# HP 530 Notebook PC
## Maintenance and Service Guide

First Edition: April 2007

Document Part Number: 446951-001

# 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

| Category | Description | 940GML system board without wireless local area network (WLAN) | 940GML system board with WLAN | 945GM system board with WLAN |
|---|---|---|---|---|
| **Product Name** | **HP 530 Notebook PC** | √ | √ | √ |
| **Processors** | • Intel® Core™ Duo T2300 (1.66-GHz) processor with 667-MHz front side bus (FSB), 2 MB of L2 cache, socketed | | | √ |
| | • Intel® Core Duo T2300E (1.66-GHz) processor 667-MHz FSB, 2 MB of L2 cache, socketed | | | √ |
| | • Intel Core Solo T1400 (1.83-GHz) processor 667-MHz FSB, 2 MB of L2 cache, socketed | | | √ |
| | • Intel Core Solo T1300 (1.1.66-GHz) processor 667-MHz FSB, 2 MB of L2 cache, socketed | | | √ |
| | • Intel Celeron® M 420M (1.60-GHz) processor 533-MHz FSB, 512 KB of L2 cache, socketed | √ | √ | |
| | • Intel Celeron M 410M (1.46-GHz) processor 533-MHz FSB, 512 KB of L2 cache, socketed | √ | √ | |
| **Chipsets** | • Northbridge: Intel 945GM | | | √ |
| | • Northbridge: Intel 940GML | √ | √ | |
| | • Southbridge: Intel ICH-7M | √ | √ | √ |
| **Graphics** | Unified Memory Architecture (UMA) – graphics subsystem shares memory resources with main system memory | √ | √ | √ |
| **Panels** | • 15.4-inch, WXGA (16:10 aspect ratio) BrightView with wireless antenna transceivers and cables | | √ | √ |
| | • 15.4-inch, WXGA (16:10 aspect ratio) BrightView without wireless antenna transceivers and cables | √ | | |
| **Memory** | • Two SODIMM slots | √ | √ | √ |
| | • Customer-accessible/upgradable | | | |

| Category | Description | 940GML system board without wireless local area network (WLAN) | 940GML system board with WLAN | 945GM system board with WLAN |
|---|---|---|---|---|
| | • DDRII PC2-5300 (667-MHz)<br>• Supports the following configurations:<br>◦ 2048 MB total system memory (1024-MB × 2)<br>◦ 1536 MB total system memory (1024-MB + 512-MB)<br>◦ 1024 MB total system memory (1024-MB × 1, 512-MB × 2)<br>◦ 768 MB total system memory (512-MB + 256-MB)<br>◦ 512 MB total system memory (512-MB × 1, 256-MB × 2)<br>◦ 256 MB total system memory (256-MB × 1) | | | |
| **Hard drives** | • Supports all 9.5-mm, 2.5-inch hard drives<br>• Parallel ATA<br>• Supports the following drives:<br>◦ 120-GB, 5400-rpm<br>◦ 80-GB, 5400-rpm | √ | √ | √ |
| **Optical drives (fixed)** | • 12.7-mm tray load<br>• Parallel ATA<br>• Fixed, no modular requirements (1 screw removal)<br>• Supports the following drives:<br>◦ DVD±RW and CD-RW Super Multi Double-Layer Combo Drive<br>◦ DVD/CD-RW Combo Drive | √ | √ | √ |
| **Diskette drive** | Supports external USB drive only | √ | √ | √ |
| **Audio** | • Conexant CX20549<br>• Single speaker<br>• Headphone and microphone jacks | √ | √ | √ |
| **Modem** | • Conexant CX20548-11<br>• Modem cable included | √ | √ | √ |
| **Ethernet** | Intel 82562GT | √ | √ | √ |

| Category | Description | 940GML system board without wireless local area network (WLAN) | 940GML system board with WLAN | 945GM system board with WLAN |
|---|---|---|---|---|
| **Wireless** | **Integrated wireless options by way of WLAN module:**<br>• WLAN antennae (2, configured in display assembly)<br>• Intel 802.11a/b/g<br>• Broadcom and Intel 802.11b/g | | √ | √ |
| **External media card** | One Type I/II PC Card slot, 16-bit PCMCIA and 32-bit CardBus | √ | √ | √ |
| **Ports** | • 2-pin AC jack<br>• Audio-out (stereo microphone) jack<br>• Audio-in (stereo headphone) jack<br>• RJ-11 modem jack<br>• RJ-45 Ethernet jack (includes link and activity LEDs)<br>• USB 2.0 ports (2)<br>• VGA port (Dsub 15-pin) | √ | √ | √ |
| **Docking** | No docking support | | | |
| **Keyboard/ pointing devices** | • Keyboard with embedded numeric keypad<br>• TouchPad with 2 buttons and one-way scroll | √ | √ | √ |
| **Power requirements** | • 4-cell, 2.2-Ah, 32-Wh, Li-ion battery<br>**NOTE:** The HP 530 Notebook PC does not support Smart Battery technology.<br>• 65-W AC adapter with localized cable plug support (2-wire plug with ground pin, supports 2-pin DC connector)<br>**NOTE:** The HP 530 Notebook PC does not support Smart AC adapter technology. | √ | √ | √ |
| **Security** | Security cable slot | √ | √ | √ |
| **Operating system** | **Preinstalled:**<br>• Windows Vista™ Home Basic<br>• Windows Vista Business 32<br>• Microsoft® Windows® XP Pro (in Japan only)<br>• FreeDOS | √ | √ | √ |

| Category | Description | 940GML system board without wireless local area network (WLAN) | 940GML system board with WLAN | 945GM system board with WLAN |
|---|---|---|---|---|
| **Serviceability** | **End-user replaceable parts:** | | | |
| | • AC adapter | √ | √ | √ |
| | • Battery (system) | √ | √ | √ |
| | • Hard drive | √ | √ | √ |
| | • Memory module | √ | √ | √ |
| | • WLAN module | | √ | √ |

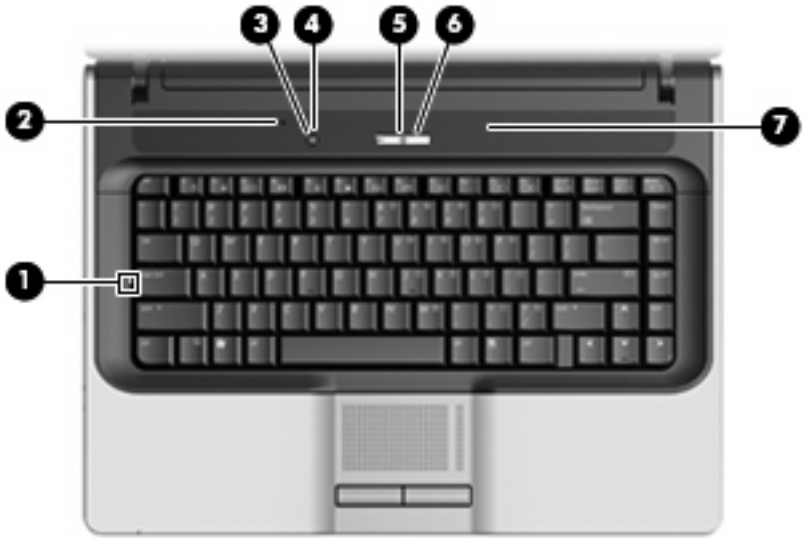
# 2 External component identification

## Front components


| Item | Component | Function |
|---|---|---|
| **(1)** | Wireless antennae (select models only) | Send and receive signals from one or more wireless devices. These antennae are not visible from the outside of the computer.<br><br>**NOTE:** To see wireless regulatory notices, refer to the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region. These notices are located in Help and Support. |
| **(2)** | Battery light | • Amber: A battery is charging.<br>• Green: A battery is close to full charge capacity.<br>• 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 to blink rapidly.<br>• Off: If the computer is plugged into an external power source, the light turns off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level. |
| **(3)** | Audio-out (headphone) jack | Produces sound when connected to optional stereo speakers, headphones, ear buds, a headset, or television audio. |
| **(4)** | Audio-in (microphone) jack | Connects an optional computer headset microphone, stereo array microphone, or monaural microphone. |

# Top components

## Buttons and lights

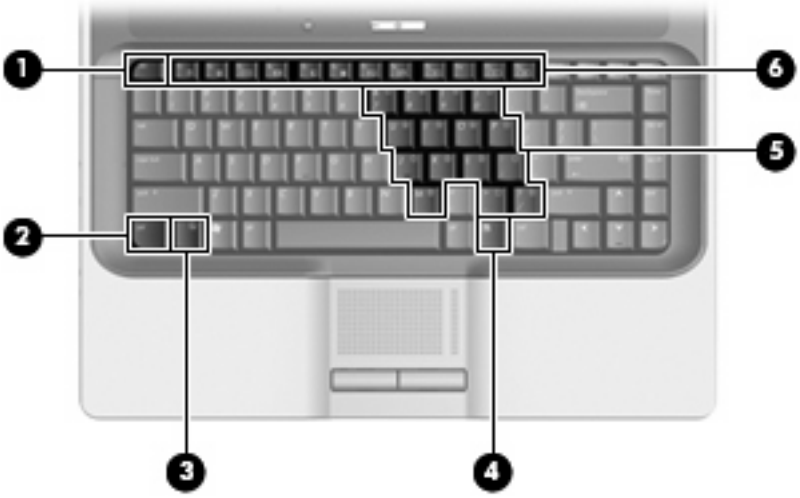



| Item | Component | Function |
|---|---|---|
| **(1)** | Caps lock light | On: Caps lock is on. |
| **(2)** | Internal display switch | Turns off the display if the display is closed while the power is on. |
| **(3)** | Wireless button (select models only) | Turns the wireless feature on or off, but does not create a wireless connection.<br><br>**NOTE:** A wireless network must be set up in order to establish a wireless connection. |
| **(4)** | Wireless light (select models only) | • On: An integrated wireless device, such as a wireless local area network (WLAN) device, the HP Broadband Wireless Module, and/or a Bluetooth® device, is on.<br><br>• Off: All wireless devices are turned off. |
| **(5)** | Power button* | • When the computer is off, press the button to turn on the computer.<br><br>• When the computer is on, press the button to initiate the Sleep state (Windows Vista) or shut down the computer (Windows XP).<br><br>• When the computer is in the Sleep state (Windows Vista) or in Standby (Windows XP), press the button briefly to exit Sleep or Standby.<br><br>• When the computer is in Hibernation, press the button briefly to exit Hibernation.<br><br>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. |

| Item | Component | Function |
|---|---|---|
| | | To learn more about power settings, follow these steps:<br>• In Windows Vista, select **Start > Control Panel > System and Maintenance > Power Options**.<br>• In Windows XP, select **Start > Control Panel > Performance and Maintenance > Power Options**. |
| **(6)** | Power light | • On: The computer is on.<br>• Blinking: The computer is in the Sleep state (Windows Vista) or in Standby (Windows XP).<br>• Off: The computer is off or in Hibernation. |
| **(7)** | Speaker | Produces sound. |

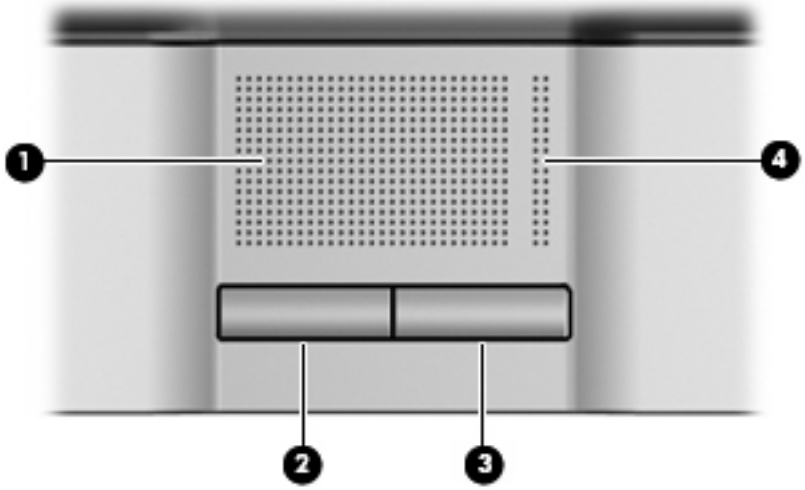
*This table describes factory settings. For information about changing factory settings, refer to the user guides located in Help and Support.

# Keys




| Item | Component | Function |
|---|---|---|
| **(1)** | esc key | Displays system information when pressed in combination with the fn key. |
| **(2)** | fn key | Executes frequently used system functions when pressed in combination with a function key or the esc key. |
| **(3)** | Windows logo key | Displays the Windows Start menu. |
| **(4)** | 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)** | Function keys | Execute frequently used system functions when pressed in combination with the fn key. |

## Pointing devices




| Item | Component | Function |
|---|---|---|
| **(1)** | TouchPad* | Moves the pointer and selects or activates items on the screen. |
| **(2)** | Left TouchPad button* | Functions like the left button on an external mouse. |
| **(3)** | Right TouchPad button* | Functions like the right button on an external mouse. |
| **(4)** | TouchPad scroll zone | Scrolls up or down. |

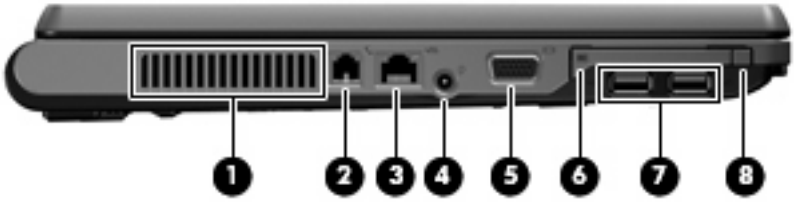
*This table describes factory settings. View or change pointing device preferences as follows:

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

# Right-side components

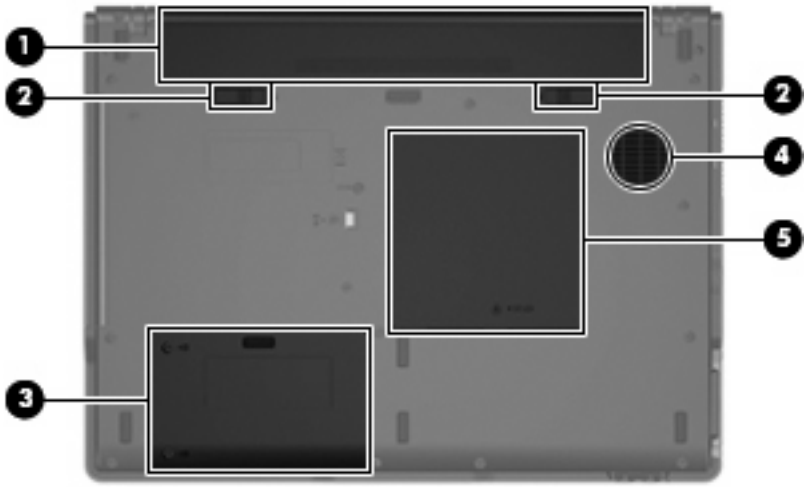

| Item | Component | Function |
|---|---|---|
| **(1)** | Optical drive | Reads an optical disc. |
| **(2)** | Security cable slot | Attaches an optional security cable to the computer.<br><br>**NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen. |

# Left-side components




| Item | Component | Function |
|---|---|---|
| **(1)** | Vent | Enables airflow to cool internal components.<br><br>**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)** | RJ-11 (modem) jack (select models only) | Connects a modem cable. |
| **(3)** | RJ-45 (network) jack | Connects a network cable. |
| **(4)** | Power connector | Connects an AC adapter.<br><br>**NOTE:** The HP 530 Notebook PC does not support Smart AC adapter technology. |
| **(5)** | External monitor port | Connects an optional VGA external monitor or projector. |
| **(6)** | PC Card slot | Supports optional Type I or Type II 32-bit (CardBus) or 16-bit PC Cards. |
| **(7)** | USB ports (2) | Connect optional USB devices. |
| **(8)** | PC Card eject button | Ejects the PC Card from the PC Card slot. |

# Bottom components



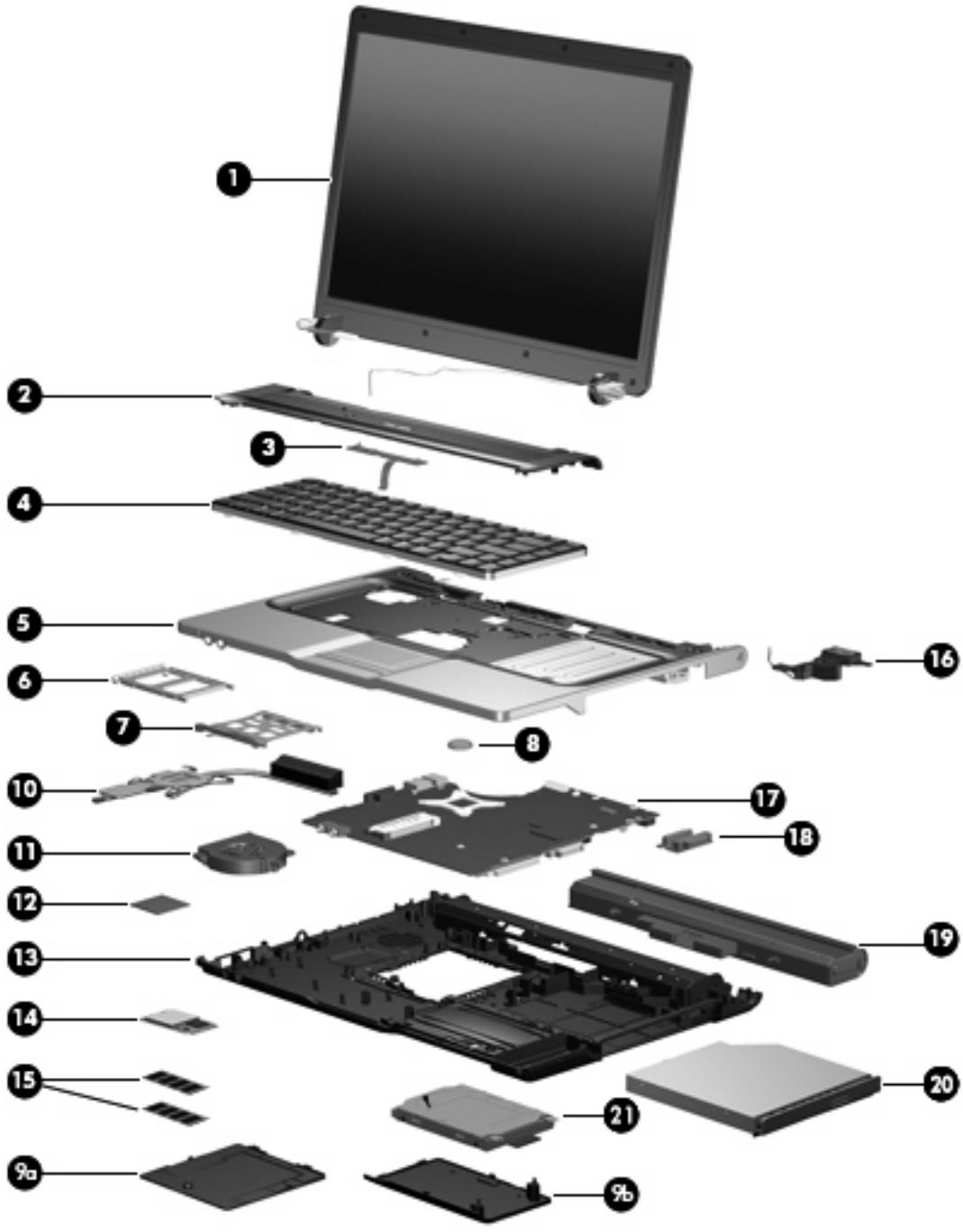

| Item | Component | Function |
|---|---|---|
| **(1)** | Battery bay | Holds the battery.<br><br>**NOTE:** The HP 530 Notebook PC does not support Smart Battery technology. |
| **(2)** | Battery release latches (2) | Release the battery from the battery bay. |
| **(3)** | Hard drive bay | Holds the hard drive. |
| **(4)** | Vent | Enables airflow to cool internal components.<br><br>**NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation. |
| **(5)** | Memory/WLAN module compartment | Contains two memory module slots and the WLAN module slot.<br><br>**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** | |
| | 15.4-inch, WXGA BrightView display assembly for use only with computer models with WLAN capability (includes wireless antenna transceivers and cables) | 440716-001 |
| | 15.4-inch, WXGA BrightView display assembly for use only with computer models without WLAN capability | 440715-001 |

| Item | Description | Spare part number |
|---|---|---|
| **(2)** | **Switch covers** | |
| | For use only with computer models with WLAN capability (includes wireless button and wireless light) | 441623-001 |
| | For use only with computer models without WLAN capability | 441624-001 |
| **(3)** | **Button board** | 441632-001 |
| **(4)** | **Keyboards** | |
| | Belgium | 444340-A41 |
| | The Czech Republic | 444340-221 |
| | Denmark | 444340-081 |
| | The Netherlands and Europe | 444340-021 |
| | France | 444340-051 |
| | French Canada | 444340-121 |
| | Germany | 444340-041 |
| | Greece | 444340-151 |
| | Hungary | 444340-211 |
| | Israel | 444340-BB1 |
| | Italy | 444340-061 |
| | Norway | 444340-091 |
| | Poland | 444340-241 |
| | Portugal | 444340-131 |
| | Russia | 444340-251 |
| | Saudi Arabia | 444340-171 |
| | Slovakia | 444340-231 |
| | Slovenia | 444340-BA1 |
| | South Africa | 444340-AR1 |
| | Spain | 444340-071 |
| | Sweden and Finland | 444340-B71 |
| | Turkey | 444340-141 |
| | The United Kingdom | 444340-031 |
| | The United States | 444340-001 |
| **(5)** | **Top cover** (includes TouchPad and TouchPad cable) | 441626-001 |
| | **TouchPad cable** (not illustrated) | 441638-001 |
| **(6)** | **PC Card slot bezel** | 438527-001 |
| **(7)** | **PC Card assembly** | 438551-001 |

