua & Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, Uruguay, the United States, Venezuela, and Vietnam	480985-001
Broadcom BCM4312 802.11b/g WLAN modules:	
For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States	459263-001
For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines,	459263-002

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

Before removing the WLAN module, follow these steps:

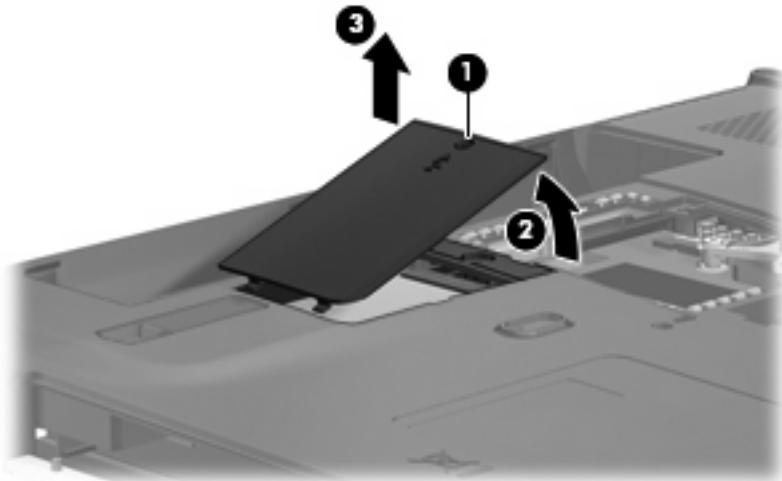
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).

Remove the WLAN module:

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

1. Loosen the Phillips PM2.5×6.0 screw **(1)** that secures the WLAN module compartment cover to the computer.

2. Lift the right side of the cover (2), swing it up and to the left, and then remove the cover (3). The WLAN module compartment cover is included in the Plastics Kit, spare part number 486621-001.

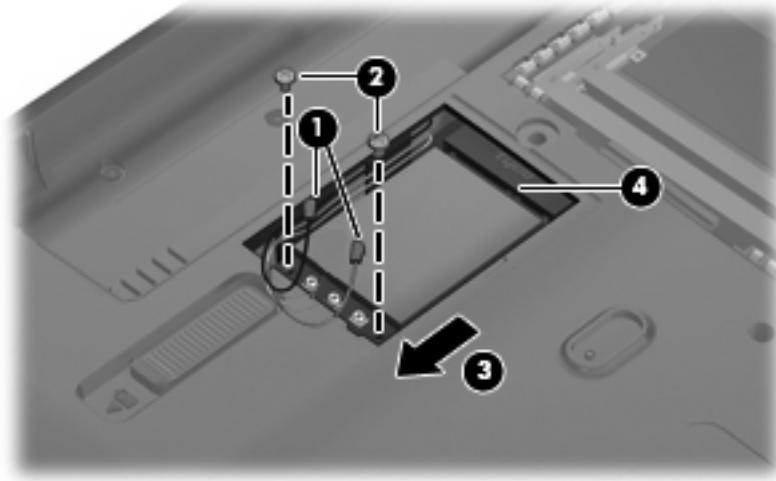


3. Disconnect the WLAN antenna cables (1) from the terminals on the WLAN module.

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

4. Remove the two Phillips PM2.5×5.0 screws (2) that secure the WLAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)
5. Remove the WLAN module (3) by pulling the module away from the slot at an angle.

NOTE: WLAN modules are designed with a notch (4) to prevent incorrect installation.



Reverse this procedure to install the WLAN module.

Keyboard

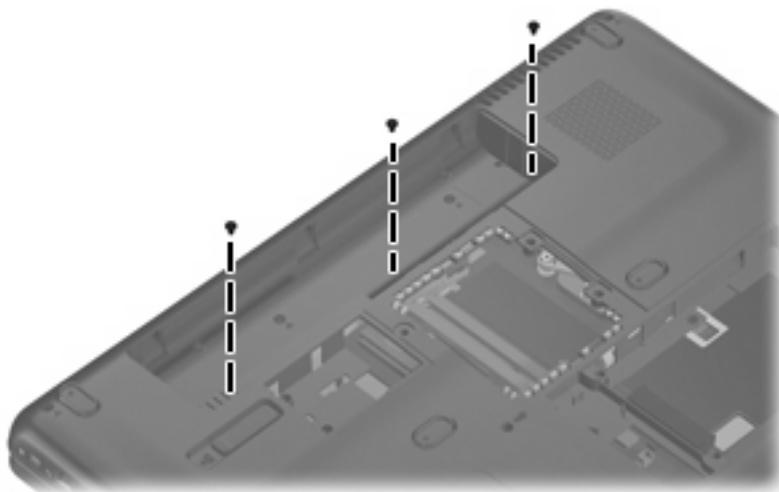
For use in:	Spare part number	For use in:	Spare part number
Belgium	486654-A41	Portugal	486654-131
Canada	486654-121	Russia	486654-251
The Czech Republic	486654-221	Saudi Arabia	486654-171
Denmark, Finland, and Norway	486654-DH1	South Korea	486654-AD1
France	486654-051	Spain	486654-071
Germany	486654-041	Switzerland	486654-111
Greece	486654-151	Taiwan	486654-AB1
Israel	486654-BB1	Thailand	486654-281
Italy	486654-061	Turkey	486654-141
Latin America	486654-161	The United Kingdom	486654-031
The Netherlands	486654-B31	The United States	486654-001

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 40](#)).

Remove the keyboard:

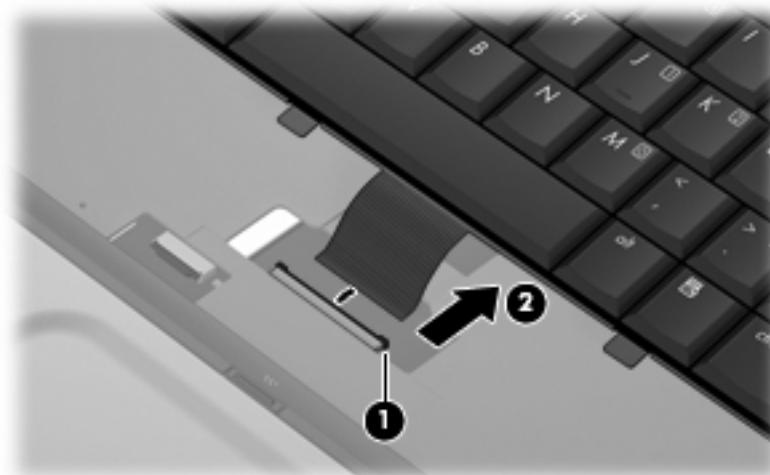
1. Turn the computer upside down, with the front toward you.
2. Remove the three Phillips PM2.5×5.0 screws that secure the keyboard to the computer.



3. Turn the computer display-side up, with the front toward you.
4. Open the computer as far as possible.
5. Disengage the tabs (1) on the outside edges of the keyboard from the keyboard cover.
6. Lift the rear edge of the keyboard (2), and then slide it back until it rests on the display.



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



8. Remove the keyboard.

Reverse this procedure to install the keyboard.

Keyboard cover

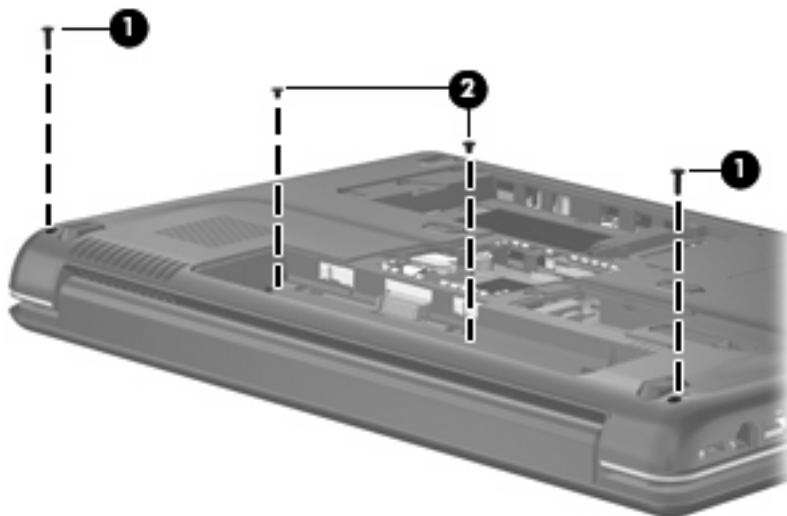
Description	Spare part number
Keyboard cover (includes an LED board and LED board cable)	486626-001

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 40](#)).
5. Remove the keyboard (see [Keyboard on page 52](#)).

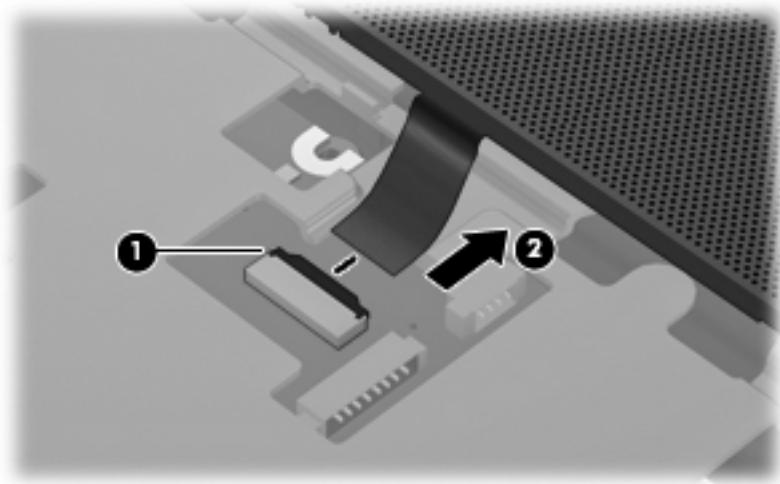
Remove the keyboard cover:

1. Turn the computer upside down, with the rear panel toward you.
2. Remove the two Phillips PM2.5×10.0 screws (1) and the two Phillips PM2.0×3.0 screws (2) that secure the keyboard cover to the computer.



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

5. Release the ZIF connector (1) to which the power button board cable is attached, and disconnect the power button board cable (2) from the system board.



6. Slide the keyboard cover (1) toward the display assembly until it disengages from the top cover.
7. Remove the keyboard cover (2).



Reverse this procedure to install the keyboard cover.

Power button board

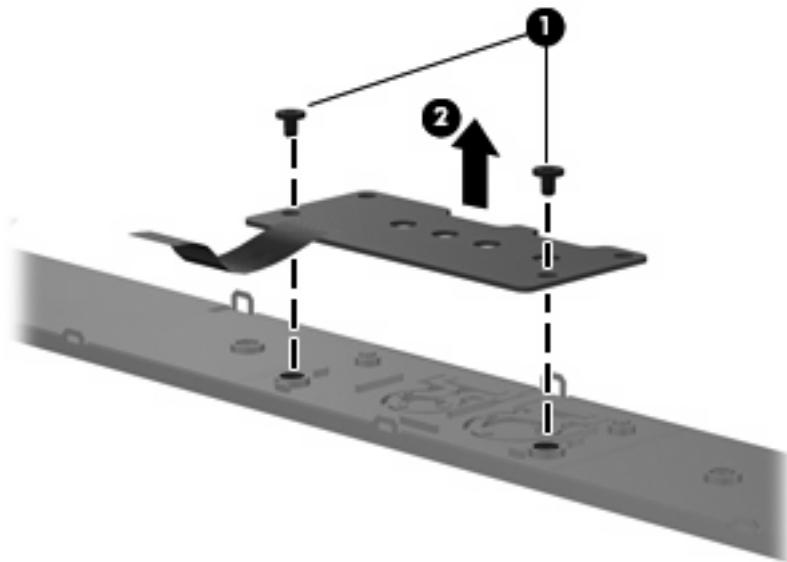
Description	Spare part number
Power button board (includes cable)	486627-001

Before removing the power button board, perform 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 40](#)).
5. Disconnect the wireless antenna cables from the WLAN module (see [WLAN module on page 49](#)).
6. Remove the keyboard (see [Keyboard on page 52](#)).
7. Remove the keyboard cover (see [Keyboard cover on page 54](#)).

Remove the power button board:

1. Turn the keyboard cover upside down, with the front toward you.
2. Remove the two Phillips PM2.0×3.0 screws (1) that secure the power button board to the keyboard cover.
3. Remove the power button board and cable (2).



Reverse this procedure to install the power button board.

Display assembly

Description	Spare part number
15.4-inch, WXGA+BrightView display assembly for use only with HP G50 computer models (includes 2 WLAN antenna transceivers and cables, microphones and cables, and logo)	
Includes webcam module and cable	487603-001
Does not include webcam module and cable	487602-001
15.4-inch, WXGA+BrightView display assembly for use only with Compaq CQ50 computer models (includes 2 WLAN antenna transceivers and cables, microphones and cables, and logo)	
Includes webcam module and cable	485047-001
Does not include webcam module and cable	487046-001

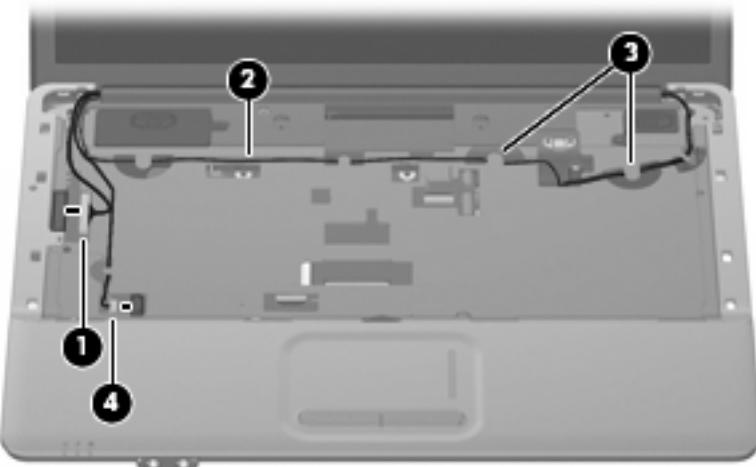
Before removing the display assembly, follow these steps:

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 40](#)).
5. Disconnect the wireless antenna cables from the WLAN module (see [WLAN module on page 49](#)).
6. Remove the keyboard (see [Keyboard on page 52](#)).
7. Remove the keyboard cover (see [Keyboard cover on page 54](#)).

Remove the display assembly:

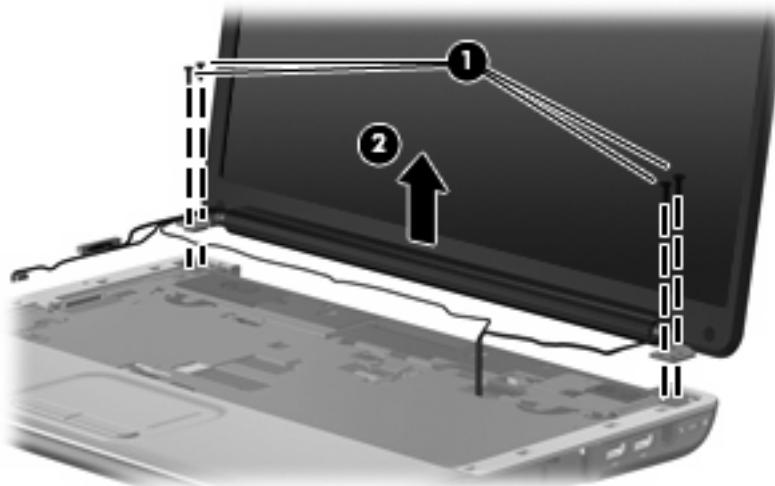
1. Disconnect the display panel cable **(1)** from the system board.
2. Remove the wireless antenna cables **(2)** from the routing channel and clips **(3)** built into the top cover.

