

HP Compaq 6910p Notebook PC

Maintenance and Service Guide

© Copyright 2007, 2008 Hewlett-Packard
Development Company, L.P.

Bluetooth is a trademark owned by its proprietor and used by Hewlett-Packard Company under license. Intel and Core are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Java is a US trademark of Sun Microsystems, Inc. Microsoft, Windows, and Windows Vista are either trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries. SD Logo is a trademark of its proprietor.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Second Edition: September 2008

First Edition: April 2007

Document Part Number: 438870-002

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).
-

Table of contents

1 Product description

2 External component identification

Top components	6
Buttons, microphone, volume controls, and fingerprint reader	6
Keys	8
Pointing devices	9
Front components	10
Left-side components	11
Rear components	12
Right-side components	13
Bottom components	14

3 Illustrated parts catalog

Serial number location	15
Computer major components	16
Plastics Kit	23
Cable Kit	24
Mass storage devices	25
Miscellaneous parts	26
Sequential part number listing	27

4 Removal and replacement procedures

Preliminary replacement requirements	33
Tools required	33
Service considerations	33
Plastic parts	33
Cables and connectors	34
Drive handling	34
Grounding guidelines	35
Electrostatic discharge damage	35
Packaging and transporting guidelines	36
Workstation guidelines	36

Equipment guidelines	37
Unknown user password	38
Component replacement procedures	39
Serial number	39
Battery	40
SIM	41
Display inverter	42
Hard drive	44
Computer feet	46
Bluetooth module	46
Expansion memory module	48
WLAN module	50
MultiBay II device	54
Keyboard	55
RTC battery	58
Primary memory module	59
Modem module	60
WWAN module	61
Switch cover	62
Fan assembly	64
Heat sink	65
Processor	67
Display assembly	69
Top cover	74
Smart card reader board	77
Speaker assembly	79
System board	80
MultiBay II eject assembly	85

5 Computer Setup

Starting Computer Setup	87
Using Computer Setup	88
Navigating and selecting in Computer Setup	88
Restoring factory settings in Computer Setup	88
Computer Setup menus	89
File menu	89
Security menu	90
Diagnostics menu	90
System Configuration menu	91

6 Specifications

Computer specifications	93
14.1-inch, WXGA display specifications	94

Hard drive specifications	95
Primary 6-cell, Li-ion battery specifications	96
DVD±RW and CD-RW Double-Layer Combo Drive specifications	97
DVD/CD-RW Combo Drive specifications	98
DVD-ROM Drive	99
System DMA specifications	100
System interrupt specifications	101
System I/O address specifications	102
System memory map specifications	104

7 Screw listing

Phillips PM2.0×5.0 captive screw	106
Phillips PM2.5×13.0 captive screw	107
Phillips PM3.0×3.0 screw	108
Phillips PM2.0×3.0 screw	109
Phillips PM2.5×5.0 screw	111
Torx T8M2.5×11.0 captive screw	112
Torx T8M2.5×11.0 screw	113
Phillips PM2.0×6.0 screw	114
Phillips PM2.0×2.0 broad head screw	116
Phillips PM2.5×3.0 screw	117
Torx T8M2.5×7.0 screw	118
Phillips PM2.0×10.0 captive screw	120
Phillips PM2.5×6.0 screw	121
Phillips PM2.5×4.0 screw	122

8 Backup and recovery

Backup and recovery in Windows Vista	123
Creating recovery discs	123
Backing up your information	123
When to back up	124
Backup suggestions	124
Backing up specific files or folders	124
Backing up the entire hard drive	125
Creating recovery points	126
Scheduling backups	126
Performing a recovery	126
Performing a recovery from the recovery discs	127
Performing a recovery from the hard drive	127
Initiating a recovery in Windows	128
Initiating a recovery from the hard drive recovery partition	128
Backup and recovery in Windows XP	128
Creating recovery discs	128

Backing up your information	129
When to back up	129
Backup suggestions	129
Backing up specific files or folders	130
Backing up the entire hard drive	130
Creating recovery points	131
Scheduling backups	131
Performing a recovery	131
Performing a recovery from the recovery discs	132
Performing a recovery from the hard drive	132
Initiating a recovery in Windows	133
Initiating a recovery from the hard drive recovery partition	133

9 Connector pin assignments

Audio-out (headphone)	134
Audio-in (microphone)	134
External monitor	135
RJ-11 (modem)	136
RJ-45 (network)	136
S-Video-out	137
Universal Serial Bus	137

10 Power cord set requirements

Requirements for all countries and regions	138
Requirements for specific countries and regions	139

11 Recycling

Battery	140
Display	140

Index	146
--------------------	------------

1 Product description

Category	Description	HP Compaq 6910p Notebook PC with UMA video memory	HP Compaq 6910p Notebook PC with discrete video memory
Processors	Intel® Core™ Duo processors:	√	√
	• T7700 2.4-GHz processor with 800-MHz Front Side Bus (FSB) and 4-MB L2 cache		
	• T7500 2.2-GHz processor with 800-MHz FSB and 4-MB L2 cache		
	• T7300 2.0-GHz processor with 800-MHz FSB and 4-MB L2 cache		
	• T7100 1.8-GHz processor with 800-MHz FSB and 2-MB L2 cache		
Chipsets	• Northbridge: Intel PM965 with up to 800-Mhz FSB with iAMT support		√
	• Northbridge: Intel GM965 with up to 800-Mhz FSB with iAMT support	√	
	• Southbridge: Intel ICH8-M enhanced	√	√
Graphics	ATI M64S PCI Express, 64-bit VRAM bus:		√
	• 128-MB GDDR3 video memory (256-MB Hypermemory)		
	• 64-MB GDDR3 video memory (256-MB Hypermemory)		
	Intel Crestline Graphics Media Accelerator, Unified Memory Architecture (UMA), integrated with shared video memory, up to 384-MB shared memory	√	
Panels	16:10 aspect ratio display panels:	√	√
	• 14.1 WXGA+ (1440 × 900), configured with 3 WLAN antennas and 2 WWAN antennas		
	• 14.1 WXGA (1280 × 800), configured with 3 WLAN antennas and 2 WWAN antennas		
	• Supports privacy filter		

Category	Description	HP Compaq 6910p Notebook PC with UMA video memory	HP Compaq 6910p Notebook PC with discrete video memory
Memory	<ul style="list-style-type: none"> Two SODIMM slots, both customer accessible/upgradable (memory slot under the keyboard must be populated first) DDRII PC2-5300 (667-MHz) Supports dual-channel memory Supported configurations: <ul style="list-style-type: none"> 4096 MB total system memory (2048 MB × 2, dual-channel) 3072 MB total system memory (2048 MB + 1024 MB, dual-channel) 2560 MB total system memory (2048 MB + 512 MB, dual-channel) 2048 MB total system memory (2048 MB × 1; 1024 MB × 2, dual-channel) 1536 MB total system memory (1024 MB + 512 MB, dual-channel) 1024 MB total system memory (1024 MB × 1; 512 MB × 2, dual-channel) 512 MB total system memory (512 MB × 1) 	√	√
Hard drives	<ul style="list-style-type: none"> Supports all 9.5-mm, 2.5-inch hard drives Serial ATA The following hard drives are available: <ul style="list-style-type: none"> 160-GB, 5400-rpm 120-GB, 5400-rpm 100-GB, 7200-rpm 80-GB, 7200- and 5400-rpm 	√	√
Optical drives	<ul style="list-style-type: none"> 9.5-mm tray load MultiBay II Supports all common optical formats, including the following: <ul style="list-style-type: none"> DVD±RW and CD-RW Double-Layer Combo Drive DVD/CD-RW Combo Drive DVD-ROM Drive 	√	√
Diskette drive	Supports external USB drive only	√	√

Category	Description	HP Compaq 6910p Notebook PC with UMA video memory	HP Compaq 6910p Notebook PC with discrete video memory
Audio	• Stereo speakers	√	√
	• Integrated monoaural microphone		
	• Headphone and microphone jacks		
Modem	• 56K, v.92, data/fax modem (MDC1.5)	√	√
	• Modem cable included in Brazil, the Czech Republic, France, Greece, Hungary, Israel, Latin America, Poland, Russia, Saudi Arabia, Slovakia, Slovenia, South Africa, Turkey, and the United Kingdom.		
Ethernet	• Intel 10/100/1000 Ethernet with iAMT	√	√
	• Network interface card (NIC) power-down		
	• S4/S5 wake on LAN (on AC power only)		
Wireless	Integrated wireless options by way of wireless module		
	Wireless local area network (WLAN) options:	√	√
	• Broadcom 802.11a/b/g/n		
	• Broadcom 802.11a/b/g		
	• Broadcom 802.11b/g		
	• Intel 802.11a/b/g/n		
	• Intel 802.11a/b/g		
	• 3 WLAN antennas built into display panel		
	Wireless wide area network (WWAN) options:	√	√
	• Evolution-data optimized (EVDO) WWAN module		
	• High-speed downlink packet access (HSPDA) WWAN module		
	• Subscriber identity module (SIM)		
	Wireless personal area network (WPAN) options:	√	√
	• Bluetooth® 2.0 module + Blueflame module		
	• Supports no WPAN option		
External media card	• One Type I/II PC Card slot, 16-bit PCMCIA and 32-bit CardBus	√	√
	• Media Card Reader (MS Duo adapters, plus SD, MMC, MS, MSPro, and xD)		
Ports	• 1394a port	√	√
	• Docking connector		

Category	Description	HP Compaq 6910p Notebook PC with UMA video memory	HP Compaq 6910p Notebook PC with discrete video memory
	<ul style="list-style-type: none"> Headphone connector Fast infrared port Microphone connector Primary battery connector RJ-11 modem port RJ-45 Ethernet port S-Video-out connector Smart AC adapter connector Travel battery connector USB ports (3) VGA port (Dsub 15-pin) supporting 1600 × 1200 external resolution @ 75 Hz, hot plug/unplug, and auto detect 		
Docking	Docking support	√	√
Keyboard/pointing devices	<ul style="list-style-type: none"> Spill-resistant keyboard with embedded numeric keypad, TouchPad, and fingerprint reader Taps enabled as default Two-way scrolling Windows Vista™ hardware Start button 	√	√
Power requirements	Primary batteries: <ul style="list-style-type: none"> 6-cell, 5.10-Ah, Li-ion battery (55-Wh) 6-cell, 2.20-Ah Li-ion battery (47-Wh) Travel batteries: <ul style="list-style-type: none"> 12-cell Li-ion battery 8-cell Li-ion battery AC adapter: <ul style="list-style-type: none"> 90-watt Localized cable plug support 3-wire plug with ground pin Supports multipin AC connector 	√	√
Security	<ul style="list-style-type: none"> Fingerprint reader HP 3D DriveGuard Security cable slot 	√	√

Category	Description	HP Compaq 6910p Notebook PC with UMA video memory	HP Compaq 6910p Notebook PC with discrete video memory
	<ul style="list-style-type: none"> Smart card reader/bezel snap-in Trusted platform module (TPM) 1.2 on system board 		
Operating system	Preinstalled: <ul style="list-style-type: none"> Windows Vista Home Basic (32-bit) Windows Vista Business (32- and 64-bit) Windows® XP Professional FreeDOS Certified: <ul style="list-style-type: none"> SuSe Linux Enterprise Desktop (SLED) 10 Novell 	√	√
Serviceability	End-user replaceable parts: <ul style="list-style-type: none"> AC adapter Hard drive Memory module MultiBay II device Primary battery SIM WLAN module WWAN module 	√	√

2 External component identification

Top components

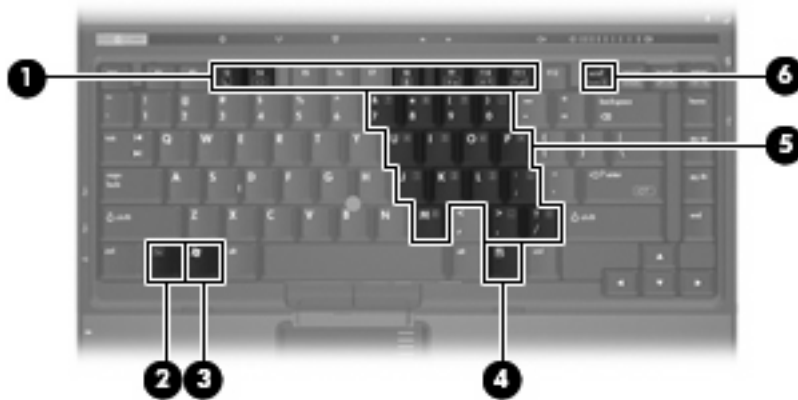
Buttons, microphone, volume controls, and fingerprint reader



Item	Component	Function
(1)	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 to shut down the computer.• When the computer is in the Sleep state (Windows Vista) or in Standby (Windows XP), press the button briefly to exit the Sleep state or Standby.• When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>If the computer has stopped responding and Windows® shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer.</p>

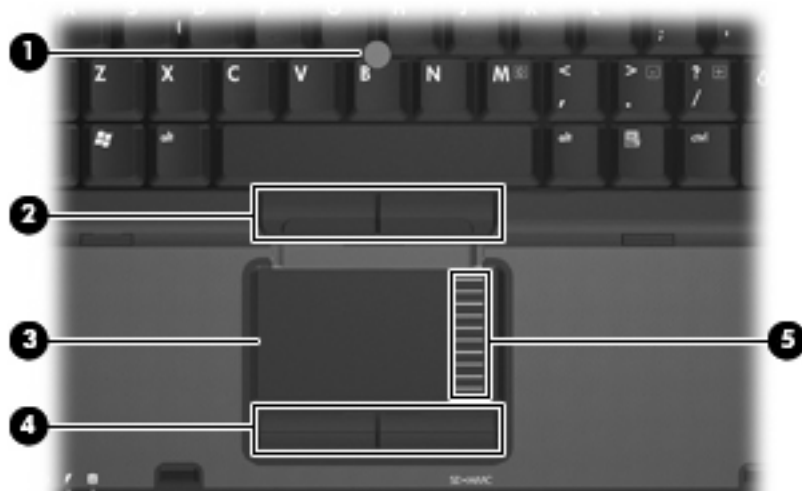
Item	Component	Function
		<p>To learn more about power settings, follow these steps:</p> <ul style="list-style-type: none"> • In Windows Vista, select Start > Control Panel > System and Maintenance > Power Options. • In Windows XP, select Start > Control Panel > Performance and Maintenance > Power Options.
(2)	Info button (select models only)	Opens Info Center, which enables you to open various software solutions.
(3)	Wireless button	<p>Turns the wireless feature on or off, but does not establish a wireless connection.</p> <p>NOTE: A wireless network must be set up in order to establish a wireless connection.</p>
(4)	Presentation button (select models only)	Starts the presentation feature.
(5)	Volume mute button (select models only)	Mutes and restores speaker sound.
(6)	Volume scroll zone (select models only)	Adjusts speaker volume. Slide your finger to the left to decrease volume and to the right to increase volume. You can also tap the minus sign on the scroll zone to decrease volume, or tap the plus sign on the scroll zone to increase volume.
(7)	Internal microphone (select models only)	Records sound.
(8)	Fingerprint reader (select models only)	Allows a fingerprint logon to Windows, instead of a password logon.

Keys



Item	Component	Function
(1)	Function keys	Execute frequently used system functions when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with a function key or the esc key.
(3)	Windows logo key	Displays the Windows Start menu.
(4)	Windows applications key	Displays a shortcut menu for items beneath the pointer.
(5)	Embedded numeric keypad keys	Can be used like the keys on an external numeric keypad.
(6)	num lock key	Enables numeric lock, turns on the embedded numeric keypad, and turns on the num lock light.

Pointing devices

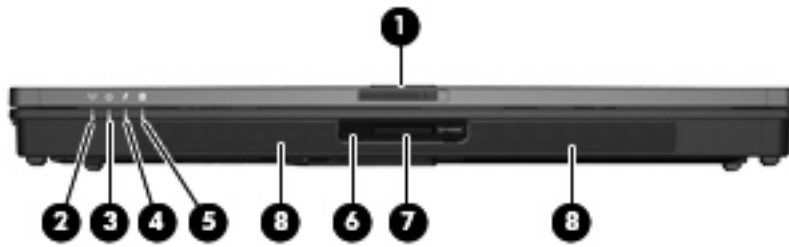


Item	Component	Function
(1)	Pointing stick (select models only)	Moves the pointer and selects or activates items on the screen.
(2)	Pointing stick buttons (select models only)	Function like the left, middle, and right buttons on an external mouse.
(3)	TouchPad*	Moves the pointer and selects or activates items on the screen.
(4)	Left and right TouchPad buttons*	Function like the left and right buttons on an external mouse.
(5)	TouchPad scroll zone	Scrolls up or down.

*This table describes factory settings. View or change pointing device preferences as follows:

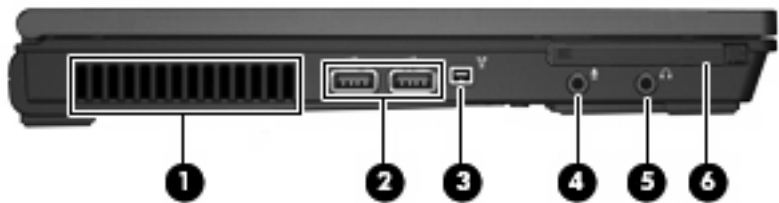
- In Windows Vista, select **Start > Control Panel > Hardware and Sound > Mouse**.
- In Windows XP, select **Start > Control Panel > Printers and Other Hardware > Mouse**.

Front components



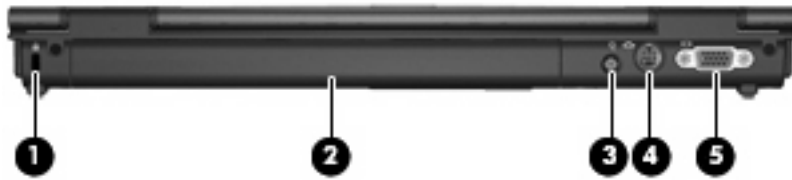
Item	Component	Function
(1)	Display release latch	Opens the computer.
(2)	Wireless light	<ul style="list-style-type: none">On: An integrated wireless device, such as a WLAN device, a WWAN device, and/or a Bluetooth device, is turned on.Off: All wireless devices are turned off.
(3)	Power light	<ul style="list-style-type: none">On: The computer is on.Blinking: The computer is in the Sleep state (Windows Vista) or in Standby (Windows XP).Blinking rapidly: An AC adapter with a higher power rating should be connected.Off: The computer is off or in Hibernation.
(4)	Battery light	<ul style="list-style-type: none">Amber: A battery is charging.Green: A battery is close to full charge capacity.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: If the computer is plugged into an external power source, the light turns off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
(5)	Drive light	<ul style="list-style-type: none">Blinking green: The hard drive or optical drive is being accessed.Amber (select models only): HP 3D DriveGuard has temporarily parked the hard drive.
(6)	Infrared port	Provides wireless communication between the computer and an optional IrDA-compliant device.
(7)	Media Card Reader	Supports Secure Digital (SD) Memory Cards and MultiMediaCards.
(8)	Speakers (2)	Produce sound.

Left-side components



Item	Component	Function
(1)	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.
(2)	USB ports (2)	Connect USB 1.1- and 2.0-compliant devices to the computer using a standard USB cable, or connect an optional External MultiBay II to the computer. The MultiBay II must also be connected to an external power source.
(3)	1394 port (select models only)	Connects an optional IEEE 1394 or 1394a device, such as a camcorder.
(4)	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(5)	Audio-out (headphone) jack	Produces computer sound when connected to optional power stereo speakers, headphones, ear buds, a headset, or television audio.
(6)	PC Card slot	Supports optional Type I or Type II 32-bit (CardBus) or 16-bit PC Cards.

Rear components



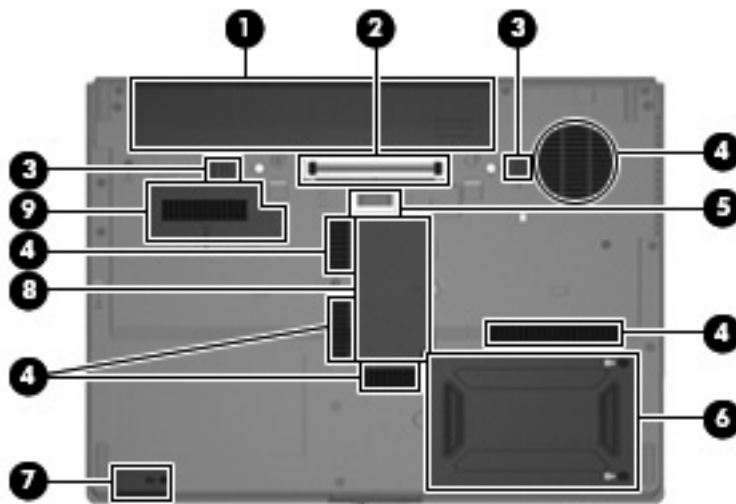
Item	Component	Function
(1)	Security cable slot	Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)	Battery bay	Holds a battery.
(3)	Power connector	Connects an AC adapter or an optional power adapter.
(4)	S-Video-out jack	Connects an optional S-Video device such as a television, VCR, camcorder, overhead projector, or video capture card.
(5)	External monitor port	Connects an external VGA monitor or projector.

Right-side components



Item	Component	Function
(1)	Smart card reader	Supports optional smart cards and Java™ Cards.
(2)	MultiBay II device	Supports an optical disc. The type of optical drive varies by model.
(3)	USB port	Connects USB 1.1- and 2.0-compliant devices to the computer using a standard USB cable, or connects an optional External MultiBay II to the computer. The MultiBay II must also be connected to an external power source.
(4)	RJ-45 (network) jack	Connects an optional network cable.
(5)	RJ-11 (modem) jack	Connects the modem cable.

Bottom components

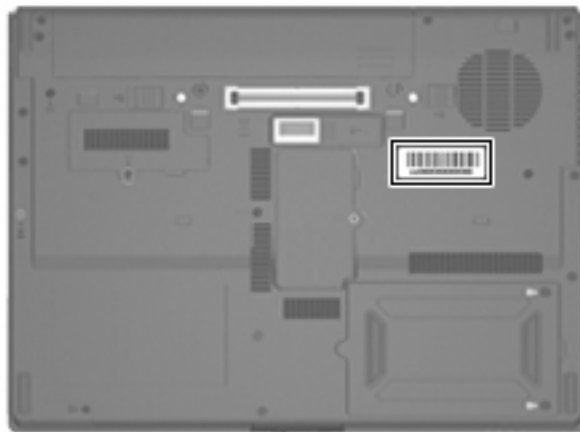


Item	Component	Function
(1)	Battery bay	Holds the battery.
(2)	Docking connector (select models only)	Connects an optional docking device.
(3)	Battery latches (2)	Release the battery from the battery bay.
(4)	Vents (5)	Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(5)	Accessory battery connector	Connects an optional accessory battery.
(6)	Hard drive bay	Holds the hard drive.
(7)	Bluetooth module compartment (select models only)	Contains a Bluetooth device.
(8)	Memory module compartment	Contains the memory module slot.
(9)	WLAN module compartment	Contains the WLAN module slot. CAUTION: To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact technical support through Help and Support.

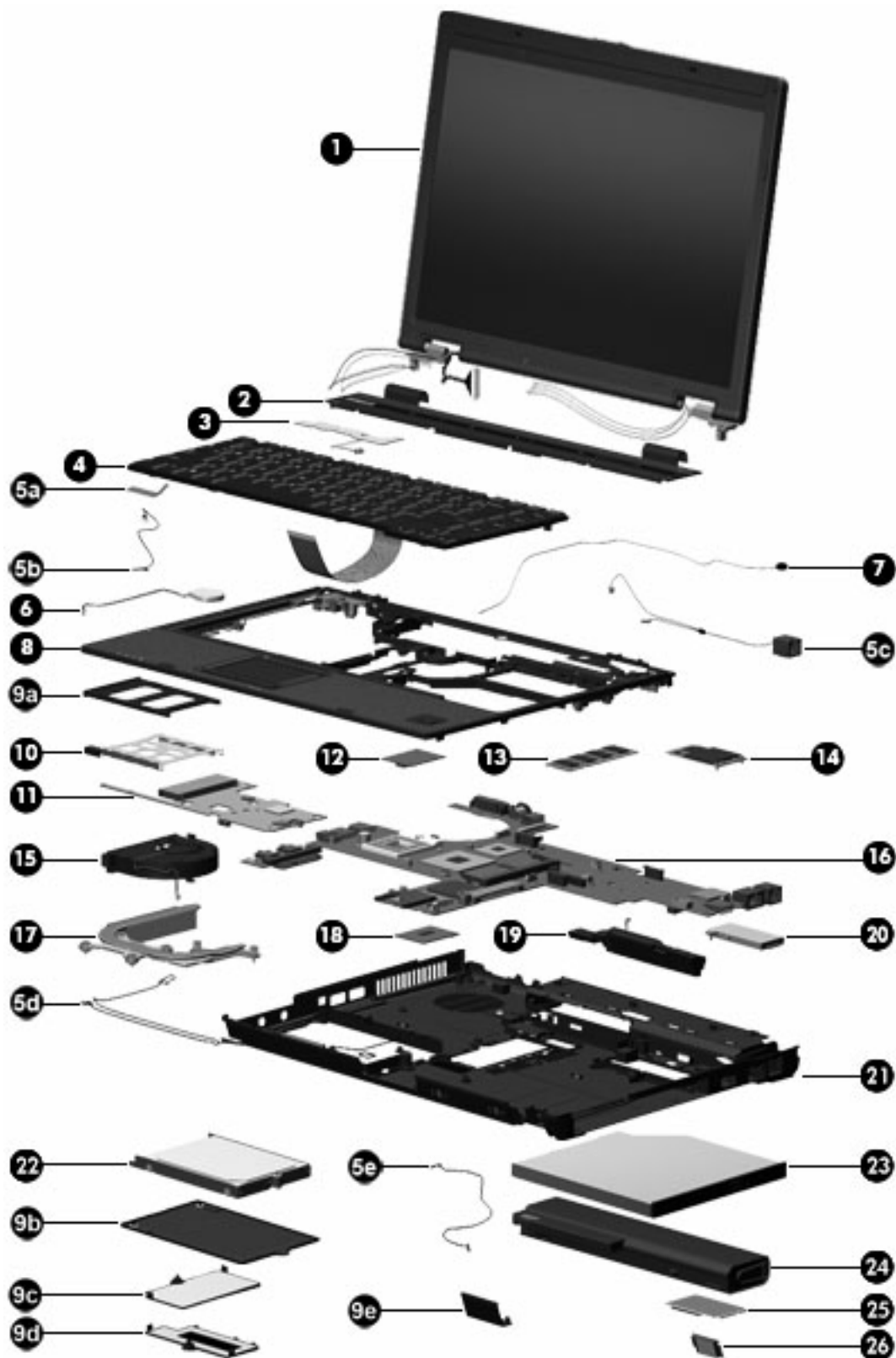
3 Illustrated parts catalog

Serial number location

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



Computer major components



Item	Description	Spare part number
(1)	Display assemblies (include wireless antenna transceivers and cables)	
	14.1-inch, WXGA+	446436-001
	14.1-inch, WXGA	446435-001
(2)	Switch cover	446401-001
(3)	Power button board (includes power button board cable)	446438-001
(4)	Keyboards (include pointing stick and pointing stick cable)	
	Belgium	446448-A41
	Brazil	446448-201
	The Czech Republic	446448-221
	Denmark	446448-081
	France	446448-051
	French Canada	446448-121
	Germany	446448-041
	Greece	446448-151
	Hungary	446448-211
	Iceland	446448-DD1
	International	446448-021
	Israel	446448-BB1
	Italy	446448-061
	Japan	446448-291
	Korea	446448-AD1
	Latin America	446448-161
	Norway	446448-091
	Portugal	446448-131
	Russia	446448-251
	Saudi Arabia	446448-171
	Slovakia	446448-231
	Slovenia	446448-BA1
	Spain	446448-071
	Sweden and Finland	446448-B71
	Switzerland	446448-111
	Taiwan	446448-AB1
	Thailand	446448-281
	Turkey	446448-141

Item	Description	Spare part number
	The United Kingdom	446448-031
	The United States	446448-001
	Cable Kit (see Cable Kit on page 24 for more Cable Kit spare part information):	446406-001
(5a)	Pointing stick cable	
(5b)	TouchPad cable	
(5c)	Modem module cable (includes RJ-11 connector)	
(5d)	Audio cable	
(5e)	Bluetooth module cable	
(6)	RTC battery	446400-001
(7)	Microphone	446432-001
(8)	Top cover (includes TouchPad, smart card reader, and fingerprint reader board)	446407-001
	Plastics Kit (see Plastics Kit on page 23 for more Plastics Kit spare part information):	446439-001
(9a)	PC Card slot bezel	
(9b)	Hard drive cover	
(9c)	Memory module compartment cover	
(9d)	WLAN module compartment cover	
(9e)	Bluetooth module compartment cover	
(10)	PC Card assembly	446437-001
(11)	Smart card reader board	446793-001
(12)	Modem module (includes modem module cable)	446433-001
(13)	Memory modules (667-MHz, PC2-5300, 1-DIMM)	
	2048-MB	446430-001
	1024-MB	446429-001
	512-MB	446431-001
(14)	WWAN modules	
	Verizon EVDO WWAN module	418860-001
	Cingular HSPDA WWAN module	436638-001
	Vodafone HSPDA WWAN module	435098-001
(15)	Fan assembly	446416-001
(16)	System boards (include thermal material and alcohol pad)	
	For use with heat sink spare part number 446446-001 (includes 128 MB of discrete video memory)	446403-001
	For use with heat sink spare part number 446446-001 (includes 64 MB of discrete video memory)	446404-001

