



# **Maintenance and Service Guide**

HP Compaq nx6110/nc6110 and  
nx6120/nc6120 Notebook PCs

Document Part Number: 373146-002

September 2005

This guide is a troubleshooting reference used for maintaining and servicing the computer. It provides comprehensive information on identifying computer features, components, and spare parts; troubleshooting computer problems; and performing computer disassembly procedures.

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Maintenance and Service Guide  
HP Compaq nx6110/nc6110 and nx6120/nc6120  
Notebook PCs  
Second Edition September 2005  
First Edition February 2005  
Document Part Number: 373146-002

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# 1

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## Product Description

The HP Compaq nx6110/nc6110 and nx6120/nc6120 Notebook PCs offer advanced modularity, Intel® Pentium® M and Celeron® M processors, and extensive multimedia support.



*HP Compaq nx6110/nc6110 and nx6120/nc6120  
Notebook PCs*

## 1.1 Features

- The following processors are available, varying by computer model:
  - ❑ Intel Pentium M 2.13-, 2.00-, 1.86-, 1.73-, 1.60-, or 1.30-GHz processor,
  - ❑ Intel Celeron M 1.5- or 1.4-GHz
- The following displays are available, varying by computer model:
  - ❑ 15.0-inch, SXGA+WVA, TFT (1400 × 1050) with over 16.8 million colors
  - ❑ 15.0-inch, XGA, TFT (1280 × 800) with over 16.8 million colors
  - ❑ 14.1-inch, XGA, TFT (1280 × 800) with over 16.8 million colors
- 80-, 60-, 40-, or 30-GB high-capacity hard drive, varying by computer model
- 256-MB DDR2 synchronous DRAM (SDRAM) at 400 and 533 MHz, expandable to 2.0 GB
- Microsoft® Windows® XP Home Edition or Windows XP Professional, varying by computer model
- Full-size Windows keyboard with embedded numeric keypad
- TouchPad pointing device, including a dedicated vertical scroll region and a button that enables/disables TouchPad operation.
- TouchPad and pointing stick pointing devices (select models only)
- Integrated 10 Base-T/100 Base-TX Ethernet local area network (LAN) network interface card (NIC) with RJ-45 jack



- Integrated high-speed 56K modem with RJ-11 jack
- Integrated wireless support for Mini PCI IEEE 802.11b or 802.11b/g WLAN device
- Support for 1 or 2 Type II PC Card slots, with support for both 32-bit (CardBus) and 16-bit PC Cards, varying by computer model
- External 65-watt AC adapter with 3-wire power cord, varying by computer model
- 6-cell Li-Ion battery pack
- Stereo speakers
- Volume up, volume mute, and volume down buttons (full-featured models only)



Numerous references are made throughout this *Maintenance and Service Guide* to “full-featured” and “defeatured” units. A computer model is considered to be full-featured if it has 4 Universal Serial Bus ports, 2 PC Card slots, and the following components:

- Volume control buttons
- Info Center button
- Infrared port
- 6-in-1 Digital Media Slot
- Serial port
- Parallel port
- S-Video-out jack
- Docking connector

A computer model is considered to be defeatured if it has only 2 Universal Serial Bus ports, 1 PC Card slot, and none of the components in the preceding list.

---

- Support for the following optical drives:
  - ❑ DVD±RW and CD-RW Combo Drive
  - ❑ DVD/CD-RW Combo Drive
  - ❑ DVD-ROM drive
  - ❑ CD-ROM drive
- Connectors:
  - ❑ Audio-out (headphone)
  - ❑ Audio-in (microphone)
  - ❑ Universal Serial Bus (USB) v. 2.0 (4 ports on full-featured computer models, 2 ports on defeatured computer models)
  - ❑ Power
  - ❑ External monitor
  - ❑ RJ-11 (modem)
  - ❑ RJ-45 (network)
  - ❑ IEEE 1394
  - ❑ Travel battery
  - ❑ Infrared (full-featured models only)
  - ❑ Digital Media Slot (full-featured models only)
  - ❑ Parallel port (full-featured models only)
  - ❑ S-Video-out (full-featured models only)
  - ❑ Docking connector (full-featured models only)

## 1.2 Resetting the Computer

If the computer you are servicing has an unknown password, follow these steps to clear the password. These steps also clear CMOS:

1. Prepare the computer for disassembly (refer to [Section 6.3, “Preparing the Computer for Disassembly,”](#) for more information).
2. Remove the real-time clock (RTC) battery (refer to [Section 6.18, “RTC Battery,”](#) for more information on removing and replacing the RTC battery).
3. Wait approximately 5 minutes.
4. Replace the RTC battery and reassemble the computer.
5. Connect AC power to the computer. Do not reinsert any battery packs at this time.
6. Turn on the computer.

All passwords and all CMOS settings have been cleared.

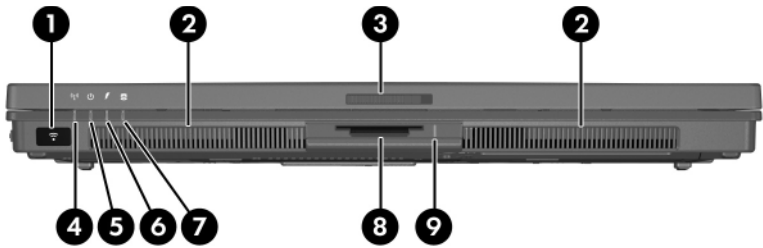
## 1.3 Power Management

The computer comes with power management features that extend battery operating time and conserve power. The computer supports the following power management features:

- Standby
- Hibernation
- Setting customization by the user
- Hotkeys for setting the level of performance
- Battery calibration
- Lid switch standby/resume
- Power button
- Advanced Configuration and Power Management (ACPM) compliance

## 1.4 External Components

The external components on the front of the computer are shown below and described in Table 1-1.



Front Components

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**Table 1-1**  
**Front Components**

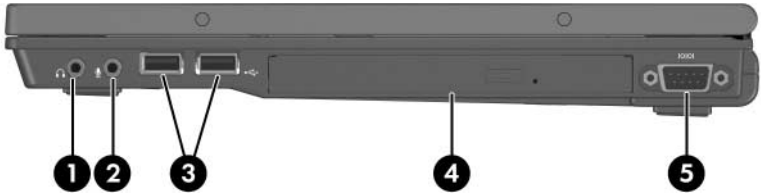
| Item | Component                                 | Function  |
|------|---|---|
| 1    | Infrared port (full-featured models only) | Provides wireless communication between the computer and an optional IrDA-compliant device. |
| 2    | Stereo speakers (2)                       | Produce stereo sound.   |
| 3    | Display release latch                     | Opens the computer.   |
| 4    | Wireless light                            | On: an integrated wireless device has been enabled.   |

---

**Table 1-1**  
**Front Components (Continued)**

| <b>Item</b> | <b>Component</b>  | <b>Function</b>  |
|-------------|---|--|
| 5           | Power light   | <ul style="list-style-type: none"> <li>■ Green: The computer is on.</li> <li>■ Blinking green: The computer is in standby.</li> <li>■ Off: The computer is off or in hibernation.</li> </ul>   |
| 6           | Battery light   | <ul style="list-style-type: none"> <li>■ Amber: A battery pack is charging.</li> <li>■ Green: A battery pack is close to full charge capacity.</li> <li>■ Blinking amber: A battery pack that is the only available power source has reached a low-battery condition. When the battery reaches a critical low-battery condition, the battery light begins blinking more quickly.</li> <li>■ Off: If the computer is connected to an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not connected to an external power source, the light is turned off until the battery reaches a low-battery condition.</li> </ul> |
| 7           | Integrated Drive Electronics (IDE) drive light              | Blinking: The hard drive or optical drive is being accessed.   |
| 8           | 6-in-1 Digital Media Slot (full-featured models only)       | Supports 6 optional digital memory card formats: SD (Secure Digital) Memory Card, MultiMediaCard, Memory Stick, Memory Stick Pro, SmartMedia, and xD-Picture Card.   |
| 9           | 6-in-1 Digital Media Slot light (full-featured models only) | On: A digital memory card is being accessed.   |

The external components on the right side of the computer are shown below and described in Table 1-2.