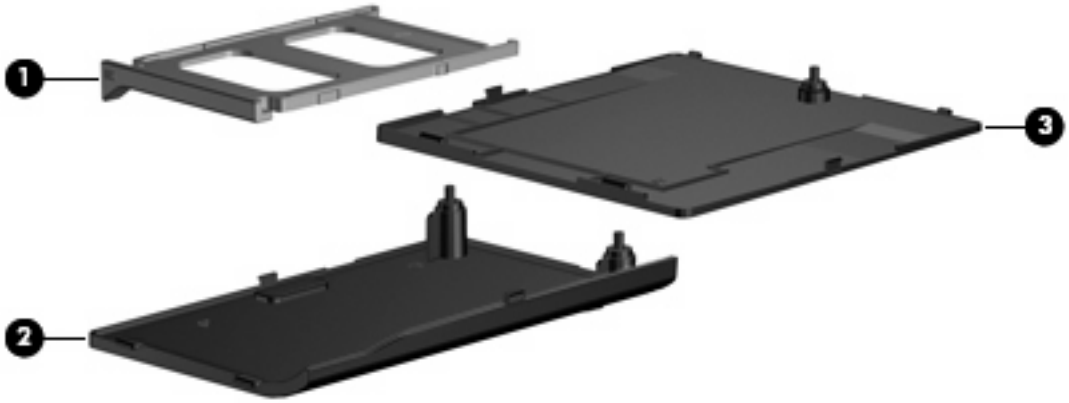
| Item | Description | Spare part number |
|---|---|---|
| **(8)** | **RTC battery** | 438556-001 |
| | **Plastics/Hardware Kit** | 448431-001 |
| **(9a)** | Memory/WLAN module compartment cover (includes 1 captive screw, secured by a C-clip) | |
| **(9b)** | Hard drive cover (includes 2 captive screws, secured by C-clips) | |
| **(10)** | **Heat sink** (includes thermal paste) | 448336-001 |
| **(11)** | **Fan assembly** | 438528-001 |
| **(12)** | **Processors** (include thermal paste) | |
| | Intel Core Solo T1400 1.83-GHz processor | 448326-001 |
| | Intel Core Solo T1300 1.66-GHz processor | 448325-001 |
| | Intel Core Duo T2300E 1.66-GHz processor | 448324-001 |
| | Intel Core Duo T2300 1.66-GHz processor | 448323-001 |
| | Intel Celeron M 420 1.60-GHz processor | 448322-001 |
| | Intel Celeron M 410 1.46-GHz processor | 448321-001 |
| **(13)** | **Base enclosure** (includes 6 rubber feet, not illustrated) | 441625-001 |
| | **Rubber Feet Kit** (includes 8 rubber feet, not illustrated) | 438557-001 |
| **(14)** | **WLAN modules** | |
| | 802.11a/b/g WLAN modules: | |
| | • 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 |
| | • 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 |
| | • For use in Ecuador, Haiti, Honduras, Pakistan, the People's Republic of China, Peru, Qatar, South Korea, Uruguay, and Venezuela | 407576-003 |
| | • For use in Japan | 407576-291 |
| | 802.11b/g WLAN modules: | |
| | • For use in Canada and the United States | 407107-001 |
| | • For use in Algeria, Andorra, Argentina, Australia, Austria, Bahrain, Bangladesh, Belarus, Belgium, Bolivia, Brazil, Brunei, Bulgaria, Chile, Colombia, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Ecuador, Egypt, El Salvador, Estonia, Finland, France, Germany, Gibraltar, Greece, Guatemala, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jordan, Kuwait, Latvia, Lebanon, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malaysia, Mexico, Morocco, Netherlands, New Zealand, Nicaragua, Norway, Oman, Pakistan, Panama, Paraguay, People's Republic of China, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russia, Saudi Arabia, Singapore, Slovakia, | 407107-002 |

| Item | Description | Spare part number |
|---|---|---|
| | Slovenia, South Africa, South Korea, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, United Kingdom, Uruguay, Venezuela, Vietnam, and Yemen | |
| | • For use in Japan | 407107-291 |
| **(15)** | **Memory modules** (667-MHz, PC2-5300, 1-DIMM) | |
| | 1024-MB | 409060-001 |
| | 512-MB | 447518-001 |
| | 256-MB | 447517-001 |
| **(16)** | **Speaker** | 441627-001 |
| **(17)** | **System boards** | |
| | For use only with computer models with Intel Core processors and WLAN capability | 448434-001 |
| | For use only with computer models with Intel Celeron M processors and WLAN capability | 448433-001 |
| | For use only with computer models without WLAN capability | 448432-001 |
| **(18)** | **Optical drive connector board** | 441631-001 |
| **(19)** | **4-cell, 2.2-Ah, 32-Wh battery** | 440704-001 |
| **(20)** | **Optical drives** (include bezel and bracket) | |
| | DVD±RW and CD-RW Super Multi Double-Layer Combo Drive | 438523-001 |
| | DVD/CD-RW Combo Drive | 438524-001 |
| **(21)** | **Hard drives** (include bracket and connector) | |
| | 120-GB, 5400-rpm | 435775-001 |
| | 80-GB, 5400-rpm | 435773-001 |

# Display assembly components


| Item | Description | Spare part number |
|---|---|---|
| (1) | **Display bezel** | 440706-001 |
| (2) | **Display Bracket/Hinge Kit** | 440707-001 |
| (3) | **15.4-inch, WXGA, BrightView display panel** | 440711-001 |
| (4) | **Display inverter** | 441628-001 |
| (5) | **Wireless Antenna Kit** (includes wireless antenna transceivers and cables) | 441639-001 |
| (6) | **Display enclosures** | |
| | For use only with computer models with WLAN capability (includes logo and wireless antenna transceivers and cables) | 440710-001 |
| | For use only with computer models without WLAN capability (includes logo) | 440709-001 |
| | **Display Cable Kit** (not illustrated) | 440708-001 |
| | **Display Label Kit** (not illustrated) | 448430-001 |
| | **Display Screw Kit** (not illustrated) | 440714-001 |

# Plastics/Hardware Kit




| Item | Description | Spare part number |
|---|---|---|
| | **Plastics/Hardware Kit** | 448431-001 |
| **(1)** | PC Card slot bezel | |
| **(2)** | Hard drive cover (includes 2 captive screws, secured by C-clips) | |
| **(3)** | Memory/WLAN module compartment cover (includes 1 captive screw, secured by a C-clip) | |

# Mass storage devices


| Item | Description | Spare part number |
|---|---|---|
| **(1)** | **Hard drives** (include bracket and connector) | |
| | 5400-rpm, 120-GB | 435775-001 |
| | 5400-rpm, 80-GB | 435773-001 |
| **(2)** | **Optical drives** (include bezel and bracket) | |
| | DVD±RW and CD-RW Super Multi Double-Layer Combo Drive | 438523-001 |
| | DVD/CD-RW Combo Drive | 438524-001 |

# Miscellaneous parts

| Description | Spare part number |
|---|---|
| **65-watt AC adapter** | 417220-001 |
| **Power cords:** | |
| Australia | 350055-011 |
| Brazil | 350055-201 |
| Denmark | 350055-081 |
| Europe | 350055-021 |
| French Canada | 350055-DB1 |
| Israel | 350055-BB1 |
| Italy | 350055-061 |
| Japan | 350055-291 |
| Korea | 350055-AD1 |
| People's Republic of China | 350055-AA1 |
| Switzerland | 350055-BG1 |
| The United Kingdom | 350055-031 |
| The United States | 350055-001 |
| **Screw Kit**<br>• Phillips PM3.0×3.0 screw<br>• Phillips PM2.5×6.0 captive screw<br>• Phillips PM2.5×6.0 screw<br>• Phillips PM2.5×4.0 screw<br>• Phillips PM2.0×9.0 screw<br>• Phillips PM2.0×7.0 screw<br>• Phillips PM2.0×3.0 screw<br>• Phillips PM2.0×2.0 screw | 441629-001 |

# Sequential part number listing

| Spare part number | Description |
|---|---|
| 350055-001 | Power cord use in the United States |
| 350055-011 | Power cord for use in Australia |
| 350055-021 | Power cord for use in Europe |
| 350055-031 | Power cord for use in the United Kingdom |
| 350055-061 | Power cord for use in Italy |
| 350055-081 | Power cord for use in Denmark |
| 350055-201 | Power cord for use in Brazil |
| 350055-291 | Power cord for use in Japan |
| 350055-AA1 | Power cord for use in the People's Republic of China |
| 350055-AD1 | Power cord for use in Korea |
| 350055-BB1 | Power cord for use in Israel |
| 350055-BG1 | Power cord for use in Switzerland |
| 350055-DB1 | Power cord for use in French Canada |
| 407107-001 | 802.11b/g WLAN module for use in Canada and the United States |
| 407107-002 | 802.11b/g WLAN module for use in Algeria, Andorra, Argentina, Australia, Austria, Bahrain, Bangladesh, Belarus, Belgium, Bolivia, Brazil, Brunei, Bulgaria, Chile, Colombia, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Ecuador, Egypt, El Salvador, Estonia, Finland, France, Germany, Gibraltar, Greece, Guatemala, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jordan, Kuwait, Latvia, Lebanon, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malaysia, Mexico, Morocco, Netherlands, New Zealand, Nicaragua, Norway, Oman, Pakistan, Panama, Paraguay, People's Republic of China, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russia, Saudi Arabia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, United Kingdom, Uruguay, Venezuela, Vietnam, and Yemen |
| 407107-291 | 802.11b/g WLAN module for use in Japan |
| 407576-001 | 802.11a/b/g WLAN module 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 WLAN module 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 WLAN module 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 WLAN module for use in Japan |
| 409060-001 | 1024-MB, 667-MHz, PC2-5300, 1-DIMM memory module |
| 417220-001 | 65-watt AC adapter |

| Spare part number | Description |
|---|---|
| 435773-001 | 80-GB, 5400-rpm hard drive (includes hard drive bracket and connector) |
| 435775-001 | 120-GB, 5400-rpm hard drive (includes hard drive bracket and connector) |
| 438523-001 | DVD±RW and CD-RW Super Multi Double-Layer Combo Drive (includes bezel and optical drive bracket) |
| 438524-001 | DVD/CD-RW Combo Drive (includes bezel and optical drive bracket) |
| 438527-001 | PC Card slot bezel |
| 438528-001 | Fan assembly |
| 438551-001 | PC Card assembly |
| 438556-001 | RTC battery |
| 438557-001 | Rubber Feet Kit |
| 440704-001 | 4-cell, 2.2-Ah, 32-Wh battery |
| 440706-001 | Display bezel |
| 440707-001 | Display Bracket/Hinge Kit |
| 440708-001 | Display Cable Kit |
| 440709-001 | Display enclosure for use only with computer models without WLAN capability (includes logo) |
| 440710-001 | Display enclosure for use only with computer models with WLAN capability (includes logo and wireless antenna transceivers and cables) |
| 440711-001 | 15.4-inch WXGA BrightView display panel |
| 440714-001 | Display Screw Kit |
| 440715-001 | 15.4-inch WXGA BrightView display assembly for use only with computer models without WLAN capability (includes wireless antenna transceivers and cables) |
| 440716-001 | 15.4-inch WXGA BrightView display assembly for use only with computer models with WLAN capability |
| 441623-001 | Switch cover for use only with computer models with WLAN capability (includes wireless button and wireless light) |
| 441624-001 | Switch cover for use only with computer models without WLAN capability |
| 441625-001 | Base enclosure (includes 6 rubber feet) |
| 441626-001 | Top cover (includes TouchPad and TouchPad cable) |
| 441627-001 | Speaker |
| 441628-001 | Display inverter |
| 441629-001 | Screw Kit |
| 441631-001 | Optical drive connector board |
| 441632-001 | Button board |
| 441638-001 | TouchPad cable |
| 441639-001 | Wireless Antenna Kit (includes wireless antenna transceivers and cables) |
| 444340-001 | Keyboard for use in the United States |
| 444340-021 | Keyboard for use in the Netherlands and Europe |

| Spare part number | Description |
|---|---|
| 444340-031 | Keyboard for use in the United Kingdom |
| 444340-041 | Keyboard for use in Germany |
| 444340-051 | Keyboard for use in France |
| 444340-061 | Keyboard for use in Italy |
| 444340-071 | Keyboard for use in Spain |
| 444340-081 | Keyboard for use in Denmark |
| 444340-091 | Keyboard for use in Norway |
| 444340-121 | Keyboard for use in French Canada |
| 444340-131 | Keyboard for use in Portugal |
| 444340-141 | Keyboard for use in Turkey |
| 444340-151 | Keyboard for use in Greece |
| 444340-171 | Keyboard for use in Saudi Arabia |
| 444340-211 | Keyboard for use in Hungary |
| 444340-221 | Keyboard for use in the Czech Republic |
| 444340-231 | Keyboard for use in Slovakia |
| 444340-241 | Keyboard for use in Poland |
| 444340-251 | Keyboard for use in Russia |
| 444340-A41 | Keyboard for use in Belgium |
| 444340-AR1 | Keyboard for use in South Africa |
| 444340-B71 | Keyboard for use in Sweden and Finland |
| 444340-BA1 | Keyboard for use in Slovenia |
| 444340-BB1 | Keyboard for use in Israel |
| 447517-001 | 256-MB, 667-MHz, PC2-5300, 1-DIMM memory module |
| 447518-001 | 512-MB, 667-MHz, PC2-5300, 1-DIMM memory module |
| 448321-001 | Intel Celeron M 410 1.46-GHz processor |
| 448322-001 | Intel Celeron M 420 1.60-GHz processor |
| 448323-001 | Intel Core Duo T2300 1.66-GHz processor |
| 448324-001 | Intel Core Duo T2300E 1.66-GHz processor |
| 448325-001 | Intel Core Solo T1300 1.66-GHz processor |
| 448326-001 | Intel Core Solo T1400 1.83-GHz processor |
| 448336-001 | Heat sink (includes thermal material) |
| 448430-001 | Display Label Kit |
| 448431-001 | Plastics/Hardware Kit |
| 448432-001 | System board for use only with computer models without WLAN capability |

| Spare part number | Description |
|---|---|
| 448433-001 | System board for use only with computer models with Intel Celeron M processors and WLAN capability |
| 448434-001 | System board for use only with computer models with Intel Core processors and WLAN capability |

# 4 Removal and replacement procedures

## Preliminary replacement requirements

### Tools required

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

- Magnetic screwdriver
- Phillips P0 and P1 screwdrivers
- Flat-bladed 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 area ready to install them.

Use nonmagnetic tools.

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

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

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

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

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

**Typical electrostatic voltage levels**

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

### Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

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

### Workstation guidelines

Follow these grounding workstation guidelines:

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

## Equipment guidelines

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

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

The following grounding equipment is recommended to prevent electrostatic damage:

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

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

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

## 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.

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 32).
5. Remove the real-time clock (RTC) battery (see RTC battery on page 54).
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 73 screws, in 8 different sizes, that must be removed, replaced, or loosened when servicing the computer. Make special note of each screw and screw lock 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

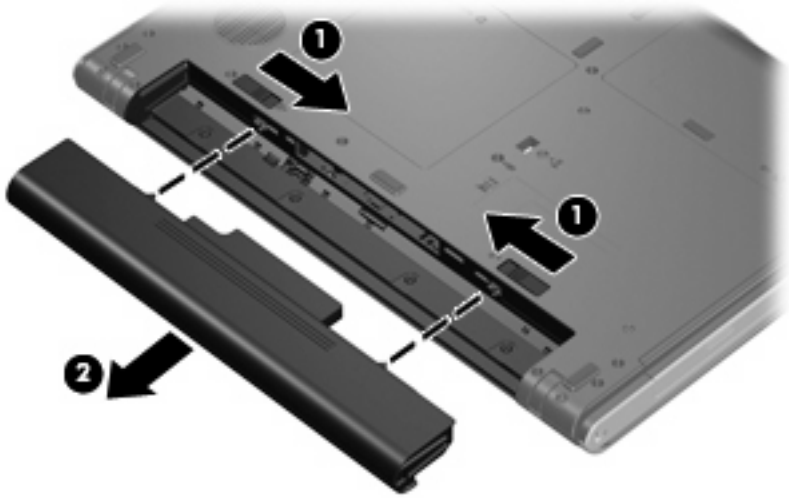
| Description | Spare part number |
|---|---|
| 4-cell, 2.2-Ah, 32-Wh battery | 440704-001 |

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 rear panel toward you.
2. Slide the battery release latches **(1)** to release the battery.
3. Remove the battery **(2)**.




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

# Hard drive

| Description | Spare part number |
|---|---|
| 120-GB, 5400-rpm | 435775-001 |
| 80-GB, 5400-rpm | 435773-001 |

Before disassembling the computer, follow these steps:

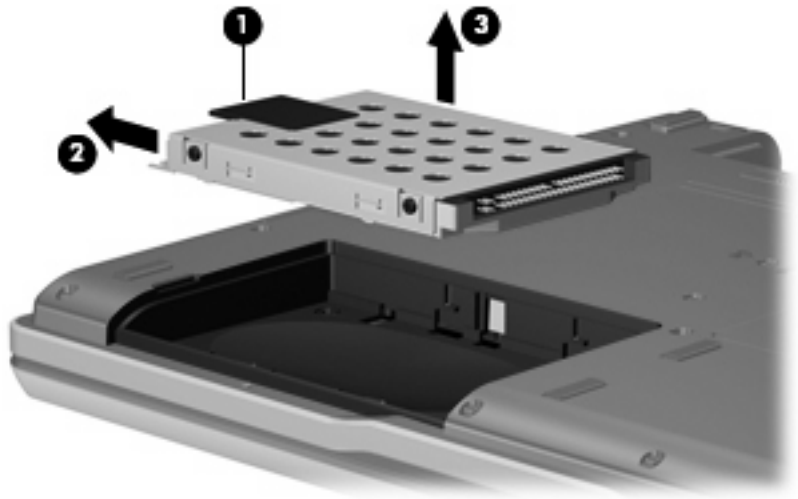
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 32).

