HP Pavilion dm1 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 air vents. Use the computer only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to contact the skin or a soft surface, such as pillows or rugs or clothing, during operation. The computer and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).

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1 Product description

Category	Description
Product name	HP Pavilion dm1
Processor	AMD Turion™ II Neo K625 1.5-GHz, 2MB L2 cache, 800-MHz front-side bus (FSB), 3.2-GT/s, Dual Core 15W AMD Athlon™ II Neo K325 1.3-GHz, 2MB L2 cache, 800-MHz front-side bus (FSB), 2.0-GT/s, Dual Core 12W AMD Athlon™ II Neo K125 1.7-GHz, 1MB L2 cache, 800-MHz front-side bus (FSB), 2.0-GT/s, Single Core 12W
Chipset	ATI RS880M - AMD M880G with ATI Mobility Radeon™ HD 4225 Southbridge: SB820M
Graphics	ATI Mobility Radeon™ HD 4225
	Universal Memory Architecture (UMA) graphics integrated with shared video memory: • up to 251MB for =1024MB system RAM • up to 358MB for >=2048MB system RAM • up to XXXMB for >=3072MB system RAM • up to XXXMB for >=4096MB system RAM • up to XXXMB for =5124MB system RAM
Panel	**29.5-cm** (11.6-in) (1366 x 768) HD BrightView LED display assembly, supports privacy filter

Category	Description
Memory	1024-MB on-board memory and one customer-accessible/upgradable memory module slot Supports dual-channel memory Supports the following DDR3 configurations at 1333 MHz downgrade to DDR3-800MHz: **NOTE:** For the Microsoft® Windows® Starter operating system, do not install more than 2 GB of memory. • 5120-MB total system memory (1024 on-board memory + 4096, dual-channel) • 4096-MB total system memory (1024 on-board memory + 3072, dual-channel) • 3072-MB total system memory (1024 on-board memory + 2048, dual-channel) • 2048-MB total system memory (1024 on-board memory + 1024, dual-channel) • 1024-MB total system memory (1024 on-board memory, dual-channel)
Sold-state drive	Supports 128-GB solid-state drive
Hard drives	Supports 9.50-mm, 6.35-cm (2.50-in) hard drives Supports HP ProtectSmart Hard Drive Protection Customer-accessible Serial ATA (SATA) Supports the following hard drives: **NOTE:** For the Windows Starter operating system, do not use a hard drive with a capacity more than 320 GB. • 500-GB, 7200-rpm • 320-GB, 7200-rpm • 250-GB, 7200-rpm • 160-GB, 7200-rpm
Optical drives	12.7-mm tray load external USB optical drive Serial ATA (SATA) Customer-accessible Supports no-optical-drive option Supports the following drives: • Blu-ray ROM with LightScribe DVD±R/RW and CD-RW SuperMulti Double-Layer Drive • DVD±RW and CD-RW SuperMulti Double-Layer Drive with LightScribe
Diskette drive	Supports external USB drive only Supports boot from USB device
Microphone	Single digital microphone

Category	Description
Audio	2 integrated HD stereo speakers Headphone jack Microphone jack
Webcam	Integrated standard VGA camera with fixed focus
Ethernet	Integrated Realtek10/100 network interface card (NIC) Ethernet cable not included
Wireless	Integrated wireless local-area network (WLAN) options via Mini PCI module: • 802.11b/g/n WLAN module • 802.11b/g/n WLAN/ Bluetooth® combo module Supports no-WLAN option 2 WLAN antennas built into the display assembly
	Integrated wireless wide-area network (WWAN) option via Mini PCI module: • WWAN security provided by subscriber identity module (SIM), user-accessible behind battery • 2 WWAN antennas (worldwide, 5-band) built into the display assembly • Does not support WWAN aftermarket option
	Integrated wireless personal area network (WPAN) options via Bluetooth® module
External media cards	Digital Media Slot supporting the following optional digital card formats: • Memory Stick (MS) • Memory Stick Pro (MS/Pro) • MultiMediaCard (MMC) • Secure Digital High Capacity (SDHC) memory card • xD-Picture Card
Ports	Audio-in (stereo microphone)/Audio-out (stereo headphone) combo jack HDMI v.1.3 AC power RJ-45 (Ethernet, includes link and activity lights) USB v. 2.0 (3) VGA (Dsub 15-pin) supporting: • 1900 x 1200 external resolution at 60 GHz • 1600 × 1200 external resolution at 75 GHz

Category	Description
Keyboard/pointing device	TouchPad with TouchPad buttons Touch-sensitive controls Supports 2-way scroll with legend Taps enabled by default
Power requirements	65-W AC adapter 6-cell, 2.55-Ah (55-Wh) Li-ion battery
Security	Security cable slot
Operating system	**Preinstalled:** • Windows® 7 Professional, 64-bit • Windows 7 Premium, 32- and 64-bit • Windows 7 Basic, 32- and 64-bit • Windows 7 Starter, 32-bit
Serviceability	**End-user replaceable parts:** • AC adapter • Battery (system) • Hard drive • Memory modules • SIM • WLAN module • WWAN module

2 External component identification

Components included with the computer may vary by region and model. The illustrations in this chapter identify the standard features on most computer models.

Top components

TouchPad

Component		Description
(1)	TouchPad	Moves the pointer and selects or activates items on the screen.
(2)	Left TouchPad button	Functions like the left button on an external mouse.
(3)	Right TouchPad button	Functions like the right button on an external mouse.
(4)	TouchPad scroll zone	Scrolls up or down.
This table describes factory settings. To view or change pointing device preferences, select **Start > Devices and Printers**.		

Lights

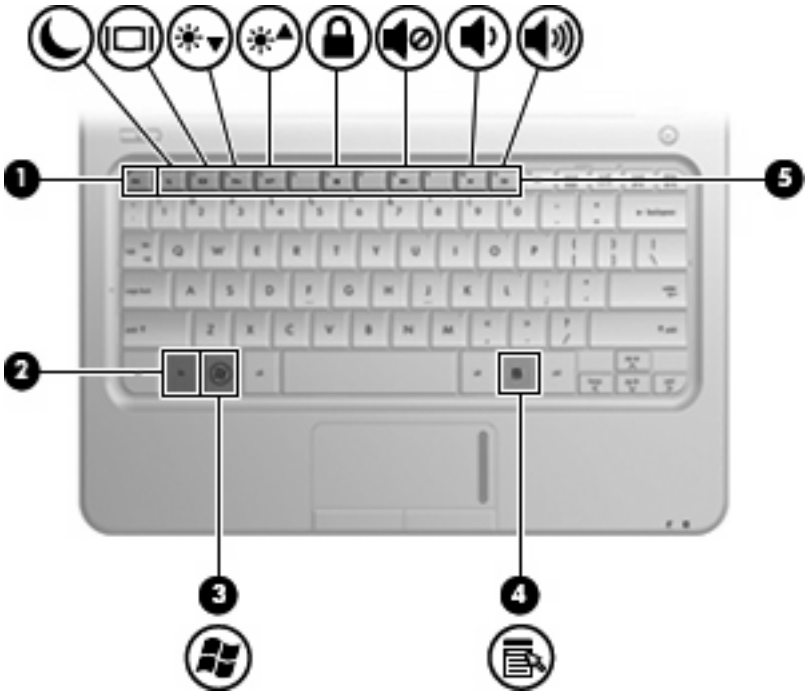
Component			Description
(1)		Caps lock light	On: Caps lock is on.
(2)		Power light	• On: The computer is on. • Blinking: The computer is in the Sleep state. • Off: The computer is off or in Hibernation.
(3)		Wireless light	• On: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. • Off: All wireless devices are off. **NOTE:** On some models, the wireless light is amber when all wireless devices are off.

Buttons

Component		Description
(1)	Power button*	• When the computer is off, press the button to turn on the computer. • When the computer is on, press the button briefly to initiate Sleep. • When the computer is in the Sleep state, press the button briefly to exit Sleep. • When the computer is in Hibernation, press the button briefly to exit Hibernation. If the computer has stopped responding and Windows® shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer. To learn more about your power settings, select **Start > Control Panel > System and Security > Power Options**.
(2)	Wireless button	Turns the wireless feature on or off but does not create a wireless connection. **NOTE:** To establish a wireless connection, a wireless network must already be set up.

*This table describes factory settings.

Keys

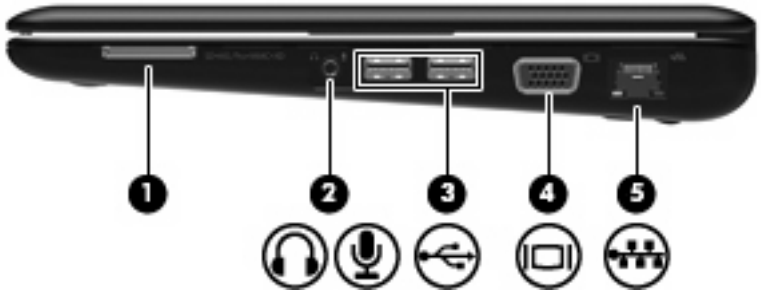


Component			Description
(1)		esc key	Displays system information when pressed in combination with the fn key.
(2)		fn key	Executes frequently used system functions when pressed in combination with a function key.
(3)		Windows® logo key	Displays the Windows Start menu.
(4)		Windows applications key	Displays a shortcut menu for items beneath the pointer.
(5)		Function keys	Execute frequently used system functions when pressed in combination with the fn key.

Front components

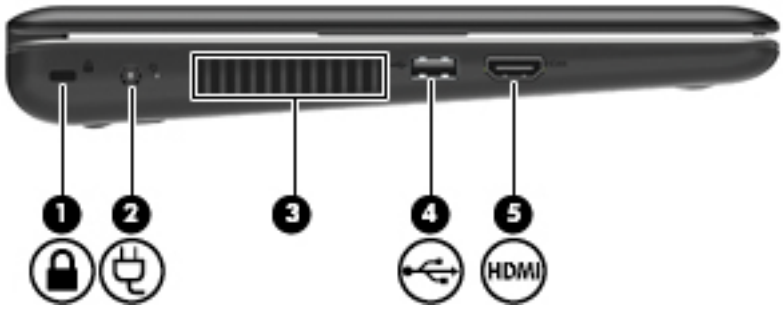
Component			Description
(1)		Speakers (2)	Produce sound.
(2)		Battery light	• On: A battery is charging. • Blinking: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly. • Off: If the computer is plugged into an external power source, the light turns 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 flash drive is being accessed.

Right-side components



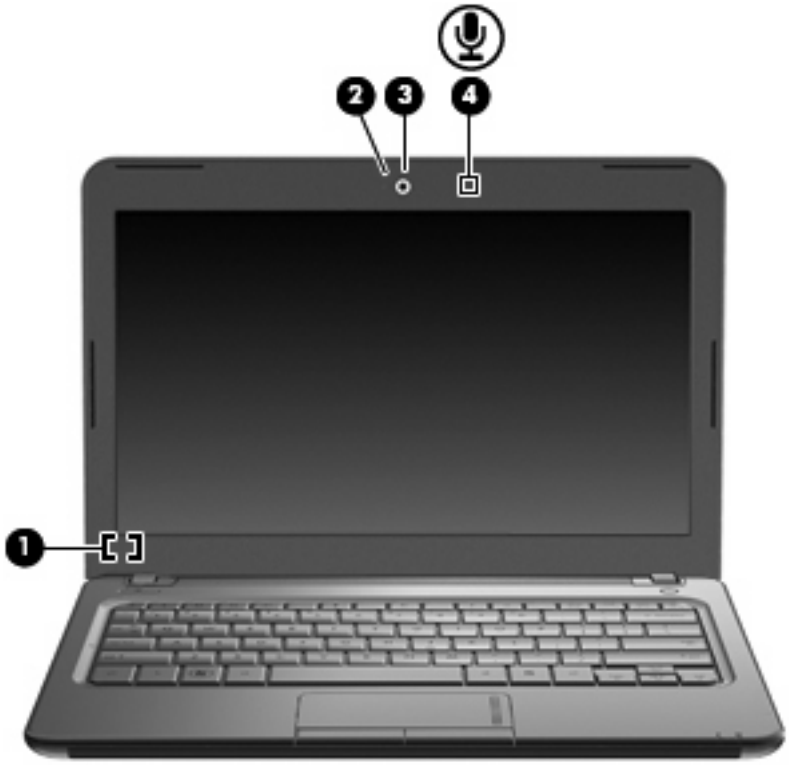
Component			Description
(1)		Digital Media Slot	Supports the following optional digital card formats: • Memory Stick (MS) • Memory Stick Pro (MS/Pro) • MultiMediaCard (MMC) • Secure Digital (SD) Memory Card • xD-Picture card
(2)		Audio-out (headphone) jack/Audio-in (microphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, earbuds, a headset, or television audio. Also connects an optional headset microphone. **NOTE:** When a device is connected to the jack, the computer speakers are disabled. The audio component cable must have a 4-conductor connector.
(3)		USB ports (2)	Connect optional USB devices.
(4)		External monitor port	Connects an external VGA monitor or projector.
(5)		RJ-45 (network) jack	Connects a network cable.

Left-side components



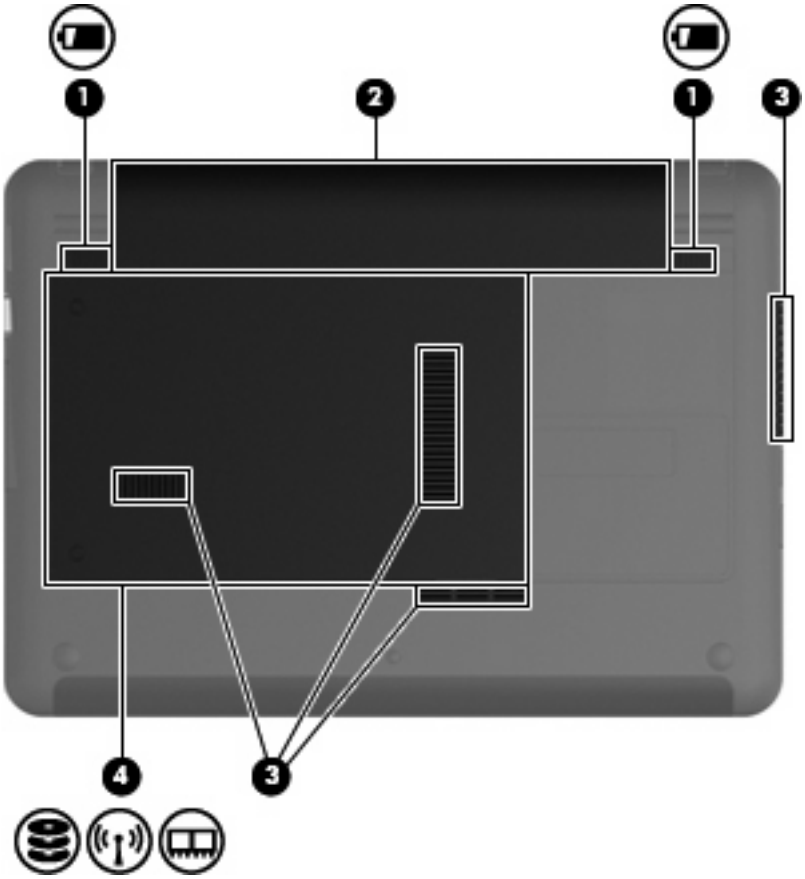
Component		Description
(1)	Security cable slot	Attaches an optional security cable to the computer. **NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)	Power connector	Connects an AC adapter.
(3)	Vent	Enables airflow 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.
(4)	USB port	Connects an optional USB device.
(5)	HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component. **NOTE:** Depending on your computer model, the computer may include an HDMI port or a USB port at this location.

Display components



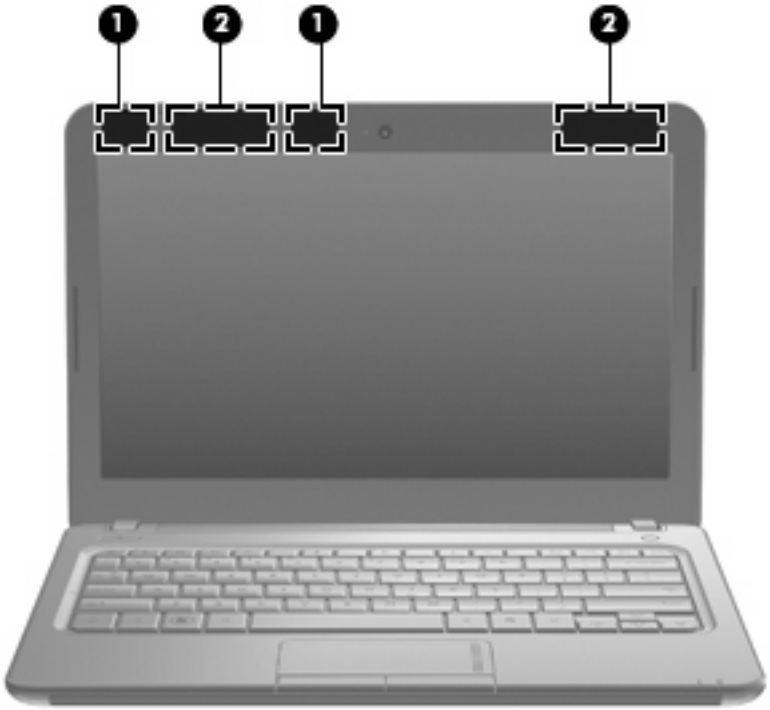
Component		Description
(1)	Internal display switch	Turns off the display if the display is closed while the power is on.
(2)	Webcam light	On: The webcam is in use.
(3)	Webcam	Captures still photographs and videos. **NOTE:** To capture videos, you must install additional webcam software.
(4)	Internal microphone	Records sound.