Item	Description	Spare part number
	For use with heat sink spare part number 446447-001 (video memory is shared with main system memory)	446402-001
(17)	Heat sinks	
	For use with system boards spare part numbers 446403-001 and 446404-001	446446-001
	For use with system board spare part number 446402-001	446447-001
(18)	Processors (include thermal material)	
	Intel Core Duo T7700 2.4-GHz (4-MB L2 cache)	446443-001
	Intel Core Duo T7500 2.2-GHz (4-MB L2 cache)	446442-001
	Intel Core Duo T7300 2.0-GHz (4-MB L2 cache)	446441-001
	Intel Core Duo T7100 1.8-GHz (2-MB L2 cache)	446440-001
(19)	Speaker assembly	446445-001
(20)	MultiBay II eject assembly	446434-001
(21)	Base enclosure (includes LED board, LED board cable, and rubber feet)	446397-001
	Rubber Kit —includes 6 computer feet (in 2 different sizes) and 2 base enclosure screw covers	446680-001
(22)	Hard drives (include hard drive bracket and connector)	
	160-GB, 5400-rpm	446411-001
	120-GB, 5400-rpm	446413-001
	100-GB, 7200-rpm	446412-001
	80-GB, 7200-rpm	446415-001
	80-GB, 5400-rpm	446414-001
(23)	MultiBay II devices (include bezel)	
	DVD±RW and CD-RW Double-Layer Combo Drive	446409-001
	DVD/CD-RW Combo Drive	446410-001
	DVD-ROM Drive	446408-001
(24)	Batteries	
	6-cell, 5.10-Ah Li-ion	446399-001
	4-cell, 2.55-Ah Li-ion	446398-001
(25)	WLAN modules	
	802.11a/b/g/n Broadcom WLAN modules:	
	<ul style="list-style-type: none"> For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States 	441531-001
	<ul style="list-style-type: none"> For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Belize, Benin, Bermuda, Bolivia, Bosnia & Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Cayman Islands, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, 	441531-002

Item	Description	Spare part number
	the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guam, Guatemala, Guinea, Guinea-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Italy, the Ivory Coast, Jamaica, Jordan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Puerto Rico, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	
•	For use in Japan	441531-291
	802.11a/b/g/n Intel WLAN modules:	
•	For use in Antigua and Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, Uruguay, the United States, Venezuela, and Vietnam	441086-001
•	For use in Austria, Azerbaijan, Bahrain, Belgium, Brazil, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Qatar, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and Uzbekistan	441087-002
•	For use in Australia, New Zealand, Pakistan, the People's Republic of China, and South Korea	441088-003
•	For use in Japan	441089-291
	802.11a/b/g Broadcom WLAN modules:	
•	For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States	441075-001
•	For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissa, 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	441076-002

Item	Description	Spare part number
	Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, 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	
	<ul style="list-style-type: none"> For use in Japan 	441077-291
	802.11a/b/g Intel WLAN modules:	
	<ul style="list-style-type: none"> For use in Antigua and Barbuda, Argentina, Australia, the Bahamas, Barbados, Brunei, Canada, Chile, the Dominican Republic, Guam, Guatemala, Hong Kong, India, Indonesia, Malaysia, Mexico, New Zealand, Panama, Paraguay, Saudi Arabia, Taiwan, the United States, and Vietnam 	407576-001
	<ul style="list-style-type: none"> For use in Aruba, Austria, Azerbaijan, Bahrain, Belgium, Bermuda, Brazil, Bulgaria, the Cayman Islands, Colombia, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, El Salvador, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Jordan, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, the United Kingdom, and Uzbekistan 	407576-002
	<ul style="list-style-type: none"> For use in Ecuador, Haiti, Honduras, Pakistan, the People's Republic of China, Peru, Qatar, South Korea, Uruguay, and Venezuela 	407576-003
	<ul style="list-style-type: none"> For use in Japan 	407576-291
	802.11a/b/g Intel WLAN modules:	
	<ul style="list-style-type: none"> For use in Antigua & Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, the United States, Uruguay, Venezuela, and Vietnam 	441082-001
	<ul style="list-style-type: none"> For use in Austria, Azerbaijan, Bahrain, Belgium, Brazil, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Qatar, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and Uzbekistan 	441083-002
	<ul style="list-style-type: none"> For use in Australia, New Zealand, Pakistan, the People's Republic of China, and South Korea 	441084-003
	<ul style="list-style-type: none"> For use in Japan 	441085-291
	802.11b/g Broadcom WLAN modules:	
	<ul style="list-style-type: none"> For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States 	441090-001
	<ul style="list-style-type: none"> For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, 	441091-002

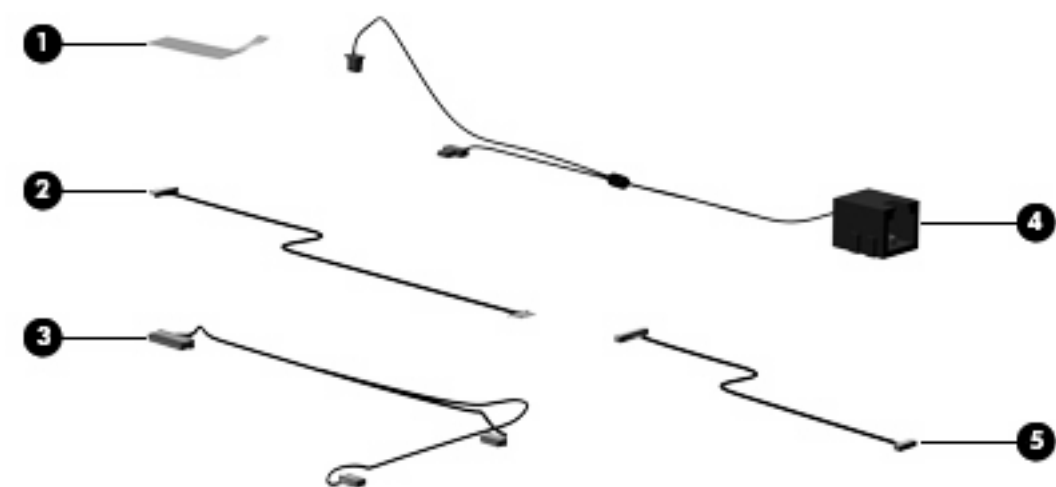
Item	Description	Spare part number
	the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe	
	<ul style="list-style-type: none"> • For use in Japan 	441092-291
	<ul style="list-style-type: none"> • For use in Thailand 	409250-004
(26)	Bluetooth module (includes Bluetooth module cable)	446405-001

Plastics Kit



Item	Description	Spare part number
	Plastics Kit:	446439-001
(1)	PC Card slot bezel	
(2)	Hard drive cover (includes 2 captive screws, secured by C-clips)	
(3)	Memory module compartment cover (includes 1 captive screw, secured by a C-clip)	
(4)	WLAN module compartment cover (includes 1 captive screw, secured by a C-clip)	
(5)	Bluetooth module compartment cover (includes 1 captive screw, secured by a C-clip)	

Cable Kit



Item	Description	Spare part number
Cable Kit:		446406-001
(1)	Pointing stick cable	
(2)	TouchPad cable	
(3)	Audio cable	
(4)	Modem module cable (includes RJ-11 connector)	
(5)	Bluetooth module cable	

Mass storage devices



Item	Description	Spare part number
(1)	Hard drives (include frame and connector)	
	160-GB, 5400-rpm	446411-001
	120-GB, 5400-rpm	446412-001
	100-GB, 7200-rpm	446412-001
	80-GB, 7200-rpm	446415-001
	80-GB, 5400-rpm	446414-001
(2)	MultiBay II devices (include bezel)	
	DVD±RW and CD-RW Double-Layer Combo Drive	446409-001
	DVD/CD-RW Combo Drive	446410-001
	DVD-ROM Drive	446408-001

Miscellaneous parts

Description	Spare part number
HP Smart Adapter AC adapters	
90-watt non-PFC Smart Adapter	418873-001
90-watt PFC Smart Adapter	418875-001
External MultiBay II	366143-001
External MultiBay II power cable and stand	366144-001
HP Extended Life Battery	367456-001
HP Docking Station	374803-001
HP Docking Station Miscellaneous Plastics Kit	380089-001
Label Kit	446419-001
MultiBay II 8X DVD-ROM Drive	373314-001
MultiBay II 24X DVD/CD-RW Combo Drive	373315-001
Nylon carrying case	325814-001
Power cords	
For use in the United States	403811-001
For use in Australia	403811-011
For use in Europe, the Middle East, and Africa	403811-021
For use in the United Kingdom	403811-031
For use in Italy	403811-061
For use in Denmark	403811-081
For use in Switzerland	403811-111
For use in Japan	403811-291
For use in the People's Republic of China	403811-AA1
For use in Taiwan	403811-AB1
For use in Korea	403811-AD1
For use in Israel	403811-BB1
For use in India	403811-D61
Screw Kit	446444-001
<ul style="list-style-type: none"> Phillips PM3.0×3.0 screw Phillips PM2.5×13.0 captive screw Phillips PM2.5×6.0 screw Phillips PM2.5×5.0 screw Phillips PM2.5×4.0 screw 	

Description	Spare part number
<ul style="list-style-type: none"> Phillips PM2.5×3.0 screw Phillips PM2.0×10.0 captive screw Phillips PM2.0×6.0 screw Phillips PM2.0×5.0 captive screw Phillips PM2.0×3.0 screw Torx T8M2.5×11.0 captive screw Torx T8M2.5×11.0 screw Torx T8M2.5×7.0 screw 	

Sequential part number listing

Spare part number	Description
325814-001	Nylon carrying case
366143-001	External MultiBay II
366144-001	External MultiBay II power cable and stand
367456-001	HP Extended Life Battery
373314-001	MultiBay II 8X DVD-ROM Drive
373315-001	MultiBay II 24X DVD/CD-RW Combo Drive
374803-001	HP Docking Station
380089-001	HP Docking Station Miscellaneous Plastics Kit
403811-001	Power cord for use in the United States
403811-011	Power cord for use in Australia
403811-021	Power cord for use in Europe, the Middle East, and Africa
403811-031	Power cord for use in the United Kingdom
403811-061	Power cord for use in Italy
403811-081	Power cord for use in Denmark
403811-111	Power cord for use in Switzerland
403811-291	Power cord for use in Japan
403811-AA1	Power cord for use in the People's Republic of China
403811-AB1	Power cord for use in Taiwan
403811-AD1	Power cord for use in Korea
403811-BB1	Power cord for use in Israel
403811-D61	Power cord for use in India

Spare part number	Description
407576-001	802.11a/b/g Broadcom WLAN module for use in for use in Antigua and Barbuda, Argentina, Australia, the Bahamas, Barbados, Brunei, Canada, Chile, the Dominican Republic, Guam, Guatemala, Hong Kong, India, Indonesia, Malaysia, Mexico, New Zealand, Panama, Paraguay, Saudi Arabia, Taiwan, the United States, and Vietnam
407576-002	802.11a/b/g Broadcom WLAN module for use in for use in Aruba, Austria, Azerbaijan, Bahrain, Belgium, Bermuda, Brazil, Bulgaria, the Cayman Islands, Colombia, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, El Salvador, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Jordan, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, the United Kingdom, and Uzbekistan
407576-003	802.11a/b/g Broadcom WLAN module for use in for use in Ecuador, Haiti, Honduras, Pakistan, the People's Republic of China, Peru, Qatar, South Korea, Uruguay, and Venezuela
407576-291	802.11a/b/g Broadcom WLAN module for use in Japan
409250-004	802.11b/g Broadcom WLAN module for use in Thailand
418860-001	Verizon EVDO WWAN module
418873-001	90W non-PFC HP Smart Adapter
418875-001	90W PFC HP Smart Adapter
435098-001	Vodafone HSPDA WWAN module
436638-001	Cingular HSPDA WWAN module
441075-001	802.11a/b/g Broadcom WLAN module for use in for use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States
441076-002	802.11a/b/g Broadcom WLAN module for use in for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, 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
441077-291	802.11a/b/g Broadcom WLAN module for use in Japan
441082-001	802.11a/b/g Intel WLAN module for use in for use in Antigua & Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, the United States, Uruguay, Venezuela, and Vietnam
441083-002	802.11a/b/g Intel WLAN module for use in for use in Austria, Azerbaijan, Bahrain, Belgium, Brazil, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco,

Spare part number	Description
	the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Qatar, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and Uzbekistan
441084-003	802.11a/b/g Intel WLAN module for use in ROW
441085-291	802.11a/b/g Intel WLAN module for use in Japan
441086-001	802.11a/b/g/n Intel WLAN module for use in for use in Antigua and Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, Uruguay, the United States, Venezuela, and Vietnam
441087-002	802.11a/b/g/n Intel WLAN module for use in for use in Austria, Azerbaijan, Bahrain, Belgium, Brazil, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Qatar, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and Uzbekistan
441088-003	802.11a/b/g/n Intel WLAN module for use in for use in Australia, New Zealand, Pakistan, the People's Republic of China, and South Korea
441089-291	802.11a/b/g/n Intel WLAN module for use in Japan
441090-001	802.11b/g Broadcom WLAN module for use in for use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States
441091-002	802.11b/g Broadcom WLAN module for use in For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
441092-291	802.11b/g Broadcom WLAN module for use in Japan
441531-001	802.11a/b/g/n Broadcom WLAN module for use in for use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States
441531-002	802.11a/b/g/n Broadcom WLAN module for use in for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Belize, Benin, Bermuda, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Cayman Islands, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guam, Guatemala, Guinea,

Spare part number	Description
	Guinea-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Italy, the Ivory Coast, Jamaica, Jordan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Puerto Rico, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe
441531-291	802.11a/b/g/n Broadcom WLAN module for use in Japan
446397-001	Base enclosure (includes LED board, LED board cable, and rubber feet)
446398-001	4-cell, 2.55-Ah battery
446399-001	6-cell, 5.10-Ah Li-ion battery
446400-001	RTC battery
446401-001	Switch cover
446402-001	System board for use with heat sink spare part number 446447-001 (video memory is shared with main system memory)
446403-001	System board for use with heat sink spare part number 446446-001 (includes 128 MB of discrete video memory)
446404-001	System board for use with heat sink spare part number 446446-001 (includes 64 MB of discrete video memory)
446405-001	Bluetooth module (includes Bluetooth module cable)
446406-001	Cable Kit (see Cable Kit on page 24 for more Cable Kit spare part information)
446407-001	Top cover (includes TouchPad, smart card reader, and fingerprint reader board)
446408-001	MultiBay II DVD-ROM Drive
446409-001	DVD±RW and CD-RW Double-Layer Combo Drive
446410-001	DVD/CD-RW Combo Drive
446411-001	160-GB, 5400-rpm hard drive (includes hard drive bracket and connector)
446412-001	100-GB, 7200-rpm hard drive (includes hard drive bracket and connector)
446413-001	120-GB, 5400-rpm hard drive (includes hard drive bracket and connector)
446414-001	80-GB, 7200-rpm hard drive (includes hard drive bracket and connector)
446415-001	80-GB, 5400-rpm hard drive (includes hard drive bracket and connector)
446416-001	Fan assembly
446419-001	Label Kit
446429-001	1024-MB memory module (667-MHz, PC2-5300, 1-DIMM)
446430-001	2048-MB memory module (667-MHz, PC2-5300, 1-DIMM)
446431-001	512-MB memory module (667-MHz, PC2-5300, 1-DIMM)
446432-001	Microphone

Spare part number	Description
446433-001	Modem module (includes modem module cable)
446434-001	MultiBay II eject assembly
446435-001	14.1-inch, WXGA display assembly (includes wireless antenna transceivers and cables)
446436-001	14.1-inch, WXGA+ display assembly (includes wireless antenna transceivers and cables)
446437-001	PC Card assembly
446438-001	Power button board (includes power button board cable)
446439-001	Plastics Kit (see Plastics Kit on page 23 for more Plastics Kit spare part information)
446440-001	Intel Core Duo T7100 1.8-GHz processor (2-MB L2 cache)
446441-001	Intel Core Duo T7300 2.0-GHz processor (4-MB L2 cache)
446442-001	Intel Core Duo T7500 2.2-GHz processor (4-MB L2 cache)
446443-001	Intel Core Duo T7700 2.4-GHz processor (4-MB L2 cache)
446444-001	Screw Kit
446445-001	Speaker assembly
446446-001	Heat sink for use with system board spare part numbers 446403-001 and 446404-001
446447-001	Heat sink For use with system board spare part number 446402-001
446448-001	Keyboard for use in the United States
446448-021	Keyboard for use in the Netherlands and Europe
446448-031	Keyboard for use in the United Kingdom
446448-041	Keyboard for use in Germany
446448-051	Keyboard for use in France
446448-061	Keyboard for use in Italy
446448-071	Keyboard for use in Spain
446448-081	Keyboard for use in Denmark
446448-091	Keyboard for use in Norway
446448-111	Keyboard for use in Switzerland
446448-121	Keyboard for use in French Canada
446448-131	Keyboard for use in Portugal
446448-141	Keyboard for use in Turkey
446448-151	Keyboard for use in Greece
446448-161	Keyboard for use in Latin America
446448-171	Keyboard for use in Saudi Arabia
446448-201	Keyboard for use in Brazil
446448-211	Keyboard for use in Hungary
446448-221	Keyboard for use in the Czech Republic

Spare part number	Description
446448-231	Keyboard for use in Slovakia
446448-251	Keyboard for use in Russia
446448-281	Keyboard for use in Thailand
446448-291	Keyboard for use in Japan
446448-A41	Keyboard for use in Belgium
446448-AB1	Keyboard for use in Taiwan
446448-AD1	Keyboard for use in Korea
446448-B71	Keyboard for use in Sweden
446448-BA1	Keyboard for use in Slovenia
446448-BB1	Keyboard for use in Israel
446448-DD1	Keyboard for use in Iceland
446680-001	Rubber Kit—includes 6 computer feet (in 2 different sizes) and 2 base enclosure screw covers
446793-001	Smart card reader board

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
- Torx T8 screwdriver

Service considerations

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



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

Plastic parts

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

Cables and connectors

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

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

Drive handling

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

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

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

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

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

Avoid dropping drives from any height onto any surface.

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

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

Avoid exposing a drive to temperature extremes or liquids.

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

Grounding guidelines

Electrostatic discharge damage

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

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

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

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

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

Use nonmagnetic tools.

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

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

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

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

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

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

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

Workstation guidelines

Follow these grounding workstation guidelines:

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

Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

Unknown user password

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



NOTE: These steps also clear CMOS.

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the real-time clock (RTC) battery (see [RTC battery on page 58](#)).
6. Wait approximately 5 minutes.
7. Replace the RTC battery and reassemble the computer.
8. Connect AC power to the computer. Do not reinsert any batteries at this time.
9. Turn on the computer.

All passwords and all CMOS settings have been cleared.

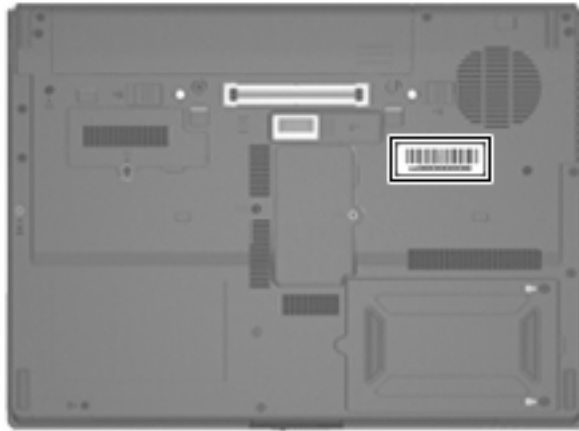
Component replacement procedures

This chapter provides removal and replacement procedures.

There are as many as 72 screws, in 15 different sizes, that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Serial number

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



Battery

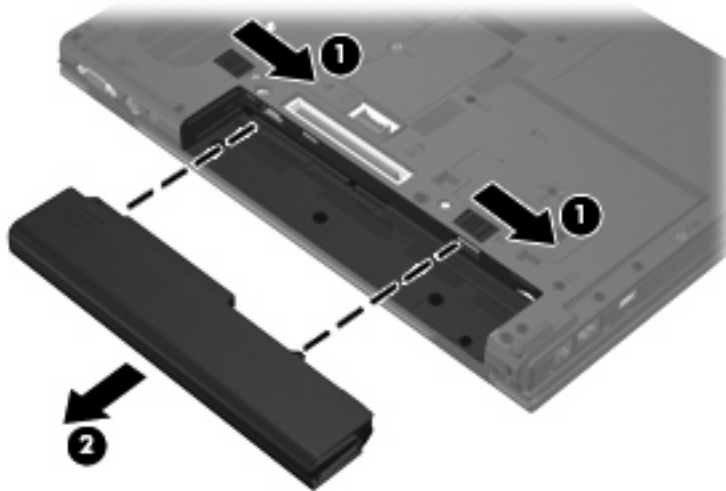
Description	Spare part number
6-cell, 5.1-Ah, Li-ion battery	446399-001
4-cell, 2.55-Ah, Li-ion battery	446398-001

Before disassembling the computer, follow these steps:

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


Remove the battery:

1. Turn the computer upside down on a flat surface, with the battery bay toward you.
2. Slide the battery release latches **(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.

SIM

 **NOTE:** This section applies only to computer models with WWAN capability.

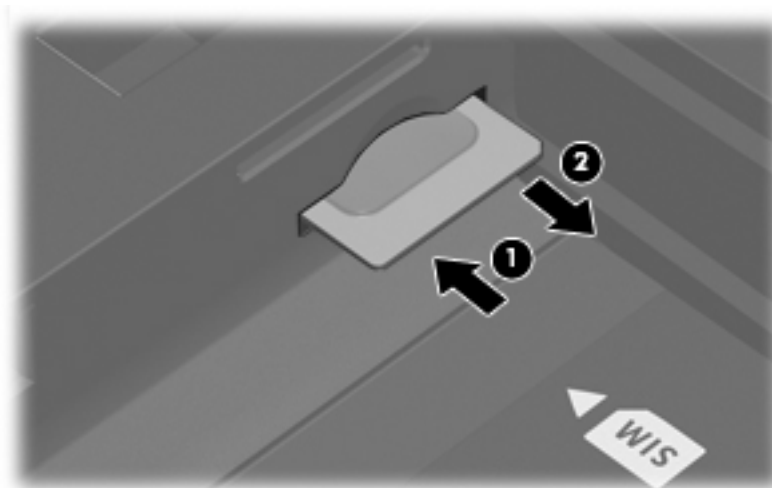
NOTE: If there is a SIM inserted in the SIM slot, it must be removed before disassembling the computer. Be sure the SIM is reinserted in the SIM slot after reassembling the computer.

Before removing the SIM, follow these steps:

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


Remove the SIM:

1. Press in on the SIM (1). (The module is partially ejected from the SIM slot.)
2. Remove the SIM (2) from the SIM slot.



Reverse this procedure to install the SIM.

Display inverter

 **NOTE:** If it has been determined that the display inverter is the component that must be replaced to complete the computer repair, the display assembly does not have to be removed. Follow the procedures in this section to replace the display inverter. For information on replacing the display assembly and the display hinges, see [Display assembly on page 69](#).

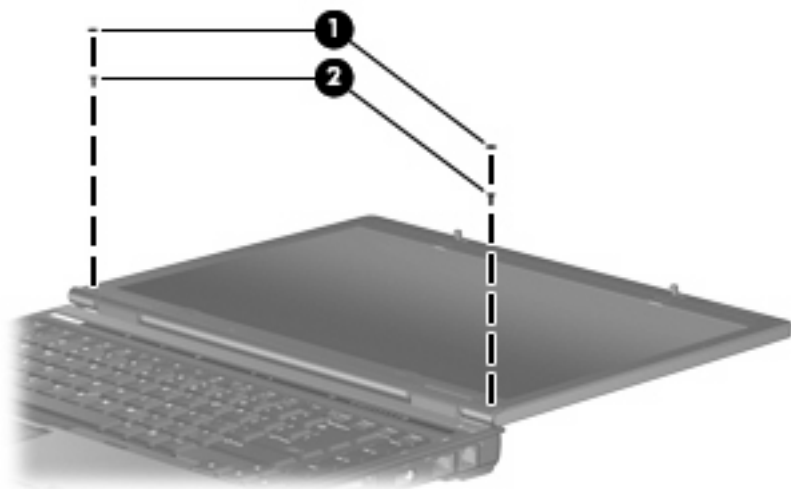
Description	Spare part number
Display inverter (includes 2-sided tape)	446418-001

Before removing the display inverter, follow these steps:

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

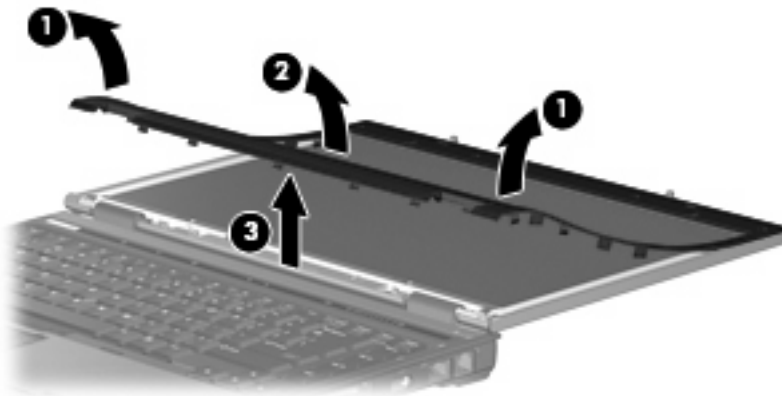
Remove the display inverter:

1. Turn the computer right-side up, with the front toward you.
2. Open the computer as far as possible.
3. Remove the two rubber screw covers **(1)** on the bottom edge of the display bezel.
4. Remove the two Torx T8M2.5×6.0 screws **(2)** that secure the bottom edge of the display bezel to the display enclosure.

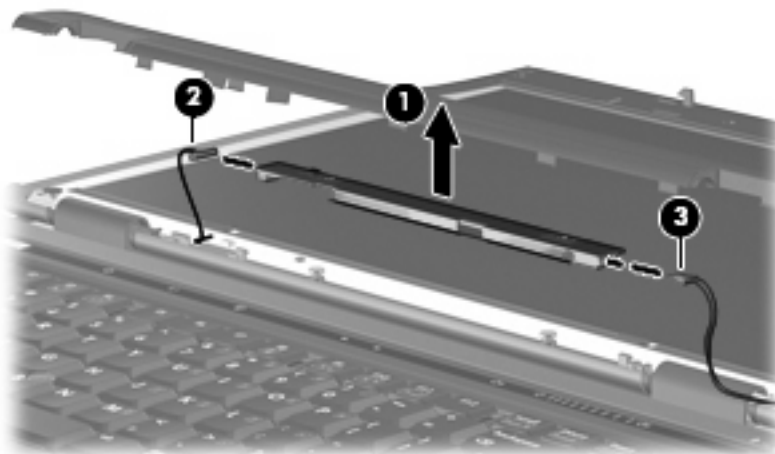


5. Flex the inside edges of the left and right sides **(1)** and the bottom edge **(2)** of the display bezel until the bezel disengages from the display enclosure.

6. Release the bottom edge of the display bezel **(3)** from the display assembly.



7. Release the inverter **(1)** from the display enclosure as far as the display panel cable and backlight cable allow.
8. Disconnect the display panel cable **(2)** and the backlight cable **(3)** from the display inverter.



9. Remove the display inverter.

Reverse this procedure to install the display inverter.

Hard drive

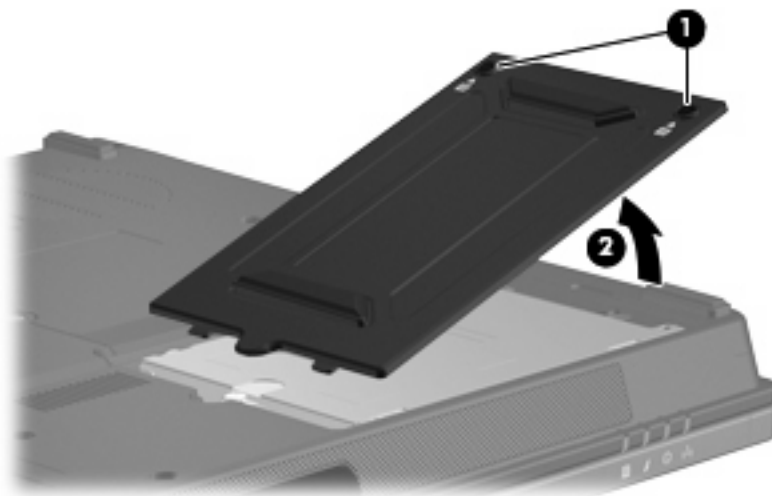
Description	Spare part number
160-GB, 5400-rpm hard drive	446411-001
120-GB, 5400-rpm hard drive	446413-001
100-GB, 7200-rpm hard drive	446412-001
80-GB, 7200-rpm hard drive	446415-001
80-GB, 5400-rpm hard drive	446414-001

Before disassembling the computer, follow these steps:

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

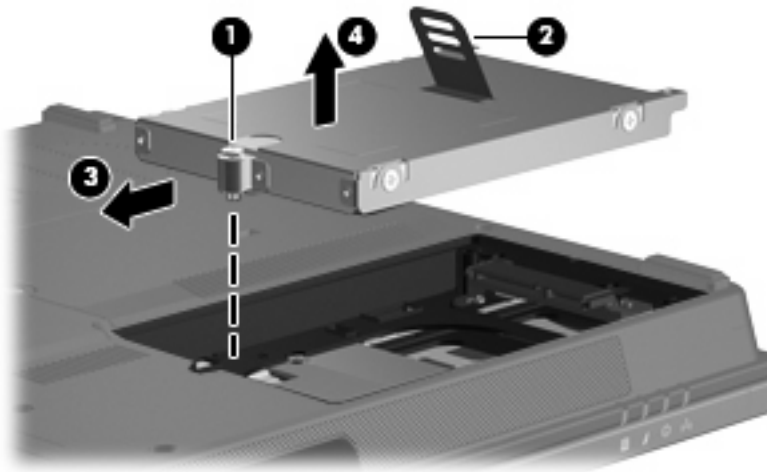
Remove the hard drive:

1. Position the computer with the front toward you.
2. Loosen the two Phillips PM2.0×5.0 captive screws (1) that secure the hard drive cover to the computer.
3. Lift the right side of the hard drive cover (2), swing it to left, and remove the cover. The hard drive cover is included in the Plastics Kit, spare part number 446439-001.