*Right-Side Components*

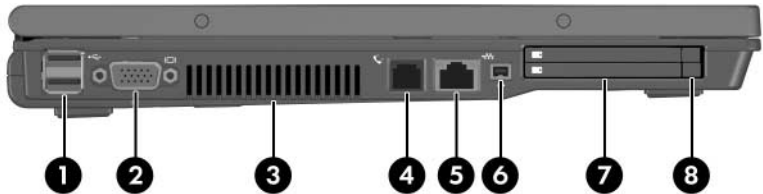
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**Table 1-2**  
**Right-Side Components**

| <b>Item</b> | <b>Component</b>                          | <b>Function</b>   |
|-------------|---|---|
| 1           | Audio-out (headphone) jack                | Connect optional headphones or powered stereo speakers. Also connects the audio function of an audio/video device such as a television or VCR.  |
| 2           | Audio-in (microphone) jack                | Connects an optional monaural microphone.   |
| 3           | USB ports (2) (full-featured models only) | Connect USB 1.1- and 2.0-compliant devices to the computer using a standard USB cable, or connect an optional External MultiBay II to the computer. The MultiBay II must also be connected to an external power source. |
| 4           | Optical drive                             | Supports an optical disc. The type of optical drive varies by model.  |
| 5           | Serial port (full-featured models only)   | Connects an optional serial device.   |

---

The external components on the left side of the computer are shown below and described in Table 1-3.



*Left-Side Components*

---

**Table 1-3**


**Left-Side Components**

| Item | Component             | Function  |
|------|-----------------------|---|
| 1    | USB ports (2)         | Connect USB 1.1- and 2.0-compliant devices to the computer using a standard USB cable, or connect an optional External MultiBay II to the computer. The MultiBay II must also be connected to an external power source. |
| 2    | External monitor port | Connects an optional VGA external monitor or projector.   |

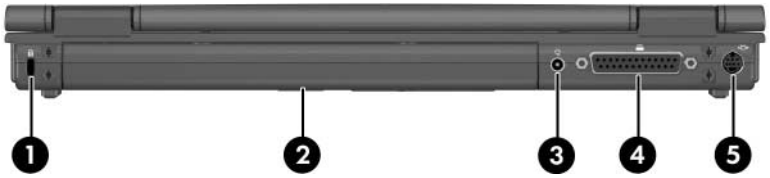
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**Table 1-3**  
**Left-Side Components (Continued)**


| Item | Component   | Function   |
|------|---|--|
| 3    | Exhaust vent  | Provides airflow to cool internal components.  |
|      |  To prevent overheating, do not obstruct vents. Do not allow a hard surface, such as a printer, or a soft surface, such as pillows, thick rugs, or clothing, to block airflow. |  |
| 4    | RJ-11 (modem) jack  | Connects the modem cable.  |
| 5    | RJ-45 (network) jack  | Connects an optional network cable.  |
| 6    | 1394 port   | Connects an optional 1394a device such as a scanner, digital camera, or digital camcorder. |
| 7    | PC Card slots (2 slots on full-featured models, 1 slot on defeatured models)  | Support an optional Type I, Type II, or Type III 32-bit (CardBus) or 16-bit PC Card.       |
| 8    | PC Card eject buttons (2 buttons on full-featured models, 1 button on defeatured models)  | Eject an optional PC Card from the PC Card slot.   |

The external components on the rear panel of the computer are shown below and described in Table 1-4.

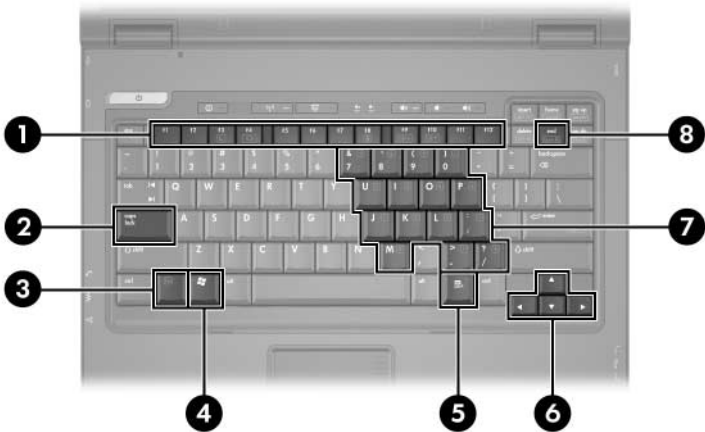


*Rear Panel Components*

**Table 1-4**  
**Rear Panel Components**

| <b>Item</b> | <b>Component</b>  | <b>Function</b>  |
|-------------|---|--|
| 1           | Security cable slot   | Attaches an optional security cable to the computer.   |
|             |  Security solutions are designed to act as deterrents. These deterrents may not prevent a product from being mishandled or stolen. |  |
| 2           | Battery bay   | Holds a battery pack.  |
| 3           | Power connector   | Connects an AC adapter or an optional automobile or aircraft adapter.  |
| 4           | Parallel port<br>(full-featured models only)  | Connects an optional parallel device, such as an external diskette drive or a printer.                       |
| 5           | S-Video-out jack<br>(full-featured models only)   | Connects an optional S-Video device, such as a television, VCR, camcorder, projector, or video capture card. |

The standard keyboard components of the computer are shown below and described in Table 1-5.

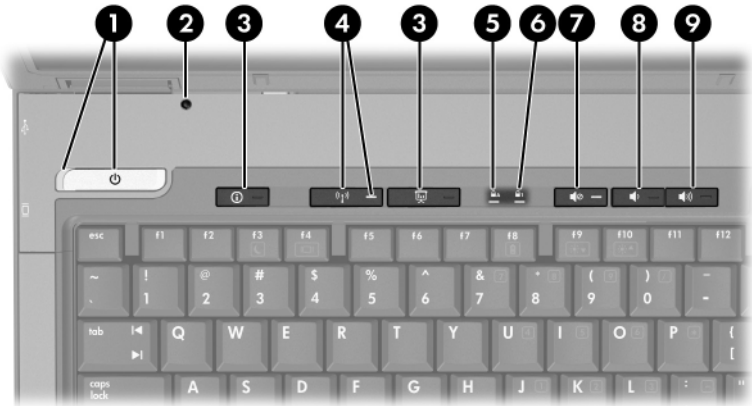


*Standard Keyboard Components*

**Table 1-5**  
**Standard Keyboard Components**

| <b>Item</b> | <b>Component</b>                  | <b>Function</b>   |
|-------------|-----------------------------------|---|
| 1           | <b>fn</b> to <b>f12</b> keys (12) | Perform system and application tasks. When combined with the <b>fn</b> key, several keys and buttons perform additional tasks as hotkeys. |
| 2           | <b>caps lock</b> key              | Enables caps lock and turns on the caps lock light.   |
| 3           | <b>fn</b> key                     | Executes frequently used system functions when pressed in combination with a function key or the <b>esc</b> key.                          |
| 4           | Windows logo key                  | In Windows, displays the Windows Start menu.  |
| 5           | Windows applications key          | In Windows, displays a shortcut menu for items beneath the pointer.   |
| 6           | Arrow keys                        | Moves the cursor around the screen.   |
| 7           | Keypad keys (15)                  | In Windows, can be used like the keys on an external numeric keypad.  |
| 8           | <b>num lock</b> key               | Enables numeric lock, turns on the embedded numeric keypad, and turns on the num lock light.  |

The computer top components are shown below and described in Table 1-6.