Bottom components



Component		Description
(1)	Battery release latches (2)	Release the battery from the battery bay.
(2)	Battery bay	Holds the battery.
(3)	Vents (4)	Enable airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(4)	Hard drive bay	Contains the hard drive, the wireless LAN module slot, and the memory module slot. **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.

Wireless antennas



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

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

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

Additional hardware components

Component		Description
(1)	Power cord*	Connects an AC adapter to an AC outlet.
(2)	Battery*	Powers the computer when the computer is not plugged into external power.
(3)	AC adapter	Converts AC power to DC power.

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

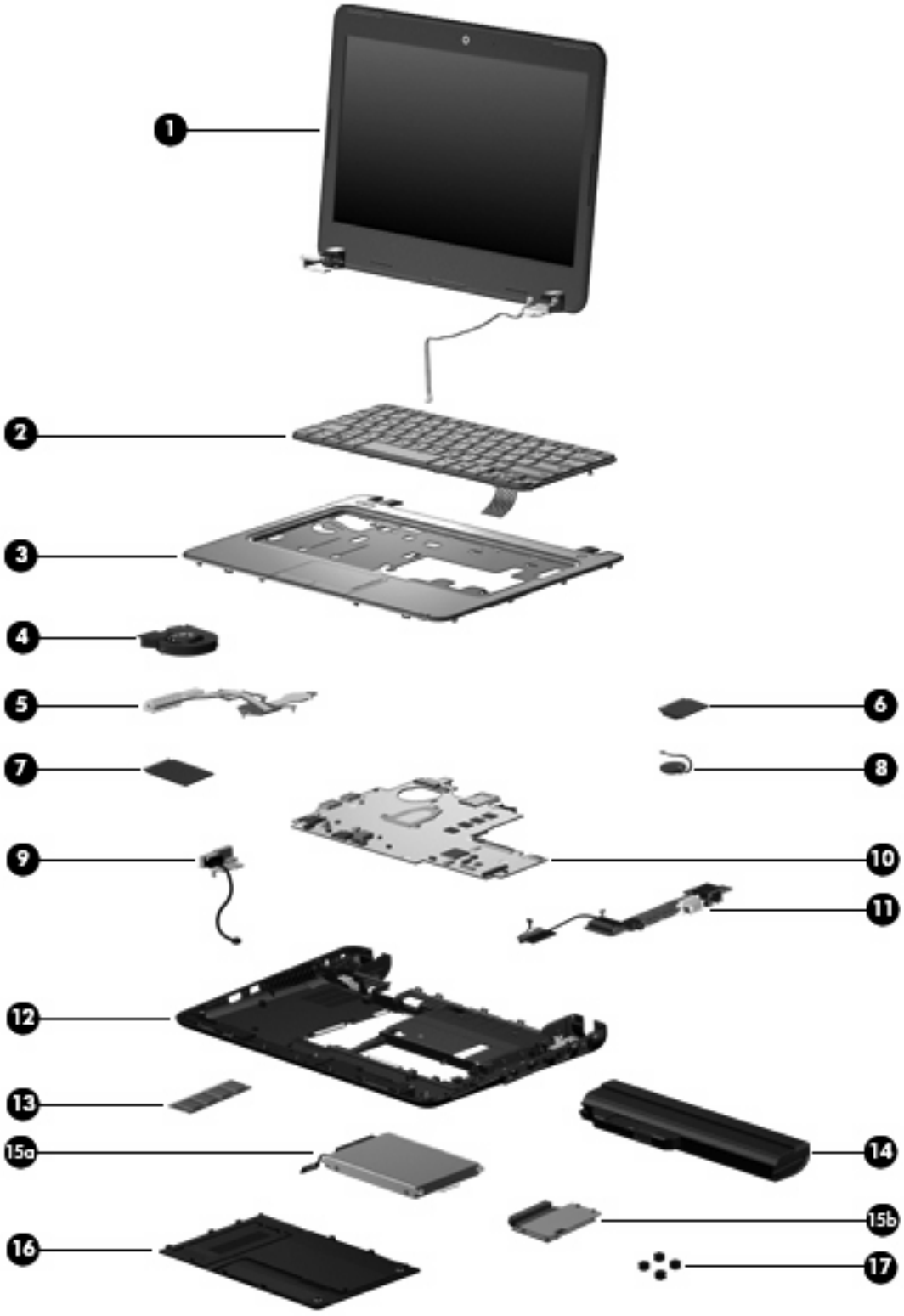
3 Illustrated parts catalog

Service tag

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

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

Computer major components

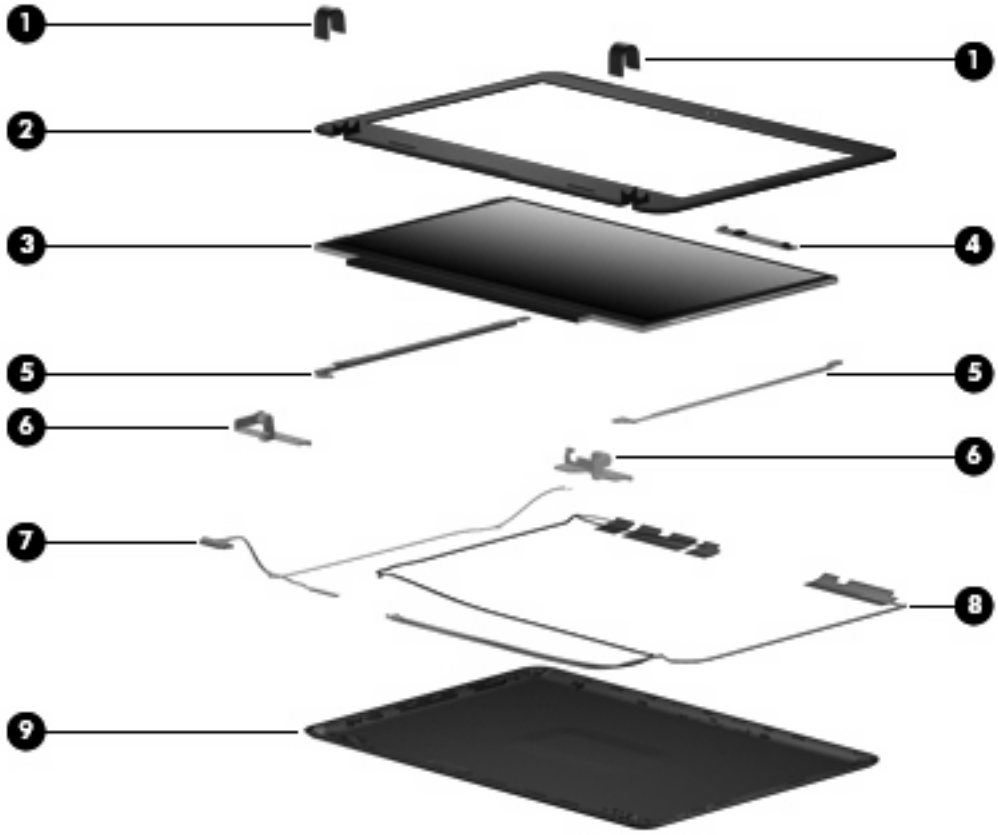


Item	Description	Spare part number
(1)	**29.5-cm (11.6-in) (1366 × 768) HD BrightView LED display assembly** (includes webcam, microphone, nameplate, and logo)	608631-001
	See Display assembly subcomponents on page 21 for internal component spare part information.	
(2)	**Keyboard** (includes keyboard cable):	
	• For use in Belgium	608583-A41
	• For use in Brazil	608583-201
	• For use in the Czech Republic	608583-221
	• For use in France	608583-051
	• For use in French Canada	608583-121
	• For use in Germany	608583-041
	• For use in Greece	608583-DJ1
	• For use in Hungary	608583-211
	• For international use	608583-B31
	• For use in Israel	608583-BB1
	• For use in Italy	608583-061
	• For use in Japan	608583-291
	• For use in Korea	608583-AD1
	• For use in Latin America	608583-161
	• For use in Norway	608583-DH1
	• For use in Portugal	608583-131
	• For use in Russia	608583-251
	• For use in Saudi Arabia	608583-171
	• For use in Spain	608583-071
	• For use in Switzerland	608583-BG1
	• For use in Taiwan	608583-AB1
	• For use in Thailand	608583-281
	• For use in Turkey	608583-141
	• For use in the United Kingdom	608583-031
	• For use in the United States	608583-001
(3)	**Top cover** (includes TouchPad board and cable)	608643-001
(4)	**Fan** (includes cable)	611688-001
(5)	**Heat sink assembly** (includes replacement thermal material)	608629-001
(6)	**WLAN module:**	
	Broadcom 4313 802.11b/g/n 1x1 WiFi Adapter	593836-001

Item	Description	Spare part number
	Broadcom 4313 802.11b/g/n 1x1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0 +HS ready)	600370-001
	Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter (BT3.0 +HS ready)	602992-001
	Atheros AR9285 802.11b/g/n 1x1 WiFi Adapter	
	• For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States	580101-001
	• 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, 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, 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	580101-002
(7)	**WWAN Module**	531993-001
(8)	**RTC battery**	608635-001
(9)	**Power connector** (includes power connector cable and security cable bracket)	591851-001
(10)	**System board:**	
	• With AMD Athlon II Neo K125 1.7-GHz single core processor, 1-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material	608640-001
	• With AMD Athlon II Neo K325 1.3-GHz dual core processor, 2-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material	608641-001
	• With AMD Turion II Neo K625 1.5-GHz dual core processor, 2-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material	608642-001
	• With onboard AMD Athlon II Neo K125 1.7-GHz single core processor, for use with WWAN SKUs only, 1-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material	616522-001
	• With AMD Athlon II Neo K325 1.3-GHz dual core processor, for use with WWAN SKUs only, 2-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material	616523-001

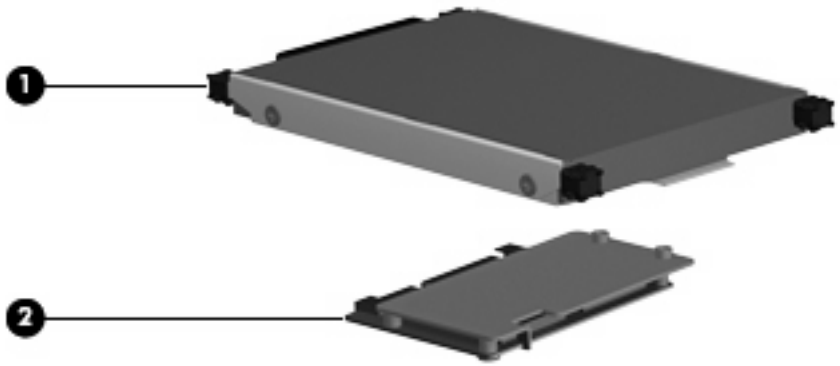
Item	Description	Spare part number
	• With AMD Turion II Neo K625 1.5-GHz dual core processor, for use with WWAN SKUs only, 2-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material	616524-001
(11)	**Multi board** (includes USB and RJ-45 ports, and cable)	611692-001
(12)	**Base enclosure**	608628-001
(13)	**Memory module:**	
	• 1-GB memory module (1333-MHz, DDR3)	598859-001
	• 2-GB memory module (1333-MHz, DDR3)	598856-001
	• 4-GB memory module (1333-MHz, DDR3)	599092-001
(14)	**6-cell, 2.55-Ah (55-Wh) Li-ion battery**	586029-001
(15a)	**Hard drive** (includes hard drive bracket):	
	• 500-GB, 7200-rpm	609774-001
	• 500-GB, 7200-rpm (for use with WWAN models only)	616991-001
	• 320-GB, 7200-rpm	609773-001
	• 320-GB, 7200-rpm (for use with WWAN models only)	616990-001
	• 250-GB, 7200-rpm	609772-001
	• 250-GB, 7200-rpm (for use with WWAN models only)	616989-001
	• 160-GB, 7200-rpm	611689-001
	• 160-GB, 7200-rpm (for use with WWAN models only)	616988-001
	Hard Drive Mounting Kit (not illustrated; includes mounting bracket and screws)	608645-001
	External optical drive (not illustrated; select models only)	
	• DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	584383-001
	• Blu-ray R/RE with LightScribe DVD±R/RW SuperMulti Double-Layer Drive	584384-001
(15b)	**Solid-state drive**, 128-GB	608639-001
(16)	**Hard drive cover** (included in the Plastics Kit, part number 608634-001)	
(17)	Rubber feet (included in Rubber Kit, part number 580062-001)	

Display assembly subcomponents



Item	Description	Spare part number
(1)	**Display hinge covers** (included in the display bezel spare part kit)	
(2)	**Display bezel**	587312–001
(3)	**29.5-cm** (11.6-in) (1366 × 768) HD BrightView LED display panel	608632-001
(4)	**Webcam**	608644-001
(5)	**Display panel brackets** (included in the display hinge brackets spare part kit)	
(6)	**Display hinge brackets**	580002-001
(7)	**Display cable**	611686-001
(8)	**WLAN/WWAN antennas** (includes cables)	608626-001
(9)	**Display enclosure**	608627-001

Mass storage devices



Item	Description	Spare part number
(1)	**Hard drive** (includes hard drive bracket):	
	• 500-GB, 7200-rpm	609774-001
	• 500-GB, 7200-rpm (for use with WWAN models only)	616991-001
	• 320-GB, 7200-rpm	609773-001
	• 320-GB, 7200-rpm (for use with WWAN models only)	616990–001
	• 250-GB, 7200-rpm	609772-001
	• 250-GB, 7200-rpm (for use with WWAN models only)	616989-001
	• 160-GB, 7200-rpm	611689-001
	• 160-GB, 7200-rpm (for use with WWAN models only)	616988-001
(2)	**Solid-state drive**, 128-GB	608639–001
	Hard Drive Mounting Kit (not illustrated; includes mounting bracket and screws)	608645-001
	External optical drive (not illustrated; select models only)	
	• DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe	584383–001
	• Blu-ray R/RE with LightScribe DVD±R/RW SuperMulti Double-Layer Drive	584384–001

Miscellaneous parts

Description	Spare part number
Digital media assembly (includes cable)	611693-001
Power button board (includes cable)	611690-001
Speakers (includes cables)	580064-001
65-W AC adapter	613149-001
Power cords, 3-pin, 1.83m	
• For use in Argentina	490371-D01
• For use in Australia	490371-011
• For use in Brazil	490371-202
• For use in Denmark	490371-081
• For use in Europe, the Middle East, and Africa	490371-021
• For use in India	490371-D61
• For use in Israel	490371-BB1
• For use in Italy	490371-061
• For use in Japan	490371-291
• For use in the People's Republic of China	490371-AA1
• For use in South Africa	490371-AR1
• For use in South Korea	490371-AD1
• For use in Switzerland	490371-111
• For use in Taiwan	490371-AB1
• For use in Thailand	490371-201
• For use in the United Kingdom and Singapore	490371-031
• For use in the United States	490371-001
Cable Kit (includes hard drive cable, hard drive connector, and Bluetooth cable)	611685-001
Wireless button board (includes cable)	611691-001
TouchPad button board (includes cable)	621306-001
Bluetooth module	537921-001
WLAN/WWAN antennas (includes cables)	608626-001
Plastics Kit (includes hard drive cover)	608634-001

Description	Spare part number
Rubber Kit (includes computer feet — two front and two rear)	580062-001
Screw Kit Includes the following screws: • PM2.0x9.0-I • PM2x2-I • PM2.0x3.0-I • PM2.0x3.0 • PM2.0x5.0 • PM2.5x4.0	608637-001