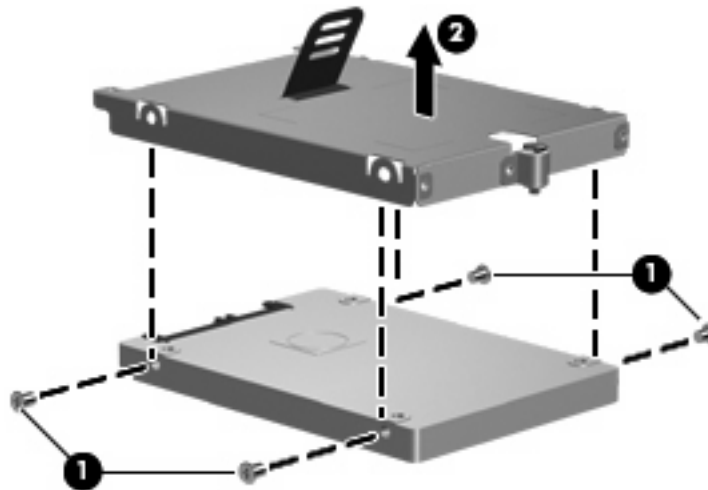


4. Loosen the Phillips PM2.5×13.0 captive screw (1) that secures the hard drive to the computer.
5. Grasp the Mylar tab (2) on the hard drive and slide the hard drive (3) to the left to disconnect it from the system board.

6. Remove the hard drive (4) from the hard drive bay.



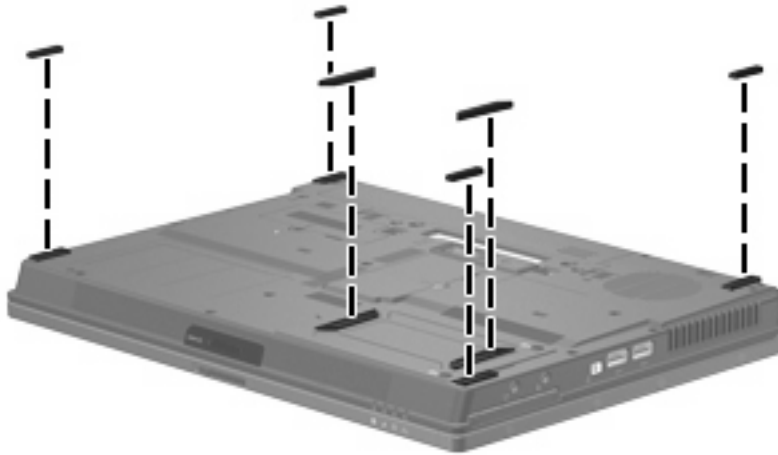
7. If it is necessary to replace the hard drive bracket, remove the two Phillips PM3.0×3.0 hard drive bracket screws (1) from each side of the hard drive.
8. Lift the bracket (2) straight up to remove it from the hard drive.



Reverse this procedure to reassemble and install the hard drive.

Computer feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Rubber Kit, spare part number 446680-001. There are 6 rubber feet in 2 different sizes. The feet attach to the base enclosure in the locations illustrated below.



Bluetooth module

Description	Spare part number
Bluetooth (includes Bluetooth module cable)	446405-001

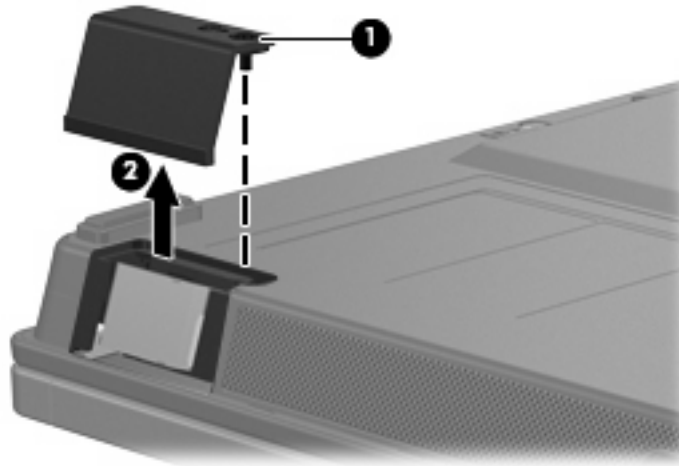
Before removing the Bluetooth module, follow these steps:

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

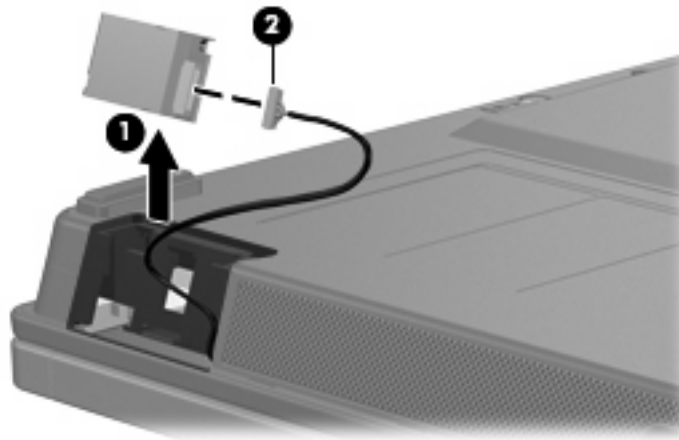
Remove the Bluetooth® module:

1. Position the computer with the front toward you.
2. Loosen the Phillips PM2.0×5.0 captive screw **(1)** that secures the Bluetooth module compartment cover to the computer.

3. Lift the cover (2) straight up to remove it. The Bluetooth module compartment cover is included in the Plastics Kit, spare part number 446439-001.



4. Remove the Bluetooth module (1) from the computer.
5. Disconnect the Bluetooth module cable (2) from the module.



6. Remove the Bluetooth module.

Reverse this procedure to reassemble and install the Bluetooth module.

Expansion memory module

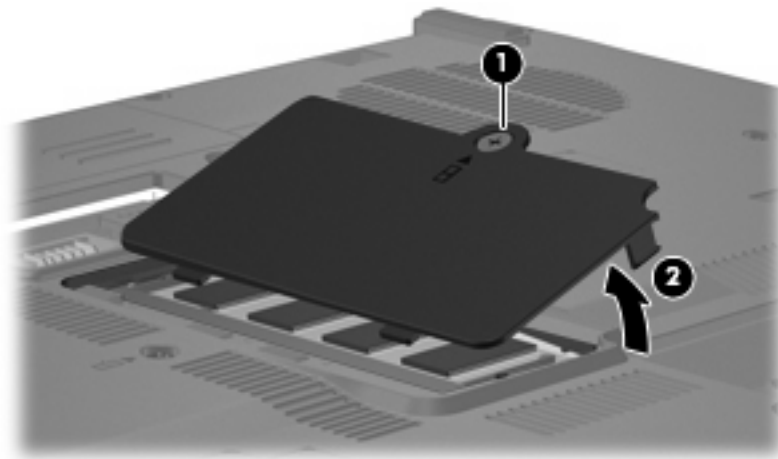
Description	Spare part number
2048-MB (667-MHz, PC2-5300, 1-DIMM)	446430-001
1024-MB (667-MHz, PC2-5300, 1-DIMM)	446429-001
512-MB (667-MHz, PC2-5300, 1-DIMM)	446431-001

Before removing the expansion memory module, follow these steps:

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


Remove the expansion memory module:

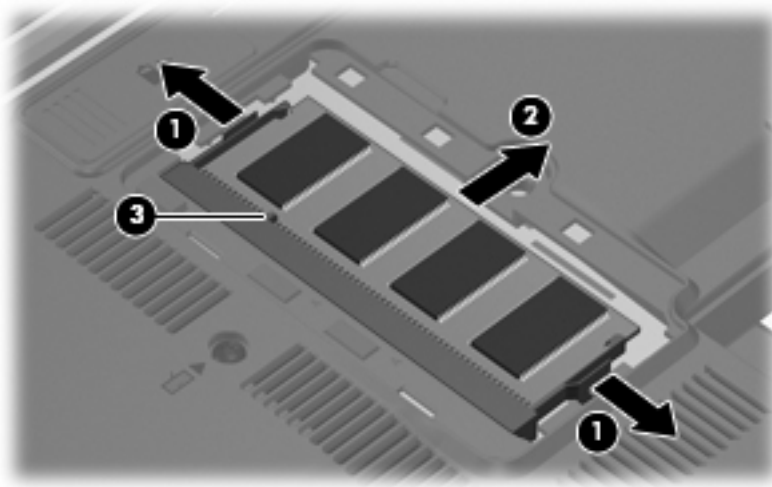
1. Loosen the Phillips PM2.0×5.0 captive screw **(1)** that secures the memory module compartment cover to the computer.
2. Lift the right side of the cover **(2)**, swing it to the right, and remove the cover. The memory module compartment cover is included in the Plastics Kit, spare part number 446439-001.



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

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

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



Reverse this procedure to install the expansion memory module.

WLAN module

△ **CAUTION:** The WLAN module and WWAN module are not interchangeable.

Description	Spare part number
802.11a/b/g/n Broadcom WLAN modules:	
<ul style="list-style-type: none"> For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States 	441531-001
<ul style="list-style-type: none"> For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Belize, Benin, Bermuda, Bolivia, Bosnia & Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Cayman Islands, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guam, Guatemala, Guinea, Guinea-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Italy, the Ivory Coast, Jamaica, Jordan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Puerto Rico, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe 	441531-002
<ul style="list-style-type: none"> For use in Japan 	441531-291
802.11a/b/g/n Intel WLAN modules:	
<ul style="list-style-type: none"> For use in Antigua and Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, Uruguay, the United States, Venezuela, and Vietnam 	441086-001
<ul style="list-style-type: none"> For use in Austria, Azerbaijan, Bahrain, Belgium, Brazil, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Qatar, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and Uzbekistan 	441087-002
<ul style="list-style-type: none"> For use in Australia, New Zealand, Pakistan, the People's Republic of China, and South Korea 	441088-003
<ul style="list-style-type: none"> For use in Japan 	441089-291
802.11a/b/g Broadcom WLAN modules:	
<ul style="list-style-type: none"> For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States 	441075-001
<ul style="list-style-type: none"> For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the 	441076-002

Description	Spare part number
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-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, 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	
<ul style="list-style-type: none"> For use in Japan 	441077-291
802.11a/b/g Intel WLAN modules:	
<ul style="list-style-type: none"> For use in Antigua & Barbuda, Argentina, Aruba, the Bahamas, Barbados, Bermuda, Brunei, Canada, the Cayman Islands, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Hong Kong, India, Indonesia, Malaysia, Mexico, Panama, Paraguay, Peru, Saudi Arabia, Taiwan, the United States, Uruguay, Venezuela, and Vietnam 	441082-001
<ul style="list-style-type: none"> For use in Austria, Azerbaijan, Bahrain, Belgium, Brazil, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Qatar, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and Uzbekistan 	441083-002
<ul style="list-style-type: none"> For use in Australia, New Zealand, Pakistan, the People's Republic of China, and South Korea 	441084-003
<ul style="list-style-type: none"> For use in Japan 	441085-291
802.11a/b/g Broadcom WLAN modules:	
<ul style="list-style-type: none"> For use in Antigua and Barbuda, Argentina, Australia, the Bahamas, Barbados, Brunei, Canada, Chile, the Dominican Republic, Guam, Guatemala, Hong Kong, India, Indonesia, Malaysia, Mexico, New Zealand, Panama, Paraguay, Saudi Arabia, Taiwan, the United States, and Vietnam 	407576-001
<ul style="list-style-type: none"> For use in Aruba, Austria, Azerbaijan, Bahrain, Belgium, Bermuda, Brazil, Bulgaria, the Cayman Islands, Colombia, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, El Salvador, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Jordan, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Oman, the Philippines, Poland, Portugal, Romania, Russia, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, the United Kingdom, and Uzbekistan 	407576-002
<ul style="list-style-type: none"> For use in Ecuador, Haiti, Honduras, Pakistan, the People's Republic of China, Peru, Qatar, South Korea, Uruguay, and Venezuela 	407576-003
<ul style="list-style-type: none"> For use in Japan 	407576-291
802.11b/g Broadcom WLAN modules:	
<ul style="list-style-type: none"> For use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States 	441090-001

Description	Spare part number
<ul style="list-style-type: none"> For use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua & Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia, Bosnia & Herzegovina Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equitorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Grenada, Guadeloupe, Guatemala, Guinea, Guinea-Bissa, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, the Ivory Coast, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Nether Antilles, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Qatar, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia and Montenegro, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, South Korea, Spain, Sri Lanka, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenada, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe 	441091-002
<ul style="list-style-type: none"> For use in Japan 	441092-291
<ul style="list-style-type: none"> For use in Thailand 	409250-004

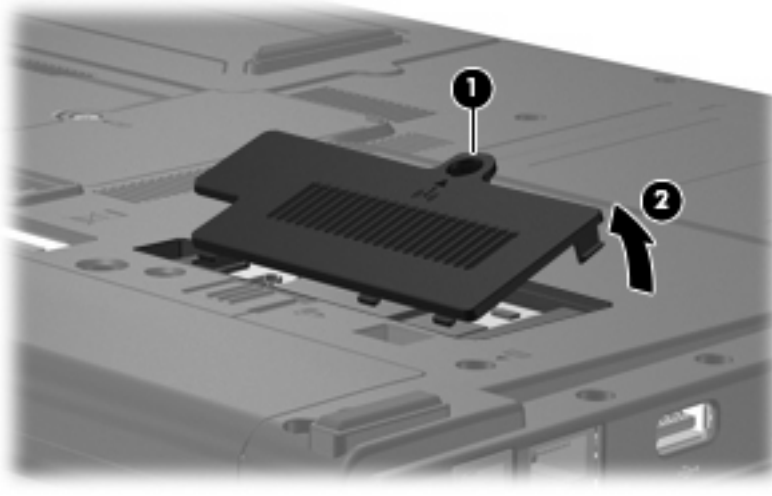
Before removing the WLAN module, follow these steps:

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


Remove the WLAN module:

1. Loosen the Phillips PM2.0×5.0 captive screw **(1)** that secures the WLAN module compartment cover to the computer.


2. Lift the front edge of the WLAN module compartment cover (2), swing it toward the back of the computer, and remove the cover. The WLAN module compartment cover is included in the Plastics Kit, spare part number 446439-001.

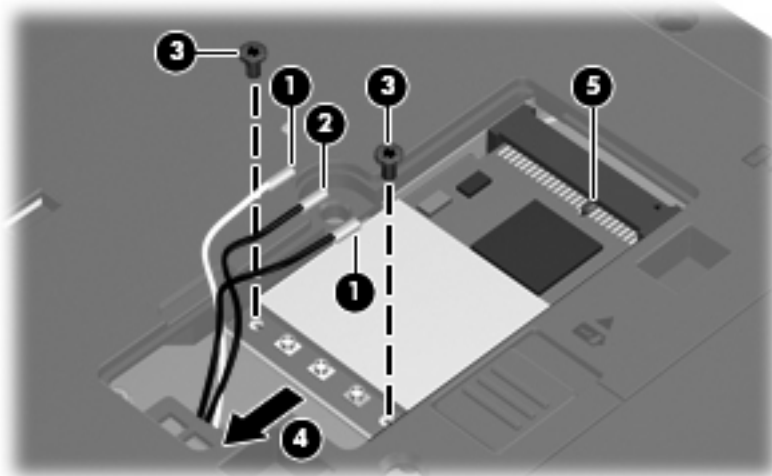


3. Disconnect the WLAN antenna cables (1) from the terminals on the WLAN module.

 **NOTE:** The black WLAN antenna cable is connected to the WLAN module “Main” terminal. The white WLAN antenna cable is connected to the WLAN module “Aux” terminal. If the computer is equipped with an 802.11a/b/g/n WLAN module, the yellow WLAN antenna cable (2) is connected to the middle terminal on the WLAN module.

4. Remove the two Phillips PM2.0×3.0 screws (3) that secure the WLAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)
5. Remove the WLAN module (4) by pulling the module away from the slot at an angle.

 **NOTE:** WLAN modules are designed with a notch (5) to prevent incorrect installation.



Reverse this procedure to install the WLAN module.

MultiBay II device

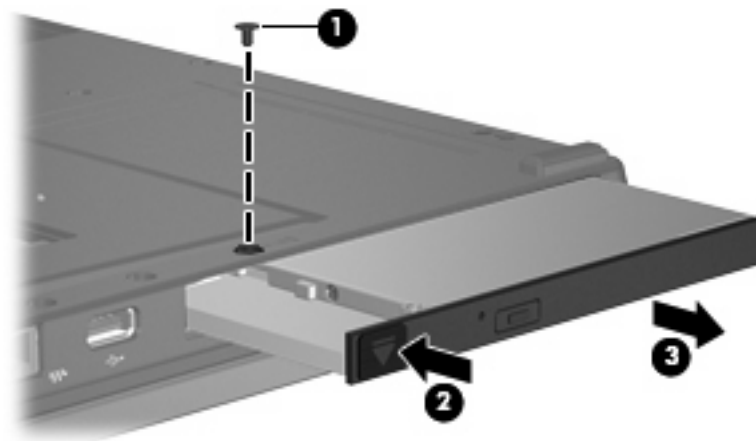
Description	Spare part number
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	446409-001
DVD/CD-RW Combo Drive	446410-001
DVD-ROM Drive	446408-001

Before removing the MultiBay II device, follow these steps:

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

Remove the optical drive:

1. Position the computer with the left side toward you.
2. If present, remove the Phillips PM2.5×5.0 screw (1) that secures the MultiBay II device to the computer.
3. Push in on the right side of the MultiBay II device (2). (The MultiBay II device partially ejects from the MultiBay II.)
4. Remove the MultiBay II device (3) from the computer.



Reverse this procedure to install a MultiBay II device.

Keyboard

For use in:	Spare part number	For use in:	Spare part number
Belgium	446448-A41	The Netherlands and Europe	446448-021
Brazil	446448-201	Norway	446448-091
The Czech Republic	446448-221	Portugal	446448-131
Denmark	446448-081	Russia	446448-251
France	446448-051	Saudi Arabia	446448-171
French Canada	446448-121	Slovakia	446448-231
Germany	446448-041	Slovenia	446448-BA1
Greece	446448-151	Spain	446448-071
Hungary	446448-211	Sweden and Finland	446448-B71
Iceland	446448-DD1	Switzerland	446448-111
Israel	446448-BB1	Taiwan	446448-AB1
Italy	446448-061	Thailand	446448-281
Japan	446448-291	Turkey	446448-141
Korea	446448-AD1	The United Kingdom	446448-031
Latin America	446448-161	The United States	446448-001

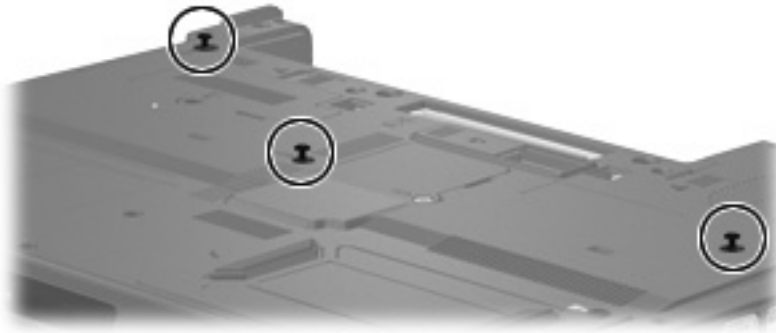
Before removing the keyboard, follow these steps:

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

Remove the keyboard:

1. Position the computer with the front toward you.

2. Loosen the three Torx T8M2.5×11.0 screws that secure the keyboard to the computer.

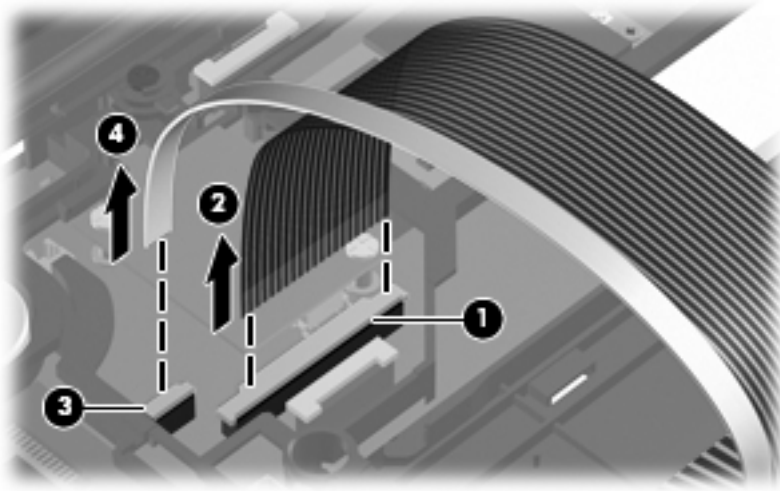


3. Turn the computer display-side up, with the front toward you.
4. Open the computer as far as possible.
5. Slide the four keyboard retention tabs (1) toward you. The tabs are located between the **esc** and **f1** keys, between the **f4** and **f5** keys, between the **f8** and **f9** keys, and between the **f12** and **scroll** keys.
6. Lift the rear edge of the keyboard (2) and swing it toward you until it rests on the palm rest.

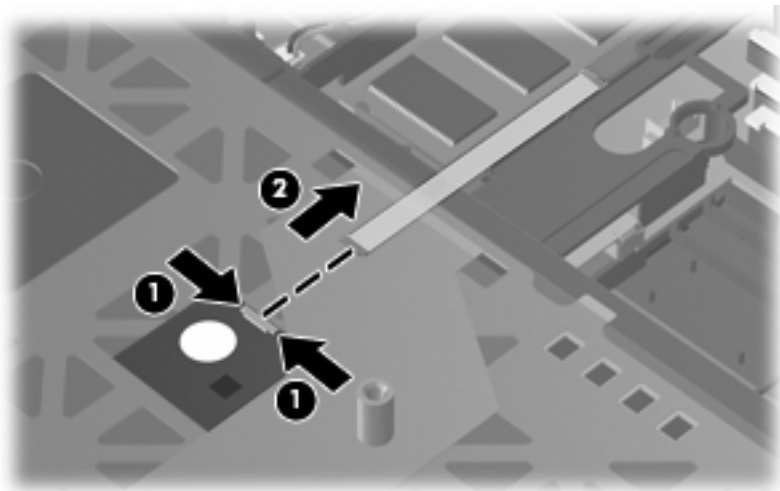


7. Release the zero insertion force (ZIF) connector (1) to which the keyboard cable is attached, and disconnect the keyboard cable (2) from the system board.

8. Release the ZIFconnector (3) to which the pointing stick cable is attached, and disconnect the pointing stick cable (4) from the system board.



9. Remove the keyboard.
10. If it is necessary to replace the pointing stick cable, turn the keyboard upside down, with the bottom of the keyboard toward you.
11. Release the ZIF connector (1) to which the pointing stick cable is attached, and disconnect the cable (2) from the keyboard. The pointing stick cable is included in the Cable Kit, spare part number 446406-001.



Reverse this procedure to install the keyboard.

RTC battery



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

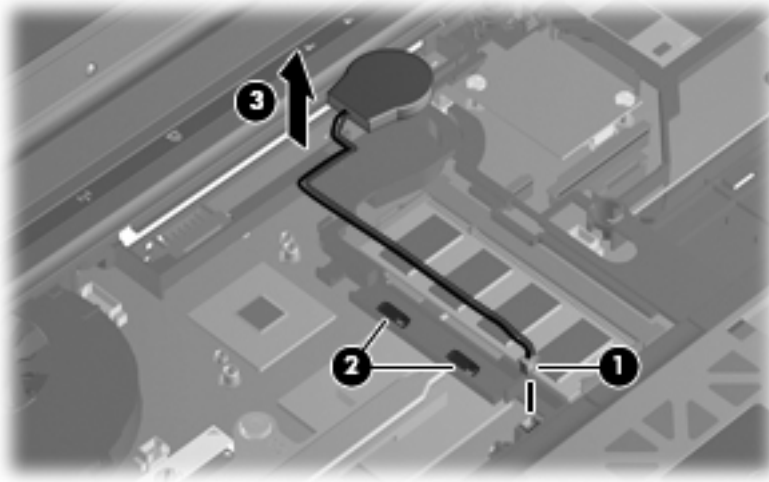
Description	Spare part number
RTC battery (includes 2-sided tape)	446400-001

Before removing the RTC battery, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Release the keyboard (see [Keyboard on page 55](#)).

Remove the RTC battery:

1. Disconnect the RTC battery cable **(1)** from the system board.
2. Remove the RTC battery cable **(2)** from the system board.
3. Remove the RTC battery **(3)** from the clip built into the top cover.



Reverse this procedure to install the RTC battery.

Primary memory module


Description	Spare part number
2048-MB (667-MHz, PC2-5300, 1-DIMM)	446430-001
1024-MB (667-MHz, PC2-5300, 1-DIMM)	446429-001
512-MB (667-MHz, PC2-5300, 1-DIMM)	446431-001

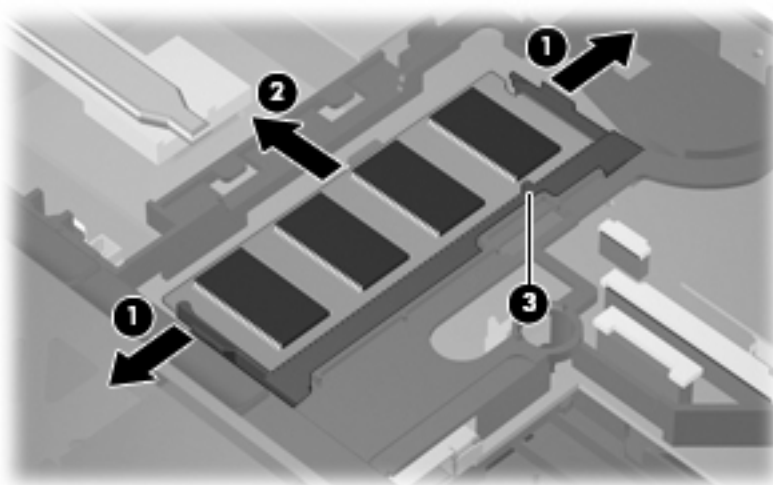
Before removing the primary memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Release the keyboard (see [Keyboard on page 55](#)).

Remove the primary memory module:

1. Spread the retaining tabs **(1)** on each side of the memory module slot to release the memory module. (The edge of the module opposite the slot rises away from the computer.)
2. Remove the memory module **(2)** by pulling the module away from the slot at an angle.

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



Reverse this procedure to install the primary memory module.

Modem module

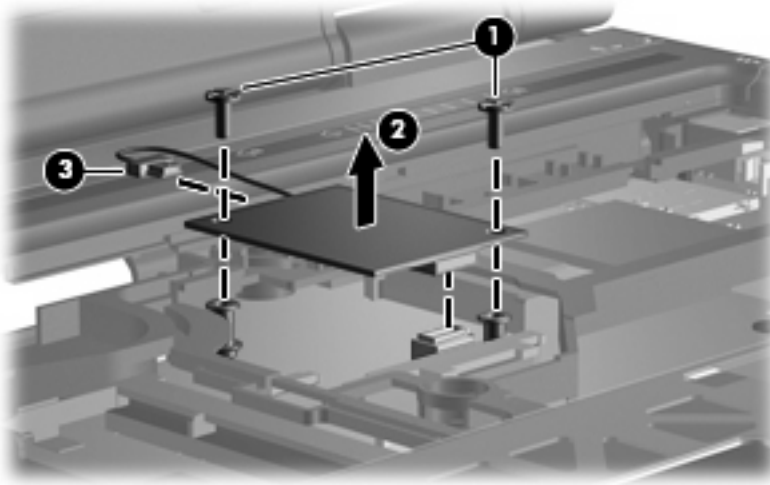
Description	Spare part number
Modem module (includes modem module cable)	446433-001

Before removing the modem module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Release the keyboard (see [Keyboard on page 55](#)).

Remove the modem module:

1. Remove the two Phillips PM2.0×6.0 screws **(1)** that secure the modem module to the computer.
2. Lift the modem module **(2)** straight up to disconnect it from the system board.
3. Disconnect the modem module cable **(3)** from the modem module.



4. Remove the modem module.

Reverse this procedure to install the modem module.

WWAN module

△ **CAUTION:** The WWAN module and WLAN module are not interchangeable.


Description	Spare part number
Verizon EVDO WWAN module	418860-001
Cingular HSPDA WWAN module	436638-001
Vodafone HSPDA WWAN module	435098-001

Before removing the WWAN module, follow these steps:


1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Release the keyboard (see [Keyboard on page 55](#)).

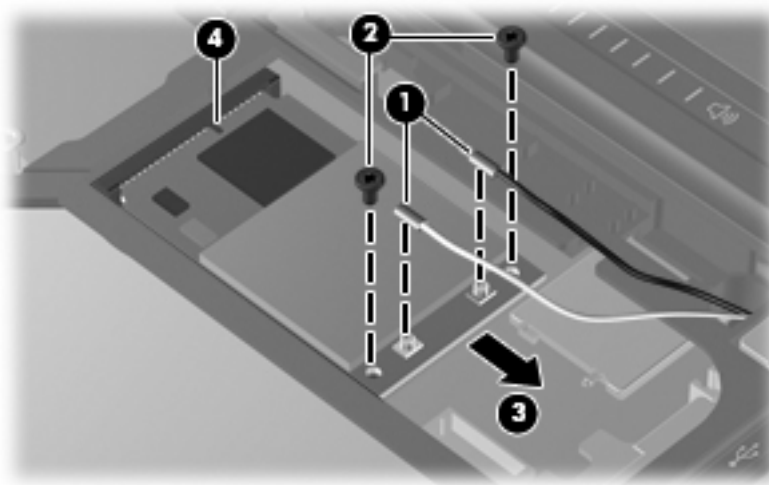
Remove the WWAN module:

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

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

2. Remove the two Phillips PM2.0×3.0 screws (2) that secure the WWAN module to the computer. (The edge of the module opposite the slot rises away from the computer.)
3. Remove the WWAN module (3) by pulling the module away from the slot at an angle.