Remove the hard drive:

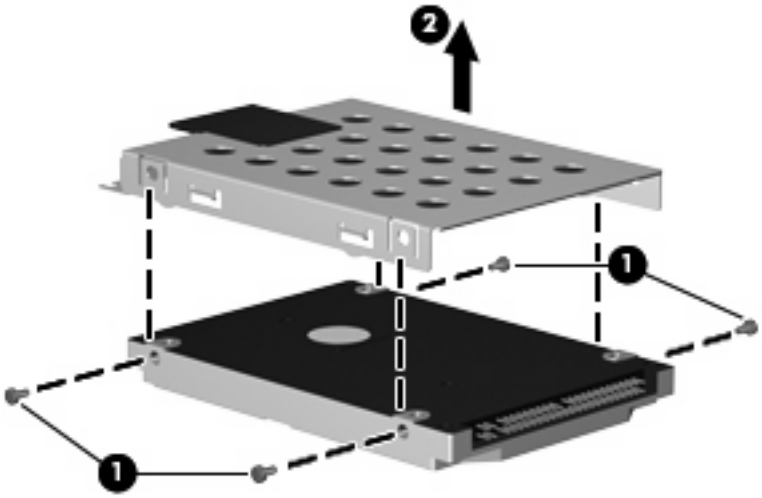
1. Position the computer with the front toward you.
2. Loosen the two Phillips PM2.5×6.0 screws **(1)** that secure the hard drive cover to the computer.
3. Lift the left side of the hard drive cover **(2)**, swing it to the right, and remove the cover. The hard drive cover is included in the Plastics/Hardware Kit, spare part number 448431-001.


4. Grasp the Mylar tab **(1)** on the hard drive and pull the hard drive **(2)** to the left to disconnect it from the system board.

5. Remove the hard drive **(3)** from the hard drive bay.




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

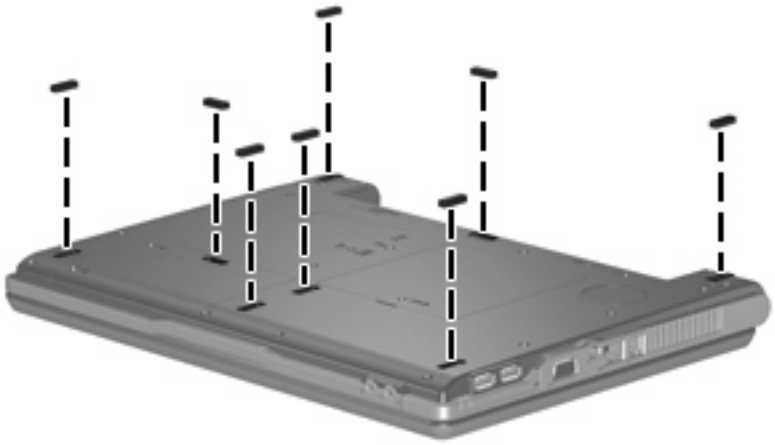



Reverse this procedure to reassemble and install the hard drive.

## Computer feet

| Description | Spare part number |
|---|---|
| Rubber Feet Kit | 438557-001 |

The computer feet are adhesive-backed rubber pads. There are 8 rubber feet. The feet attach to the base enclosure in the locations illustrated below.



## Memory module

| Description | Spare part number |
|---|---|
| 1024-MB, 667-MHz, PC2-5300, 1-DIMM | 409060-001 |
| 512-MB, 667-MHz, PC2-5300, 1-DIMM | 447518-001 |
| 256-MB, 667-MHz, PC2-5300, 1-DIMM | 447517-001 |

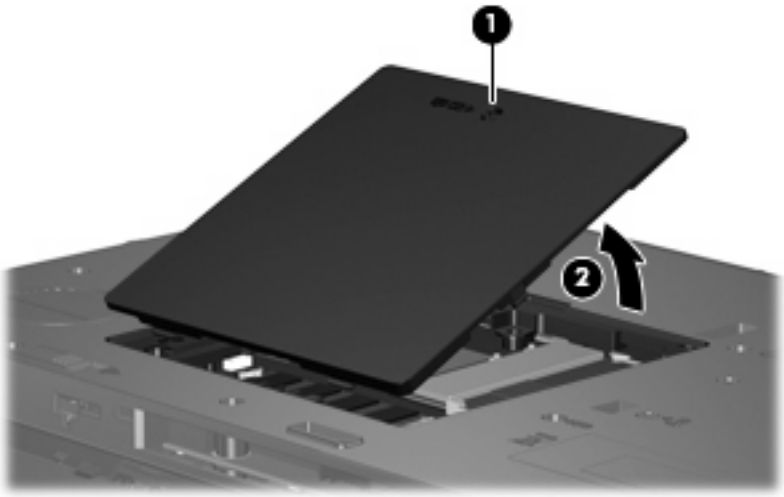
Before removing the memory module, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 32).

Remove the external memory module:

1. Position the computer with the rear panel toward you.
2. Loosen the Phillips PM2.5×6.0 screw **(1)** that secures the memory/WLAN module compartment cover to the computer.

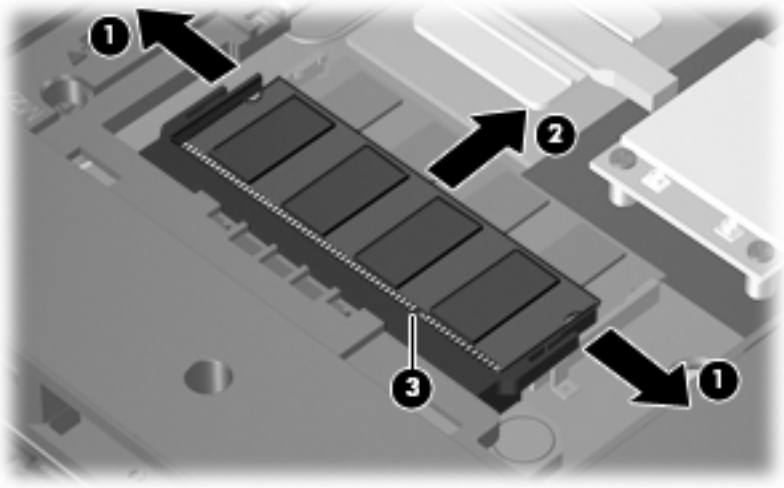
3. Lift the front edge of the cover **(2)**, swing it toward you, and remove the cover. The memory/WLAN module compartment cover is included in the Plastics/Hardware Kit, spare part number 448431-001.




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

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

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




Reverse this procedure to install a memory module.

# WLAN module

| Description | Spare part number |
|---|---|
| 802.11a/b/g WLAN modules: | |
| • 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 |
| • 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 |
| • For use in Ecuador, Haiti, Honduras, Pakistan, the People's Republic of China, Peru, Qatar, South Korea, Uruguay, and Venezuela | 407576-003 |
| • For use in Japan | 407576-291 |
| 802.11b/g WLAN modules: | |
| • For use in Canada and the United States | 407107-001 |
| • For use in For use in Algeria, Andorra, Argentina, Australia, Austria, Bahrain, Bangladesh, Belarus, Belgium, Bolivia, Brazil, Brunei, Bulgaria, Chile, Colombia, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Ecuador, Egypt, El Salvador, Estonia, Finland, France, Germany, Gibraltar, Greece, Guatemala, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jordan, Kuwait, Latvia, Lebanon, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malaysia, Mexico, Morocco, Netherlands, New Zealand, Nicaragua, Norway, Oman, Pakistan, Panama, Paraguay, People's Republic of China, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russia, Saudi Arabia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, United Kingdom, Uruguay, Venezuela, Vietnam, and Yemen | 407107-002 |
| • For use in Japan | 407107-291 |

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 32).
5. Remove the memory/WLAN module compartment cover (see Memory module on page 35).

Remove the WLAN module:

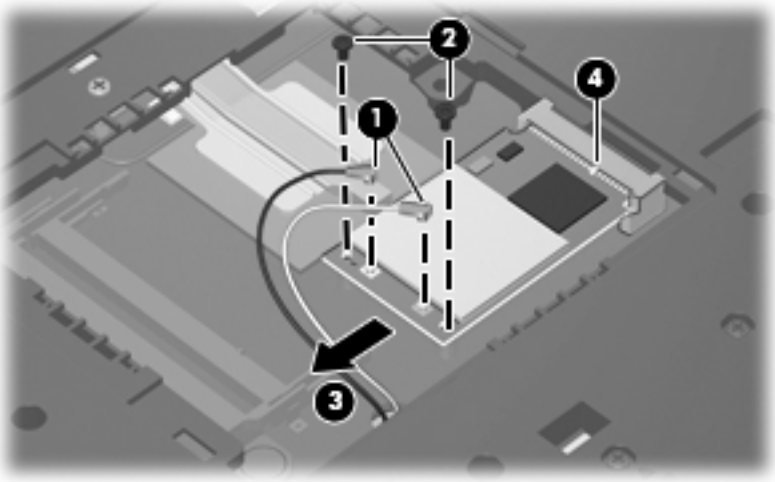
1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.

**NOTE:** The black WLAN antenna cable is connected to the WLAN module "Main" terminal. The gray WLAN antenna cable is connected to the WLAN module "Aux" terminal.

2. Remove the two Phillips PM2.0×4.0 screws **(2)** that secure the WLAN module to the system board. (The edge of the module opposite the slot rises away from the computer.)

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

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




Reverse this procedure to install a WLAN module.

# Optical drive

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

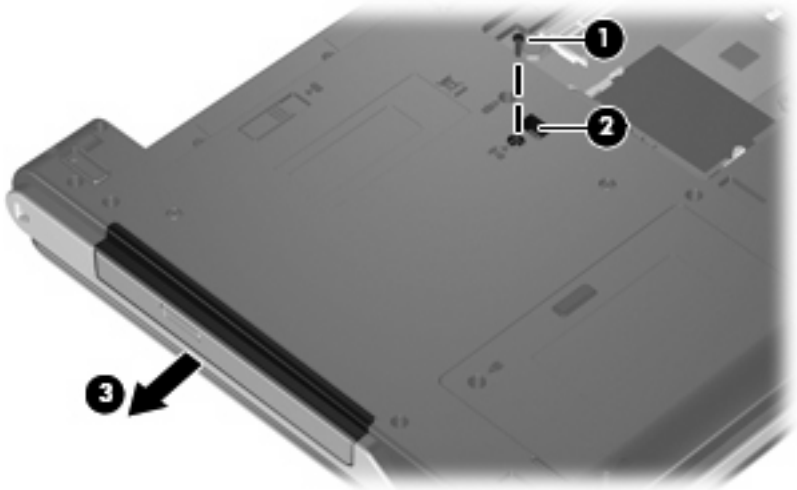
| Description | Spare part number |
|---|---|
| DVD±RW and CD-RW Super Multi Double-Layer Combo Drive | 438523-001 |
| DVD/CD-RW Combo Drive | 438524-001 |

Before removing the optical drive, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 32).
5. Remove the memory/WLAN module compartment cover (see Memory module on page 35).

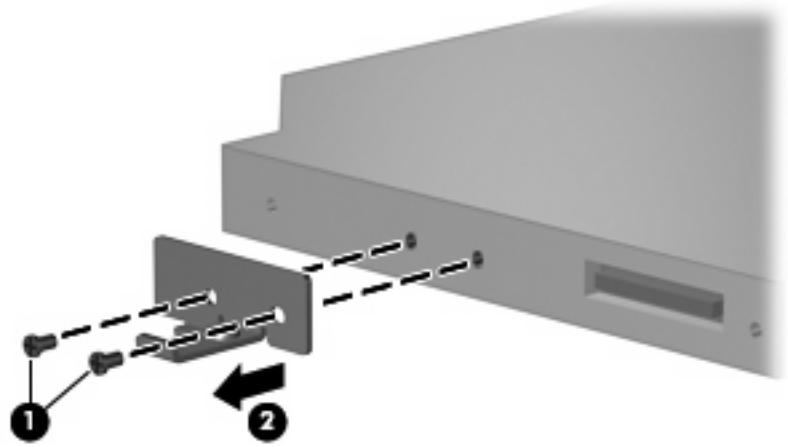
Remove the optical drive:

1. Position the computer with left side toward you.
2. Remove the Phillips PM2.0×9.0 screw **(1)** that secures the optical drive to the computer.
3. Use a flat-bladed tool to push the metal tab **(2)** toward the left side of the computer. (The optical drive partially removes from the optical drive bay.)
4. Remove the optical drive **(3)** from the computer.




5. If it is necessary to replace the optical drive bracket, remove the two Phillips PM2.0×3.0 screws **(1)** that secure the bracket to the optical drive.

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




Reverse this procedure to reassemble and install the optical drive.

# Switch cover

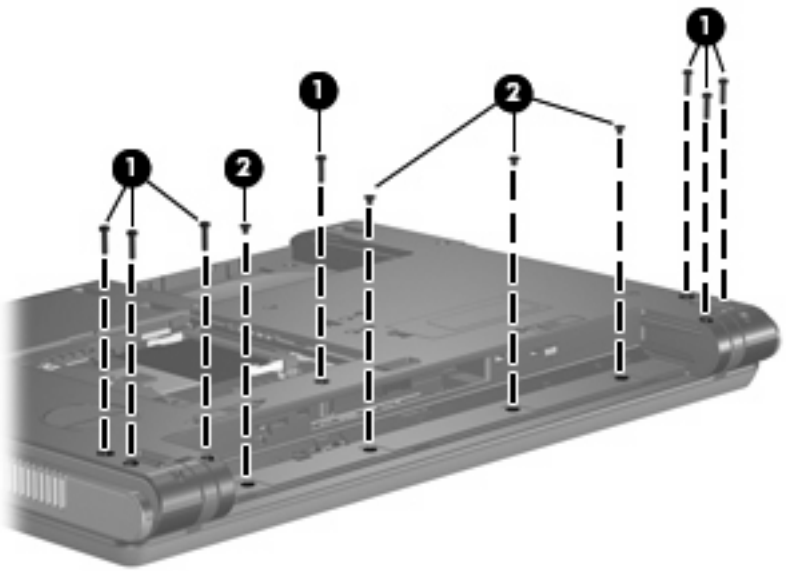
| Description | Spare part number |
|---|---|
| For use only with computer models with WLAN capability (includes wireless button and wireless light) | 441623-001 |
| For use only with computer models without WLAN capability | 441624-001 |

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 32).

Remove the switch cover:

1. Turn the computer upside down, with the rear panel toward you.
2. Remove the seven Phillips PM2.0×9.0 screws **(1)** and the four Phillips PM2.0×2.0 screws **(2)** that secure the switch cover to the computer.




3. Turn the computer display-side up, with the front toward you.
4. Open the computer as far as possible.
5. Lift the rear edge of the switch cover and swing it forward.

6. Remove the switch cover.

Reverse this procedure to install the switch cover.

# Keyboard

| For use in: | Spare part number | For use in: | Spare part number |
|---|---|---|---|
| Belgium | 444340-A41 | Poland | 438531-241 |
| The Czech Republic | 444340-221 | Portugal | 438531-131 |
| Denmark | 444340-081 | Russia | 438531-251 |
| The Netherlands and Europe | 444340-021 | Saudi Arabia | 438531-171 |
| France | 444340-051 | Slovakia | 438531-231 |
| French Canada | 444340-121 | Slovenia | 438531-BA1 |
| Germany | 444340-041 | South Africa | 438531-AR1 |
| Greece | 444340-151 | Spain | 438531-071 |
| Hungary | 444340-211 | Sweden and Finland | 438531-B71 |
| Israel | 444340-BB1 | Turkey | 438531-141 |
| Italy | 444340-061 | The United Kingdom | 438531-031 |
| Norway | 444340-091 | The United States | 438531-001 |

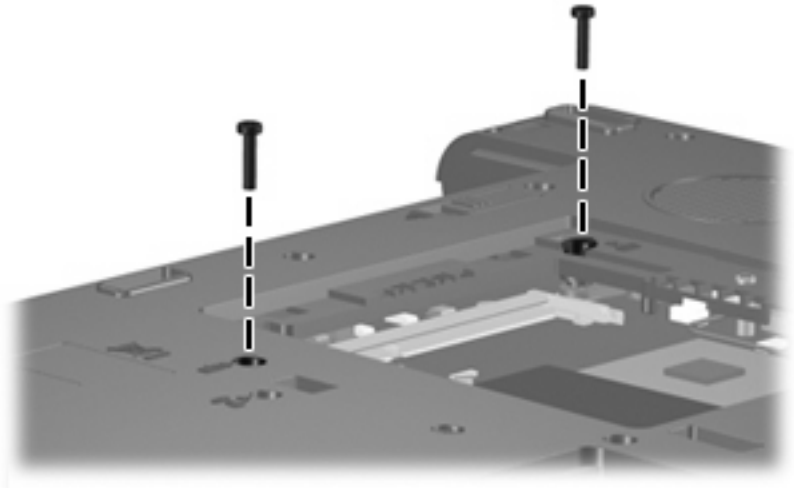
Before removing the keyboard, follow these steps:

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 32).
5. Remove the memory/WLAN module compartment cover (see Memory module on page 35).
6. Remove the switch cover (see Switch cover on page 41).

Remove the keyboard:

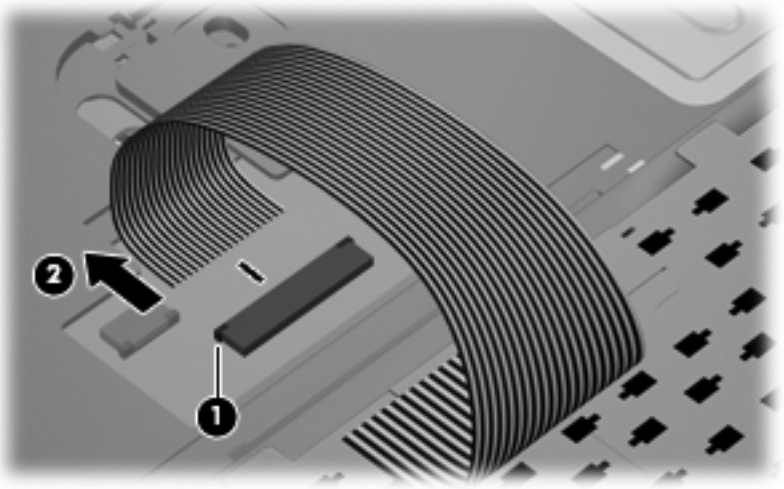
1. Position the computer with the front toward you.

2. Remove the two Phillips PM2.0×9.0 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. Lift the rear edge of the keyboard and swing it toward you until it rests on the palm rest.

6. 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.




7. Remove the keyboard.

Reverse this procedure to install the keyboard.