3. Disconnect the webcam module cable (**4**) from the system board.



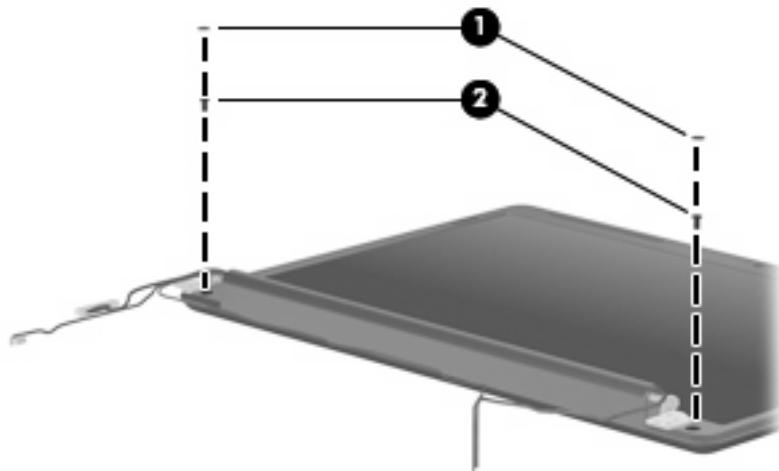
△ **CAUTION:** The display assembly will be unsupported when the following screws are removed. To prevent damage to the display assembly, support it before removing the screws.

4. Remove the four Phillips PM2.5×10.0 screws (**1**) that secure the display assembly to the computer.
5. Lift the display assembly (**2**) straight up and remove it.



6. If it is necessary to replace the display bezel or the display assembly internal components, remove the following:

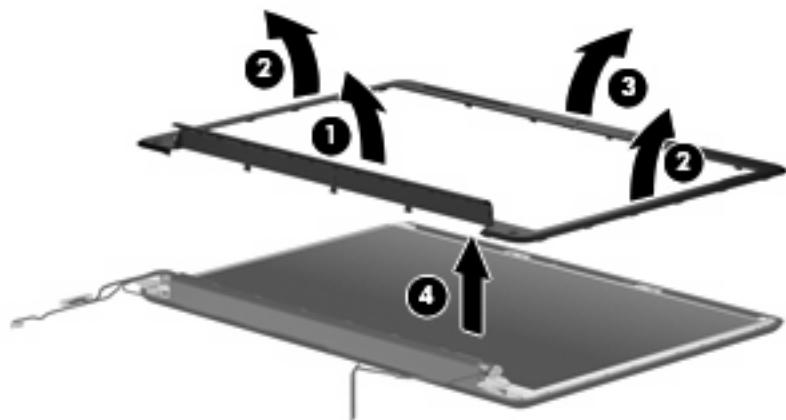
- (1) Two rubber screw covers on the display bezel bottom edge (the display bezel rubber screw covers are available in the Display Rubber Kit, spare part number 486584-001)
- (2) Two Phillips PM2.5×8.0 screws that secure the display bezel to the display assembly (all display assembly subcomponent screws are available in the Display Screw Kit, spare part number 486561-001)



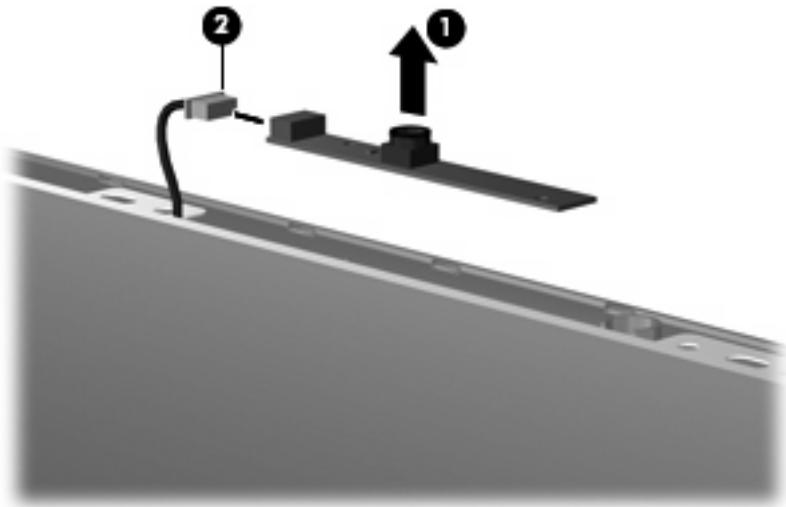
7. Flex the inside edges of the bottom edge (1), left and right sides (2), and the top edge (3) of the display bezel until the bezel disengages from the display enclosure.
8. Remove the display bezel (4).

The following display bezels are available:

- For use only with HP G50 computer models equipped with webcam module, spare part number 487607-001
- For use only with HP G50 computer models not equipped with webcam module, spare part number 487606-001
- For use only with Compaq CQ50 computer models equipped with webcam module, spare part number 486582-001
- For use only with Compaq CQ50 computer models not equipped with webcam module, spare part number 486555-001

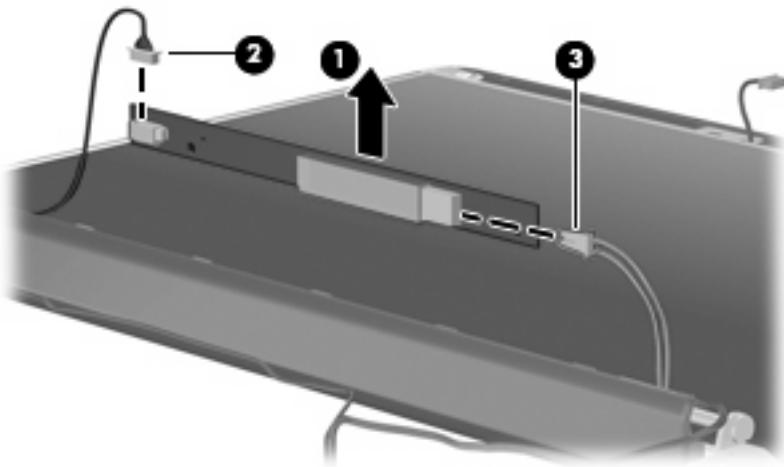


9. If it is necessary to replace the webcam module, release the webcam module (1) as far from the display enclosure as the webcam module cable allows.
10. Disconnect the webcam module cable (2) from the webcam module.

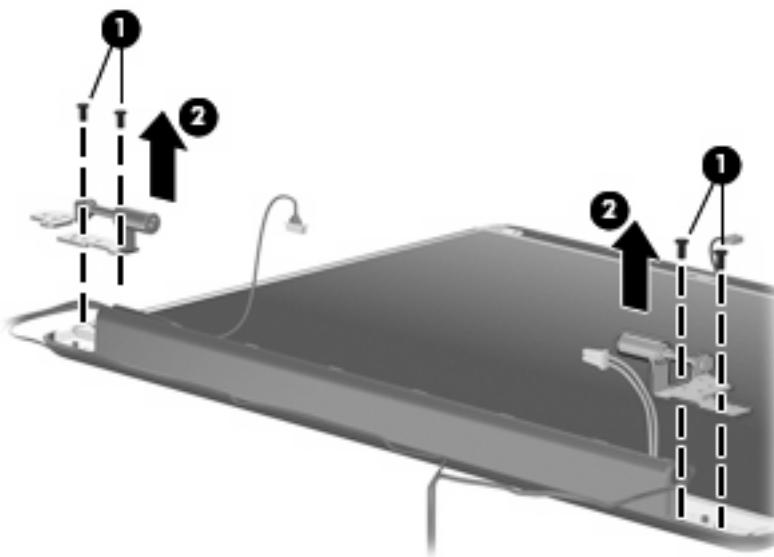


11. Remove the webcam module. The webcam module is available using spare part number 486581-001.
12. If it is necessary to replace the display inverter, release the inverter (1) as far from the display enclosure as the display panel cable and backlight cable allow.

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

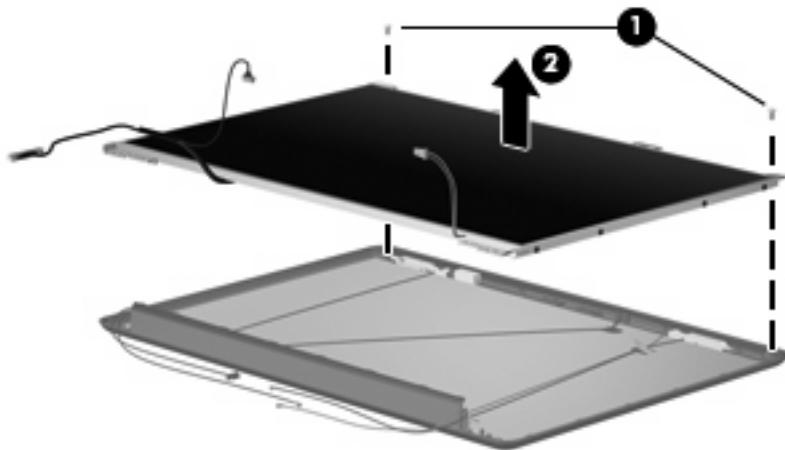


14. Remove the display inverter from the display enclosure. The display inverter is available using spare part number 486556-001.
15. If it is necessary to replace the hinges, remove the two Phillips PM2.5×7.0 screws (1) that secure each hinge to the display enclosure.
16. Remove the hinges (2). The hinges are available in the Display Hinge Kit, spare part number 486558-001.

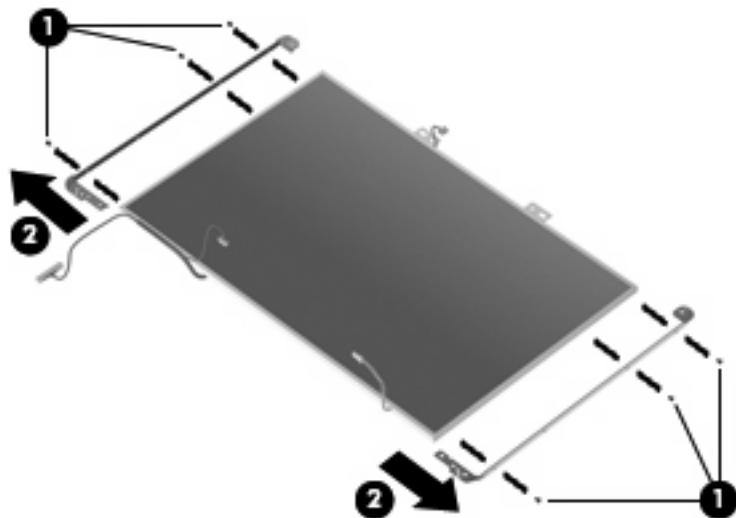


17. If it is necessary to replace the display panel, remove the two Phillips PM2.5×5.0 screws (1) that secure the display panel to the display enclosure.

18. Remove the display panel (2) from the display enclosure. The display panel is available using spare part number 485027-001.

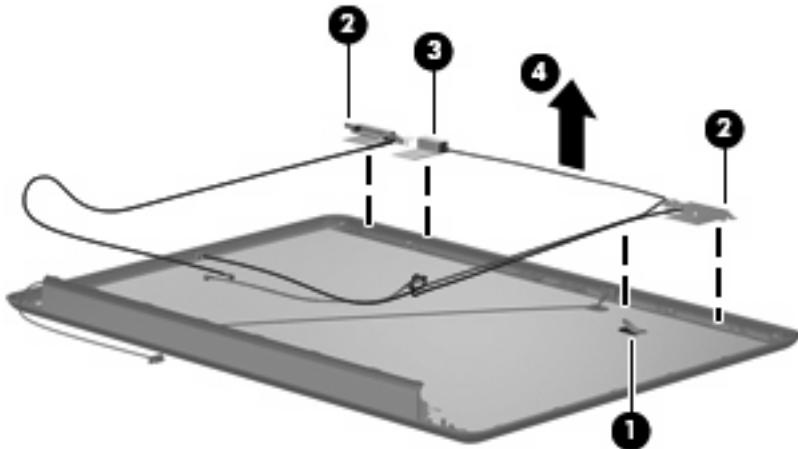


19. If it is necessary to replace the display panel brackets, remove the three Phillips PM2.0×3.0 screws (1) that secure the brackets to the display panel.
20. Remove the display panel brackets (2) from the display panel. The display panel brackets are available using spare part number 486559-001.

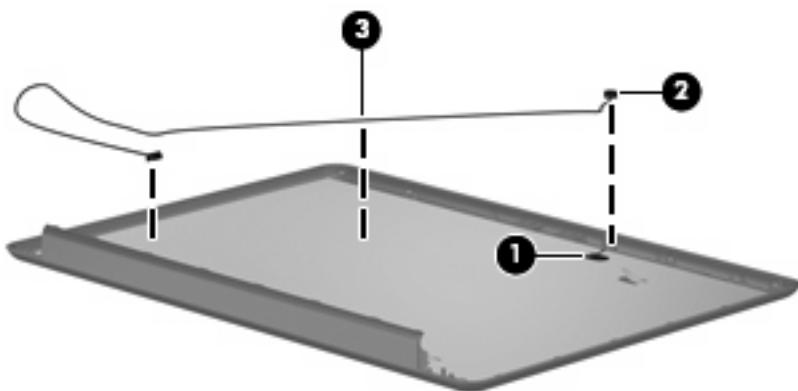


21. If it is necessary to replace the wireless antenna transceivers and cables, release the tab (1) built into the display enclosure that secures the wireless antenna cables.
22. Detach the main and auxiliary transceivers (2) from the display enclosure.
23. Detach the third transceiver (3) from the display enclosure, when present.

- 24.** Remove the wireless antenna transceivers and cables (**4**) from the display enclosure. The wireless antenna transceivers and cables are available using spare part number 486562-001.



- 25.** If it is necessary to replace the microphone and cable, release the tab built into the display enclosure shielding (**1**) that secures the microphone cable.
- 26.** Remove the microphone receiver (**2**) from the clip built into the display enclosure and the microphone cable (**3**) from the display enclosure. The microphone receiver and cable are available using spare part number 486560-001.



Reverse this procedure to reassemble and install the display assembly.

