



HP 6360t Mobile Thin Client

Maintenance and Service Guide

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Safety warning notice

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

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1 Product description

Category	Description
Product Name	HP 6360t Mobile Thin Client
Processors	Intel® Celeron® B810 1.60-GHz processor (2.0-MB L3 cache, 2 threads, 35 W)
Chipset	Mobile Intel HM65 chipset
Graphics	Intel high-definition (HD) unified memory architecture (UMA) graphics Supports dual-display ports through the dock
Panel	13.3-in, HD, AntiGlare, light-emitting diode (LED), SVA (1366×768) display; 16:9 aspect ratio All display assemblies include 2 wireless local area network (WLAN) antenna cables Supports privacy filter and low-voltage differential signalling
Memory	2 customer-accessible/upgradable memory module slots Supports dual-channel memory Supports up to 16,384 GB of system RAM DDR3/1333-MHz Supports the following configurations: <ul style="list-style-type: none">• 16384-MB total system memory (8192×2, select models only)• 8192-MB total system memory (4096×2 + 8192×1, select models only)• 4096-MB total system memory (2048×2 or 4096×1)• 2048-MB total system memory (2048×1)
Solid-state module	2.0-GB solid-state module using a 2.5-in bracket Customer-accessible Serial ATA
Optical drive	Fixed Serial ATA 12.7-mm tray load DVD-ROM drive

Category	Description
	Supports "no optical drive" option
Audio and video	HD audio
	Integrated mono microphone on computer models equipped with a webcam
	720p HD webcam (select models only)
	Stereo speakers (2)
Modem	56K v.92 MDC data/fax modem
	Support for "no modem" option
Ethernet	Intel 82579V 10/100/1000 Ethernet Gigabit Network Connection
	NIC Power-down technology
	S3/S4/S5 wake on LAN
Wireless	Integrated wireless local area network (WLAN) options by way of wireless module
	Two WLAN antennas built into display assembly
	Support for the following WLAN formats:
	<ul style="list-style-type: none"> • Broadcom 4313 802.11b/g/n 1x1 WiFi Adapter • Broadcom 43224AGN 802.11a/b/g/n 2x2 WiFi Adapter
External media card	54-mm ExpressCard
	Integrated SD flash media slot supporting MultiMediaCard and Secure Digital (SD) Memory Card
Ports	<ul style="list-style-type: none"> • 3-pin AC power • Accessory battery connector • Audio-in (mono microphone) • Audio-out (stereo headphone) • DisplayPort v.1.1 • Docking connector • eSATA/USB 2.0 Combo port • RJ-11 (modem) • RJ-45 (Ethernet, includes link and activity lights) • USB 2.0 (3 ports) • VGA (Dsub 15 pin) supporting: 1920x1200 external resolution @ 75 Hz hot plug and unplug and auto-detection for correct output to wide-aspect vs. standard aspect video
Docking	Support for the HP APR Docking Station and the HP PR Docking Station

Category	Description
Keyboard/pointing devices	<p>Keyboard requirements:</p> <ul style="list-style-type: none"> • Spill-resistant with drain • Full chiclet-style keyboard <p>Fn key functionality:</p> <ul style="list-style-type: none"> • F3 – Sleep • F4 – Display Switching • F6 – Volume Down • F7 – Volume Up • F8 – MS Native Power Control • F9 – Brightness Down • F10 – Brightness Up <p>Touchpad requirements:</p> <ul style="list-style-type: none"> • Touchpad only • On/off button • Supports 2-way scroll with legend • Taps enabled as default • Gestures disabled by default
Power requirements	<p>Support for 9-cell 100-WHr Li-ion battery (3.00-AHr)</p> <p>Support for 6-cell 62-WHr Li-ion battery (2.80-AHr)</p> <p>Support for 6-cell 55-WHr Li-ion battery (2.55-AHr)</p> <p>Support for 9-cell Lithium Polymer Extended Life Battery</p> <p>Support for 9-cell Ultra Extended Life Battery</p> <p>Support for HP Fast Charge Technology</p> <p>65W HP Smart AC adapter with localized cable plug support (3-wire plug with ground pin, supports 3-pin DC connector)</p>
Security	<p>Support Security Lock</p> <p>Optional Integrated Smart Card Reader (Active)</p>
Operating system	<p>Preinstalled:</p> <ul style="list-style-type: none"> • Windows® Embedded Standard 2009 • Windows Embedded Standard 7

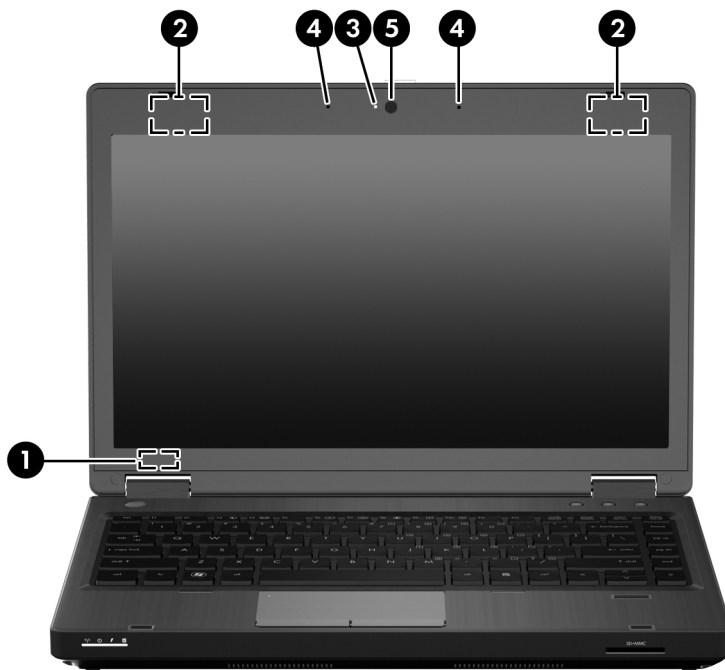
Category	Description
	Web-only support: <ul style="list-style-type: none">• Windows Embedded Standard 2009• Windows Embedded Standard 7
Serviceability	End-user replaceable parts: <ul style="list-style-type: none">• AC adapter• Battery• Solid-state module• Memory modules (2)• Optical drive• WLAN module

2 External component identification

Identifying the hardware

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

Display



Item	Component	Description
(1)	Internal display switch	Turns off the display or initiates Sleep if the display is closed while the power is on. NOTE: The display switch is not visible from the outside of the computer.
(2)	WLAN antennas (2)*	Send and receive wireless signals to communicate with WLANs.
(3)	Webcam light (select models only)	On: The webcam is in use.

Item	Component	Description
(4)	Internal microphone(s) (1 without webcam/ 2 with webcam)	Records sound.
(5)	Webcam (select models only)	Records video and captures still photographs.

*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 the Getting Started guide.

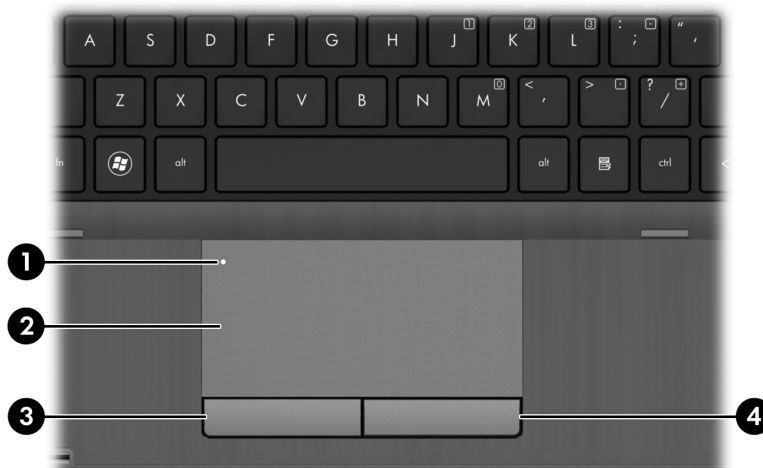
Buttons



Item	Component	Description
(1)	TouchPad on/off button	Turns the TouchPad on and off.
(2)	Power button	<ul style="list-style-type: none"> • When the computer is off, press the button to turn on the computer. • When the computer is on, press the button briefly to initiate Sleep. • When the computer is in the Sleep state, press the button briefly to exit Sleep. <p>If the computer has stopped responding and operating system shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer.</p>
(3)	Wireless button	<p>Turns the wireless feature on or off but does not establish a wireless connection.</p> <p>NOTE: A wireless connection may be established if one has been previously configured.</p>

Item	Component	Description
(4)	QuickWeb button (select models only)	<ul style="list-style-type: none"> When the computer is on, press the button to open Internet Explorer. When the computer is off or in the Sleep state the button does not perform any action or function.
(5)	Volume mute button	Mutes and restores speaker sound.

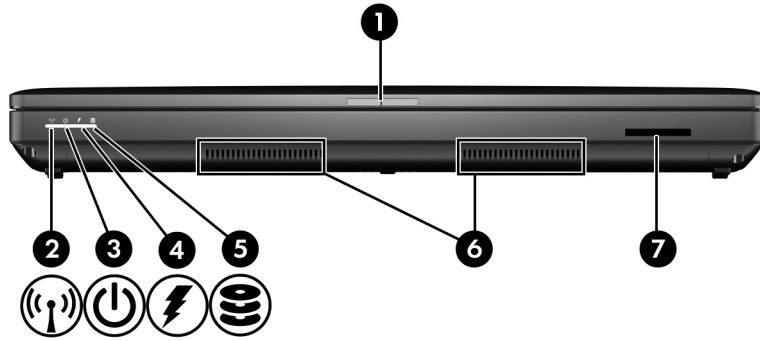
TouchPad



Item	Component	Description
(1)	TouchPad on/off button	Turns the TouchPad on and off.
(2)	TouchPad zone	Moves the pointer and selects or activates items on the screen.
(3)	Left TouchPad button	Functions like the left button on an external mouse.
(4)	Right TouchPad button	Functions like the right button on an external mouse.

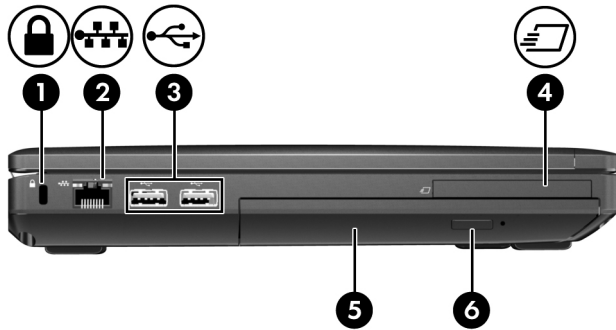
NOTE: This table describes factory settings. To view or change pointing device preferences, select **Start > Control Panel > Mouse**.

Front



Item	Component	Description
(1)	Display release latch	Opens the computer.
(2)	Wireless light	<ul style="list-style-type: none"> White: An integrated wireless device, such as a WLAN device is on. Amber: All wireless devices are off.
(3)	Power light	<ul style="list-style-type: none"> On: The computer is on. Blinking: The computer is in the Sleep state. Off: The computer is off.
(4)	Battery light	<ul style="list-style-type: none"> Amber: The computer is connected to external power and the battery is charged from 0 to 90 percent. White: The computer is connected to external power and the battery is charged from 90 to 99 percent. Blinking amber: 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: The battery is fully charged.
(5)	Drive light	<ul style="list-style-type: none"> Blinking white: The flash drive or optional optical drive is being accessed. Amber: HP 3D DriveGuard has been activated.
(6)	Speakers (2)	Produce sound.
(7)	Media Card Reader	Supports the following digital card formats: <ul style="list-style-type: none"> MultiMediaCard Secure Digital (SD) Memory Card

Left side



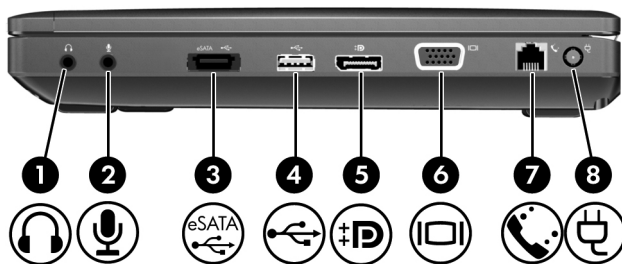
Item	Component	Description
(1)	Security cable slot	Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)	RJ-45 (network) jack	Connects a network cable.
(3)	USB 2.0 port (2)	Connect optional USB devices.
(4)	ExpressCard slot or smart card reader (depending on the configuration)	Supports optional ExpressCards or smart cards.
(5)	Optical drive (select models only)	Reads and writes (select models only) to an optical disc.
(6)	Optical drive eject button (select models only)	Releases the optical drive disc tray.

Rear



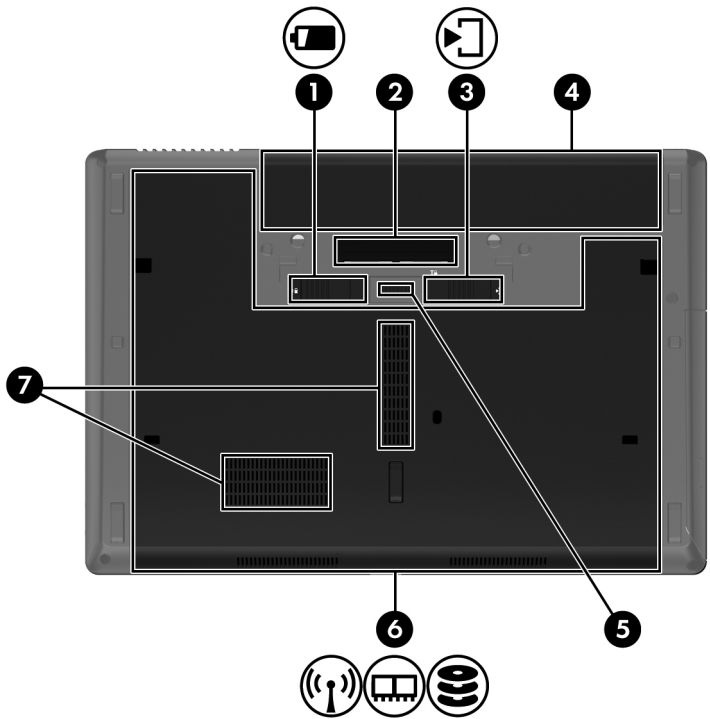
Component	Description
Vent	Enables airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.

Right side



Item	Component	Description
(1)	Audio-out (headphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, earbuds, a headset, or television audio. WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the <i>Getting Started</i> guide. NOTE: When a device is connected to the jack, the computer speakers are disabled.
(2)	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(3)	eSATA/USB 2.0 combo port	Connects a high-performance eSATA component, such as an eSATA external hard drive, or connects an optional USB device.
(4)	USB 2.0 port	Connect an optional USB device.
(5)	DisplayPort	Connects an optional digital display device, such as a high-performance monitor or projector.
(6)	External monitor port	Connects an external VGA monitor or projector.
(7)	RJ-11 (modem) jack	Connects a modem cable.
(8)	Power connector	Connects an AC adapter.

Bottom

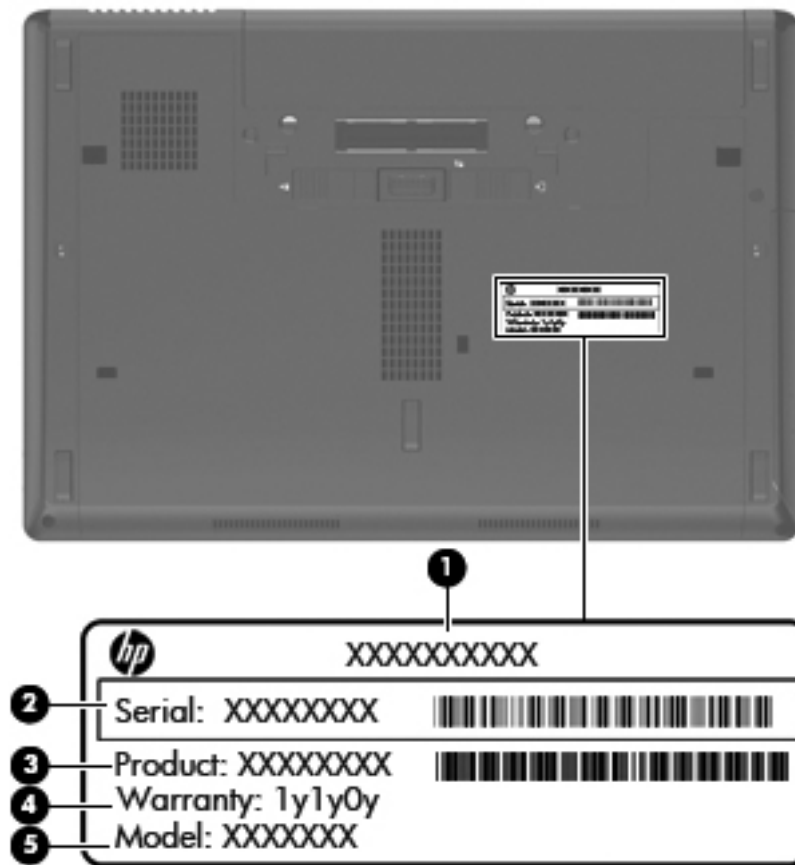


Item	Component	Description
(1)	Battery (2)	Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(2)	Battery release latch	Releases the battery from the battery bay.
(3)	Docking connector	Connects an optional docking device.
(4)	Service cover release latch	Releases the service cover from the computer.
(5)	Battery bay	Holds the battery.
(6)	Accessory battery connector	Connects an optional accessory battery.
(7)	Wireless and memory module compartments and flash drive bay	Holds the flash drive, and also contains the WLAN module slot, and the memory module slots. 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.