# Button board

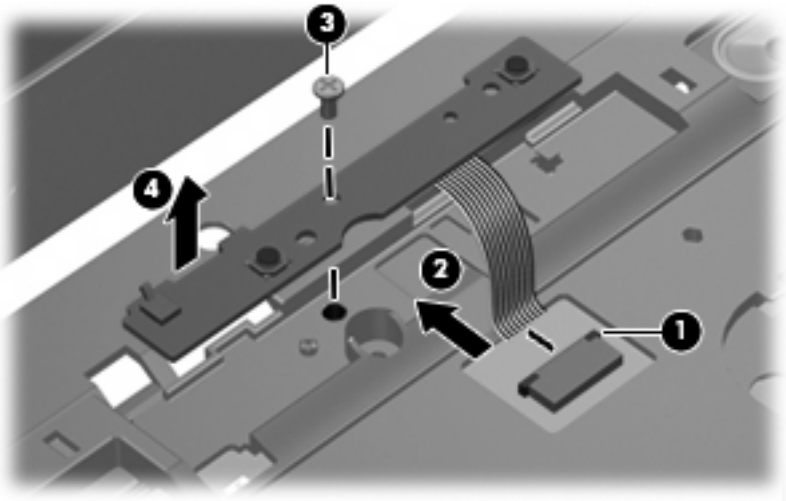
| Description | Spare part number |
|---|---|
| Button board | 441632-001 |

Before removing the button board, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 32).
5. Remove the memory/WLAN module compartment cover (see Memory module on page 35).
6. Remove the following components:
   a. Switch cover (see Switch cover on page 41)
   b. Keyboard (see Keyboard on page 43)

Remove the button board:

1. Release the ZIF connector **(1)** to which the button board cable is connected, and disconnect the cable **(2)** from the system board.
2. Remove the Phillips PM2.0×3.0 screw **(3)** that secures the button board to the computer.
3. Remove the button board **(4)**.




Reverse this procedure to reassemble and install the button board.

# Display assembly

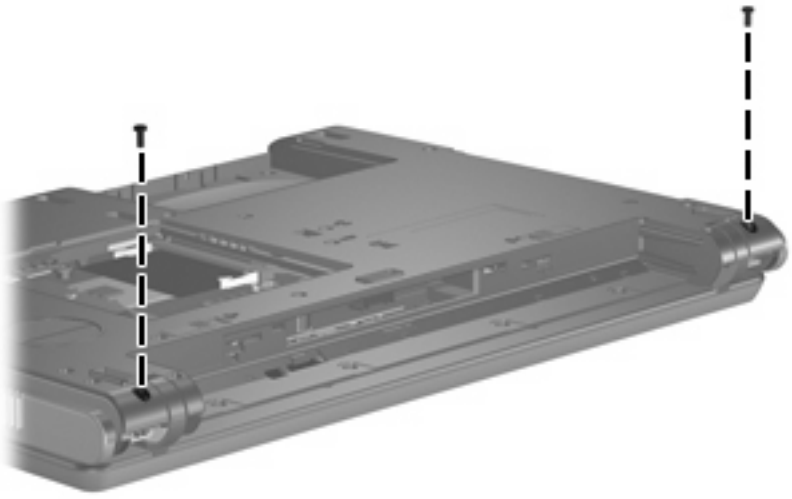
| Description | Spare part number |
|---|---|
| 15.4-inch, WXGA BrightView display assembly for use only with computer models with WLAN capability (includes wireless antenna transceivers and cables) | 440716-001 |
| 15.4-inch, WXGA BrightView display assembly for use only with computer models without WLAN capability | 440715-001 |

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 32).
5. Remove the memory/WLAN module compartment cover (see Memory module on page 35) and disconnect the wireless antenna cables from the WLAN module (see WLAN module on page 37).
6. Remove the following components:
   a. Switch cover (see Switch cover on page 41)
   b. Keyboard (see Keyboard on page 43)

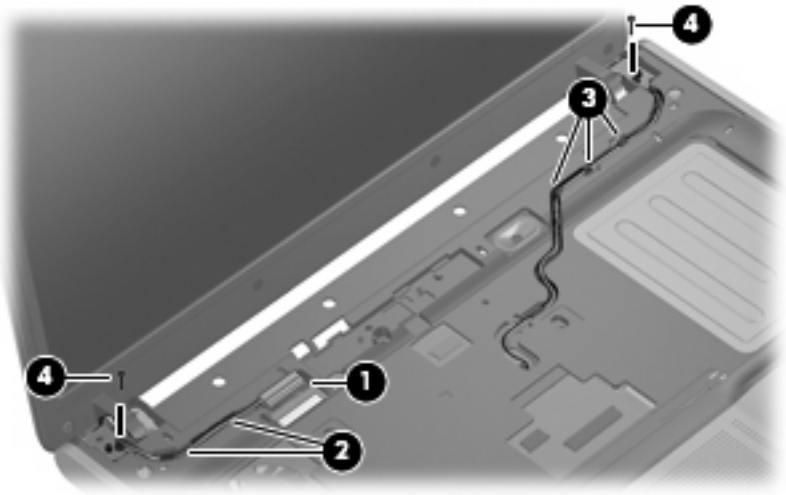
Remove the display assembly:

1. Close the computer and turn it upside down, with the rear panel toward you.
2. Remove the two Phillips PM2.0×7.0 screws that secure the display assembly to the computer.



3. Turn the computer display-side up, with the front toward you.
4. Open the computer until the display assembly is in an upright position.

5. Disconnect the display panel cable **(1)** from the system board and remove the display panel cable **(2)** from the clips and routing channel built into the top cover.
6. Remove the wireless antenna cables **(3)** from the clips and routing channel built into the top cover.
7. Remove the two Phillips PM2.0×9.0 screws **(4)** that secure the display assembly to the computer.



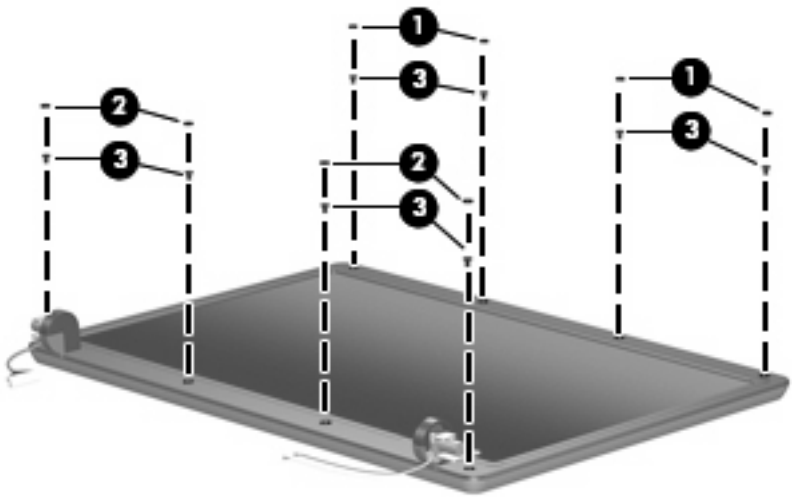

8. Lift the display assembly straight up and remove it.

9. If it is necessary to replace the display bezel or any of the display assembly internal subcomponents, remove the following display bezel screw covers and screws:

   **(1)** Four round rubber screw covers on the top edge of the display bezel. The display bezel screw covers and all screws used to secure display assembly internal subcomponents are available in the Display Screw Kit, spare part number 404714-001.

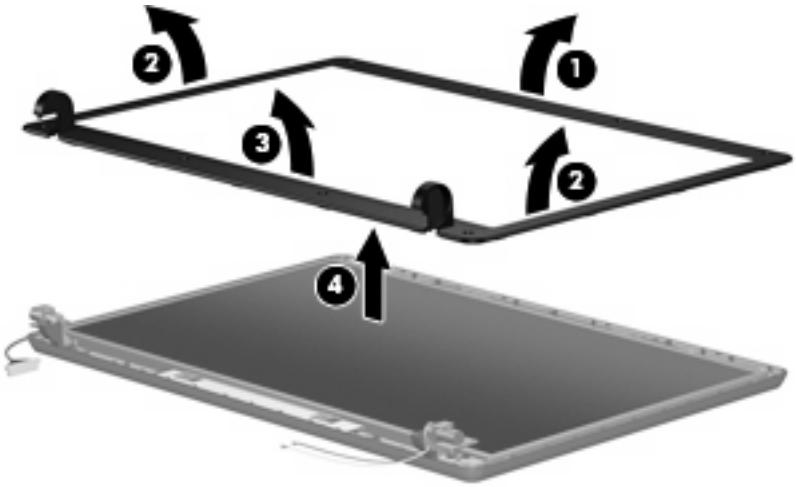
   **(2)** Four flat rubber screw covers on the bottom edge of the display bezel.

   **(3)** Eight Phillips PM2.5×6.0 screws.



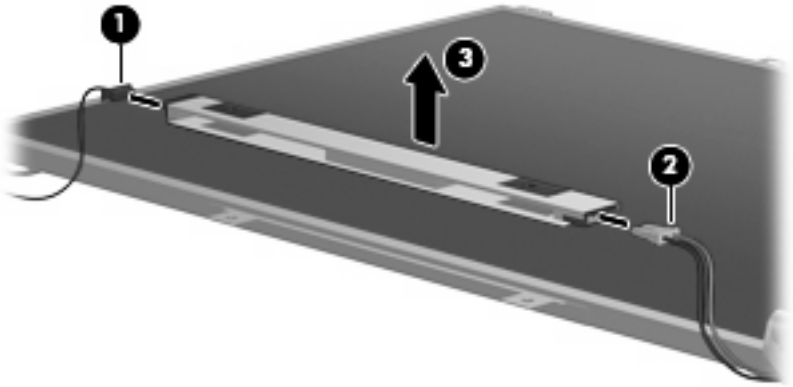

10. Flex the inside edges of the top side **(1)**, the left and right sides **(2)**, and then the bottom side **(3)** of the display bezel until the bezel disengages from the display assembly.

11. Remove the display bezel **(4)**. The bezel is available using spare part number 440706-001.

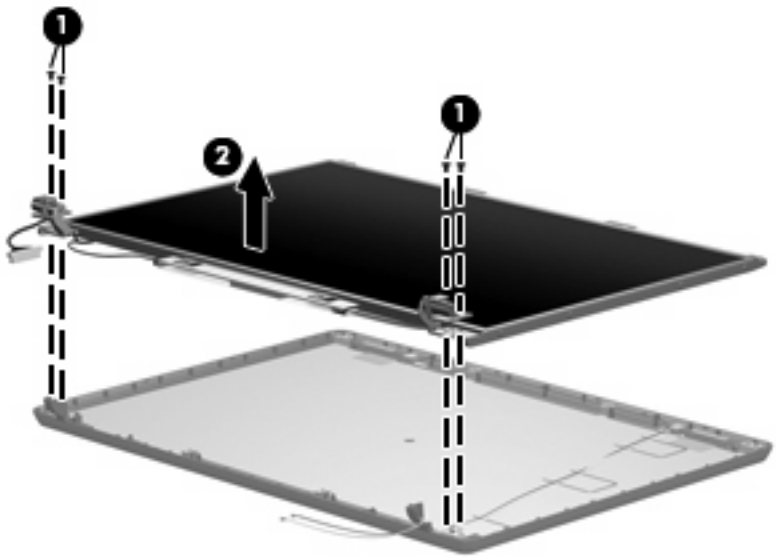



12. If it is necessary to replace the display inverter, disconnect the display panel cable **(1)** and the backlight cable **(2)** from the inverter.

13. Remove the display inverter **(3)**. The inverter is available using spare part number 441628-001.

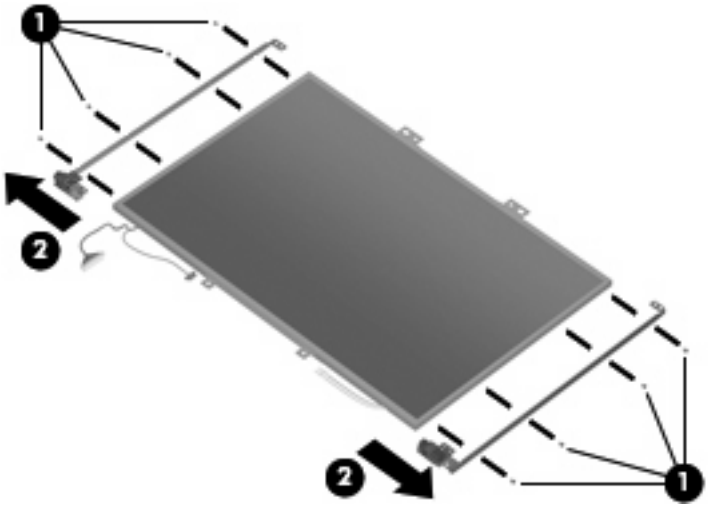



14. If it is necessary to replace the display panel, remove the four Phillips PM2.5×6.0 screws **(1)** that secure the panel to the display enclosure.
15. Remove the display panel **(2)**. The panel is available using spare part number 440711-001.




16. If it is necessary to replace either of the display hinges, remove the four Phillips PM2.0×3.0 screws **(1)** that secure each hinge to the display panel.

17. Remove the display hinges **(2)**. The hinges are available in the Display Bracket/Hinge Kit, spare part number 440707-001.

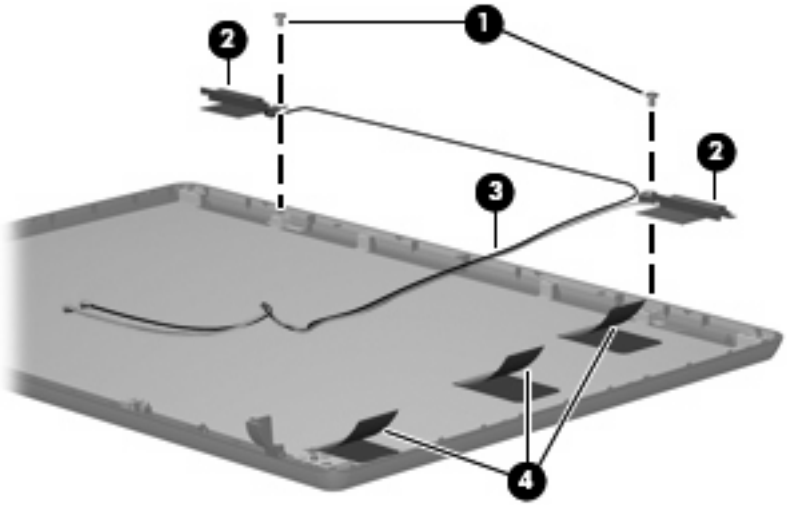


18. If it is necessary to replace the wireless antenna transceivers, remove the Phillips PM2.5×4.0 screws **(1)** that secure each transceiver **(2)** to the display enclosure. The wireless antenna transceivers and cables are available in the Wireless Antenna Kit, spare part number 441639-001.

**NOTE:** The wireless antenna transceivers are also attached to the display enclosure with a thin layer of adhesive. It may be necessary to use a flat-bladed tool to pry the transceivers away from the display enclosure.

19. Remove the wireless antenna transceivers **(2)** and cables **(3)** from the display enclosure.

**NOTE:** The wireless antenna cables are attached to the display enclosure by a series of pliable tabs **(4)** built into the enclosure shielding. Lift the tabs to release the cables.



Reverse this procedure to reassemble and install the display assembly.

# Base enclosure

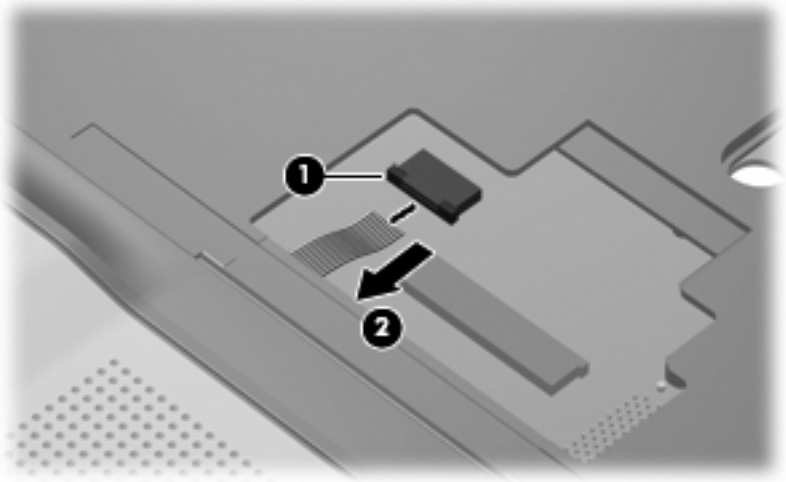
| Description | Spare part number |
|---|---|
| Base enclosure | 441625-001 |
| Rubber Feet Kit | 438557-001 |

Before removing the base enclosure, 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 32).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 33)
   b. Memory/WLAN module compartment cover (see Memory module on page 35)
   c. Optical drive (see Optical drive on page 39)
   d. Switch cover (see Switch cover on page 41)
   e. Keyboard (see Keyboard on page 43)
   f. Display assembly (see Display assembly on page 47)

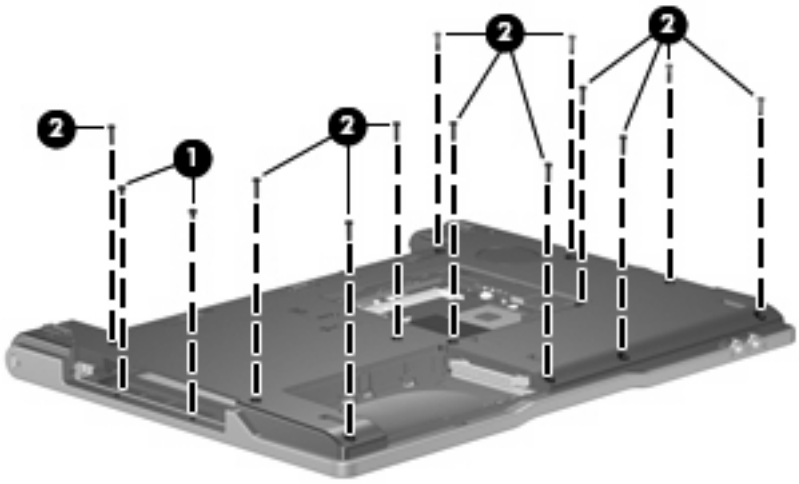
Remove the base enclosure:

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




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

3. Remove the two Phillips PM2.0×3.0 screws **(1)** and the twelve Phillips PM2.0×9.0 screws **(2)** that secure the base enclosure to the computer.




4. Lift the left side of the base enclosure **(1)** until the USB connectors **(2)** disengage from their openings in the base enclosure.


5. Remove the base enclosure.

Reverse this procedure to install the base enclosure.

# 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.

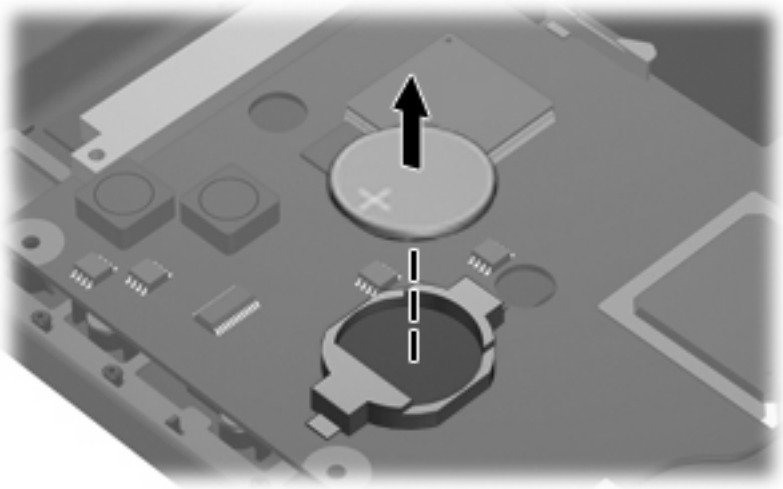
| Description | Spare part number |
|---|---|
| RTC battery | 438556-001 |

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 32).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 33)
   b. Memory/WLAN module compartment cover (see Memory module on page 35)
   c. Optical drive (see Optical drive on page 39)
   d. Switch cover (see Switch cover on page 41)
   e. Keyboard (see Keyboard on page 43)
   f. Display assembly (see Display assembly on page 47)
   g. Base enclosure (see Base enclosure on page 52)

Remove the RTC battery:

▲ Use a non-conductive, flat-bladed tool to pry the RTC battery out of the socket.