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



Reverse this procedure to install the WWAN module.

Switch cover

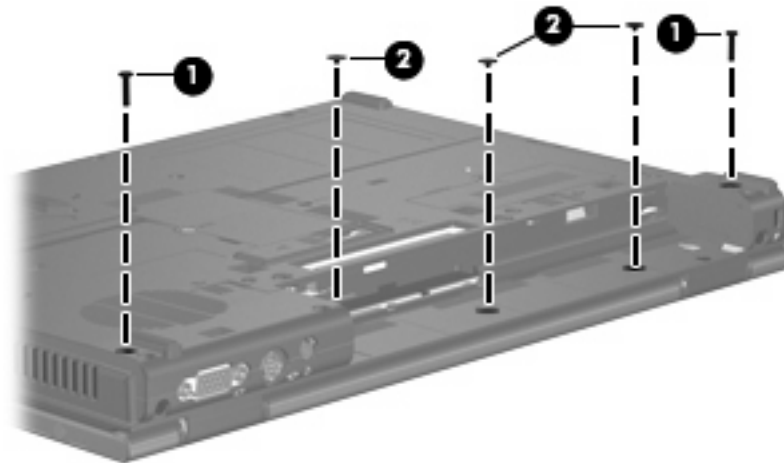
Description	Spare part number
Switch cover	446401-001

Before removing the switch cover, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the keyboard (see [Keyboard on page 55](#)).

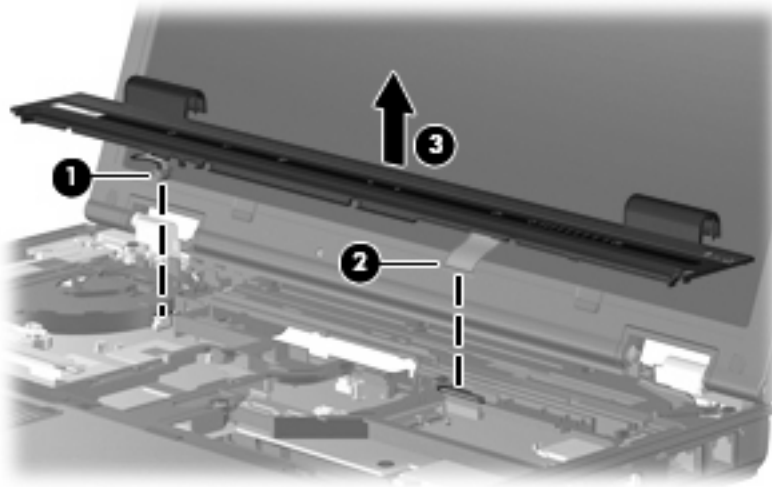
Remove the switch cover:

1. Close the computer.
2. Turn the computer upside down, with the rear panel toward you.
3. Remove the two Torx T8M2.5×11.0 screws (1) and the three Phillips PM2.0×2.0 screws (2) that secure the switch cover to the computer.

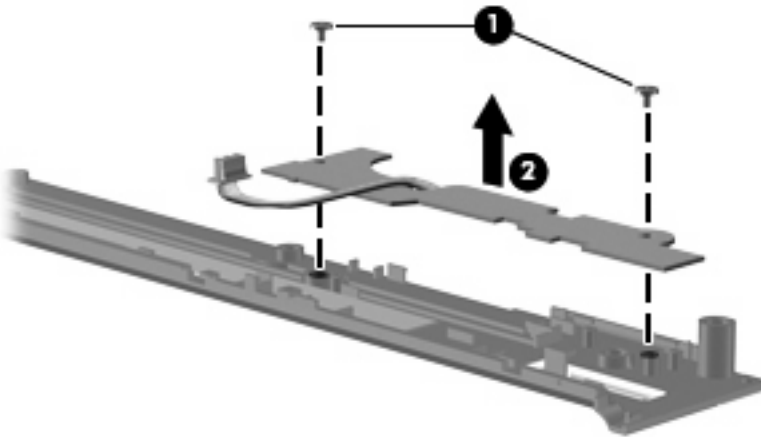


4. Turn the computer right-side up, with the front toward you.
5. Open the computer as far as possible.
6. Disconnect the power button board cable (1) from the system board.
7. Release the ZIF connector to which the LED board cable is attached, and disconnect the LED board cable (2) from the system board.

8. Remove the switch cover (3) by lifting it straight up until it disengages from the computer.



9. If it is necessary to replace the power button board, turn the switch cover upside down, with the bottom of the switch cover toward you.
10. Remove the Phillips PM2.5×3.0 screw (1) that secures the power button board to the switch cover.
11. Remove the power button board (2). The power button board is available using spare part number 446438-001.



Reverse this procedure to install the power button board and switch cover.

Fan assembly

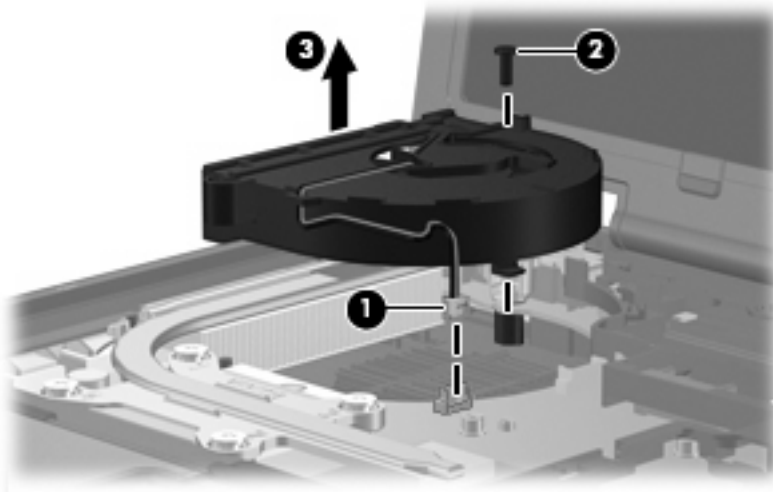
Description	Spare part number
Fan assembly	446416-001

Before removing the fan assembly, follow these steps:


1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the keyboard (see [Keyboard on page 55](#)).
6. Remove the switch cover (see [Switch cover on page 62](#)).

Remove the fan assembly:

1. Disconnect the fan cable (1) from the system board.
2. Remove the Phillips PM2.5×7.0 screw (2) that secures the fan assembly to the computer.
3. Remove the fan assembly (3).



Reverse this procedure to install the fan assembly.

 **NOTE:** To properly ventilate the computer, allow at least a 7.6-cm (3-inch) clearance on the left and right sides 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 applications. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

Heat sink



NOTE: All heat sink spare part kits include thermal material.

Description	Spare part number
For use with system boards spare part numbers 446403-001 and 446404-001	446446-001
For use with system board spare part number 446402-001	446447-001

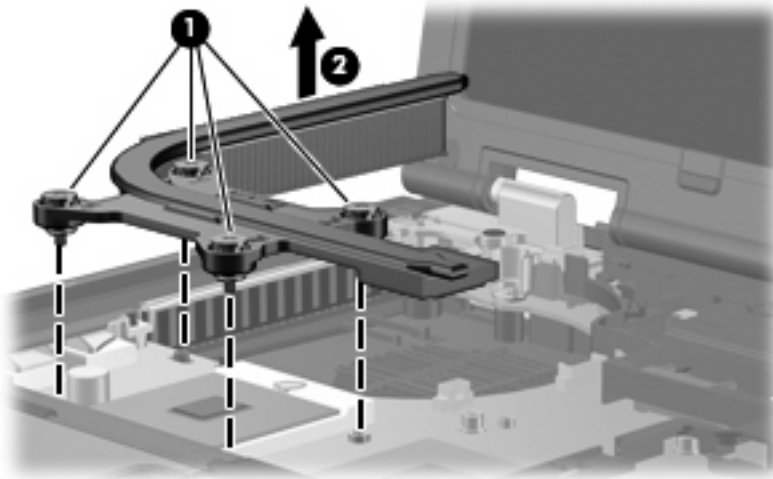
Before removing the heat sink, follow these steps:


1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the keyboard (see [Keyboard on page 55](#)).
6. Remove the switch cover (see [Switch cover on page 62](#)).
7. Remove the fan assembly (see [Fan assembly on page 64](#)).

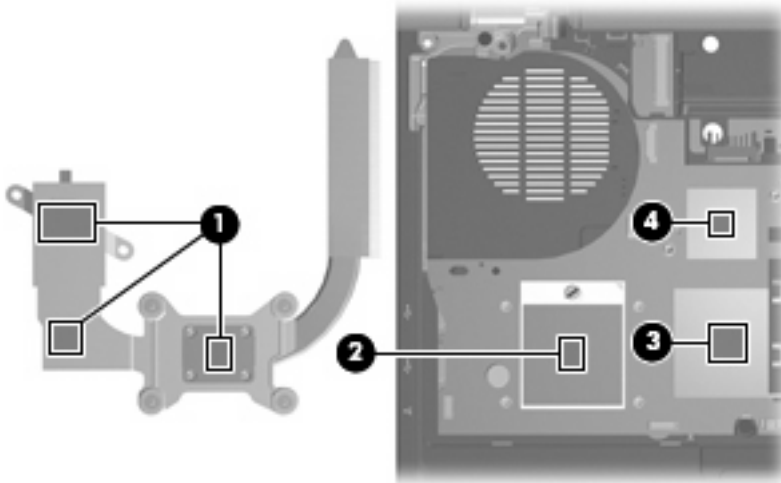
Remove the heat sink:

1. Loosen the four Phillips PM2.0×10.0 screws **(1)** that secure the heat sink to the system board.

2. Remove the heat sink (3) by lifting it straight up.



 **NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the heat sink (1) and the processor (2), and system board components (3) and (4) each time the heat sink is removed. Thermal material is included with all heat sink and processor spare part kits.



Reverse this procedure to install the heat sink.

Processor



NOTE: All processor spare part kits include thermal material.

Description	Spare part number
Intel Core Duo T7700 2.4-GHz processor (4-MB L2 cache)	446443-001
Intel Core Duo T7500 2.2-GHz processor (4-MB L2 cache)	446442-001
Intel Core Duo T7300 2.0-GHz processor (4-MB L2 cache)	446441-001
Intel Core Duo T7100 1.8-GHz processor (2-MB L2 cache)	446440-001


Before removing the processor, follow these steps:

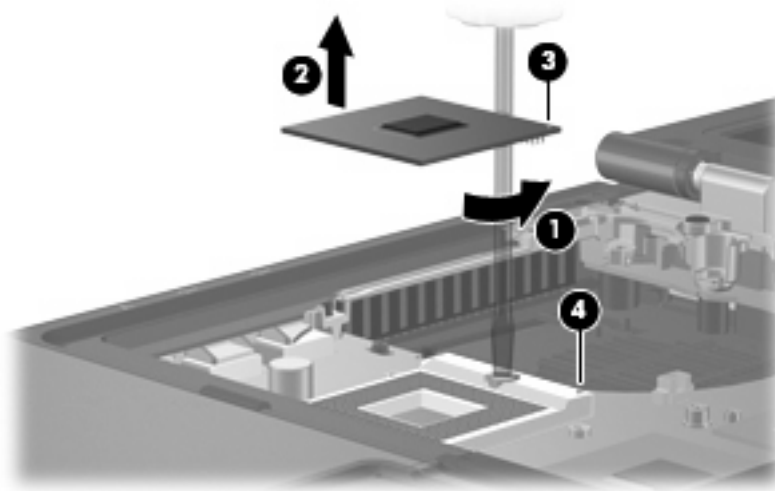
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Release the keyboard (see [Keyboard on page 55](#)).
6. Remove the switch cover (see [Switch cover on page 62](#)).
7. Remove the fan assembly (see [Fan assembly on page 64](#)).
8. Remove the heat sink (see [Heat sink on page 65](#)).

Remove the processor:

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

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

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



Reverse this procedure to install the processor.

Display assembly

Description	Spare part number
14.1-inch, WXGA+ display assembly (includes wireless antenna transceivers and cables)	446436-001
14.1-inch, WXGA display assembly (includes wireless antenna transceivers and cables)	446435-001

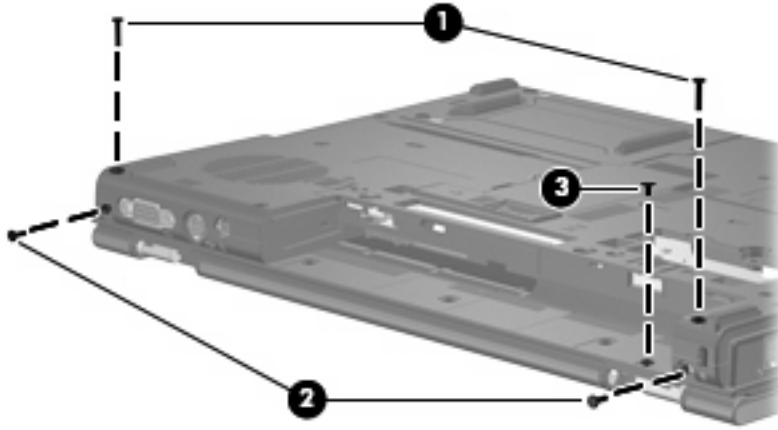
Before removing the display assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Disconnect the wireless antenna cables from the WLAN module (see [WLAN module on page 50](#)).
6. Remove the following components:
 - a. Keyboard (see [Keyboard on page 55](#))
 - b. Switch cover (see [Switch cover on page 62](#))
7. Disconnect the wireless antenna cables from the WWAN module (see [WWAN module on page 61](#)).

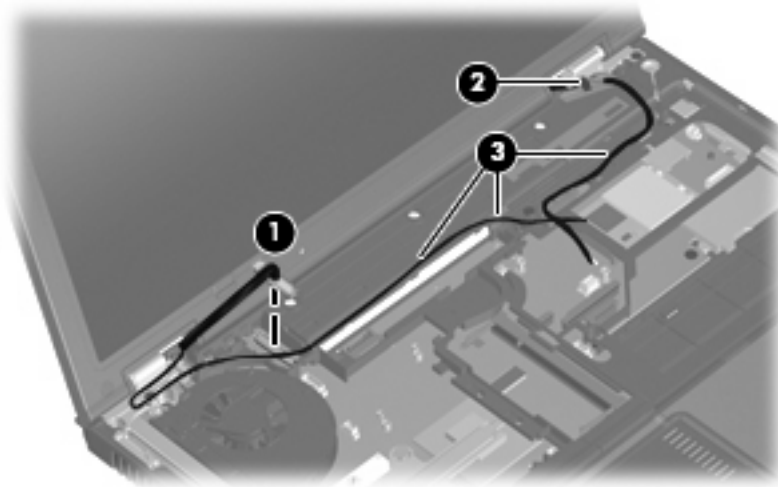
Remove the display assembly:

1. Turn the computer upside down, with the rear panel toward you.

2. Remove the following screws:
 - (1) Two Torx T8M2.5×11.0 screws
 - (2) Two Torx T8M2.5×7.0 screws
 - (3) One Phillips PM2.5×5.0 screw

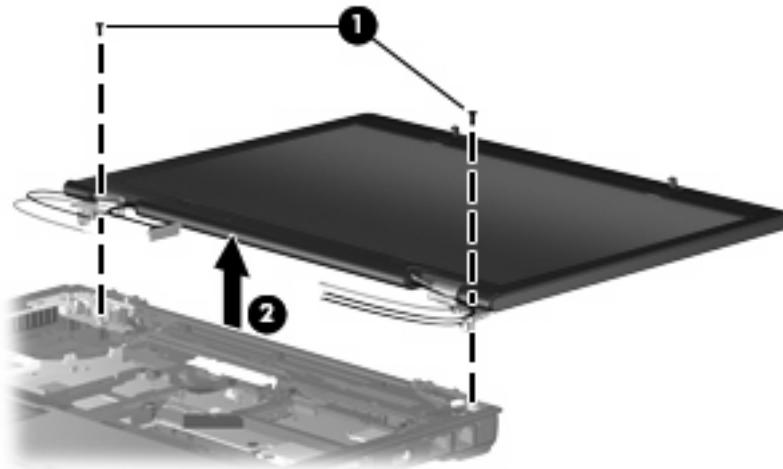


3. Turn the computer right-side up, with the front toward you.
4. Open the computer as far as possible.
5. Disconnect the display panel cable (1) from the system board.
6. Remove the wireless antenna cables from the routing channels (2) and clips (3) built into the top cover.



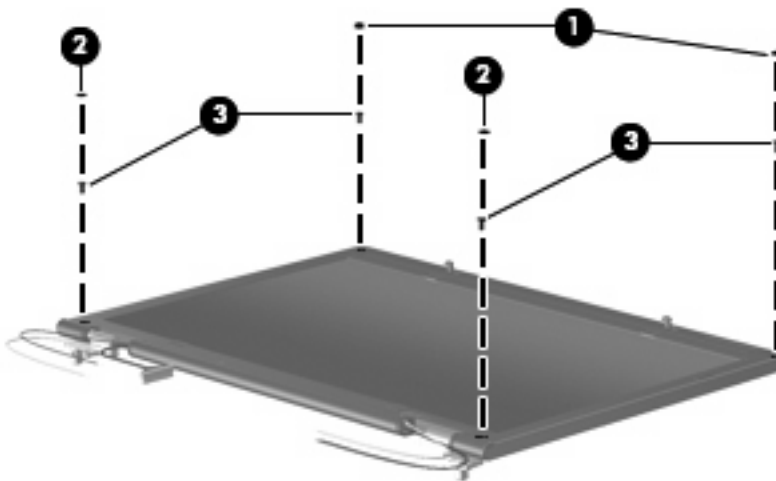
7. Remove the two Torx T8M2.5×7.0 screws (1) that secure the display assembly to the computer.

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



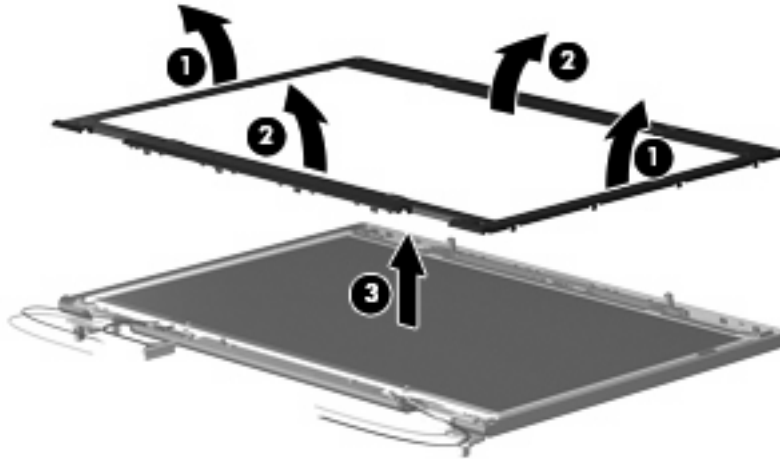
9. If it is necessary to replace the display hinges, remove the following:

- (1) Two rubber screw covers on the display bezel top edge
- (2) Two rubber screw covers on the display bezel bottom edge
- (3) Four Torx T8M2.5×6.0 screws

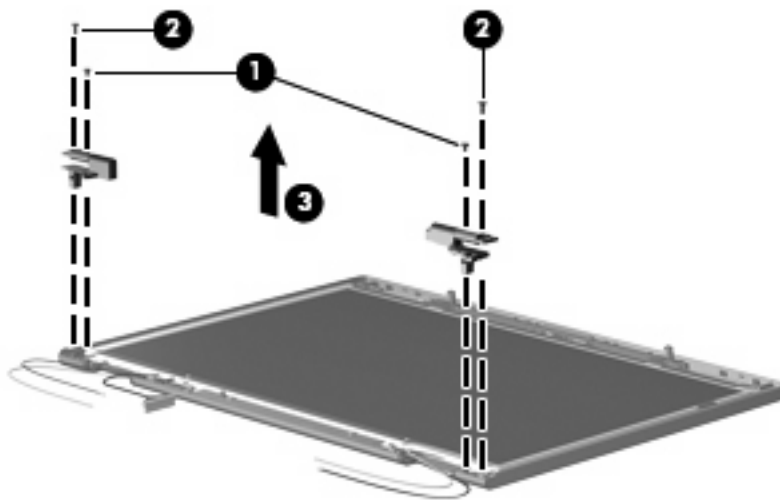


10. Flex the inside edges of the left and right sides (1) and the top and bottom sides (2) of the display bezel until the bezel disengages from the display enclosure.

11. Remove the display bezel (3). The display bezel is available using spare part number 446420-001.

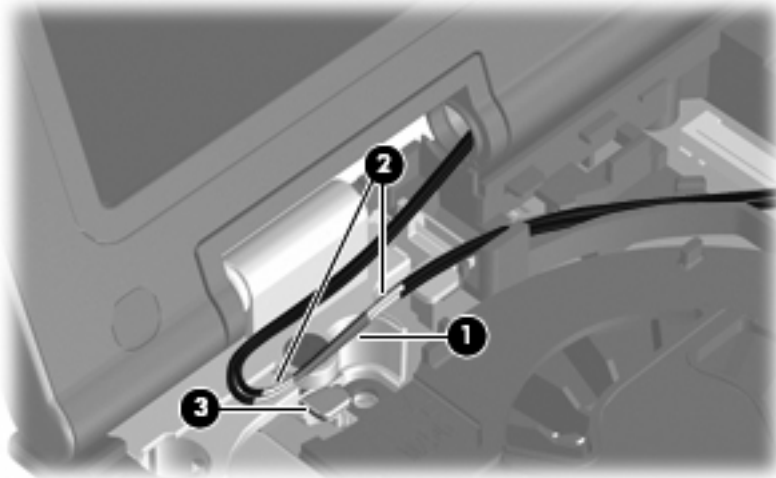


12. Remove the two Phillips PM2.5×4.0 screws (1) and the two Phillips PM2.5×6.0 screws (2) that secure the display hinge to the display panel.
13. Remove the display hinges (3). The left and right display hinges are available using spare part number 446417-001.



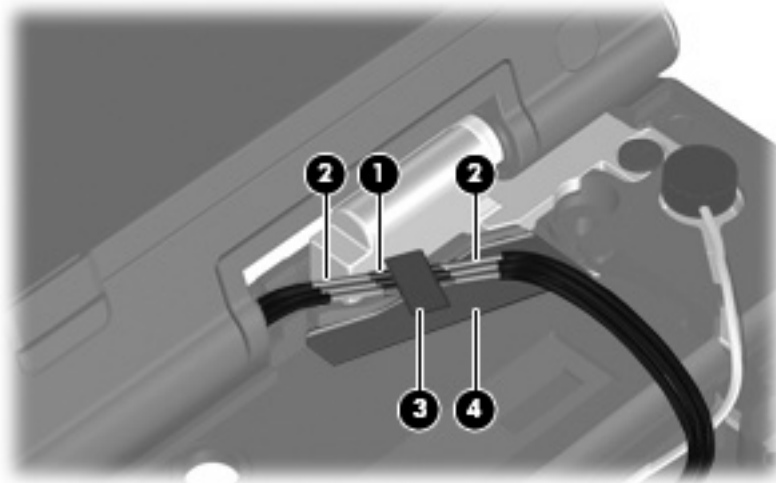
△ **CAUTION:** When installing the display assembly, be sure that the wireless antenna cable routed out of the display left hinge is routed and arranged properly. This antenna cable has a grounding sleeve (1) and an exposed section of cable (2). The grounding sleeve must completely cover the exposed section of cable, and must be in contact with the grounding clip (3) on the left display hinge.

Failure to follow these routing instructions can result in degradation of the computer's WLAN and WWAN performance.



- △ **CAUTION:** Be sure that the 3 wireless antenna cables routed out of the display right hinge are also routed and arranged properly. Each antenna cable has a metallic grounding sleeve (1) that must completely cover the exposed section of cable (2). A piece of metallic grounding tape (3) must be used to secure the cables to the flat section (4) of the display right hinge. This grounding tape must make contact with the grounding sleeves.

Failure to follow these routing instructions can result in degradation of the computer's WLAN and WWAN performance.



Reverse this procedure to reassemble and install the display assembly.

Top cover

Description	Spare part number
Top cover	446407-001

Before removing the top cover, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 44](#))
 - b. MultiBay II device (see [MultiBay II device on page 54](#))
 - c. Keyboard (see [Keyboard on page 55](#))
 - d. Switch cover (see [Switch cover on page 62](#))
 - e. Display assembly (see [Display assembly on page 69](#))

Remove the top cover:

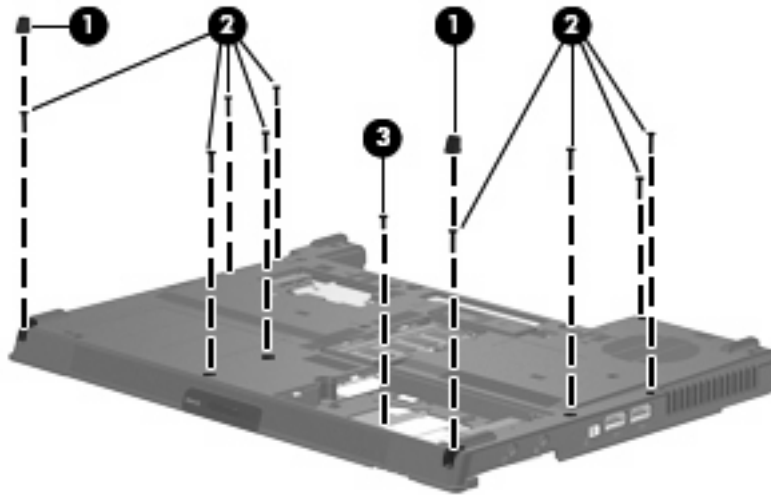
1. Turn the computer upside down, with the front toward you.

2. Remove the following:

(1) Two base enclosure rubber screw covers. The base enclosure rubber screw covers are included in the Rubber Kit, spare part number 446680-001.

(2) Nine Torx T8M2.5×11.0 screws.

(3) One Torx T8M2.5×7.0 screw.



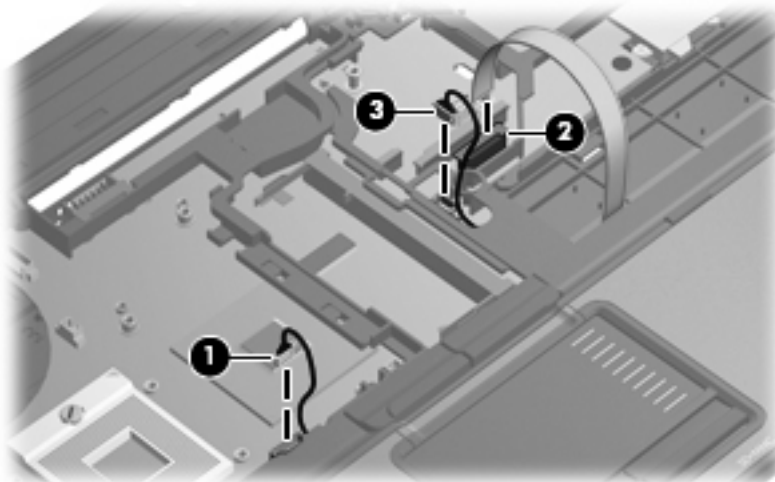
3. Turn the computer right-side up, with the front toward you.

4. Disconnect the following cables from the system board:

(1) TouchPad cable

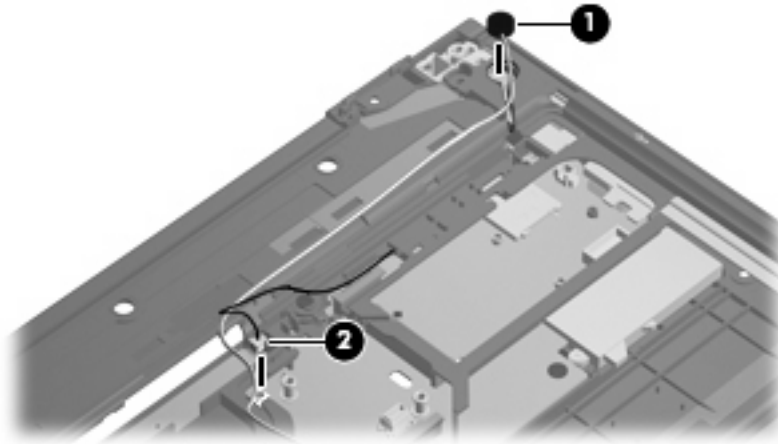
(2) Fingerprint reader board cable

(3) Smart card reader board cable

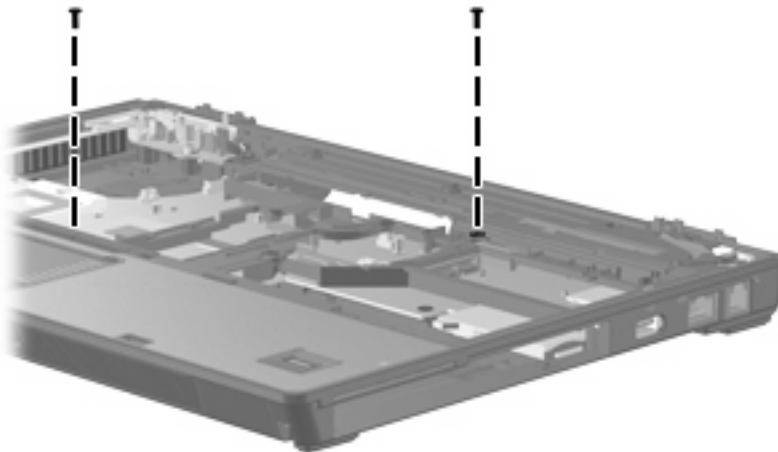


5. Remove the microphone receiver **(1)** from the clip built into the top cover.

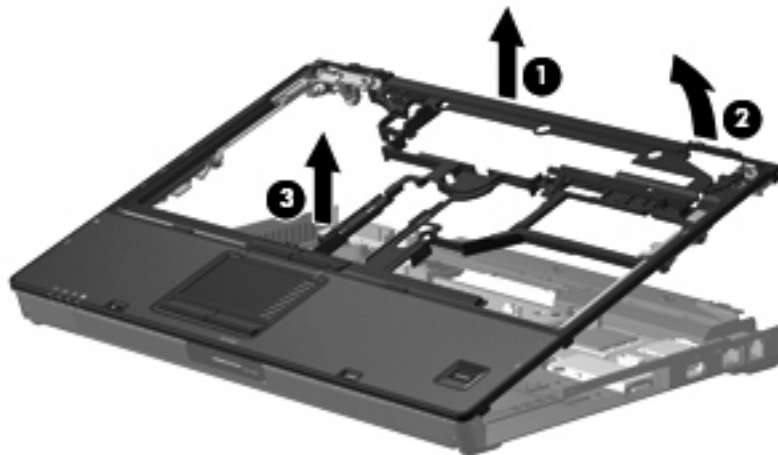
6. Disconnect the microphone cable (2) from the system board.