3 Illustrated parts catalog

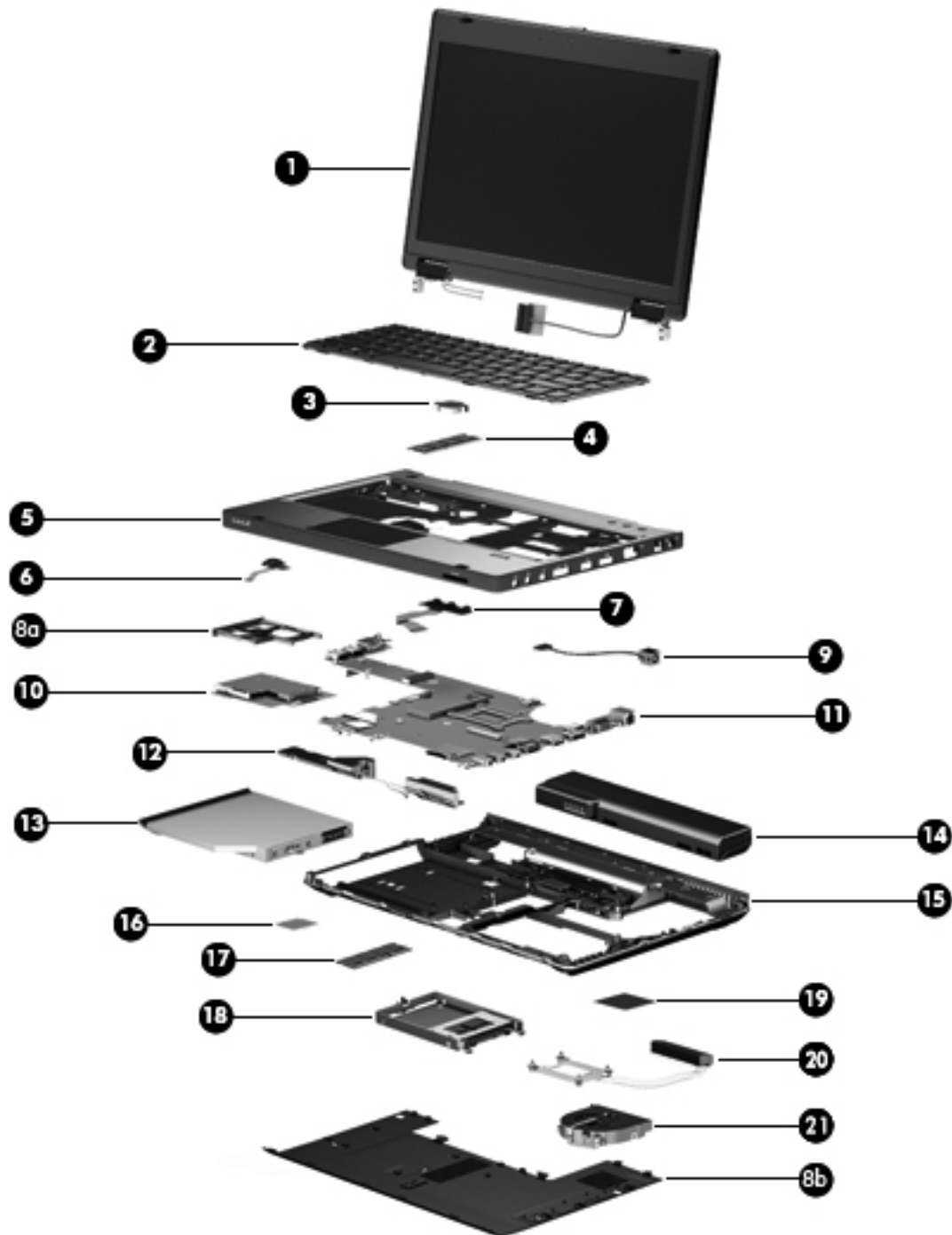
Service tag

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



Item	Description	Function
(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)	Warranty period	This number describes the duration of the warranty period for the computer.
(5)	Model description	This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.

Computer major components



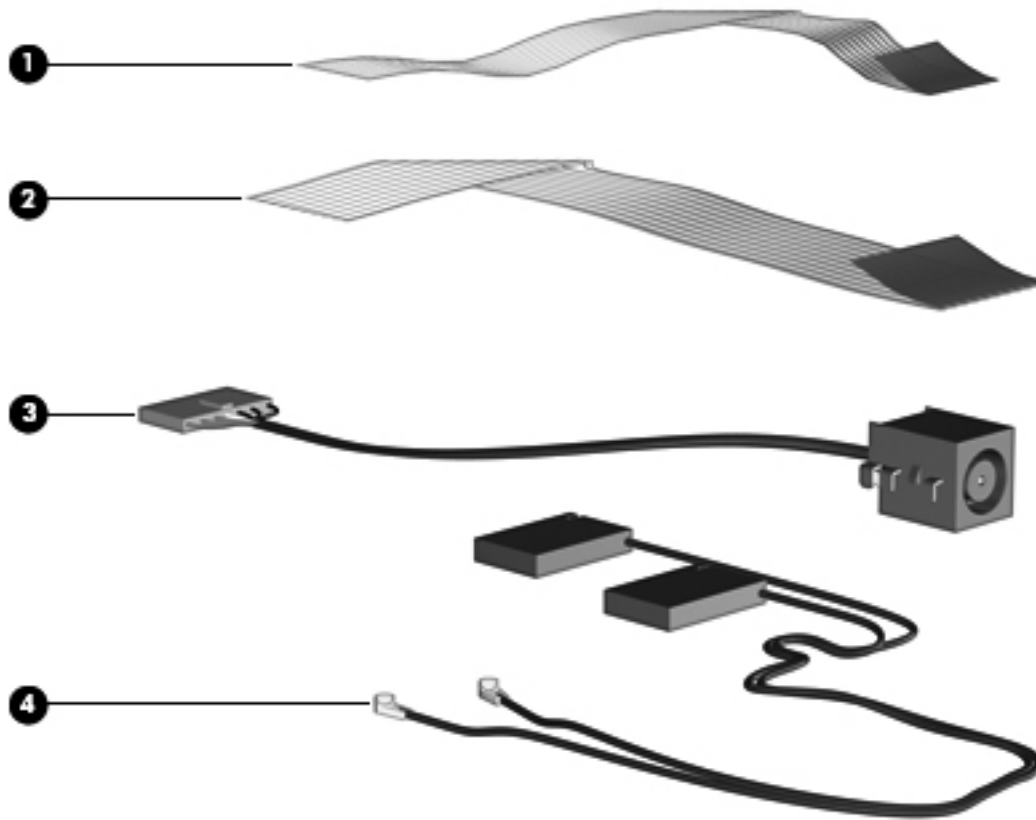
Item	Component	Spare part number
(1)	Display assembly: The display assembly is spared at the subcomponent level only. For display assembly spare part information, see Display assembly subcomponents on page 19 .	
(2)	Keyboard (includes keyboard cable):	
	For use in Belgium	639477-A41

Item	Component	Spare part number
	For use in Bulgaria	639477-261
	For use in the Denmark	639477-081
	For use in Denmark, Finland, and Norway	639477-DH1
	For use in the Netherlands	639477-B31
	For use in Europe	639477-DW1
	For use in French Canada	639477-121
	For use in France	639477-051
	For use in Germany	639477-041
	For use in Greece	639477-DJ1
	For use in Hungary	639477-211
	For use in Iceland	639477-DD1
	For use in Israel	639477-BB1
	For use in Italy	639477-061
	For use in Norway	639477-091
	For use in Portugal	639477-131
	For use in Russia	639477-251
	For use in Saudi Arabia	639477-171
	For use in Slovenia	639477-A81
	For use in Spain	639477-071
	For use in Sweden and Finland	639477-B71
	For use in Switzerland	639477-BG1
	For use in Turkey	639477-141
	For use in the United Kingdom	639477-031
	For use in the United States	639477-001
(3)	RTC battery	651038-001
(4)	Expansion memory module (PC3, 10600, 1333-MHz):	
	8 GB	634091-001
	4 GB	621569-001
	2 GB	581096-001
(5)	Top cover (includes TouchPad button and bracket)	658547-001
(6)	Power button board (includes cable)	639481-001
(7)	Function board (includes cable)	639480-001

Item	Component	Spare part number
	Plastics Kit , includes:	639482-001
(8a)	ExpressCard slot bezel	
(8b)	Service cover	
	NOTE: See Plastics Kit on page 22 for more Plastics Kit spare part information.	
(9)	Power connector cable (included in the Cable Kit, spare part number 639473-001)	
	NOTE: See Cable Kit on page 18 for more Cable Kit spare part information.	
(10)	ExpressCard assembly	639479-001
	NOTE: The ExpressCard assembly spare part kit does not include the ExpressCard assembly cable. The ExpressCard assembly cable is included in the Cable Kit, spare part number 639473-001.	
(11)	System board with HM65 chipset and graphics subsystem with UMA memory (includes replacement thermal material)	655561-001
(12)	Speaker Kit (includes left and right speakers and cable)	639484-001
(13)	DVD-ROM drive (includes bezel and bracket)	647672-001
(14)	Battery:	
	9-cell, 100-Whr, 3.00-Ah Li-ion battery	634087-001
	9-cell, 100-Whr, 3.00-Ah Li-ion battery	631243-001
	6-cell, 62-Whr, 2.80-Ah Li-ion battery	628668-001
	6-cell, 55-Whr, 2.55-Ah Li-ion battery	628666-001
(15)	Base enclosure (includes battery release latch and 4 rubber feet)	639468-001
	Rubber Kit (not illustrated, includes 7 base enclosure rubber feet and 4 base enclosure screw covers)	639483-001
(16)	WLAN module:	
	Broadcom 4313 802.11b/g/n 1×1 WiFi Adapter	593836-001
	Broadcom 43224AGN 802.11a/b/g/n 2×2 WiFi Adapter for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	582564-001

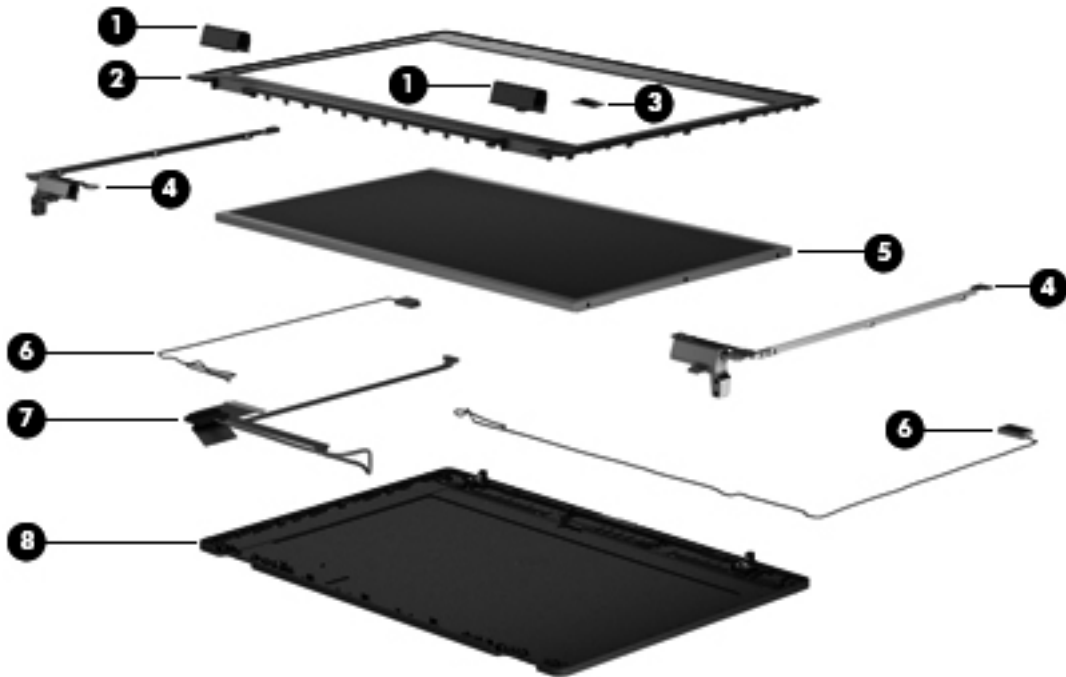
Item	Component	Spare part number
	Broadcom 43224AGN 802.11a/b/g/n 2x2 WiFi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, 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, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	582564-002
(17)	Primary memory module (PC3, 10600, 1333-MHz):	
	8 GB	634091-001
	4 GB	621569-001
	2 GB	581096-001
(18)	2.0 GB solid-state module (2.5-in, 7.0-mm, SATA; does not include solid-state module bracket or screws)	656837-001
	Solid-state Module Hardware Kit (not illustrated, includes solid-state module bracket and screws)	651649-001
(19)	Intel Celeron B810 1.60-GHz processor (1-MB L2 cache, 800-MHz FSB, includes replacement thermal material)	646760-001
(20)	Heat sink (includes replacement thermal material)	639475-001
(21)	Fan	639474-001

Cable Kit



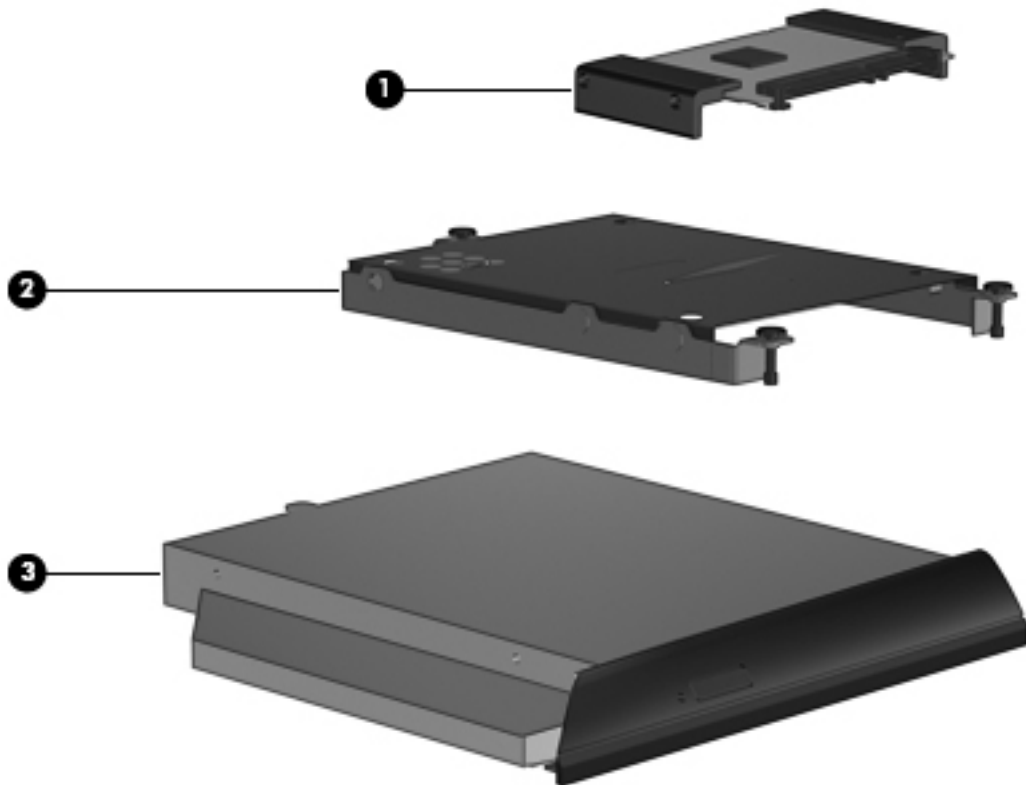
Item	Component	Spare part number
	Cable Kit , includes:	639473-001
(1)	TouchPad cable	
(2)	ExpressCard assembly cable	
(3)	Power connector cable	
(4)	Wireless antenna	

Display assembly subcomponents



Item	Component	Spare part number
(1)	Display hinge covers (2, included in the Plastics Kit, spare part number 639482-001) NOTE: See Plastics Kit on page 22 for more Plastics Kit spare part information.	
(2)	Display bezel	655562-001
(3)	Microphone module	647675-001
(4)	Display Hinge Kit (includes left and right display hinges and brackets)	639476-001
(5)	13.3-in, HD, AG, LED, display panel	647671-001
(6)	WLAN antenna cables (included in the Cable Kit, spare part number 639473-001; includes WLAN cables and transceivers) NOTE: See Cable Kit on page 18 for more Cable Kit spare part information.	
(7)	Display Cable Kit (includes display panel cable and microphone module cable)	639472-001
(8)	Display enclosure	639467-001

Mass storage devices

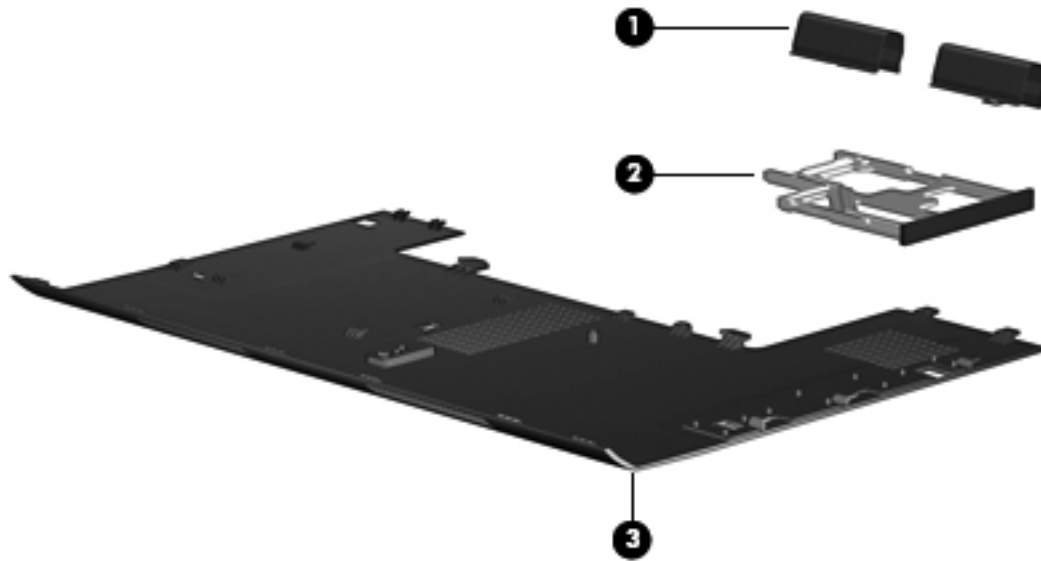


Item	Component	Spare part number
(1)	2.0-GB solid-state module (2.5-in, 7.0-mm, SATA; does not include solid-state module bracket or screws)	656837-001
	Solid-state Module Hardware Kit , includes:	651649-001
(2)	Solid-state module bracket	
	Screws (not illustrated)	
(3)	DVD-ROM drive (includes bezel and bracket)	647672-001

Miscellaneous parts

Component	Spare part number
HP Smart AC adapter:	
65-W RC V HP Smart AC adapter	609939-001
65-W RC V EM HP Smart AC adapter	609948-001
Power cord (3-pin, black, 1.83-m):	
For use in Australia	490371-011
For use in Europe	490371-021
For use in India	490371-D61
For use in Israel	490371-BB1
For use in Italy	490371-061
For use in Japan	490371-291
For use in North America	490371-001
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
Screw Kit	647676-001