Top cover

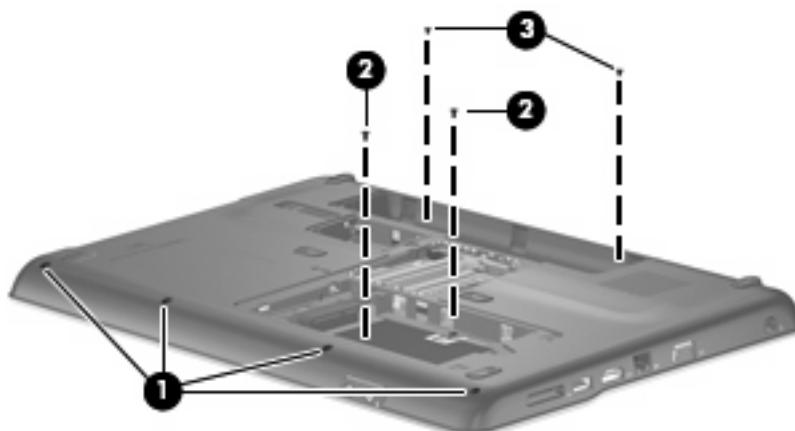
Description	Spare part number
Top cover (includes TouchPad and TouchPad cable)	486628-001

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 40](#)).
5. Remove the following components:
 - a. Optical drive (see [Optical drive on page 41](#))
 - b. Hard drive (see [Hard drive on page 43](#))
 - c. Keyboard (see [Keyboard on page 52](#))
 - d. Keyboard cover (see [Keyboard cover on page 54](#))
 - e. Display assembly (see [Display assembly on page 57](#))

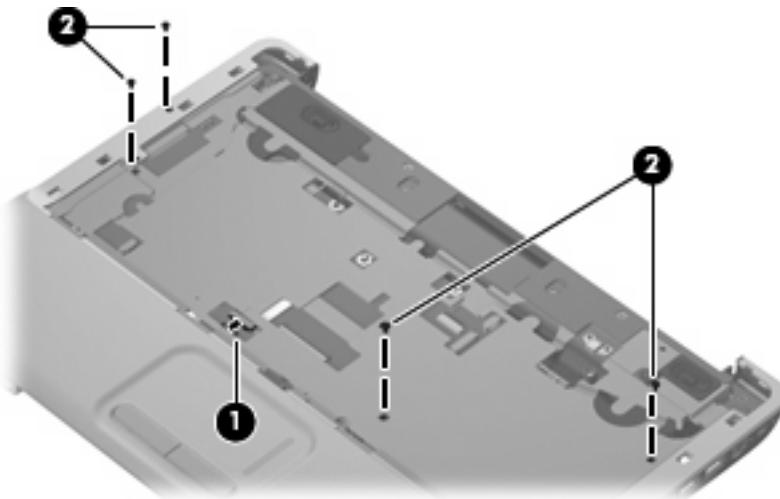
Remove the top cover:

1. Turn the computer upside down, with the front toward you.
2. Loosen the four Phillips PM2.5×10.0 captive screws **(1)** that secure the top cover to the display enclosure.
3. Remove the two Phillips PM2.0×6.0 screws **(2)** and the two Phillips PM2.0×3.0 screws **(3)** that secure the top cover to the base enclosure.

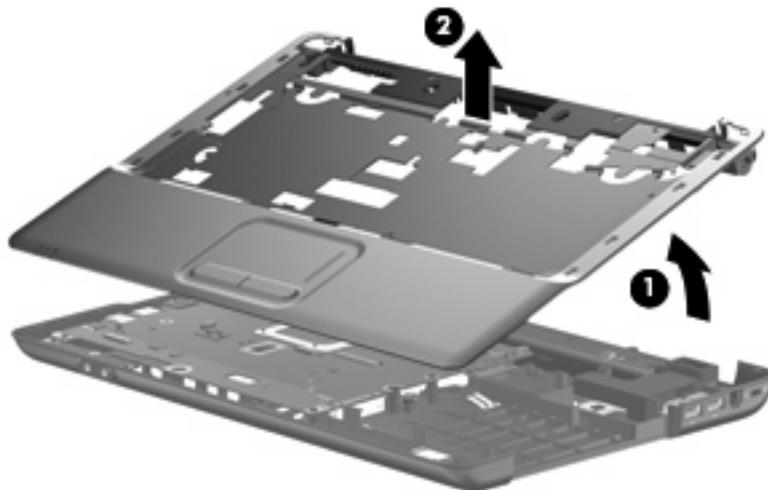


4. Turn the computer right-side up, with the front toward you.

5. Release the ZIF connector to which the TouchPad cable is attached, and disconnect the TouchPad cable (1) from the system board.
6. Remove the four Phillips PM2.0×6.0 screws (2) that secure the top cover to the base enclosure.



7. Lift the rear edge of the top cover (1) until the top cover disengages from the base enclosure.
8. Remove the top cover (2).



Reverse this procedure to install the top cover.

TouchPad on/off button board

Description	Spare part number
TouchPad on/off button board (includes cables)	486630-001

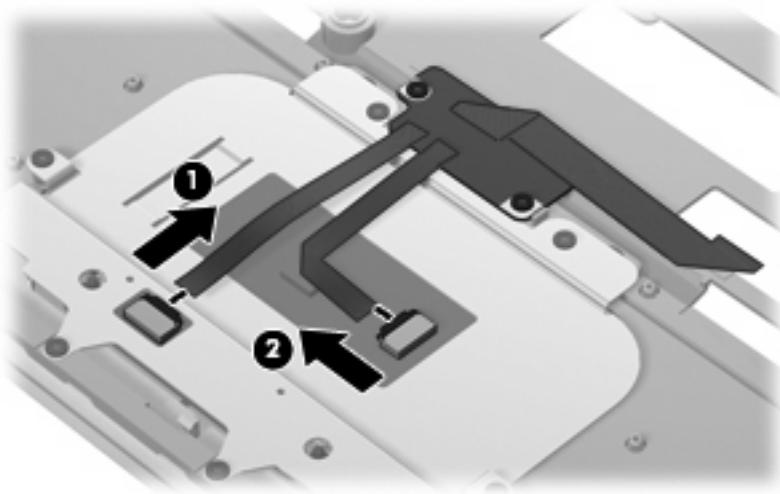
Before removing the TouchPad on/off button board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the following components:
 - a. Optical drive (see [Optical drive on page 41](#))
 - b. Hard drive (see [Hard drive on page 43](#))
 - c. Keyboard (see [Keyboard on page 52](#))
 - d. Keyboard cover (see [Keyboard cover on page 54](#))
 - e. Display assembly (see [Display assembly on page 57](#))
 - f. Top cover (see [Top cover on page 64](#))

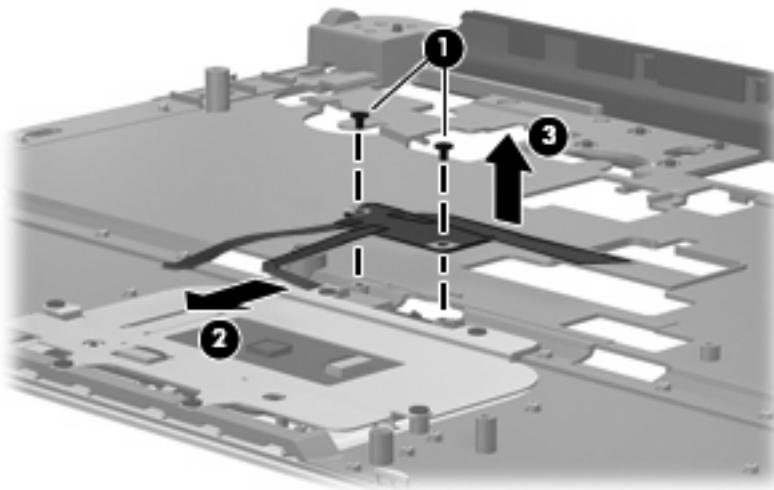
Remove the TouchPad on/off button board:

1. Turn the top cover upside down, with the front toward you.
2. Release the ZIF connector on the TouchPad button board to which the TouchPad on/off board cable is attached, and disconnect the TouchPad on/off board cable **(1)** from the TouchPad button board.

3. Release the ZIF connector on the TouchPad board to which the TouchPad on/off board cable is attached, and disconnect the TouchPad on/off board cable (2) from the TouchPad board.



4. Remove the two Phillips PM2.0×3.0 screws (1) that secure the TouchPad on/off button board to the top cover.
5. Release the TouchPad on/off button board (2) by sliding it forward until it clears the clip built into the top cover.
6. Remove the TouchPad on/off button board (3).



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

TouchPad button board

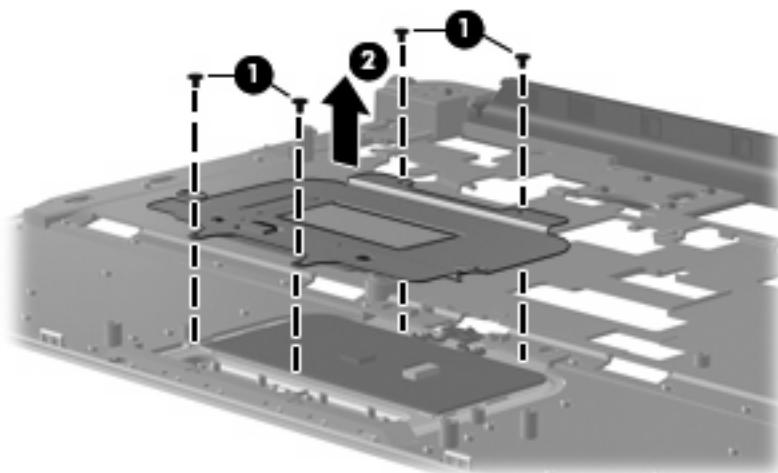
Description	Spare part number
TouchPad button board	486629-001

Before removing the TouchPad button board, follow these steps:

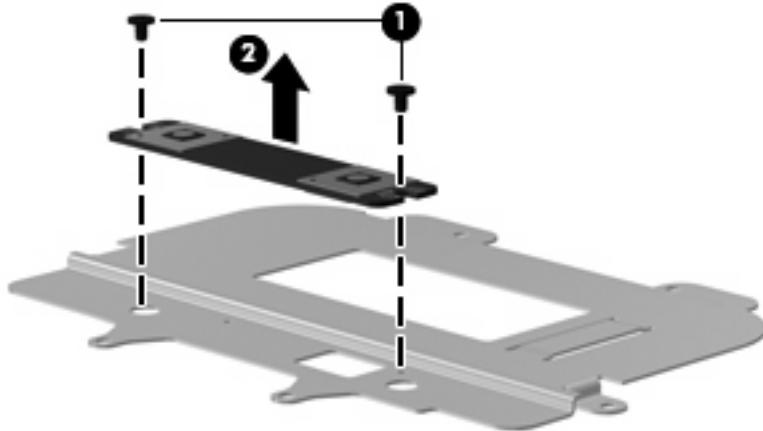
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the following components:
 - a. Optical drive (see [Optical drive on page 41](#))
 - b. Hard drive (see [Hard drive on page 43](#))
 - c. Keyboard (see [Keyboard on page 52](#))
 - d. Keyboard cover (see [Keyboard cover on page 54](#))
 - e. Display assembly (see [Display assembly on page 57](#))
 - f. Top cover (see [Top cover on page 64](#))
 - g. TouchPad on/off button board (see [TouchPad on/off button board on page 66](#))

Remove the TouchPad button board:

1. Remove the four Phillips PM2.0×3.0 screws (1) that secure the TouchPad button board bracket to the top cover.
2. Remove the TouchPad button board bracket (2).



3. Turn the TouchPad button board bracket upside down with the front toward you.
4. Remove the two Phillips PM2.0×3.0 screws **(1)** that secure the TouchPad button board to the TouchPad button board bracket.
5. Remove the TouchPad button board **(2)** from the TouchPad button board bracket.



Reverse this procedure to install the TouchPad button board.

Audio board

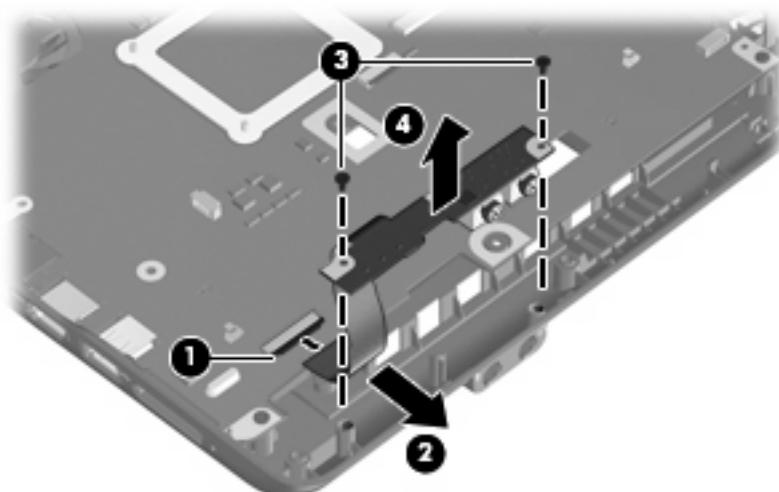
Description	Spare part number
Audio board (includes cable)	486634-001

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 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 43](#))
 - b. Optical drive (see [Optical drive on page 41](#))
 - c. Keyboard (see [Keyboard on page 52](#))
 - d. Keyboard cover (see [Keyboard cover on page 54](#))
 - e. Display assembly (see [Display assembly on page 57](#))
 - f. Top cover (see [Top cover on page 64](#))

Remove the audio board:

1. Release the ZIF connector (1) to which the audio board cable is attached, and disconnect the audio board cable (2) the system board.
2. Remove the two Phillips PM2.0×6.0 screws (3) that secure the audio board to the base enclosure.
3. Remove the audio board (4).



Reverse this procedure to install the audio board.

Bluetooth module

Description	Spare part number
Bluetooth module (does not include Bluetooth module cable)	483113-001
Bluetooth module cable	486640-001

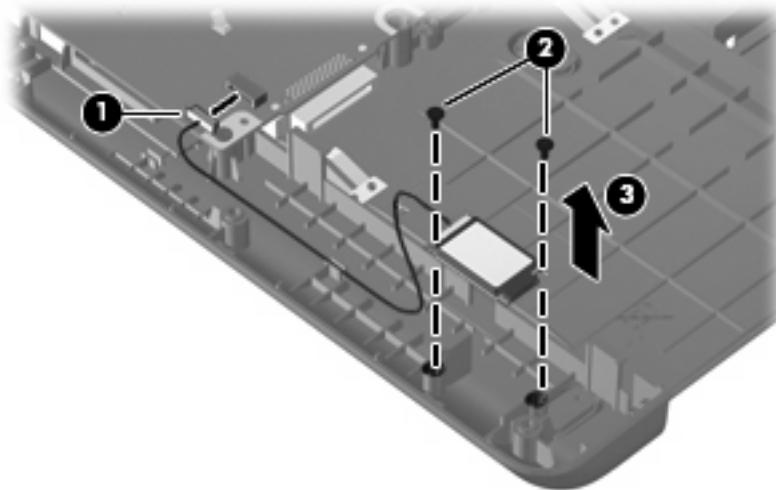
Before removing the Bluetooth module, follow these steps:

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 40](#)).
5. Remove the following components:
 - a. Optical drive (see [Optical drive on page 41](#))
 - b. Hard drive (see [Hard drive on page 43](#))
 - c. Keyboard (see [Keyboard on page 52](#))
 - d. Keyboard cover (see [Keyboard cover on page 54](#))
 - e. Display assembly (see [Display assembly on page 57](#))
 - f. Top cover (see [Top cover on page 64](#))

Remove the Bluetooth module:

1. Disconnect the Bluetooth module cable **(1)** from the system board.
2. Remove the two Phillips PM2.0×6.0 screws **(2)** that secure the Bluetooth module to the base enclosure.