Reverse this procedure to install the RTC battery. Be sure the RTC battery is installed with the "+" sign facing up.

## Fan assembly

| Description | Spare part number |
|---|---|
| Fan assembly | 438528-001 |

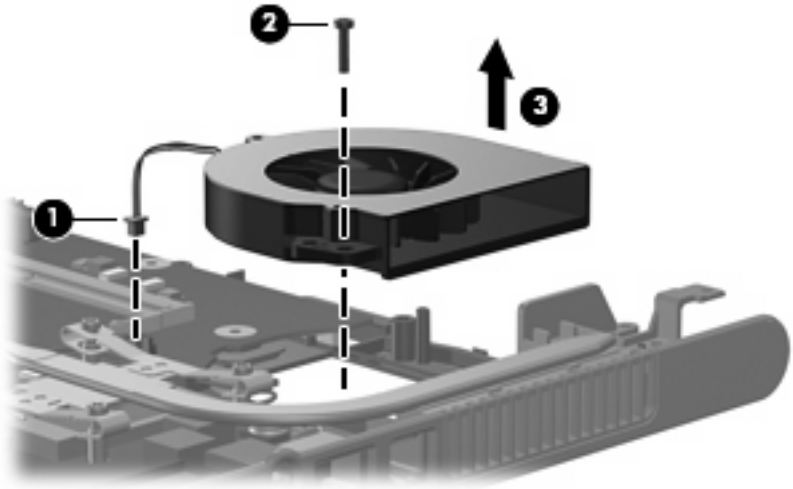
Before removing the fan assembly, follow these steps:

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 32).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 33)
   b. Memory/WLAN module compartment cover (see Memory module on page 35)
   c. Optical drive (see Optical drive on page 39)
   d. Switch cover (see Switch cover on page 41)
   e. Keyboard (see Keyboard on page 43)
   f. Display assembly (see Display assembly on page 47)
   g. Base enclosure (see Base enclosure on page 52)

Remove the fan assembly:

1. Disconnect the fan cable **(1)** from the system board.
2. Remove the Phillips PM2.0×9.0 screw **(2)** that secures the fan assembly to the top cover.

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

| Description | Spare part number |
|---|---|
| Heat sink (includes thermal material) | 448336-001 |

Before removing the heat sink, follow these steps:

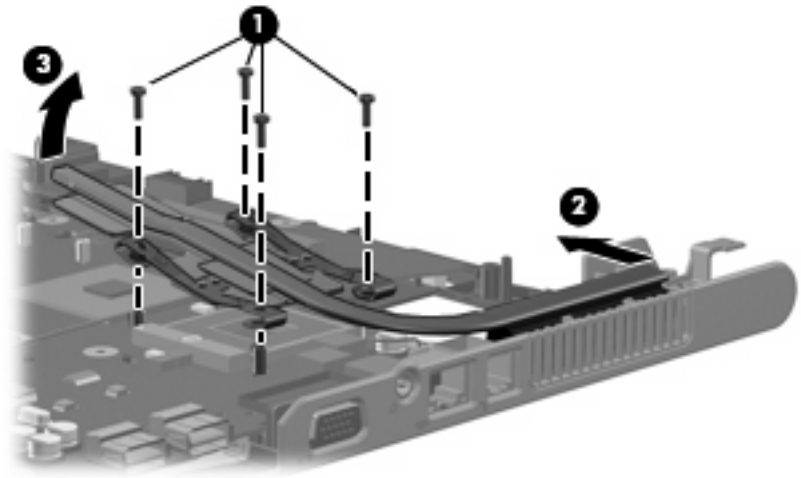
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 32).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 33)
   b. Memory/WLAN module compartment cover (see Memory module on page 35)
   c. Optical drive (see Optical drive on page 39)
   d. Switch cover (see Switch cover on page 41)
   e. Keyboard (see Keyboard on page 43)
   f. Display assembly (see Display assembly on page 47)
   g. Base enclosure (see Base enclosure on page 52)
   h. Fan assembly (see Fan assembly on page 55)

Remove the heat sink:

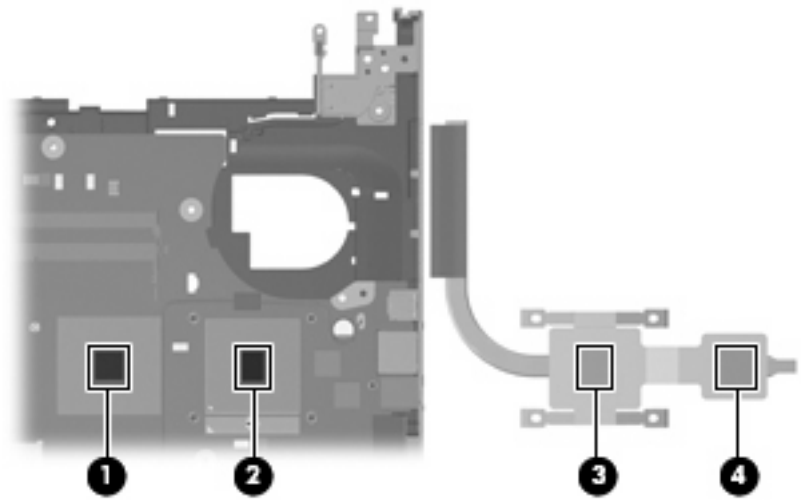
1. Remove the four Phillips PM2.5×6.0 screws **(1)** that secure the heat sink to the system board.
2. Slide the heat sink **(2)** to the left until the right side of the heat sink clears the top cover.

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

3. Lift the left side of the heat sink **(3)** and remove it.




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




Reverse this procedure to install the heat sink.

# Processor

**NOTE:** All processor spare part kits include thermal paste.

| Description | Spare part number |
|---|---|
| Intel Core Solo T1400 1.83-GHz processor | 448326-001 |
| Intel Core Solo T1300 1.66-GHz processor | 448325-001 |
| Intel Core Duo T2300E 1.66-GHz processor | 448324-001 |
| Intel Core Duo T2300 1.66-GHz processor | 448323-001 |
| Intel Celeron M 420 1.60-GHz processor | 448322-001 |
| Intel Celeron M 410 1.46-GHz processor | 448321-001 |

Before removing the processor, follow these steps:

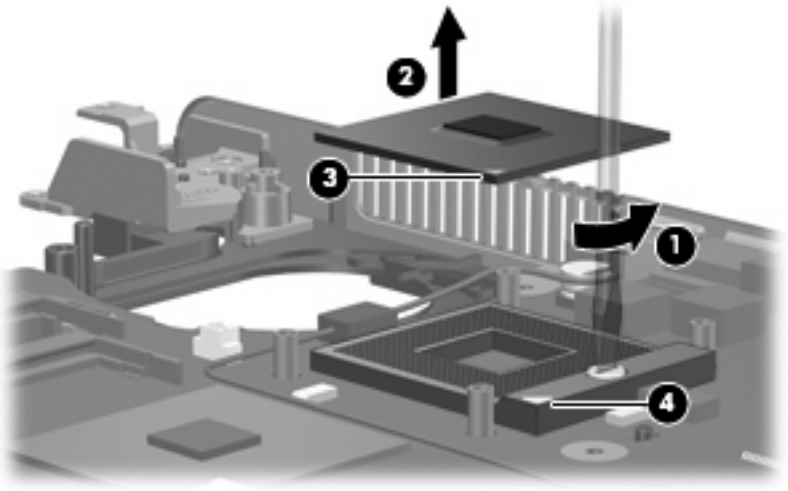
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 32).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 33)
   b. Memory/WLAN module compartment cover (see Memory module on page 35)
   c. Optical drive (see Optical drive on page 39)
   d. Switch cover (see Switch cover on page 41)
   e. Keyboard (see Keyboard on page 43)
   f. Display assembly (see Display assembly on page 47)
   g. Base enclosure (see Base enclosure on page 52)
   h. Fan assembly (see Fan assembly on page 55)
   i. Heat sink (see Heat sink on page 57)

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.

## Speaker

| Description | Spare part number |
|---|---|
| Speaker | 441627-001 |

Before removing the speaker, follow these steps:

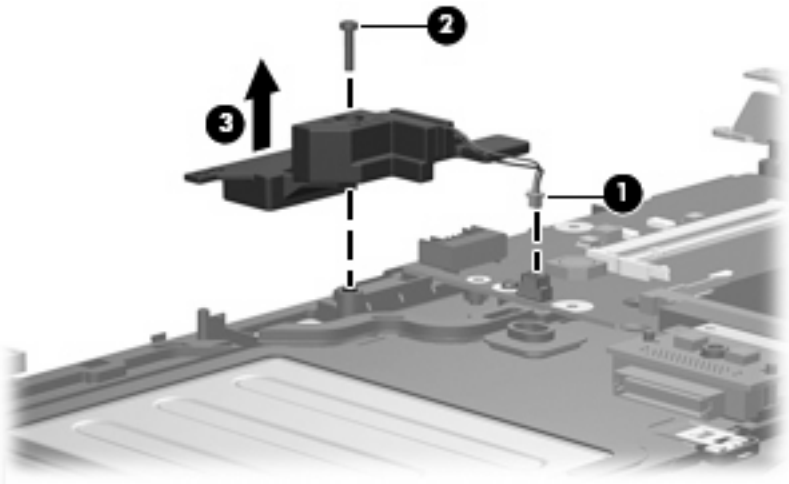
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 32).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 33)
   b. Memory/WLAN module compartment cover (see Memory module on page 35)
   c. Optical drive (see Optical drive on page 39)
   d. Switch cover (see Switch cover on page 41)
   e. Keyboard (see Keyboard on page 43)

f. Display assembly (see Display assembly on page 47)

g. Base enclosure (see Base enclosure on page 52)

Remove the speaker:

1. Disconnect the speaker cable **(1)** from the system board.
2. Remove the Phillips PM2.0×9.0 screw **(2)** that secures the speaker to the top cover.
3. Remove the speaker **(3)**.




Reverse this procedure to install the speaker.

# System board

| Description | Spare part number |
|---|---|
| For use only with computer models with Intel Core processors and WLAN capability | 448434-001 |
| For use only with computer models with Intel Celeron M processors and WLAN capability | 448433-001 |
| For use only with computer models without WLAN capability | 448432-001 |

Before removing the system board, follow these steps:

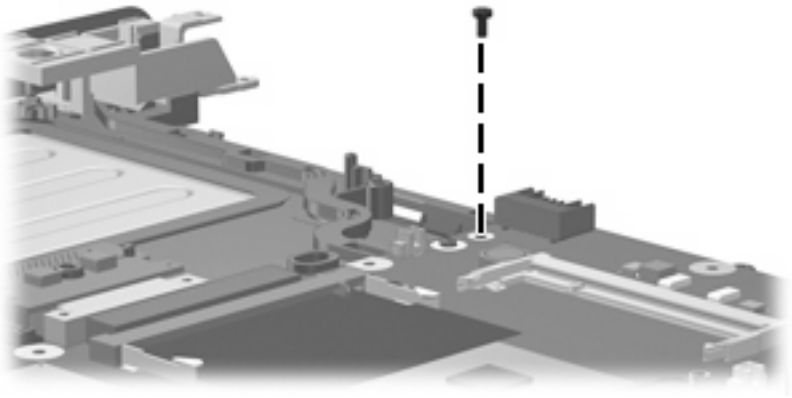
1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 32).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 33)
   b. Memory/WLAN module compartment cover (see Memory module on page 35)
   c. Optical drive (see Optical drive on page 39)
   d. Switch cover (see Switch cover on page 41)
   e. Keyboard (see Keyboard on page 43)
   f. Display assembly (see Display assembly on page 47)
   g. Base enclosure (see Base enclosure on page 52)
   h. Fan assembly (see Fan assembly on page 55)
   i. Heat sink (see Heat sink on page 57)

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

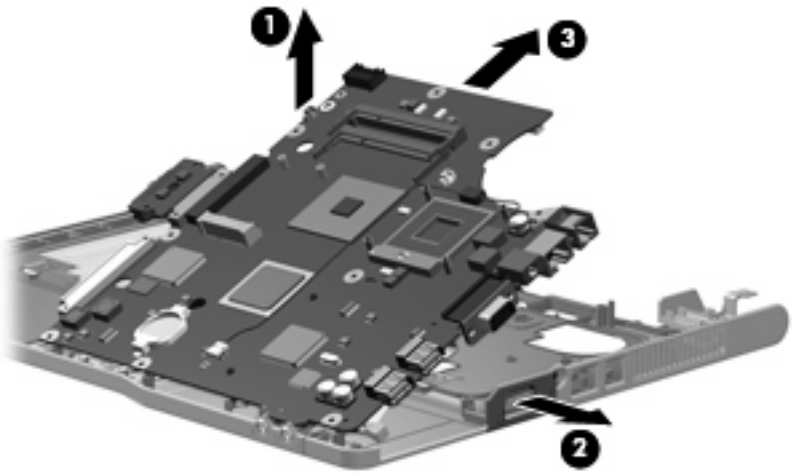
- Memory module (see Memory module on page 35)
- WLAN module (see WLAN module on page 37)
- RTC battery (see RTC battery on page 54)
- Processor (see Processor on page 59)
- PC Card assembly (see PC Card assembly on page 65)

Remove the system board:

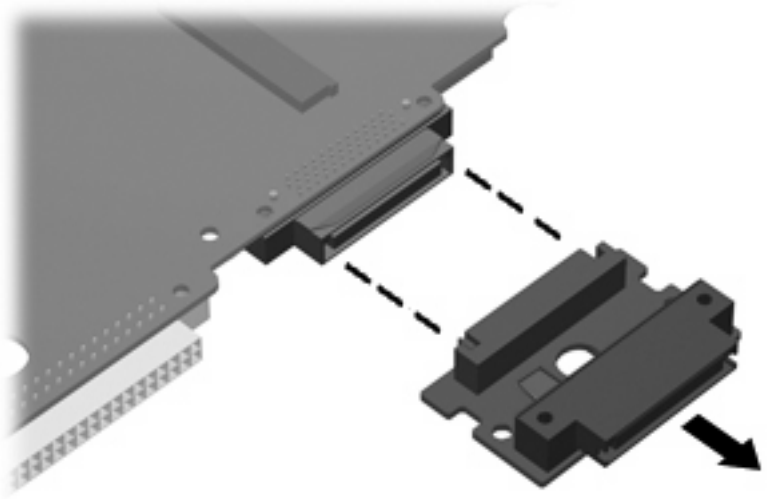
1. Remove the Phillips PM2.0×3.0 screw that secures the system board to the top cover.



2. Lift the left side of the system board **(1)** until it rests at an angle.
3. Flex the right side of the top cover **(2)** until the external monitor connector clears the opening in the top cover.
4. Remove the system board **(3)** by pulling it away from the top cover at an angle until it clears the top cover.



5. If it is necessary to replace the optical drive connector board, pull the board away from the system board until it disconnects from the system board.



**NOTE:** The optical drive connector board is available using spare part number 441631-001.

Reverse this procedure to install the system board.

# PC Card assembly

| Description | Spare part number |
|---|---|
| PC Card assembly | 438551-001 |
| PC Card slot bezel | 438527-001 |

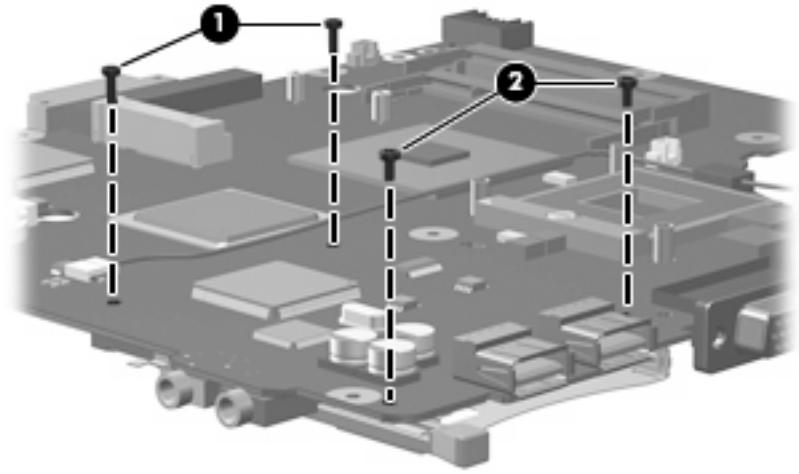
Before removing the PC Card assembly, follow these steps:

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 32).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 33)
   b. Memory/WLAN module compartment cover (see Memory module on page 35)
   c. Optical drive (see Optical drive on page 39)
   d. Switch cover (see Switch cover on page 41)
   e. Keyboard (see Keyboard on page 43)
   f. Display assembly (see Display assembly on page 47)
   g. Base enclosure (see Base enclosure on page 52)
   h. Fan assembly (see Fan assembly on page 55)
   i. Heat sink (see Heat sink on page 57)
   j. System board (see System board on page 62)

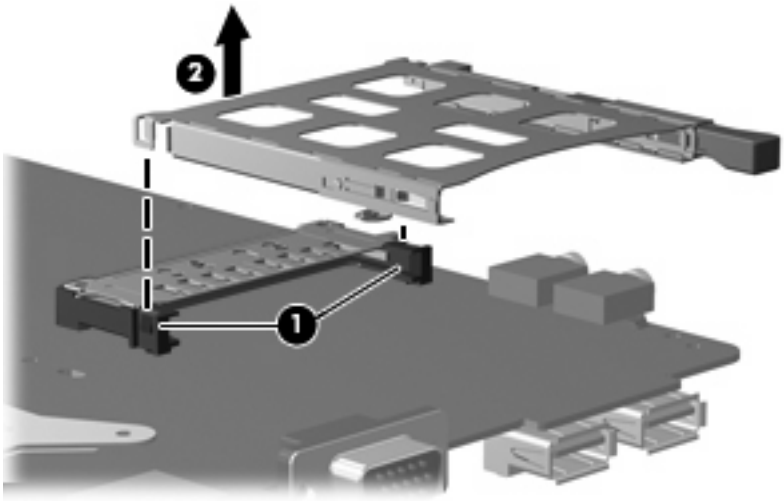
Remove the PC Card assembly:

1. Position the system board with the PC Card eject button toward you.

2. Remove the two Phillips PM2.0×8.0 screws **(1)** and the two Phillips PM2.0×4.0 screws **(2)** that secure the PC Card assembly to the system board.




3. Turn the system board top-side up, with the PC Card eject button toward you.
4. Disengage the slots on the PC Card assembly from the tabs **(1)** on the PC Card connector.
5. Remove the PC Card assembly **(2)** from the system board.




Reverse this procedure to install the PC Card assembly.