Plastics Kit



Item	Component	Spare part number
	Plastics Kit , includes:	639482-001
(1)	Display hinge covers (2)	
(2)	ExpressCard slot space saver	
(3)	Service cover	

Sequential part number listing

Spare part number	Description
490371-001	Power cord for use in North America (3-pin, black, 1.83-m)
490371-011	Power cord for use in Australia (3-pin, black, 1.83-m)
490371-021	Power cord for use in Europe (3-pin, black, 1.83-m)
490371-031	Power cord for use in the United Kingdom and Singapore (3-pin, black, 1.83-m)
490371-061	Power cord for use in Italy (3-pin, black, 1.83-m)
490371-111	Power cord for use in Switzerland (3-pin, black, 1.83-m)
490371-201	Power cord for use in Thailand (3-pin, black, 1.83-m)
490371-291	Power cord for use in Japan (3-pin, black, 1.83-m)
490371-AA1	Power cord for use in the People's Republic of China (3-pin, black, 1.83-m)
490371-AB1	Power cord for use in Taiwan (3-pin, black, 1.83-m)
490371-AD1	Power cord for use in South Korea (3-pin, black, 1.83-m)
490371-AR1	Power cord for use in South Africa (3-pin, black, 1.83-m)
490371-BB1	Power cord for use Israel (3-pin, black, 1.83-m)
490371-D61	Power cord for use in India (3-pin, black, 1.83-m)
581096-001	2-MB memory module (PC3, 10600, 1333-MHz)
582564-001	Broadcom 43224AGN 802.11a/b/g/n 2x2 WiFi Adapter for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States

Spare part number	Description
582564-002	Broadcom 43224AGN 802.11a/b/g/n 2x2 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, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
593836-001	Broadcom 4313 802.11b/g/n 1x1 WiFi Adapter
609939-001	65-W RC V HP Smart AC adapter
609948-001	65-W RC V EM HP Smart AC adapter
621569-001	4-MB memory module (PC3, 10600, 1333-MHz)
628666-001	6-cell, 55-Whr, 2.55-Ah Li-ion battery
628668-001	6-cell, 62-Whr, 2.80-Ah Li-ion battery
631243-001	9-cell, 100-Whr, 3.00-Ah Li-ion battery
634087-001	9-cell, 100-Whr, 3.00-Ah Li-ion battery
634091-001	8-MB memory module (PC3, 10600, 1333-MHz)
639467-001	Display enclosure
639468-001	Base enclosure (includes battery release latch and 4 rubber feet)
639472-001	Display Cable Kit (includes display panel cable and webcam/microphone module cable)
639473-001	Cable Kit (includes the ExpressCard assembly cable, power connector cable, TouchPad cable, WLAN antenna cable, and WWAN antenna cable)
	NOTE: See Cable Kit on page 18 for more Cable Kit spare part information.
639474-001	Fan
639475-001	Heat sink (includes replacement thermal material)
639476-001	Display Hinge Kit (includes left and right display hinges and brackets)
639477-001	Keyboard for use in the United States (includes keyboard cable)

Spare part number	Description
639477-031	Keyboard for use in the United Kingdom and Singapore (includes keyboard cable)
639477-041	Keyboard for use in Germany (includes keyboard cable)
639477-051	Keyboard for use in France (includes keyboard cable)
639477-061	Keyboard for use in Italy (includes keyboard cable)
639477-071	Keyboard for use in Spain (includes keyboard cable)
639477-081	Keyboard for use in Denmark Norway (includes keyboard cable)
639477-091	Keyboard for use in Norway (includes keyboard cable)
639477-121	Keyboard for use in French Canada (includes keyboard cable)
639477-131	Keyboard for use in Portugal (includes keyboard cable)
639477-141	Keyboard for use in Turkey (includes keyboard cable)
639477-171	Keyboard for use in Saudi Arabia (includes keyboard cable)
639477-211	Keyboard for use in Hungary (includes keyboard cable)
639477-251	Keyboard for use in Russia (includes keyboard cable)
639477-261	Keyboard for use in Bulgaria (includes keyboard cable)
639477-A41	Keyboard for use in Belgium (includes keyboard cable)
639477-A81	Keyboard for use in Slovenia (includes keyboard cable)
639477-B31	Keyboard for use in the Netherlands (includes keyboard cable)
639477-B71	Keyboard for use in Slovenia (includes keyboard cable)
639477-BB1	Keyboard for use in Israel (includes keyboard cable)
639477-BG1	Keyboard for use in Switzerland (includes keyboard cable)
639477-DD1	Keyboard for use in Iceland (includes keyboard cable)
639477-DH1	Keyboard for use in Denmark, Finland, and Norway (includes keyboard cable)
639477-DJ1	Keyboard for use in Greece (includes keyboard cable)
639477-DW1	Keyboard for use in Europe (includes keyboard cable)
639479-001	ExpressCard assembly
639480-001	Function board (includes cable)
639481-001	Power button board (includes cable)
639482-001	Plastics Kit (includes 2 display hinge covers, ExpressCard slot space saver, and service cover)
	NOTE: See Plastics Kit on page 22 for more Plastics Kit spare part information.
639483-001	Rubber Kit (includes 7 base enclosure rubber feet and 4 base enclosure screw covers)
639484-001	Speaker Kit (includes left and right speakers and cable)
641735-001	Webcam/microphone module

Spare part number	Description
646760-001	Intel Celeron B810 1.60-GHz processor (1-MB L2 cache, 800-MHz FSB) (includes replacement thermal material)
647671-001	13.3-in, HD, AG, LED, display panel
647672-001	DVD-ROM drive (includes bezel and bracket)
647675-001	Microphone module
647676-001	Screw Kit
651038-001	RTC battery
651649-001	Solid-state Module Hardware Kit (includes solid-state module bracket and screws)
655561-001	System board with HM65 chipset and graphics subsystem with UMA memory (includes replacement thermal material)
655562-001	Display bezel
656837-001	2.0-GB solid-state module (2.5-in, 7.0-mm, SATA; does not include solid-state module bracket or screws)
658547-001	Top cover (includes TouchPad button and bracket)

4 Removal and replacement procedures

Preliminary replacement requirements


Tools required

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


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

Service considerations


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

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

Plastic parts

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

Cables and connectors

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

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

Drive handling

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

Before removing or inserting a hard drive, shut down the computer.

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

- Cover the workstation with approved static-shielding material.
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.

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

Equipment guidelines

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

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm $\pm 10\%$ resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap.
- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use foot straps on both feet with a minimum of one megohm resistance between the operator and ground. To be effective, the conductive 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 plastics	Bags	1,500 V
Carbon-loaded plastic	Floor mats	7,500 V
Metallized laminate	Floor mats	5,000 V

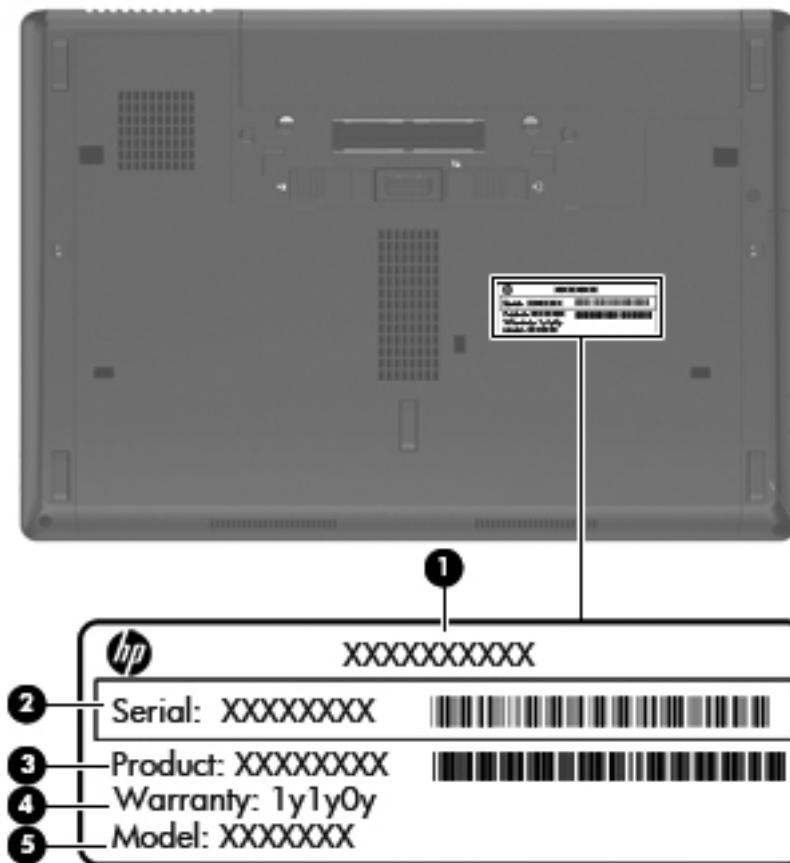
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 75 screws that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Service tag

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

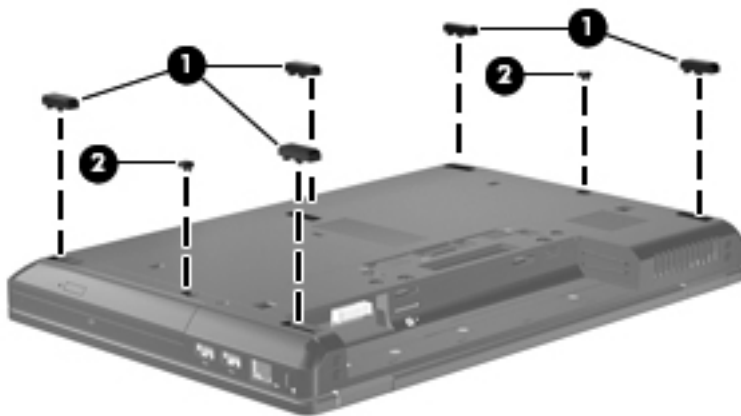


Item	Description	Function
(1)	Product name	This is the product name affixed to the front of the computer.

Item	Description	Function
(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)	Warranty period	This number describes the duration of the warranty period for the computer.
(5)	Model description	This is the alphanumeric identifier used to locate documents, drivers, and support for the computer.

Computer feet

The computer feet are adhesive-backed rubber pads. There are 7 rubber feet, in two different sizes, large **(1)** and small **(2)**, that attach to the base enclosure in the locations illustrated below. The computer feet are available in the Rubber Kit, spare part number 639483-001.



Battery

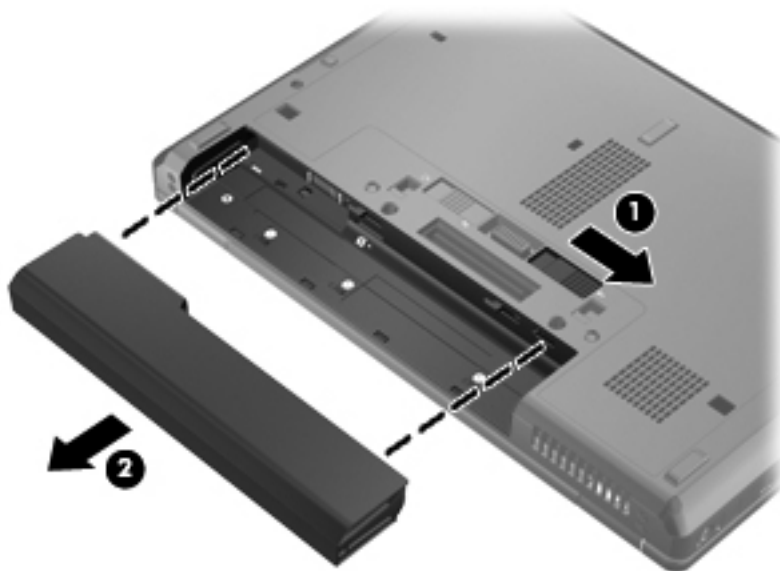
Description	Spare part number
9-cell, 100-Whr, 3.00-Ah Li-ion battery	634087-001
9-cell, 100-Whr, 3.00-Ah Li-ion battery	631243-001
6-cell, 62-Whr, 2.80-Ah Li-ion battery	628668-001
6-cell, 55-Whr, 2.55-Ah Li-ion battery	628666-001

Before disassembling the computer, follow these steps:

1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.


Remove the battery:

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



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

Solid-state module

 **NOTE:** The solid-state module spare part kit does not include the solid-state module bracket or screws. The solid-state module bracket and screws are included in the Solid-state Module Hardware Kit, spare part number 651649-001.


Description	Spare part number
2.0-GB solid-state module (2.5-in, 7.0-mm, SATA)	656837-001

Before removing the solid-state module, follow these steps:

1. Shut down the computer.
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 33](#)).

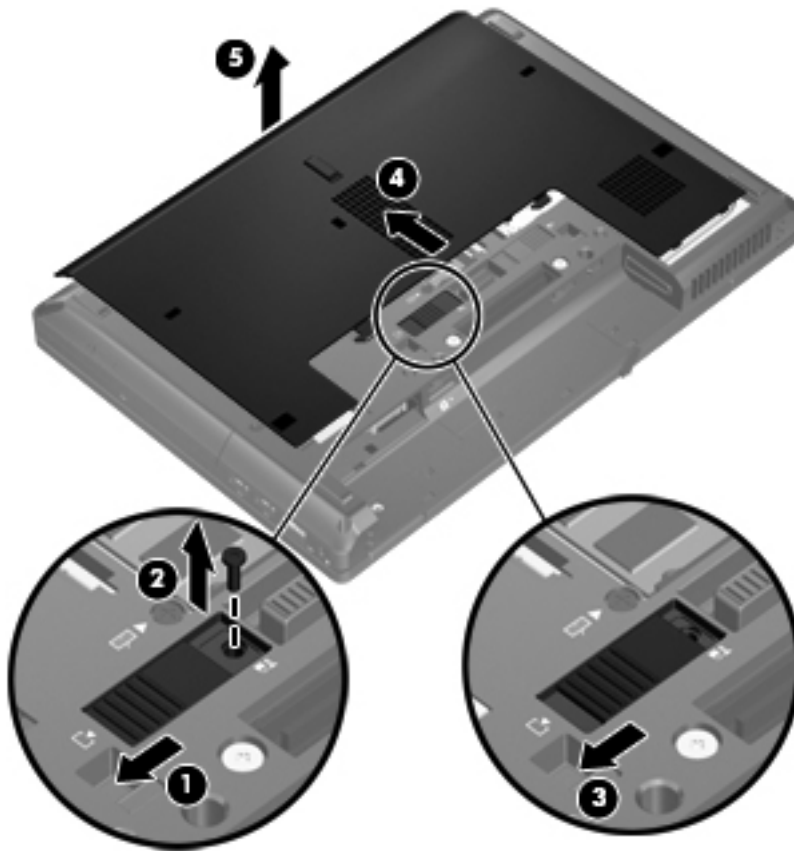
Remove the solid-state module:

1. Slide the service cover release latch **(1)** to the left.
2. If the optional security screw **(2)** is being used, remove the screw, and then slide the release latch again **(3)** to release the service cover.

 **NOTE:** If you want to use the optional screw, it is stored inside the service cover.

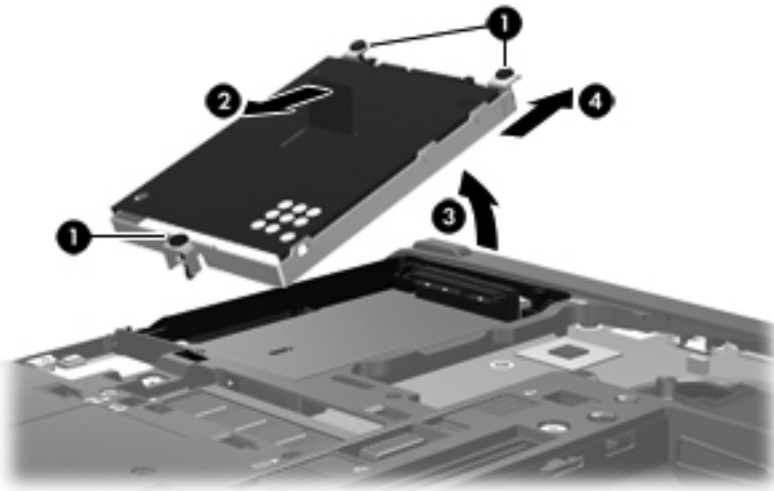
3. Slide the service cover forward **(4)** until it disengages from the computer.

4. Remove the service cover **(5)**. The service cover is available in the Plastics Kit, spare part number 639482-001.

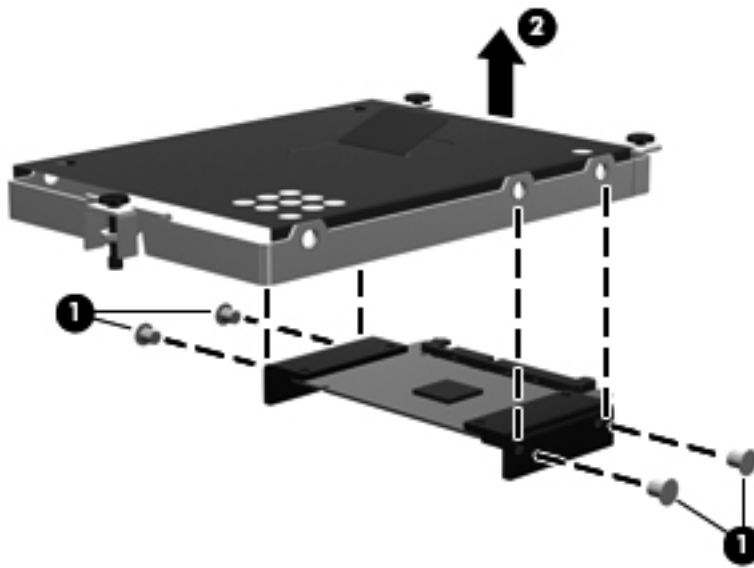


5. Loosen the three Phillips PM2.5×9.0 screws **(1)** that secure the solid-state module to the computer.
6. Use the plastic tab on the solid-state module **(2)** to slide the drive to the left to disconnect it from the system board.
7. Use the plastic tab to lift the right side of the solid-state module **(3)** until it is clear of the base enclosure.

8. Remove the solid-state module **(4)** by sliding it up and away from the computer at an angle.



9. If it is necessary to replace the solid-state module screws **(1)** and bracket **(2)**, remove and replace the components.



Reverse this procedure to reassemble and install the solid-state module.