Sequential part number listing

Spare part number	Description
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, the Middle East, and Africa
490371-031	Power cord for use in the United Kingdom and Singapore
490371-061	Power cord for use in Italy
490371-081	Power cord for use in Denmark
490371-111	Power cord for use in Switzerland
490371-201	Power cord for use in Thailand
490371-202	Power cord for use in Brazil
490371-291	Power cord for use in Japan
490371-AA1	Power cord for use in the People's Republic of China
490371-AB1	Power cord for use in Taiwan
490371-AD1	Power cord for use in South Korea
490371-AR1	Power cord for use in South Africa
490371-BB1	Power cord for use in Israel
490371-D01	Power cord for use in Argentina
490371-D61	Power cord for use in India
531993-001	WWAN Module
537641-001	Hard Drive Mounting Kit (includes mounting bracket and screws)
537921-001	Bluetooth module
580002-001	Display hinge brackets
580062-001	Rubber Kit (includes computer feet — two front and two rear)
580064-001	Speakers (include cables)
580101-001	Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter for use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States

580101-002	Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter 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, 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
584383-001	DVD±RW and CD-RW SuperMulti Double-Layer Drive with LightScribe external USB optical drive
584384-001	Blu-ray ROM DVD±R/RW and CD-RW SuperMulti Double-Layer Drive with LightScribe external USB optical drive
586029-001	6-cell, 2.55-Ah (55-Wh) Li-ion battery
587312-001	Display bezel
591851-001	Power connector (includes power connector cable and security cable bracket)
593836-001	Broadcom 4313 802.11b/g/n 1x1 WiFi Adapter
594808–001	Display back cover with logo
598856-001	2-GB memory module (1333-MHz, DDR3)
598859-001	1-GB memory module (1333-MHz, DDR3)
599092-001	4-GB memory module (1333-MHz, DDR3)
600370-001	Broadcom 4313 802.11b/g/n 1x1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0+HS ready)
602992-001	Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter (BT3.0+HS ready)
608583-001	Keyboard for use in the United States
608583-031	Keyboard for use in the United Kingdom
608583-041	Keyboard for use in Germany
608583-051	Keyboard for use in France
608583-061	Keyboard for use in Italy
608583-071	Keyboard for use in Spain
608583-121	Keyboard for use in French Canada
608583-131	Keyboard for use in Portugal
608583-141	Keyboard for use in Turkey

608583-161	Keyboard for use in Latin America
608583-171	Keyboard for use in Saudi Arabia
608583-201	Keyboard for use in Brazil
608583-211	Keyboard for use in Hungary
608583-221	Keyboard for use in the Czech Republic
608583-251	Keyboard for use in Russia
608583-BB1	Keyboard for use in Israel
608583-BG1	Keyboard for use in Switzerland
608583–B31	Keyboard for international use
608583-DJ1	Keyboard for use in Greece
608626-001	WLAN/WWAN antennas (includes cables)
608627-001	Display enclosure
608628-001	Base enclosure
608629-001	Heat sink assembly (includes replacement thermal material)
608630-001	Display Hinge Kit (includes left and right display panel hinges)
608631-001	**29.5-cm** (11.6-in) (1366 × 768) HD BrightView LED display assembly (includes webcam, microphone, nameplate, and logo)
608632-001	**29.5-cm** (11.6-in) (1366 × 768) HD BrightView LED display panel
608634-001	Plastics Kit (includes hard drive cover)
608635-001	RTC battery
608637-001	Screw Kit
608639-001	Solid-state drive, 128-GB
608640-001	System board (with AMD Athlon II Neo K125 1.7-GHz single core processor, 1-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material)
608641-001	System Board (with AMD Athlon II Neo K325 1.3-GHz dual core processor, 2-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material)
608642-001	System Board (includes AMD Turion II Neo K625 1.5-GHz dual core processor, 2-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material)
608643-001	Top cover (includes TouchPad board and cable)
608644-001	Webcam module
609772-001	Hard drive, 250-GB, 7200-rpm
609773-001	Hard drive, 320-GB, 7200-rpm
609774-001	Hard drive, 500-GB, 7200-rpm
611685-001	Cable Kit (includes hard drive cable, hard drive connector, and Bluetooth cable)
611686-001	Display cable
611688-001	Fan (includes cable)
611690-001	Power button board (includes cable)

611691-001	Wireless button board (includes cable)
611692-001	Multi board (includes USB and RJ-45 ports, and cable)
611693-001	Digital media assembly (includes cable)
616522-001	With onboard AMD Athlon II Neo K125 1.7-GHz single core processor, for use with WWAN SKUs only, 1-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material
616523-001	With AMD Athlon II Neo K325 1.3-GHz dual core processor, for use with WWAN SKUs only, 2-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material
616524-001	With AMD Turion II Neo K625 1.5-GHz dual core processor, for use with WWAN SKUs only, 2-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material
616988–001	Hard drive, 160-GB, 7200-rpm (for use with WWAN models only)
616989–001	Hard drive, 250-GB, 7200-rpm (for use with WWAN models only)
616990–001	Hard drive, 320-GB, 7200-rpm (for use with WWAN models only)
616991–001	Hard drive, 500-GB, 7200-rpm (for use with WWAN models only)
621306–001	TouchPad button board (includes cable)

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
- Phillips P0 screwdriver
- Phillips P1 screwdriver

Service considerations

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

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

Plastic parts

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

Cables and connectors

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

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

Drive handling

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

Use nonmagnetic tools.

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

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

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

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

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

Typical electrostatic voltage levels

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 56 screws, in 8 different sizes, that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Service tag

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

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

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

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

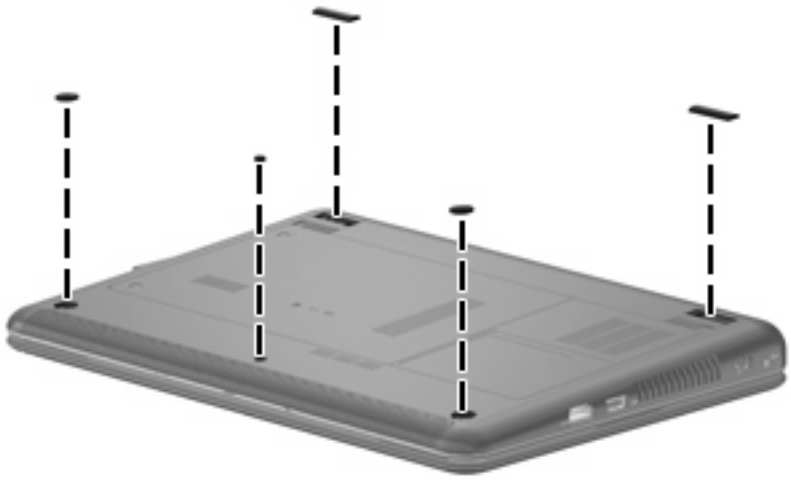
(4) Model description: This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.

(5) Warranty period: This number describes the duration of the warranty period for the computer.

Computer feet

The computer feet are adhesive-backed rubber pads that are attached to the base enclosure.

Description	Spare part number
Rubber Kit (includes computer feet — two front and two rear)	580062-001



Battery

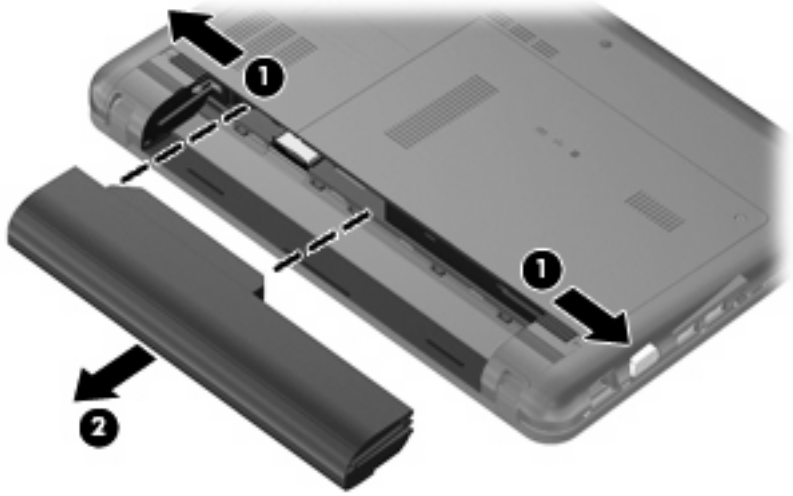
Description	Spare part number
6-cell, 2.55-Ah (55-Wh) Li-ion battery	586029-001

Before removing the battery, follow these steps:

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

Remove the battery:

1. Position the computer upside down on a flat surface, with the battery bay toward you.
2. Slide the battery release latches **(1)** to release the battery.
3. Remove the battery **(2)**.



Install the battery by inserting it into the battery bay until you hear a click.

SIM

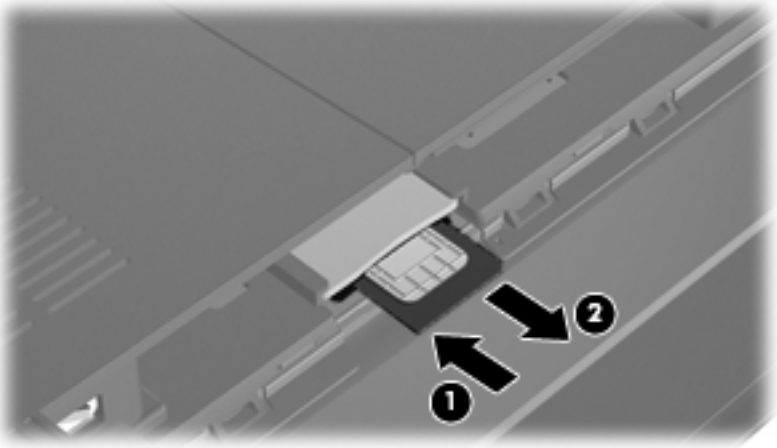
NOTE: The SIM is provided by the end user as a security measure for the WWAN module. The SIM should be removed, placed into a static-dissipative container, and then replaced when the computer is reassembled.

Before removing the SIM, follow these steps:

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

Remove the SIM:

1. Position the computer upside down on a flat surface, with the battery bay toward you.
2. Press in on the SIM **(1)** to release it from the SIM slot.
3. Remove the SIM **(2)** from the computer.



Install the SIM by inserting it into the SIM slot until you hear a click.

WLAN module

Description	Spare part number
WLAN module:	
Broadcom 4313 802.11b/g/n 1x1 WiFi Adapter	593836-001
Broadcom 4313 802.11b/g/n 1x1 WiFi and 2070 Bluetooth 2.1+EDR Combo adapter (BT3.0+HS ready)	600370-001
Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter (BT3.0+HS ready)	602992-001
Atheros AR9285 802.11b/g/n 1x1 WiFi Adapter:	
• For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States	580101-001
• 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, 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, 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	580101-002

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 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 36).

Remove the WLAN module:

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

1. Position the computer upside down on a flat surface, with the front toward you.
2. Loosen the 2 PM2.0×6.0 captive screws **(1)** that secure the hard drive cover to the computer.
3. Lift the left side of the cover **(2)** to detach it from the computer, and remove the hard drive cover.

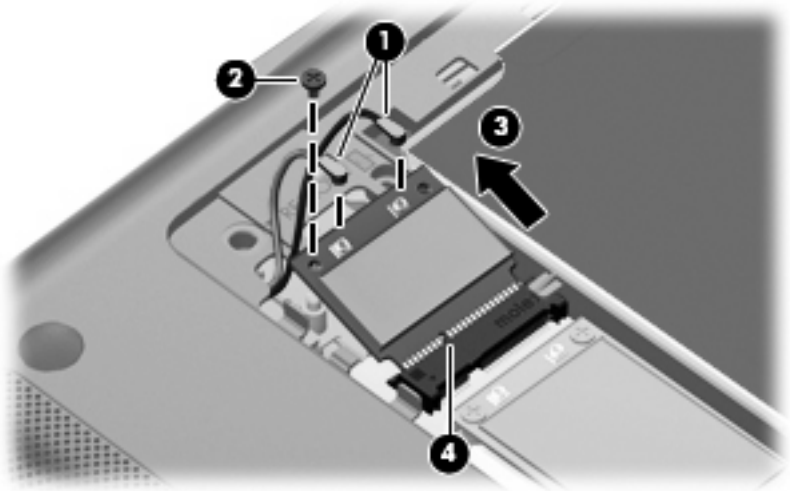
NOTE: The hard drive cover is included in the Plastics Kit, part number 608634-001.

4. 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 gray WLAN antenna cable is connected to the WLAN module “Aux” terminal.

5. Remove the PM2.0×3.5 screw **(2)** that secures the WLAN module to the system board. (The WLAN module tilts up.)
6. Remove the WLAN module **(3)** by pulling it away from the slot at an angle.

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



Reverse this procedure to install the WLAN module.

WWAN module

Description	Spare part number
WWAN module	531993-001

Before removing the WWAN module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 36).
5. Remove the hard drive cover (see WLAN module on page 38).

Remove the WWAN module:

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

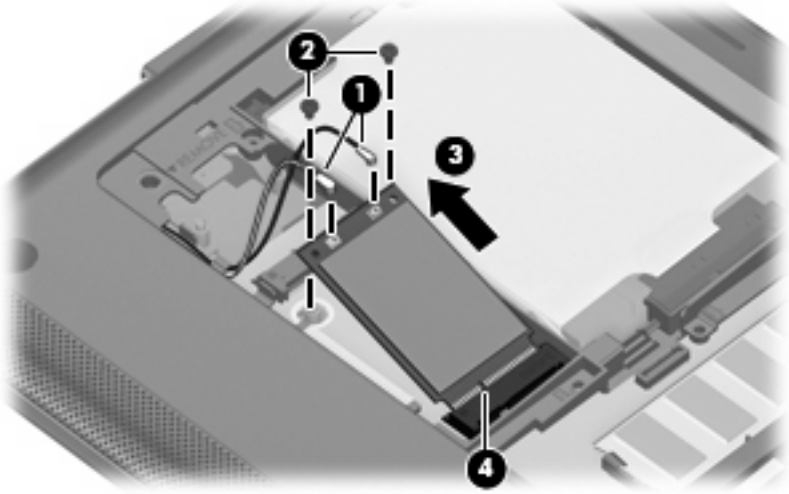
1. Position the computer upside down on a flat surface, with the front toward you.
2. Disconnect the WWAN antenna cables **(1)** from the terminals on the WWAN module.

   NOTE: The red WWAN antenna cable is connected to the WWAN module “Main” terminal. The blue WWAN antenna cable is connected to the WWAN module “Aux” terminal.

3. Remove the 2 PM2.0×3.5 screws **(2)** that secure the WWAN module to the system board. (The WWAN module tilts up.)

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

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



Reverse this procedure to install the WWAN module.

RTC battery

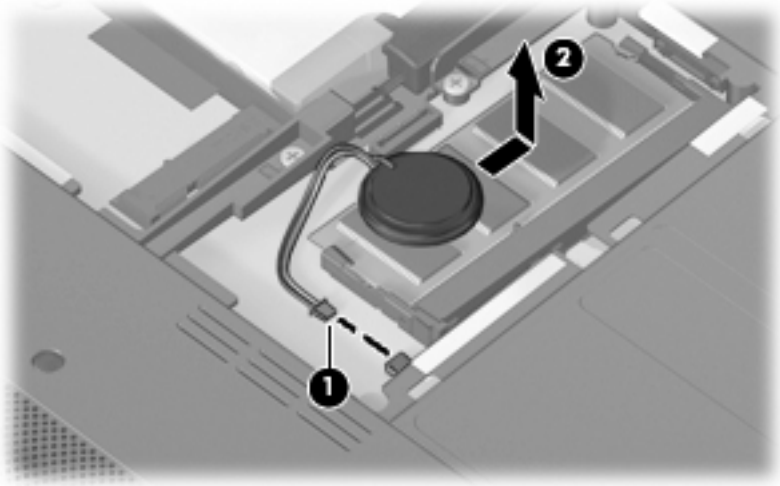
Description	Spare part number
RTC battery	608635-001

Before removing the real-time clock (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 36).
5. Remove the hard drive cover (see WLAN module on page 38).

Remove the RTC battery:

1. Position the computer upside down on a flat surface, with the front toward you.
2. Disconnect the RTC battery cable **(1)** from the system board.
3. Slide the RTC battery **(2)** directly back to remove it.



Reverse this procedure to install the RTC battery.

Memory module

Description	Spare part number
1-GB memory module (1333-MHz, DDR3)	598859-001
2-GB memory module (1333-MHz, DDR3)	598856-001
4-GB memory module (1333-MHz, DDR3)	599092-001

Before removing the memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 36).
5. Remove the hard drive cover (see WLAN module on page 38).