# TouchPad cable

| Description | Spare part number |
|---|---|
| TouchPad cable | 441638-001 |

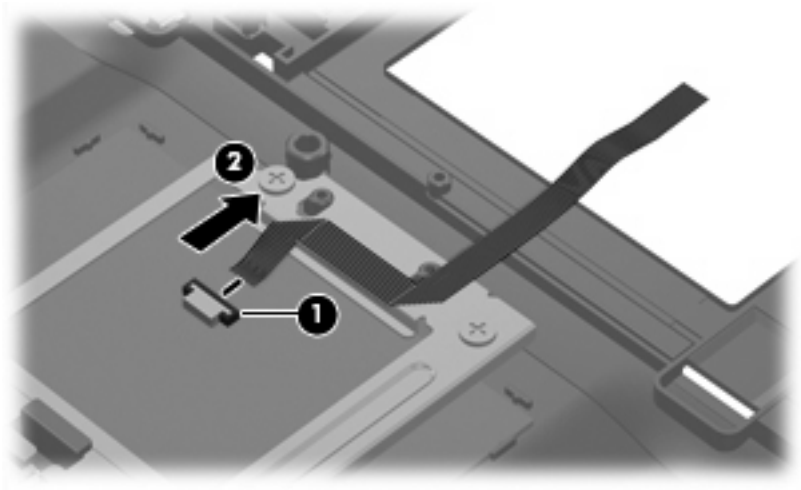
Before removing the TouchPad cable, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.
2. Disconnect all external devices connected to the computer.
3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet and then unplugging the AC adapter from the computer.
4. Remove the battery (see Battery on page 32).
5. Remove the following components:
   a. Hard drive (see Hard drive on page 33)
   b. Memory/WLAN module compartment cover (see Memory module on page 35)
   c. Optical drive (see Optical drive on page 39)
   d. Switch cover (see Switch cover on page 41)
   e. Keyboard (see Keyboard on page 43)
   f. Display assembly (see Display assembly on page 47)
   g. Base enclosure (see Base enclosure on page 52)
   h. Fan assembly (see Fan assembly on page 55)
   i. Heat sink (see Heat sink on page 57)
   j. System board (see System board on page 62)

Remove the TouchPad cable:

1. Position the top cover with the front toward you.

2. Release the ZIF connector **(1)** to which the TouchPad cable is connected, and disconnect the TouchPad cable **(2)** from the TouchPad board.




Reverse this procedure to install the TouchPad cable.

# 5 Computer Setup

## Starting Computer Setup

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

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

**NOTE:** 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 | • View identification information for the computer and the batteries in the system.<br>• 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 | • Enable/disable stringent security.<br>• Enable/disable password requirement on computer restart. |
| DriveLock passwords | • Enable/disable DriveLock on any computer hard drive and on optional MultiBay hard drives.<br>• Change a DriveLock user password or master password.<br>**NOTE:** DriveLock settings are accessible only when you enter Computer Setup by turning on (not restarting) the computer. |
| Smart Card security | Enable/disable support for smart card and Java™ Card power-on authentication.<br>**NOTE:** Power-on authentication for smart cards is supported only on computers with optional smart card readers.<br>**NOTE:** You must have an administrator password to change this setting. |
| 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.<br>**NOTE:** You must have a setup password to change this setting. |
| 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:<br>• Fast: Runs the Disk Sanitizer erase cycle once.<br>• Optimum: Runs the Disk Sanitizer erase cycle 3 times.<br>• Custom: Allows you to select the desired number of Disk Sanitizer erase cycles from a list.<br>**CAUTION:** If you run Disk Sanitizer, the data on the primary hard drive is destroyed permanently. |

## 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 | • Set f9, f10, and f12 delay when starting up.<br>• Enable/disable CD-ROM boot.<br>• Enable/disable floppy boot.<br>• Enable/disable internal network adapter boot and set the boot mode (PXE or RPL).<br>• Enable/disable MultiBoot, which sets a boot order that can include most boot devices in the system.<br>• Set the Express Boot Popup delay in seconds.<br>• Set the boot order. |
| Device configurations | • Swap the functions of the fn key and left ctrl key.<br>• 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**.)<br>• Enable/disable USB legacy support. When enabled, USB legacy support allows the following:<br>◦ Use of a USB keyboard, mouse, and hub in Computer Setup even when a Windows operating system is not running.<br>◦ 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).<br>• Select a parallel port mode: EPP (Enhanced Parallel Port), standard, bidirectional, or ECP (Enhanced Capabilities Port).<br>• Enable/disable BIOS DMA data transfers.<br>• Enable/disable fan always on while connected to an AC outlet.<br>• 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.<br>• Enable/disable LAN Power Save. When enabled, saves power by turning off the LAN when not in use.<br>• Enable/disable SATA Native Mode.<br>• Enable/disable Dual Core CPU.<br>• Enable/disable Secondary Battery Fast Charge.<br>• Choose Bit-shift or LBA assisted HDD Translation Mode.<br>• Enable/disable Windows direct application launcher.<br>• Enable/disable HP Lockout. |
| Built-In Device Options | • Enable/disable embedded WWAN Device Radio.<br>• Enable/disable embedded WLAN Device Radio. |

| Select | To do this |
| --- | --- |
| | • Enable/disable embedded Bluetooth® Device Radio.<br>• Enable/disable LAN/WLAN Switching. When enabled, switches to a WLAN when a LAN is either unavailable or disconnected.<br>• Enable/disable Wake on LAN from Off.<br>• Enable/disable the ambient light sensor. |
| Port Options | • Enable/disable the serial port.<br>• Enable/disable the parallel port.<br>• Enable/disable the flash media reader.<br>• Enable/disable the USB port.<br>**CAUTION:** Disabling the USB port also disables MultiBay devices and ExpressCard devices on the advanced port replicator.<br>• Enable/disable the 1394 port.<br>• Enable/disable the cardbus slot.<br>• Enable/disable the ExpressCard slot.<br>• Enable/disable the infrared port.<br>• Enable/disable the optical disk drive.<br>• Enable/disable the network controller. |

# 6 Specifications

## Computer specifications

| | Metric | U.S. |
|---|---|---|
| **Dimensions** | | |
| Height (front to back) | 3.19 to 3.59 cm | 1.26 to 1.41 in |
| Width | 35.79 cm | 14.09 in |
| Depth | 25.70 cm | 10.12 in |
| **Weight** (with optical drive, hard drive, and battery) | 2.67 kg | 5.88 lbs |
| **Input power** | | |
| Operating voltage | 18.5 V dc @ 3.5 A – 65 W | |
| Operating current | 3.5 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.

# 15.4-inch, WXGA display specifications

| | Metric | U.S. |
|---|---|---|
| **Dimensions** | | |
| Height | 20.7 cm | 8.15 in |
| Width | 33.1 cm | 13.03 in |
| Diagonal | 39.1 cm | 15.39 in |
| **Number of colors** | Up to 16.8 million | |
| **Contrast ratio** | 200:1 (typical) | |
| **Brightness** | 160 nits (typical) | |
| **Pixel resolution** | | |
| Pitch | 0.259 × 0.259 mm | |
| Format | 1280 × 800 | |
| Configuration | RGB vertical stripe | |
| **Backlight** | Edge lit | |
| **Refresh rate** | 60 Hz | |
| **PPI** | 107 | |
| **Viewing angle** | +/-65° horizontal, +/-50° vertical (typical) | |

# Hard drive specifications

| | 120-GB* | 80-GB* |
|---|---|---|
| **Dimensions** | | |
| Height | 9.5 mm | 9.5 mm |
| Width | 70 mm | 70 mm |
| Weight | 101 g | 101 g |
| **Interface type** | ATA-7 | ATA-7 |
| **Transfer rate** | | |
| Synchronous (maximum) | 100 MB/sec | 100 MB/sec |
| Security | ATA security | ATA security |
| **Seek times** (typical read, including setting) | | |
| Single track | 3 ms | 3 ms |
| Average | 13 ms | 13 ms |
| Maximum | 24 ms | 24 ms |
| **Logical blocks** | 234,420,480 | 156,280,320 |
| **Disc rotational speed** | 5400-rpm | 5400-rpm |
| **Operating temperature** | 5°C to 55°C (41°F to 131°F) | |
| *1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. | | |
| **NOTE:** Certain restrictions and exclusions apply. Contact technical support for details. | | |

# Primary 4-cell, Li-ion battery specifications

| | Metric | U.S. |
|---|---|---|
| **Dimensions** | | |
| Height | 2.00 cm | 0.79 in |
| Width | 26.80 cm | 3.70 in |
| Depth | 5.30 cm | 5.28 in |
| Weight | 0.34 kg | 0.75 lb |
| **Energy** | | |
| Voltage | 14.4 V | |
| Amp-hour capacity | 2.2 Ah | |
| Watt-hour capacity | 32 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 Super Multi 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<br><br>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** | Audio-out, 0.7 Vrms | |
| **Cache buffer** | 2 MB | |
| **Data transfer rate** | | |
| 24X CD-ROM | 3,600 KB/sec | |
| 8X DVD | 10,800 KB/sec | |
| 24X CD-R | 3,600 KB/sec | |
| 16X CD-RW | 2,400 KB/sec | |
| 8X DVD+R | 10,800 KB/sec | |
| 4X DVD+RW | 5,400 KB/sec | |
| 8X DVD-R | 10,800 KB/sec | |
| 4X DVD-RW | 5,400 KB/sec | |
| 2.4X DVD+R(9) | 2,700 KB/sec | |
| 5X DVD-RAM | 6,750 KB/sec | |
| **Transfer mode** | Multiword DMA Mode | |
| **Startup time** | < 15 seconds | |
| **Stop time** | < 6 seconds | |

# DVD/CD-RW 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 |
| **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 | < 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/s 8X DVD 10,800 KB/s 24X CD-R 3,600 KB/s 24X CD-RW 3,600 KB/s | |
| 24X CD-ROM | 3,600 KB/sec | |
| 8X DVD | 10,800 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 | |

# 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) |

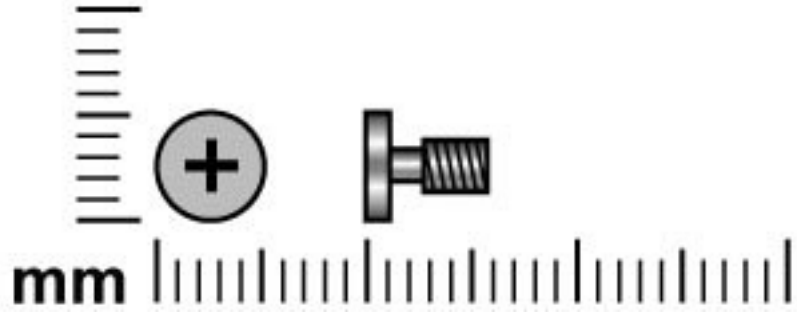
# System memory map specifications

| 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 | 000E8000-000FFFFF | 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-FFFEFFFF | Unused |
| 64 KB | FFFF0000-FFFFFFFF | System BIOS |

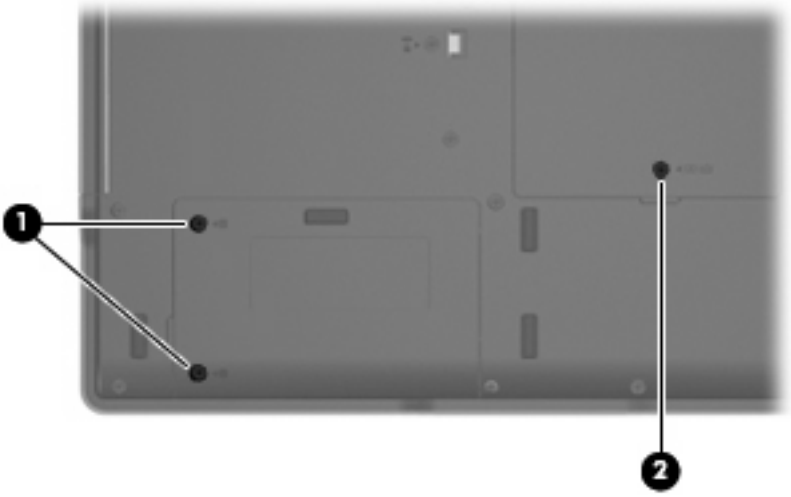
# 7 Screw listing

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 441629-001, and the Display Screw Kit, spare part number 440714-001.

# Phillips PM2.5×6.0 captive screw




| Color | Quantity | Length | Thread | Head width |
|---|---|---|---|---|
| Black | 3 | 6.0 mm | 2.5 mm | 5.0 mm |

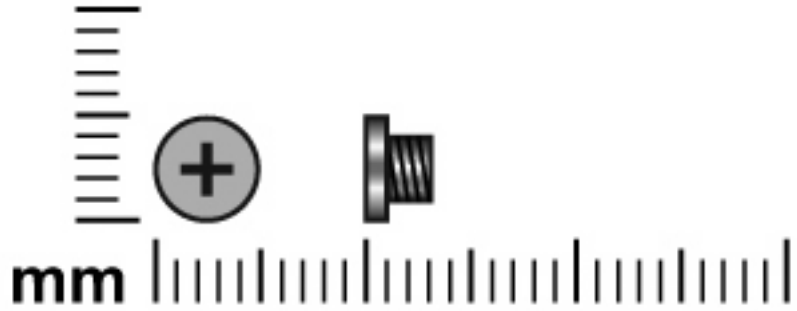



**Where used:**

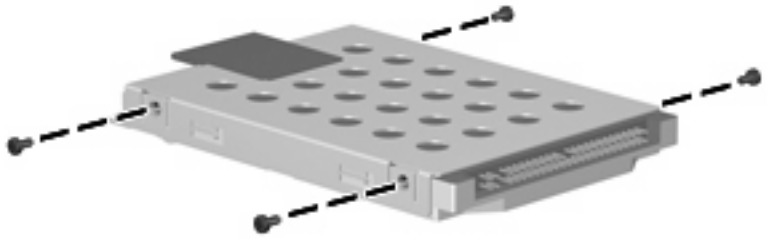
**(1)** Two screws that secure the hard drive cover to the computer (screws are captured on the cover by C-clips)

**(2)** One screw that secures the memory/WLAN module compartment cover to the computer (screw is captured on the cover by a C-clip)

# Phillips PM3.0×3.0 screw

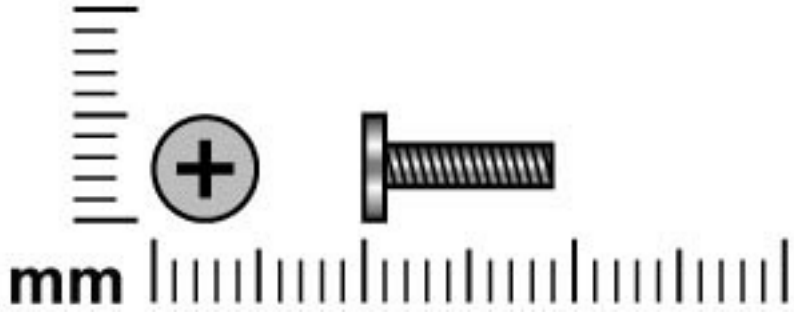



| Color | Quantity | Length | Thread | Head width |
|---|---|---|---|---|
| Silver | 4 | 3.0 mm | 3.0 mm | 5.0 mm |

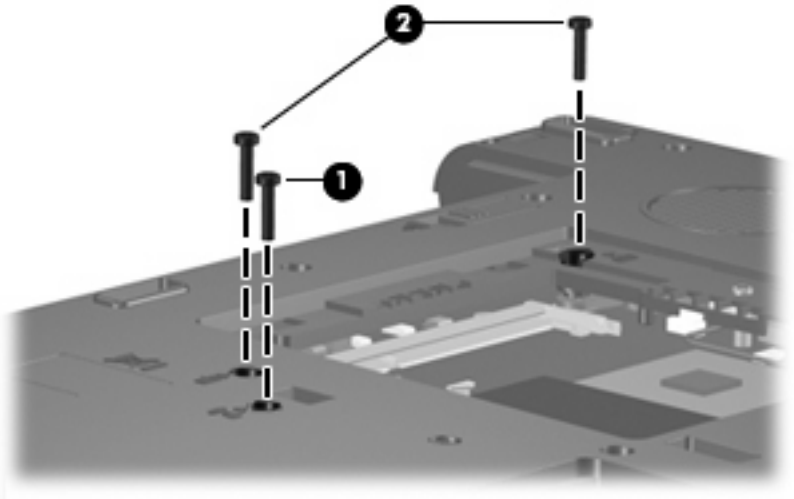


**Where used:** 4 screws that secure the hard drive bracket to the hard drive

# Phillips PM2.0×9.0 screw



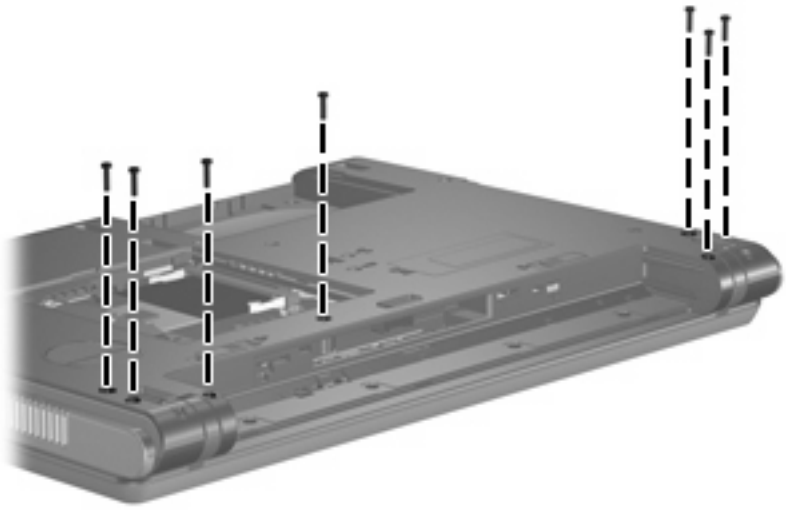

| Color | Quantity | Length | Thread | Head width |
|---|---|---|---|---|
| Black | 26 | 9.0 mm | 2.0 mm | 5.0 mm |



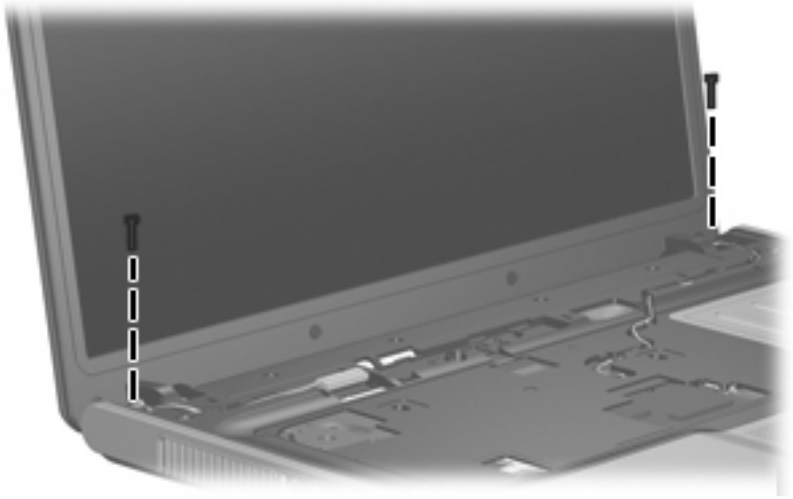

**Where used:**

**(1)** One screw that secures the optical drive to the computer

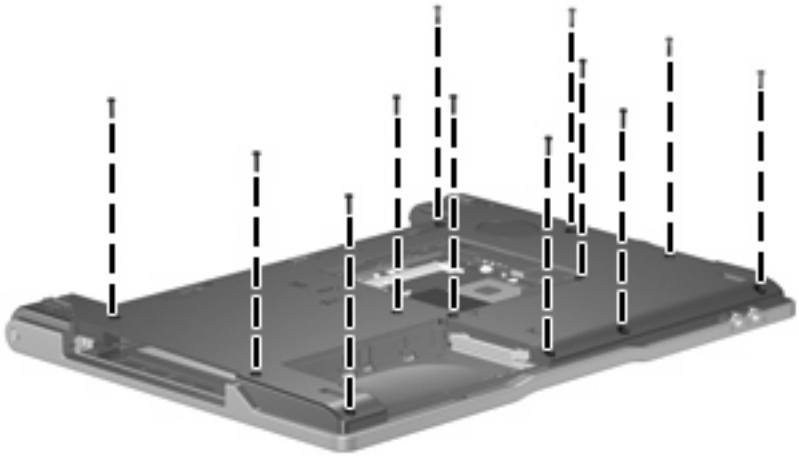
**(2)** Two screws that secure the keyboard to the computer