Primary memory module

Description	Spare part number
8 GB	634091-001
4 GB	621569-001
2 GB	581096-001

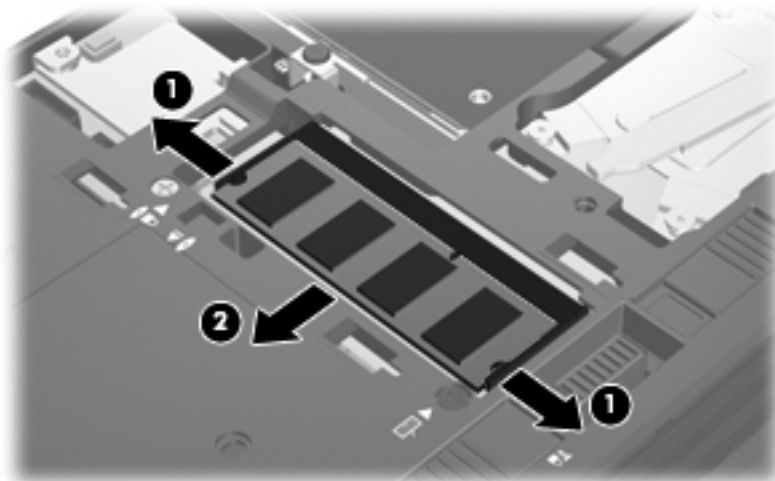
Before removing the primary memory module, follow these steps:

1. Shut down the computer.
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 33](#)).
5. Remove the service cover (see [Solid-state module on page 34](#)).

Remove the primary memory module:

1. Pull away the retention clips **(1)** on each side of the memory module. (The memory module tilts up.)
2. Grasp the edge of the memory module, and then gently pull the memory module **(2)** out of the memory module slot.


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



To protect a memory module after removal, place it in an electrostatic-safe container.

Reverse this procedure to install the primary memory module.

Optical drive

 **NOTE:** The optical drive spare part kit includes a bezel and bracket.

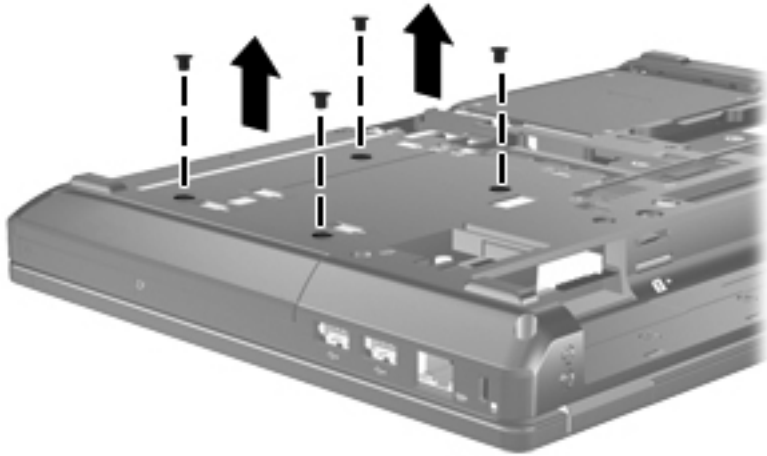
Description	Spare part number
DVD-ROM drive	647672-001

Before removing the optical drive, follow these steps:

1. Shut down the computer.
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 33](#)).
5. Remove the service cover (see [Solid-state module on page 34](#)).

Remove the optical drive:

1. Remove the four screws that secure the optical drive to the computer.

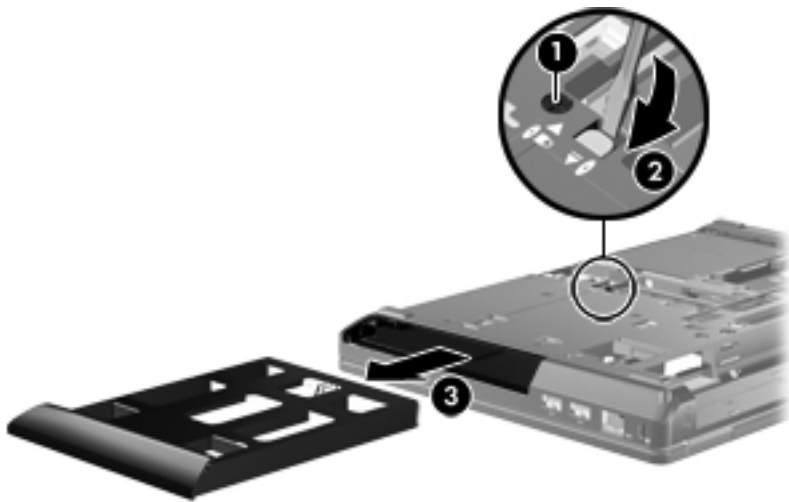


2. Loosen the optical drive captive screw **(1)**.
3. Using a flat-bladed screwdriver, gently push the tab **(2)** to release the optical drive.

4. Remove the optical drive **(3)** from the optical drive bay.



5. If the optical drive space saver is installed, loosen the optical drive captive screw **(1)**.
6. Using a flat-bladed screwdriver, gently push the tab **(2)** to release the optical drive space saver.
7. Remove the optical drive space saver **(3)** from the optical drive bay.



8. If it is necessary to replace the optical drive bracket, position the optical drive with the rear panel toward you.
9. Remove the two Phillips PM2.0x3.0 screws **(1)** that secure the bracket to the optical drive.


10. Remove the optical drive bracket **(2)**.



Reverse this procedure to reassemble and install the optical drive.

Fan

Description	Spare part number
Fan	639474-001

 **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.

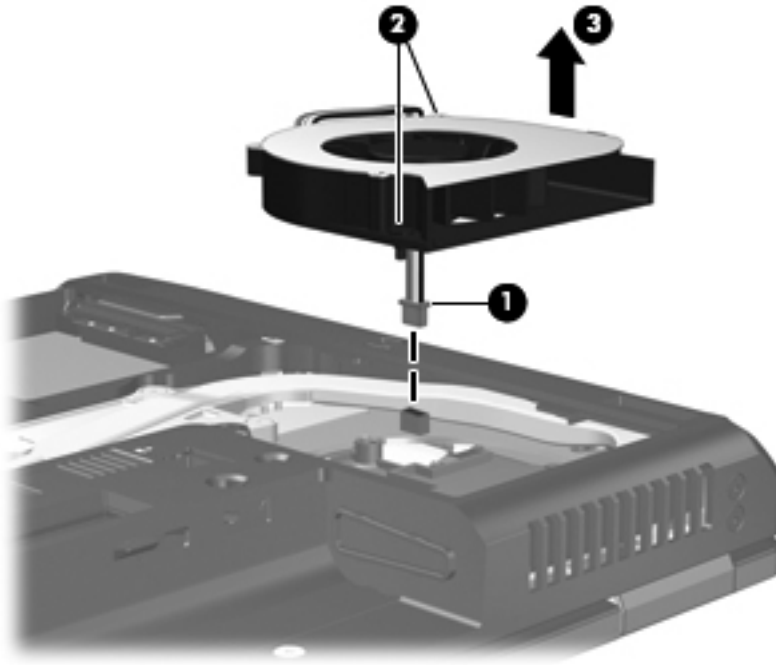
Before removing the fan, follow these steps:

1. Shut down the computer.
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 33](#)).
5. Remove the service cover (see [Solid-state module on page 34](#)).

Remove the fan:

1. Disconnect the fan cable **(1)** from the system board.
2. Loosen the two Phillips PM2.5×7.0 captive screws **(2)** that secure the fan to the system board.

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



Reverse this procedure to install the fan.

Heat sink


Description	Spare part number
Heat sink (includes replacement thermal material)	639475-001

Before removing the heat sink, follow these steps:

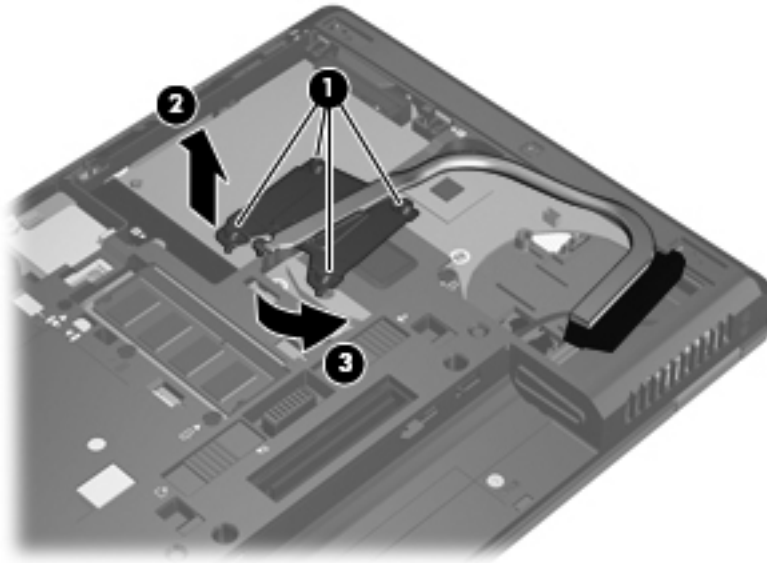
1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).
5. Remove the service cover (see [Solid-state module on page 34](#)).
6. Remove the fan (see [Fan on page 40](#)).

Remove the heat sink:

1. Loosen the four captive Phillips PM2.5×10.0 screws **(1)** that secure the heat sink to the system board.

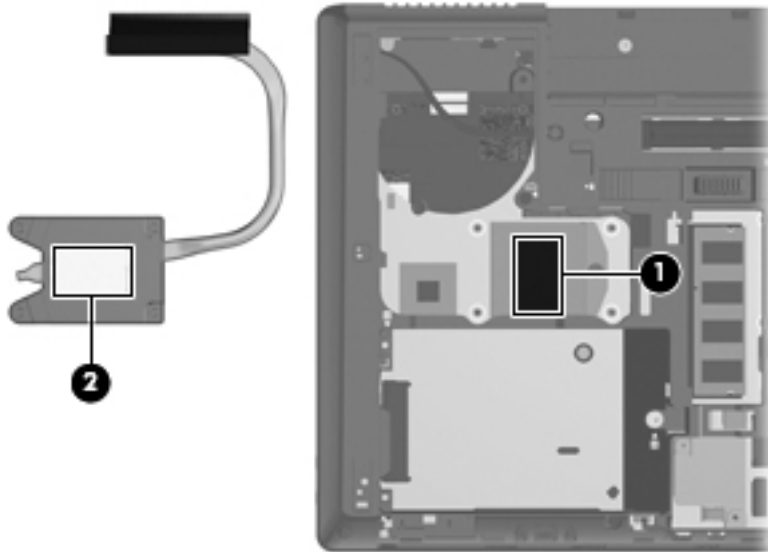
 **NOTE:** Due to the adhesive quality of the thermal material located between the heat sink and system board components, it may be necessary to move the heat sink from side to side to detach it.

2. Lift the left side **(2)** of the heat sink until it disengages from the system board.
3. Rotate the heat sink **(3)** counterclockwise until it is clear of the rear right corner of the base enclosure.



4. Remove the heat sink.

The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink, processor, and system board spare part kits. Thermal paste is used on the processor **(1)** and the heat sink section **(2)** that services it.



Reverse this procedure to reassemble and install the heat sink.

Processor

Description	Spare part number
Intel Celeron B810 1.60-GHz processor (1-MB L2 cache, 800-MHz FSB, includes replacement thermal material)	646760-001


Before removing the processor, follow these steps:

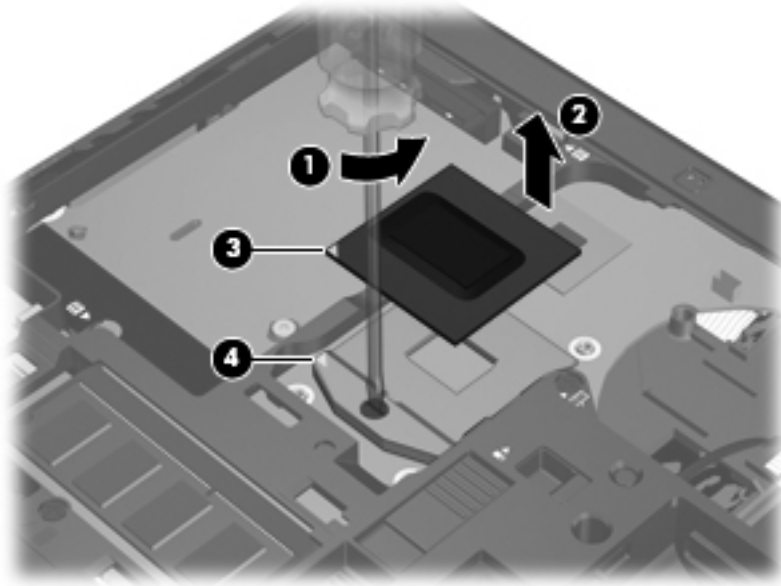
1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)), and then remove the following components:
 - Service cover (see [Solid-state module on page 34](#))
 - Fan (see [Fan on page 40](#))
 - Heat sink (see [Heat sink on page 41](#))

Remove the processor:

1. Use a flat-bladed screw driver to turn the processor locking screw one-half turn counterclockwise **(1)**, until you hear a click.

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

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



Reverse this procedure to install the processor.

WLAN module

Description	Spare part number
Broadcom 4313 802.11b/g/n 1x1 WiFi Adapter	593836-001
Broadcom 43224AGN 802.11a/b/g/n 2x2 WiFi Adapter for use in Antigua and Barbuda, Barbados, Belize, Canada, the Cayman Islands, Guam, Puerto Rico, Trinidad and Tobago, the U.S. Virgin Islands, and the United States	582564-001
Broadcom 43224AGN 802.11a/b/g/n 2x2 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, the People's Republic of China, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	582564-002


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 device functionality, and then contact technical support.

Before removing the WLAN module, follow these steps:


1. Shut down the computer.
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 33](#)).
5. Remove the service cover (see [Solid-state module on page 34](#)).

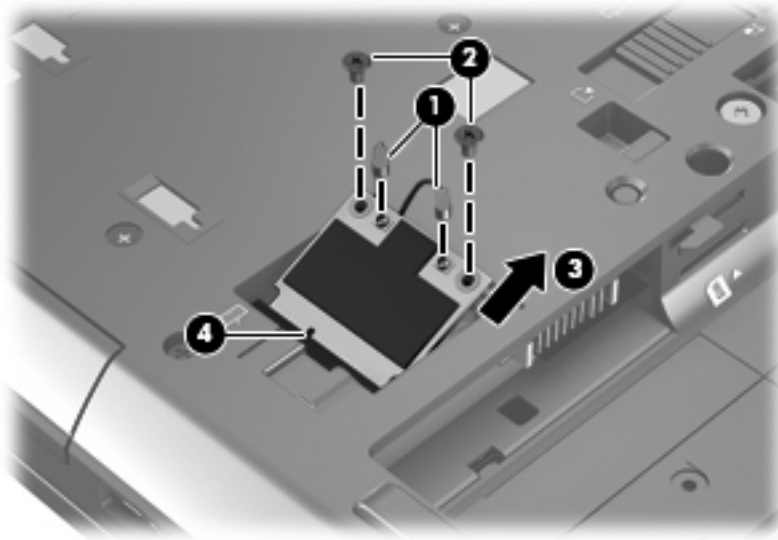
Remove the WLAN module:


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

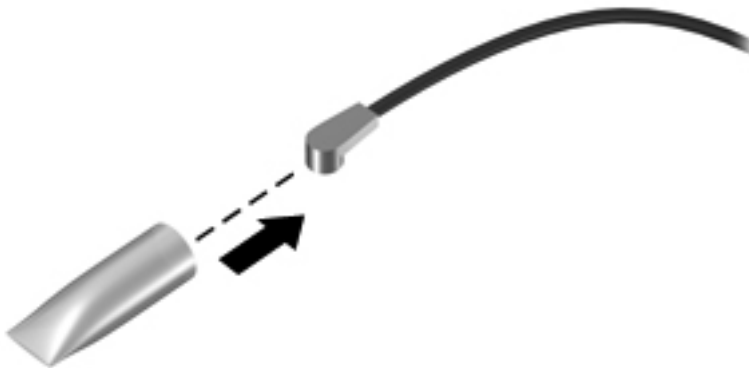
 **NOTE:** The #1 WLAN antenna cable is connected to the WLAN module #1/Main terminal. The #2 WLAN antenna cable is connected to the WLAN module #2/Aux terminal.

2. Remove the two Phillips PM2.5×4.0 screws **(2)** that secure the WLAN module to the system board. (The WLAN module tilts up.)
3. Remove the WLAN module by pulling the module away from the slot at an angle **(3)**.

 **NOTE:** The WLAN module is designed with a notch **(4)** to prevent incorrect installation into the WLAN module socket.




 **NOTE:** If the WLAN antennas are not connected to the terminals on a WLAN module, the protective sleeves must be installed on the antenna connectors, as shown in the following illustration.



Reverse this procedure to install the WLAN module.

Keyboard

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

Description	Spare part number	Description	Spare part number
For use in Belgium	639477-A41	For use in Italy	639477-061
For use in Bulgaria	639477-261	For use in Norway	639477-091
For use in the Denmark	639477-081	For use in Portugal	639477-131
For use in Denmark, Finland, and Norway	639477-DH1	For use in Russia	639477-251
For use in the Netherlands	639477-B31	For use in Saudi Arabia	639477-171
For use in Europe	639477-DW1	For use in Slovenia	639477-A81
For use in French Canada	639477-121	For use in Spain	639477-071
For use in France	639477-051	For use in Sweden and Finland	639477-B71
For use in Germany	639477-041	For use in Switzerland	639477-BG1
For use in Greece	639477-DJ1	For use in Turkey	639477-141
For use in Hungary	639477-211	For use in the United Kingdom	639477-031
For use in Iceland	639477-DD1	For use in the United States	639477-001
For use in Israel	639477-BB1		

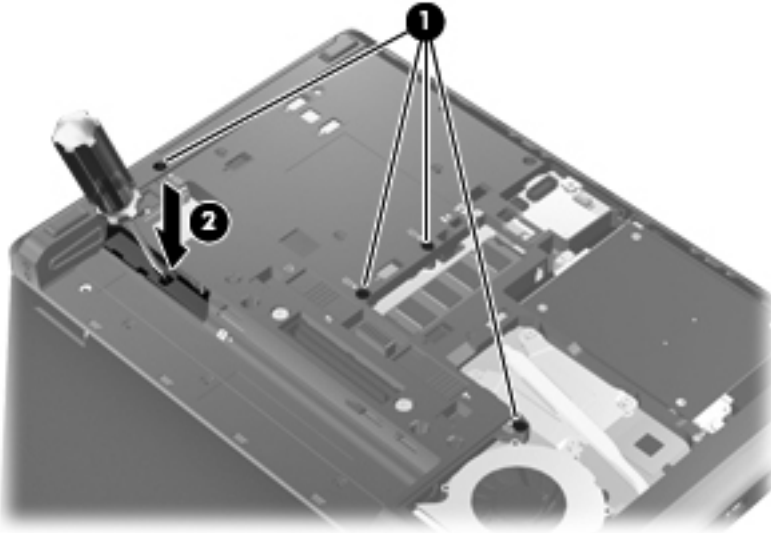
Before removing the keyboard, follow these steps:

1. Shut down the computer.
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 33](#)).
5. Remove the service cover (see [Solid-state module on page 34](#)).