Top Components, Part 1

**Table 1-6**  
**Top Components, Part 1**

| Item | Component    | Function   |
|------|--------------|--|
| 1    | Power light  | <ul style="list-style-type: none"> <li>■ On: The computer is turned on.</li> <li>■ Blinking: The computer is in standby,</li> <li>■ Off: The computer is off.</li> </ul>   |
|      | Power button | <p>When the computer is:</p> <ul style="list-style-type: none"> <li>■ Off, press to turn on the computer.</li> <li>■ On, briefly press to initiate hibernation.</li> <li>■ In standby, briefly press to resume from standby.</li> <li>■ In hibernation, briefly press to restore from hibernation.</li> </ul> <p>If the system has stopped responding and Windows shutdown procedures cannot be used, press and hold for 5 seconds to turn off the computer.</p> |

**Table 1-6**  
**Top Components, Part 1 (Continued)**

| <b>Item</b> | <b>Component</b>   | <b>Function</b>   |
|-------------|--|---|
| 2           | Display lid switch   | <ul style="list-style-type: none"> <li>■ If the computer is closed while on, turns off the display.</li> <li>■ If the computer is opened while in standby, turns on the computer (resumes from standby).</li> </ul> |
| 3           | Info Center button   | Enables you to view a list of commonly used software solutions.   |
|             | Presentation mode button   | Turns on Presentation mode.   |
| 4           | Wireless button  | Turns the wireless functionality on or off, but does not create a wireless connection.  |
|             |  To establish a wireless connection, a wireless network must already be set up. |   |
|             | Wireless light   | On: An integrated wireless device has been turned on.   |
| 5           | Caps lock light  | On: <b>caps lock</b> is on.   |
| 6           | Num lock light   | On: <b>num lock</b> or the numeric keypad is on.  |
| 7           | Volume mute button (full-featured models only)   | Mutes or restores system volume.  |
| 8           | Volume down button (full-featured models only)   | Decreases system volume.  |
| 9           | Volume up button (full-featured models only)   | Increases system volume.  |

The computer top components are continued below and described in Table 1-7.



Top Components, Part 2



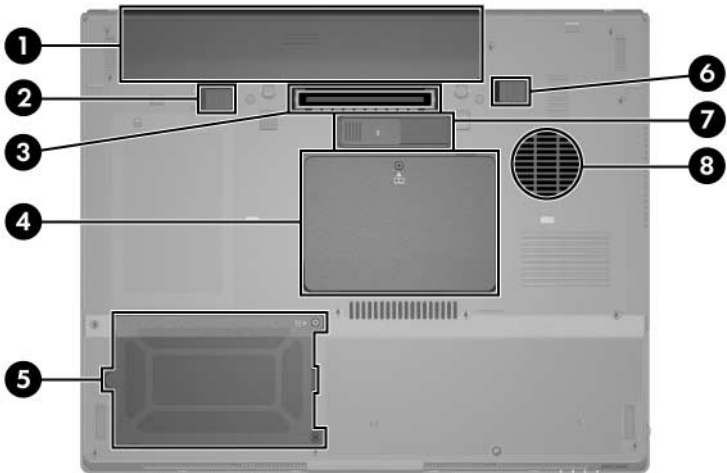
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**Table 1-7**  
**Top Components, Part 2**

| <b>Item</b> | <b>Component</b>                  | <b>Function</b>   |
|-------------|-----------------------------------|---|
| 1           | Pointing stick                    | Moves the pointer and selects or activates items on the screen.   |
| 2           | Left/right pointing stick buttons | Function like the left and right buttons on an external mouse.  |
| 3           | TouchPad                          | Moves the pointer and selects or activates items on the screen. Can be set to perform other mouse functions, such as scrolling, selecting, and double-clicking. |
| 4           | Left/right TouchPad buttons       | Function like the left and right buttons on an external mouse.  |
| 5           | TouchPad scroll zone              | Scrolls up or down.   |

---

The external components on the bottom of the computer are shown below and described in Table 1-8.



*Bottom Components*

---

**Table 1-8**

**Bottom Components**

| <b>Item</b> | <b>Component</b>                              | <b>Function</b>  |
|-------------|---|--|
| 1           | Primary battery bay                           | Holds the primary battery pack.                        |
| 2           | Primary battery locking latch                 | Secures the primary battery pack into the battery bay. |
| 3           | Docking connector (full-featured models only) | Connects the computer to an optional docking device.   |

---

**Table 1-8**  
**Bottom Components (Continued)**

| Item | Component  | Function   |
|------|--|--|
| 4    | Memory module compartment  | Contains 2 memory slots that support replaceable memory modules. The number of preinstalled memory modules varies by computer model. |
|      | Mini PCI compartment   | Holds an optional wireless LAN device.   |
|      | <p>△ To prevent an unresponsive system and the display of a warning message, install only a Mini PCI device authorized for use in your computer by the governmental agency that regulates wireless devices in your country. If you install a device and then receive a warning message, remove the device to restore computer functionality. Then contact Customer Care.</p> |  |
| 5    | Hard drive bay   | Holds the primary hard drive.  |
| 6    | Primary battery release latch  | Releases the primary battery pack from the battery bay.  |
| 7    | Travel battery connector   | Connects an optional travel battery.   |
| 8    | Fan  | Provides airflow to cool internal components.  |
|      | <p>△ To prevent overheating, do not obstruct fans. Do not allow a hard surface, such as a printer, or a soft surface, such as pillows, thick rugs, or clothing, to block airflow.</p>  |  |

## 1.5 Design Overview

This section presents a design overview of key parts and features of the computer. Refer to [Chapter 4, “Illustrated Parts Catalog,”](#) to identify replacement parts, and [Chapter 6, “Removal and Replacement Procedures,”](#) for disassembly steps.

The system board provides the following device connections:

- Memory module
- Mini PCI communications devices
- Hard drive
- Display
- Keyboard and TouchPad
- Audio
- Intel Pentium M and Intel Celeron M processors
- PC Card



**CAUTION:** 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 be turned 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.

---

# Troubleshooting



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

---

## 2.1 Computer Setup

Computer Setup is a system information and customization utility that can be used even when the operating system is not working or will not load. This utility includes settings that are not available in Windows.

### Using Computer Setup

Information and settings in Computer Setup are accessed from the **Main**, **Security**, **Advanced**, or **Tools** menus:

1. Turn on or restart the computer. Press **f10** while the F10 = ROM-Based Setup message is displayed in the lower-left corner of the screen.
  - ❑ To change the language, use the cursor control keys to navigate to the **Advanced** menu.
  - ❑ To view navigation information, press **f1**.
  - ❑ To return to the Computer Setup menu, press **esc**.

2. Select the **Main**, **Security**, **Advanced**, or **Tools** menu.
3. To close Computer Setup and restart the computer:
  - ❑ Select **Exit > Exit Saving Changes**, and then press **enter**.
  - or –
  - ❑ Select **Exit > Exit Discarding Changes**, and then press **enter**.
  - or –
  - ❑ Select **Exit > Load Setup Defaults**, and then press **enter**.
4. When you are prompted to confirm your action, press **f10**.