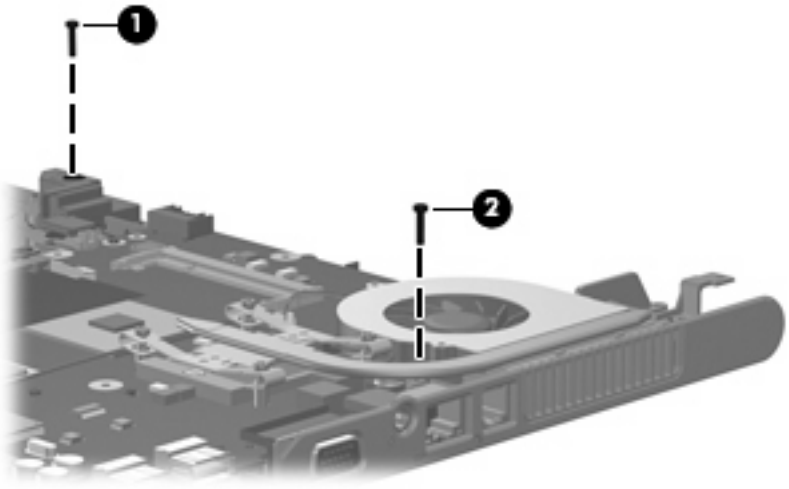
**Where used:** 7 screws that secure the switch cover to the computer



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



**Where used:** 12 screws that secure the base enclosure to the computer

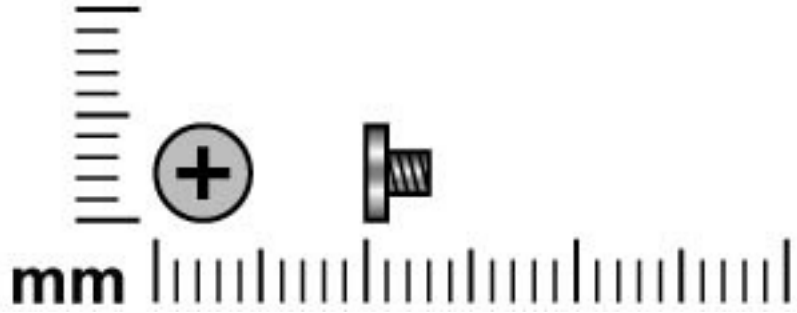



**Where used:**

**(1)** One screw that secures the fan assembly to the computer

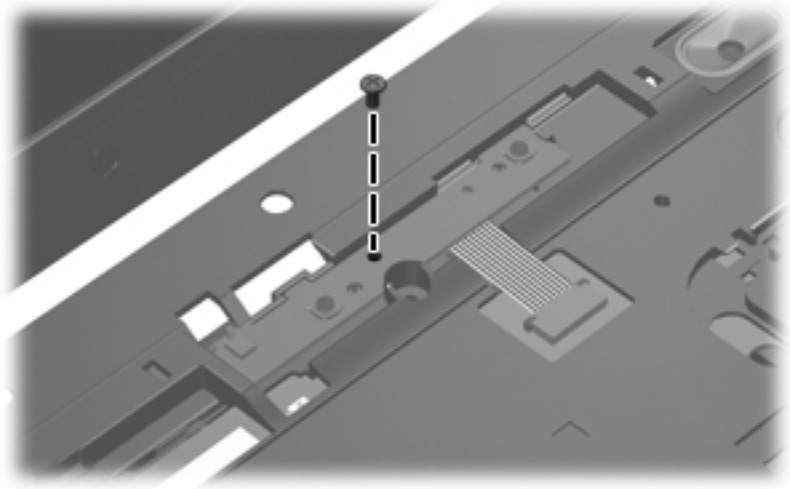
**(2)** One screw that secures the speaker to the computer

# Phillips PM2.0×3.0 screw

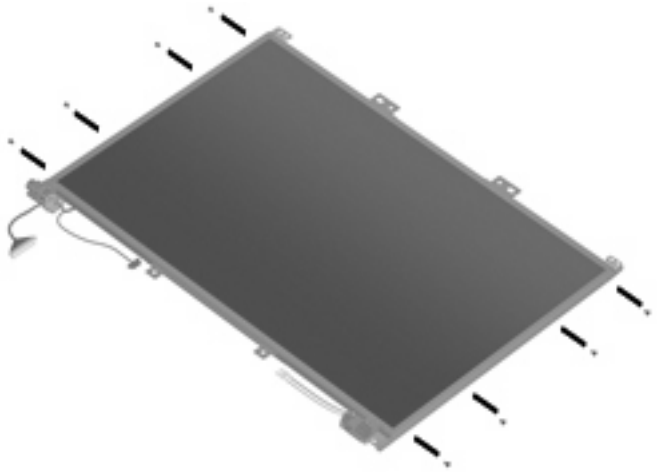



| Color | Quantity | Length | Thread | Head width |
|---|---|---|---|---|
| Silver | 16 | 3.0 mm | 2.0 mm | 4.5 mm |

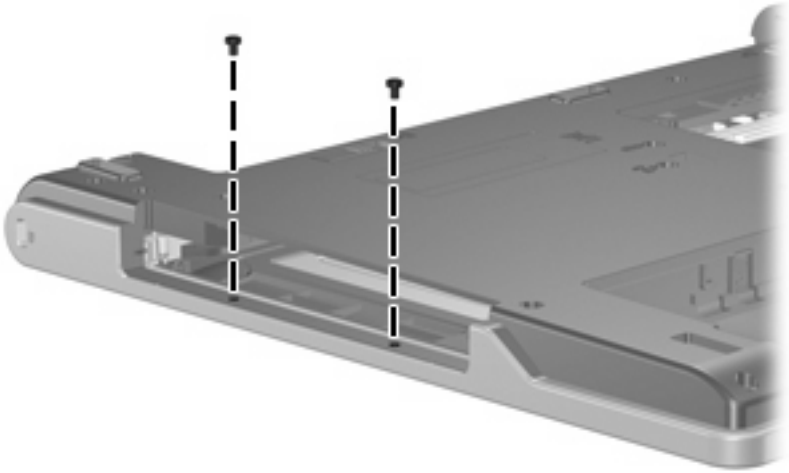
**Where used:** 2 screws that secure the optical drive bracket to the optical drive



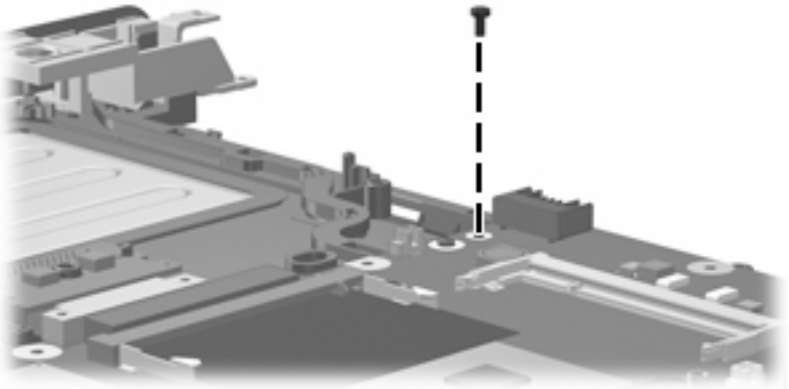
**Where used:** One screw that secures the button board to the computer



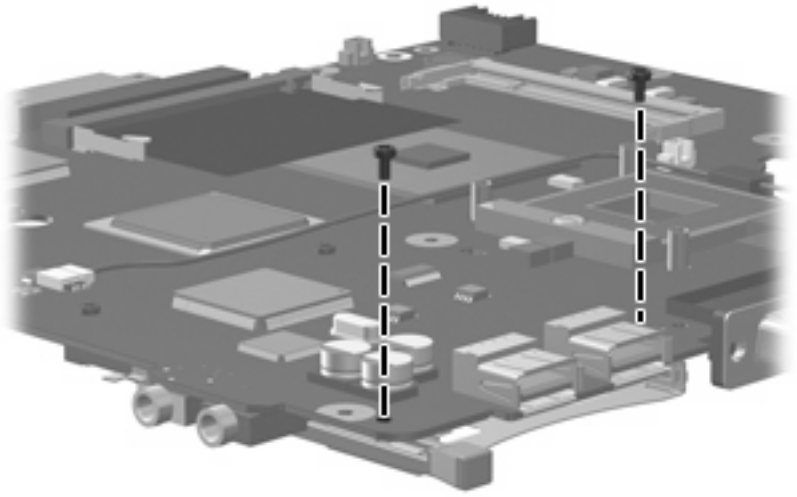
**Where used:** 4 screws that secure each display hinge to the display panel



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

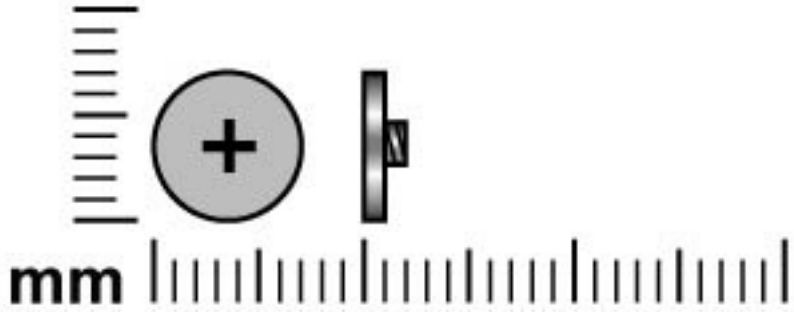


**Where used:** One screw that secures the system board to the base enclosure

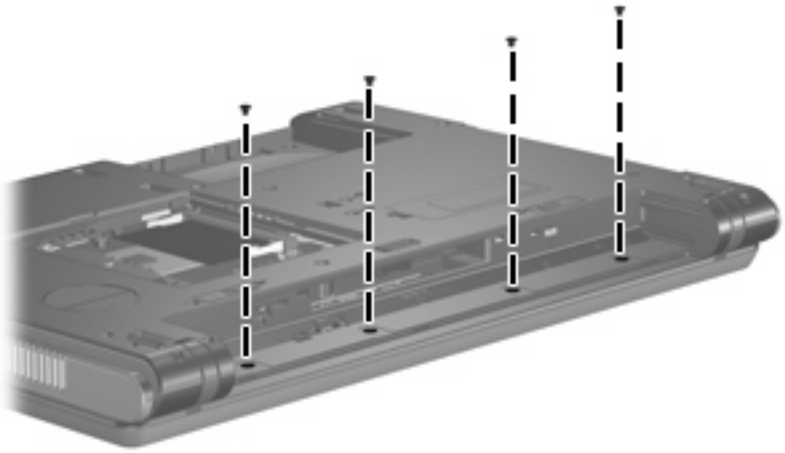


**Where used:** 2 screws that secure the PC Card assembly to the system board

# Phillips PM2.0×2.0 screw

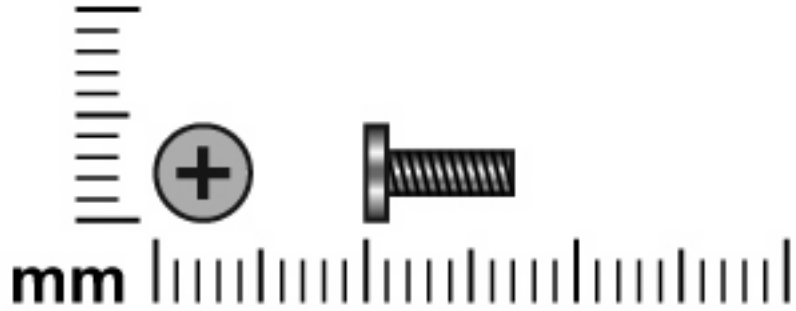



| Color | Quantity | Length | Thread | Head width |
|---|---|---|---|---|
| Black | 4 | 2.0 mm | 2.0 mm | 7.0 mm |

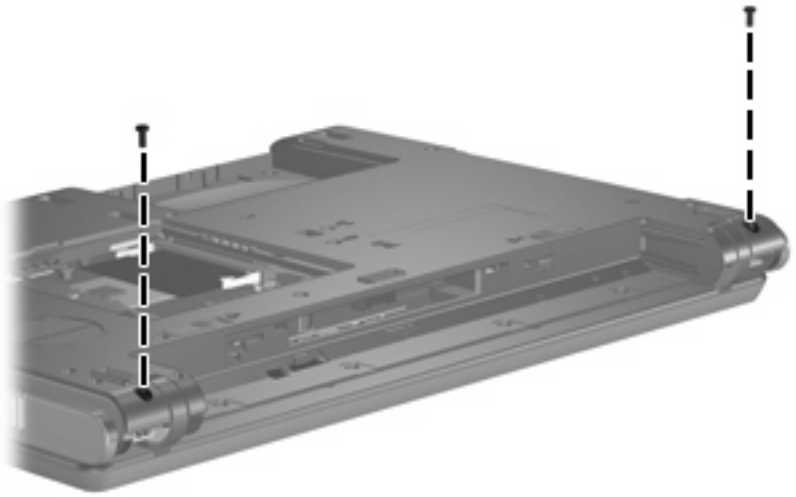


**Where used:** 4 screws that secure the switch cover to the computer

# Phillips PM2.0×7.0 screw

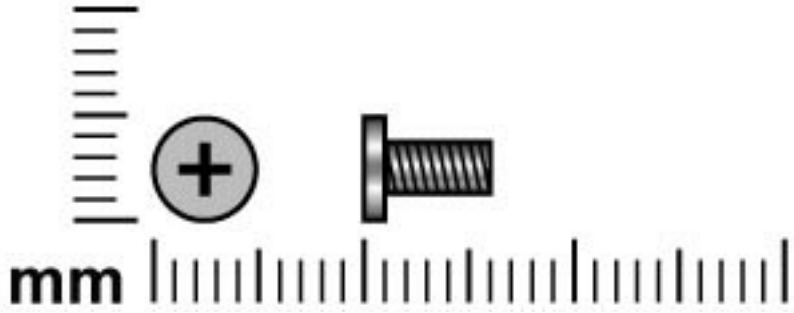



| Color | Quantity | Length | Thread | Head width |
|---|---|---|---|---|
| Black | 2 | 7.0 mm | 2.0 mm | 5.0 mm |

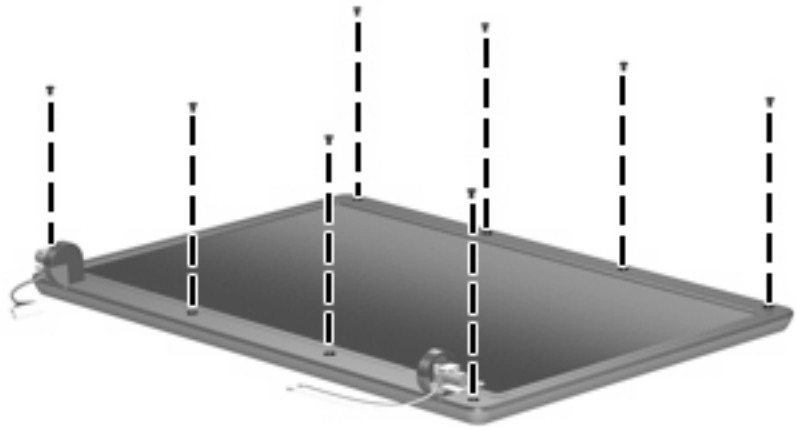


**Where used:** 2 screws that secure the display assembly to the computer

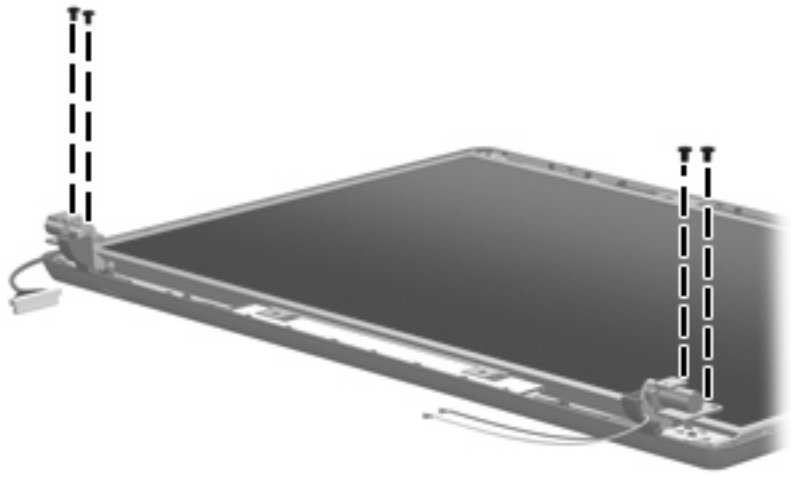
# Phillips PM2.5×6.0 screw



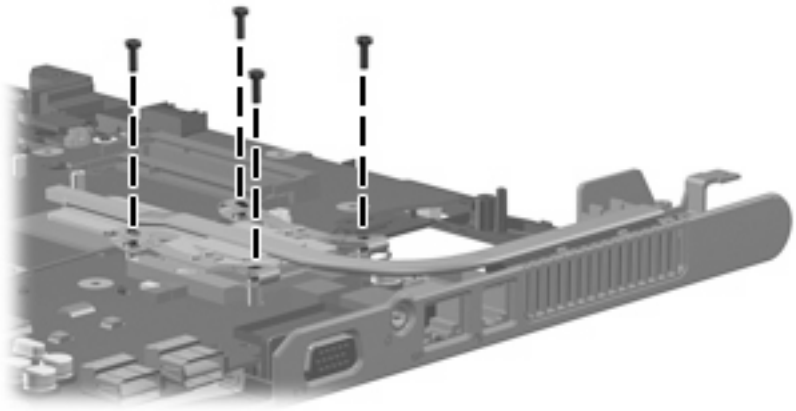

| Color | Quantity | Length | Thread | Head width |
|---|---|---|---|---|
| Silver | 16 | 6.0 mm | 2.5 mm | 5.0 mm |



**Where used:** 8 screws that secure the display bezel to the display assembly

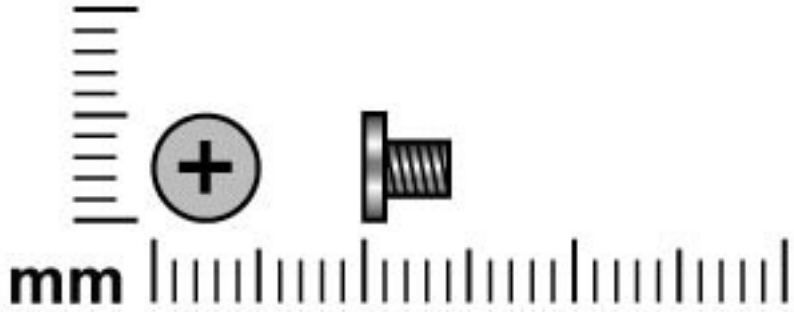


**Where used:** 4 screws that secure the display panel to the display enclosure

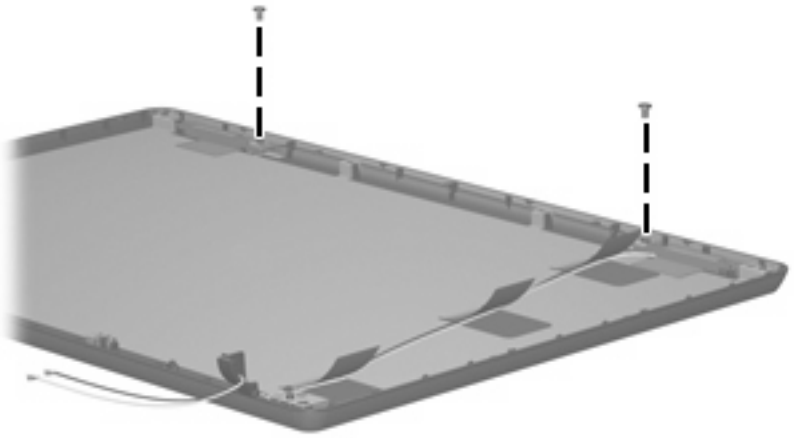


**Where used:** 4 screws that secure the heat sink to the base enclosure

# Phillips PM2.5×4.0 screw




| Color | Quantity | Length | Thread | Head width |
|---|---|---|---|---|
| Silver | 2 | 4.0 mm | 2.5 mm | 5.0 mm |



**Where used:** 2 screws that secure the wireless antenna transceivers to the display enclosure

# 8 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 undesireable 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 & 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.