7. Remove the two Torx T8M2.5×7.0 screws that secure the top cover to the computer.



8. Lift the rear edge of the top cover (1) until it disengages from the base enclosure.
9. Swing the rear edge (2) of the top cover toward you until it rests at an angle.
10. Lift the top cover (3) straight up and remove it.



Reverse this procedure to install the top cover.

Smart card reader board

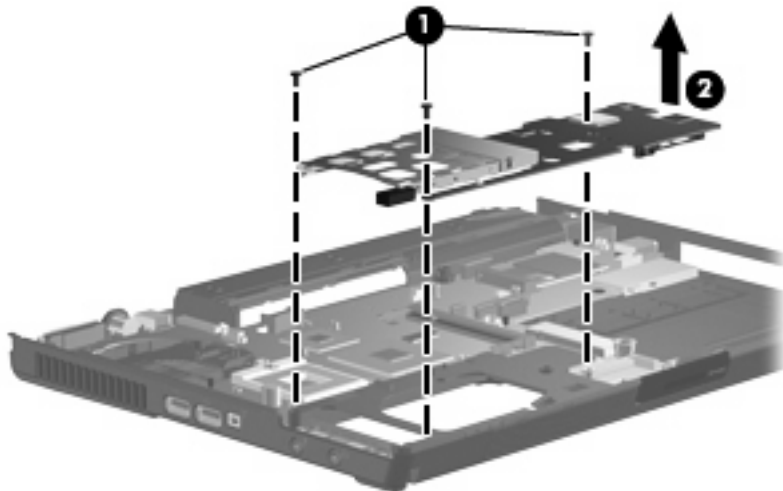
Description	Spare part number
Smart card reader board	446793-001

Before removing the smart card reader board, follow these steps:

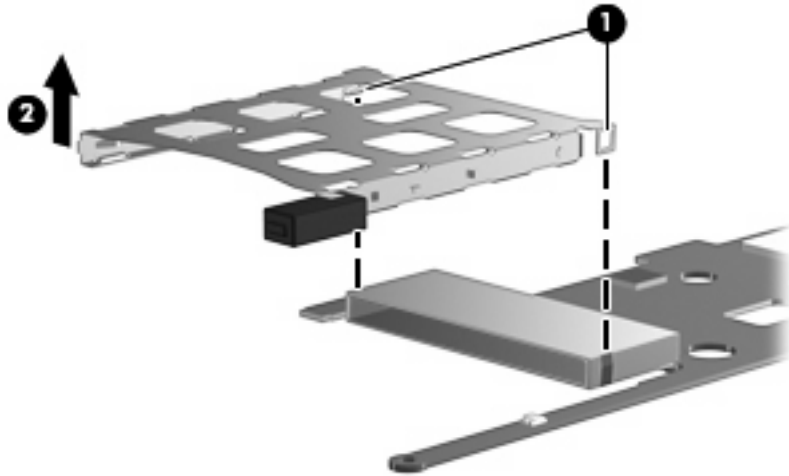
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 44](#))
 - b. MultiBay II device (see [MultiBay II device on page 54](#))
 - c. Keyboard (see [Keyboard on page 55](#))
 - d. Switch cover (see [Switch cover on page 62](#))
 - e. Display assembly (see [Display assembly on page 69](#))
 - f. Top cover (see [Top cover on page 74](#))

Remove the smart card reader board:

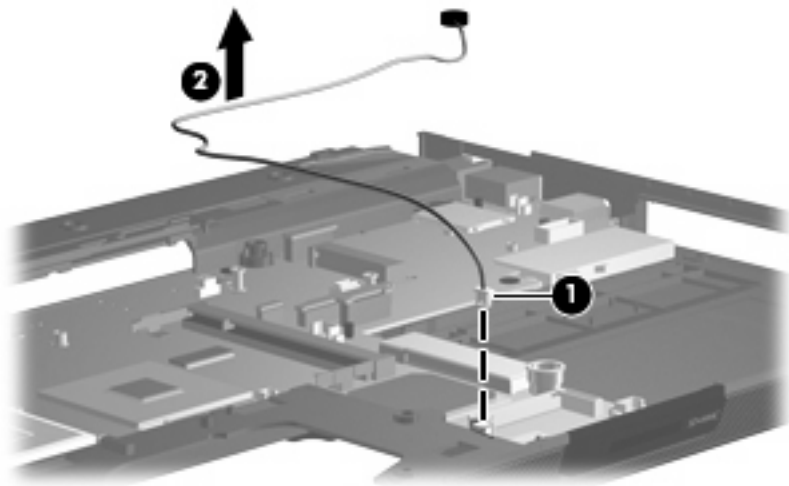
1. Remove the three Phillips PM2.5×4.0 screws (1) that secure the smart card reader board and the PC Card assembly to the base enclosure.
2. Remove the smart card reader board and the PC Card assembly (2).



3. If it is necessary to replace the PC Card assembly, remove the PC Card assembly from the smart card reader board by disengaging the hooks **(1)** on the PC Card assembly from the tabs on the smart card reader board.
4. Remove the PC Card assembly **(2)** from the smart card reader board. The PC Card assembly is available using spare part number 446437-001.



5. If it is necessary to replace the microphone and cable, disconnect the microphone cable **(1)** from the system board.
6. Remove the microphone and cable **(2)**. The microphone is available using spare part number 446432-001.



Reverse this procedure to install the smart card reader board, PC Card assembly, and microphone.

Speaker assembly

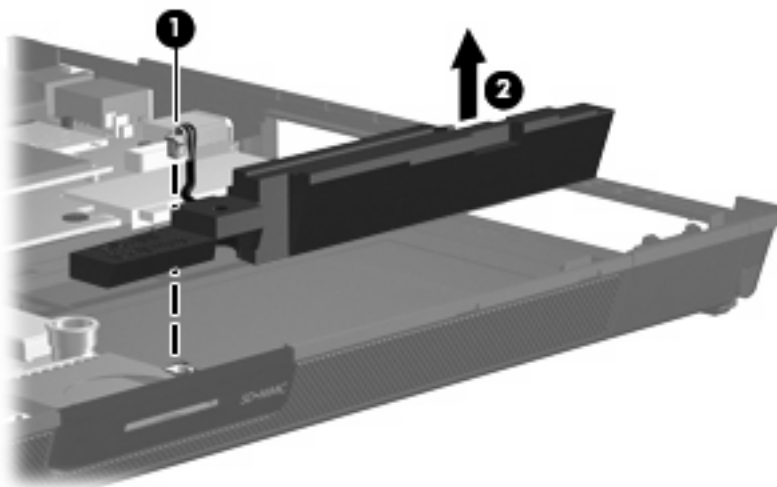
Description	Spare part number
Speaker assembly	446445-001

Before removing the speaker assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 44](#))
 - b. MultiBay II device (see [MultiBay II device on page 54](#))
 - c. Keyboard (see [Keyboard on page 55](#))
 - d. Switch cover (see [Switch cover on page 62](#))
 - e. Display assembly (see [Display assembly on page 69](#))
 - f. Top cover (see [Top cover on page 74](#))

Remove the speaker assembly:

1. Disconnect the speaker cable **(1)** from the system board.
2. Remove the speaker assembly **(2)** from the base enclosure.



Reverse this procedure to install the speaker assembly.

System board

Description	Spare part number
System board for use with heat sink spare part number 446446-001 (includes 128 MB of discrete video memory)	446403-001
System board for use with heat sink spare part number 446446-001 (includes 64 MB of discrete video memory)	446404-001
System board for use with heat sink spare part number 446447-001 (video memory is shared with main system memory)	446402-001

Before removing the system board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 44](#))
 - b. Bluetooth module (see [Bluetooth module on page 46](#))
 - c. MultiBay II device (see [MultiBay II device on page 54](#))
 - d. Keyboard (see [Keyboard on page 55](#))
 - e. Switch cover (see [Switch cover on page 62](#))
 - f. Fan assembly (see [Fan assembly on page 64](#))
 - g. Heat sink (see [Heat sink on page 65](#))
 - h. Display assembly (see [Display assembly on page 69](#))
 - i. Top cover (see [Top cover on page 74](#))
 - j. Smart card reader board (see [Smart card reader board on page 77](#))
 - k. Microphone (see [Smart card reader board on page 77](#))
 - l. Speaker assembly (see [Speaker assembly on page 79](#))

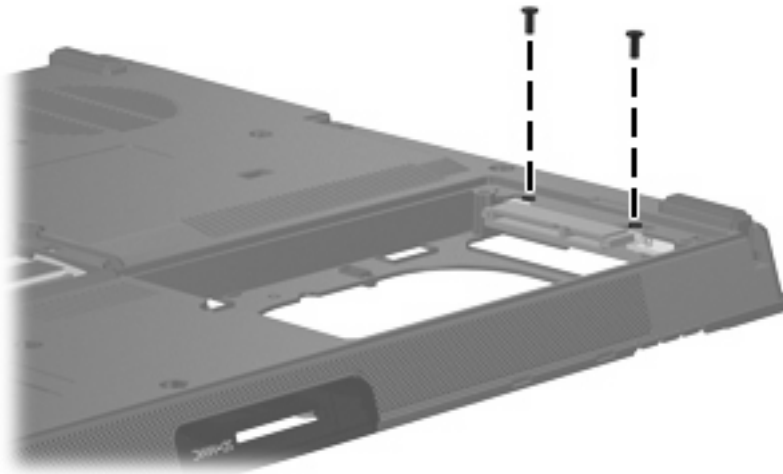
When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

- SIM (see [SIM on page 41](#))
- Memory modules (see [Expansion memory module on page 48](#) and [Primary memory module on page 59](#))
- WLAN module (see [WLAN module on page 50](#))

- RTC battery (see [RTC battery on page 58](#))
- WWAN module (see [WWAN module on page 61](#))
- Processor (see [Processor on page 67](#))
- Smart card reader board (see [Smart card reader board on page 77](#))
- Modem module (see [Modem module on page 60](#))

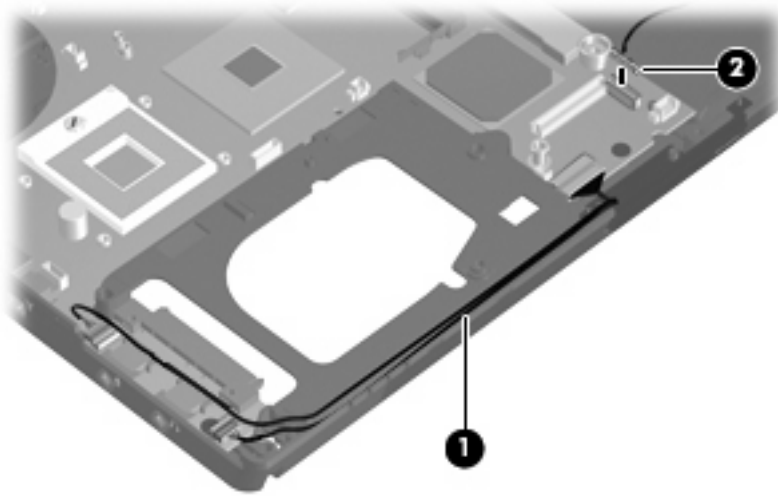
Remove the system board:

1. Turn the computer upside down, with the front toward you.
2. Remove the two Phillips PM2.0×6.0 screws, on each side of the hard drive connector, that secure the system board to the base enclosure.

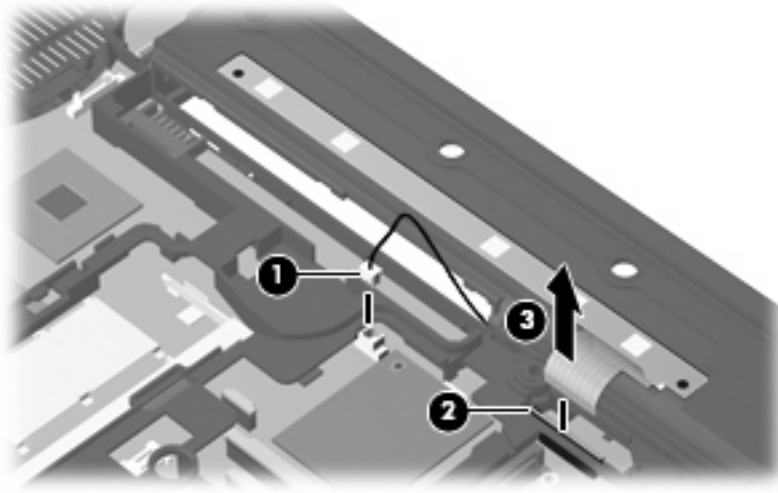


3. Turn the computer right-side up, with the front toward you.
4. Remove the audio cable **(1)** from the space between the base enclosure and the system board. The audio board cable is available in the Cable Kit, spare part number 446406-001.

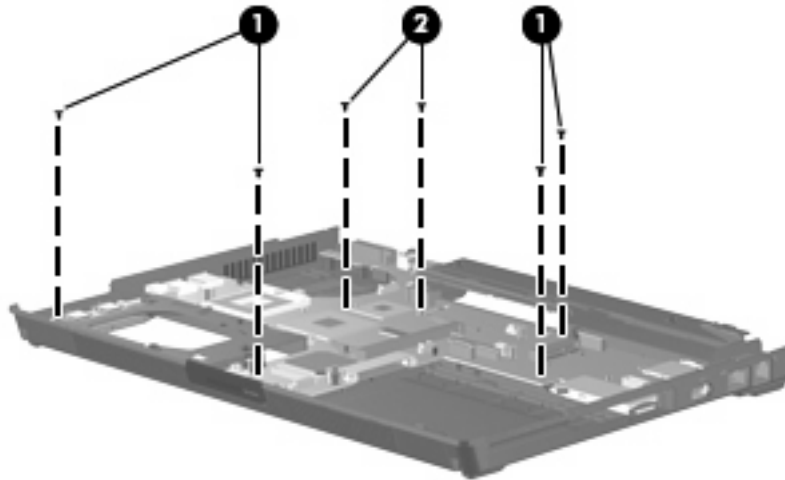
5. Disconnect the Bluetooth module cable (2) from the system board and remove the cable from the base enclosure. The Bluetooth module cable is available in the Cable Kit, spare part number 446406-001.



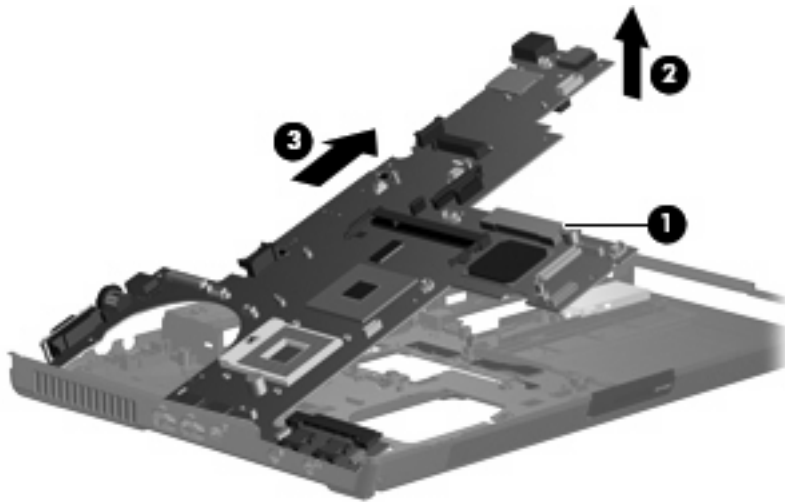
6. Disconnect the modem module cable (1) from the system board. The modem module cable is available in the Cable Kit, spare part number 446406-001.
7. Release the ZIF connector (2) to which the LED board cable is attached, and disconnect the LED board cable (3) from the system board.



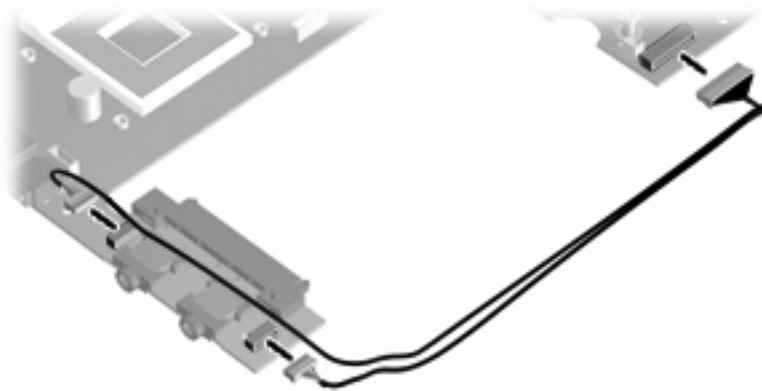
8. Remove the four Phillips PM2.5×4.0 screws (1) and the two Phillips PM2.0×3.0 screws (2) that secure the system board to the base enclosure.



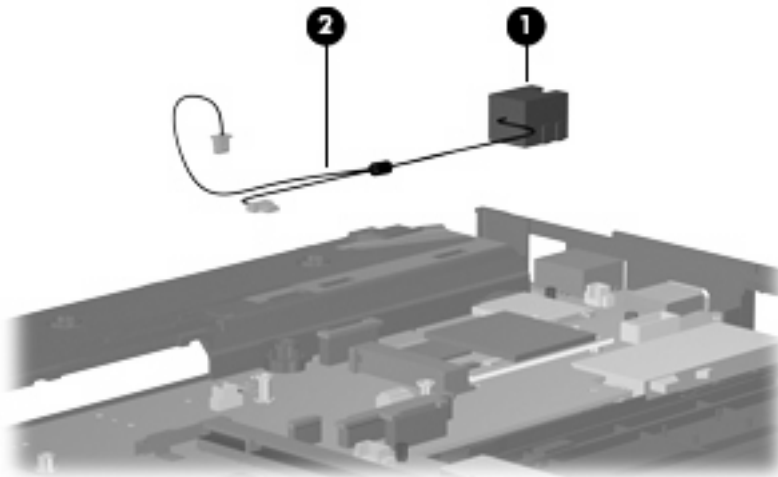
9. Use the optical drive connector (1) to lift the right side of the system board (2) until it rests at an angle.
10. Remove the system board (3) by sliding it away from the base enclosure at an angle.



11. If it is necessary to replace the audio cable, disconnect the audio cable from the 3 audio connectors on the system board. The audio cable is included in the Cable Kit, spare part number 446406-001.



12. If it is necessary to replace the modem module cable, remove the RJ-11 connector (1) from the clip built into the base enclosure.
13. Remove the modem module cable (2) from the clips and routing channels built into the base enclosure. The modem module cable is included in the Cable Kit, spare part number 446406-001.



Reverse the preceding procedure to install the system board.

MultiBay II eject assembly

Description	Spare part number
MultiBay II eject assembly	446434-001

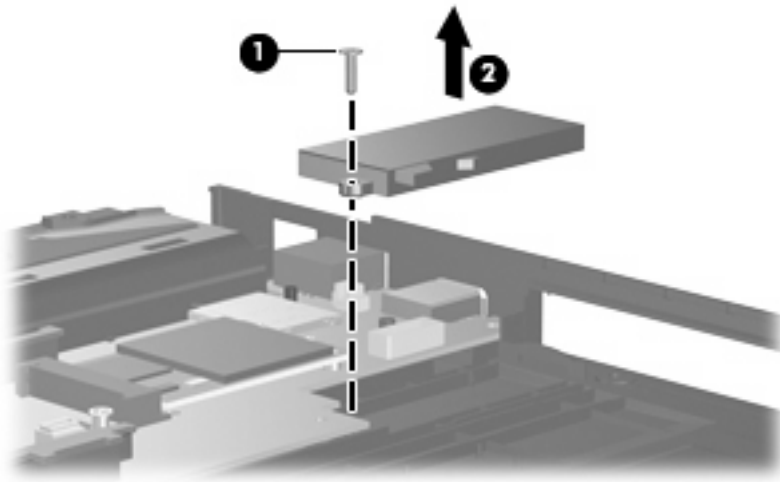
Before removing the MultiBay II eject assembly, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC Adapter from the computer.
4. Remove the battery (see [Battery on page 40](#)).
5. Remove the following components:
 - a. Hard drive (see [Hard drive on page 44](#))
 - b. Bluetooth module (see [Bluetooth module on page 46](#))
 - c. MultiBay II device (see [MultiBay II device on page 54](#))
 - d. Keyboard (see [Keyboard on page 55](#))
 - e. Switch cover (see [Switch cover on page 62](#))
 - f. Fan assembly (see [Fan assembly on page 64](#))
 - g. Heat sink (see [Heat sink on page 65](#))
 - h. Display assembly (see [Display assembly on page 69](#))
 - i. Top cover (see [Top cover on page 74](#))
 - j. Smart card reader board (see [Smart card reader board on page 77](#))
 - k. Microphone (see [Smart card reader board on page 77](#))
 - l. Speaker assembly (see [Speaker assembly on page 79](#))
 - m. System board (see [System board on page 80](#))

Remove the MultiBay II eject assembly:

1. Remove the Phillips PM2.0×6.0 screw **(1)** that secures the MultiBay II eject assembly to the base enclosure.

2. Remove the MultiBay II eject assembly (2) from the base enclosure.



Reverse this procedure to install the MultiBay II eject assembly.

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: Pointing devices are not supported in Computer Setup. You must use the keyboard to navigate and make selections.

NOTE: An external keyboard connected by USB can be used with Computer Setup only if USB legacy support is enabled.

To start Computer Setup:

1. Turn on or restart the computer.
2. Before Windows® opens and while the "F10 = ROM Based Setup" message is displayed in the lower-left corner of the screen, press **F10**.

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.

1. Open Computer Setup by turning on or restarting the computer, and then pressing **f10** while the "F10 = ROM Based Setup" message is displayed in the lower-left corner of the screen.

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

- To choose a menu or a menu item, use the arrow keys.
 - To select an item, press **enter**.
 - To close open dialog boxes and return to the main Computer Setup screen, press **esc**.
 - To view navigation information, press **f1**.
 - To change the language, press **f2**.
2. Select the **File**, **Security**, **Diagnostics**, or **System Configuration** menu.
 3. To exit Computer Setup, choose one of the following methods:
 - To exit Computer Setup without saving your preferences, use the arrow keys to select **File > Ignore Changes and Exit**. Then follow the instructions on the screen.
 - To save your preferences and exit Computer Setup, use the arrow keys to select **File > Save Changes and Exit**. Then follow the instructions on the screen.

Your preferences go into effect when the computer restarts.

Restoring factory settings in Computer Setup

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

1. Open Computer Setup by turning on or restarting the computer, and then pressing **f10** while the "F10 = ROM Based Setup" message is displayed in the lower-left corner of the screen.
2. Use the arrow keys to select **File > Restore** defaults, and then press **enter**.
3. When the confirmation dialog box opens, press **f10**.
4. To save your preferences and exit Computer Setup, use the arrow keys to select **File > Save Changes and Exit**. Then follow the instructions on the screen.

Your preferences 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.
Restore defaults	Replace the configuration settings in Computer Setup with the original factory settings. (Password settings and security settings are not changed when you restore the factory settings.)
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

Select	To do this
Setup password	Enter, change, or delete a setup password.
Power-On password	Enter, change, or delete a power-on password.
Password options	<ul style="list-style-type: none">• Enable/disable stringent security.• Enable/disable password requirement on computer restart.
DriveLock passwords	<ul style="list-style-type: none">• Enable/disable DriveLock on any computer hard drive and on optional MultiBay hard drives.• Change a DriveLock user password or master password. <p>NOTE: DriveLock settings are accessible only when you enter Computer Setup by turning on (not restarting) the computer.</p>
Smart Card security	Enable/disable support for smart card and Java™ Card power-on authentication. <p>NOTE: Power-on authentication for smart cards is supported only on computers with optional smart card readers.</p> <p>NOTE: You must have an administrator password to change this setting.</p>
TPM Embedded Security	Enable/disable support for Trusted Platform Module (TPM) Embedded Security, which protects the computer from unauthorized access to owner functions available in Embedded Security for ProtectTools. For more information, refer to the ProtectTools software Help. <p>NOTE: You must have a setup password to change this setting.</p>
System IDs	Enter user-defined computer asset tracking number and ownership tag.
Disk Sanitizer	Run Disk Sanitizer to destroy all existing data on the primary hard drive. The following options are available: <ul style="list-style-type: none">• Fast: Runs the Disk Sanitizer erase cycle once.• Optimum: Runs the Disk Sanitizer erase cycle 3 times.• Custom: Allows you to select the desired number of Disk Sanitizer erase cycles from a list. <p>CAUTION: If you run Disk Sanitizer, the data on the primary hard drive is destroyed permanently.</p>

Diagnostics menu

Select	To do this
Hard Drive Self-Test options	Run a comprehensive self-test on any hard drive in the system or on any optional MultiBay hard drive.
Memory Check	Run a comprehensive check on system memory.
Startup Check (select models only)	Verify the system components needed for starting the computer.

System Configuration menu



NOTE: Some of the listed System Configuration options may not be supported by your computer.

Select	To do this
Language (or press f2)	Change the Computer Setup language.
Boot options	<ul style="list-style-type: none"> • Set f9, f10, and f12 delay when starting up. • Enable/disable CD-ROM boot. • Enable/disable floppy boot. • Enable/disable internal network adapter boot and set the boot mode (PXE or RPL). • Enable/disable MultiBoot, which sets a boot order that can include most boot devices in the system. • Set the Express Boot Popup delay in seconds. • Set the boot order.
Device configurations	<ul style="list-style-type: none"> • Swap the functions of the fn key and left ctrl key. • Enable/disable multiple standard pointing devices at startup. (To set the computer to support only a single, usually nonstandard, pointing device at startup, select Disable.) • Enable/disable USB legacy support. When enabled, USB legacy support allows the following: <ul style="list-style-type: none"> ◦ Use of a USB keyboard, mouse, and hub 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 or to an optional docking device (select models only). • Select a parallel port mode: EPP (Enhanced Parallel Port), standard, bidirectional, or ECP (Enhanced Capabilities Port). • Enable/disable BIOS DMA data transfers. • Enable/disable fan always on while connected to an AC outlet. • Enable/disable Intel® Data Execution Prevention or AMD® PSAE Execution Disable. When enabled, the processor can disable some virus code execution, which helps to improve computer security. • Enable/disable LAN Power Save. When enabled, saves power by turning off the LAN when not in use. • Enable/disable SATA Native Mode. • Enable/disable Dual Core CPU. • Enable/disable Secondary Battery Fast Charge. • Choose Bit-shift or LBA assisted HDD Translation Mode. • Enable/disable Windows direct application launcher. • Enable/disable HP Lockout.

Select	To do this
Built-In Device Options	<ul style="list-style-type: none"> • Enable/disable embedded WWAN Device Radio. • Enable/disable embedded WLAN Device Radio. • Enable/disable embedded Bluetooth® Device Radio. • Enable/disable LAN/WLAN Switching. When enabled, switches to a WLAN when a LAN is either unavailable or disconnected. • Enable/disable Wake on LAN from Off. • Enable/disable the ambient light sensor.
Port Options	<ul style="list-style-type: none"> • Enable/disable the serial port. • Enable/disable the parallel port. • 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 1394 port. • Enable/disable the cardbus slot. • Enable/disable the ExpressCard slot. • Enable/disable the infrared port. • Enable/disable the optical disk drive. • Enable/disable the network controller.