## Selecting from the Main Menu

---




**Table 2-1**  
**Main Menu**

| Select             | To Do This   |
|--------------------|--|
| System Information | <ul style="list-style-type: none"><li>■ Change the system time and system date.</li><li>■ View identification information about the computer.</li><li>■ View specification information about the processor, memory and cache size, and system ROM.</li></ul> |

---

## Selecting from the Security Menu

**Table 2-2**  
**Security Menu**

| Select   | To Do This   |
|--|--|
| Administrator Password   | Enter, change, or delete an Administrator password.  |
| Power-on Password  | Enter, change, or delete a power-on password.  |
| DriveLock Passwords  | <p>Enable/disable DriveLock; change a DriveLock user or master password.</p> <p> DriveLock Settings are accessible only when you enter Computer Setup by turning on (not restarting) the computer.</p>                            |
| Password Options<br>(Password options can be selected only when a power-on password has been set.) | <p>Enable/disable:</p> <ul style="list-style-type: none"> <li>■ QuickLock</li> <li>■ QuickLock on Standby</li> <li>■ QuickBlank</li> </ul> <p> To enable QuickLock on Standby or QuickBlank, you must first enable QuickLock.</p> |
| Device Security  | <p>Enable/disable:</p> <ul style="list-style-type: none"> <li>■ Diskette drive startup*</li> <li>■ CD-ROM or diskette startup</li> </ul> <p> Settings for a DVD-ROM can be entered in the CD-ROM field.</p>                     |

\*Not applicable to SuperDisk LS-120 drives.

## Selecting from the Advanced Menu

---

**Table 2-3**  
**Advanced Menu**

| Select                | To Do This  |
|-----------------------|---|
| Language              | Change the Computer Setup language.   |
| Boot Order            | Enable/disable MultiBoot, which sets a startup sequence that can include most bootable devices and media in the system. |
| Accessibility Options | Allows electronic and information technology to be accessible to people with varying ranges of abilities.               |
| Video Memory          | Displays the amount of video memory available on the computer.  |

---

## Selecting from the Tools Menu

---

**Table 2-4**  
**Tools Menu**

| Select               | To Do This   |
|----------------------|--|
| Hard Drive Self Test | Run a quick comprehensive self test on hard drives in the system that support the test features. |

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---

## 2.2 Troubleshooting Flowcharts

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**Table 2-5**  
**Troubleshooting Flowcharts Overview**

| <b>Flowchart</b> | <b>Description</b>  |
|------------------|---|
| 2.1              | "Flowchart 2.1—Initial Troubleshooting"                       |
| 2.2              | "Flowchart 2.2—No Power, Part 1"                              |
| 2.3              | "Flowchart 2.3—No Power, Part 2"                              |
| 2.4              | "Flowchart 2.4—No Power, Part 3"                              |
| 2.5              | "Flowchart 2.5—No Power, Part 4"                              |
| 2.6              | "Flowchart 2.6—No Video, Part 1"                              |
| 2.7              | "Flowchart 2.7—No Video, Part 2"                              |
| 2.8              | "Flowchart 2.8—Nonfunctioning Docking Device (if applicable)" |
| 2.9              | "Flowchart 2.9—No Operating System (OS) Loading"              |
| 2.10             | "Flowchart 2.10—No OS Loading, Hard Drive, Part 1"            |
| 2.11             | "Flowchart 2.11—No OS Loading, Hard Drive, Part 2"            |
| 2.12             | "Flowchart 2.12—No OS Loading, Hard Drive, Part 3"            |
| 2.13             | "Flowchart 2.13—No OS Loading, Diskette Drive"                |