3. Remove the Bluetooth module (3).



Reverse this procedure to install the Bluetooth module.

Speakers

Description	Spare part number
Speakers	486632-001

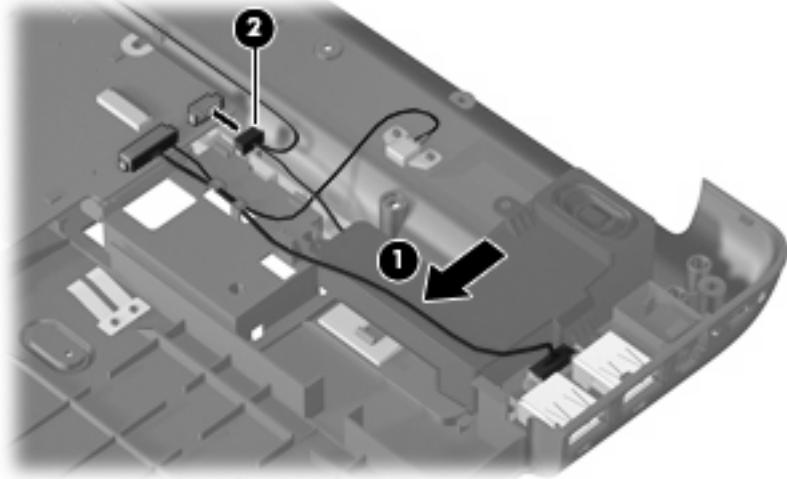
Before removing the speakers, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the following components:
 - a. Optical drive (see [Optical drive on page 41](#))
 - b. Hard drive (see [Hard drive on page 43](#))
 - c. Keyboard (see [Keyboard on page 52](#))
 - d. Keyboard cover (see [Keyboard cover on page 54](#))
 - e. Display assembly (see [Display assembly on page 57](#))
 - f. Top cover (see [Top cover on page 64](#))

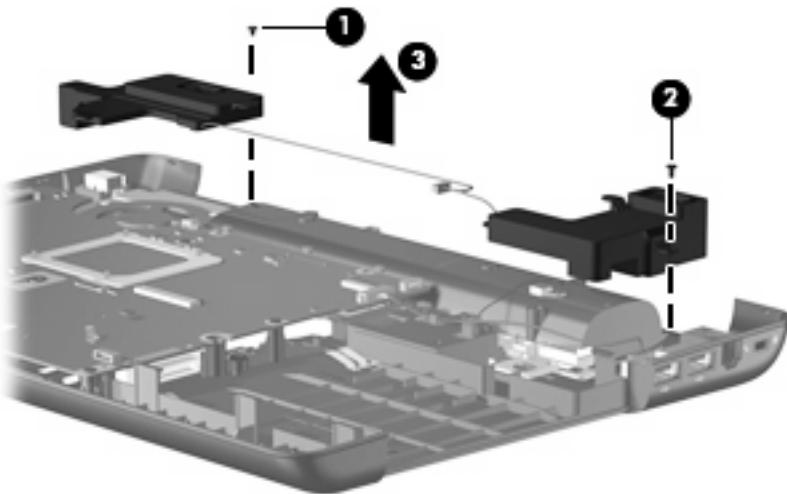
Remove the speakers:

1. Detach the USB board cable (1) from the right speaker. The USB board cable is attached to the speaker with double-sided tape.

2. Disconnect the speaker cable (2) from the system board.



3. Remove the Phillips PM2.0×3.0 screw (1) that secures the left speaker to the base enclosure.
4. Remove the Phillips PM2.0×6.0 screw (2) that secures the right speaker to the base enclosure.
5. Remove the left and right speakers and the speaker cables (3) from the base enclosure.



Reverse this procedure to install the speakers.

USB board

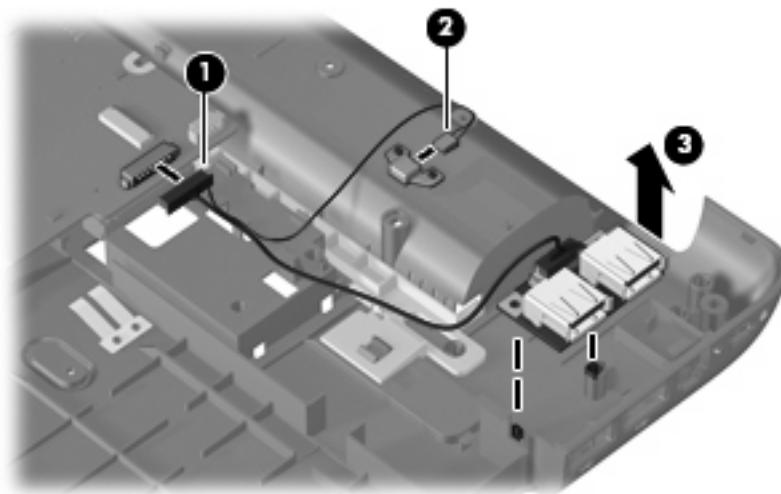
Description	Spare part number
USB board (does not include USB board cable)	486633-001
USB board cable (includes num lock LED)	486639-001

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 40](#)).
5. Remove the following components:
 - a. Optical drive (see [Optical drive on page 41](#))
 - b. Hard drive (see [Hard drive on page 43](#))
 - c. Keyboard (see [Keyboard on page 52](#))
 - d. Keyboard cover (see [Keyboard cover on page 54](#))
 - e. Display assembly (see [Display assembly on page 57](#))
 - f. Top cover (see [Top cover on page 64](#))
 - g. Speakers (see [Speakers on page 72](#))

Remove the USB board:

1. Disconnect the USB board cable (1) from the system board.
2. Remove the num lock LED cable (2) from the light cover built into the base enclosure.
3. Remove the USB board (3) from the base enclosure.



Reverse this procedure to install the USB board.

System board

 **NOTE:** All system board spare part kits include UMA graphics subsystem memory, built-in modem, and replacement thermal material.

Description	Spare part number
Equipped with AMD processors:	
For use only with HP G50 and Compaq CQ50 computer models equipped with a Digital Media Slot and an HDMI port	489810-001
For use only with HP G50 and Compaq CQ50 computer models equipped only with a Digital Media Slot	486550-001
For use only with Compaq CQ50 computer models equipped with an HDMI port	490828-001
For use only with Compaq CQ50 computer models not equipped with an HDMI port	494182-001
Equipped with Intel processors:	
For use only with HP G50 and Compaq CQ50 computer models equipped with a GM45 chipset, Digital Media Slot, and HDMI port	485218-001
For use only with HP G50 and Compaq CQ50 computer models equipped with a GM45 chipset and Digital Media Slot	494281-001
For use only with HP G50 and Compaq CQ50 computer models equipped with a GL40 chipset, Digital Media Slot, and HDMI port	485219-001
For use only with HP G50 and Compaq CQ50 computer models equipped with a GL40 chipset and Digital Media Slot	494282-001
For use only with HP G50 and Compaq CQ50 computer models equipped with NVIDIA GeForce 9200M graphics, a Digital Media Slot, and an HDMI port	488338-001
For use only with HP G50 and Compaq CQ50 computer models equipped with NVIDIA GeForce 9200M graphics and a Digital Media Slot	494283-001

Before removing the system board, follow these steps:

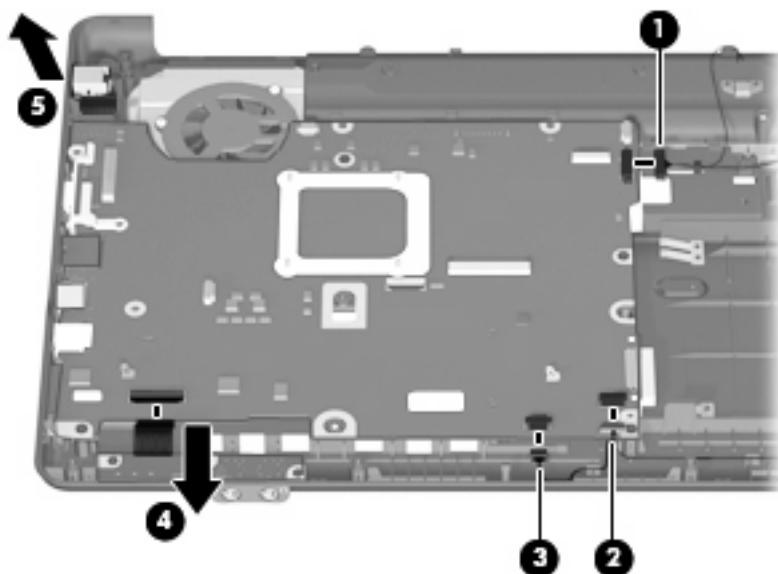
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 43](#))
 - b. Optical drive (see [Optical drive on page 41](#))
 - c. Keyboard (see [Keyboard on page 52](#))
 - d. Keyboard cover (see [Keyboard cover on page 54](#))
 - e. Display assembly (see [Display assembly on page 57](#))
 - f. Top cover (see [Top cover on page 64](#))
 - g. Speakers (see [Speakers on page 72](#))

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:

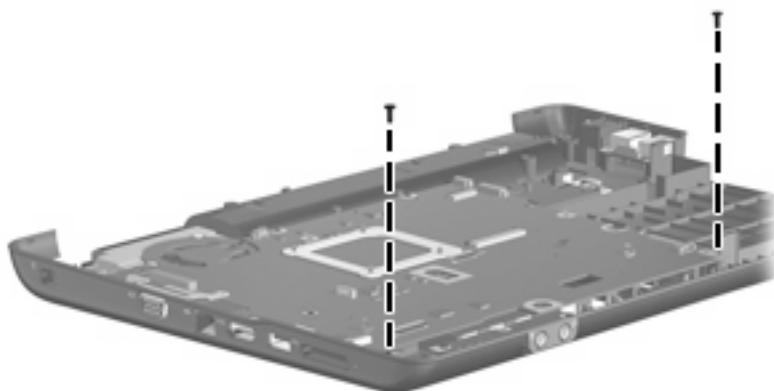
- Memory modules (see [Memory module on page 47](#))
- RTC battery (see [RTC battery on page 46](#))
- WLAN module (see [WLAN module on page 49](#))
- Fan/heat sink assembly (see [Fan/heat sink assembly on page 79](#))
- Processor (see [Processor on page 82](#))

Remove the system board:

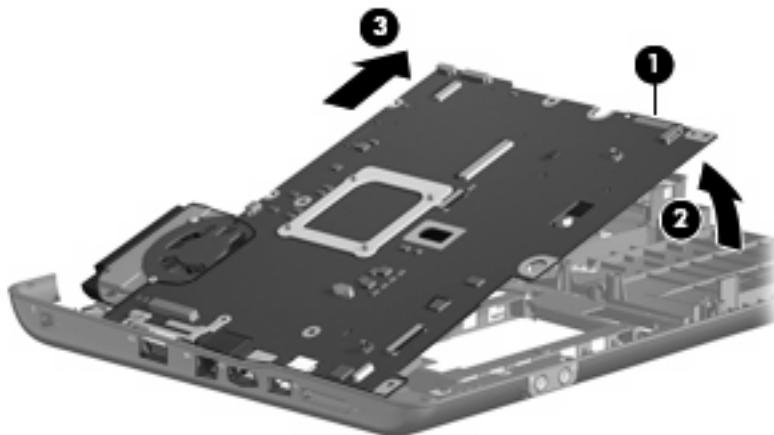
1. Disconnect the following cables from the system board:
 - (1) USB board cable
 - (2) Bluetooth module cable
 - (3) RJ-11 connector cable
 - (4) Audio board cable
2. Remove the power connector cable (5) from the clip built into the base enclosure.



3. Remove the two Phillips PM2.5×10.0 screws that secure the system board to the base enclosure.



4. Use the optical drive connector (1) to lift the right side of the system board (2) until it rests at an angle.
5. Remove the system board (3) by pulling it away from the base enclosure at an angle.



Reverse this procedure to install the system board.

RJ-11 connector cable

Description	Spare part number
RJ-11 connector cable	486638-001

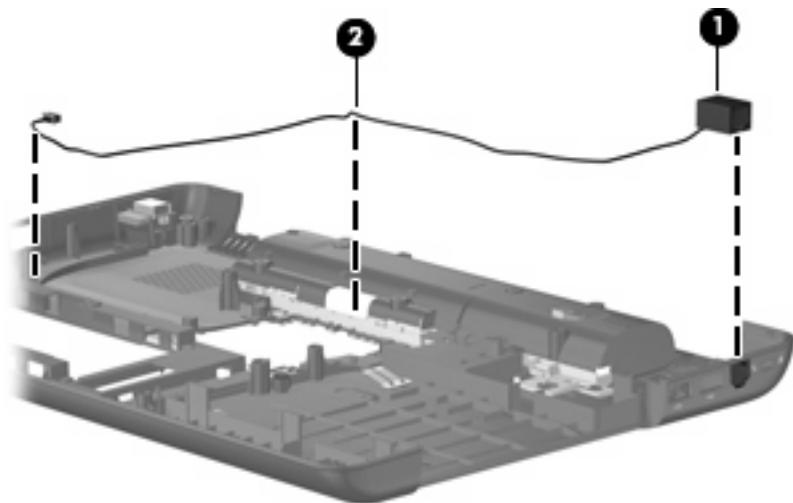
Before removing the RJ-11 connector cable, follow these steps:

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 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 43](#))
 - b. Optical drive (see [Optical drive on page 41](#))
 - c. Keyboard (see [Keyboard on page 52](#))
 - d. Keyboard cover (see [Keyboard cover on page 54](#))
 - e. Display assembly (see [Display assembly on page 57](#))
 - f. Top cover (see [Top cover on page 64](#))
 - g. Speakers (see [Speakers on page 72](#))
 - h. System board (see [System board on page 74](#))

Remove the RJ-11 connector cable:

1. Remove the RJ-11 connector from the clip **(1)** built into the base enclosure.
2. Remove the RJ-11 connector cable **(2)** from the clips and routing channels built into the base enclosure.



Reverse this procedure to install the RJ-11 connector cable.