6 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Height (front to back)	2.91 to 3.37 cm	1.15 to 1.33 in
Width	33.1 cm	13.03 in
Depth	23.9 cm	9.41 in
Weight (with optical drive, hard drive, and battery)	2.24 kg	4.93 lbs
Input power		
Operating voltage	19.0 V dc @ 4.74 A – 90 W	
Operating current	4.74 A	
Temperature		
Operating (not writing to optical disc)	0°C to 35°C	32°F to 95°F
Operating (writing to optical disc)	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity		
Operating	10% to 90%	
Nonoperating	5% to 95%	
Maximum altitude (unpressurized)		
Operating (14.7 to 10.1 psia)	-15 m to 3,048 m	50 ft to 10,000 ft
Nonoperating (14.7 to 4.4 psia)	-15 m to 12,192 m	-50 ft to 40,000 ft
Shock		
Operating	125 g, 2 ms, half-sine	
Nonoperating	200 g, 2 ms, half-sine	
Random vibration		
Operating	0.75 g zero-to-peak, 10 Hz to 500 Hz, 0.25 oct/min sweep rate	

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

14.1-inch, WXGA display specifications

	Metric	U.S.
Dimensions		
Height	21.3 cm	8.40 in
Width	28.5 cm	11.20 in
Diagonal	35.8 cm	14.10 in
Number of colors	Up to 16.8 million	
Contrast ratio	200:1 (typical)	
Brightness	180 nits (typical)	
Pixel resolution		
Pitch	0.259 × 0.259 mm	
Format	1440 × 900	
Configuration	RGB vertical stripe	
Backlight	CCFT	
Character display	80 × 25	
Total power consumption	6.5 W	
Viewing angle	+/-45° horizontal, +15/-35° vertical (typical)	

Hard drive specifications

	160-GB*	120-GB*	100-GB*	80-GB*
Dimensions				
Height	9.5 mm	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm	70 mm
Weight	101 g	101 g	101 g	101 g
Interface type	SATA	SATA	SATA	SATA
Transfer rate	100 MB/sec	100 MB/sec	100 MB/sec	100 MB/sec
Security	ATA security	ATA security	ATA security	ATA security
Seek times (typical read, including setting)				
Single track	3 ms	3 ms	3 ms	3 ms
Average	13 ms	13 ms	13 ms	13 ms
Maximum	24 ms	24 ms	24 ms	24 ms
Logical blocks	312,560,640	234,420,480	195,350,400	156,280,320
Disc rotational speed	5400 rpm	5400 rpm	7200 rpm	7200 and 5400 rpm
Operating temperature	5°C to 55°C (41°F to 131°F)			
*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications may differ slightly.				
NOTE: Certain restrictions and exclusions apply. Contact technical support for details.				

Primary 6-cell, Li-ion battery specifications

	Metric	U.S.
Dimensions		
Height	2.0 cm	0.79 in
Width	20.3 cm	7.99 in
Depth	5.3 cm	2.09 in
Weight	0.34 kg	0.75 lb
Energy		
Voltage	14.4 V	
Amp-hour capacity	2.2 Ah and 2.55 Ah	
Watt-hour capacity	47 Wh and 55 Wh	
Temperature		
Operating	5°C to 45°C	41°F to 113°F
Nonoperating	0°C to 60°C	32°F to 140°F

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

Applicable disc	Read:	Write:
	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	CD-R and CD-RW DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM
Center hole diameter	1.5 cm (0.59 in)	
Disc diameter		
Standard disc	12 cm (4.72 in)	
Mini disc	8 cm (3.15 in)	
Disc thickness	1.2 mm (0.047 in)	
Track pitch	0.74 µm	
Access time	CD	DVD
Random	< 175 ms	< 230 ms
Full stroke	< 285 ms	< 335 ms
Audio output level	Line-out, 0.7 Vrms	
Cache buffer	2 MB	
Data transfer rate		
24X CD-ROM	3,600 KB/sec	
8X DVD-ROM	10,800 KB/sec	
24X CD-R	3,600 KB/sec	
16X CD-RW	2,400 KB/sec	
8X DVD+R	10,800 KB/sec	
4X DVD+RW	5,400 KB/sec	
8X DVD-R	10,800 KB/sec	
4X DVD-RW	5,400 KB/sec	
2.4X DVD+R(9)	2,700 KB/sec	
5X DVD-RAM	6,750 KB/sec	
Transfer mode	Multiword DMA Mode	
Startup time	< 15 seconds	
Stop time	< 6 seconds	

DVD/CD-RW Combo Drive specifications

Applicable disc	Read: CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	Write: CD-R and CD-RW
Center hole diameter	1.5 cm (0.59 in)	
Disc diameter		
Standard disc	12 cm (4.72 in)	
Mini disc	8 cm (3.15 in)	
Disc thickness	1.2 mm (0.047 in)	
Track pitch	0.74 μ m	
Access time	CD	DVD
Random	< 110 ms	< 130 ms
Full stroke	< 210 ms	< 225 ms
Audio output level	Line-out, 0.7 Vrms	
Cache buffer	2 MB	
Data transfer rate		
24X CD-ROM	3,600 KB/sec	
8X DVD	3,600 KB/sec	
24X CD-R	3,600 KB/sec	
24X CD-RW	3,600 KB/sec	
Transfer mode	Multiword DMA mode 2	
Startup time	< 15 seconds	
Stop time	< 6 seconds	

DVD-ROM Drive

Applicable disc	DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18, CD-ROM (Mode 1 and 2), CD Digital Audio, CD-XA ready (Mode 2, Form 1 and Form 2), CD-I (Mode 2, Form 1 and Form 2), CD-R, CD-RW, Photo CD (single and multisession), CD-Bridge	
Center hole diameter	1.5 cm (0.59 in)	
Disc diameter		
Standard disc	12 cm (4.72 in)	
Mini disc	8 cm (3.15 in)	
Disc thickness	1.2 mm (0.047 in)	
Track pitch	0.74 μ m	
Access time	CD	DVD
Random	< 100 ms	< 125 ms
Full stroke	< 175 ms	< 225 ms
Audio output level	Line-out, 0.7 Vrms	
Cache buffer	512 KB	
Data transfer rate		
CD-R (24X)	3600 KB/s (150 KB/s at 1X CD rate)	
CD-RW (10X)	1500 KB/s (150 KB/s at 1X CD rate)	
CD-ROM (24X)	3600 KB/s (150 KB/s at 1X CD rate)	
DVD (8X)	10,800 KB/s (1,352 KB/s at 1X DVD rate)	
Multiword DMA mode 2	16.6 MB/s	
Startup time	< 10 seconds	
Stop time	< 3 seconds	

System DMA specifications

Hardware DMA	System function
DMA0	Not applicable
DMA1*	Not applicable
DMA2*	Not applicable
DMA3	Not applicable
DMA4	Direct memory access controller
DMA5*	Available for PC Card
DMA6	Not assigned
DMA7	Not assigned
*PC Card controller can use DMA 1, 2, or 5.	

System interrupt specifications

Hardware IRQ	System function
IRQ0	System timer
IRQ1	Standard 101-/102-Key or Microsoft® Natural Keyboard
IRQ2	Cascaded
IRQ3	Intel 82801DB/DBM USB2 Enhanced Host Controller—24CD
IRQ4	COM1
IRQ5*	Conexant AC—Link Audio Intel 82801DB/DBM SMBus Controller—24C3 Data Fax Modem with SmartCP
IRQ6	Diskette drive
IRQ7*	Parallel port
IRQ8	System CMOS/real-time clock
IRQ9*	Microsoft ACPI-compliant system
IRQ10*	Intel USB UHCI controller—24C2 Intel 82852/82855 GM/GME Graphic Controller Realtek RTL8139 Family PCI Fast Ethernet Controller
IRQ11	Intel USB EHCI controller—24CD Intel USB UHCI controller—24C4 Intel USB UHCI controller—24C7 Intel Pro/Wireless 2200BG TI OHCI 1394 host controller TI PCI1410 CardBus controller
IRQ12	Synaptics PS/2 TouchPad
IRQ13	Numeric data processor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE channel
*Default configuration; audio possible configurations are IRQ5, IRQ7, IRQ9, IRQ10, or none.	
NOTE: PC Cards may assert IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, or IRQ15. Either the infrared or the serial port may assert IRQ3 or IRQ4.	

System I/O address specifications

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

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

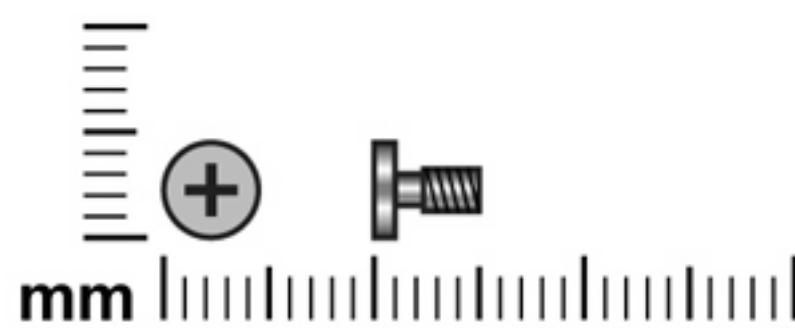
System memory map specifications

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

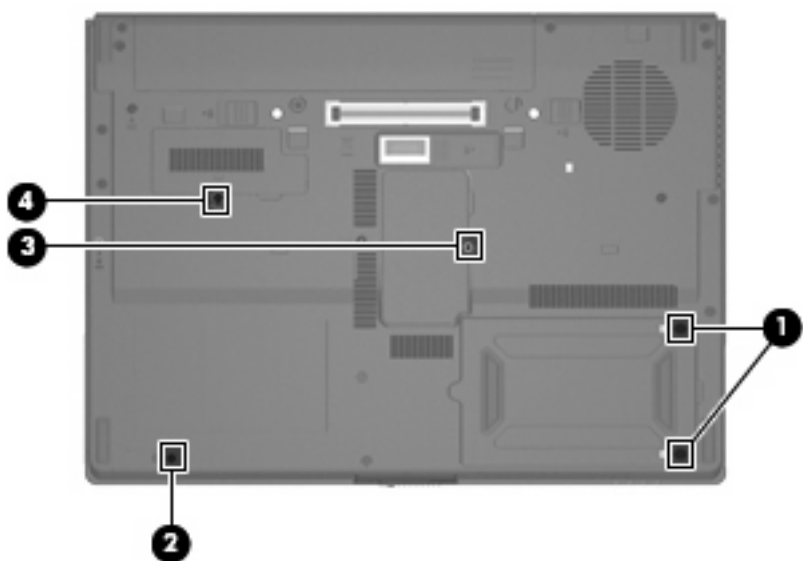
7 Screw listing

This section provides specification and reference information for the screws and screw locks used in the computer. All screws and screw locks listed in this section are available in the Screw Kit, spare part number 446444-001.

Phillips PM2.0×5.0 captive screw



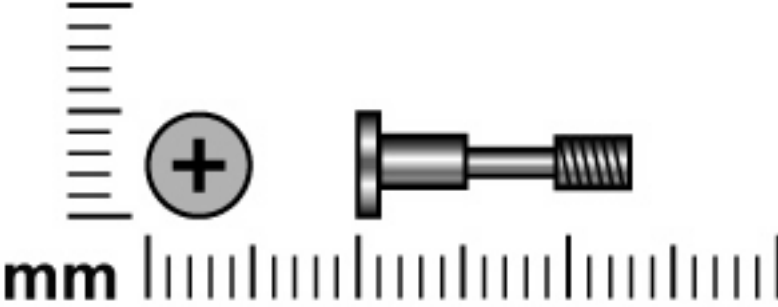
Color	Quantity	Length	Thread	Head diameter
Black	5	5.0 mm	2.0mm	5.0 mm



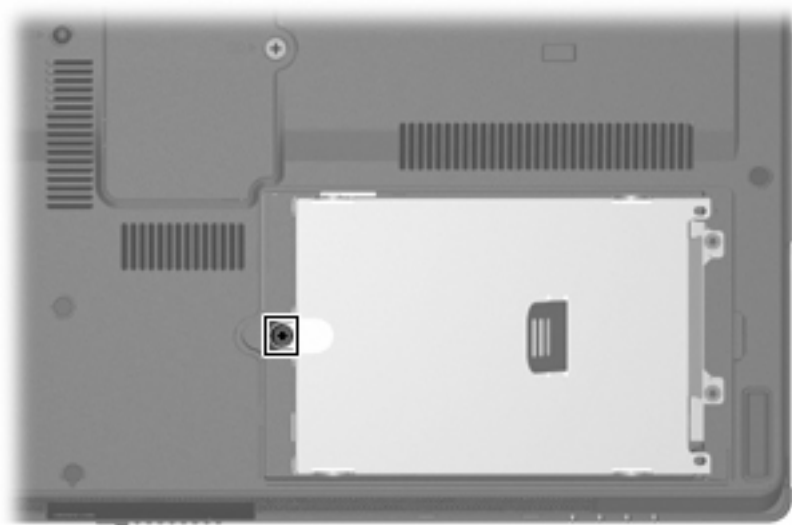
Where used:

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

Phillips PM2.5×13.0 captive screw

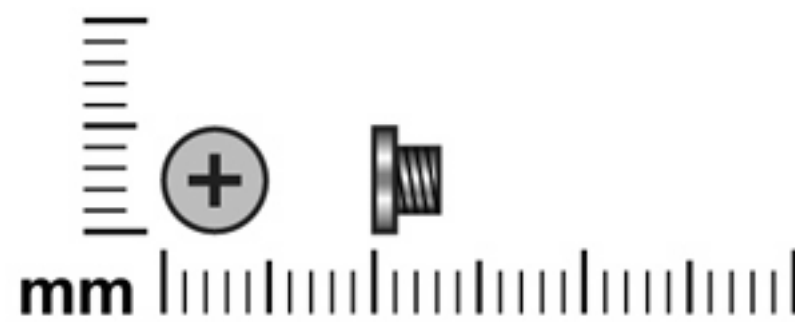


Color	Quantity	Length	Thread	Head diameter
Silver	1	13.0 mm	2.5 mm	6.0 mm



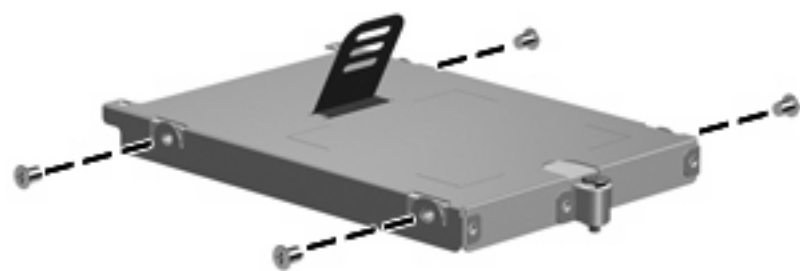
Where used: One screw that secures the hard drive to the computer

Phillips PM3.0×3.0 screw



The diagram shows a Phillips PM3.0x3.0 screw. Above the screw is a vertical ruler with markings from 0 to 10 mm. To the left of the screw is a circular symbol with a plus sign (+). Below the screw is a horizontal ruler with markings from 0 to 10 mm. The screw is shown in a 3D perspective view, highlighting its head and thread.

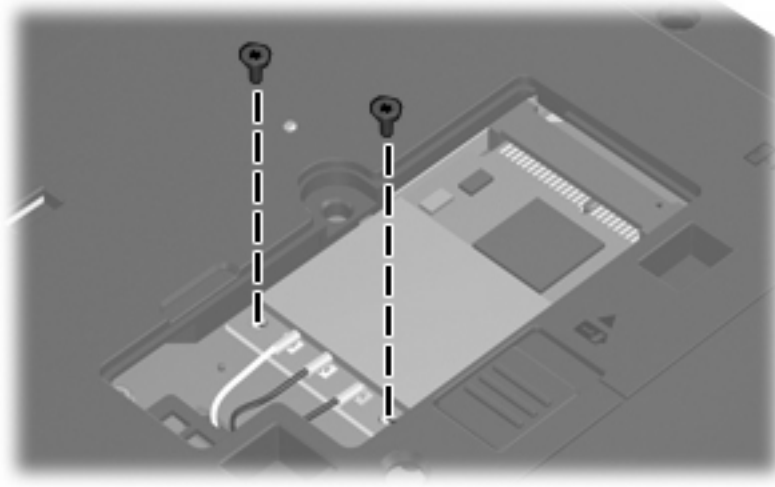
Color	Quantity	Length	Thread	Head diameter
Silver	4	3.0 mm	3.0 mm	5.0 mm



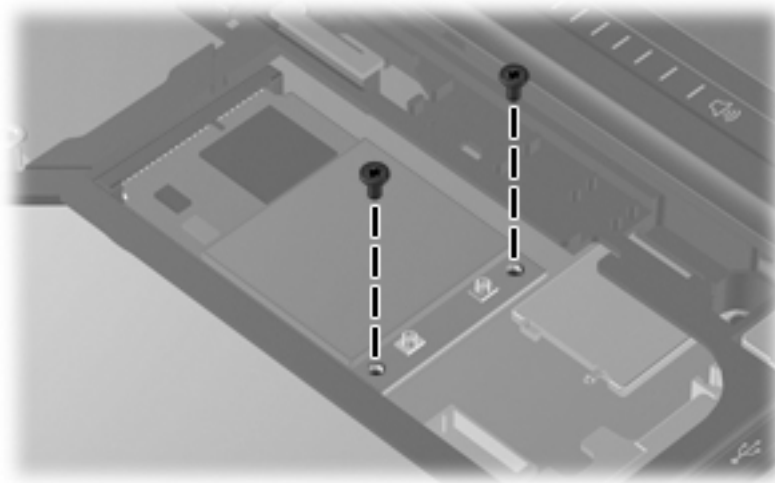
Where used: 4 screws that secure the hard drive bracket to the hard drive

Phillips PM2.0×3.0 screw

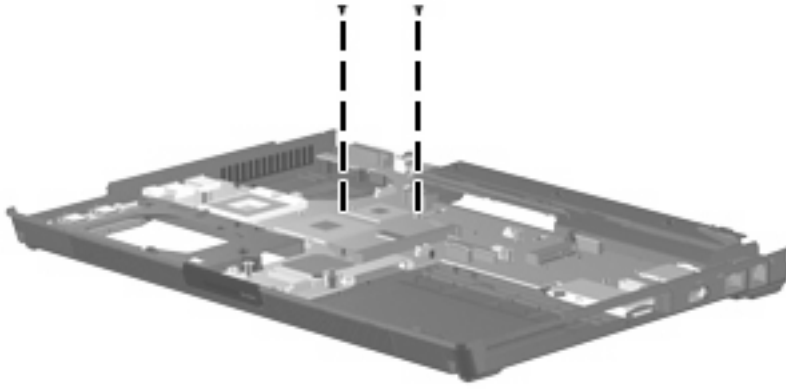
Color	Quantity	Length	Thread	Head diameter
Silver	6	3.0 mm	2.0 mm	4.0 mm



Where used: 2 screws that secure the WLAN module to the system board

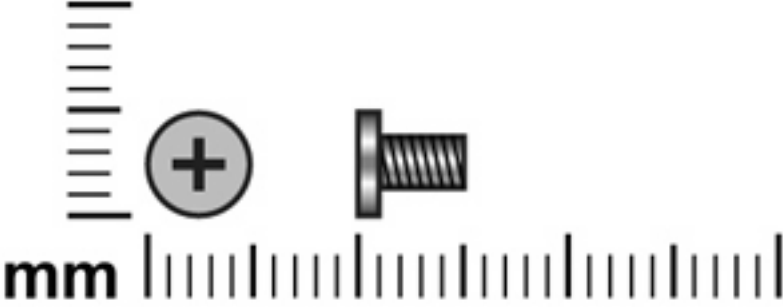


Where used: 2 screws that secure the WWAN module to the system board

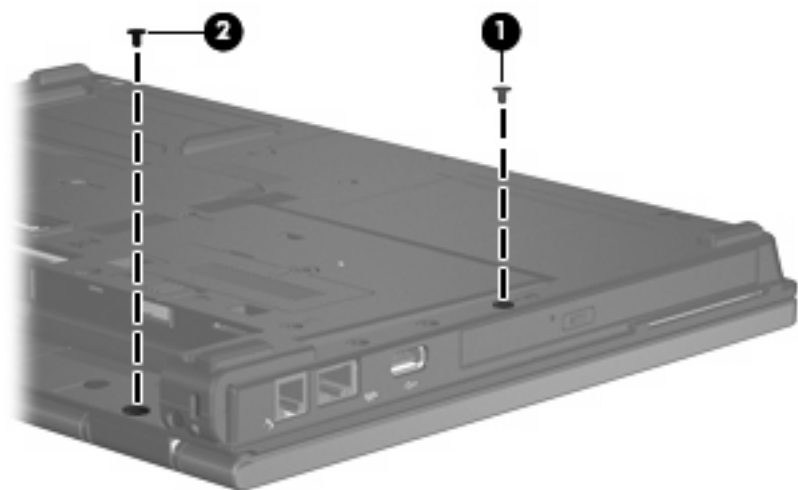


Where used: 2 screws that secure the system board to the base enclosure

Phillips PM2.5×5.0 screw



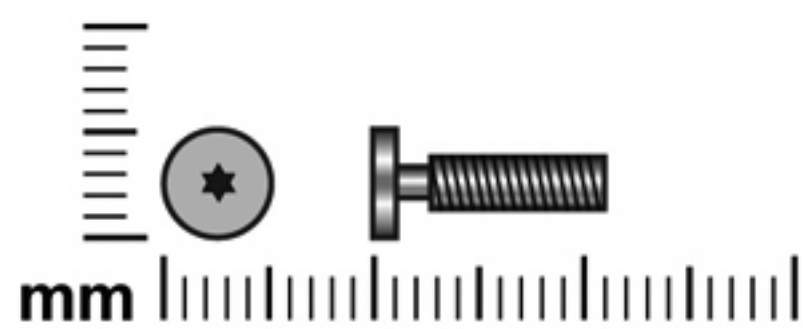
Color	Quantity	Length	Thread	Head diameter
Black	2	5.0 mm	2.5 mm	5.0 mm



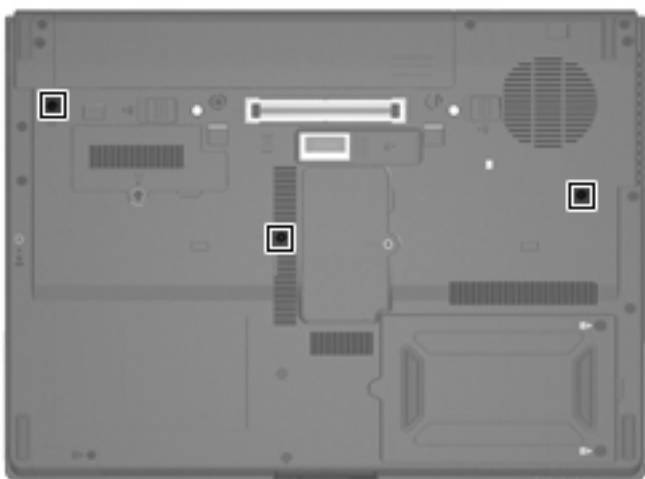
Where used:

- (1) One screw that secures the MultiBay II device to the computer
- (2) One screw that secures the display assembly to the computer

Torx T8M2.5×11.0 captive screw

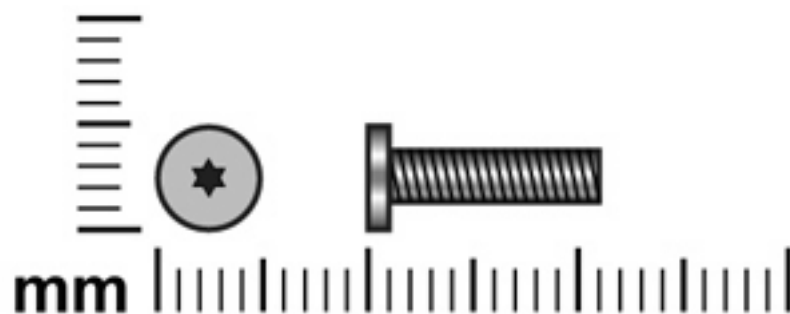


Color	Quantity	Length	Thread	Head diameter
Black	3	11.0 mm	2.5 mm	5.0 mm

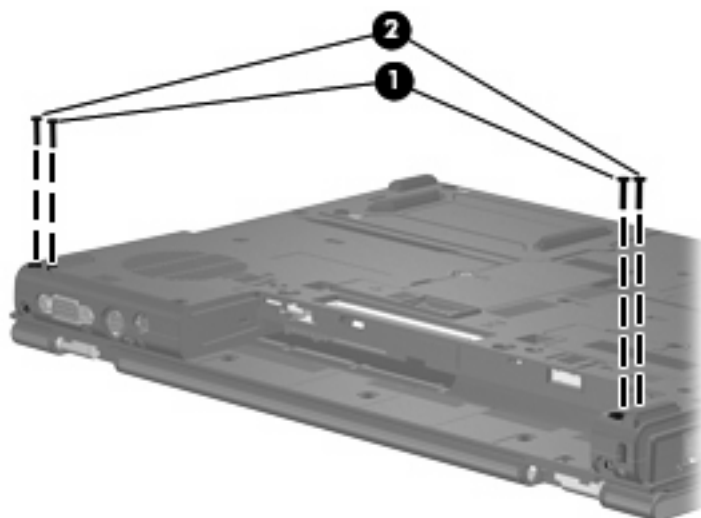


Where used: 3 screws that secure the keyboard to the computer

Torx T8M2.5×11.0 screw

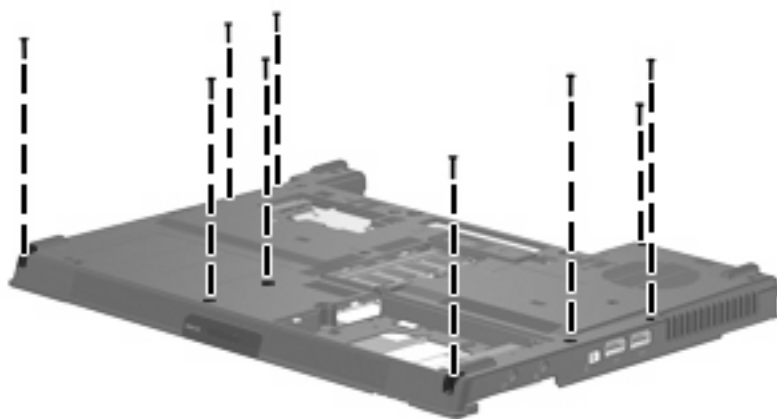


Color	Quantity	Length	Thread	Head diameter
Black	13	11.0 mm	2.5 mm	5.0 mm



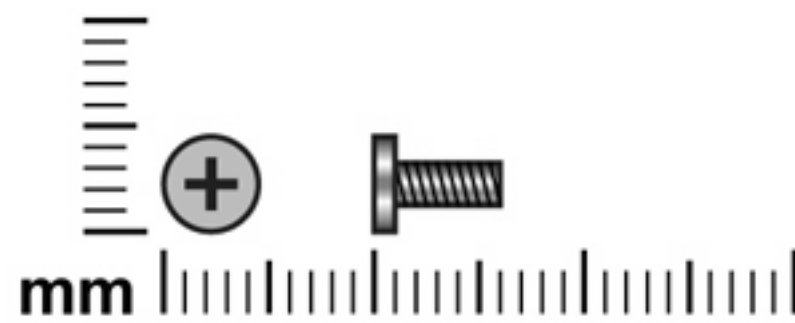
Where used:

- (1) Two screws that secure the switch cover to the computer
- (2) Two screws that secure the display assembly to the computer



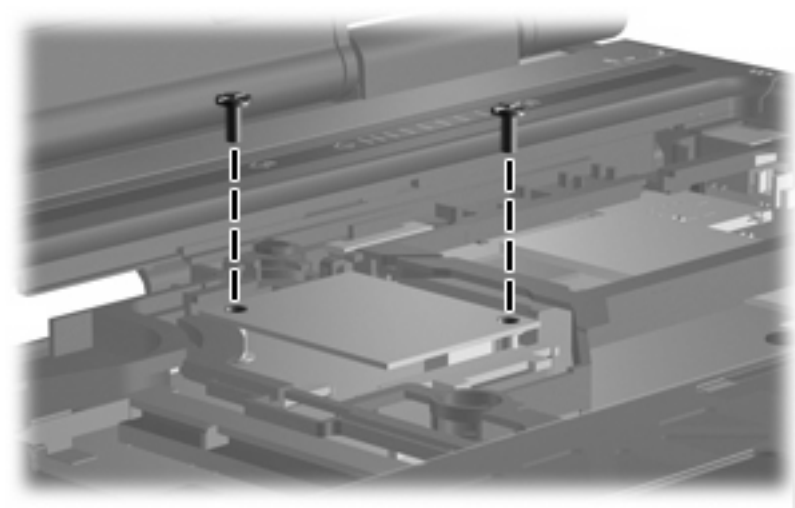
Where used: 9 screws that secure the top cover to the computer

Phillips PM2.0×6.0 screw

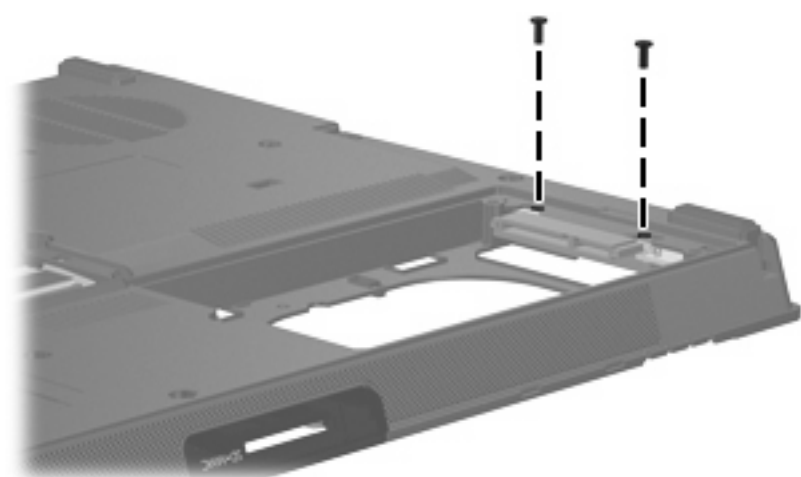


The diagram shows a Phillips PM2.0×6.0 screw. To its left is a vertical ruler scale in millimeters, with markings from 0 to 10. Below the screw is a horizontal ruler scale in millimeters, with markings from 0 to 10. The screw's length is indicated as 6.0 mm.