Remove the memory module:

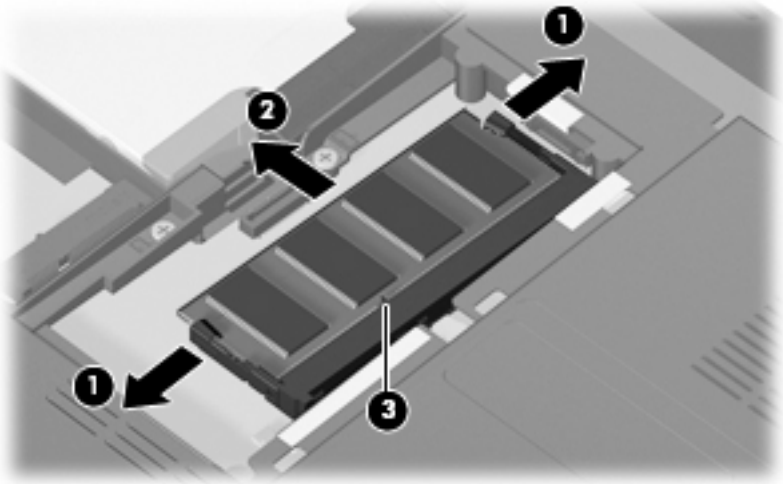
NOTE: 1024-MB primary memory is included on the system board. Memory is customer accessible and upgradable and is located in the accessory compartment.

1. Position the computer upside down on a flat surface, with the battery bay toward you.
2. Pull away the retention clips **(1)** at the sides of the memory module to release the memory module. (The memory module tilts up.)

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

3. Grasp the edge of the memory module **(2)**, and then pull it out of the memory module slot.

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



Reverse this procedure to install a memory module.

Drives

NOTE: The hard drive spare part kit and solid-state drive spare kit include a bracket.

Description	Spare part number
Hard drive (includes hard drive bracket):	
• 500-GB, 7200-rpm	609774-001
• 500-GB, 7200-rpm (for use with WWAN models only)	616991-001
• 320-GB, 7200-rpm	609773-001
• 320-GB, 7200-rpm (for use with WWAN models only)	616990–001
• 250-GB, 7200-rpm	609772-001
• 250-GB, 7200-rpm (for use with WWAN models only)	616989-001
• 160-GB, 7200-rpm	611689-001
• 160-GB, 7200-rpm (for use with WWAN models only)	616988-001
Hard Drive Mounting Kit (includes mounting bracket and screws)	608645-001
Solid-state drive, 128-GB	608639–001

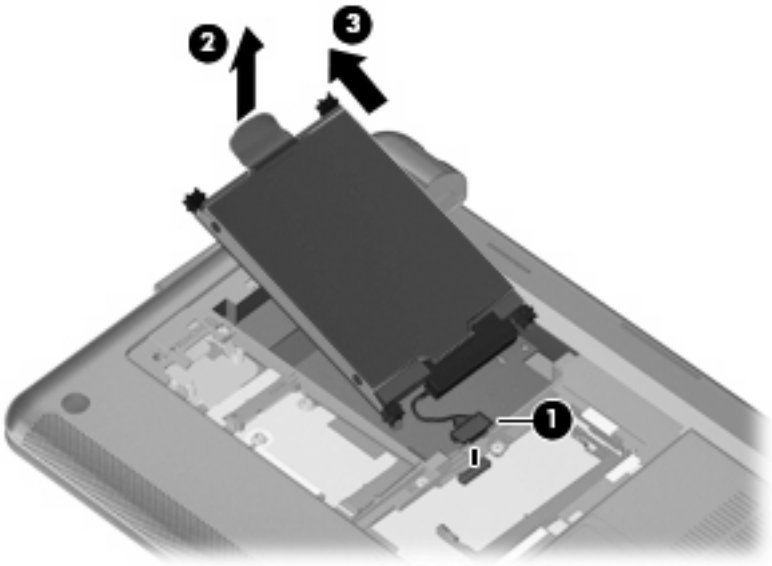
Before removing the hard drive or the solid-state drive, follow these steps:

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 36).
5. Remove the hard drive cover (see WLAN module on page 38).

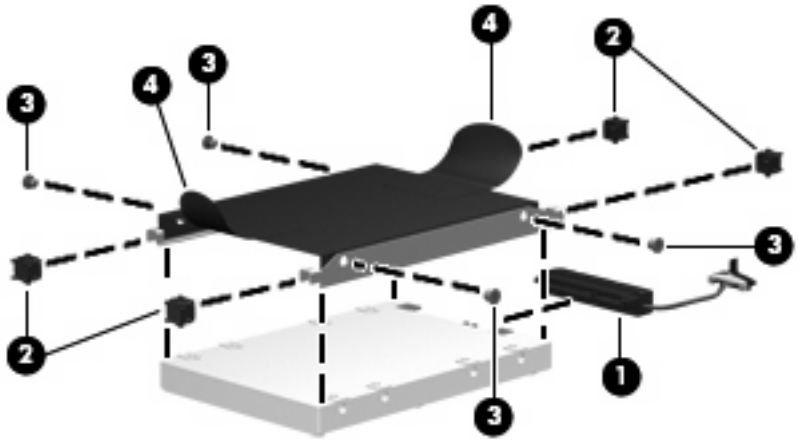
Remove the hard drive or the solid-state drive:

1. Position the computer upside down on a flat surface, with the front toward you.
2. Disconnect the drive connector **(1)**.
3. Grasp the left Mylar tab **(2)** on the drive, and then pull up to remove the drive **(3)**.



4. If it is necessary to replace the hard drive bracket or connector, follow these steps:
   a. Disconnect the hard drive connector **(1)** from the hard drive.
   b. Remove the 4 isolators **(2)** from the 4 corners of the hard drive bracket.
   c. Remove the 4 PM3.0×3.5 screws **(3)** that secure the hard drive bracket to the hard drive or solid-state drive.

d. Lift the bracket **(4)** straight up to remove it from the hard drive or solid-state drive.



Reverse this procedure to install a hard drive or solid-state drive.

Keyboard

NOTE: The keyboard spare part kit includes a keyboard cable.

Description	Spare part number
For use in Belgium	608583-A41
For use in Brazil	608583-201
For use in the Czech Republic	608583-221
For use in France	608583-051
For use in French Canada	608583-121
For use in Germany	608583-041
For use in Greece	608583-DJ1
For use in Hungary	608583-211
For use in Israel	608583-BB1
For use in Italy	608583-061
For use in Japan	608583-291
For use in Korea	608583-AD1
For use in Latin America	608583-161
For use in Norway	608583-DH1
For use in Portugal	608583-131
For use in Russia	608583-251
For use in Saudi Arabia	608583-171
For use in Spain	608583-071
For use in Switzerland	535689-111
For use in Taiwan	608583-AB1
For use in Thailand	608583-281
For use in Turkey	608583-141
For use in the United Kingdom	608583-031
For use in the United States	608583-001

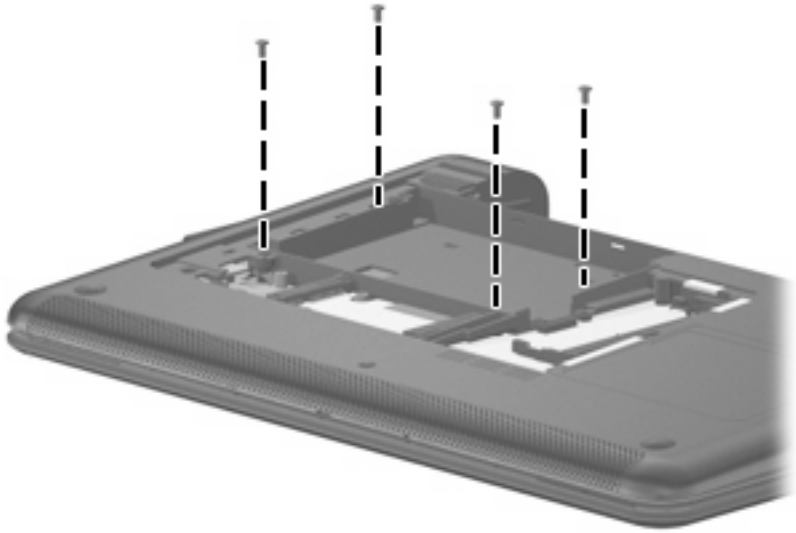
Before removing the keyboard, follow these steps:

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 36).

5. Remove the hard drive cover (see WLAN module on page 38).
6. Remove the hard drive (see Drives on page 44).

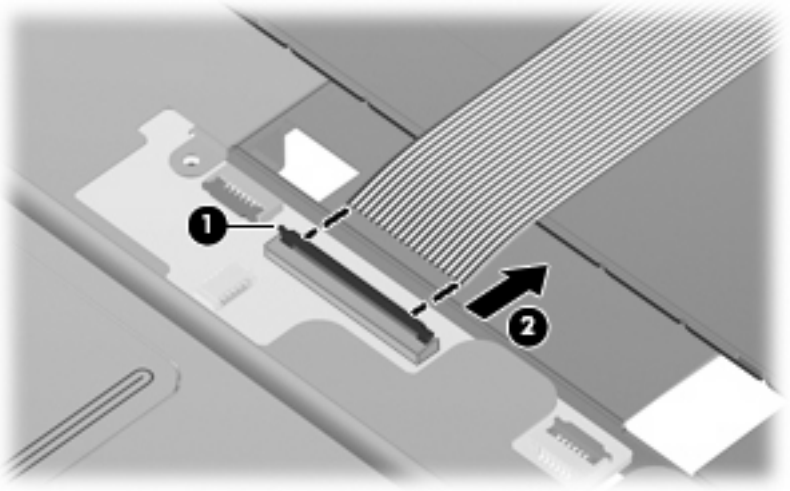
Remove the keyboard:

1. Position the computer upside down on a flat surface, with the front toward you.
2. Remove the 4 PM2.0×5.5 screws that secure the keyboard to the computer.



3. Position the computer display-side up, with the front toward you.
4. Open the computer as far as possible.
5. Use a flat-bladed screwdriver to pry the rear edge of the keyboard **(1)** loose from the three retaining tabs.
6. Lift the keyboard **(2)** and turn it upside down, resting it on the top cover.

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.

Top cover

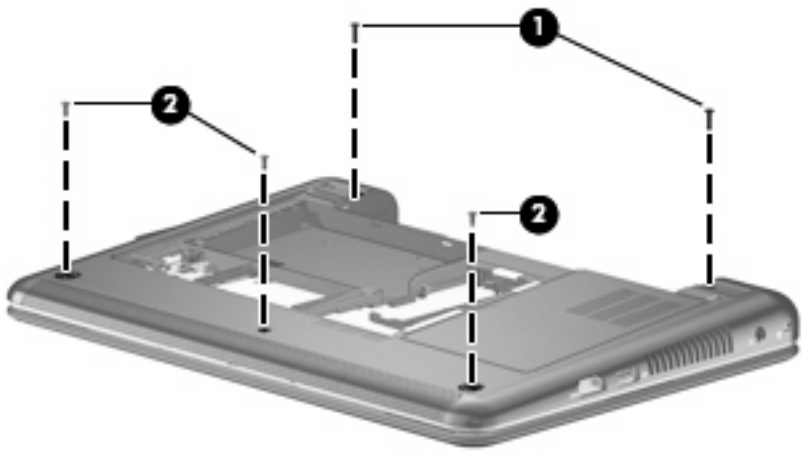
Description	Spare part number
Top cover (includes TouchPad board and cable)	608643-001

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 36).
5. Remove the hard drive cover (see WLAN module on page 38).
6. Remove the hard drive (see Drives on page 44).
7. Remove the keyboard (see Keyboard on page 47).

Remove the top cover.

1. Position the computer upside down on a flat surface, with the front toward you.
2. Use a thin, flat tool to release the 4 rubber feet.
3. Remove the 2 PM2.0×9.0 screws **(1)** and the 3 PM2.0×5.0 screws **(2)** (located under the rubber device feet) that secure the top cover to the base enclosure.



4. Position the computer right-side up, with the front toward you and the display open as far as possible.

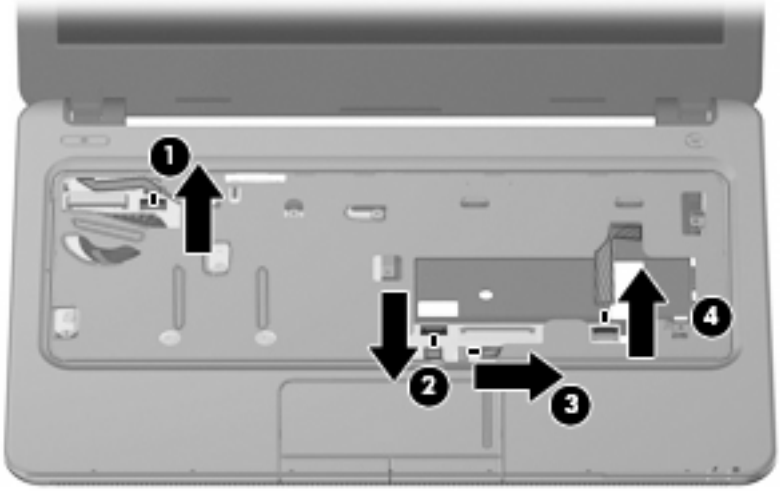
5. Release and disconnect the following low insertion force (LIF) connector cables from the system board:

   a. Power button board cable **(1)**

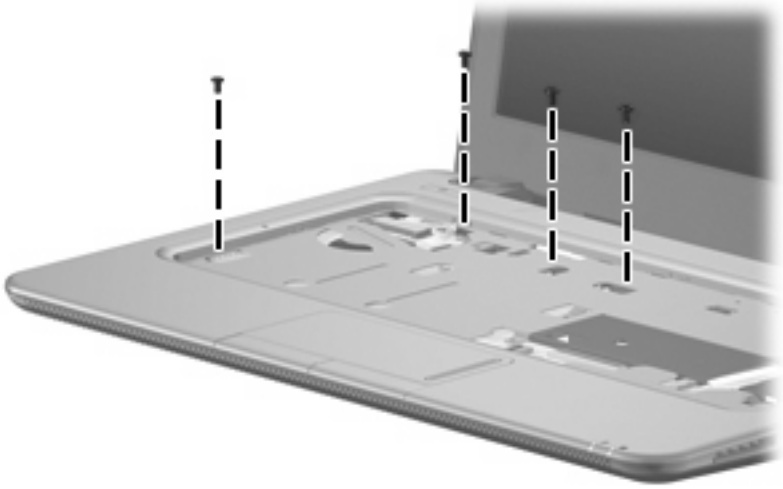
   b. TouchPad cable **(2)**

   c. TouchPad button board cable **(3)**

   d. Wireless button cable **(4)**



6. Remove the 4 PM2.0×5.0 screws that secure the top cover to the base enclosure.



7. Lift the rear edge **(1)** of the top cover until it detaches from the base enclosure.

8. Remove the top cover **(2)** by lifting it straight up.

Reverse this procedure to install the top cover.

Wireless button board

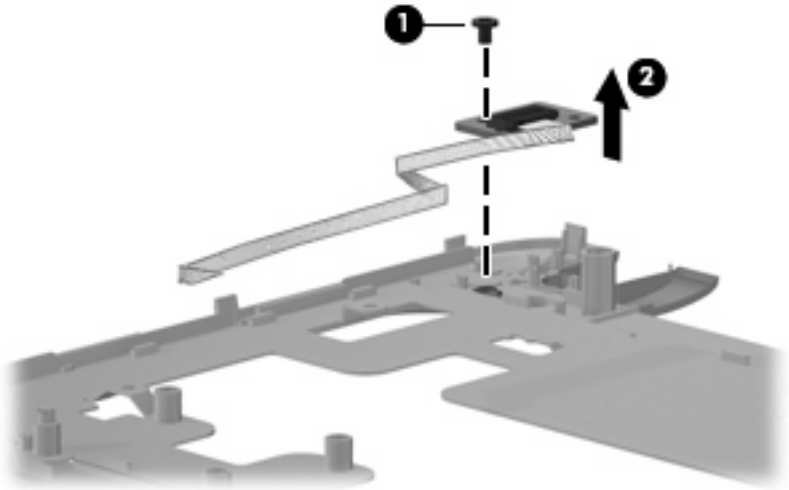
Description	Spare part number
Wireless button board (includes cable)	611691-001

Before removing the wireless 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 36).
5. Remove the hard drive cover (see WLAN module on page 38).
6. Remove the hard drive (see Drives on page 44).
7. Remove the keyboard (see Keyboard on page 47).
8. Remove the top cover (see Top cover on page 50).

Remove the wireless button board:

1. Position the top cover upside down, with the front toward you.
2. Remove the PM2.0×3.5 screw **(1)** that secures the wireless button board to the top cover.
3. Remove the wireless button board **(2)**.



Reverse this procedure to install the wireless button board.