Fan/heat sink assembly

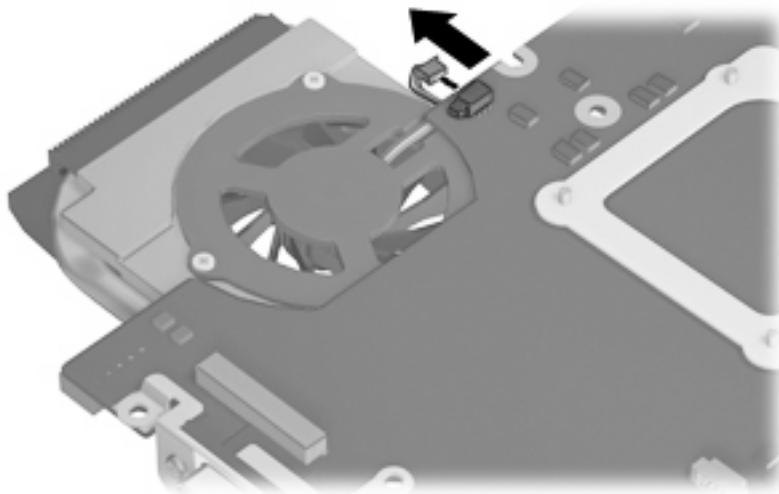
Description	Spare part number
Fan/heat sink assembly (includes replacement thermal material)	486636-001

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

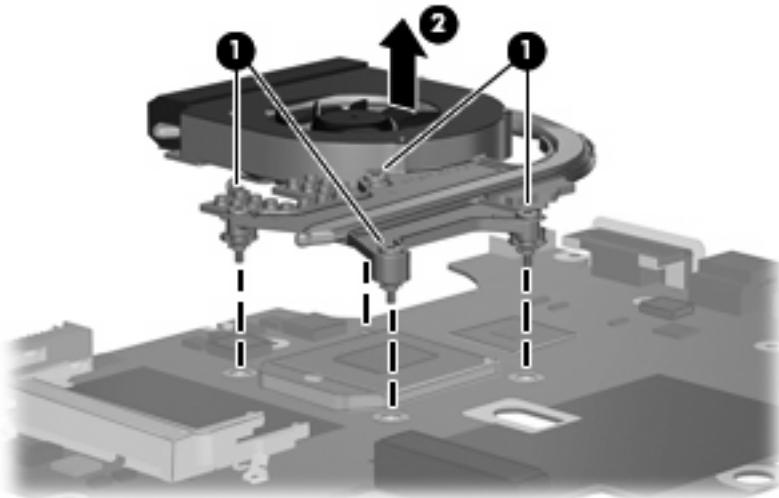
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 43](#))
 - b. Optical drive (see [Optical drive on page 41](#))
 - c. Keyboard (see [Keyboard on page 52](#))
 - d. Keyboard cover (see [Keyboard cover on page 54](#))
 - e. Display assembly (see [Display assembly on page 57](#))
 - f. Top cover (see [Top cover on page 64](#))
 - g. Speakers (see [Speakers on page 72](#))
 - h. System board (see [System board on page 74](#))

Remove the fan/heat sink assembly:

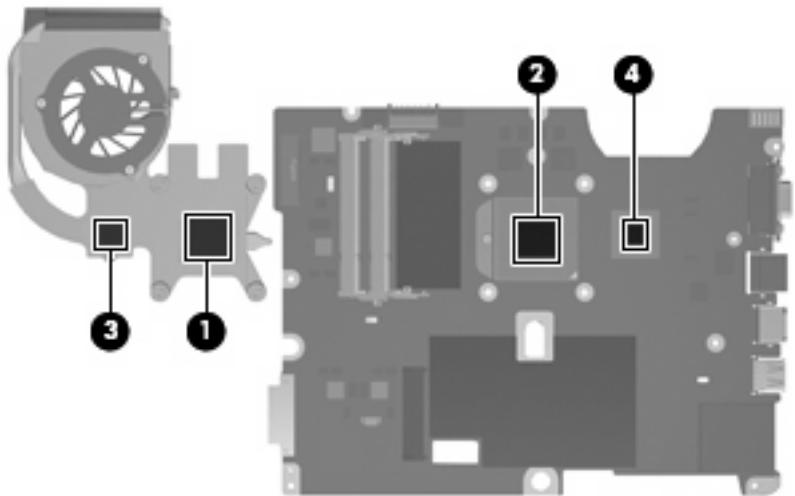
1. Disconnect the fan cable from the system board.



2. Turn the system board upside down, with the RJ-11 and RJ-45 jacks toward you.
3. Loosen the four Phillips PM2.0×10.0 captive screws (1) that secure the fan/heat sink assembly to the system board.
4. Remove the fan/heat sink assembly (2) by lifting it straight up.



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



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

Processor

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

Description	Spare part number
AMD Turion Ultra Dual-Core ZM-82 2.20-GHz processor (35W, 2-MB L2 cache)	480852-006
AMD Turion Ultra Dual-Core ZM-80 2.10-GHz processor (35W, 2-MB L2 cache)	480851-006
AMD Turion Dual-Core RM-70 2.00-GHz processor (35W, 1-MB L2 cache)	480857-005
AMD Athlon Dual-Core QL-60 1.90-GHz processor (35W, 1-MB L2 cache)	480856-005
AMD Sempron Single-Core SI-40 2.00-GHz processor (25W, 512-KB L2 cache)	487350-003
Processor bracket (AMD)	486635-001
Intel Core2 Duo T9600 2.80-GHz processor (6-MB L2 cache)	489157-006
Intel Core2 Duo T9400 2.53-GHz processor (6-MB L2 cache)	483260-006
Intel Core2 Duo P8600 2.40-GHz processor (3-MB L2 cache)	483259-005
Intel Core2 Duo P8400 2.26-GHz processor (3-MB L2 cache)	483258-006
Intel Core2 Duo P7350 2.00-GHz processor (3-MB L2 cache)	501520-001
Intel Core2 Duo T5900 2.20-GHz processor (2-MB L2 cache)	501522-001
Intel Core2 Duo T5800 2.00-GHz processor (2-MB L2 cache)	501521-001
Intel Pentium Dual-Core T3400 2.16-GHz processor (1-MB L2 cache)	501523-001
Intel Pentium Dual-Core T3200 2.00-GHz processor (1-MB L2 cache)	501519-001
Intel Celeron 585 2.16-GHz processor (1-MB L2 cache)	494285-001
Intel Celeron 575 2.00-GHz processor (1-MB L2 cache)	494284-001
Processor bracket (Intel)	497752-001

Before removing the processor, follow these steps:

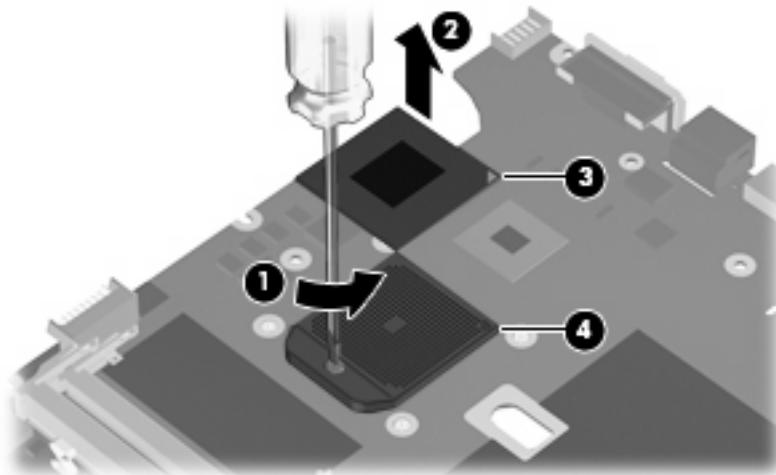
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 43](#))
 - b. Optical drive (see [Optical drive on page 41](#))
 - c. Keyboard (see [Keyboard on page 52](#))
 - d. Keyboard cover (see [Keyboard cover on page 54](#))

- e. Display assembly (see [Display assembly on page 57](#))
- f. Top cover (see [Top cover on page 64](#))
- g. Speakers (see [Speakers on page 72](#))
- h. System board (see [System board on page 74](#))
- i. Fan/heat sink assembly (see [Fan/heat sink assembly on page 79](#))

Remove the processor:

1. Use a flat-bladed screwdriver to 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:** When you install the processor, the gold triangle **(3)** on the processor must be aligned with the triangle **(4)** embossed on the processor socket.



Reverse this procedure to install the processor.

Power connector cable

Description	Spare part number
Power connector cable	486637-001

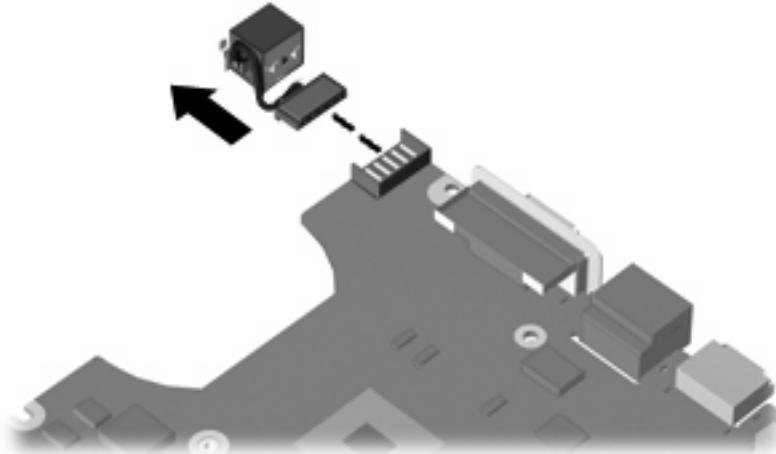
Before removing the power connector cable, follow these steps:

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 40](#)).
5. Remove the following components:
 - a. Optical drive (see [Optical drive on page 41](#))
 - b. Hard drive (see [Hard drive on page 43](#))
 - c. Keyboard (see [Keyboard on page 52](#))
 - d. Keyboard cover (see [Keyboard cover on page 54](#))
 - e. Display assembly (see [Display assembly on page 57](#))
 - f. Top cover (see [Top cover on page 64](#))
 - g. System board (see [System board on page 74](#))

Remove the power connector cable:

1. Position the system board with the front toward you.
2. Disconnect the power connector cable from the system board.



Reverse this procedure to install the power connector cable.

5 Setup Utility

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

Starting the Setup Utility

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

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

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

To start the Setup Utility:

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

Changing the language of the Setup Utility

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

1. Open the Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press **f10**.
– or –
Open the Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f10**.
2. Use the arrow keys to select **System Configuration > Language**, and then press **enter**.

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

Your change goes into effect immediately.

Navigating and selecting in the Setup Utility

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

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

Displaying system information

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

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

– or –

Open the Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f10**.
2. Select the **Main** menu. System information such as the system time and date, and identification information about the computer is displayed.
3. To exit the Setup Utility without changing any settings, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.

Restoring default settings in the Setup Utility

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

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

– or –

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

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

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

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

Exiting the Setup Utility

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

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

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

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

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

After either choice, the computer restarts in Windows.

Setup Utility menus

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



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

Main menu

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

Security menu

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

System Configuration menu

Select	To do this
Language Support	Change the Setup Utility language.
Button Sound (select models only)	Enable/disable the capacitive button tapping sound.
Virtualization Technology	Enable/disable the processor Virtualization Technology.
Processor C4 State (select models only)	Enable/disable the processor C4 sleep state.
LAN Power Saving (select models only)	Enable/disable LAN Power Saving. When enabled, saves power when the computer is in DC mode.
Card Reader/1394 Power Saving (select models only)	Enable/disable Card Reader/1394 Power Saving. When enabled, saves power when the computer is in DC mode.
Fan Always On	Enabled/disable Fan Always On. When enabled, the computer fan will always be on.
Boot Options	<p>Set the following boot options:</p> <ul style="list-style-type: none">● f9 and f10 Delay (sec.)—Set the delay for the f9 and f10 functions of the Setup Utility in intervals of 5 seconds each (0, 5, 10, 15, 20).● CD-ROM boot—Enable/disable boot from CD-ROM.● Floppy boot—Enable/disable boot from diskette.● Internal Network Adapter boot—Enable/disable boot from Internal Network Adapter.● Boot Order—Set the boot order for:<ul style="list-style-type: none">○ USB Floppy○ Internal CD/DVD ROM Drive○ Hard drive○ USB Diskette on Key○ USB Hard drive○ Network adapter

Diagnostics menu

Select	To do this
Hard Disk Self Test	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		
Length	25.60 cm	10.08 in
Width	35.70 mm	14.06 in
Height (front to rear)	3.71 to 4.44 cm	1.46 to 1.75 in
Weight		
Equipped with 6-cell battery and optical drive	2.65 g	5.84 lbs
Input power		
Operating voltage	19.0 V dc @ 4.74 A – 65 W	
Operating current	4.74 A	
Temperature		
Operating (not writing to optical disc)	0°C to 35°C	32°F to 95°F
Operating (writing to optical disc)	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
Shock		
Operating	125 g, 2 ms, half-sine	
Nonoperating	200 g, 2 ms, half-sine	
Random vibration		
Operating	0.75 g zero-to-peak, 10 Hz to 500 Hz, 0.25 oct/min sweep rate	

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

15.4-inch, WXGA display specifications

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

Hard drive specifications

	250-GB*	200-GB*	160-GB*	120-GB*
Dimensions				
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm	70 mm
Weight	101 g	101 g	101 g	101 g
Interface type	SATA	SATA	SATA	SATA
Transfer rate	100 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec
Security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)				
Single track	3 ms	3 ms	3 ms	3 ms
Average	13 ms	13 ms	13 ms	13 ms
Maximum	24 ms	24 ms	24 ms	24 ms
Logical blocks	488,376,063	390,700,850	312,560,640	234,420,480
Disc rotational speed	5400 rpm	5400 rpm	5400 rpm	5400 rpm
Operating temperature	5°C to 55°C (41°F to 131°F)			

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

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

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 BD-ROM with SuperMulti DVD±RW and CD-RW 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, BD-ROM, BD-RE, BD-R	CD-R and CD-RW DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM	
Access time	CD	DVD	Blu-ray
Random	150 ms	180 ms	300 ms
Cache buffer	8 MB		
Data transfer rate			
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

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

System interrupt specifications

Hardware IRQ	System function
IRQ0	System timer
IRQ1	Standard 101-/102-Key or Microsoft® Natural Keyboard
IRQ2	Cascaded
IRQ4	COM1
IRQ6	Diskette drive
IRQ7*	Parallel port
IRQ8	System CMOS/real-time clock
IRQ9*	Microsoft ACPI-compliant system
IRQ12	Synaptics PS/2 TouchPad
IRQ13	Numeric data processor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE channel

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

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

System I/O address specifications

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

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

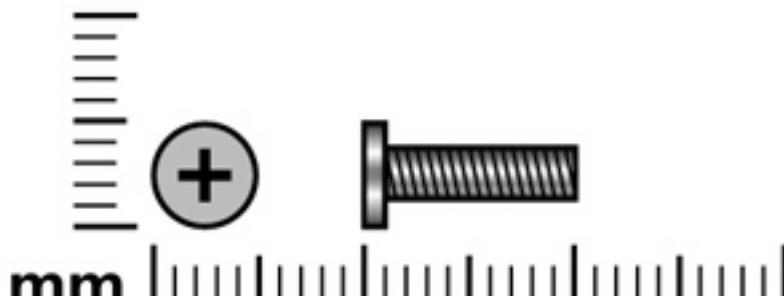
System memory map specifications

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

7 Screw listing

This section provides specification and reference information for the screws used in the computer. The screws listed in this section are available in the Screw Kit, spare part number 486622-001, or the Display Screw Kit, spare part number 486557-001.