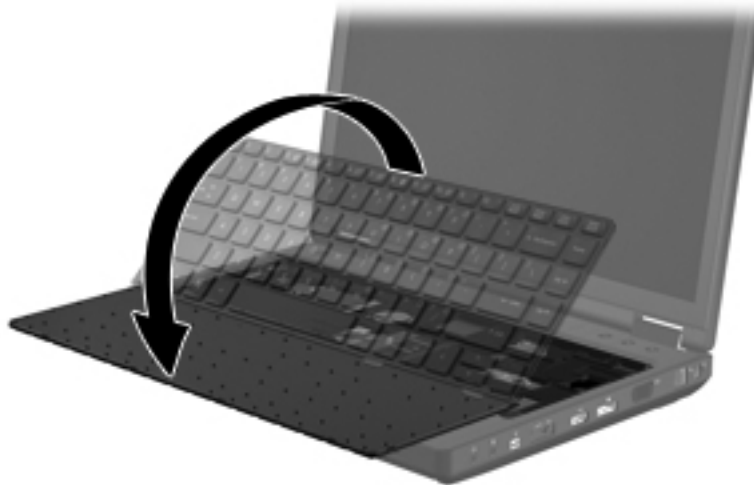
Remove the keyboard:

1. Partially open the computer.
2. Rest and secure the computer on the top edge of the display.
3. Loosen the four captive screws **(1)** that secure the keyboard to the computer.

4. Insert a screwdriver or similar thin tool into the keyboard release area **(2)**, and then press on the back of the keyboard until the keyboard disengages from the computer.

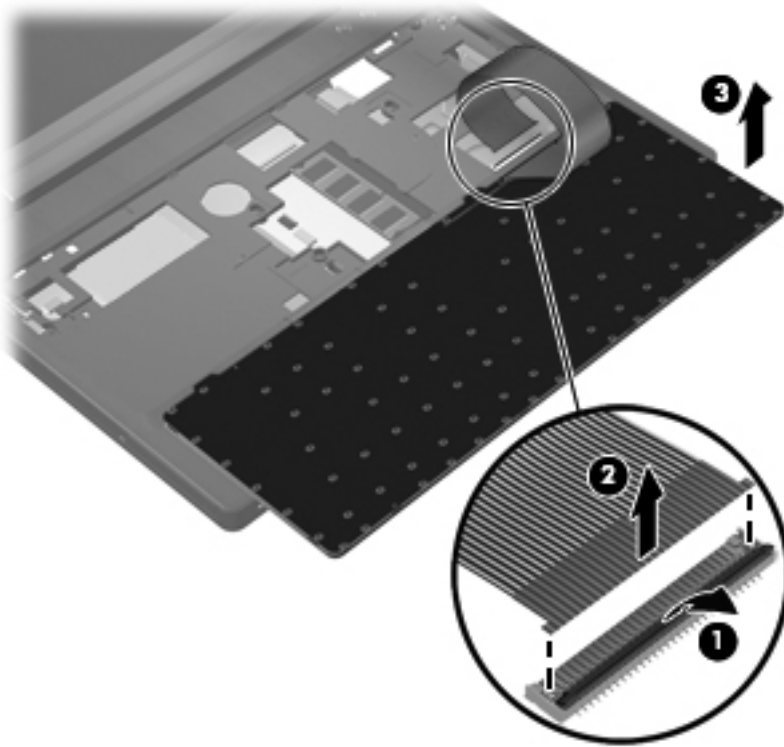


5. Turn the computer right-side up with the front toward you.
6. Lift the rear edge of the keyboard, and then swing the keyboard up and forward until it rests upside down on the palm rest.



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 **(3)**.



9. Remove the keyboard.

Reverse this procedure to install the keyboard.

RTC battery

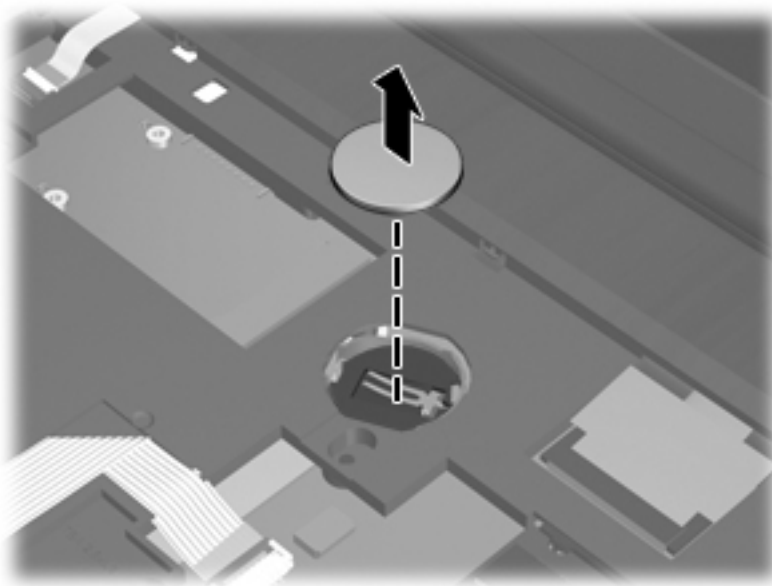
Description	Spare part number
RTC battery	651038-001

Before removing the RTC battery, follow these steps:

1. Shut down the computer.
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 33](#)).
5. Remove the service cover (see [Solid-state module on page 34](#)).
6. Remove the keyboard (see [Keyboard on page 47](#)).

Remove the RTC battery:

- ▲ Use a thin, non-conductive tool to remove the RTC battery from the socket on the system board.



Reverse this procedure to install the RTC battery. When installing the RTC battery, make sure the “+” sign faces up.

Expansion memory module

Description	Spare part number
8 GB	634091-001
4 GB	621569-001
2 GB	581096-001

Before removing the expansion memory module, follow these steps:

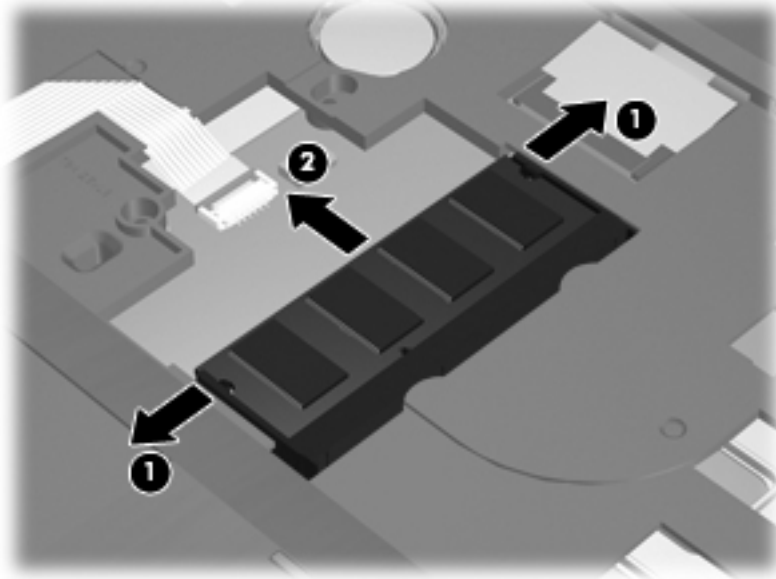
1. Shut down the computer.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see [Battery on page 33](#)).
5. Remove the service cover (see [Solid-state module on page 34](#)).
6. Remove the keyboard (see [Keyboard on page 47](#)).

Remove the expansion memory module:

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

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

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



To protect a memory module after removal, place it in an electrostatic-safe container.

Reverse this procedure to install the expansion memory module.

Base enclosure

Description	Spare part number
Base enclosure (includes battery release latch and 4 rubber feet)	639468-001
Rubber Kit (includes 7 base enclosure rubber feet and 4 base enclosure screw covers)	639483-001

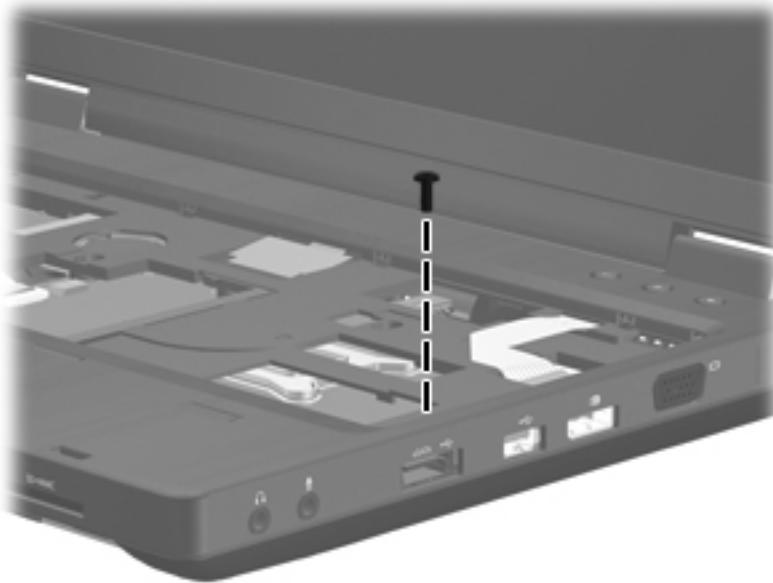
Before removing the base enclosure, follow these steps:

1. Shut down the computer.
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 33](#)), and then remove the following components:
 - a. Service cover (see [Solid-state module on page 34](#))
 - b. Solid-state module (see [Solid-state module on page 34](#))

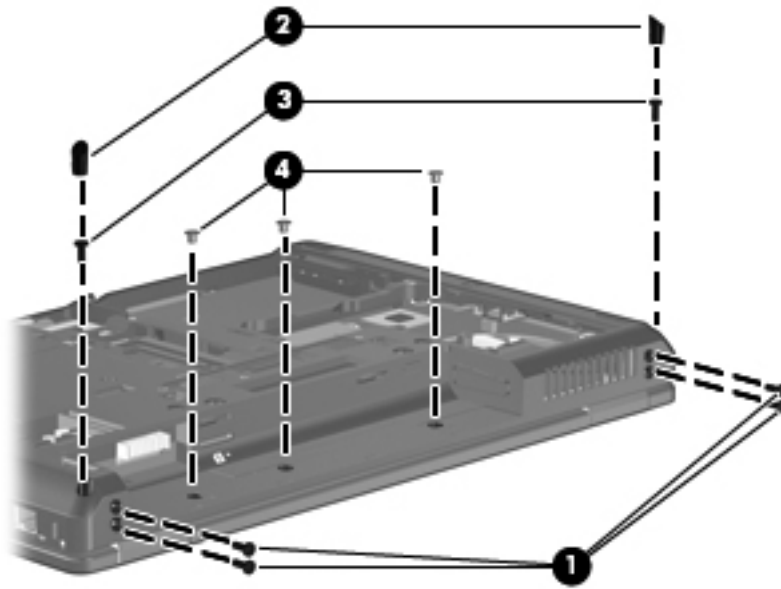
- c. Optical drive (see [Optical drive on page 38](#))
- d. Keyboard (see [Keyboard on page 47](#))

Remove the base enclosure:

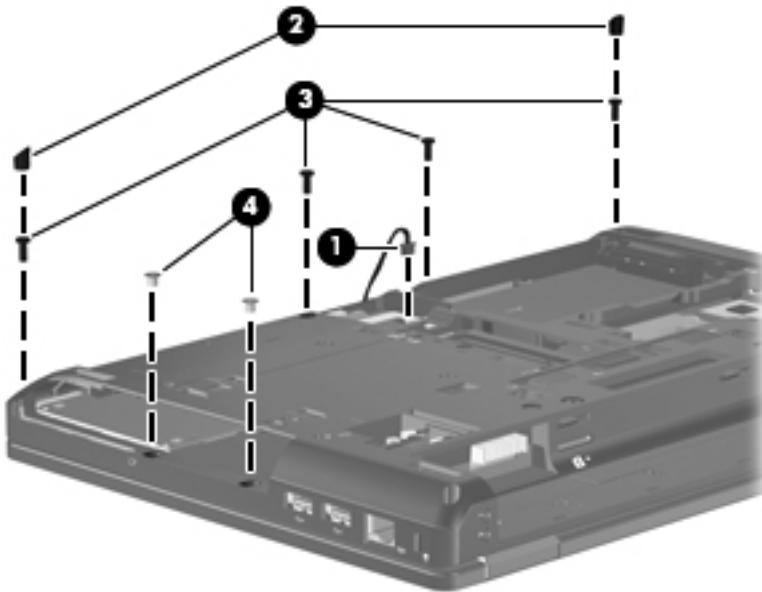
1. Remove the Torx8 TM2.5×9.0 screw that secures the base enclosure to the computer.



2. Close the computer.
3. Turn the computer upside down, with the rear panel toward you.
4. Remove the following:
 - Four Torx8 TM2.5×9.0 screws **(1)** from the computer rear panel
 - Two rubber screw covers **(2)** (available in the Rubber Kit, spare part number 639483-001)
 - Two Torx8 TM2.5×9.0 screws **(3)** from the surface of the base enclosure
 - Three Phillips PM2.0×3.0 **(4)** screws from the battery bay

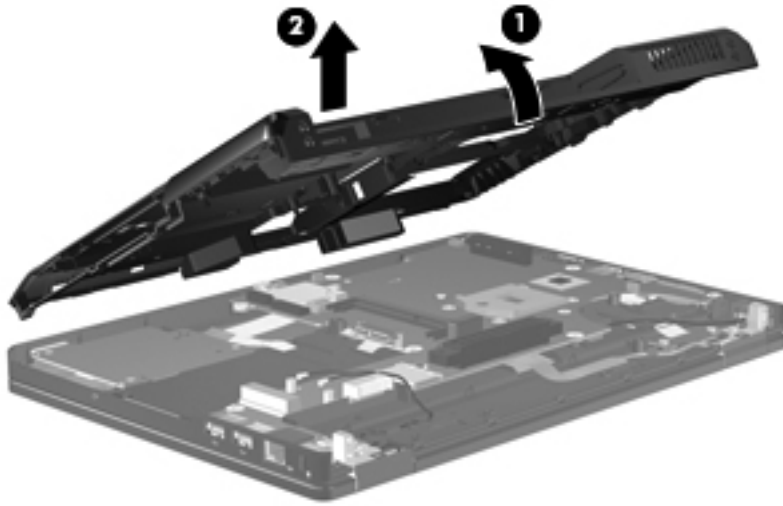


5. Disconnect the speaker cable **(1)** from the system board
6. Remove the following:
 - Two rubber screw covers **(2)** (available in the Rubber Kit, spare part number 639483-001)
 - Four Torx8 TM2.5×9.0 screws **(3)** from the surface of the base enclosure
 - Two Torx8 TM2.5×5.0 **(4)** screws from the optical drive bay



7. Lift the front edge **(1)** of the base enclosure until it disengages from the computer.

8. Remove the base enclosure **(2)**.



Reverse this procedure to install the base enclosure.

Speakers

Description	Spare part number
Speaker Kit (includes left and right speakers and cable)	639484-001

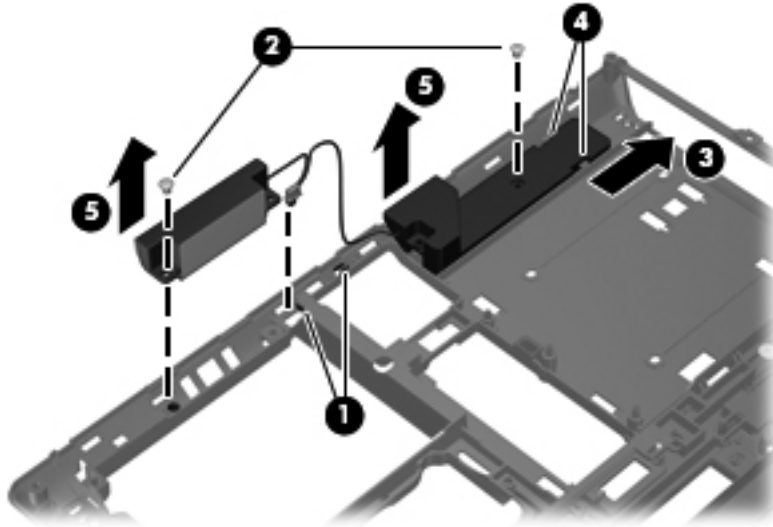
Before removing the speakers, follow these steps:

1. Shut down the computer.
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 33](#)), and then remove the following components:
 - a. Service cover (see [Solid-state module on page 34](#))
 - b. Solid-state module (see [Solid-state module on page 34](#))
 - c. Optical drive (see [Optical drive on page 38](#))
 - d. Keyboard (see [Keyboard on page 47](#))
 - e. Base enclosure (see [Base enclosure on page 52](#))

Remove the speakers:

1. Turn the base enclosure right side up, with the rear panel toward you.
2. Release the speaker cable from the clips **(1)** built into the base enclosure.

3. Remove the two Phillips PM2.5×4.0 screws (2) that secure the speakers to the computer.
4. Slide the right speaker (3) to the right to disengage it from the tabs (4) built into the base enclosure.
5. Remove the speakers (5).



Reverse this procedure to install the speakers.

ExpressCard assembly

Description	Spare part number
ExpressCard assembly	639479-001

NOTE: The ExpressCard assembly spare part kit does not include the ExpressCard assembly cable. The ExpressCard assembly cable is included in the Cable Kit, spare part number 639473-001.