---

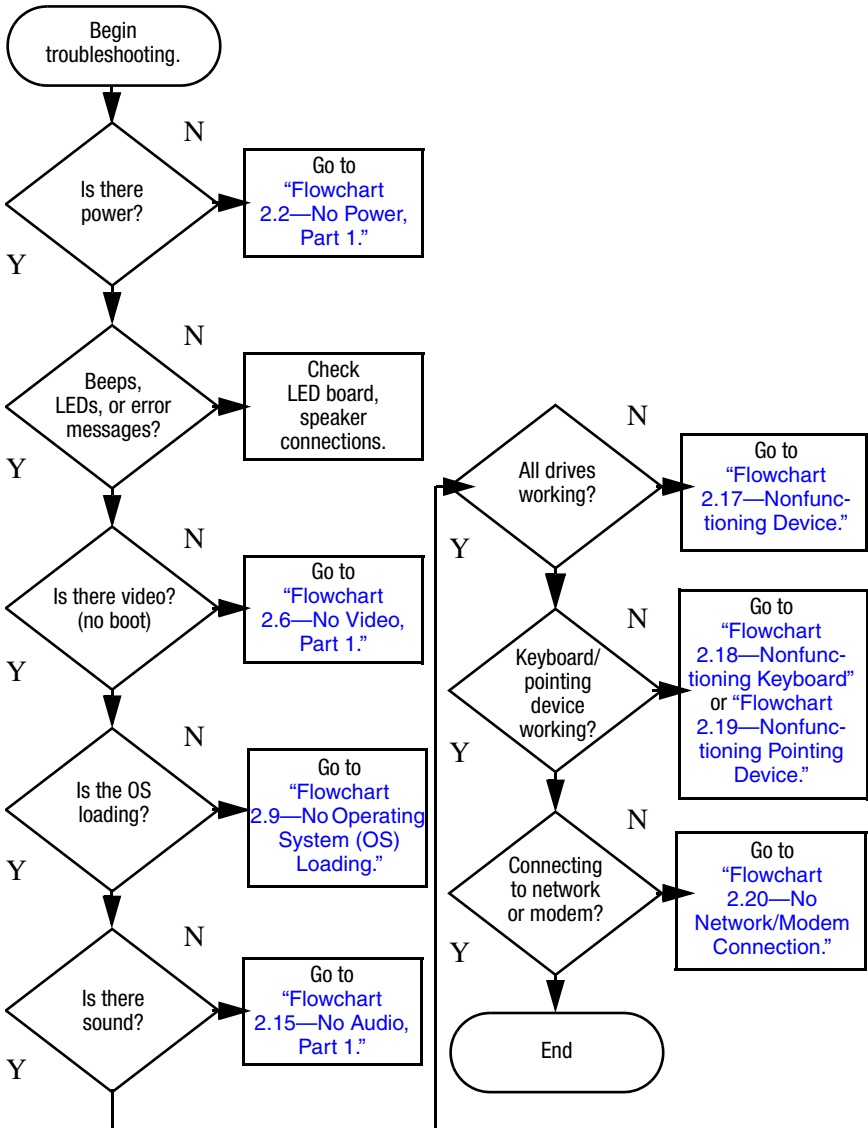
---

**Table 2-5**  
**Troubleshooting Flowcharts Overview (*Continued*)**

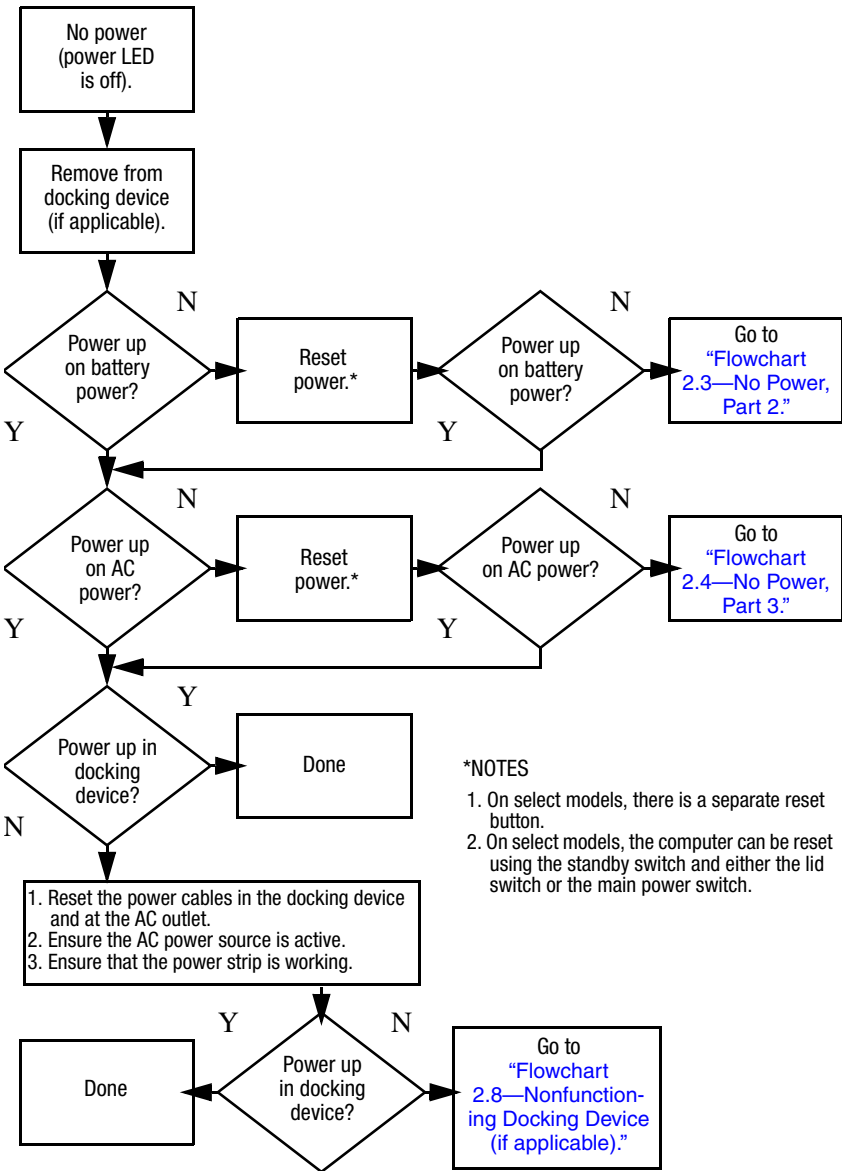
| <b>Flowchart</b> | <b>Description</b>                              |
|------------------|---|
| 2.14             | "Flowchart 2.14—No OS Loading, Optical Drive"   |
| 2.15             | "Flowchart 2.15—No Audio, Part 1"               |
| 2.16             | "Flowchart 2.16—No Audio, Part 2"               |
| 2.17             | "Flowchart 2.17—Nonfunctioning Device"          |
| 2.18             | "Flowchart 2.18—Nonfunctioning Keyboard"        |
| 2.19             | "Flowchart 2.19—Nonfunctioning Pointing Device" |
| 2.20             | "Flowchart 2.20—No Network/Modem Connection"    |

---

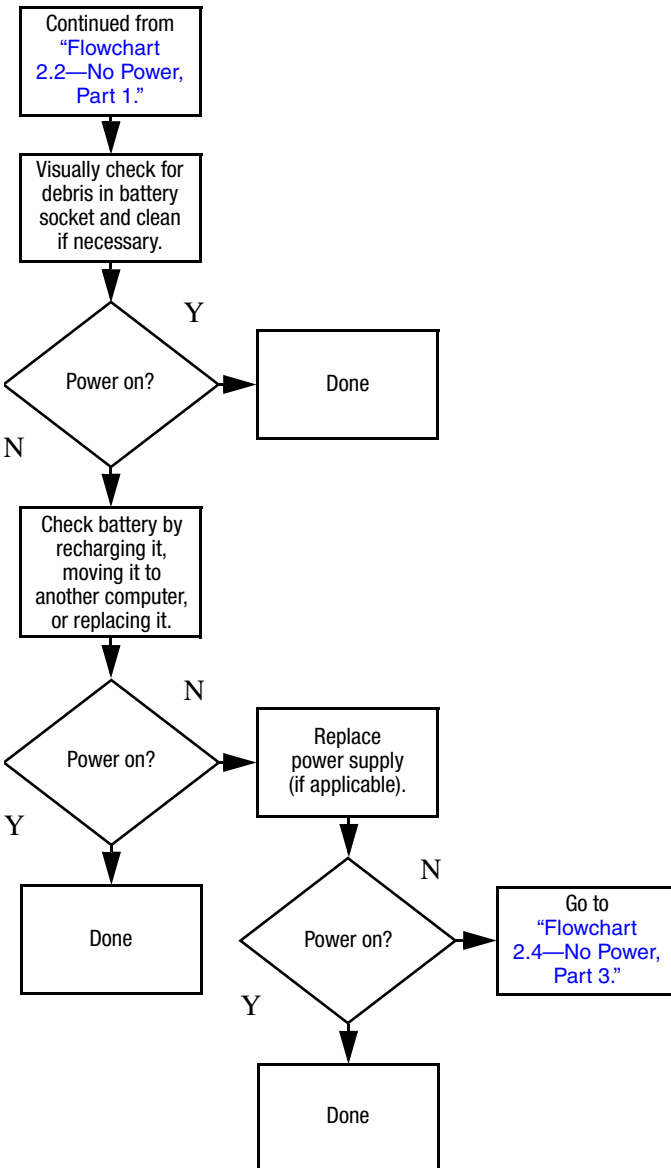
## Flowchart 2.1 – Initial Troubleshooting