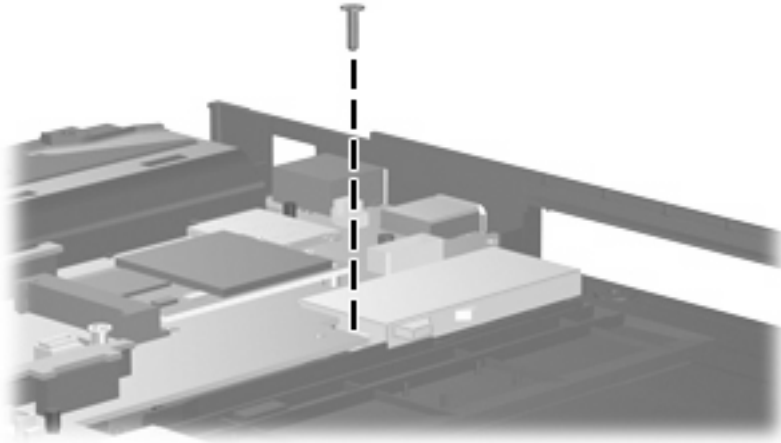
Color	Quantity	Length	Thread	Head diameter
Silver	5	6.0 mm	2.0 mm	5.0 mm



Where used: 2 screws that secure the modem module to the system board

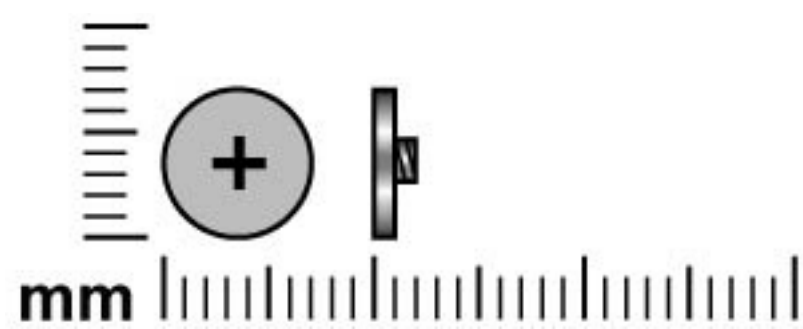


Where used: 2 screws that secure the system board to the base enclosure

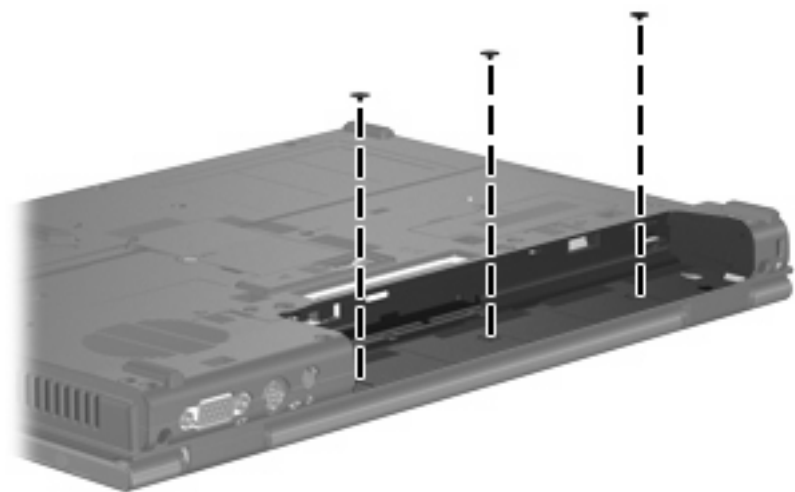


Where used: One screw that secures the MultiBay II eject assembly to the base enclosure

Phillips PM2.0×2.0 broad head screw

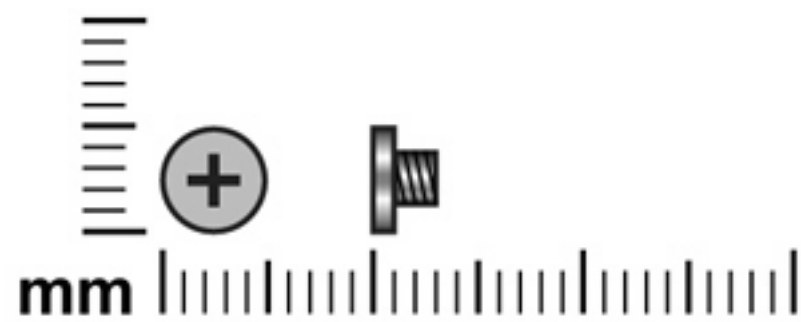


Color	Quantity	Length	Thread	Head diameter
Black	3	2.0 mm	2.0 mm	7.0 mm

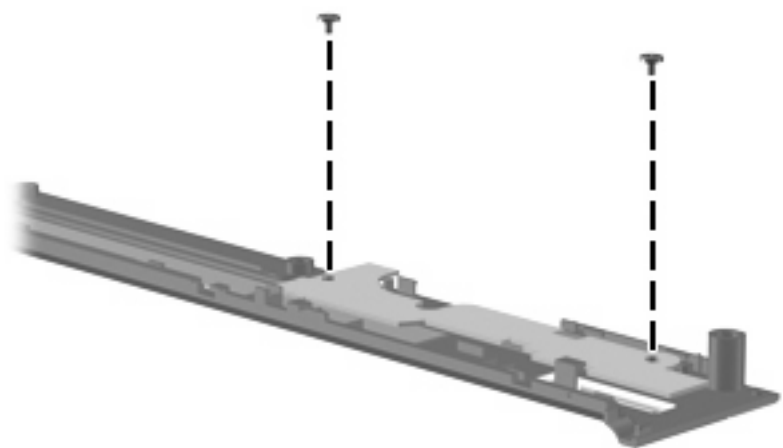


Where used: 3 screws that secure the switch cover to the computer

Phillips PM2.5×3.0 screw

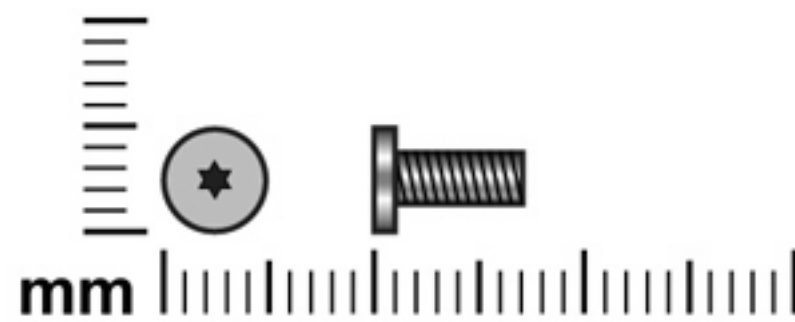


Color	Quantity	Length	Thread	Head diameter
Silver	2	3.0 mm	2.5 mm	5.0 mm



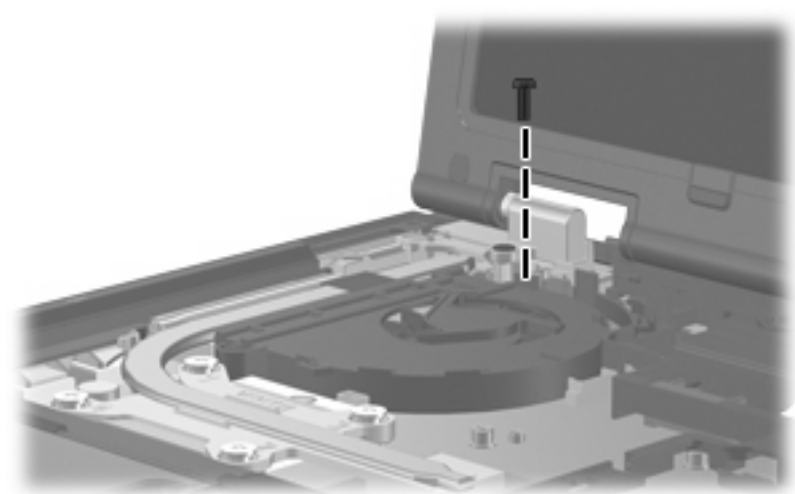
Where used: 2 screws that secure the power button board to the switch cover

Torx T8M2.5×7.0 screw

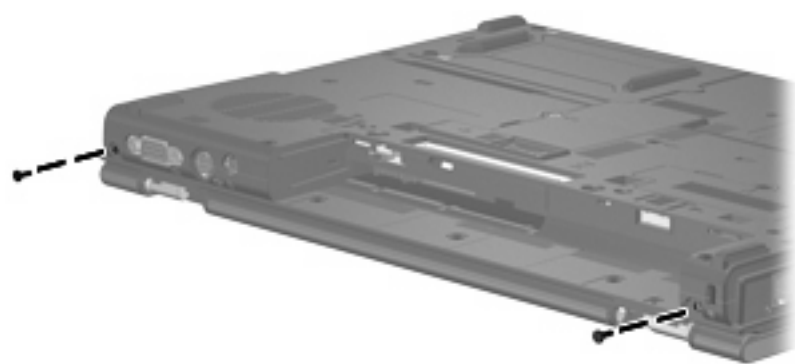


The diagram shows a Torx T8M2.5×7.0 screw. To its left is a vertical ruler with markings from 0 to 10 mm. Below the screw is a horizontal ruler with markings from 0 to 10 mm. The screw's head is positioned at the 0 mark of the horizontal ruler, and its tip reaches the 7.0 mm mark.

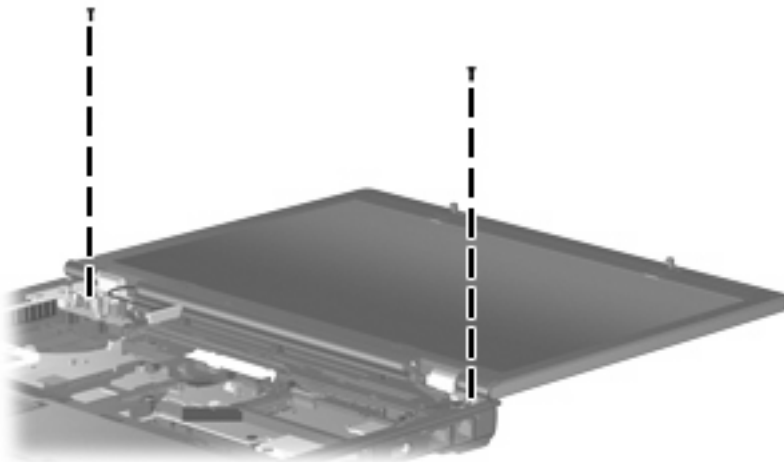
Color	Quantity	Length	Thread	Heat width
Black	8	7.0 mm	2.5 mm	5.0 mm



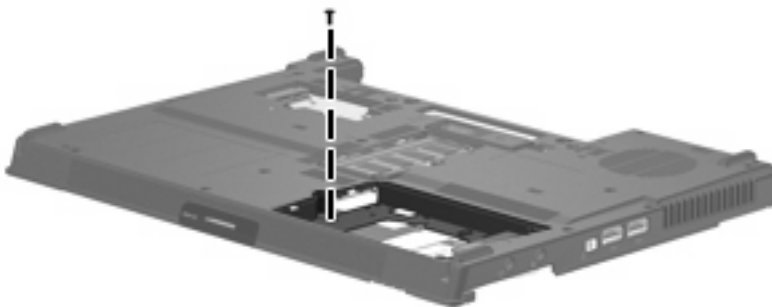
Where used: One screw that secures the fan assembly to the computer



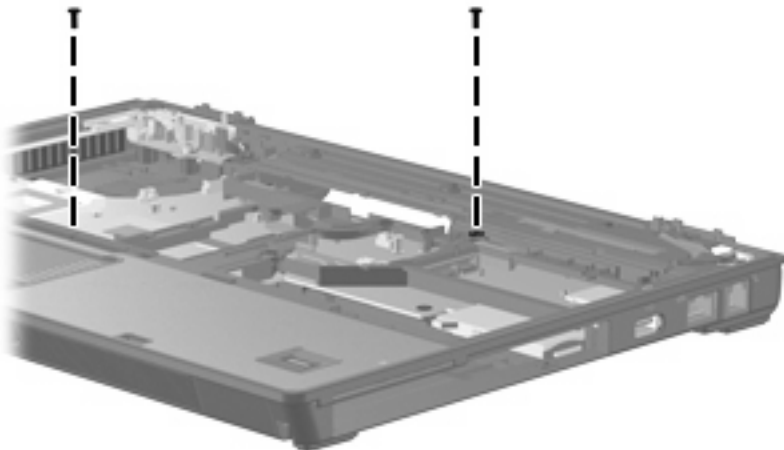
Where used: 2 screws that secure the display assembly to the computer



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

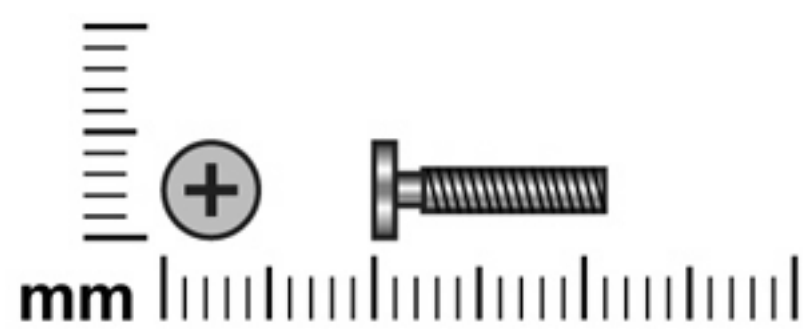


Where used: One screw that secures the top cover to the computer

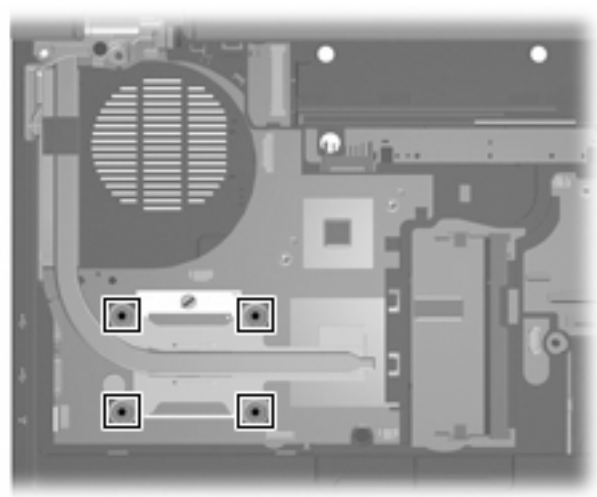


Where used: 2 screws that secure the top cover to the computer

Phillips PM2.0×10.0 captive screw

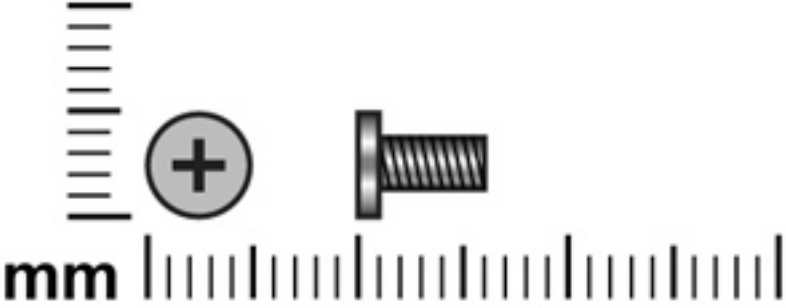


Color	Quantity	Length	Thread	Head diameter
Silver	4	10.0 mm	2.0mm	5.0 mm



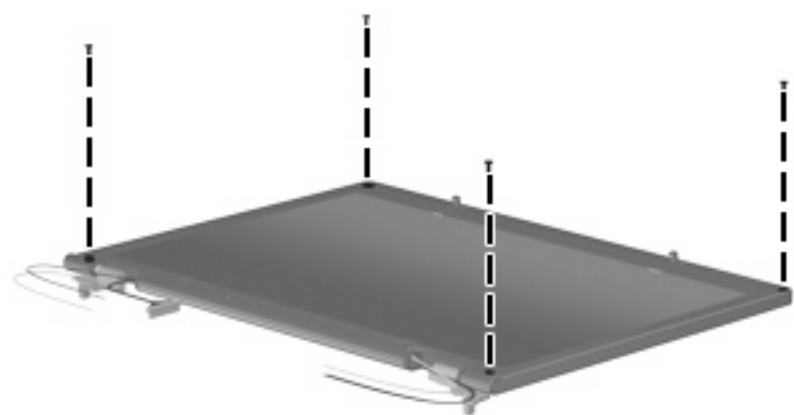
Where used: 4 captive screws that secure the heat sink to the computer

Phillips PM2.5×6.0 screw

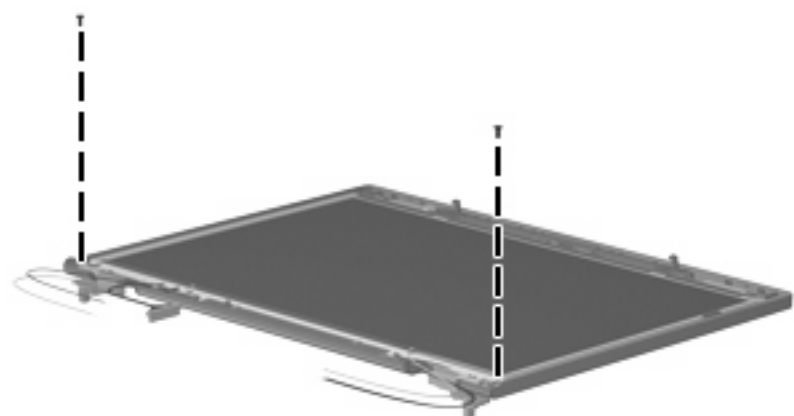


mm

Color	Quantity	Length	Thread	Head diameter
Silver	6	6.0 mm	2.5 mm	5.0 mm

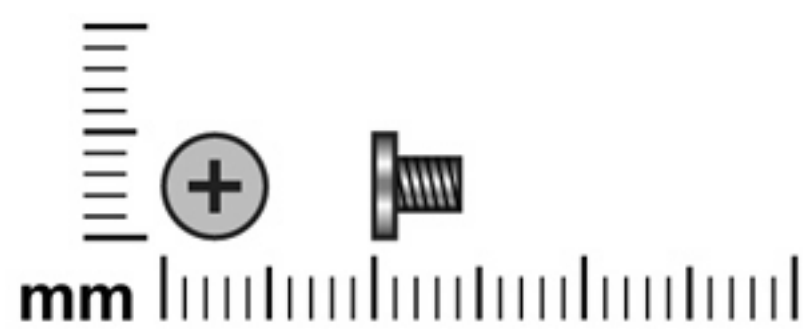


Where used: 4 screws that secure the display bezel to the display assembly

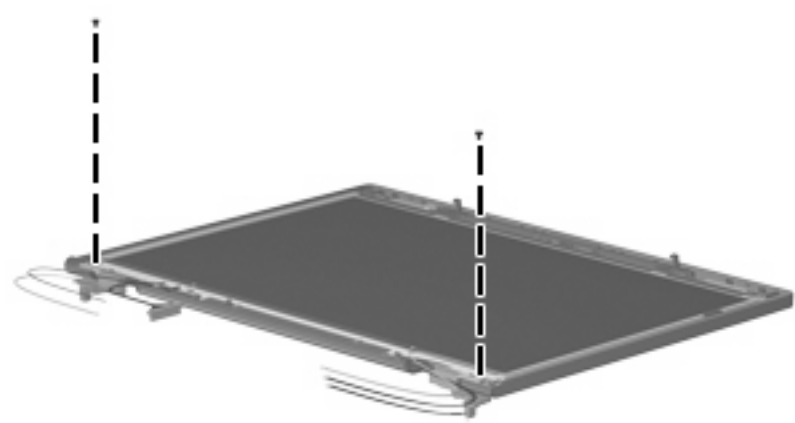


Where used: 2 screws that secure the display hinges to the display panel

Phillips PM2.5×4.0 screw



Color	Quantity	Length	Thread	Head diameter
Silver	2	4.0 mm	2.5 mm	5.0 mm



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

8 Backup and recovery


Backup and recovery in Windows Vista

Creating recovery discs

After setting up the computer for the first time, be sure to create a set of recovery discs of the full factory image. The recovery discs are used to start up (boot) the computer and recover the operating system and software to factory settings in case of system instability or failure.

Note the following guidelines before creating recovery discs:

- You will need high-quality CD-R, DVD-R, or DVD+R discs (purchased separately).


 **NOTE:** Read-write discs, such as CD-RW and DVD±RW discs, are not compatible with HP Backup & Recovery Manager.

- The computer must be connected to AC power during the process.
- Only one set of the recovery discs can be created per computer.
- Number each disc before inserting it into the optical drive of the computer.
- If necessary, you can cancel the disc creation before you have finished creating the recovery discs. The next time you select **Create a set of recovery discs (Recommended)**, you will be prompted to continue the disc creation.

To create a set of recovery discs:

1. Select **Start > All Programs > HP Backup & Recovery > Backup & Recovery Manager**.
2. Click **Next**.
3. Click **Create a set of recovery discs (Recommended)**, and then click **Next**.
4. Follow the on-screen instructions.

Backing up your information

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

With HP Backup & Recovery Manager, you can perform the following tasks:

- Backing up your information regularly to protect your important system files
- Creating system recovery points that allow you to reverse undesirable changes to your computer by restoring the computer to an earlier state
- Scheduling backups at specific intervals or events

When to back up

- On a regularly scheduled basis



NOTE: Set reminders to back up your information periodically.

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

Backup suggestions

- Create a set of recovery discs using HP Backup & Recovery Manager.
- Create system recovery points using HP Backup & Recovery Manager, and periodically copy them to disc.
- Store personal files in the Documents folder and back up these folders periodically.
- Back up templates stored in their associated programs.
- Save customized settings in a window, toolbar, or menu bar by taking a screen shot of your settings.

The screen shot can be a time saver if you have to reset your preferences.

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

- a. Display the screen.
- b. Copy the screen.

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

To copy the entire screen, press **fn+prt sc**.

- c. Open a word-processing document, and then select **Edit > Paste**.



NOTE: Before you can perform backup and recovery procedures, the computer must be connected to external power.

NOTE: Drivers, utilities, and applications installed by HP can be copied to a CD or to a DVD using HP Backup & Recovery Manager.

Backing up specific files or folders

You can back up specific files or folders to the recovery partition on the hard drive, to an optional external hard drive, or to optical discs (CDs or DVDs).




NOTE: This process will take several minutes, depending on the file size and the speed of the computer.

To back up specific files or folders:

1. Select **Start > All Programs > HP Backup & Recovery > Backup & Recovery Manager**.
2. Click **Next**.
3. Click **Create or manage backups**, and then click **Next**.
4. Click **Back up user created files and folders**, and then click **Next**.
5. Follow the on-screen instructions.

Backing up the entire hard drive

When you perform a complete backup of the hard drive, you are saving the full factory image, including the Windows® operating system, software applications, and all personal files and folders.

 **NOTE:** A copy of the entire hard drive image can be stored on another hard drive, on a network drive, or on recovery discs that you create.


NOTE: This process may take over an hour, depending on your computer speed and the amount of data being stored.

To back up your entire hard drive:

1. Select **Start > All Programs > HP Backup & Recovery > Backup & Recovery Manager**.
2. Click **Next**.
3. Click **Create or manage backups**, and then click **Next**.
4. Click **Create or manage Entire Drive Backups**, and then click **Next**.
5. Follow the on-screen instructions.


Creating recovery points

When you back up modifications since your last backup, you are creating system recovery points. This allows you to save a snapshot of your hard drive at a specific point in time. You can then recover back to that point if you want to reverse subsequent changes made to your system.

 **NOTE:** The first system recovery point, a snapshot of the entire image, is automatically created the first time you perform a backup. Subsequent recovery points make copies of changes made after that time.

HP recommends that you create recovery points at the following times:

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

 **NOTE:** Recovering to an earlier recovery point does not affect data files or e-mails created since that recovery point.

To create a system recovery point:

1. Select **Start > All Programs > HP Backup & Recovery > Backup & Recovery Manager**.
2. Click **Next**.
3. Click **Create or manage backups**, and then click **Next**.
4. Click **Create or manage Recovery Points**, and then click **Next**.
5. Follow the on-screen instructions.


Scheduling backups

Use HP Backup Scheduler to schedule backups for the entire system, for recovery points, or for specific files and folders. With this tool, you can schedule backups at specific intervals (daily, weekly, or monthly) or at specific events, such as at system restart or when you dock to an optional docking station (select models only).

To schedule backups:

1. Select **Start > All Programs > HP Backup & Recovery > HP Backup Scheduler**.
2. Follow the on-screen instructions.

Performing a recovery

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

HP Backup & Recovery Manager helps you with the following tasks for safeguarding your information and restoring it in case of a system failure:

- Recovering important files—This feature helps you reinstall important files without performing a full system recovery.
- Performing a full system recovery—With HP Backup & Recovery Manager, you can recover your full factory image if you experience system failure or instability. HP Backup & Recovery Manager works from a dedicated recovery partition on the hard drive or from recovery discs you create.

Performing a recovery from the recovery discs

To perform a recovery from the recovery discs, follow these steps:

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

Performing a recovery from the hard drive

There are 2 ways to initiate a recovery from the hard drive:

- From within Windows
- From the recovery partition

Initiating a recovery in Windows

To initiate a recovery in Windows, follow these steps:

1. Back up all personal files.
2. Select **Start > All Programs > HP Backup & Recovery > Backup & Recovery Manager**.
3. Click **Next**.
4. Click **Perform a recovery**, and then click **Next**.
5. Follow the on-screen instructions.

Initiating a recovery from the hard drive recovery partition

To initiate a recovery from the hard drive recovery partition, follow these steps:

1. Back up all personal files.
2. Restart the computer, and then press **f11** before the Windows operating system loads.
3. Click a recovery option, and then click **Next**.
4. Follow the on-screen instructions.

Backup and recovery in Windows XP

Creating recovery discs

After setting up the computer for the first time, be sure to create a set of recovery discs of the full factory image. The recovery discs are used to start up (boot) the computer and recover the operating system and software to factory settings in case of system instability or failure.

Note the following guidelines before creating recovery discs:

- You will need high-quality CD-R, DVD-R, or DVD+R discs (purchased separately).



NOTE: Read-write discs, such as CD-RW and DVD±RW discs, are not compatible with HP Backup and Recovery Manager.


- The computer must be connected to AC power during the process.
- Only one set of the recovery discs can be created per computer.
- Number each disc before inserting it into the optical drive of the computer.
- If necessary, you can cancel the disc creation before you have finished creating the recovery discs. The next time you select **Create factory software recovery CDs or DVDs to recover the system (Highly recommended)**, you will be prompted to continue the disc creation.

To create a set of recovery discs:

1. Select **Start > All Programs > HP Backup & Recovery > HP Backup and Recovery Manager**.
2. Click **Next**.

3. Click **Create factory software recovery CDs or DVDs to recover the system (Highly recommended)**, and then click **Next**.
4. Follow the on-screen instructions.

Backing up your information


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

With HP Backup and Recovery Manager, you can perform the following tasks:

- Backing up your information regularly to protect your important system files
- Creating system recovery points that allow you to reverse undesirable changes to your computer by restoring the computer to an earlier state
- Scheduling backups at specific intervals or events

When to back up

- On a regularly scheduled basis

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

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

Backup suggestions

- Create a set of recovery discs using HP Backup and Recovery Manager.
- Create system recovery points using HP Backup and Recovery Manager, and periodically copy them to disc.
- Store personal files in the My Documents folder and back up these folders periodically.
- Back up templates stored in their associated programs.
- Save customized settings in a window, toolbar, or menu bar by taking a screen shot of your settings.

The screen shot can be a time saver if you have to reset your preferences.


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

- a. Display the screen.
- b. Copy the screen.

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

To copy the entire screen, press **fn+prt sc**.


- c. Open a word-processing document, and then select **Edit > Paste**.

 **NOTE:** Before you can perform backup and recovery procedures, the computer must be connected to external power.

NOTE: Drivers, utilities, and applications installed by HP can be copied to a CD or to a DVD using HP Backup and Recovery Manager.

Backing up specific files or folders

You can back up specific files or folders to the recovery partition on the hard drive, to an optional external hard drive, or to optical discs (CDs or DVDs).


 **NOTE:** This process will take several minutes, depending on the file size and the speed of the computer.

To back up specific files or folders:

1. Select **Start > All Programs > HP Backup & Recovery > HP Backup and Recovery Manager**.
2. Click **Next**.
3. Click **Back up to protect system settings and important data files**, and then click **Next**.
4. Click **Back up individual files and folders**, and then click **Next**.
5. Follow the on-screen instructions.

Backing up the entire hard drive

When you perform a complete backup of the hard drive, you are saving the full factory image, including the Windows® operating system, software applications, and all personal files and folders.

 **NOTE:** A copy of the entire hard drive image can be stored on another hard drive, on a network drive, or on recovery discs that you create.


NOTE: This process may take over an hour, depending on your computer speed and the amount of data being stored.

To back up your entire hard drive:

1. Select **Start > All Programs > HP Backup & Recovery > HP Backup and Recovery Manager**.
2. Click **Next**.
3. Click **Back up to protect system settings and important data files**, and then click **Next**.
4. Click **Back up entire hard drive**, and then click **Next**.
5. Follow the on-screen instructions.


Creating recovery points

When you back up modifications since your last backup, you are creating system recovery points. This allows you to save a snapshot of your hard drive at a specific point in time. You can then recover back to that point if you want to reverse subsequent changes made to your system.

 **NOTE:** The first system recovery point, a snapshot of the entire image, is automatically created the first time you perform a backup. Subsequent recovery points make copies of changes made after that time.

HP recommends that you create recovery points at the following times:

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

 **NOTE:** Recovering to an earlier recovery point does not affect data files or e-mails created since that recovery point.

To create a system recovery point:

1. Select **Start > All Programs > HP Backup & Recovery > HP Backup and Recovery Manager**.
2. Click **Next**.
3. Click **Back up to protect system settings and important data files**, and then click **Next**.
4. Click **Create or manage Recovery Points**, and then click **Next**.
5. Follow the on-screen instructions.