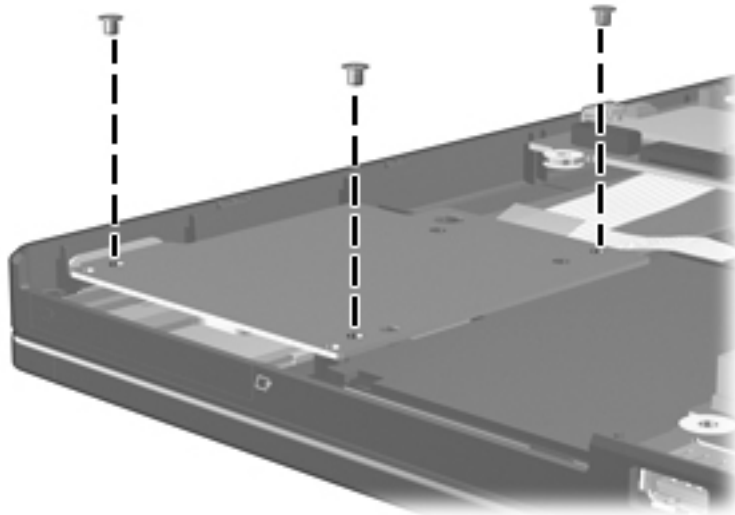
Before removing the ExpressCard assembly, follow these steps:

1. Shut down the computer.
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 33](#)).
 - a. Service cover (see [Solid-state module on page 34](#))
 - b. Solid-state module (see [Solid-state module on page 34](#))
 - c. Optical drive (see [Optical drive on page 38](#))

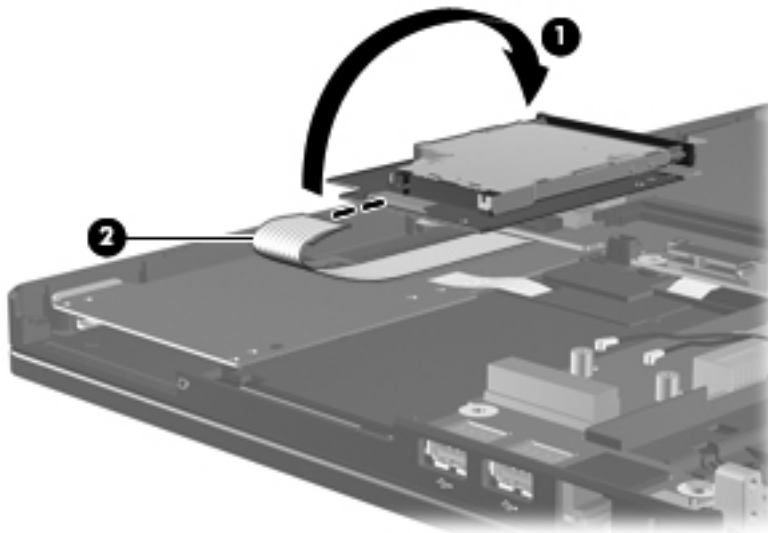
- d. Keyboard (see [Keyboard on page 47](#))
- e. Base enclosure (see [Base enclosure on page 52](#))

Remove the ExpressCard assembly:

1. Position the computer with the right side toward you.
2. Remove the three Phillips PM2.5×4.0 screws that secure the ExpressCard assembly to the system board.



3. Lift the left side of the ExpressCard assembly, and then swing it up and to the right **(1)** until it rests upside down on the system board.
4. Release the ZIF connector to which the ExpressCard assembly cable is attached, and then disconnect the cable **(2)** from the connector.



5. Remove the ExpressCard assembly.

Reverse this procedure to install the ExpressCard assembly.

Display assembly

Description	Spare part number
The display assembly is spared at the subcomponent level only	

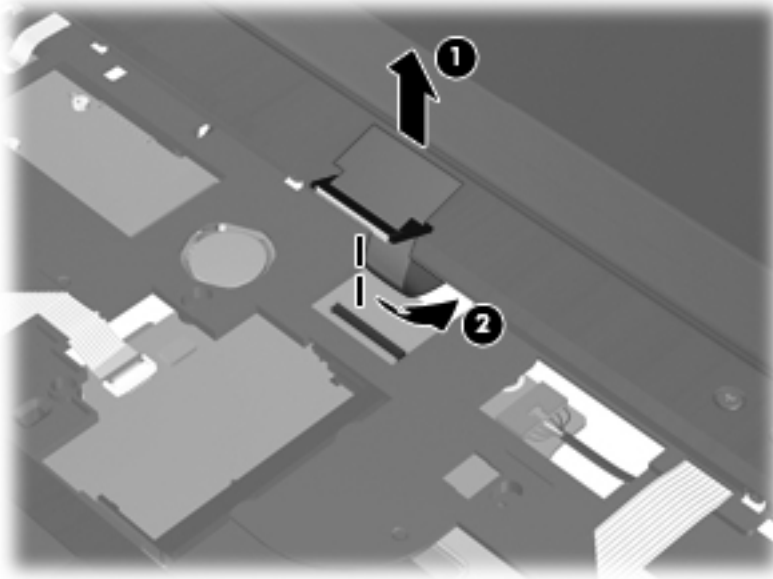
Before removing the display assembly, follow these steps:

1. Shut down the computer.
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 33](#)), and then remove the following components:
 - a. Service cover (see [Solid-state module on page 34](#))
 - b. Solid-state module (see [Solid-state module on page 34](#))
 - c. Optical drive (see [Optical drive on page 38](#))
 - d. Keyboard (see [Keyboard on page 47](#))
 - e. Base enclosure (see [Base enclosure on page 52](#))

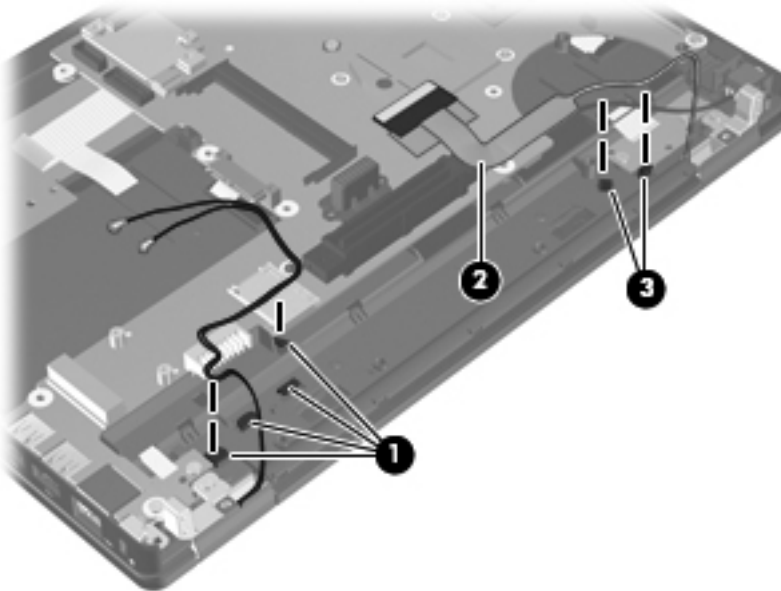
Remove the display assembly:

1. Turn the computer right side up, with the front toward you.
2. Open the computer.
3. Disconnect the display panel cable **(1)** from the system board.

4. Release the display panel cable through the opening **(2)** in the top cover.

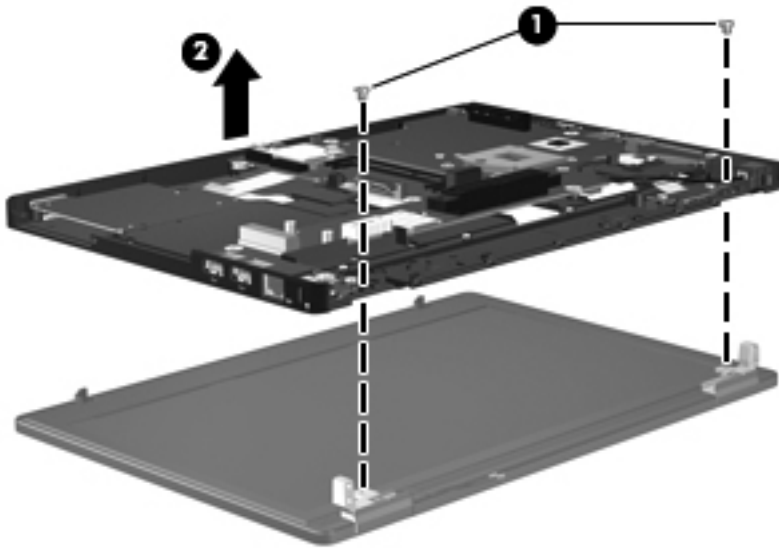


5. Close the computer.
6. Turn the computer upside down, with the rear panel toward you.
7. Release the wireless antenna cables from the clips **(1)** built into the base enclosure.
8. Release the display panel cable **(2)** from the top cover. (The display panel cable is attached to the top cover with double-sided tape.)
9. Release the display panel cable from the clips **(3)** built into the top cover.

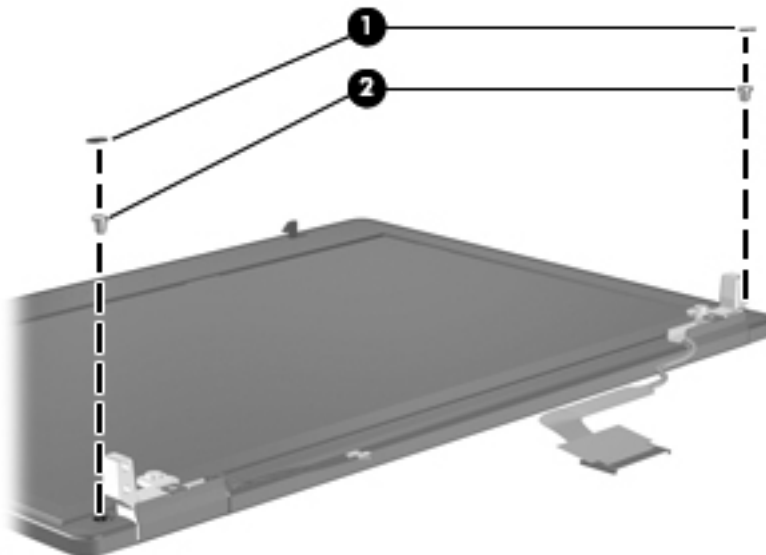


⚠ CAUTION: Support the display assembly when removing the following screws. Failure to support the display assembly can result in damage to the display assembly and other computer components.

10. Remove the two Phillips PM2.5×3.3 screws **(1)** that secure the display assembly to the computer.
11. Remove the display assembly **(2)**.

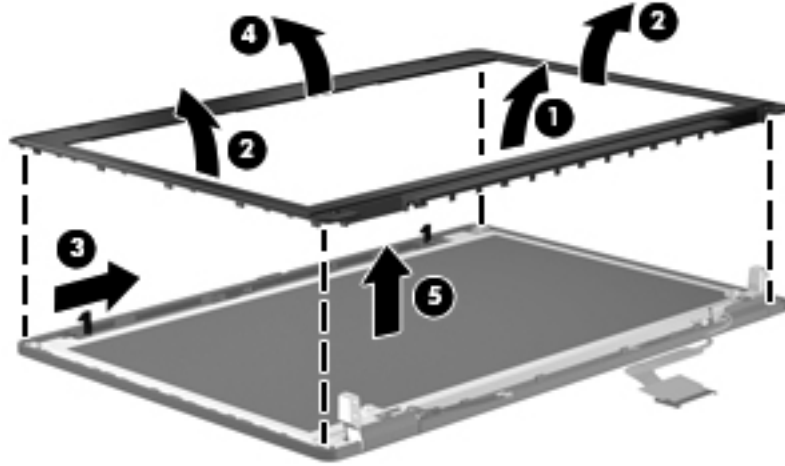


12. If it is necessary to replace the display bezel or any of the display assembly subcomponents:
 - a. Remove the two screw covers **(1)** and the two Phillips PM2.0×5.0 screws **(2)** that secure the display bezel to the display assembly. The screw covers are available in the Rubber Kit, spare part number 639483-001.



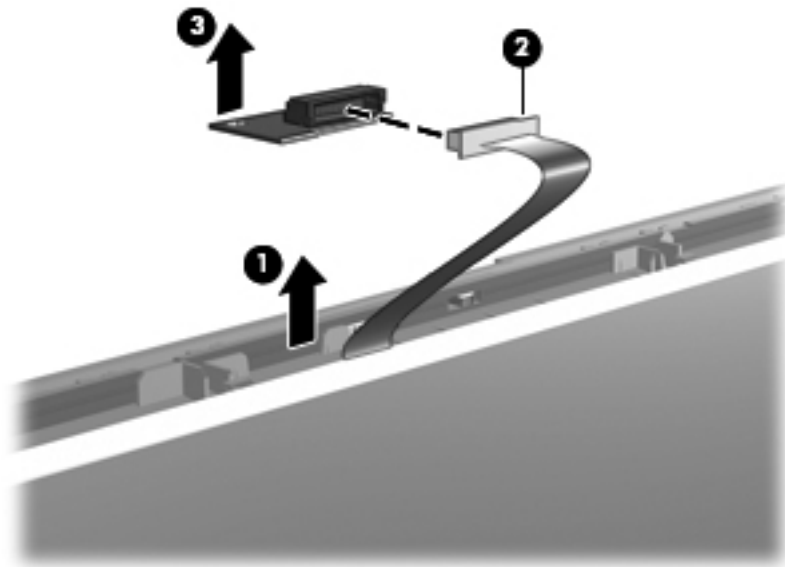
- b. Flex the inside edges of the bottom edge **(1)** and the left and right sides **(2)** of the display bezel until the bezel disengages from the display enclosure.
 - c. Slide and hold the display release hook **(3)** to the right.
 - d. Flex the inside edge of the top edge **(4)** of the display bezel until the bezel disengages from the display enclosure.

- e. Remove the display bezel **(5)**. The display bezel is available using spare part number 655562-001.



13. If it is necessary to replace the microphone module:

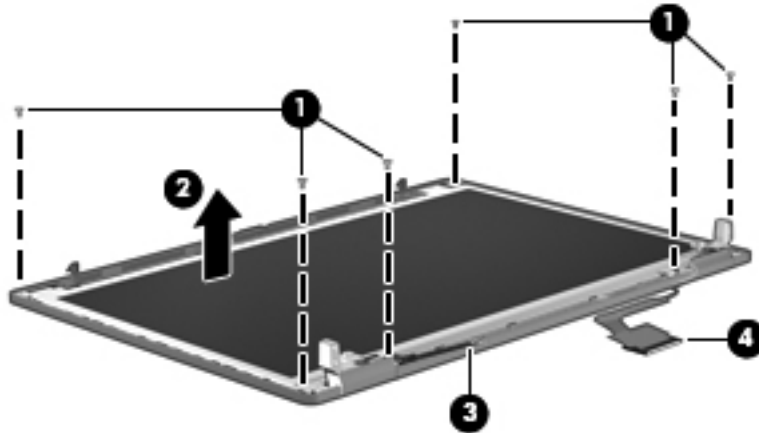
- a. Detach the microphone module **(1)** as far as the microphone module cable allows. (The module is attached to the display enclosure with double-sided tape.)
- b. Disconnect the microphone module cable **(2)** from the module.
- c. Remove the microphone module **(3)**. The microphone module is available using spare part number 647675-001.



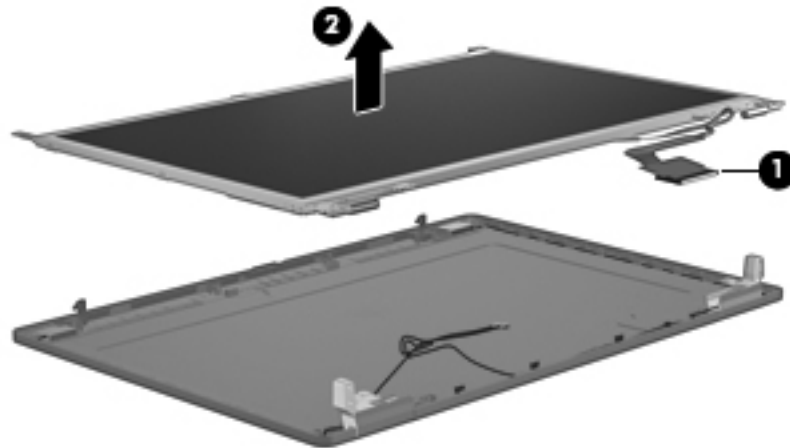
14. If it is necessary to replace the display panel:

- a. Remove the six Phillips PM2.0×4.0 screws **(1)** that secure the display panel to the display enclosure.
- b. Lift the display panel **(2)** to release it from the display enclosure.

- c. Release the wireless antenna cables **(3)** from the left hinge and the display panel cable **(4)** from the right hinge.



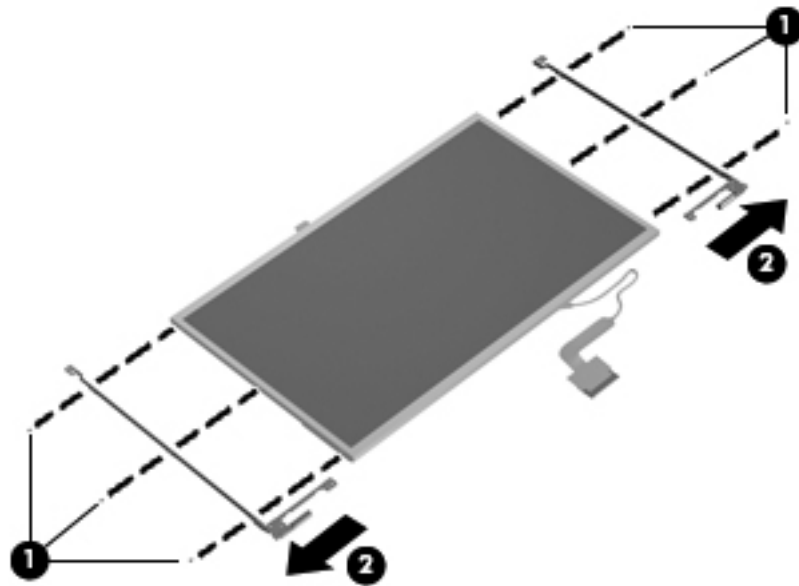
- d. Detach the display panel cable **(1)** from the display enclosure. (The display panel cable is attached to the display enclosure with double-sided tape.)
- e. Remove the display panel **(2)**.



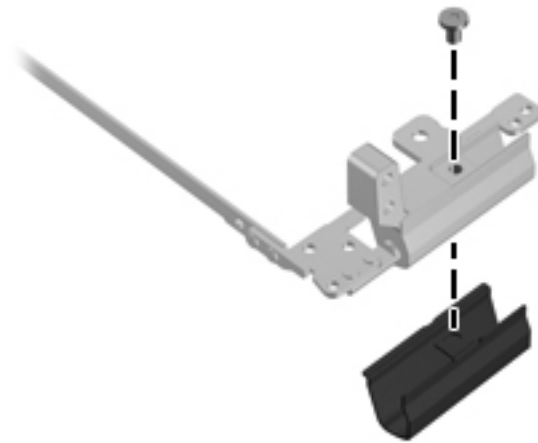
15. If it is necessary to replace the hinges:

- a. Remove the six Phillips PM2.0×3.0 **(1)** screws that secure the hinges to the display panel.