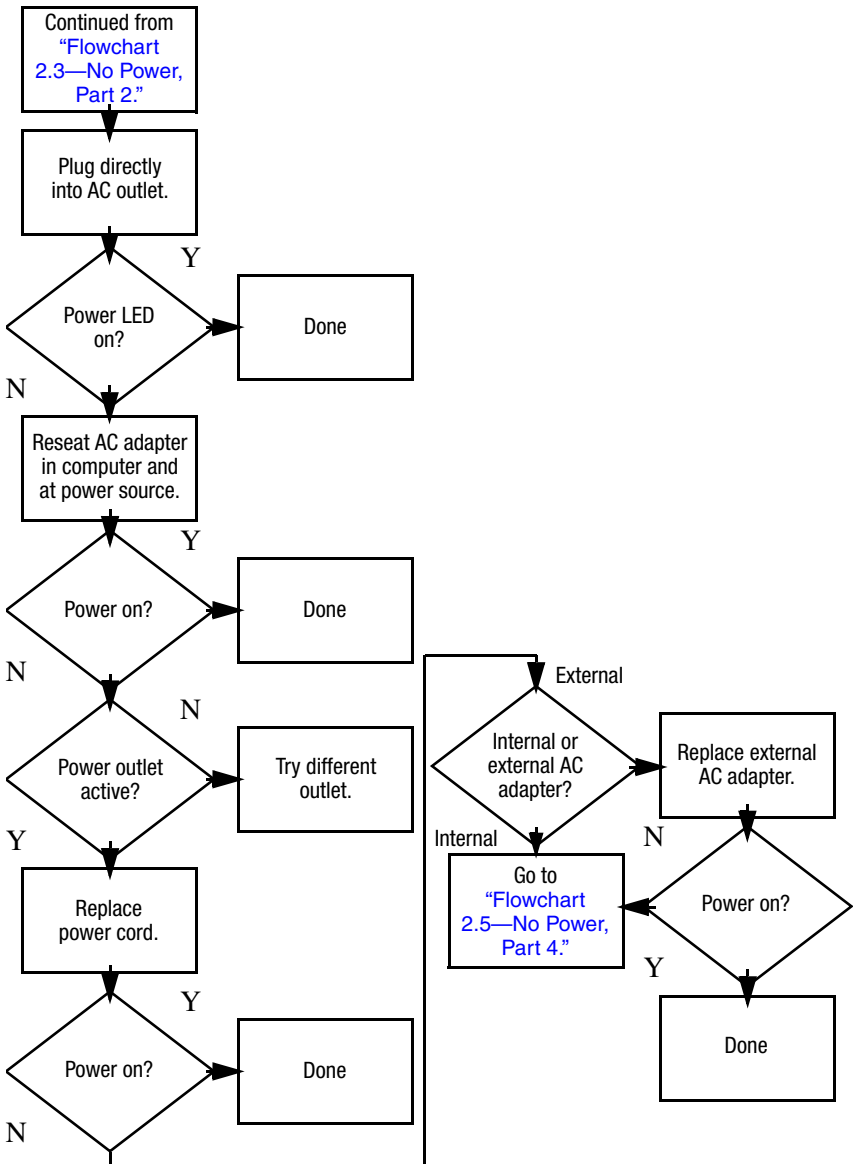
## Flowchart 2.2—No Power, Part 1



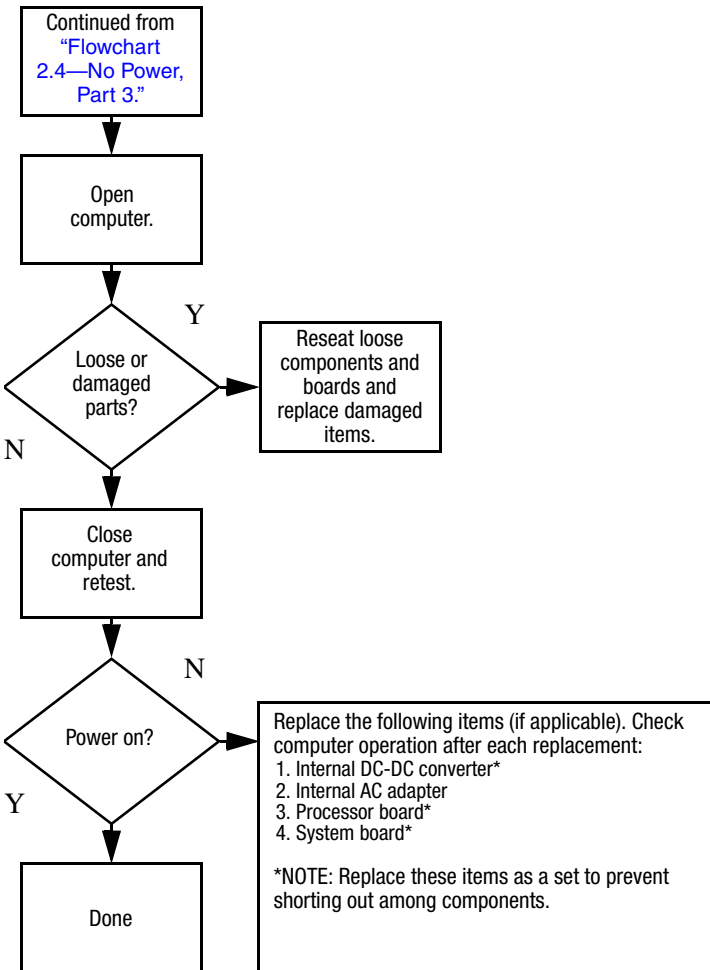
## Flowchart 2.3—No Power, Part 2



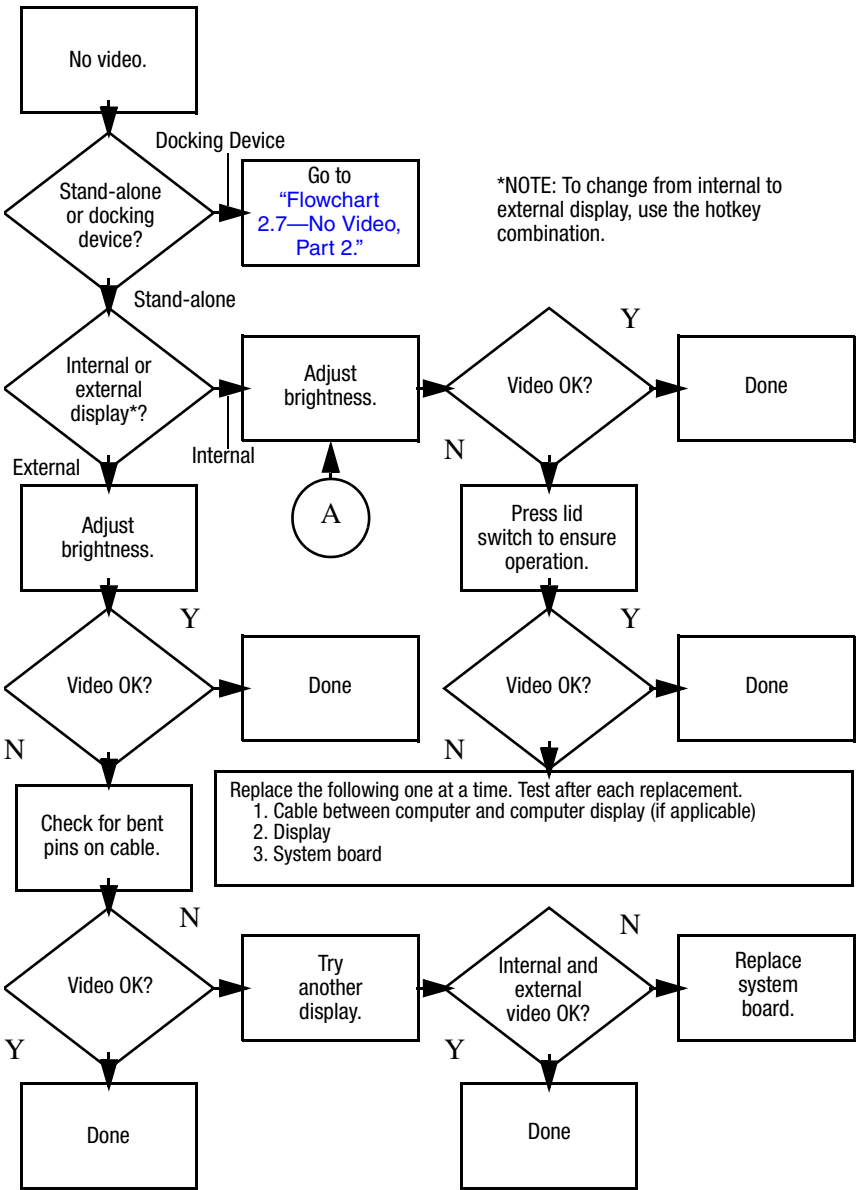
### Flowchart 2.4—No Power, Part 3



## Flowchart 2.5—No Power, Part 4

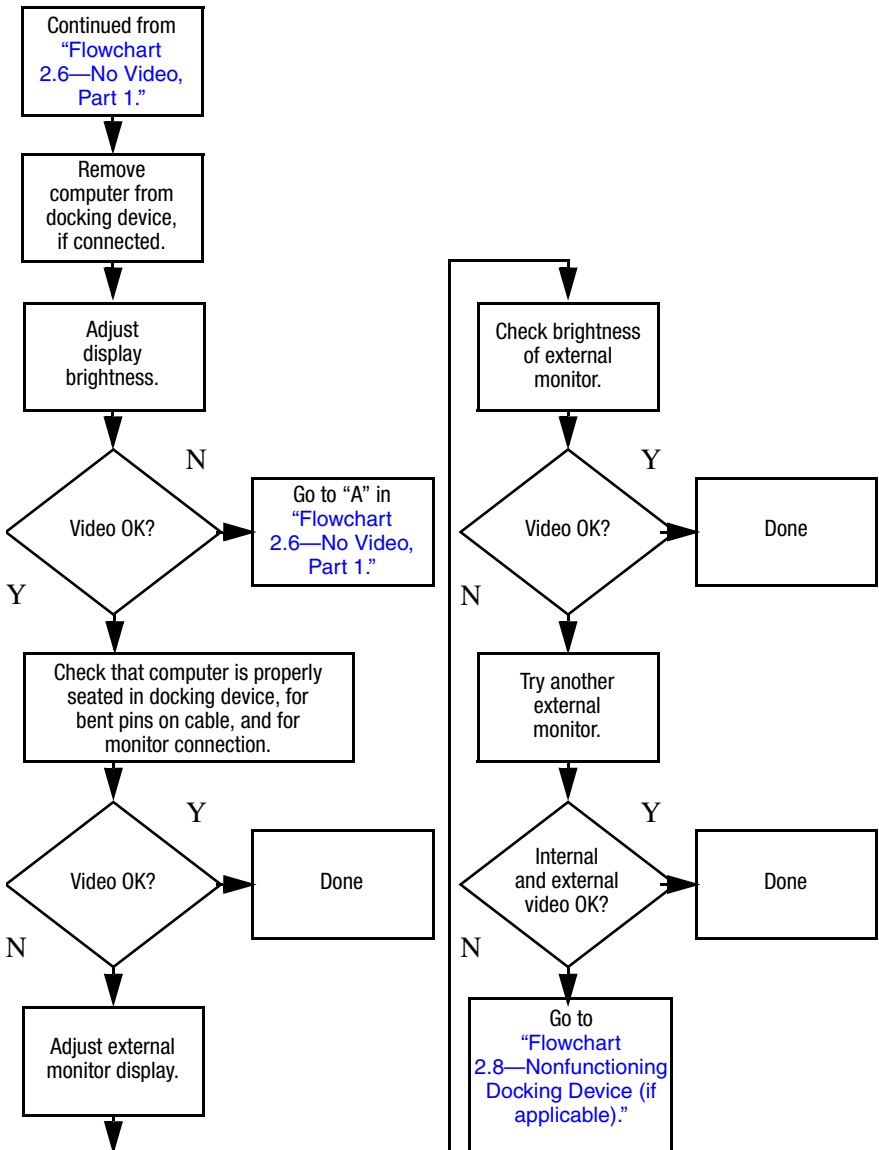