Power button board

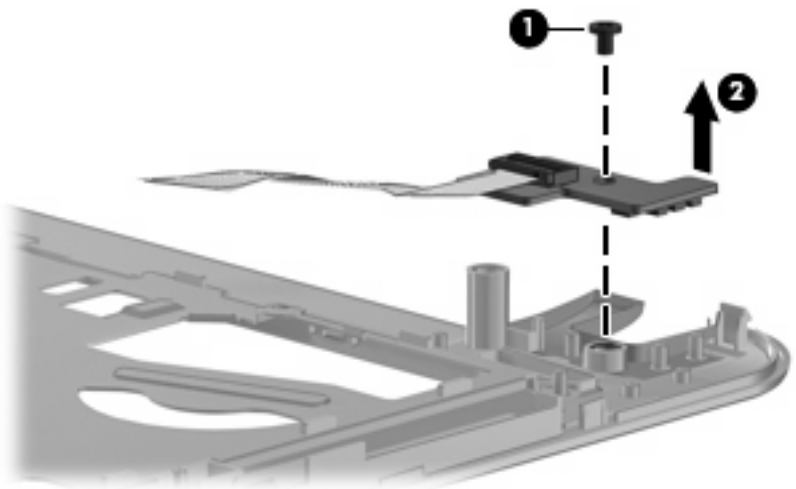
Description	Spare part number
Power button board (includes cable)	611690-001

Before removing the wireless 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 36).
5. Remove the hard drive cover (see WLAN module on page 38).
6. Remove the hard drive (see Drives on page 44).
7. Remove the keyboard (see Keyboard on page 47).
8. Remove the top cover (see Top cover on page 50).

Remove the power button board:

1. Position the top cover upside down, with the front toward you.
2. Remove the PM2.0×3.5 screw **(1)** that secures the power button board to the top cover.
3. Remove the power button board **(2)**.



Reverse this procedure to install the power button board.

Bluetooth module

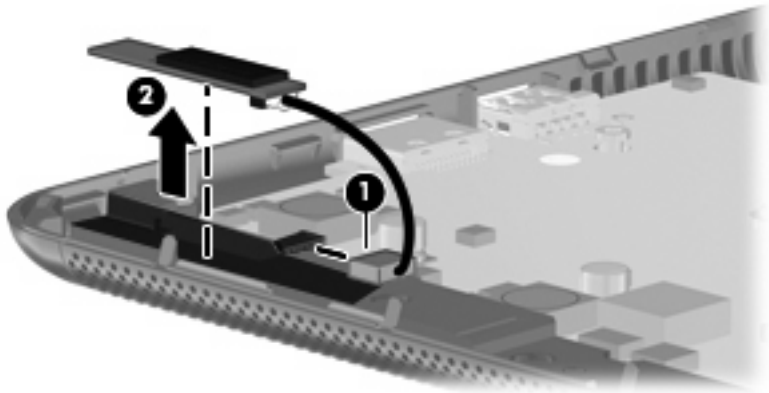
Description	Spare part number
Bluetooth module	537921-001

Before removing the Bluetooth module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 36).
5. Remove the hard drive cover (see WLAN module on page 38).
6. Remove the hard drive (see Drives on page 44).
7. Remove the keyboard (see Keyboard on page 47).
8. Remove the top cover (see Top cover on page 50).

Remove the Bluetooth module:

1. Position the computer right-side up, with the front toward you and the display open as far as possible.
2. Disconnect the Bluetooth cable **(1)** from the system board.
3. Lift the Bluetooth module **(2)** straight up from the speaker bar.



Reverse this procedure to install the Bluetooth module.

Speakers

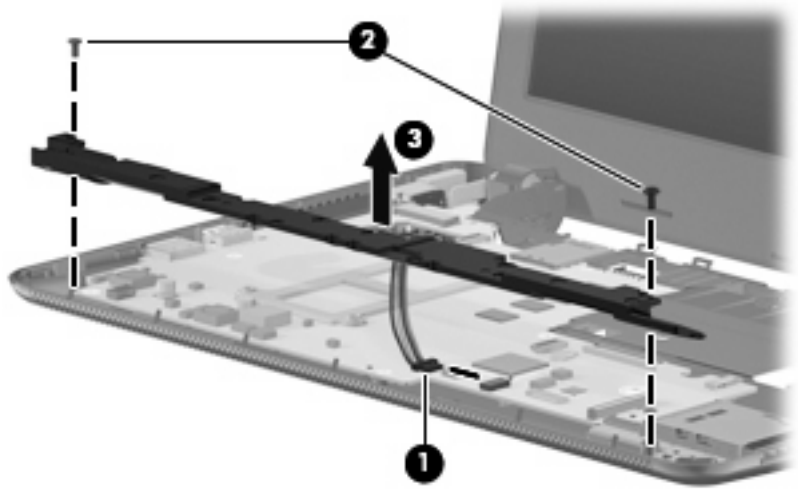
Description	Spare part number
Speakers (include cables)	580064-001

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 36).
5. Remove the hard drive cover (see WLAN module on page 38).
6. Remove the hard drive (see Drives on page 44).
7. Remove the keyboard (see Keyboard on page 47).
8. Remove the top cover (see Top cover on page 50).
9. Remove the Bluetooth module (see Bluetooth module on page 55).

Remove the speakers:

1. Position the computer right-side up, with the front toward you and the display open as far as possible.
2. Disconnect the speaker cable **(1)** from the system board.
3. Remove the 2 PM2.0×5.0 screws **(2)** that secure the speaker assembly to the base enclosure.
4. Remove the speaker assembly**(3)**.



Reverse this procedure to install the speakers.

Digital media assembly

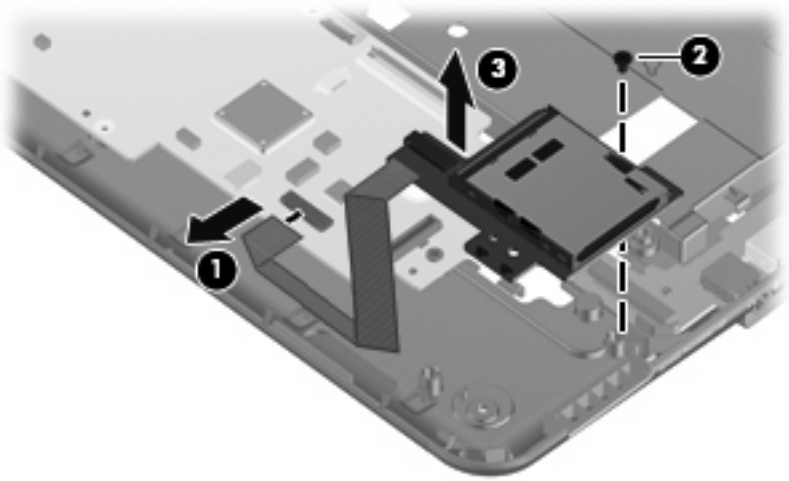
Description	Spare part number
Digital media assembly (includes cable)	611693-001

Before removing the digital media 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 36).
5. Remove the hard drive cover (see WLAN module on page 38).
6. Remove the hard drive (see Drives on page 44).
7. Remove the keyboard (see Keyboard on page 47).
8. Remove the top cover (see Top cover on page 50).

Remove the digital media assembly:

1. Position the computer right-side up, with the front toward you and the display open as far as possible.
2. Disconnect the ZIF digital media assembly cable **(1)**.
3. Remove the PM2.0×3.5 screw **(2)** that secures the digital media assembly to the base enclosure.
4. Remove the digital media assembly **(3)**.



Reverse this procedure to install the digital media assembly.

Display assembly

Description	Spare part number
29.5-cm (11.6-in) (1366 × 768) HD BrightView LED display assembly (includes webcam, microphone, nameplate, and logo)	608631-001

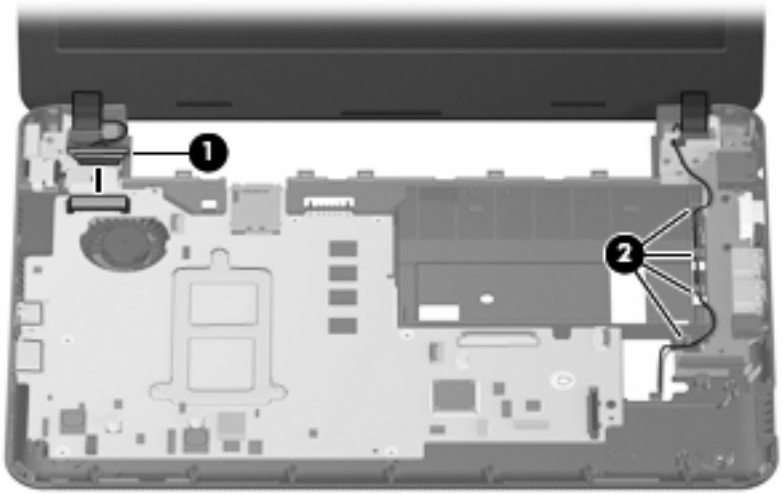
Before removing the display assembly, follow these steps:

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 36).
5. Remove the hard drive cover (see WLAN module on page 38).
6. Remove the hard drive (see Drives on page 44).
7. Disconnect the wireless antenna cables from the WLAN module (see WLAN module on page 38) and WWAN module (see WWAN module on page 40).
8. Remove the keyboard (see Keyboard on page 47).
9. Remove the top cover (see Top cover on page 50).

Remove the display assembly:

1. Position the computer display-side up, with the front toward you.
2. Open the computer as far as possible.
3. Disconnect the display panel/webcam/microphone cable **(1)** from the system board.

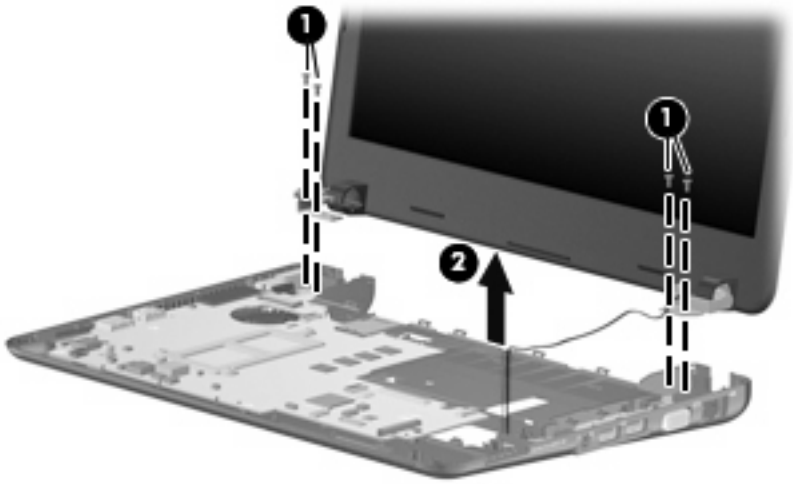
4. Remove the wireless antenna cables from the clips **(2)** and routing channel built into the base enclosure.



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

5. Remove the 4 PM2.0×5.0 screws **(1)** that secure the display assembly to the base enclosure.

6. Lift the display assembly **(2)** straight up and remove it.

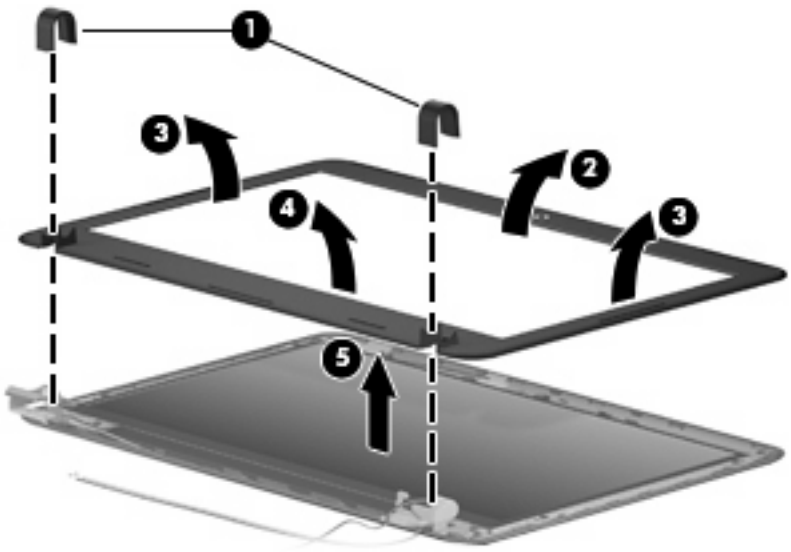


7. If it is necessary to replace the display bezel or any of the display assembly internal components:

   a. Insert a thin-bladed tool between the hinge covers and the hinges to remove the hinge covers **(1)**.

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

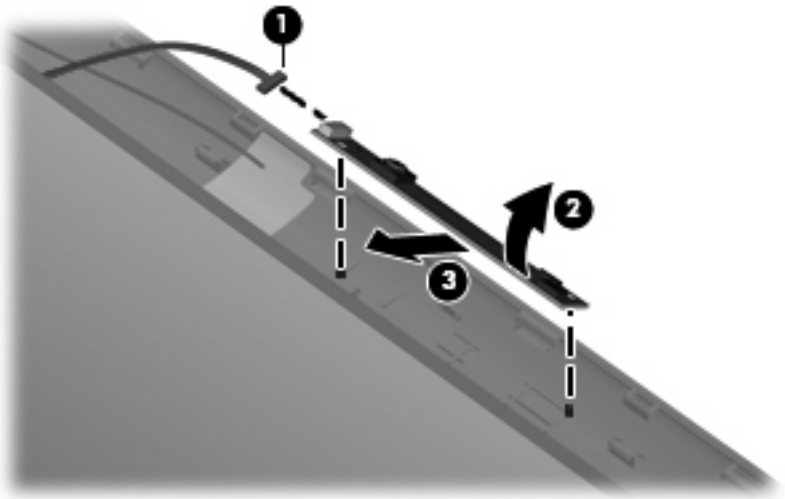
c. Remove the display bezel **(5)**.



8. If it is necessary to replace the webcam module:

   a. Disconnect the display panel/webcam/microphone cable **(1)** from the webcam module.

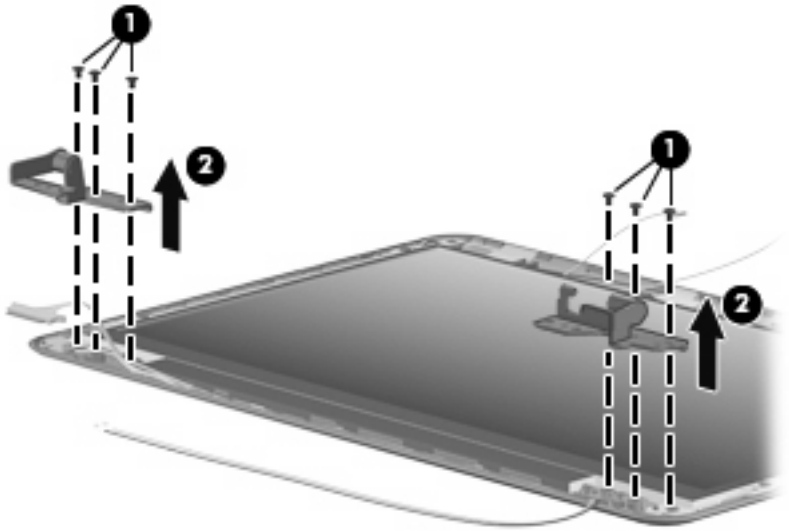
   b. To remove the webcam module, lift up the bottom edge **(2)** and slide the webcam **(3)** out at a 45-degree angle.



9. If it is necessary to replace the display panel:

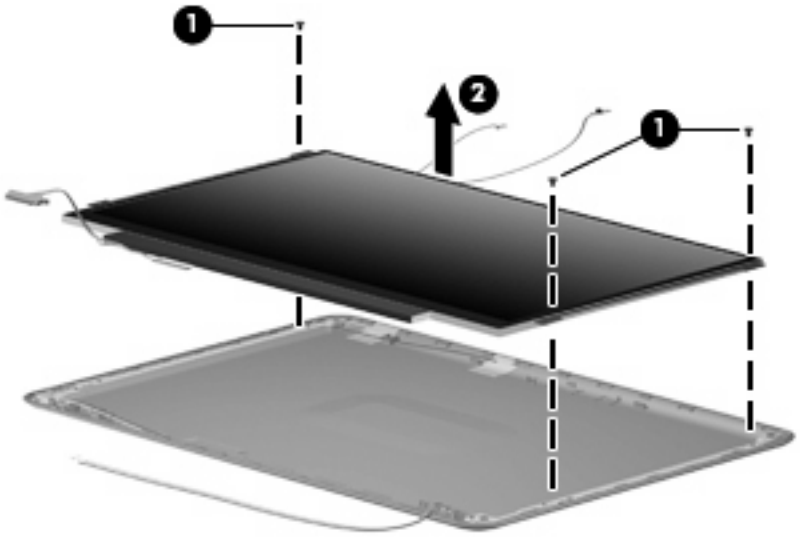
   a. Remove the 6 PM2.0×3.0 screws **(1)** that secure the display hinge brackets to the display panel.

b. Remove the display hinge brackets **(2)**.