- b.** Remove the hinges **(2)**. The hinges are available using spare part number 639476-001.



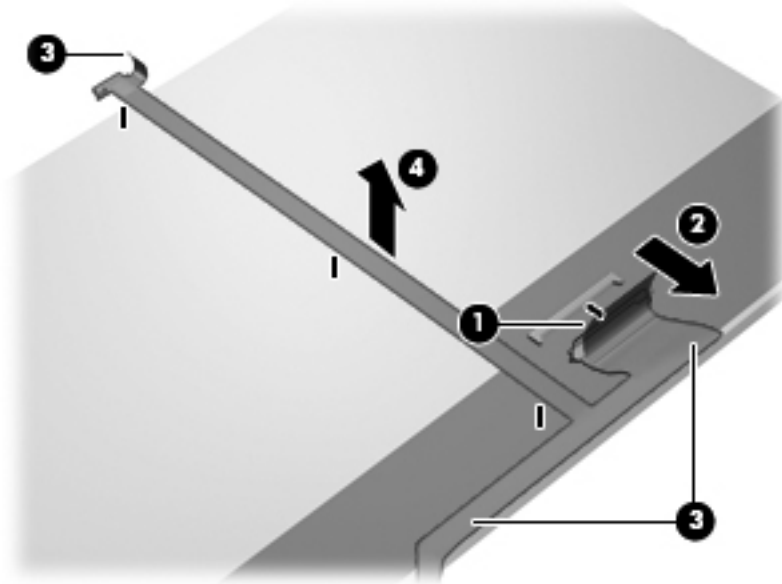
- c.** If it is necessary to replace the hinge covers, remove the Phillips PM2.5×4.3 screw that secures the hinge cover to the hinge, and then remove the hinge cover. The hinge covers are available in the Plastics Kit, spare part number 639482-001.



- 16.** If it is necessary to replace the display panel cable:

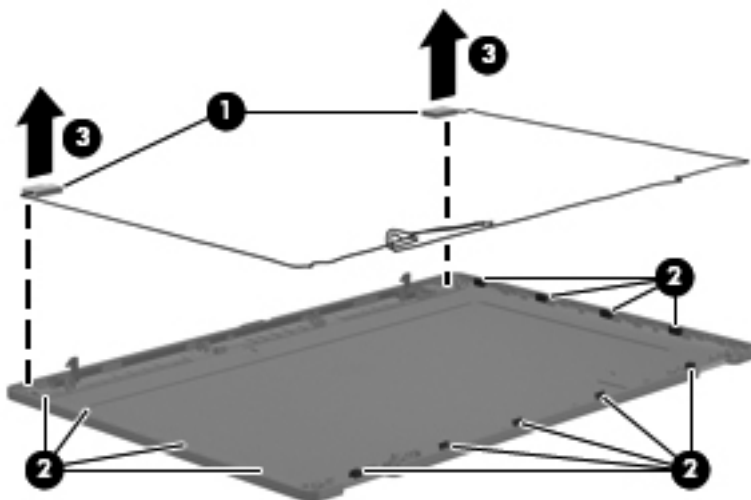
- a.** Release the adhesive support strip **(1)** that secures the display panel cable to the display panel.
- b.** Disconnect the display panel cable **(2)** from the display panel.
- c.** Release the display panel cable **(3)** from the display panel. (The display panel cable is attached to the display panel with double-sided tape.)

- d. Remove the display panel cable (4). The display panel cable includes the microphone module cable and is available in the Display Cable Kit, spare part number 639472-001.



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

- a. Release the wireless antenna transceivers (1) from the display enclosure. (The wireless antenna transceivers are attached to the display enclosure with double-sided tape.)
- b. Release the wireless antenna cables from the clips (2) built into the display enclosure.
- c. Remove the wireless antenna cables and transceivers (3). The wireless antenna cables and transceivers are available in the Cable Kit, spare part number 639473-001.



Reverse this procedure to reassemble and install the display assembly.

System board

Description	Spare part number
System board with HM65 chipset and graphics subsystem with UMA memory (includes replacement thermal material)	655561-001

Before removing the system board, follow these steps:

1. Shut down the computer.
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 33](#)), and then remove the following components:
 - a. Service cover (see [Solid-state module on page 34](#))
 - b. Solid-state module (see [Solid-state module on page 34](#))
 - c. Optical drive (see [Optical drive on page 38](#))
 - d. Fan (see [Fan on page 40](#))
 - e. Heat sink (see [Heat sink on page 41](#))
 - f. WLAN module (see [WLAN module on page 45](#))
 - g. Keyboard (see [Keyboard on page 47](#))
 - h. Base enclosure (see [Base enclosure on page 52](#))
 - i. ExpressCard assembly (see [ExpressCard assembly on page 56](#))
 - j. Display assembly (see [Display assembly on page 58](#))

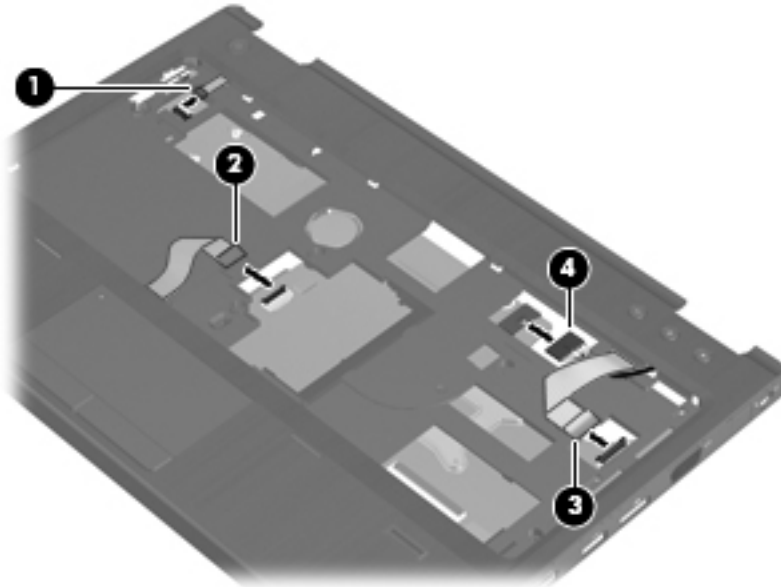
When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- Memory modules (see [Primary memory module on page 37](#) and [Expansion memory module on page 51](#))
- Processor (see [Processor on page 43](#))
- RTC battery (see [RTC battery on page 50](#))

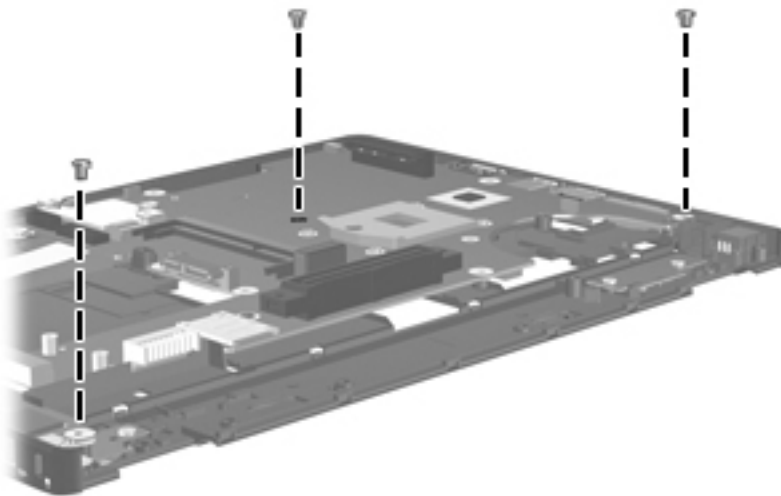
Remove the system board:

1. Turn the top cover right side up, with the front toward you.

2. Disconnect the following the cables from the system board:
 - Power button board cable (included in the power button board spare part kit, spare part number 639481-001)
 - TouchPad cable (included in the Cable Kit, spare part number 639473-001)
 - Function board cable (included in the function board spare part kit, spare part number 639480-001)
 - Power connector cable (included in the Cable Kit, spare part number 639473-001)

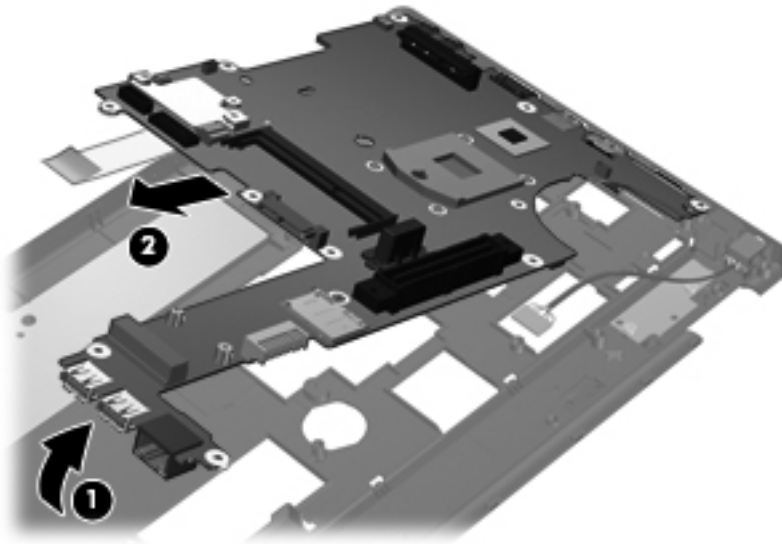


3. Turn the top cover upside down, with the rear panel toward you.
4. Remove the three Phillips PM2.5×4.2 screws that secure the system board to the top cover.



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

6. Remove the system board **(2)** by sliding it up and to the left at an angle.



Reverse this procedure to install the system board.

Power button board

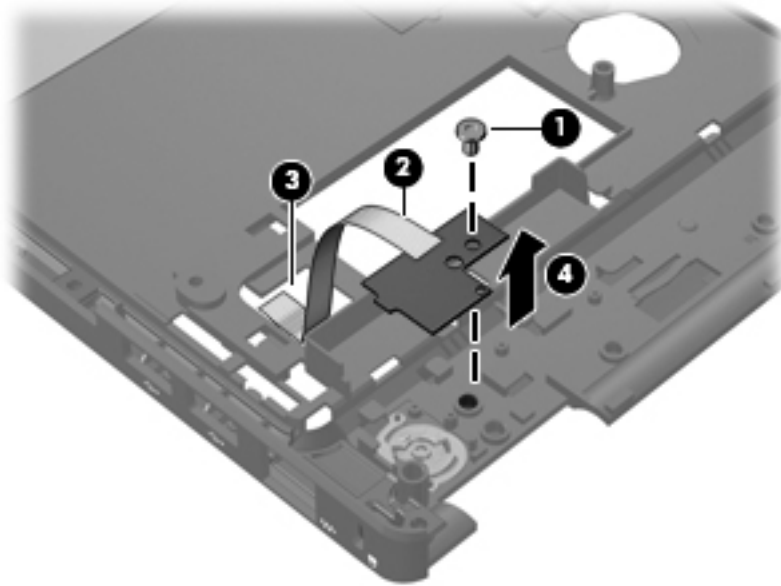
Description	Spare part number
Power button board (includes cable)	639481-001

Before removing the power button board, follow these steps:

1. Shut down the computer.
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 33](#)), and then remove the following components:
 - a. Service cover (see [Solid-state module on page 34](#))
 - b. Solid-state module (see [Solid-state module on page 34](#))
 - c. Optical drive (see [Optical drive on page 38](#))
 - d. Keyboard (see [Keyboard on page 47](#))
 - e. Base enclosure (see [Base enclosure on page 52](#))
 - f. System board (see [System board on page 65](#))

Remove the power button board:

1. Turn the top cover upside down, with the rear panel toward you.
2. Remove the Phillips PM2.0×3.0 screw **(1)** that secures the power button board to the top cover.
3. Release the power button board cable **(2)** from the opening in the top cover **(3)**.
4. Remove the power button board and cable **(4)**.



Reverse this procedure to install the power button board and cable.

Function board

Description	Spare part number
Function board (includes cable)	639480-001

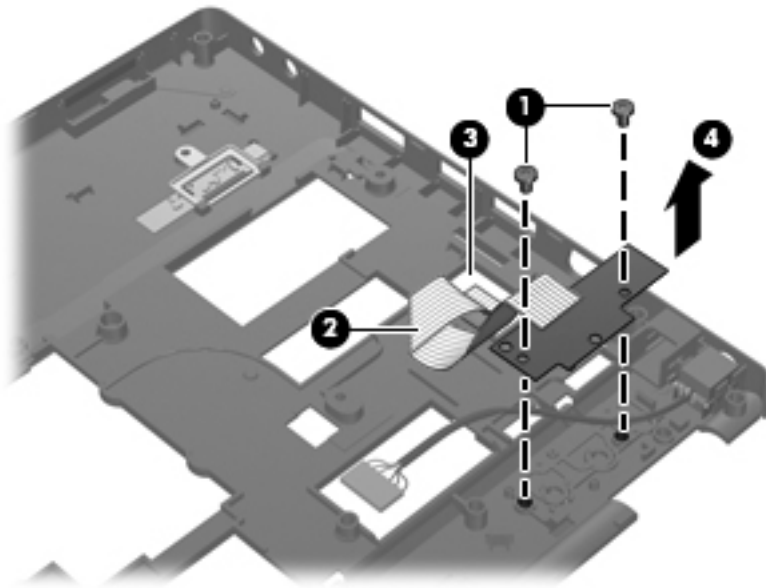
Before removing the function board, follow these steps:

1. Shut down the computer.
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 33](#)), and then remove the following components:
 - a. Service cover (see [Solid-state module on page 34](#))
 - b. Solid-state module (see [Solid-state module on page 34](#))
 - c. Optical drive (see [Optical drive on page 38](#))

- d. Keyboard (see [Keyboard on page 47](#))
- e. Base enclosure (see [Base enclosure on page 52](#))
- f. System board (see [System board on page 65](#))


Remove the function board:

1. Turn the top cover upside down, with the rear panel toward you.
2. Remove the two Phillips PM2.0×3.0 screws **(1)** that secure the function board to the top cover.
3. Release the function board cable **(2)** from the opening in the top cover **(3)**.
4. Remove the function board and cable **(4)**.



Reverse this procedure to install the function board and cable.

Power connector cable

 **NOTE:** The power connector cable is included in the Cable Kit, spare part number 639473-001.

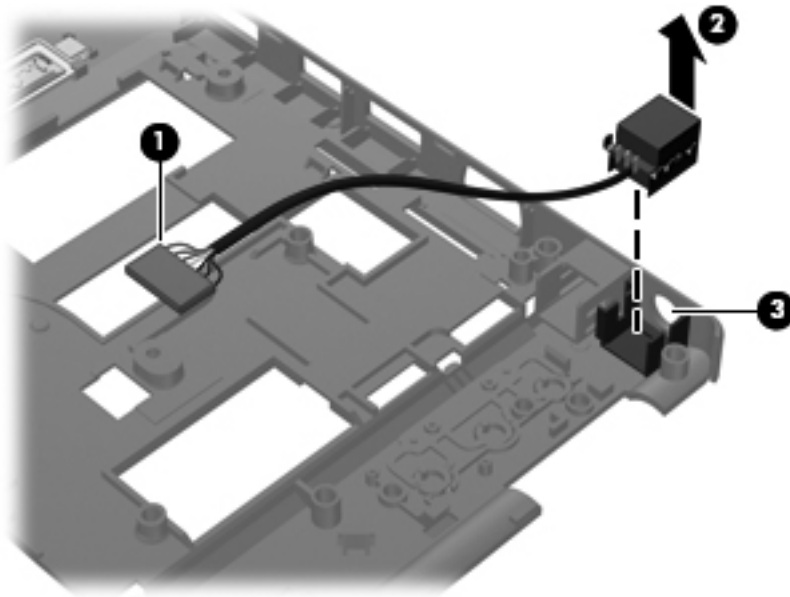
Before removing the power connector cable, follow these steps:

1. Shut down the computer.
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 33](#)), and then remove the following components:
 - a. Service cover (see [Solid-state module on page 34](#))
 - b. Solid-state module (see [Solid-state module on page 34](#))

- c. Optical drive (see [Optical drive on page 38](#))
- d. Keyboard (see [Keyboard on page 47](#))
- e. Base enclosure (see [Base enclosure on page 52](#))
- f. System board (see [System board on page 65](#))

Remove the power connector cable:

1. Turn the top cover upside down, with the rear panel toward you.
2. Release the power connector cable **(1)** from the opening in the top cover.
3. Remove the power connector **(2)** from the clip **(3)** built into the top cover.





Reverse this procedure to install the power connector cable.

5 Computer Setup

Starting Computer Setup

Computer Setup is a preinstalled, ROM-based utility that can be used even when the operating system is not working or will not load.

 **NOTE:** Some of the Computer Setup menu items listed in this guide may not be supported by your computer.

 **NOTE:** An external keyboard or mouse connected to a USB port can be used with Computer Setup only if USB legacy support is enabled.

To start Computer Setup, follow these steps:

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
2. Press **f10** to enter Computer Setup.

Using Computer Setup


Navigating and selecting in Computer Setup

The information and settings in Computer Setup are accessed from the File, Security, Diagnostics, and System Configuration menus.

To navigate and select in Computer Setup, follow these steps:

1. Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.

To select a menu or a menu item, use the function key and the keyboard arrow keys and then press **enter**.

 **NOTE:** You can use either a pointing device (TouchPad or USB mouse) or the keyboard to navigate and make selections in Computer Setup.

2. Press **f10** to enter Computer Setup.
3. Select the **File**, **Security**, or **System Configuration** menu.

To exit Computer Setup menus, choose one of the following methods:

- To exit Computer Setup menus without saving your changes, click the **Exit** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

– or –

Use the tab key and the arrow keys to select **File > Ignore changes and exit**, and then press [enter](#).

– or –

- To save your changes and exit Computer Setup menus, click the **Save** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

– or –

Use the tab key and the arrow keys to select **File > Save changes and exit**, and then press [enter](#).

Your changes go into effect when the computer restarts.

Restoring factory settings in Computer Setup



NOTE: Restoring defaults will not change the hard drive mode.