## Flowchart 2.6—No Video, Part 1

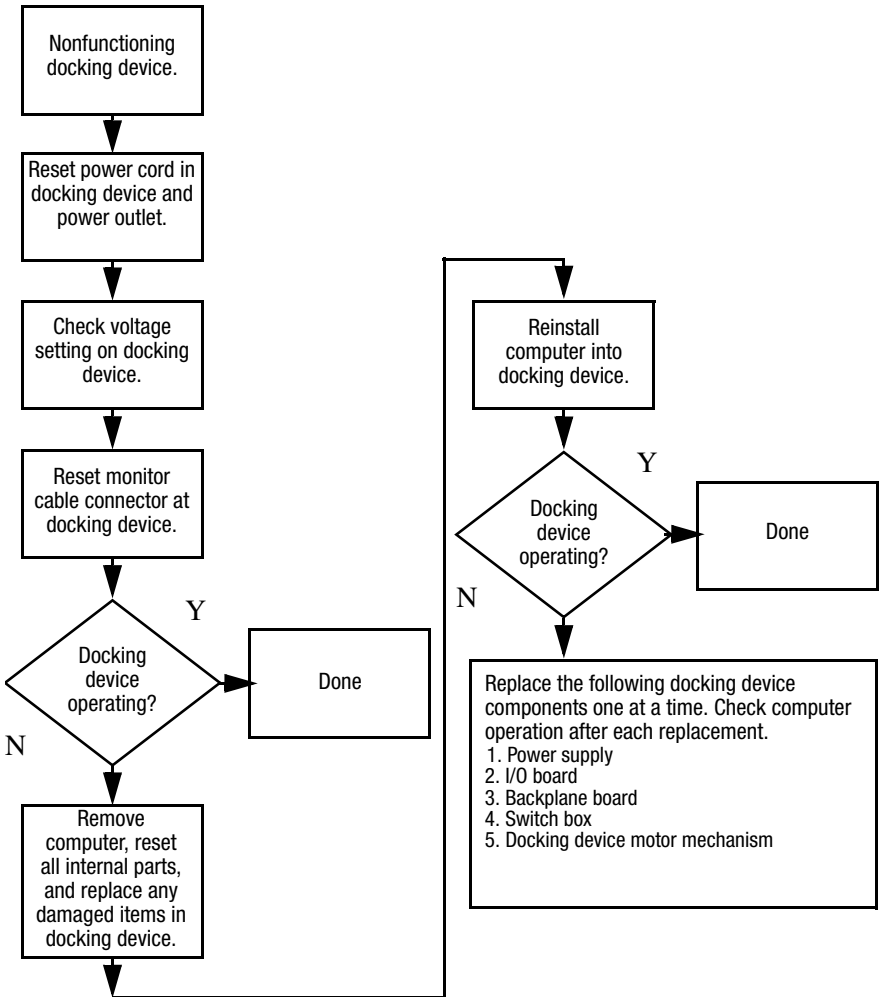




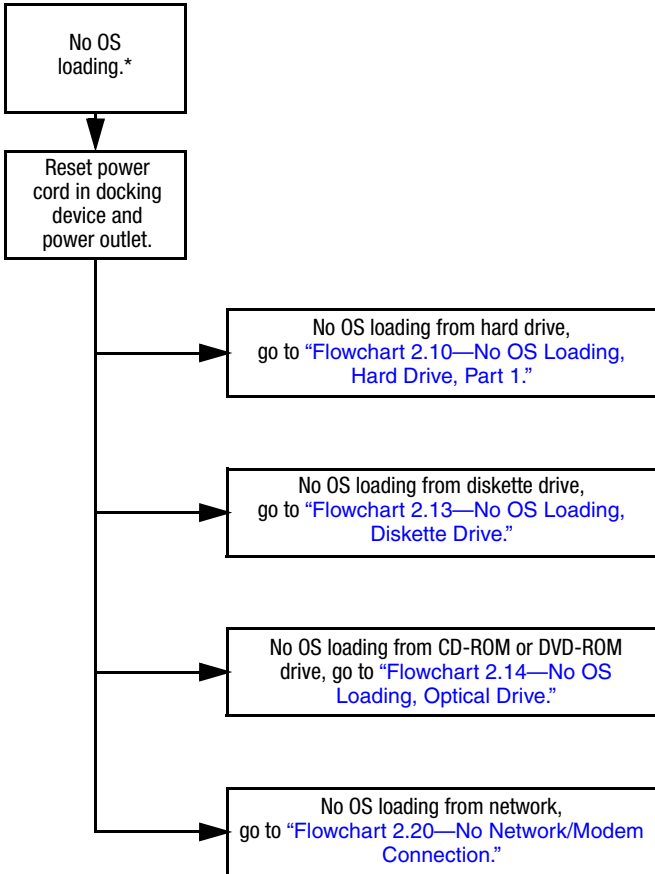
## Flowchart 2.7—No Video, Part 2



## Flowchart 2.8—Nonfunctioning Docking Device (if applicable)

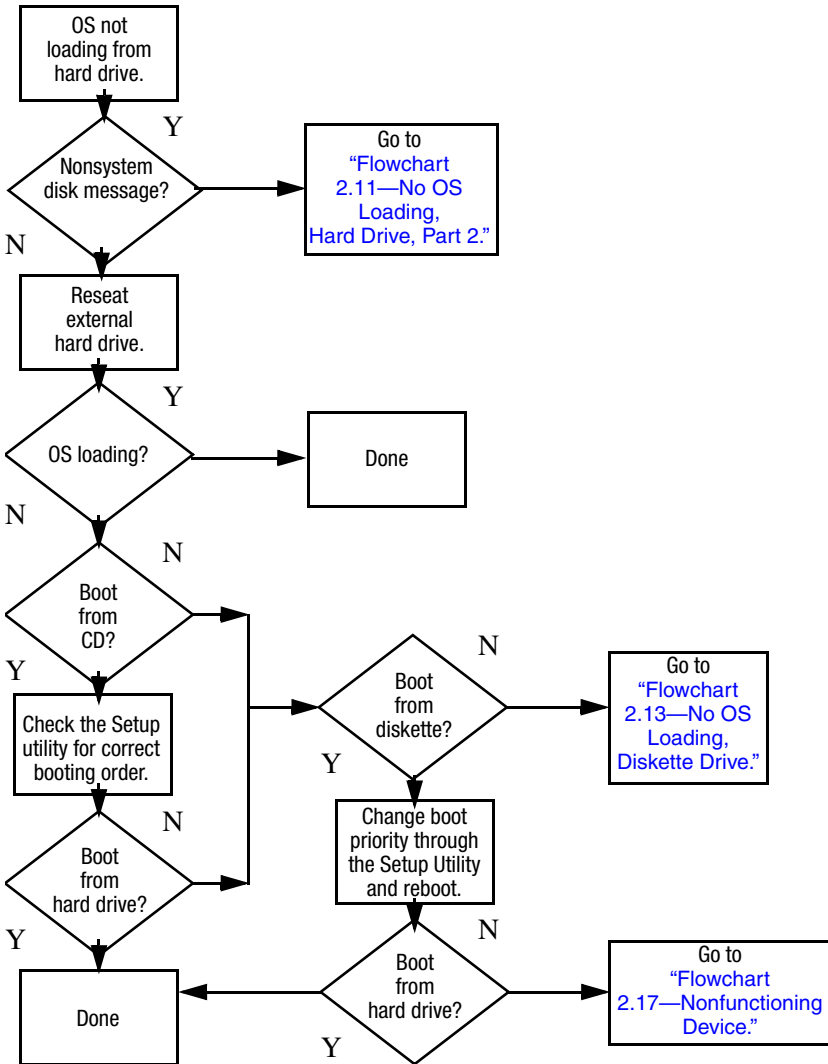