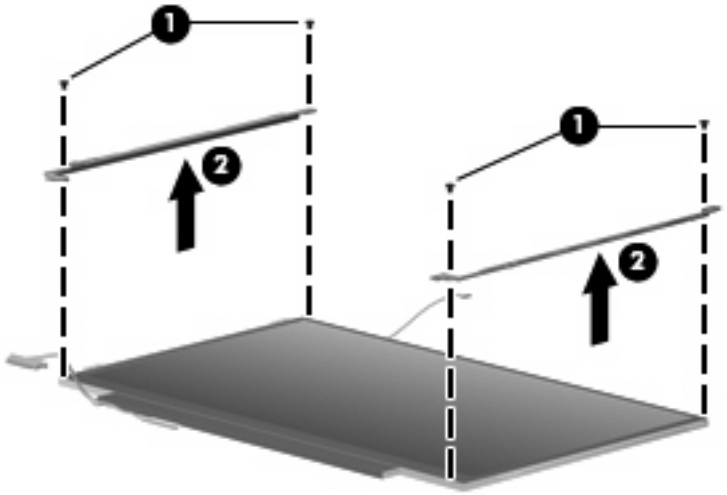
c. Remove the 3 PM2.0×2.5 screws **(1)** (two on the right side and one on the left top) that secure the display panel to the display enclosure.

d. Remove the display panel **(2)**.



e. Remove the 4 PM 2.0x2.5 screws from the display panel brackets **(1)**.

f. Remove the display panel brackets **(2)**.

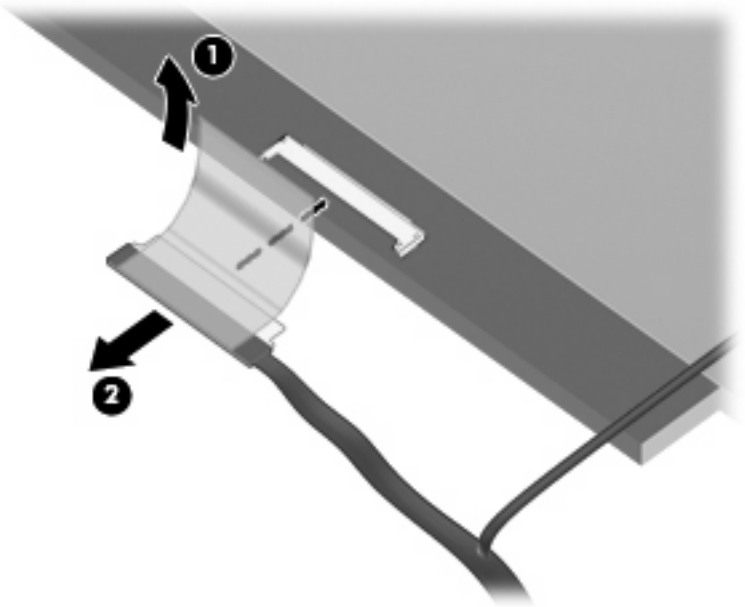


10. If it is necessary to replace the display panel/webcam/microphone cable:

    a. Turn the display panel upside down, with the bottom edge toward you.

    b. Lift the adhesive support strip **(1)** that secures the display panel/webcam/microphone cable to the display panel.

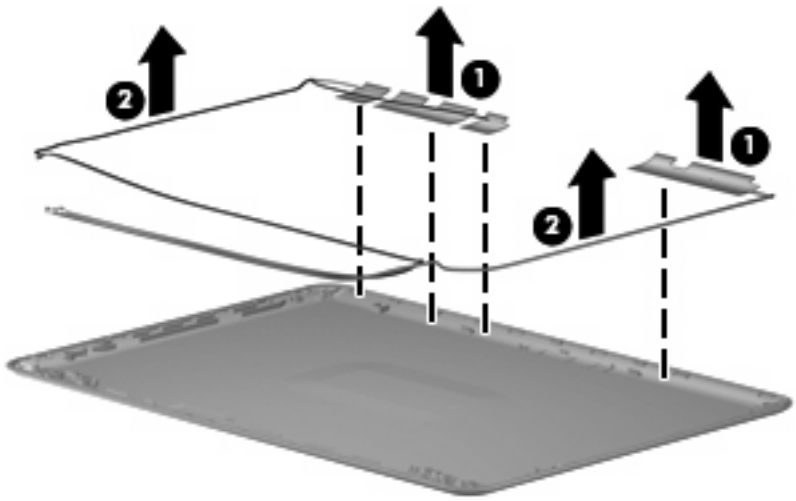
    c. Disconnect the display panel/webcam/microphone cable **(2)** from the connector on the back of the display panel, and remove the display panel/webcam/microphone cable.



11. If it is necessary to replace the wireless antenna transceivers and cables:

    a. Detach the wireless antenna transceivers **(1)** from the display enclosure. (The transceivers are attached to the enclosure with double-sided tape.)

b. Release the wireless antenna cables **(2)** from the clips and routing channels built into the left and right sides of the display enclosure, and remove the wireless antenna transceivers and cables.



Reverse this procedure to reassemble and install the display assembly.

Multi board

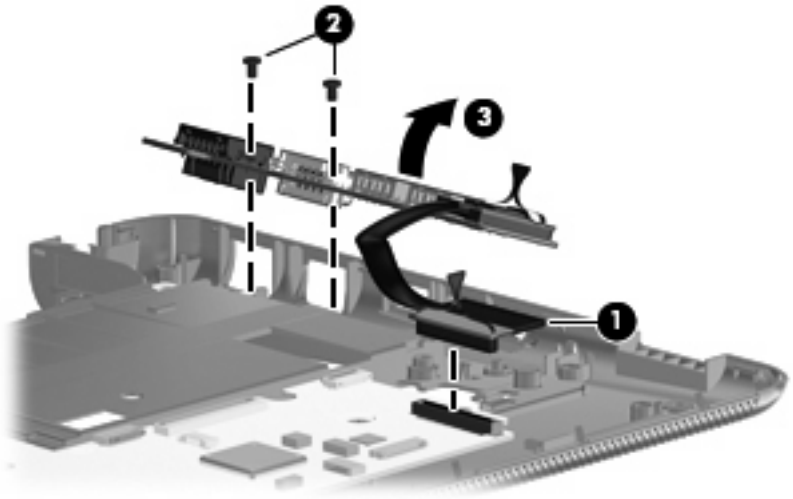
Description	Spare part number
Multi board (includes USB and RJ-45 ports, and cable)	611692-001

Before removing the multi 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 36).
5. Remove the following components:
   - **a.** hard drive cover (see WLAN module on page 38).
   - **b.** Hard drive (see Drives on page 44).
   - **c.** Keyboard (see Keyboard on page 47).
   - **d.** Top cover (see Top cover on page 50).
   - **e.** Display assembly (see Display assembly on page 58).

Remove the multi board:

1. Disconnect the multi board cable **(1)** from the system board.
2. Remove the 2 PM2.0×3.5 screws **(2)** that secure the multi board to the base enclosure.
3. To remove the multi board and cable **(3)**, lift up the inside edge and slide the multi board out at a 45-degree angle.



Reverse this procedure to install the multi board.

Security cable bracket

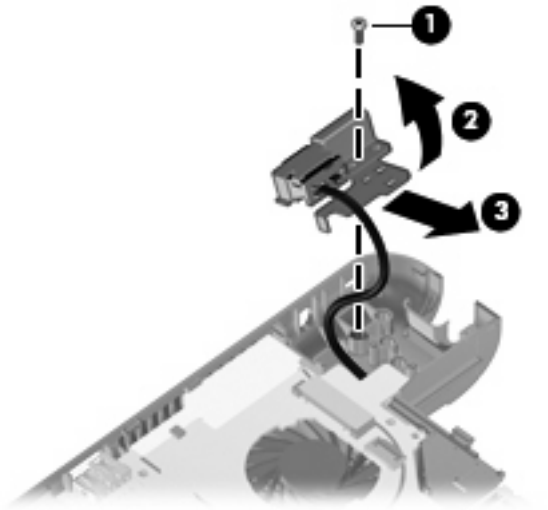
Description	Spare part number
Security cable bracket (included in power connector spare part kit, part number 591851-001)	

Before removing the security cable bracket, 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 36).
5. Remove the following components:
   a. hard drive cover (see WLAN module on page 38).
   b. Hard drive (see Drives on page 44).
   c. Keyboard (see Keyboard on page 47).
   d. Top cover (see Top cover on page 50).
   e. Display assembly (see Display assembly on page 58).

Remove the security cable bracket:

1. Position the base enclosure with the front toward you.
2. Remove the PM2.0 x 5.0 screw **(1)** that secures the security cable bracket to the base enclosure.
3. Lift the right edge **(2)** of the bracket and remove the bracket **(3)** at an angle.



Reverse this procedure to install the security cable bracket.

System board

Description	Spare part number
System board:	
• With AMD Athlon II Neo K125 1.7-GHz single core processor, 1-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material	608640-001
• With AMD Athlon II Neo K325 1.3-GHz dual core processor, 2-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material	608641-001
• With AMD Turion II Neo K625 1.5-GHz dual core processor, 2-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material	608642-001
• With onboard AMD Athlon II Neo K125 1.7-GHz single core processor, for use with WWAN SKUs only, 1-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material	616522-001
• With AMD Athlon II Neo K325 1.3-GHz dual core processor, for use with WWAN SKUs only, 2-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material	616523-001
• With AMD Turion II Neo K625 1.5-GHz dual core processor, for use with WWAN SKUs only, 2-MB Level 2 cache, 800-MHz FSB, 1024-MB base memory, and replacement thermal material	616524-001

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 36).
5. Remove the following components:
   a. hard drive cover (see WLAN module on page 38).
   b. Hard drive (see Drives on page 44).
   c. Keyboard (see Keyboard on page 47).
   d. Top cover (see Top cover on page 50).
   e. Display assembly (see Display assembly on page 58).
   f. Security cable bracket (see Security cable bracket on page 64).

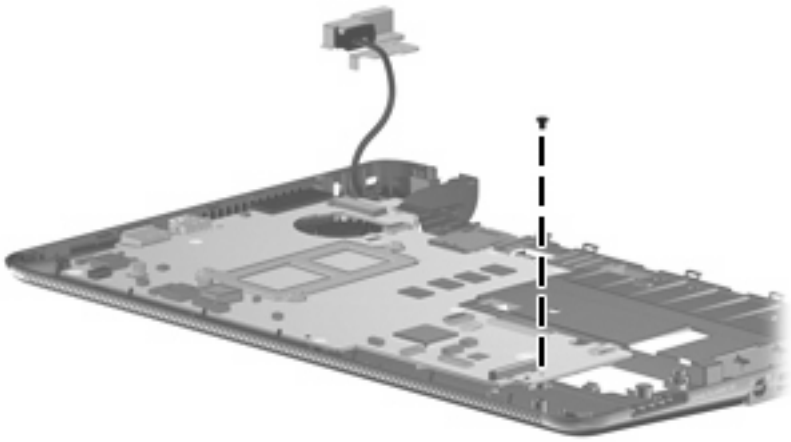
When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- SIM (see SIM on page 37)
- WLAN module (see WLAN module on page 38).
- RTC battery (see RTC battery on page 42).
- Memory module (see Memory module on page 43).

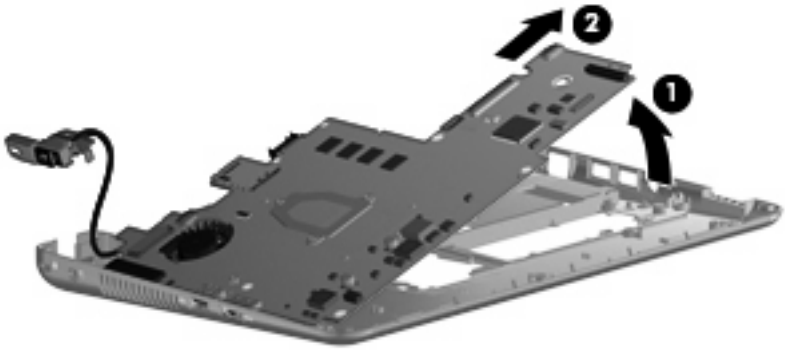
- WWAN module (see WWAN module on page 40).
- Power connector (see Power connector on page 68).
- Fan (see Fan on page 71).
- Heat sink (see Heat sink assembly on page 69).

Remove the system board:

1. Remove the PM2.0×3.5 screw that secures the system board to the base enclosure.



2. Lift the right side of the system board **(1)** until it rests at an angle.
3. Remove the system board **(2)** by sliding it away from the base enclosure at a 45-degree angle.



Reverse the procedure to install the system board.

Power connector

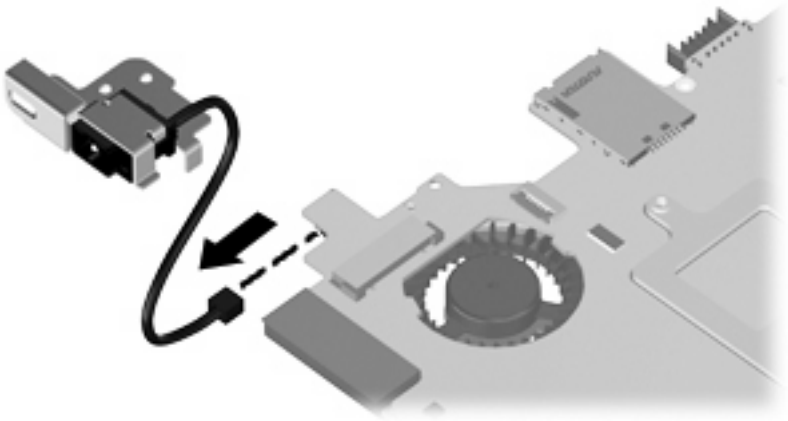
Description	Spare part number
Power connector (includes power connector cable and security cable bracket)	591851-001

Before removing the power connector, 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 36).
5. Remove the following components:
   a. hard drive cover (see WLAN module on page 38).
   b. Hard drive (see Drives on page 44).
   c. Keyboard (see Keyboard on page 47).
   d. Top cover (see Top cover on page 50).
   e. Display assembly (see Display assembly on page 58).
   f. Security cable bracket (see Security cable bracket on page 64).
   g. System board (see System board on page 66).

Remove the power connector:

1. Disconnect the power connector cable from the system board.
2. Remove the power connector.



Reverse this procedure to install the power connector.

Heat sink assembly

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

Description	Spare part number
Heat sink assembly (includes replacement thermal material)	608629-001

Before removing the heat sink assembly, follow these steps:

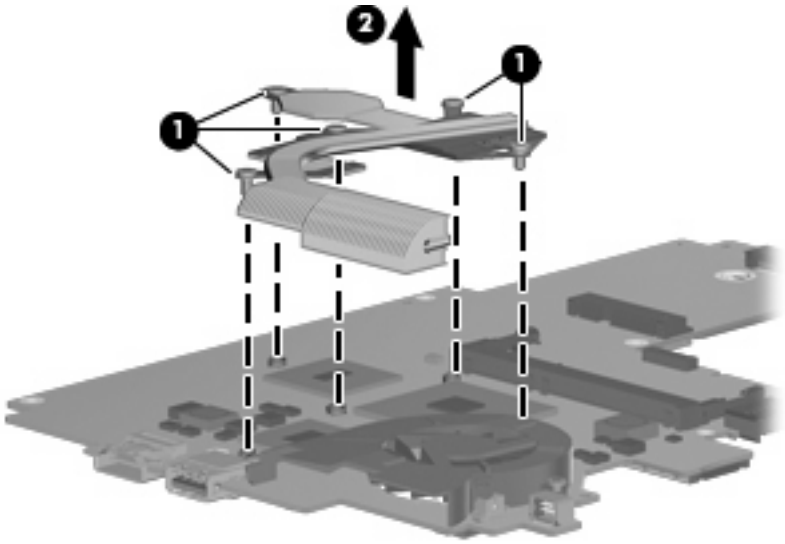
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 36).
5. Remove the following components:
   a. hard drive cover (see WLAN module on page 38).
   b. Hard drive (see Drives on page 44).
   c. Keyboard (see Keyboard on page 47).
   d. Top cover (see Top cover on page 50).
   e. Display assembly (see Display assembly on page 58).
   f. System board (see System board on page 66).

Remove the heat sink assembly:

1. Following the 1, 2, 3, 4, 5 sequence stamped into the heat sink assembly, loosen the 5 PM2.0×4.0 captive screws **(1)** that secure the heat sink assembly to the system board.