Phillips PM2.5×10.0 screw



Color	Quantity	Length	Thread	Head diameter
Black	9	10.0 mm	2.5 mm	5.0 mm

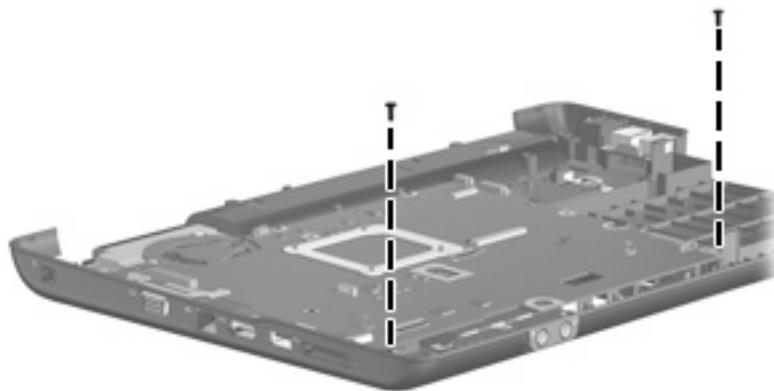


Where used:

- (1) One screw that secures the optical drive to the computer
- (2) Two screws that secure the keyboard cover to the computer

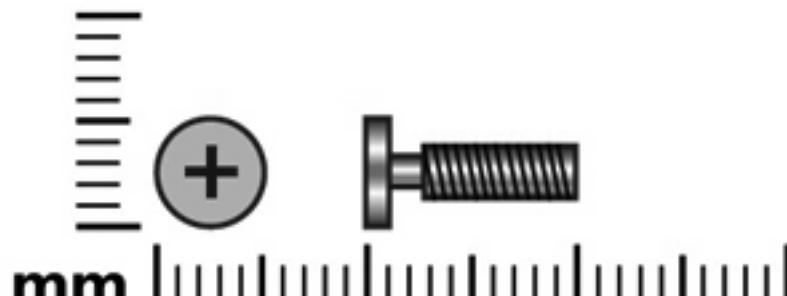


Where used: 4 screws that secure the display assembly to the computer

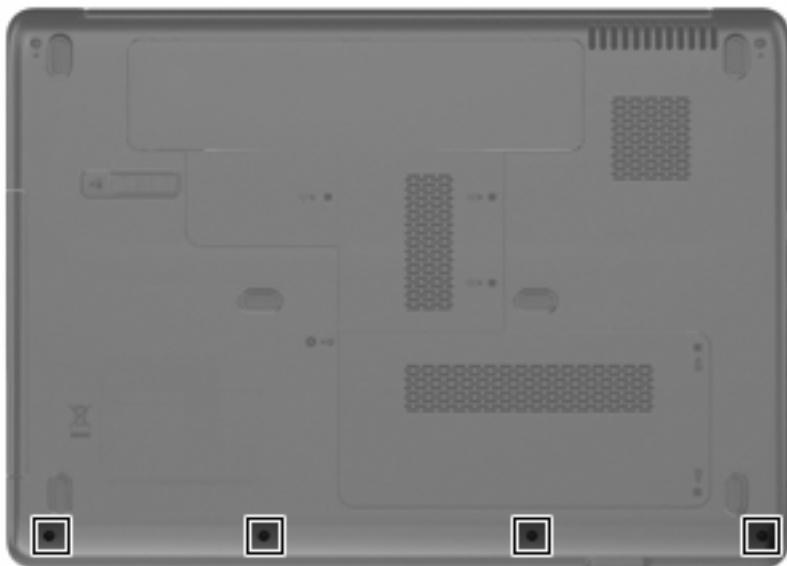


Where used: 2 screws that secure the system board to the base enclosure

Phillips PM2.5×10.0 captive screw



Color	Quantity	Length	Thread	Head diameter
Black	4	10.0 mm	2.5 mm	5.0 mm



Where used: 4 captive screws that secure the top cover to the computer (screws are secured by C-clips)

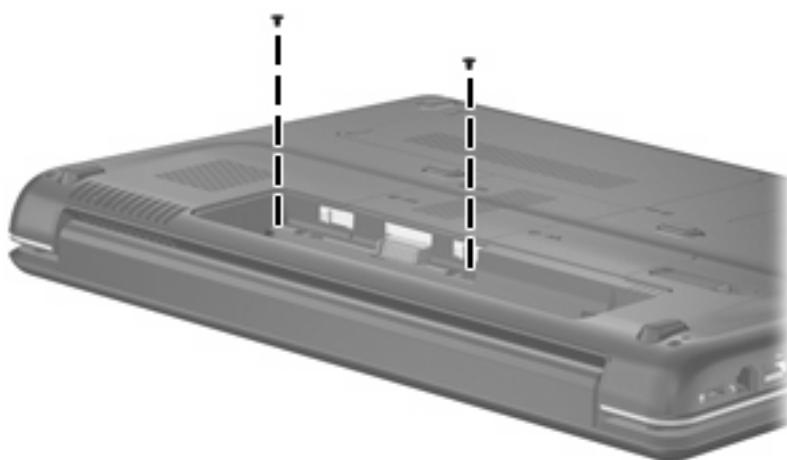
Phillips PM2.0×3.0 screw



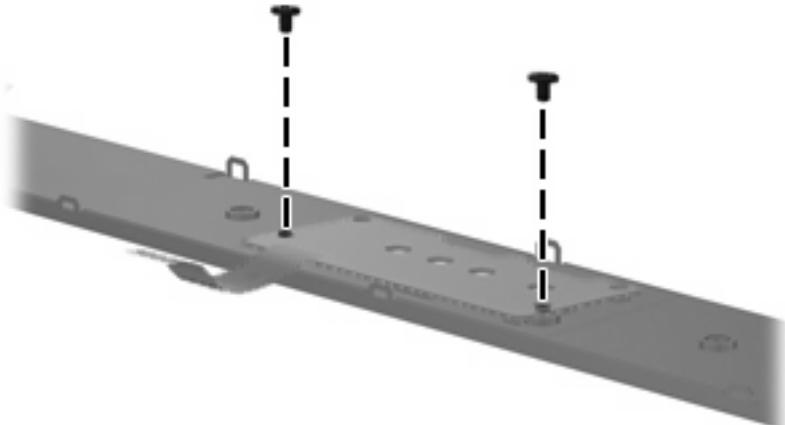
Color	Quantity	Length	Thread	Head diameter
Black	23	3.0 mm	2.0 mm	4.5 mm



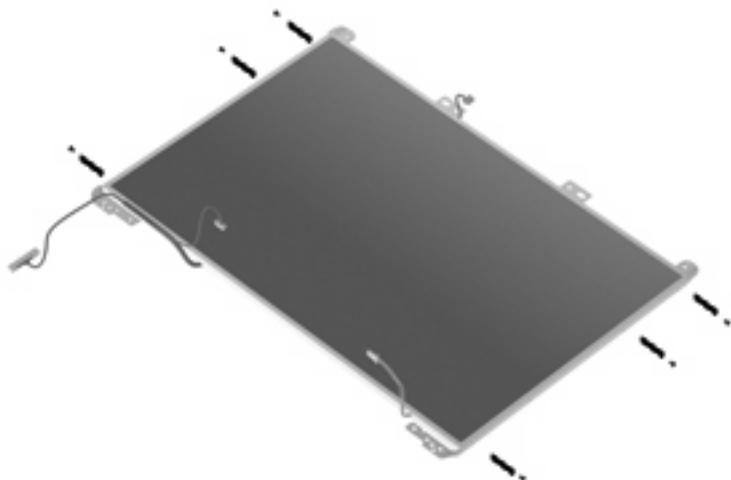
Where used: 2 screws that secure the optical drive bracket to the optical drive



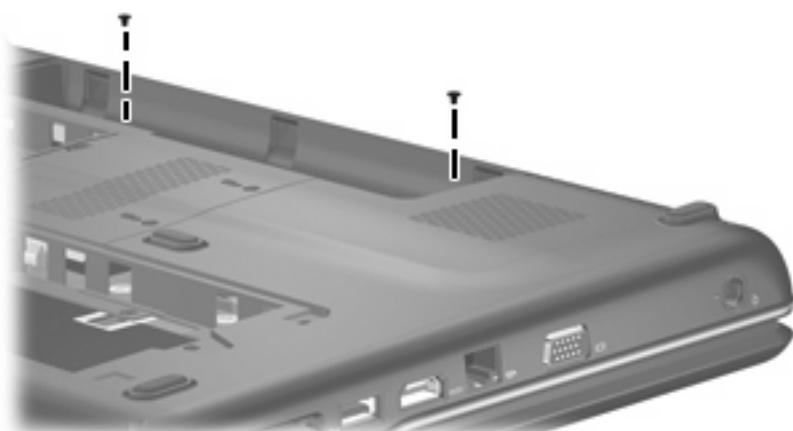
Where used: 2 screws that secure the keyboard cover to the computer



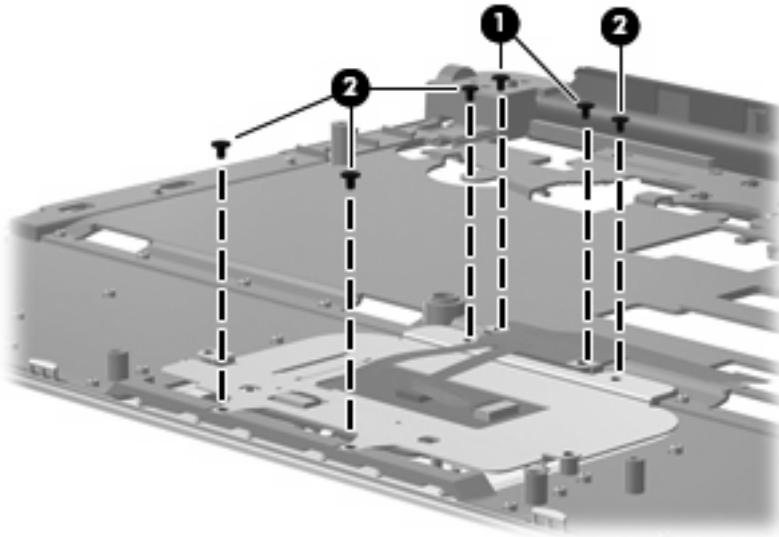
Where used: 2 screws that secure the power button board to the keyboard cover



Where used: 6 screws that secure the display panel brackets to the display panel

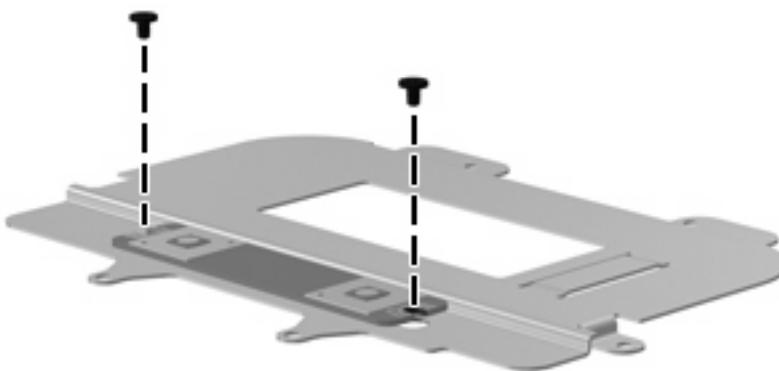


Where used: 2 screws that secure the top cover to the base enclosure

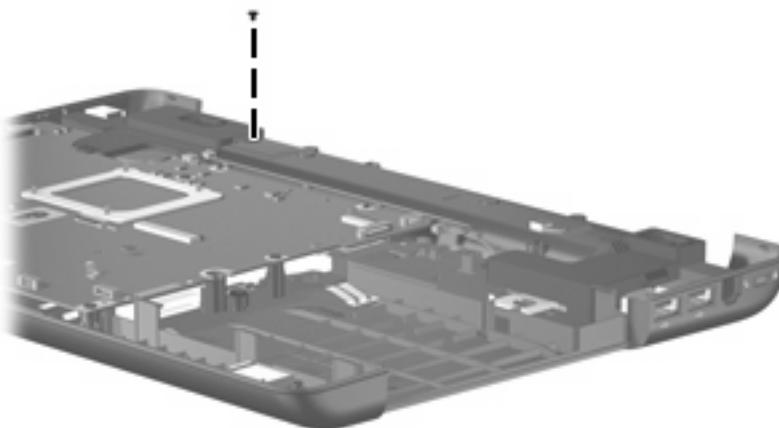


Where used:

- (1) Two screws that secure the TouchPad on/off button board to the top cover
- (2) Four screws that secure the TouchPad button board bracket to the top cover

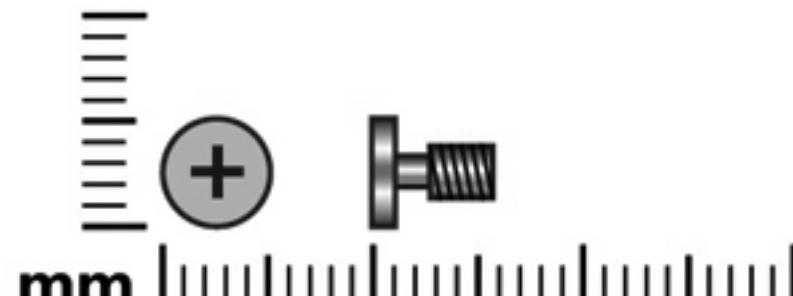


Where used: 2 screws that secure the TouchPad button board to the TouchPad button board bracket

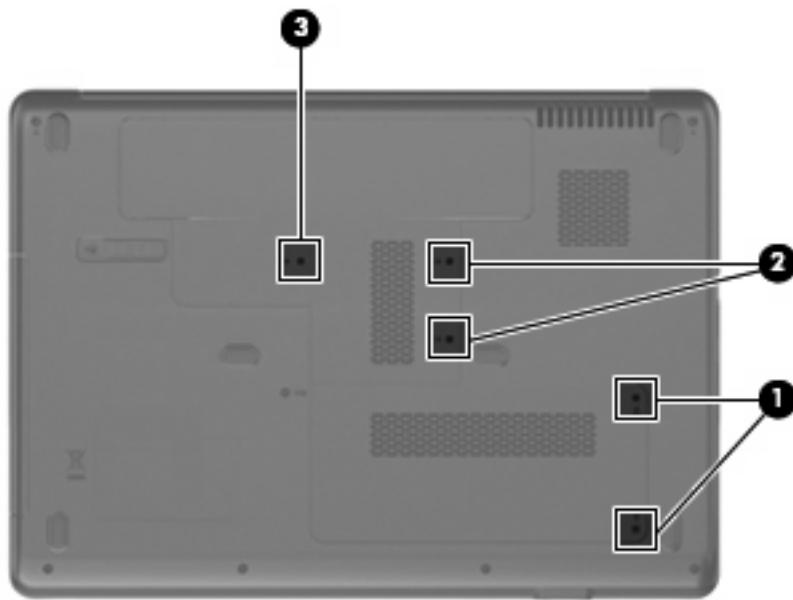


Where used: One screw that secures the left speaker to the base enclosure

Phillips PM2.5×6.0 captive screw



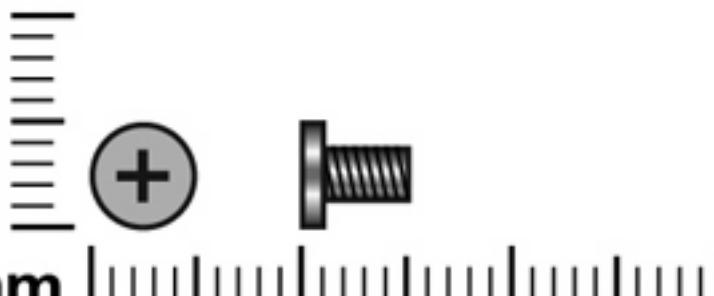
Color	Quantity	Length	Thread	Head diameter
Black	5	6.0 mm	2.5 mm	5.0 mm