# 9 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 media (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 undesireable 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.

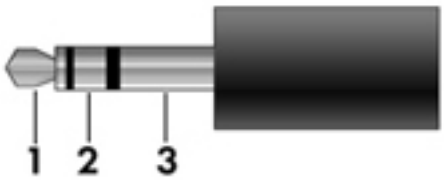
## Initiating a recovery from the hard drive recovery partition

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.

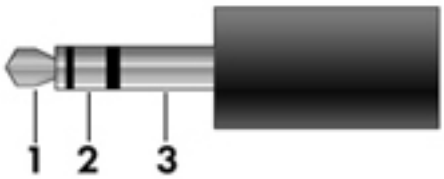
# 10 Connector pin assignments

## Audio-out (headphone)



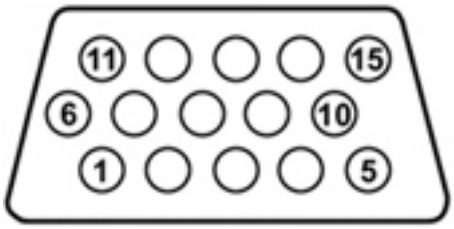

| Pin | Signal |
|---|---|
| 1 | Audio out, left channel |
| 2 | Audio out, right channel |
| 3 | Ground |

## Audio-in (microphone)



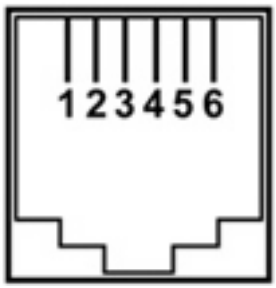

| Pin | Signal |
|---|---|
| 1 | Audio signal in |
| 2 | Audio signal in |
| 3 | Ground |

# External monitor



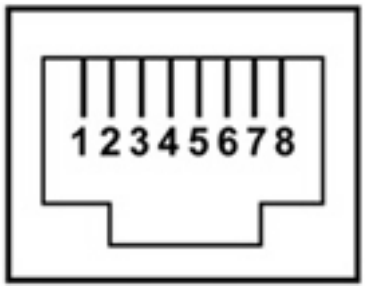

| Pin | Signal |
|---|---|
| 1 | Red analog |
| 2 | Green analog |
| 3 | Blue analog |
| 4 | Not connected |
| 5 | Ground |
| 6 | Ground analog |
| 7 | Ground analog |
| 8 | Ground analog |
| 9 | +5 VDC |
| 10 | Ground |
| 11 | Monitor detect |
| 12 | DDC 2B data |
| 13 | Horizontal sync |
| 14 | Vertical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

# RJ-11 (modem)



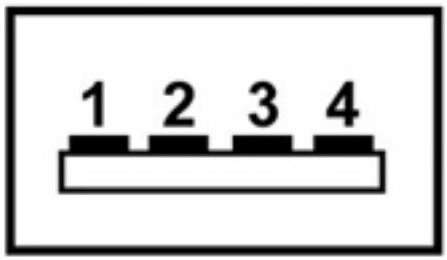

| Pin | Signal |
|---|---|
| 1 | Unused |
| 2 | Tip |
| 3 | Ring |
| 4 | Unused |
| 5 | Unused |
| 6 | Unused |

# RJ-45 (network)




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

# Universal Serial Bus




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

# 11 Power cord set requirements

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

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

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

## Requirements for all countries or regions

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

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

# Requirements for specific countries or regions

| Country/region | Accredited agency | Applicable note number |
|---|---|---|
| Australia | EANSW | 1 |
| Austria | OVE | 1 |
| Belgium | CEBC | 1 |
| Canada | CSA | 2 |
| Denmark | DEMKO | 1 |
| Finland | FIMKO | 1 |
| France | UTE | 1 |
| Germany | VDE | 1 |
| Italy | IMQ | 1 |
| Japan | METI | 3 |
| 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.

# 12 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.

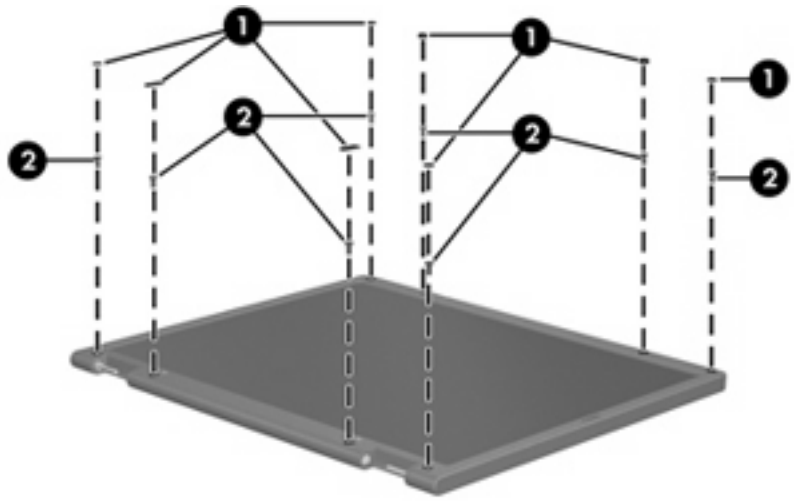
**NOTE:** **Materials Disposal**. This HP product contains mercury in the backlight in the display assembly that might require special handling at end-of-life. Disposal of mercury may be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities, 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)**.

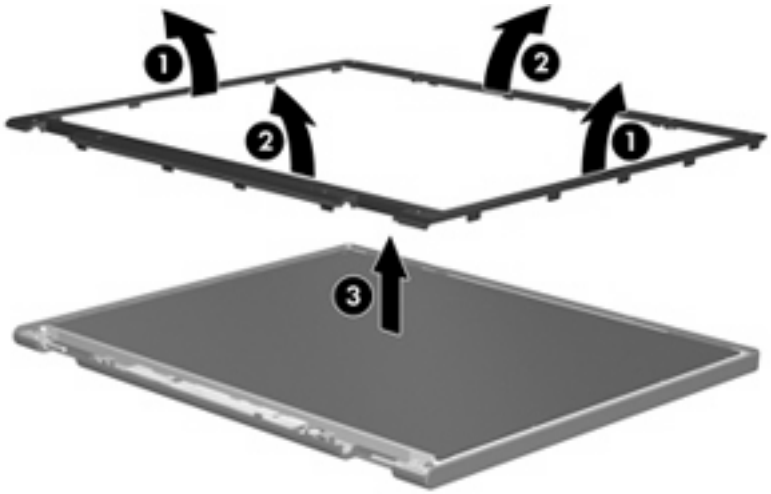

**NOTE:** The procedures provided in this appendix are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

Perform the following steps to disassemble the display assembly:

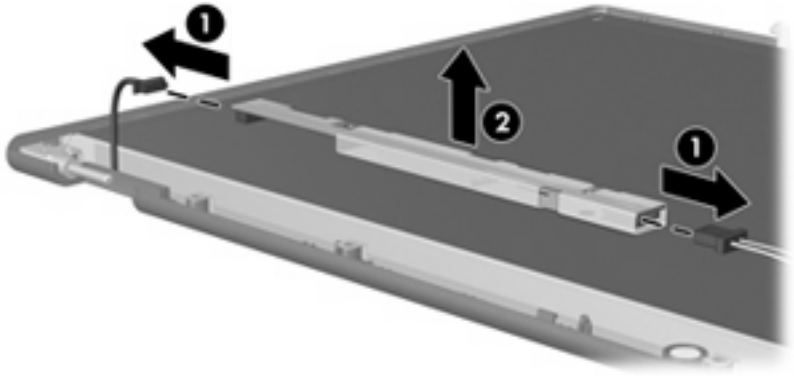
1. Remove all screw covers **(1)** and screws **(2)** that secure the display bezel to the display assembly.



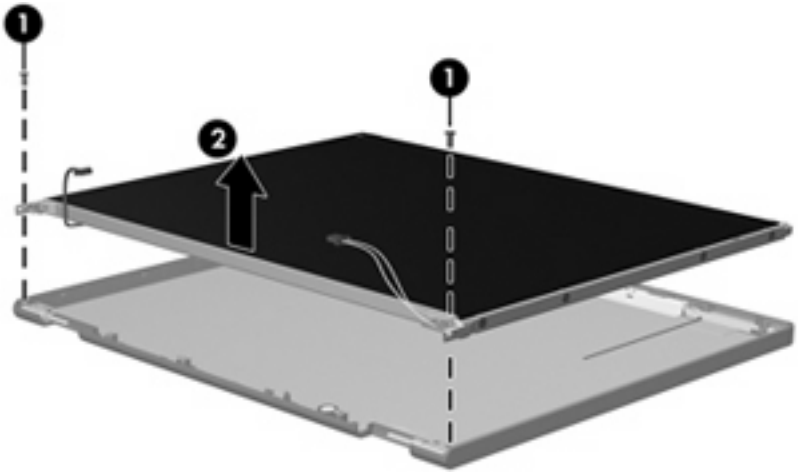
2. Lift up and out on the left and right inside edges **(1)** and the top and bottom inside edges **(2)** of the display bezel until the bezel disengages from the display assembly.
3. Remove the display bezel **(3)**.



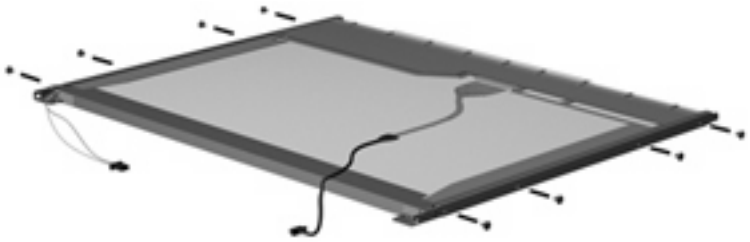
4. Disconnect all display panel cables **(1)** from the display inverter and remove the inverter **(2)**.



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.

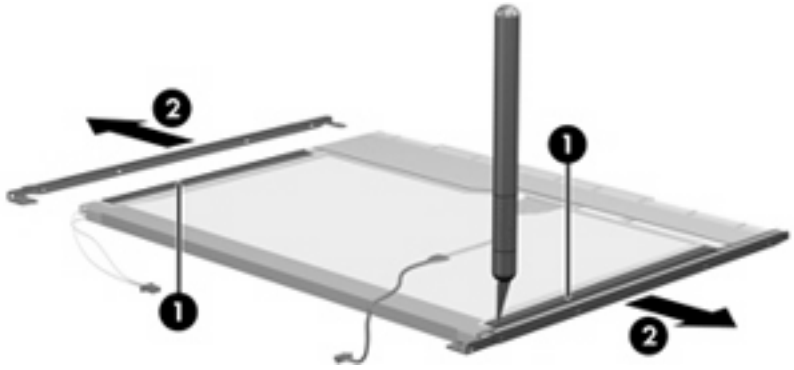


7. Turn the display panel assembly upside down.
8. Remove all screws that secure the display panel frame to the display panel.

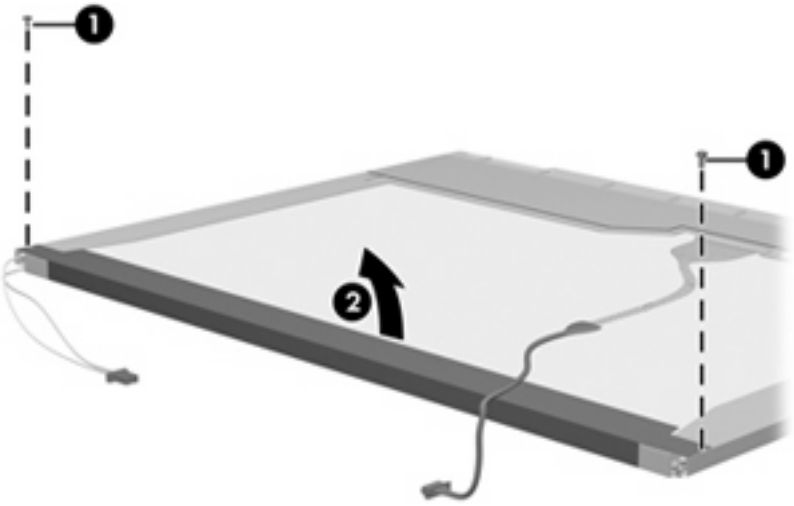


9. Use a sharp-edged tool to cut the tape **(1)** that secures the sides of the display panel to the display panel frame.

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

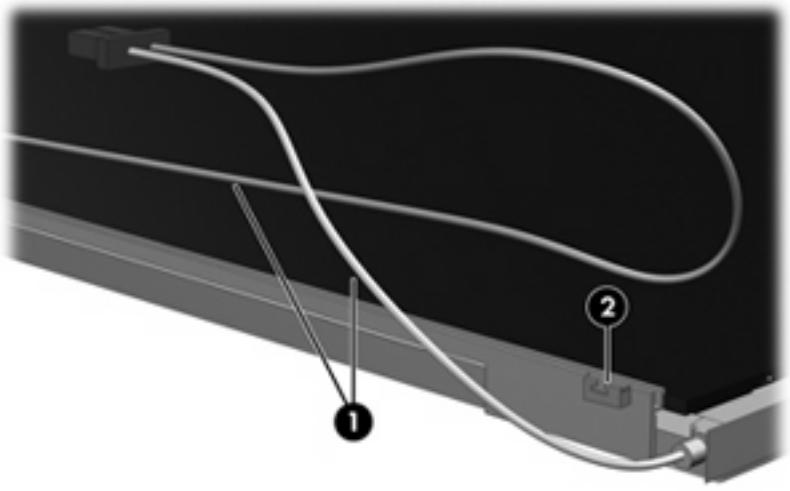


11. Remove the screws **(1)** that secure the backlight cover to the display panel.
12. Lift the top edge of the backlight cover **(2)** and swing it outward.



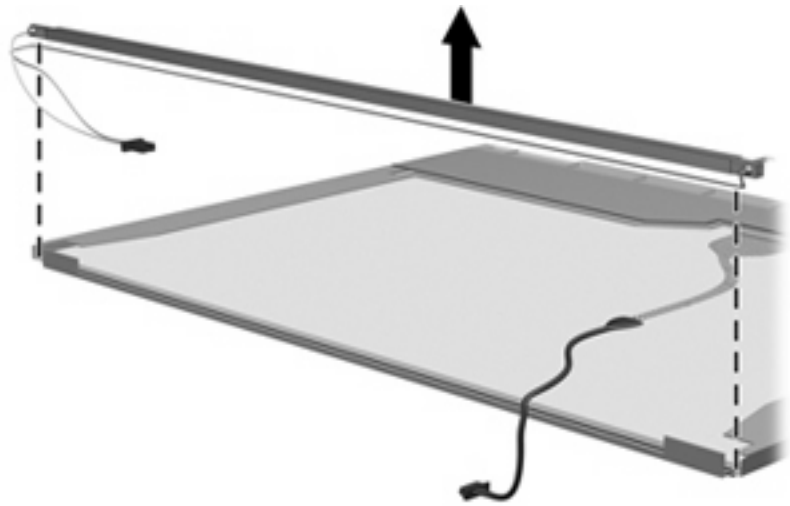
13. Remove the backlight cover.
14. Turn the display panel right-side up.

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



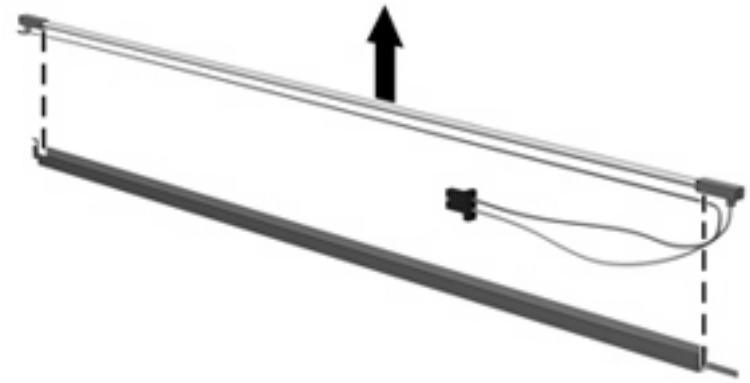

16. Turn the display panel upside down.

17. Remove the backlight frame from the display panel.

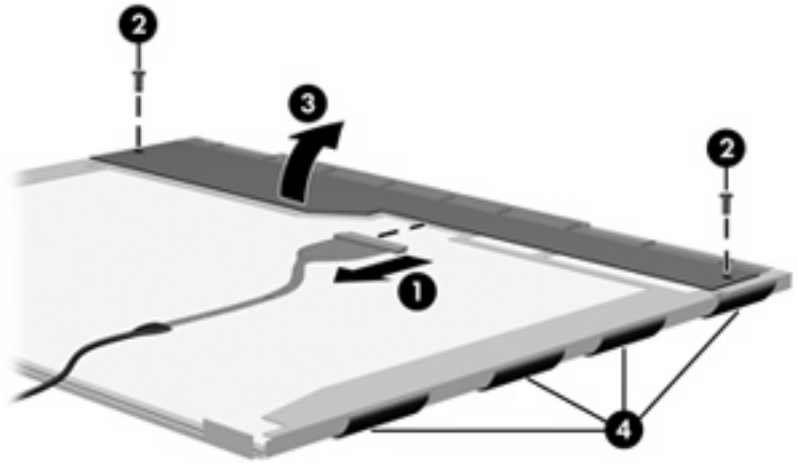


⚠ **WARNING!** The backlight contains mercury. Exercise caution when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

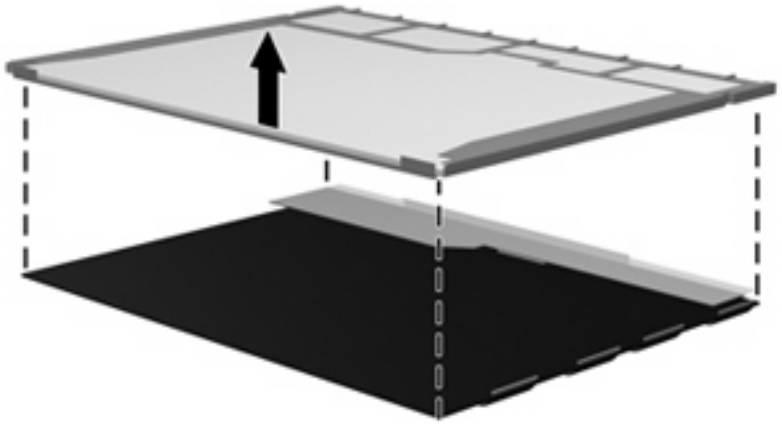
18. Remove the backlight from the backlight frame.



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




23. Remove the LCD panel.



24. Recycle the LCD panel and backlight.

# Index

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## U



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## W