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

2. Remove the heat sink assembly **(2)**.



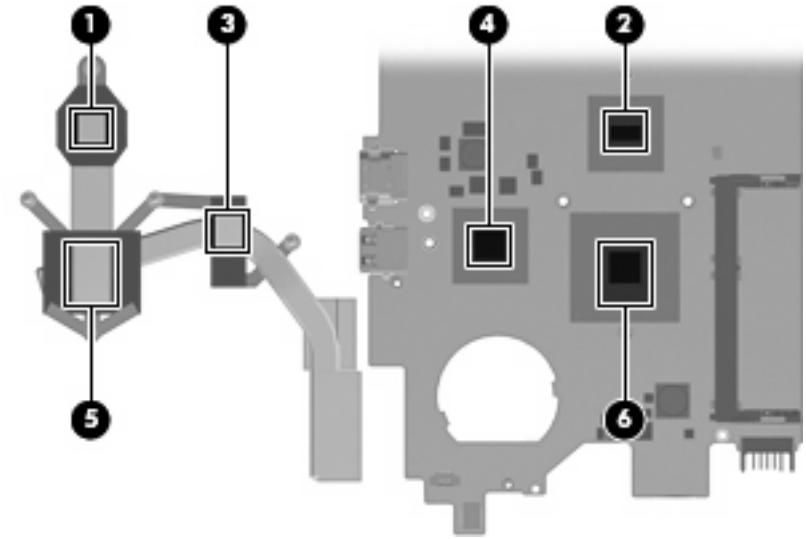
NOTE: The thermal material must be thoroughly cleaned from the surfaces of the heat sink assembly and the system board each time the fan and heat sink are removed:

Thermal paste is used on the Southbridge **(2)**, and the heat sink section **(1)** that services it.

Thermal pads are used on the graphics chip **(4)** and the heat sink section **(3)** that services it.

Thermal pads are used on the processor **(6)** and the heat sink section **(5)** that services it.

Replacement thermal material is included with all heat sink assembly and system board spare part kits.



Reverse this procedure to install the heat sink assembly.

Fan

Description	Spare part number
Fan (includes cable)	611688-001

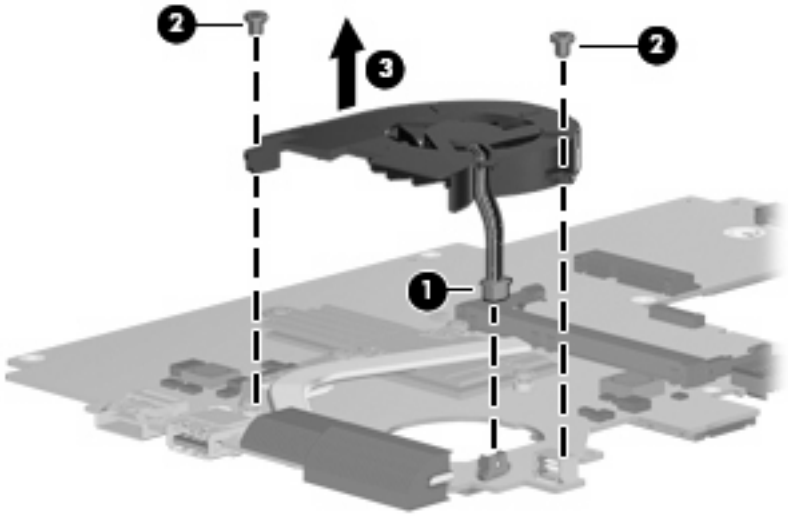
Before removing the fan, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 36).
5. Remove the following components:
   a. hard drive cover (see WLAN module on page 38).
   b. Hard drive (see Drives on page 44).
   c. Keyboard (see Keyboard on page 47).
   d. Top cover (see Top cover on page 50).
   e. Display assembly (see Display assembly on page 58).
   f. Security cable bracket (see Security cable bracket on page 64).
   g. System board (see System board on page 66).
   h. Heat sink (see Heat sink assembly on page 69).

Remove the fan:

1. Disconnect the fan cable **(1)** from the system board.
2. Remove the 2 PM2.0×3.5 screws **(2)** that secure the fan to the system board.

3. Remove the fan **(3)**.



Reverse this procedure to install the fan.

5 Computer Setup

Computer Setup in Windows 7

Starting the Setup Utility

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

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

To start the Setup Utility:

☐ Open the Setup Utility by turning on or restarting the device, and then pressing f10 while the “F10 = BIOS Setup Options” message is displayed in the lower-left corner of the screen.

Using the Setup Utility

Changing the language of the Setup Utility

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

1. Open the Setup Utility by turning on or restarting the device, and then pressing f10 while the “F10 = BIOS Setup Options” message is displayed in the lower-left corner of the screen.
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 device, and then pressing f10 while the “F10 = BIOS Setup Options” message is displayed in the lower-left corner of the screen.
2. Select the **Main** menu. System information such as the system time and date, and identification information about the device 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 device, and then pressing f10 while the “F10 = BIOS Setup Options” message is displayed in the lower-left corner of the screen.
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 device 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 device 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 device.

Main menu

Select	To do this
System information	• View and change the system time and date. • View identification information about the device. • View specification information about the processor, memory size, and system BIOS.

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.
Processor C4 State	Enable/disable the processor C4 sleep state.
Boot Options	Set the following boot options: • f10 and f12 Delay (sec.)—Set the delay for the f10 and f12 functions of the Setup Utility in intervals of 5 seconds each (0, 5, 10, 15, 20). • Internal Network Adapter boot—Enable/disable boot from Internal Network Adapter. • Boot Order—Set the boot order for: ◦ Internal hard drive (select models only) ◦ USB Floppy ◦ USB CD/DVD ROM Drive ◦ USB flash drive ◦ USB Hard drive ◦ USB Card Reader ◦ Network adapter **NOTE:** Only the devices attached to the system will appear in the boot order menu.

Diagnostics menu

Select	To do this
Hard Disk Self Test (select models only)	Run a comprehensive self-test on the hard drive.
Memory Test	Run a diagnostic test on the system memory.

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Depth	**20.40 cm**	8.03 in
Width	**28.90 cm**	11.37 in
Height	**1.98 cm**	0.78 in
Weight		
Equipped with a hard drive	**1470 g**	3.24 lb
Equipped with a solid-state drive	**1449 g**	3.19 lb
Input power		
Operating voltage	19 V dc @ 1.58 A – 30 W	
Operating current	1.58 A	
Temperature		
Operating	**5°C to 35°C**	41°F to 95°F
Nonoperating	**-20°C to 65°C**	-4°F to 149°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	0% 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

NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures.

29.5-cm (11.6-in) (1366 x 768) HD BrightView LED display specifications

Dimensions	Metric	U.S.
Height	**12.53 cm**	4.93 in
Width	**22.27 cm**	8.77 in
Diagonal	**25.55 cm**	10.06 in
Number of colors	262,144	
Contrast ratio	400:1 (typical)	
Brightness	200 nits (typical)	
Pixel resolution		
Pitch	0.2175 × 0.2175 mm	
Format	1024 × 600	
Configuration	RGB vertical stripe	
Backlight	Edge lit	
Character display	80 × 25	
Total power consumption	3.0 W	
Viewing angle	±40° horizontal, +20/-40° vertical (typical)	

Hard drive specifications

	160-GB*	250-GB*	320-GB*	500-GB*
Dimensions				
Height	**9.5 mm**	**9.5 mm**	**9.5 mm**	**9.5 mm**
Width	**63.5 mm**	**63.5 mm**	**63.5 mm**	**63.5 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	117,210,240	117,210,240	117,210,240	117,210,240
Disc rotational speed	7200 rpm	7200 rpm	7200 rpm	7200 rpm
Operating temperature	**5°C to 55°C** (41° F to 131°F)	**5°C to 55°C** (41° F to 131°F)	**5°C to 55°C** (41° F to 131°F)	**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.

Solid-state drive specifications

	128-GB solid-state drive
Dimensions	
Height	**9.5 mm**
Width	**63.5 mm**
Weight	**70 g**
Interface type	SATA
Transfer rate	220 MB/sec
Security	ATA security
Logical blocks	250,069,680
Operating temperature	**0°C to 70°C** (32°F to 158°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.	

7 Backup and recovery

Windows 7 backup and recovery

To protect your information, back up your files and folders. In case of system failure, you can use the backup files to restore your computer.

△ **CAUTION:** In the event of a hard drive failure, you cannot use your computer to access the Disaster Recovery utility. Therefore, HP recommends that you download the Disaster Recovery utility SoftPaq, and then extract it to a USB flash drive as soon as possible after software setup. For details, refer to Downloading and extracting the Disaster Recovery utility on page 83.

Depending on your computer model, you may have one of the following backup and recovery solutions:

- Roxio BackOnTrack
- HP Recovery Manager

NOTE: For detailed information, perform a search for these topics in Help and Support.

Backing up and recovering using Roxio BackOnTrack

Successful recovery after a system failure depends on whether you have completely backed up your files. If Roxio BackOnTrack is preinstalled on your computer, BackOnTrack allows you to create a backup of your computer image. You should create the initial backup 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.

Note the following guidelines when backing up your information:

- Store personal files in the Documents library and back up this folder regularly.
- Back up templates stored in their associated programs.
- Save customized settings in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to reset your preferences.

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

1. Display the screen.
2. Copy the screen:
   - To copy the active window, press alt+fn+prt sc.
   - To copy the entire screen, press fn+prt sc.

3. Open a word-processing document, select **Edit>Paste**.
4. Save the document.

Creating a copy of the hard drive

The *back up drive* function of BackOnTrack creates a Disaster Recovery Set that is an exact image of your hard drive data. You can back up the image to an external hard drive (purchased separately).

To create a Disaster Recovery Set using BackOnTrack, follow these steps:

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

1. Select **Start>All Programs> Roxio**.
2. Select**BackOnTrack>BackOnTrack Home>Disaster Recovery**.
3. Select **Backup drive**.
4. Select a drive to back up.
5. Add a comment to describe the backup.

   NOTE: Comments are optional, but adding comments can help you remember the purpose of the backup. The date and list of drives being backed up are automatically included in the description.

6. Select a destination for the Disaster Recovery Set.

   NOTE: The destination cannot be a network drive.

7. Select the action button at the bottom-right of the computer screen.
8. Follow the on-screen instructions.

Performing a recovery

In case of system failure or instability, the computer provides the following ways to recover your files:

- BackOnTrack Disaster Recovery utility: You can use Disaster Recovery to recover your hard drive image (including your files, programs, and operating system) after a hard drive failure.
- BackOnTrack Instant Restore utility: You can use Instant Restore to quickly restore your computer to a working state if a software-related problem occurs. The Instant Restore utility automatically creates working states periodically. You can also define a working state by saving the current computer state manually.

NOTE: For more information about computer system states, refer to the BackOnTrack software help.

Using the Disaster Recovery utility

NOTE: To perform a recovery with Disaster Recovery, you need a USB flash drive (purchased separately). For optimum performance, the capacity of the drive should be no larger than 2 GB.

Disaster Recovery recovers data from a Disaster Recovery Set that you previously created with Roxio BackOnTrack. Disaster Recovery is available from the HP Web site in a compressed file called a *SoftPaq*.

NOTE: Running the SoftPaq makes the USB drive bootable.

△ **CAUTION:** Before performing a disaster recovery, you must download the Disaster Recovery utility and extract it to a USB flash drive.

Downloading and extracting the Disaster Recovery utility

To download and extract Disaster Recovery, follow these steps:

1. Connect a bootable USB flash drive or external drive to a USB port on your computer.
2. Open your Web browser, go to http://www.hp.com/support, and select your country or region.
3. Enter the SoftPaq number `SP42226` in the **Search** box, press enter, and then follow the on-screen instructions.
4. Select **Download only** to save the file to your computer.
5. When prompted, select **Save**, and then select the external drive from the list of storage locations.
6. After the file is downloaded, navigate to the USB flash drive or external drive, and then double-click the SoftPaq file to format the USB flash drive and extract the Disaster Recovery files.
7. If prompted to do so, restart your computer after the installation is complete.

Restoring your hard drive image

To restore your hard drive image using Disaster Recovery, follow these steps:

1. Connect the external hard drive containing the Disaster Recovery Set to your computer.
2. Connect the bootable USB flash drive containing the extracted Disaster Recovery utility to a USB port on your computer.
3. Change the boot device order by turning on or restarting the computer, and then press f9.
4. Use the arrow keys to select the USB flash drive, and then press enter.
5. At the Roxio BackOnTrack Disaster Recovery screen, select **Disaster Recovery>Next**.
6. Browse to the external hard drive containing the Disaster Recovery Set, and then select **Next**.
7. Select **Next** to proceed with the recovery.

   NOTE: This process may take several minutes.
8. After a message on the screen reports a successful recovery, select **Finish**.

Using the Instant Restore utility

You can restore your computer from Windows when the operating system is functioning. If the operating system is not functioning, you can also access the utility by restarting your computer.

NOTE: For more information about the Instant Restore utility, refer to the BackOnTrack software Help.

Using the Instant Restore utility when the operating system is functioning

To recover information when the operating system is functioning properly, follow these steps:

1. Save and close all open documents and close any open programs.
2. Select **Start>All Programs>Roxio**.

3. Select **BackOnTrack>BackOnTrack Home>Instant Restore**.
4. Select **Restore State**, and then select a restore state.
5. Select the action button in the bottom-right corner of the computer screen.
6. Select **Yes** to confirm your selected restore state.

When the restore process is complete, the computer restarts and a notification message is displayed.

Using the Instant Restore utility when the operating system is not functioning

To recover information when the operating system is not functioning, follow these steps:

1. Restart the computer.

NOTE: If the operating system has stopped responding and the computer screen is blue, restart the computer by turning the power switch off and then on.

2. When the HP computer logo is displayed on the screen, press the f6 button repeatedly until the Windows status bar is displayed.
3. When the Roxio BackOnTrack screen is displayed, follow the on-screen instructions.

Using Windows Backup and Restore

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

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

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

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

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

Using system restore points

When you back up your system, you are creating a system restore point. A system restore point allows you to save and name a snapshot of your hard drive at a specific point in time. You can then revert 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.

Creating a system restore point

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

Restoring to a previous date and time

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

1. Select **Start>Control Panel>System and Security>System**.
2. In the left pane, select **System protection**.
3. Select the **System Protection** tab.
4. Select **System Restore**.
5. Follow the on-screen instructions.

Backing up and recovering using HP Recovery Manager

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

- Backing up your information
- Creating a set of recovery discs
- Creating system restore points
- Recovering a program or driver
- Performing a full system recovery

Backing up your information

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

- At regularly scheduled times

NOTE: Set reminders to back up your information periodically.

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

Note the following when backing up:

- Create system restore points using the Windows System Restore feature, and periodically copy them to a disc.
- Store personal files in the Documents library, and periodically back up this folder.
- Back up templates stored in their associated programs.
- You can back up your information to an optional external hard drive, a network drive, or discs.
- When backing up to discs, use any of the following types of discs (purchased separately): CD-R, CD-RW, DVD+R, DVD-R, or DVD±RW. The discs you use depend on the type of optical drive you are using.

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

- When backing up to discs, number each disc before inserting it into an optical drive.
- Save the customized settings in a window, toolbar, or menu bar by taking a screen shot of the settings. The screen shot can be a time-saver if you have to reset your preferences.

To copy the screen and paste the image into a word-processing document:

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

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

   To copy the entire screen, press prt sc.
3. Open a word-processing document, selcet **Edit> Paste**.
4. Save the document.

Creating a set of recovery discs

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

NOTE: This task will require an optional external or shared optical drive.

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

Note the following guidelines before creating recovery discs:

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

NOTE: Double-layer discs and read-write discs—such as CD-RW, 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 an optical drive.
- If necessary, you can exit the program before you have finished creating the recovery discs. The next time you open Recovery Manager, you will be prompted to continue the disc creation process.

To create a set of recovery discs:

1. Select **Start>All Programs>Recovery Manager>Recovery Disc Creation**.
2. 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 a set of recovery discs (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, computers that include a solid-state drive (SSD) 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. If you have not already tried these features, try them before using Recovery Manager. For more information on these built-in repair features, select **Start>Help and Support**.

NOTE: Recovery Manager recovers only the 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 using the recovery discs

To restore the system from the recovery discs:

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

Recovering using the partition on the hard drive (select models only)

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

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

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 –

a. Turn on or restart the computer.