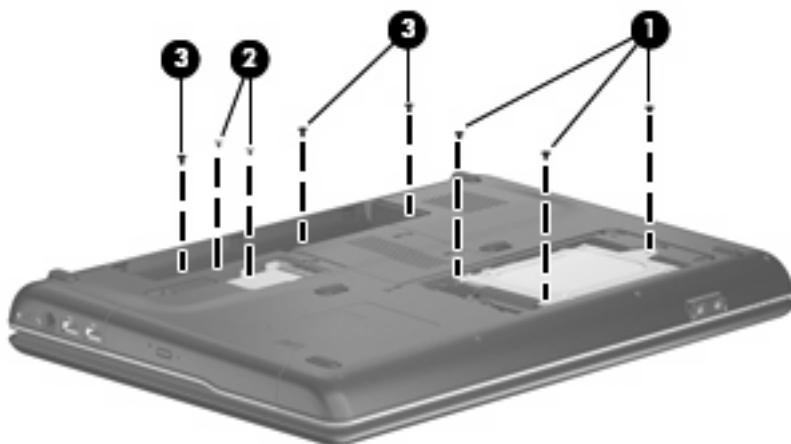
Where used:

- (1) Two captive screws that secure the hard drive cover to the computer (screws are secured by C-clips)
- (2) Two captive screws that secure the memory module compartment cover to the computer (screws are secured by C-clips)
- (3) One captive screw that secures the WLAN module compartment cover to the computer (screw is secured by a C-clip)

Phillips PM2.5×5.0 screw



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



Where used:

- (1) Three screws that secure the hard drive to the computer
- (2) Two screws that secure the WLAN module to the computer
- (3) Three screws that secure the keyboard to the computer

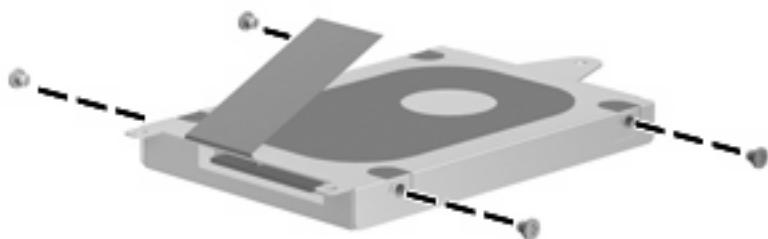


Where used: 2 screws that secure the display panel to the display enclosure

Phillips PM3.0×3.0 screw

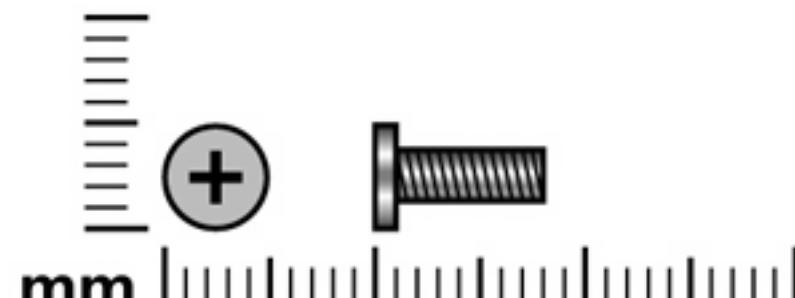


Color	Quantity	Length	Thread	Head diameter
Silver	4	3.0 mm	3.0 mm	5.0 mm

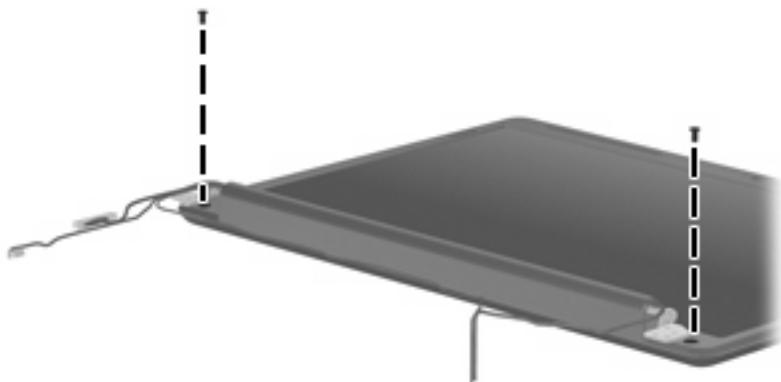


Where used: 4 screws that secure the hard drive bracket to the hard drive

Phillips PM2.5×8.0 screw

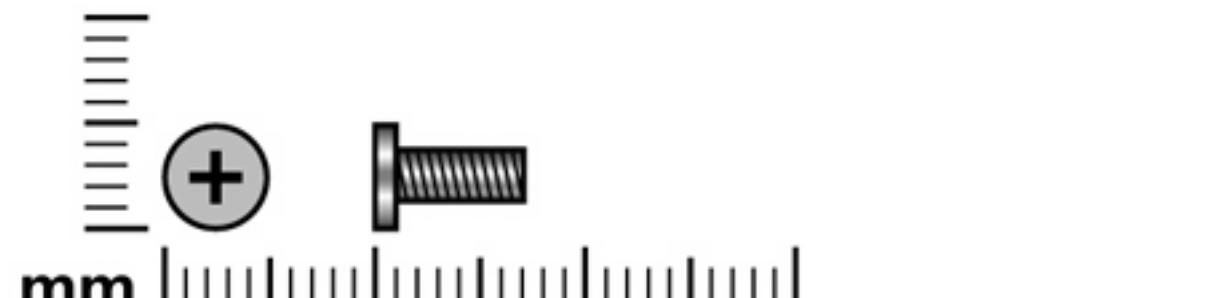


Color	Quantity	Length	Thread	Head diameter
Black	2	8.0 mm	2.5 mm	5.0 mm



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

Phillips PM2.5×7.0 screw



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



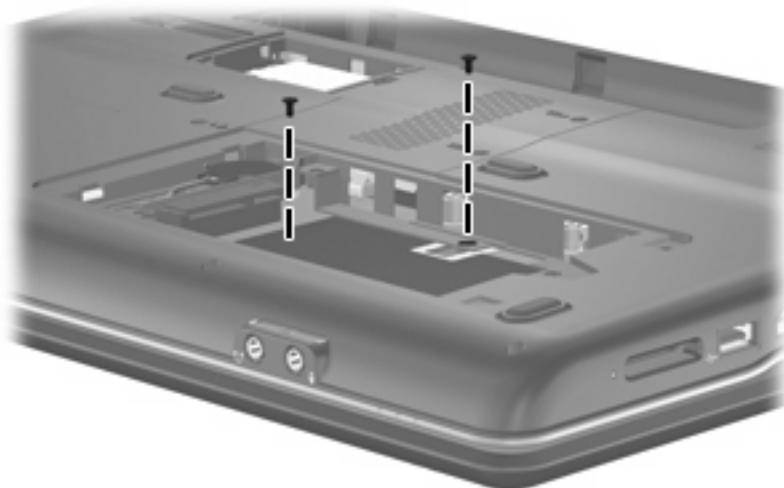
Where used: 4 screws that secure the display hinges to the display enclosure

Phillips PM2.0×6.0 screw

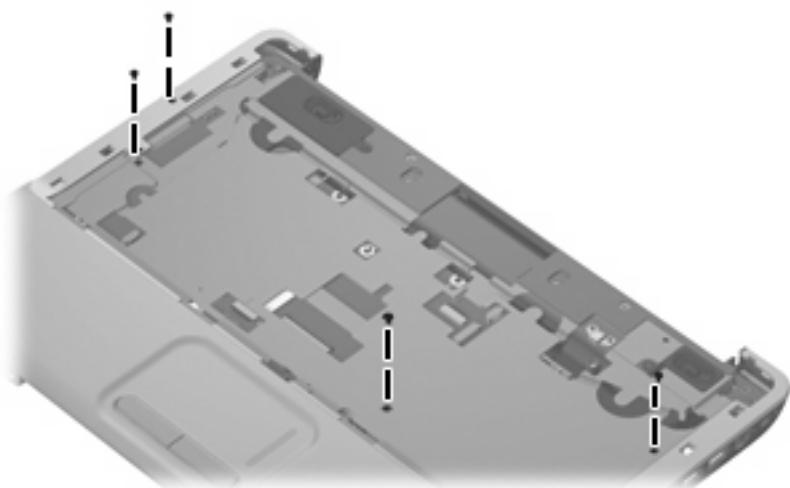


mm

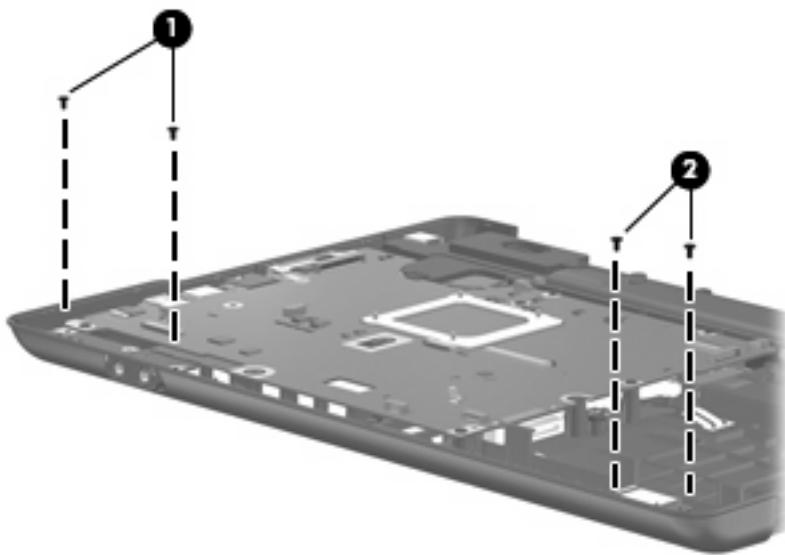
Color	Quantity	Length	Thread	Head diameter
Black	11	6.0 mm	2.0 mm	4.5 mm



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

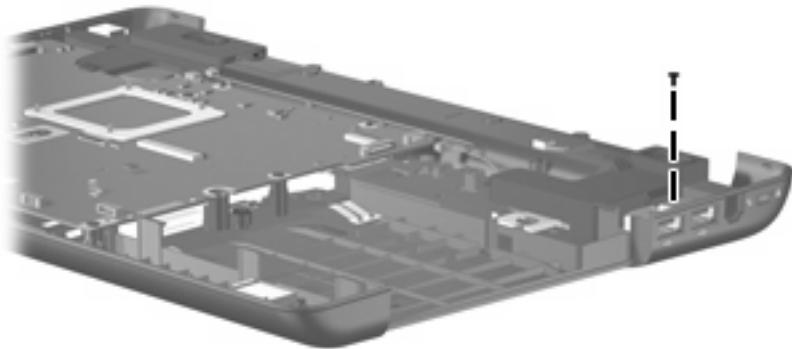


Where used: 4 screws that secure the top cover to the base enclosure



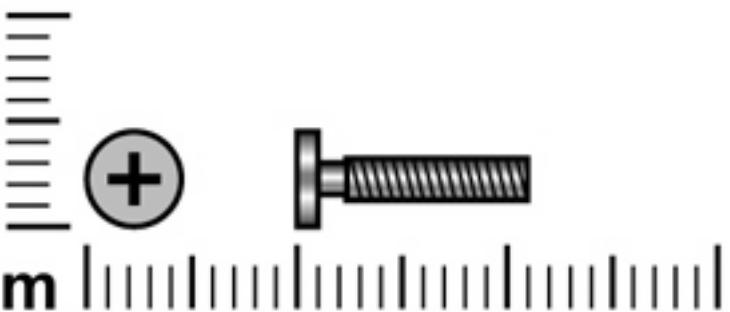
Where used:

- (1) Two screws that secure the audio board to the base enclosure
- (2) Two screws that secure the Bluetooth module to the base enclosure

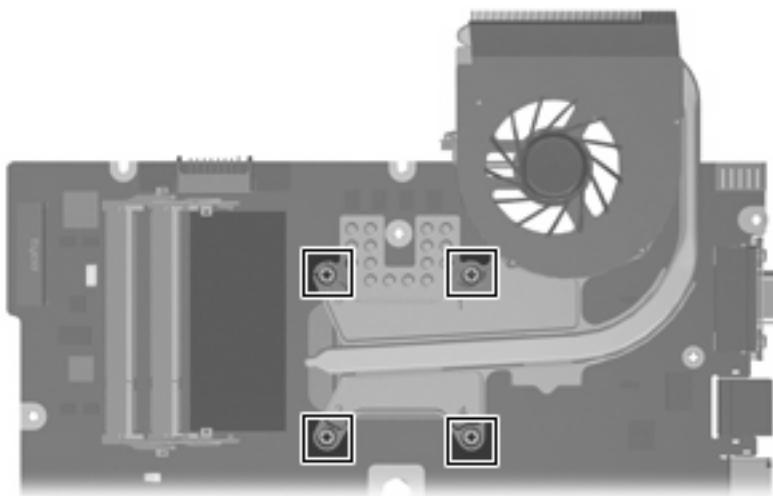


Where used: One screw that secures the right speaker to the base enclosure

Phillips PM2.0×11.0 captive screw



Color	Quantity	Length	Thread	Head diameter
Silver	4	11.0 mm	2.0 mm	5.0 mm



Where used: 4 captives screws that secure the fan/heat sink to the system board (screws are secured by C-clips)

8 Backup and recovery

Recovering system information

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

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

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

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

Creating recovery discs

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

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

Note the following guidelines before creating recovery discs:

- You will need high quality CD-R, DVD-R, double-layer DVD-R, DVD+R, double-layer DVD+R, or BD-R (writable Blu-ray) discs. All these discs are purchased separately.
-
-  **NOTE:** Read-write discs, such as CD-RW, DVD±RW, double-layer DVD±RW, and BD-RE (rewritable Blu-ray) discs, are not compatible with the Recovery Manager software.
- The computer must be connected to AC power during this process.
 - Only one set of recovery discs can be created per computer.
 - Number each disc before inserting it into the computer optical drive.
 - If necessary, you can exit the program before you have finished creating the recovery discs. The next time you open Recovery Manager, you will be prompted to continue the disc creation process.

To create a set of recovery discs:

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

Recovery Manager opens.

2. Click **Advanced Options**.

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

3. Click **Recovery disc creation**, and then click **Next**.

4. Follow the on-screen instructions.

Backing up your information

When to back up

- On a regularly scheduled basis

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

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

Backup suggestions

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

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

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

Using system restore points

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

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

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

When to create restore points

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

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

Create a system restore point

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

Restore to a previous date and time

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

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

4. Click the **System Restore** button, and then click **Next**.

The System Restore window opens.

5. Follow the on-screen instructions.

Performing a recovery

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

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

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

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

Recovering from the recovery discs

To restore the system from the recovery discs:

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

Recovering from the dedicated recovery partition (select models only)

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

On some models, you can perform a recovery from the partition on the hard drive from either the Start button or **f11**.

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

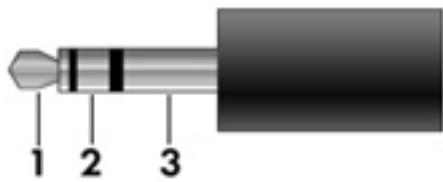
1. Access Recovery Manager in either of the following ways:
 - Select **Start > All Programs > Recovery Manager > Recovery Manager**.
 - or–
 - Restart the computer and press **f11** while the “Press <F11> for recovery” message is displayed on the screen. Then select **Recovery Manager**.