Scheduling backups

Use HP Backup Scheduler to schedule backups for the entire system, for recovery points, or for specific files and folders. With this tool, you can schedule backups at specific intervals (daily, weekly, or monthly) or at specific events, such as at system restart or when you dock to an optional docking station (select models only).

To schedule backups:

1. Select **Start > All Programs > HP Backup & Recovery > HP Backup Scheduler**.
2. Follow the on-screen instructions.

Performing a recovery

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

HP Backup and Recovery Manager helps you with the following tasks for safeguarding your information and restoring it in case of a system failure:

- Recovering important files—This feature helps you reinstall important files without performing a full system recovery.
- Performing a full system recovery—With HP Backup and Recovery Manager, you can recover your full factory image if you experience system failure or instability. HP Backup and Recovery Manager works from a dedicated recovery partition on the hard drive or from recovery discs you create.

Performing a recovery from the recovery discs

To perform a recovery from the recovery discs, follow these steps:

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

Performing a recovery from the hard drive

There are 2 ways to initiate a recovery from the hard drive:

- From within Windows
- From the recovery partition

Initiating a recovery in Windows

To initiate a recovery in Windows, follow these steps:

1. Back up all personal files.
2. Select **Start > All Programs > HP Backup & Recovery > HP Backup and Recovery Manager**.
3. Click **Next**.
4. Click **Recover important files or the entire system**, and then click **Next**.
5. Follow the on-screen instructions.

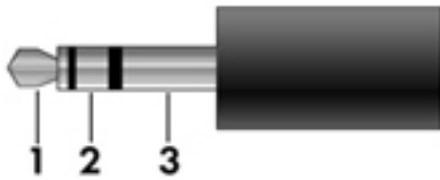
Initiating a recovery from the hard drive recovery partition

To initiate a recovery from the hard drive recovery partition, follow these steps:

1. Back up all personal files.
2. Restart the computer, and then press **f11** before the Windows operating system loads.
3. Click a recovery option, and then click **Next**.
4. Follow the on-screen instructions.

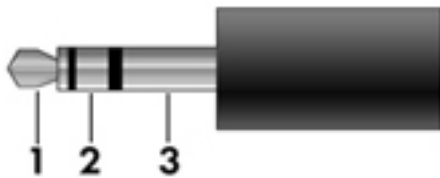
9 Connector pin assignments

Audio-out (headphone)



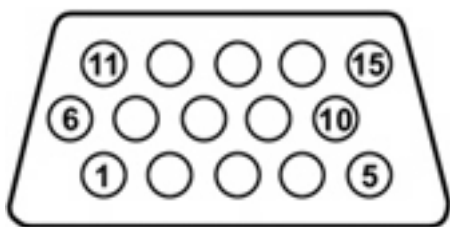
Pin	Signal
1	Audio out, left channel
2	Audio out, right channel
3	Ground

Audio-in (microphone)



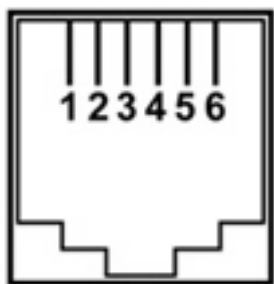
Pin	Signal
1	Audio signal in
2	Audio signal in
3	Ground

External monitor



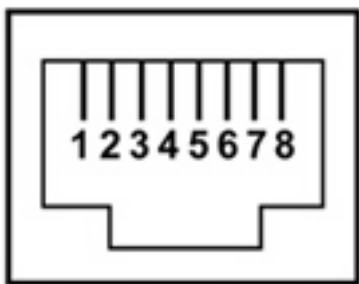
Pin	Signal
1	Red analog
2	Green analog
3	Blue analog
4	Not connected
5	Ground
6	Ground analog
7	Ground analog
8	Ground analog
9	+5 VDC
10	Ground
11	Monitor detect
12	DDC 2B data
13	Horizontal sync
14	Vertical sync
15	DDC 2B clock

RJ-11 (modem)



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

RJ-45 (network)



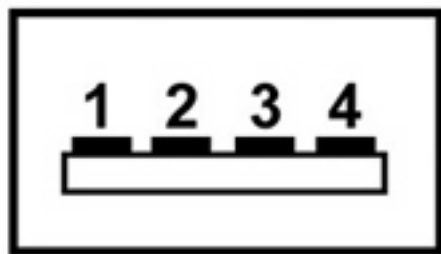
Pin	Signal
1	Transmit +
2	Transmit -
3	Receive +
4	Unused
5	Unused
6	Receive -
7	Unused
8	Unused

S-Video-out



Pin	Signal
1	S-VHS color (C) signal
2	Composite video signal
3	S-VHS intensity (Y) signal
4	S-VHS color ground
5	TV-CD
6	S-VHS intensity ground
7	Composite video ground

Universal Serial Bus



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

10 Power cord set requirements

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

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

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

Requirements for all countries and regions

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

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

Requirements for specific countries and regions

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

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

11 Recycling

Battery

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

Display

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

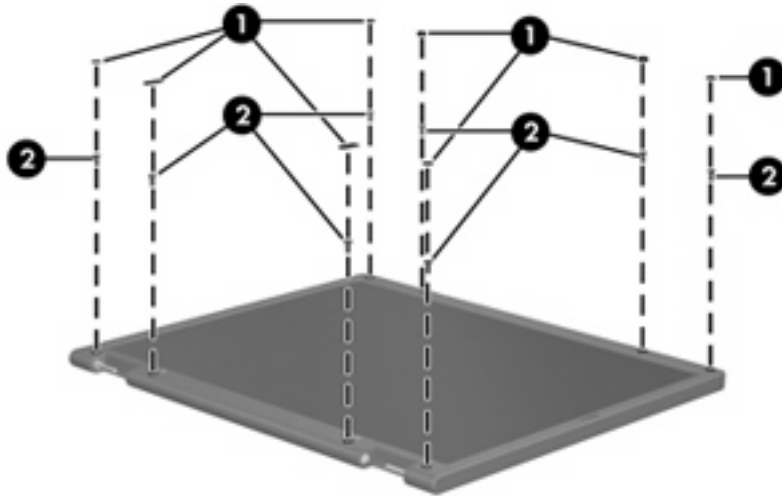
This section provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight **(1)** and the liquid crystal display (LCD) panel **(2)**.



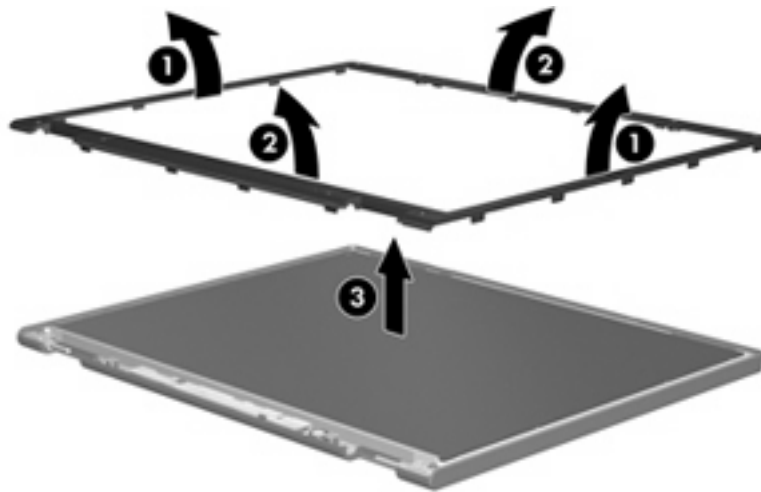
-
- 📝 **NOTE:** The procedures provided in this appendix are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.
-

Perform the following steps to disassemble the display assembly:

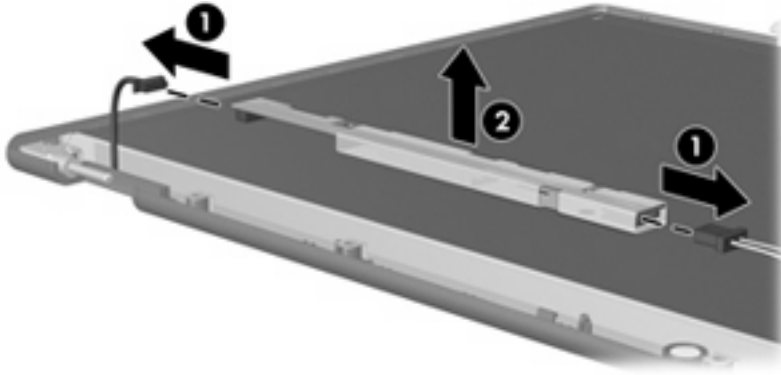
1. Remove all screw covers (1) and screws (2) that secure the display bezel to the display assembly.



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

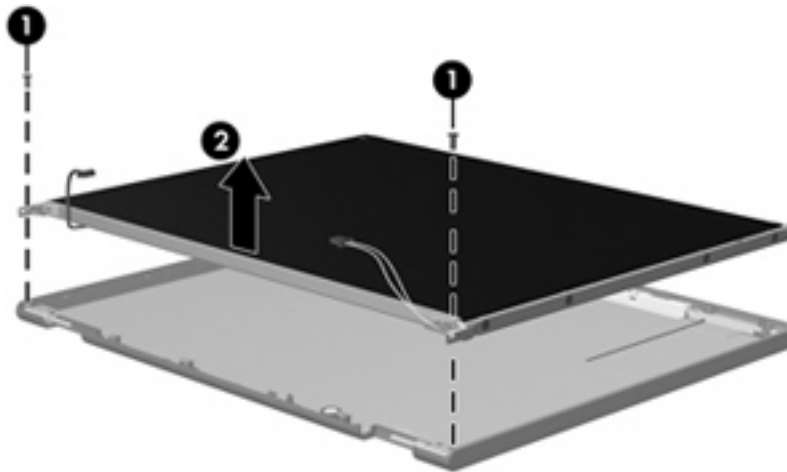


4. Disconnect all display panel cables (1) from the display inverter and remove the inverter (2).



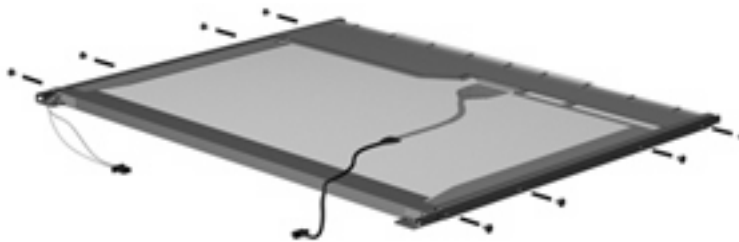
5. Remove all screws (1) that secure the display panel assembly to the display enclosure.

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



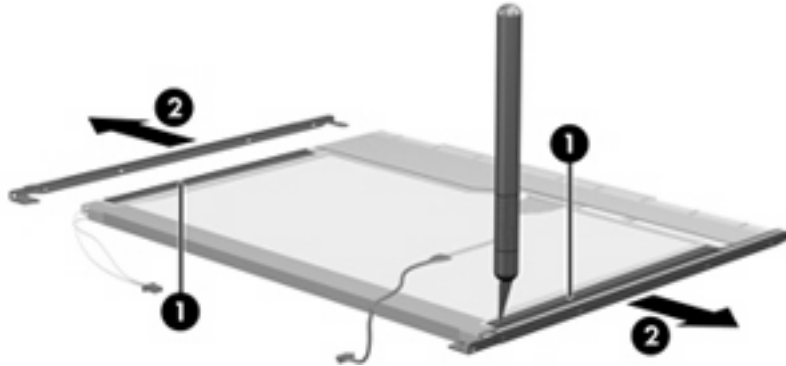
7. Turn the display panel assembly upside down.

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



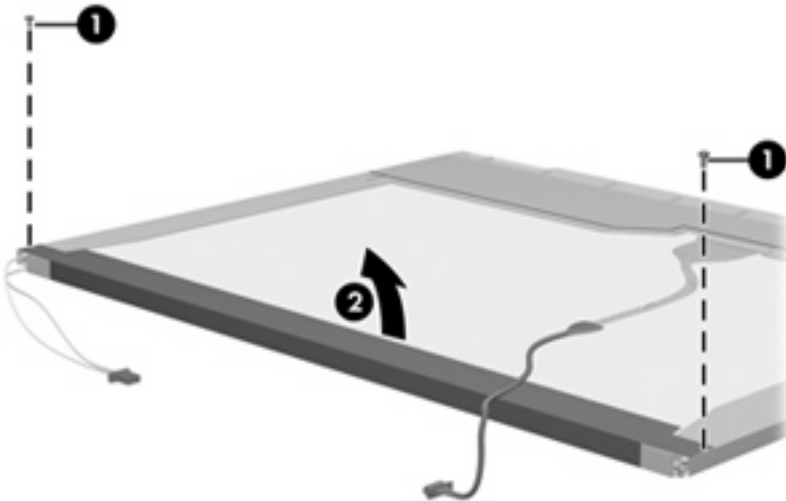
9. Use a sharp-edged tool to cut the tape (1) that secures the sides of the display panel to the display panel frame.

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



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

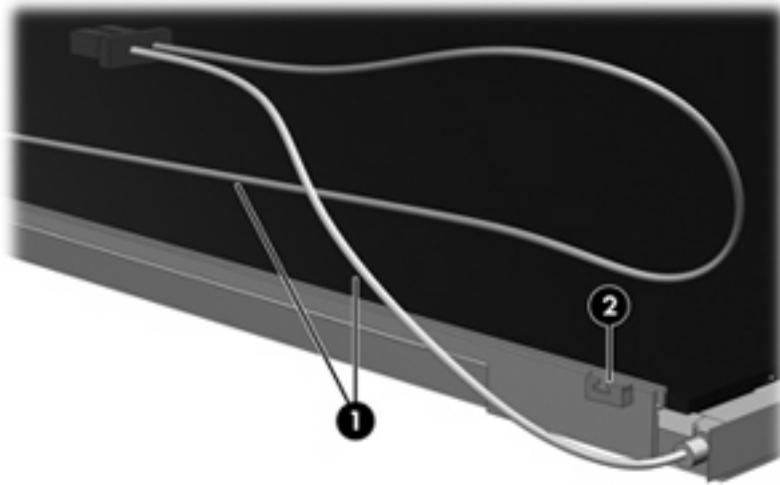
12. Lift the top edge of the backlight cover (2) and swing it outward.



13. Remove the backlight cover.

14. Turn the display panel right-side up.

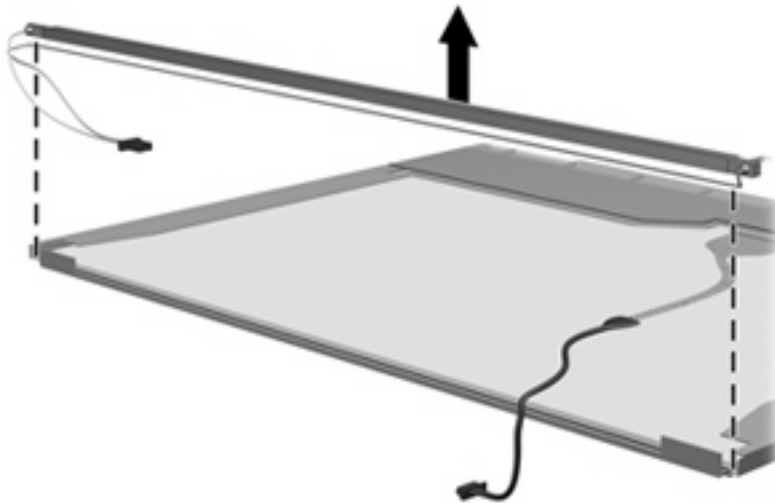
15. Remove the backlight cables (1) from the clip (2) in the display panel.



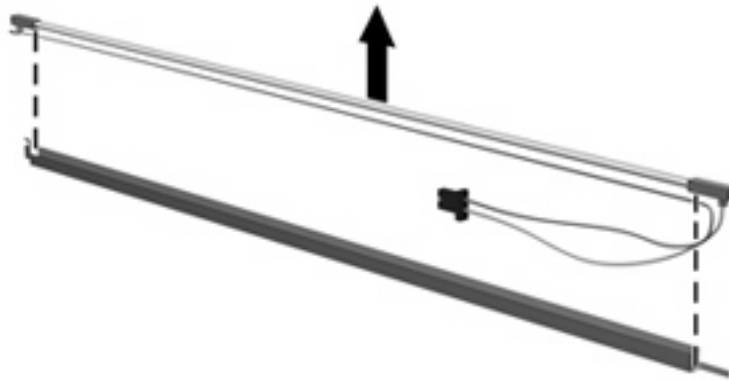
16. Turn the display panel upside down.

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

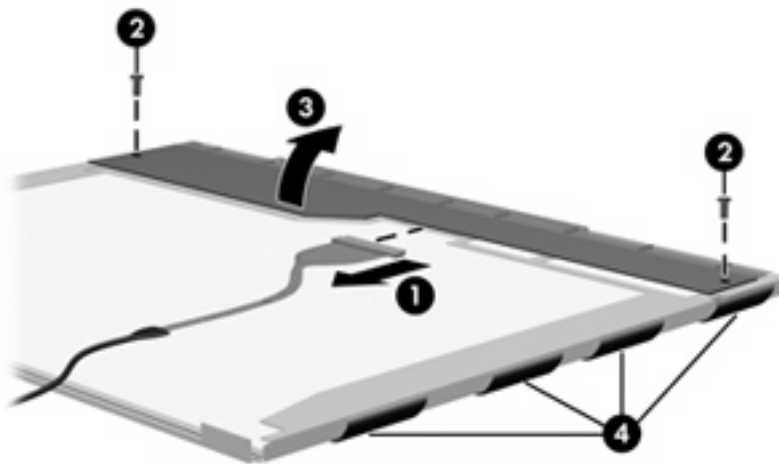
17. Remove the backlight frame from the display panel.



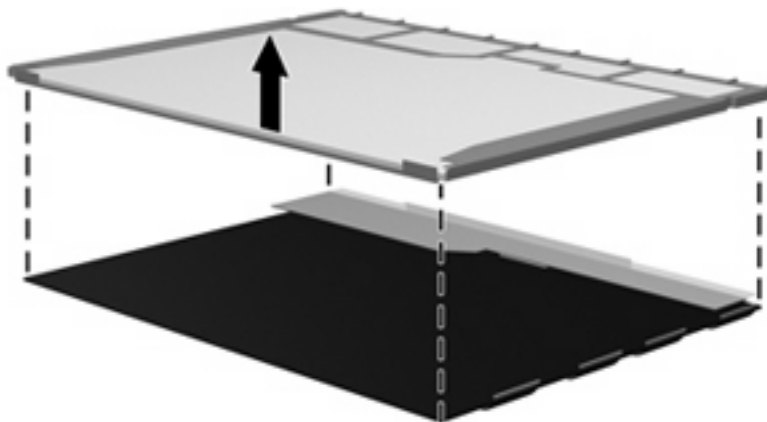
18. Remove the backlight from the backlight frame.



19. Disconnect the display 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.

Index

Symbols/Numerics

1394 port 11

A

AC adapter, spare part
 numbers 26, 28
accessory battery connector 14
antennae, disconnecting 53, 61
audio cable
 illustrated 24
 removal 84
audio, product description 3
audio-in jack
 location 11
 pin assignments 134
audio-out jack
 location 11
 pin assignments 134

B

backing up 123, 129
backup
 files and folders 124, 130
 hard drive 125, 130
 modifications made to the
 system 126, 131
 scheduling 126, 131
base enclosure, spare part
 number 19, 30
battery
 location 14
 removal 40
 spare part numbers 19, 30,
 40
 specifications 96
battery bay 12, 14
battery latch 14
battery light 10

Bluetooth module
 removal 46
 spare part number 22, 30,
 46
Bluetooth module cable,
 illustrated 24
Bluetooth module
 compartment 14
Bluetooth module compartment
 cover
 illustrated 23
 removal 47
boot options 91
boot order 91
bottom components 14
buttons
 info 7
 power 6
 presentation 7
 volume mute 7
 wireless 7

C

Cable Kit
 contents 24
 spare part number 18, 24,
 30
cables, service considerations 34
carrying case, spare part
 number 26, 27
chipset, product description 1
CMOS clearing 38
components
 bottom 14
 buttons 6
 fingerprint reader 6
 front 10
 keys 8
 left-side 11
 pointing devices 9

 rear 12
 right-side 13
 top 6
computer feet
 locations 46
 spare part number 19, 32,
 46
Computer Setup
 accessing 87
 Diagnostics menu 90
 File menu 89
 navigating and selecting 88
 restoring factory settings 88
 Security menu 90
 System Configuration
 menu 91
 using 88
computer specifications 93
connectors
 accessory battery 14
 docking 14
 power 12
 service considerations 34
creating recovery points 126,
 131

D

Diagnostics menu 90
Disk Sanitizer 90
diskette drive
 precautions 34
 product description 2
display assembly
 removal 69
 spare part numbers 17, 31,
 69
display bezel
 release 42
 removal 71
 spare part number 72

- display component recycling 140
- display hinge
 - removal 71
 - spare part number 72
- display inverter
 - removal 42
 - spare part number 42
- display release latch 10
- display specifications 94
- docking connector 14
- docking support, product
 - description 4
- drive light 10
- DriveLock password 90
- drives, boot order 91
- drives, preventing damage 34
- DVD-ROM Drive
 - precautions 34
 - removal 54
 - spare part number 19, 25, 30, 54
 - specifications 99
- DVD/CD-RW Combo Drive
 - precautions 34
 - removal 54
 - spare part number 19, 25, 30, 54
 - specifications 98
- DVD±RW and CD-RW Combo Drive
 - precautions 34
 - removal 54
 - spare part number 19, 25, 30, 54
 - specifications 97

E

- electrostatic discharge 35
- Ethernet, product description 3
- Execution Disable 91
- external media cards, product
 - description 3
- external monitor port
 - location 12
 - pin assignments 135
- External MultiBay II power cable
 - and stand, spare part number 26, 27
- External MultiBay II, spare part
 - number 26, 27

F

- fan assembly
 - removal 64
 - spare part number 18, 30, 64
- feet
 - locations 46
 - spare part number 19, 32, 46
- File menu 89
- fingerprint reader 7
- fn key 8
- front components 10
- function keys 8

G

- graphics, product description 1
- grounding equipment and
 - methods 37

H

- hard drive
 - location 14
 - precautions 34
 - product description 2
 - removal 44
 - spare part numbers 19, 25, 30, 44
 - specifications 95
- hard drive backup 125, 130
- hard drive bay 14
- hard drive bracket, removal 45
- hard drive cover
 - illustrated 23
 - removal 44
- hard drive recovery 127, 132
- hard drive test 90
- headphone jack
 - location 11
 - pin assignments 134
- heat sink
 - removal 65
 - spare part numbers 19, 31, 65
- hinge
 - removal 71
 - spare part number 72
- HP Docking Stand Miscellaneous
 - Plastics Kit, spare part number 26, 27

- HP Docking Stand, spare part
 - number 26, 27
- HP Extended Life Battery, spare
 - part number 26, 27

I

- I/O address specifications 102
- info button 7
- infrared port 10
- interrupt specifications 101
- inverter
 - removal 42
 - spare part number 42

J

- jacks
 - audio-in 11
 - audio-out 11
 - headphone 11
 - microphone 11
 - modem 13
 - network 13
 - RJ-11 13
 - RJ-45 13
 - S-Video-out 12

K

- keyboard
 - product description 4
 - removal 55
 - spare part numbers 17, 31, 55
- keypad keys 8
- keys
 - fn 8
 - function 8
 - keypad 8
 - num lock 8
 - Windows applications 8
 - Windows logo 8

L

- Label Kit, spare part number 26, 30
- LAN Power Save 91
- language, changing in Computer
 - Setup 91
- left-side components 11
- legacy support, USB 87, 91
- lights
 - battery 10

- drive 10
- power 10
- wireless 10
- M**
- mass storage devices, spare part numbers 25
- Media Card Reader 10
- memory check 90
- memory map specifications 104
- memory module
 - product description 2
 - removal 48, 59
 - spare part numbers 18, 30, 48, 59
- memory module compartment 14
- memory module compartment cover
 - illustrated 23
 - removal 48
- microphone
 - release 75
 - removal 78
 - spare part number 18, 30, 78
- microphone jack
 - location 11
 - pin assignments 134
- modem jack
 - location 13
 - pin assignments 136
- modem module
 - product description 3
 - removal 60
 - spare part number 18, 31, 60
- modem module cable
 - illustrated 24
 - removal 84
- monitor port
 - location 12
 - pin assignments 135
- MultiBay II
 - location 13
 - product description 2
- MultiBay II 24X DVD/CD-RW Combo Drive, spare part number 26, 27
- MultiBay II 8X DVD-ROM Drive, spare part number 26, 27
- MultiBay II device
 - removal 54
 - spare part numbers 19, 25, 26, 27, 30, 54
 - specifications 97, 98, 99
- MultiBay II eject assembly
 - removal 85
 - spare part number 19, 31, 85
- N**
- navigating in Computer Setup 88
- network jack
 - location 13
 - pin assignments 136
- num lock key 8
- O**
- operating system, product description 5
- optical drive
 - precautions 34
 - product description 2
 - removal 54
 - spare part numbers 19, 25, 26, 27, 30, 54
 - specifications 97, 98, 99
- P**
- packing guidelines 36
- panels, product description 1
- parallel port mode 91
- password clearing 38
- passwords 90
- PC Card assembly
 - spare part number 18, 31, 78
- PC Card slot 11
- PC Card slot bezel, illustrated 23
- pin assignments
 - audio-in jack 134
 - audio-out jack 134
 - external monitor port 135
 - headphone jack 134
 - microphone jack 134
 - modem jack 136
 - monitor port 135
 - network jack 136
 - RJ-11 136
 - RJ-45 jack 136
- S-Video-out jack 137
- Universal Serial Bus (USB) port 137
- plastic parts 33
- Plastics Kit
 - contents 23
 - spare part number 18, 23, 31
- pointing device components
 - illustrated 9
 - pointing stick 9
 - pointing stick buttons 9
 - TouchPad 9
 - TouchPad buttons 9
 - TouchPad scroll zone 9
- pointing devices, product description 4
- pointing stick cable
 - illustrated 24
 - removal 57
- ports
 - 1394 11
 - external monitor 12
 - monitor 12
 - product description 3
 - USB 11, 13
- power button 6
- power button board
 - removal 63
 - spare part number 17, 31, 63
- power connector 12
- power cord
 - set requirements 138
 - spare part numbers 26, 27
- power light 10
- power requirements, product description 4
- power-on password 90
- presentation button 7
- processor
 - product description 1
 - removal 67
 - spare part numbers 19, 31, 67
- product description
 - audio 3
 - chipset 1
 - diskette drive 2
 - docking support 4

- Ethernet 3
- external media cards 3
- graphics 1
- hard drives 2
- keyboard 4
- memory module 2
- modem module 3
- MultiBay II 2
- operating system 5
- optical drives 2
- panels 1
- pointing devices 4
- ports 3
- power requirements 4
- processors 1
- security 4
- serviceability 5
- wireless 3

R

- rear components 12
- recovery discs
 - creating 123, 128
 - using 127, 132
- recovery partition 128, 133
- recovery points 126, 131
- removal/replacement
 - preliminaries 33
 - procedures 39
- restoring Computer Setup factory settings 88
- right-side components 13
- RJ-11 jack
 - location 13
 - pin assignments 136
- RJ-45 jack
 - location 13
 - pin assignments 136
- RTC battery
 - removal 58
 - spare part number 18, 30, 58
- Rubber Kit, spare part number 19, 32

S

- S-Video-out jack
 - location 12
 - pin assignments 137
- scheduling backups 126, 131

- Screw Kit
 - contents 105
 - spare part number 26, 31
- screw listing 105
- security cable slot 12
- Security menu 90
- security, product description 4
- selecting in the Computer Setup 88
- serial number 15, 39
- service considerations 33
- serviceability, product description 5
- SIM, removal 41
- smart card reader 13
- smart card reader board
 - removal 77
 - spare part number 18, 32, 77
- smart card security 90
- speaker assembly
 - removal 79
 - spare part number 19, 31, 79
- speakers 10
- specifications
 - battery 96
 - computer 93
 - display 94
 - DVD-ROM Drive 99
 - DVD/CD-RW Combo Drive 98
 - DVD±RW and CD-RW Combo Drive 97
 - hard drive 95
 - I/O addresses 102
 - interrupts 101
 - memory map 104
 - MultiBay II device 97, 98, 99
 - optical drive 97, 98, 99
 - system DMA 100
- startup check 90
- static-shielding materials 37
- stringent security 90
- switch cover
 - removal 62
 - spare part number 17, 30, 62
- system backup 125, 130

- system board
 - removal 80
 - spare part numbers 18, 30, 80
- System Configuration menu 91
- system DMA 100
- system fan 91
- system information 89
- system memory map 104
- system recovery points 126, 131

T

- Thermal Material Kit, spare part numbers 65
- thermal material, replacement 66
- tools required 33
- top components 6
- top cover
 - removal 74
 - spare part number 18, 30, 74
- TouchPad cable, illustrated 24
- transporting guidelines 36

U

- Universal Serial Bus (USB) port
 - location 11, 13
 - pin assignments 137
- unknown password 38
- USB legacy support 87, 91

V

- vents 11, 14
- volume mute button 7
- volume scroll zone 7

W

- Windows applications key 8
- Windows logo key 8
- wireless antennae,
 - disconnecting 53, 61
- wireless button 7
- wireless light 10
- wireless, product description 3
- WLAN module
 - removal 50
 - spare part numbers 19, 28, 50
- WLAN module compartment 14

- WLAN module compartment cover
 - illustrated 23
 - removal 53
- workstation guidelines 36
- WWAN module
 - removal 61
 - spare part numbers 18, 28, 61