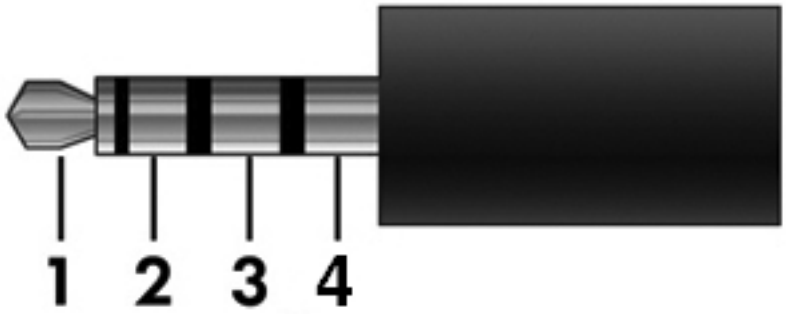
b. Press f11 while the “Press f11 for recovery message is displayed on the screen.

NOTE: It may take several minutes for Recovery Manager to load.

2. In the Recovery Manager window, select **System Recovery**.
3. Follow the on-screen instructions.

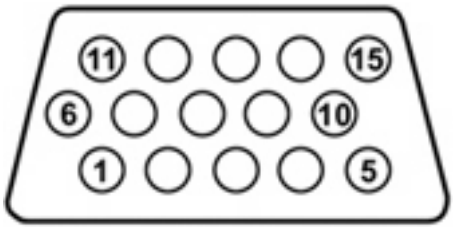
8 Connector pin assignments

Audio-out (headphone)/Audio-in (microphone) jack



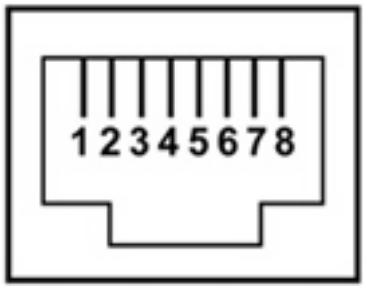
Pin	Signal
1	Left audio signal in
2	Right audio signal in
3	Ground
4	Microphone

External monitor



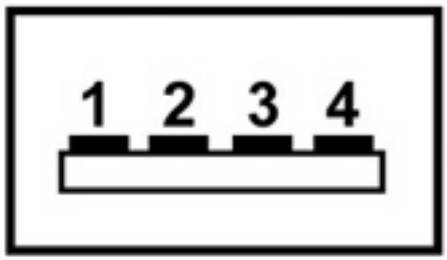
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

RJ-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

9 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.

10 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. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

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

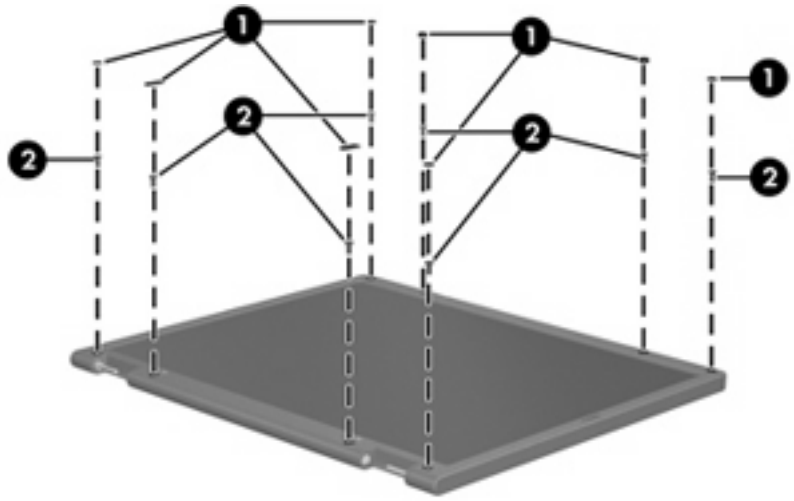
NOTE: **Materials Disposal**. This HP product contains mercury in the backlight in the display assembly that might require special handling at end-of-life. Disposal of mercury may be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities,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

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

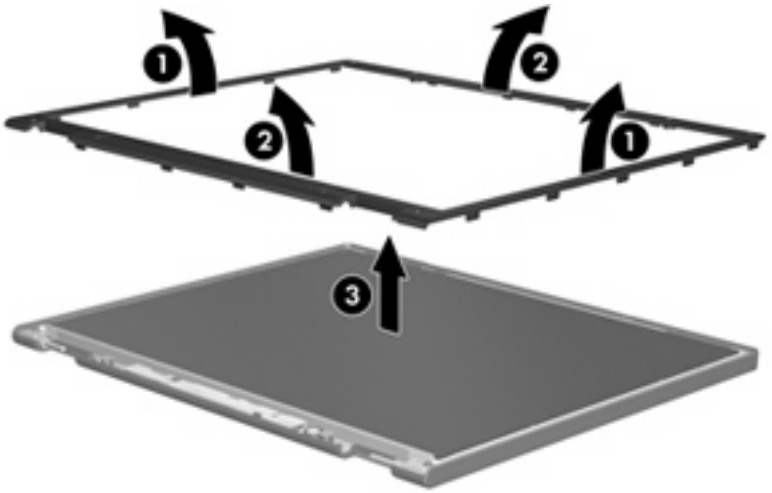
NOTE: The procedures provided in this chapter are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps to disassemble the display assembly:

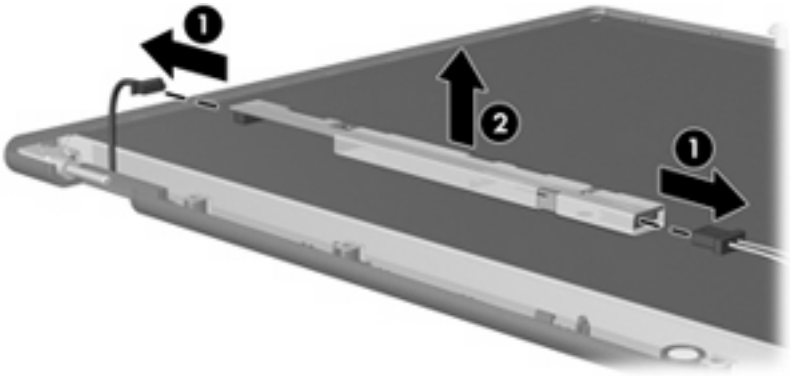
1. Remove all screw covers **(1)** and screws **(2)** that secure the display bezel to the display assembly.



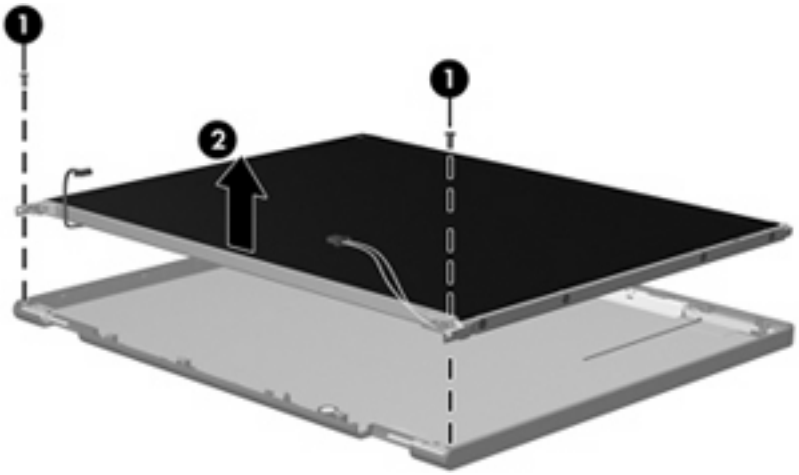
2. Lift up and out on the left and right inside edges **(1)** and the top and bottom inside edges **(2)** of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel **(3)**.



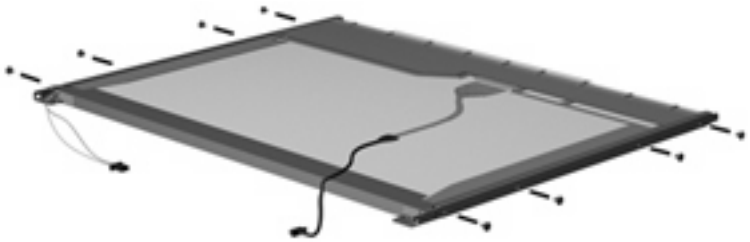
4. Disconnect all display panel cables **(1)** from the display inverter and remove the inverter **(2)**.



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

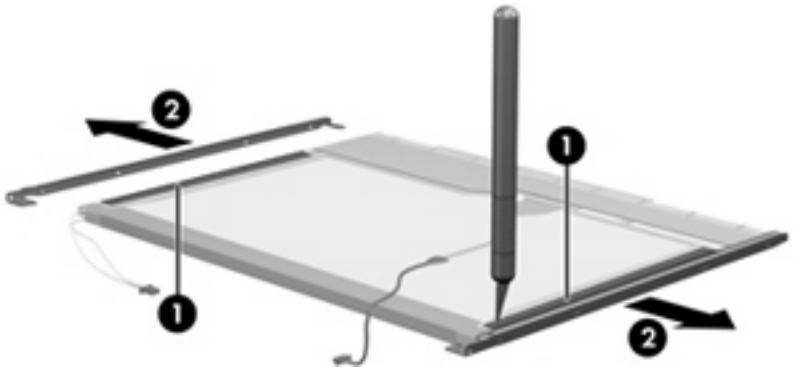


7. Turn the display panel assembly upside down.
8. Remove all screws that secure the display panel frame to the display panel.

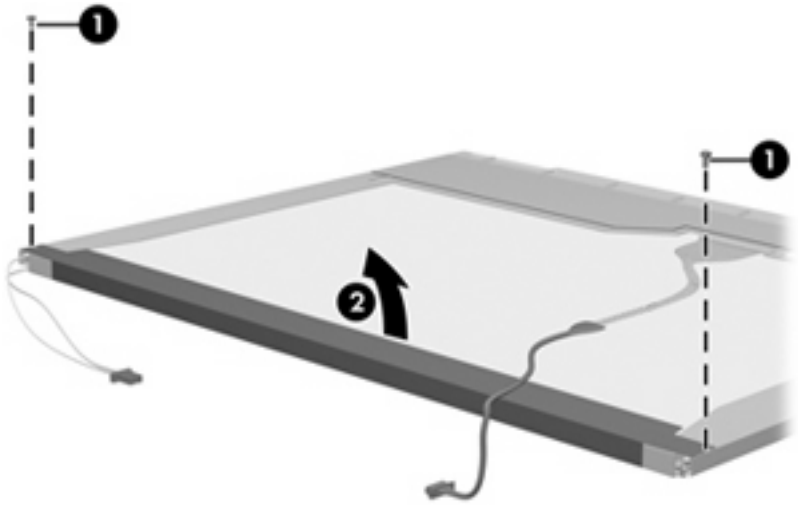


9. Use a sharp-edged tool to cut the tape **(1)** that secures the sides of the display panel to the display panel frame.

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

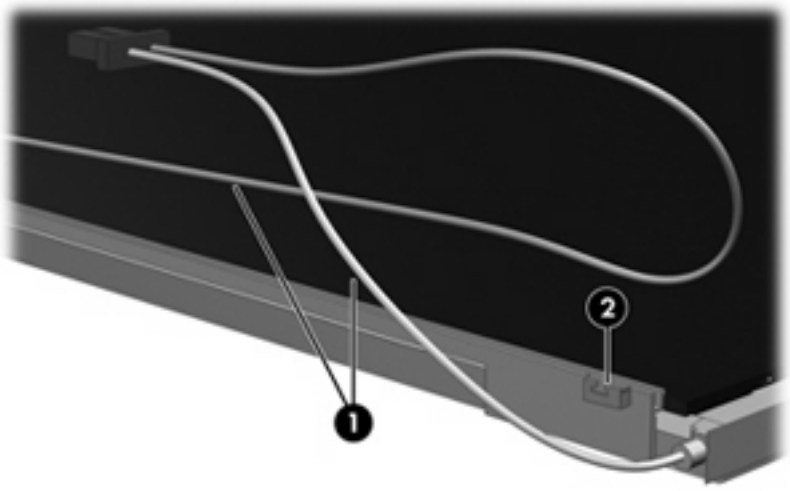


11. Remove the screws **(1)** that secure the backlight cover to the display panel.
12. Lift the top edge of the backlight cover **(2)** and swing it outward.



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

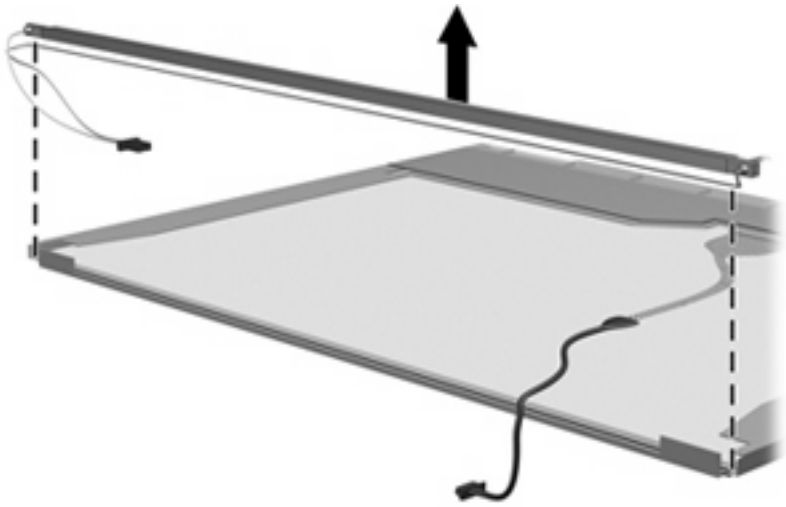
15. Remove the backlight cables **(1)** from the clip **(2)** in the display panel.



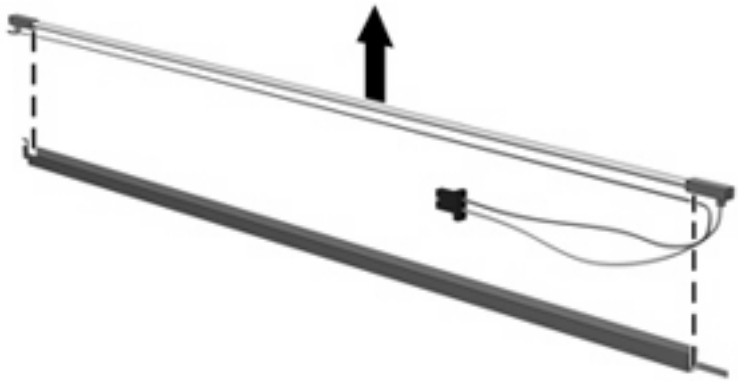
16. Turn the display panel upside down.

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

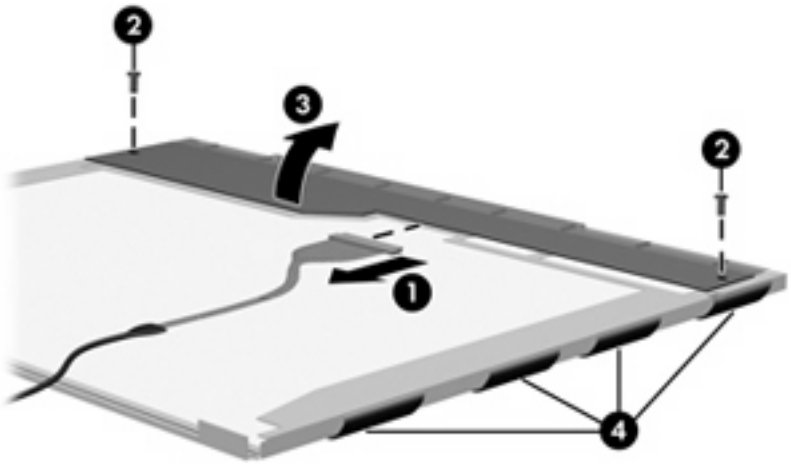
17. Remove the backlight frame from the display panel.



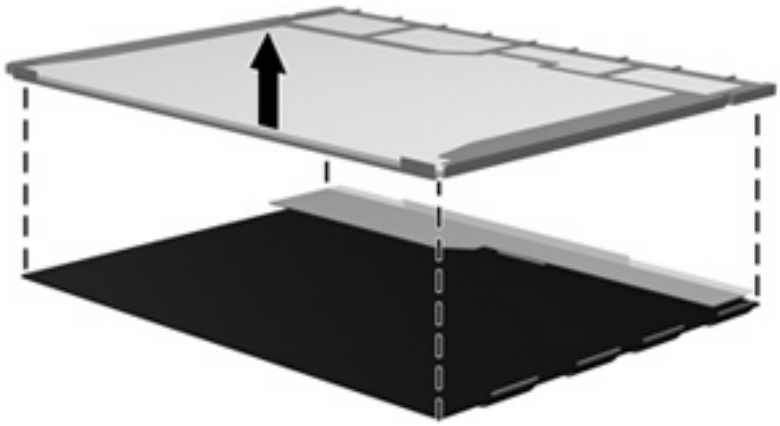
18. Remove the backlight from the backlight frame.



19. Disconnect the display panel 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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