Recovery Manager opens.

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

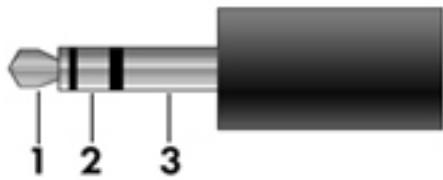
9 Connector pin assignments

Audio-out (headphone)



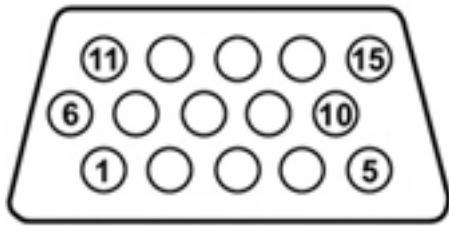
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

Audio-in (microphone)



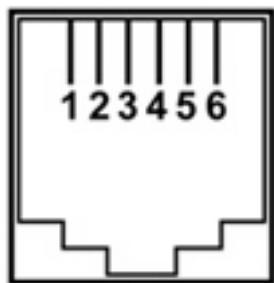
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

External monitor



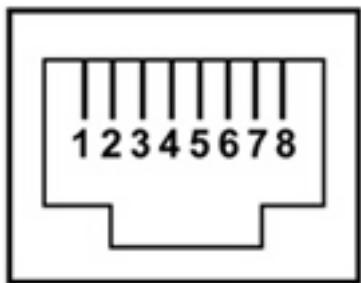
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

RJ-11 (modem)



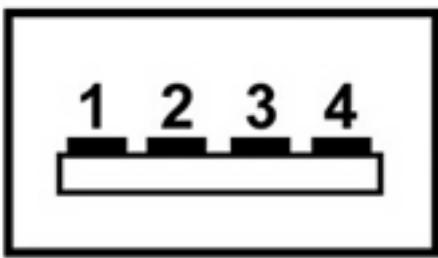
Pin	Signal
1	Unused
2	Tip
3	Ring
4	Unused
5	Unused
6	Unused

RJ-45 (network)



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

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

Requirements for all countries and regions

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

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

Requirements for specific countries and regions

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

1. The flexible cord must be Type HO5VV-F, 3-conductor, 1.0-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.

3. The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.

4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

5. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

11 Recycling

Battery

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

Display

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

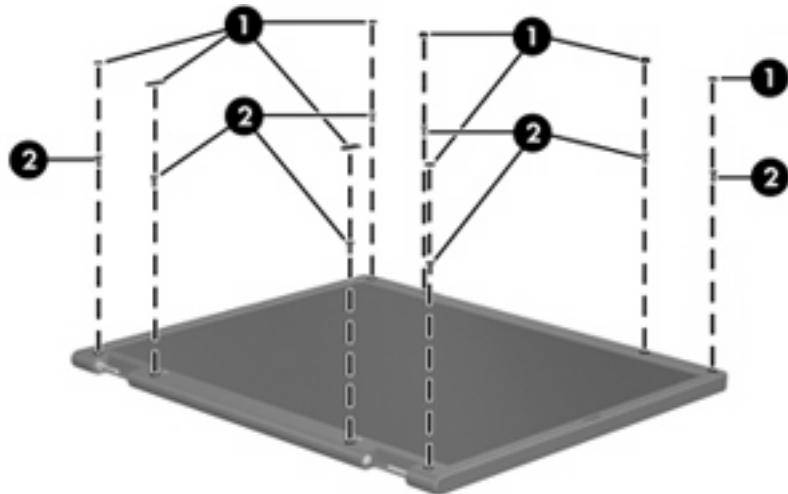
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight (1) and the liquid crystal display (LCD) panel (2).



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

Perform the following steps to disassemble the display assembly:

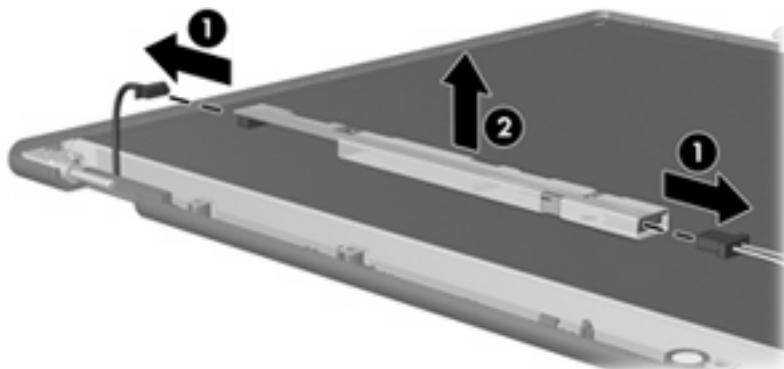
1. Remove all screw covers (1) and screws (2) that secure the display bezel to the display assembly.



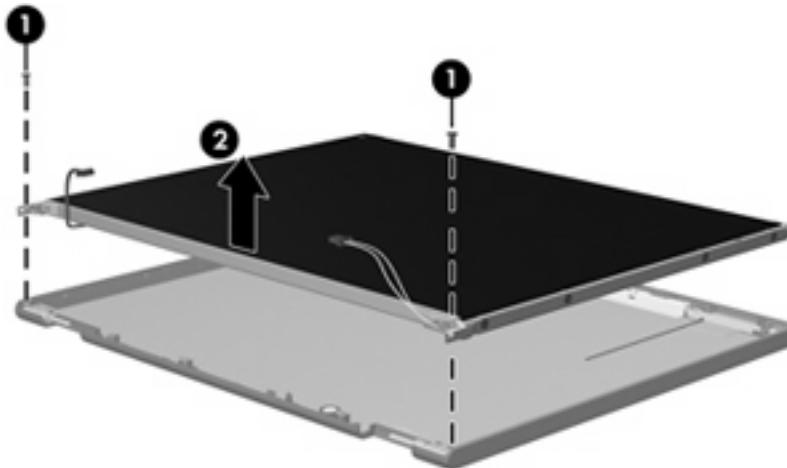
2. Lift up and out on the left and right inside edges (1) and the top and bottom inside edges (2) of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel (3).



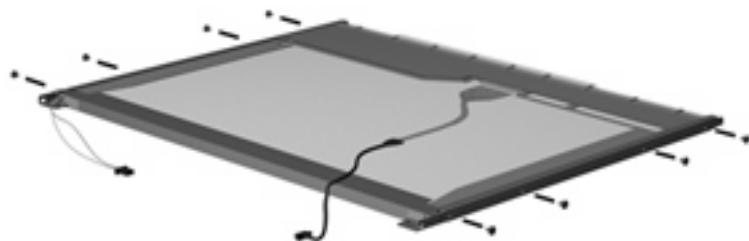
4. Disconnect all display panel cables (1) from the display inverter and remove the inverter (2).



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

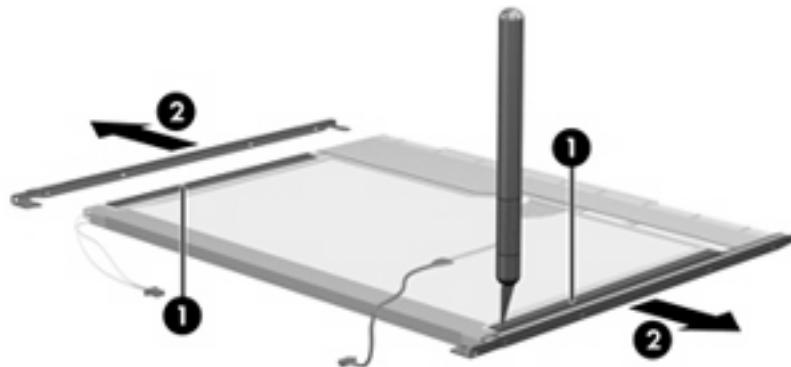


7. Turn the display panel assembly upside down.
8. Remove all screws that secure the display panel frame to the display panel.



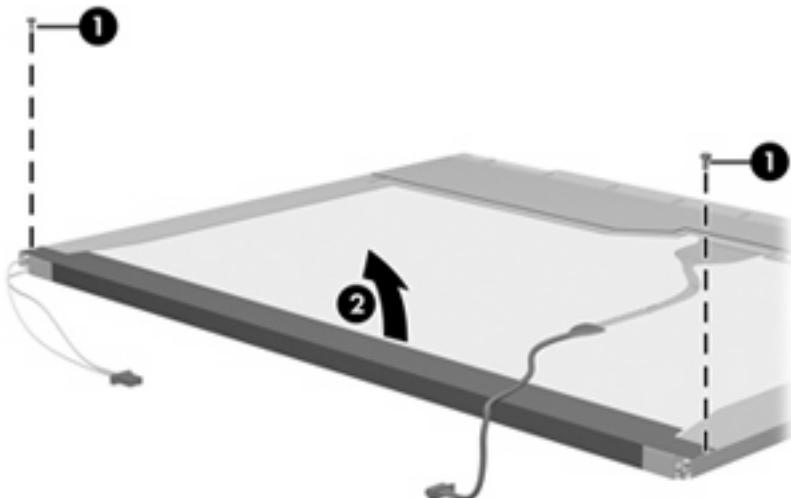
9. Use a sharp-edged tool to cut the tape (1) that secures the sides of the display panel to the display panel frame.

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



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

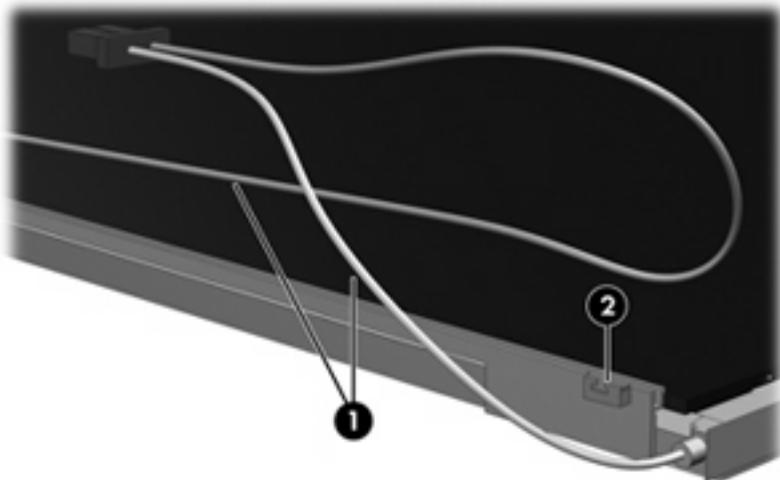
12. Lift the top edge of the backlight cover (2) and swing it outward.



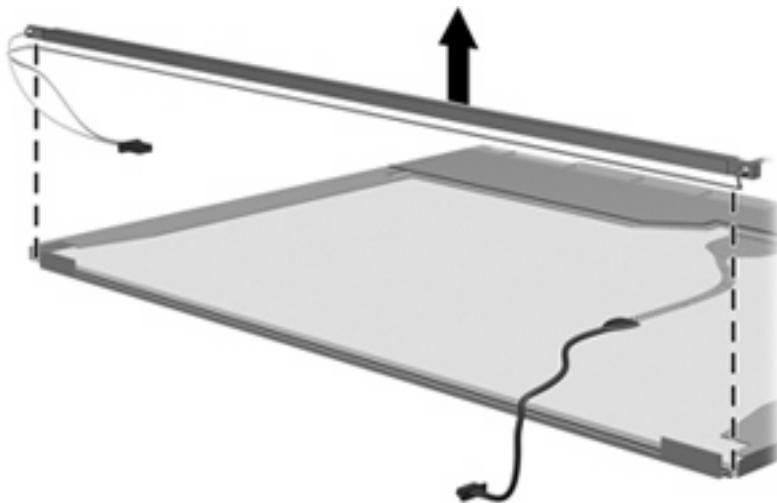
13. Remove the backlight cover.

14. Turn the display panel right-side up.

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

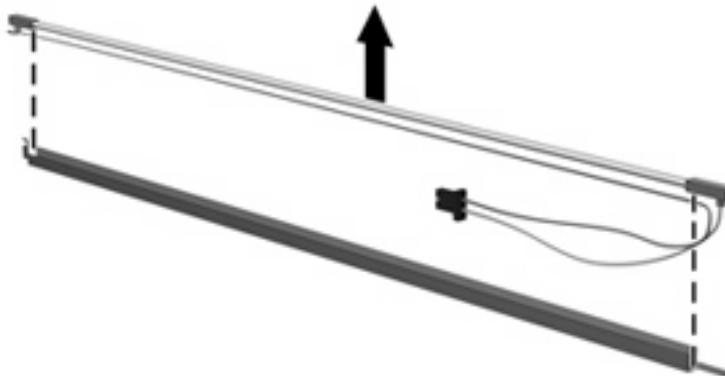


16. Turn the display panel upside down.
17. Remove the backlight frame from the display panel.

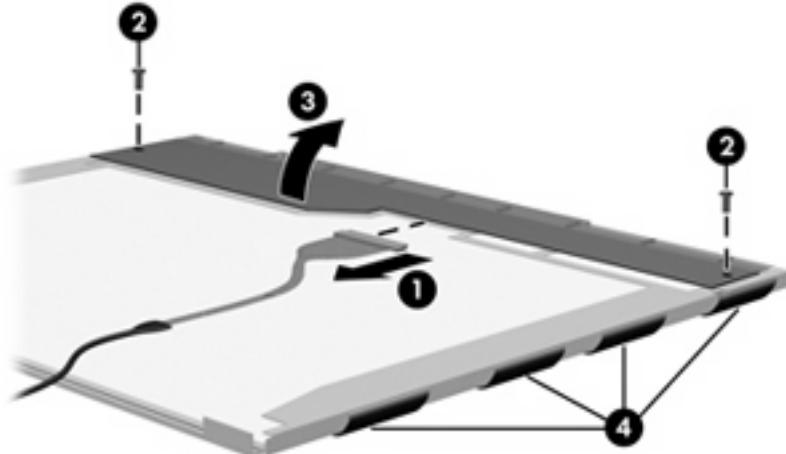


WARNING! The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

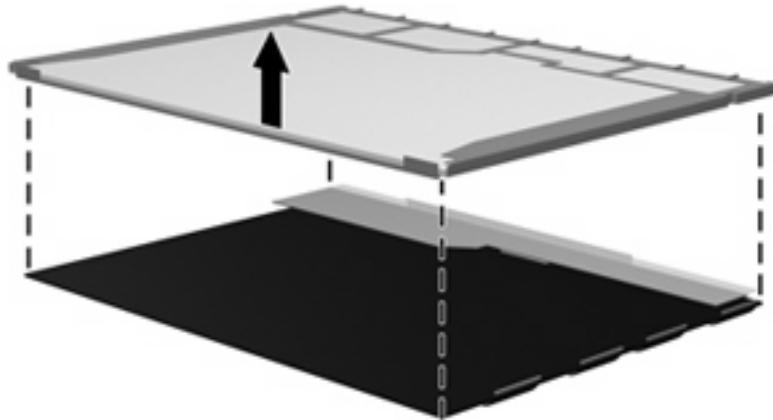
18. Remove the backlight from the backlight frame.



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



23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.

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