To return all settings in Computer Setup to the values that were set at the factory, follow these steps:

1. Turn on or restart the computer, and then press [esc](#) while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen.
2. Press [f10](#) to enter Computer Setup.
3. Use a pointing device or the arrow keys to select **File > Restore defaults**.
4. Follow the on-screen instructions.
5. To save your changes and exit, click the **Save** icon in the lower-left corner of the screen, and then follow the on-screen instructions.


Your changes go into effect when the computer restarts.



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

Computer Setup menus


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

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

File menu

Select	To do this
System information	<ul style="list-style-type: none">View identification information for the computer and the batteries in the system.View specification information for the processor, cache and memory size, system ROM, video revision, and keyboard controller version.
Set System Date and Time	Set or change the date and time on the computer.
Restore defaults	Replace the configuration settings in Computer Setup with the original factory settings. (Hard drive mode, password settings, and security settings are not changed when you restore the factory settings.)
Reset BIOS security to factory default	
Ignore changes and exit	Cancel any changes entered during the current session. Then exit and restart the computer.
Save changes and exit	Save any changes entered during the current session. Then exit and restart the computer. Your changes go into effect when the computer restarts.

Security menu

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

Select	To do this
Setup BIOS Administrator Password	Set up a BIOS administrator password.
System IDs	Enter a user-defined computer asset tracking number and ownership tag.

System Configuration menu



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

Select	To do this
Language	Change the Computer Setup language.
Boot Options	<ul style="list-style-type: none">• Set a Startup Menu delay (in seconds).• Set the Express Boot Popup delay in seconds.• Enable/disable CD-ROM boot (enabled by default).• Enable/disable PXE Internal NIC boot (disabled by default).• Set the boot order.
Device Configurations	<ul style="list-style-type: none">• Enable/disable USB legacy support (enabled by default). When enabled, USB legacy support allows the following:<ul style="list-style-type: none">◦ Use of a USB keyboard in Computer Setup even when a Windows operating system is not running.◦ Startup from bootable USB devices, including a hard drive, diskette drive, or optical drive connected by a USB port to the computer.• Enable/disable fan always on while connected to an AC outlet (enabled by default).• Enable/disable Data Execution Prevention (select models only; enabled by default). When enabled, the processor can disable some virus code execution, which helps to improve computer security.<p>NOTE: Availability of the options above varies by computer model.</p>• Enable/disable LAN Power Save (disabled by default)• Enable/disable Virtualization Technology (select models only; disabled by default).• Enable/disable Wake on USB (disabled by default).• Enable/disable Num Lk on at boot (disabled by default).

Select	To do this
Built-In Device Options	<ul style="list-style-type: none"> • Enable/disable the wireless button state (enabled by default). • Enable/disable the embedded WLAN device (enabled by default). • Enable/disable LAN/WLAN switching (disabled by default). • Enable/disable the Network Interface Controller (LAN) (enabled by default). • Set the wake on LAN state. Options include the following: <ul style="list-style-type: none"> ◦ Disabled ◦ Boot to Network (set by default) ◦ Follow Boot Order • Enable/disable the optical disc drive (enabled by default). • Enable/disable an audio device (enabled by default). • Enable/disable a modem device (enabled by default). • Enable/disable the microphone (enabled by default).
Port Options (all are enabled by default)	<p>NOTE: All port options are enabled by default.</p> <ul style="list-style-type: none"> • Enable/disable the flash media reader. • Enable/disable the USB port. <p>CAUTION: Disabling the USB port also disables MultiBay devices and ExpressCard devices on the advanced port replicator.</p> <ul style="list-style-type: none"> • Enable/disable the ExpressCard slot. • Enable/disable the eSATA port.

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Depth	22.0 cm	8.66 in
Width	32.2 cm	12.68 in
Height (front to back)	3.37 to 3.57 cm	1.33 to 1.41 in
Weight (without optical drive)	1.96 kg	4.31 lb
Input power		
Operating voltage and current	18.5 V dc @ 3.5 A - 65 W	
Temperature		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating	-15 m to 12,192 m	-50 ft to 40,000 ft
NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.		

13.3-in display specifications

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

7 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

The following requirements are applicable to all countries and regions:

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

Requirements for specific countries and regions

Country/region	Accredited agency	Applicable note number
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	METI	3
The Netherlands	KEMA	1
Norway	NEMKO	1
The People's Republic of China	COC	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.

8 Recycling

Battery

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

Display

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

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

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

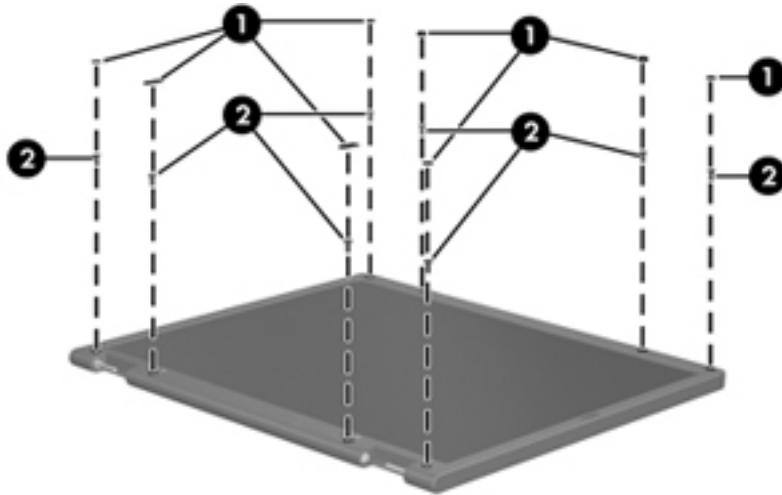
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.



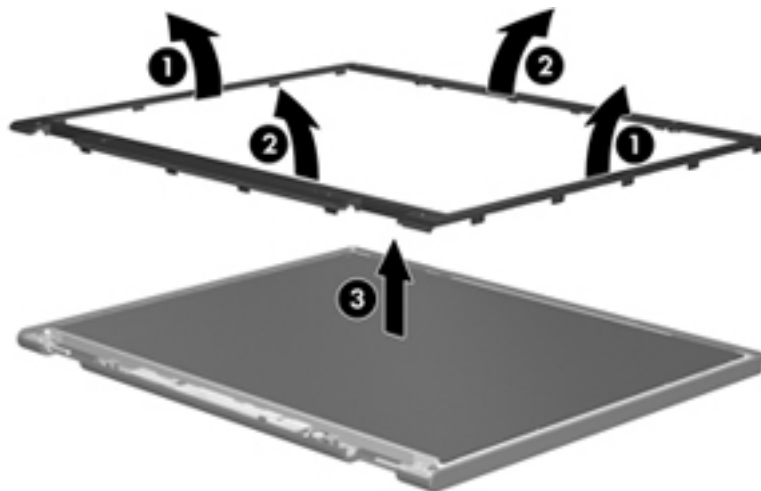
📄 NOTE: The procedures provided in this chapter are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps:

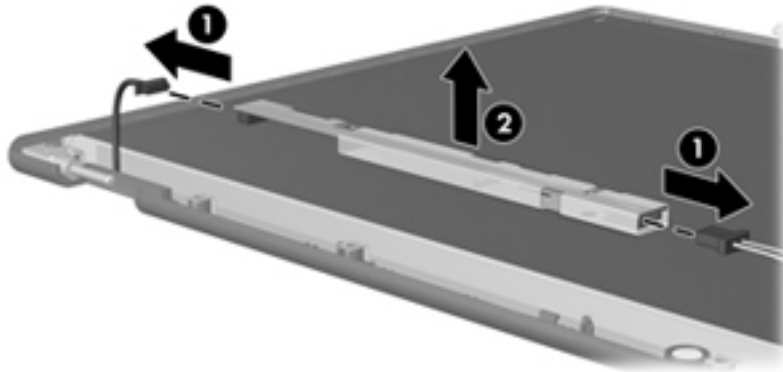
1. Remove all screw covers **(1)** and screws **(2)** that secure the display bezel to the display assembly.



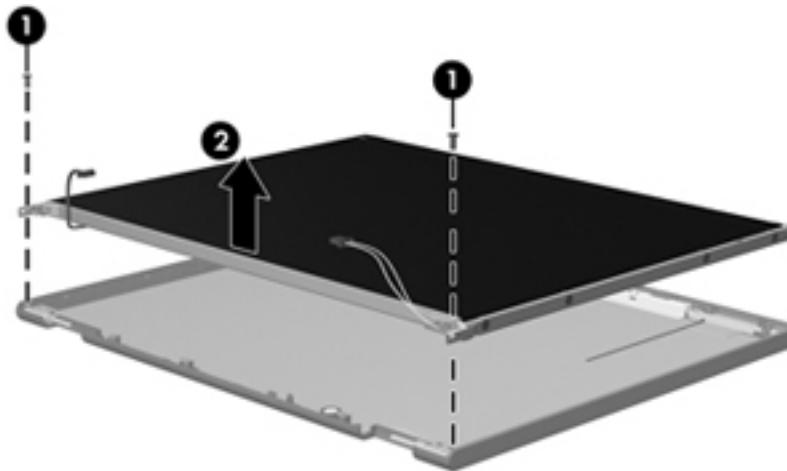
2. Lift up and out on the left and right inside edges **(1)** and the top and bottom inside edges **(2)** of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel **(3)**.



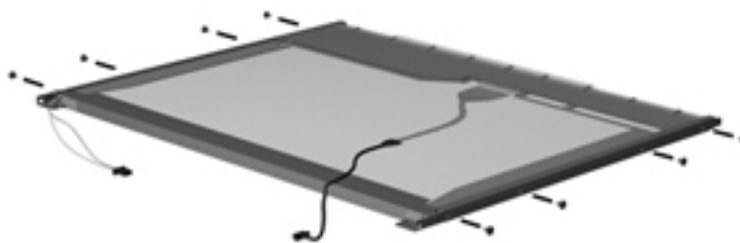
4. Disconnect all display panel cables **(1)** from the display inverter and remove the inverter **(2)**.



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

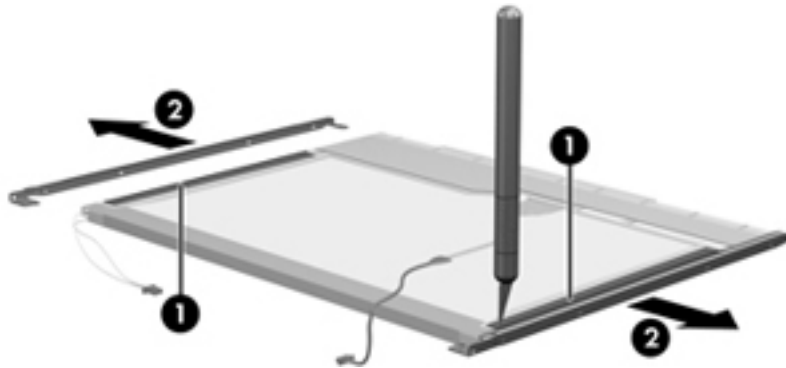


7. Turn the display panel assembly upside down.
8. Remove all screws that secure the display panel frame to the display panel.



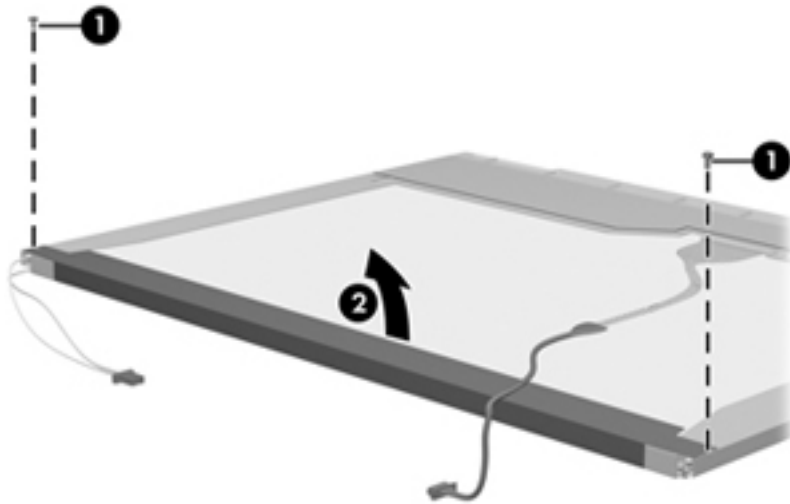
9. Use a sharp-edged tool to cut the tape **(1)** that secures the sides of the display panel to the display panel frame.

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



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

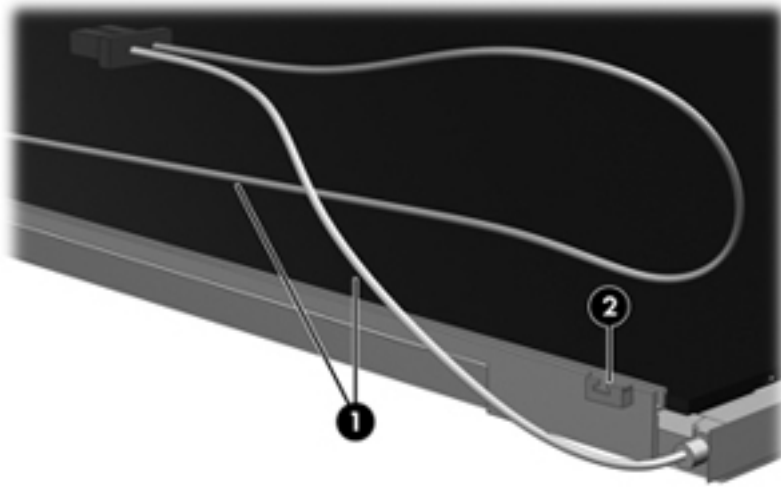
- 12.** Lift the top edge of the backlight cover **(2)** and swing it outward.



- 13.** Remove the backlight cover.

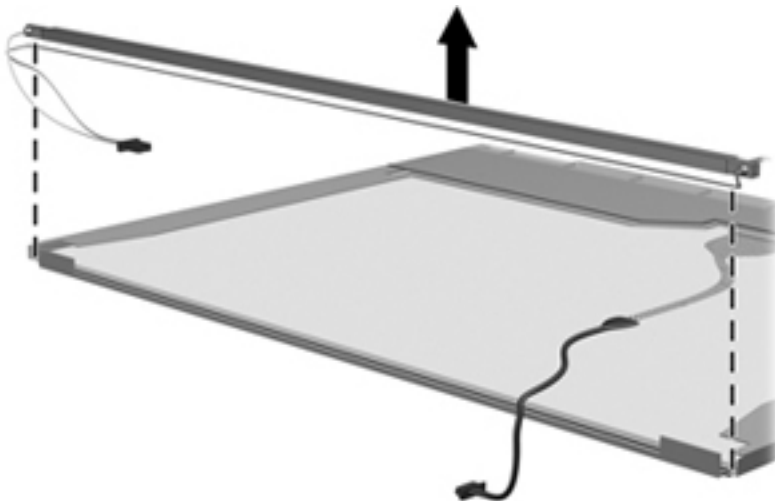
- 14.** Turn the display panel right-side up.

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



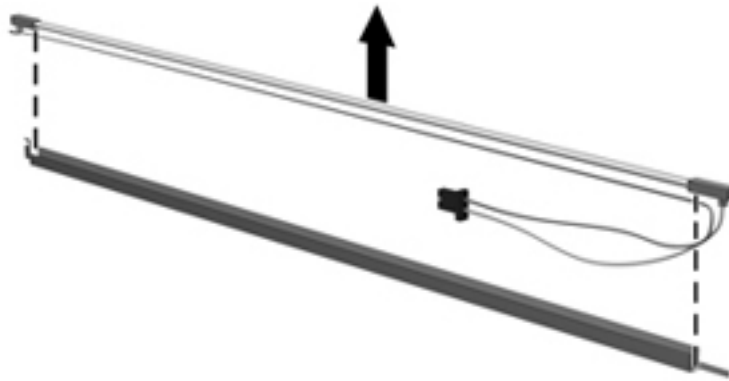
16. Turn the display panel upside down.

17. Remove the backlight frame from the display panel.



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

18. Remove the backlight from the backlight frame.

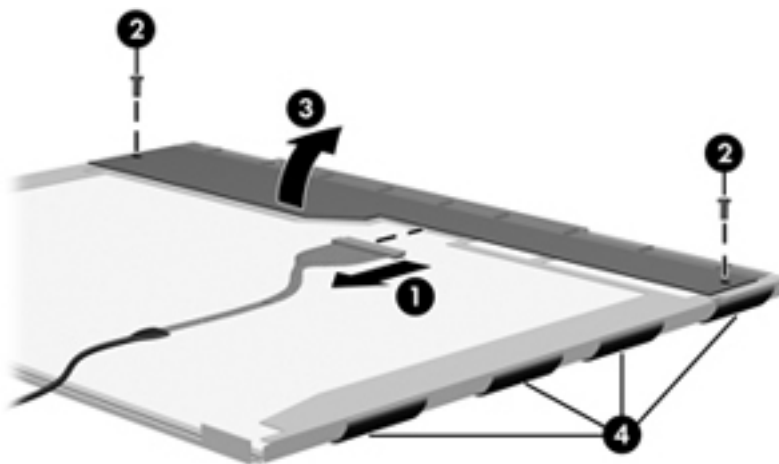


19. Disconnect the display cable **(1)** from the LCD panel.

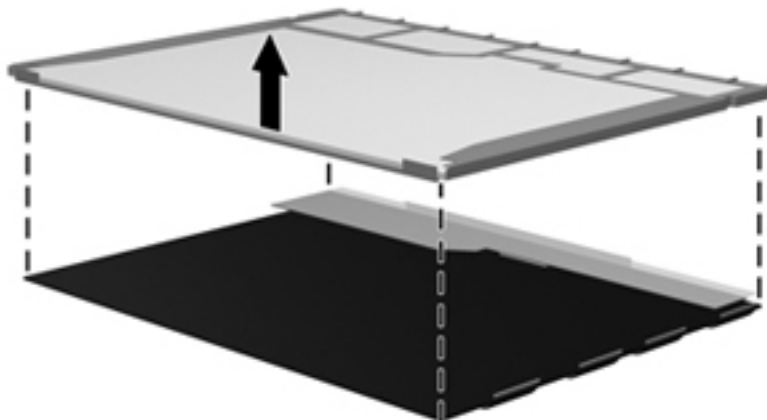
20. Remove the screws **(2)** that secure the LCD panel to the display rear panel.

21. Release the LCD panel **(3)** from the display rear panel.

22. Release the tape **(4)** that secures the LCD panel to the display rear panel.



23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.

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