## Flowchart 2.9—No Operating System (OS) Loading

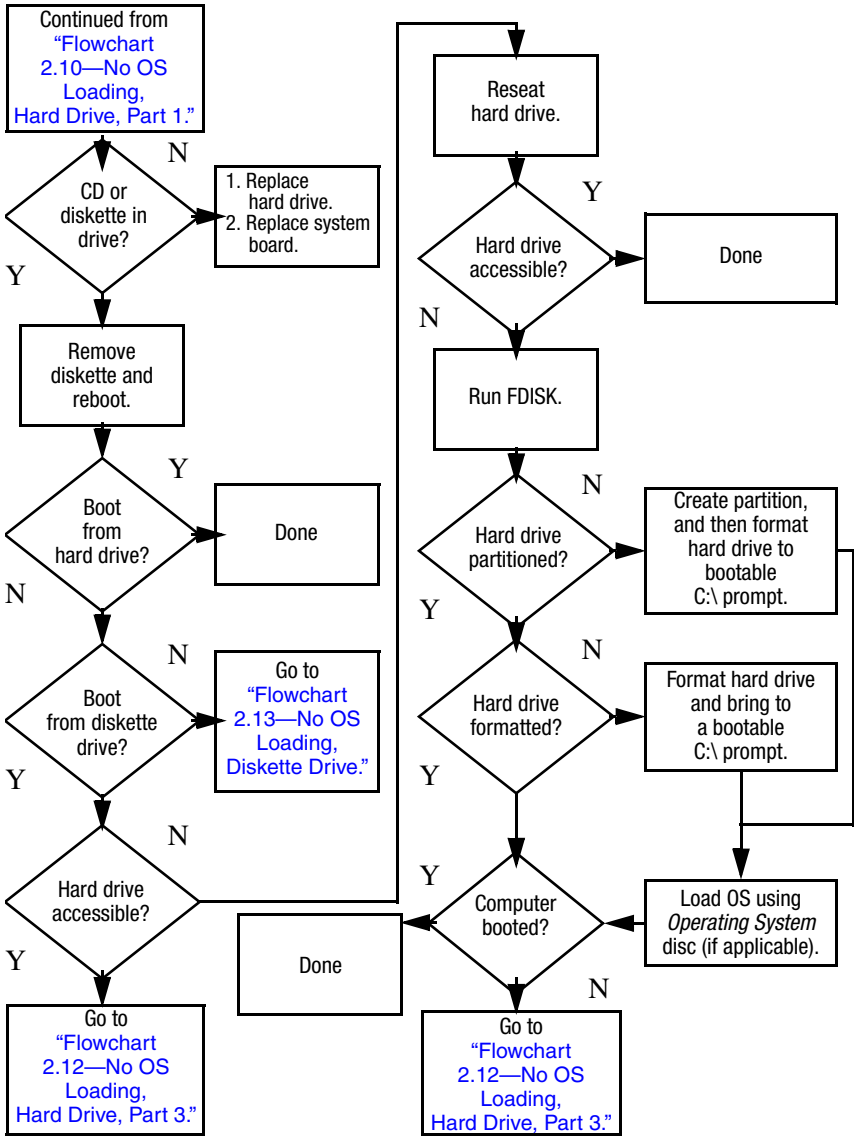


\*NOTE: Before beginning troubleshooting, always check cable connections, cable ends, and drives for bent or damaged pins.

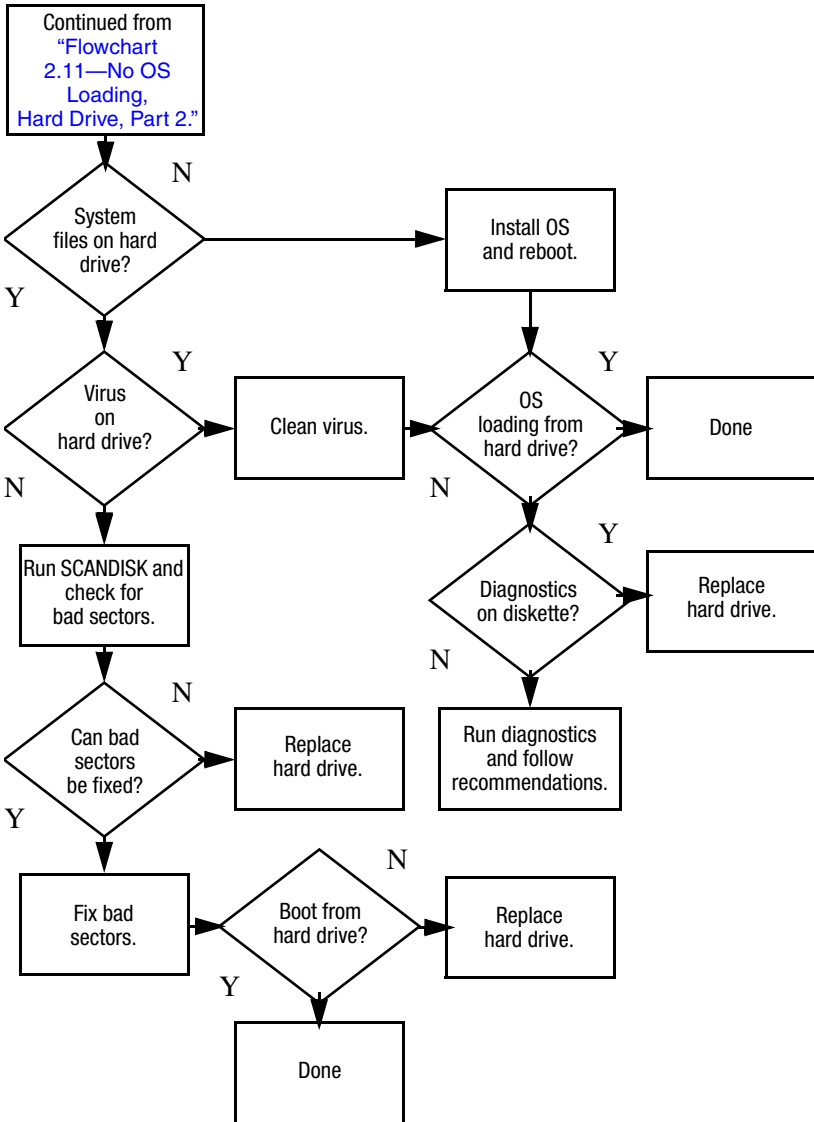
## Flowchart 2.10—No OS Loading, Hard Drive, Part 1



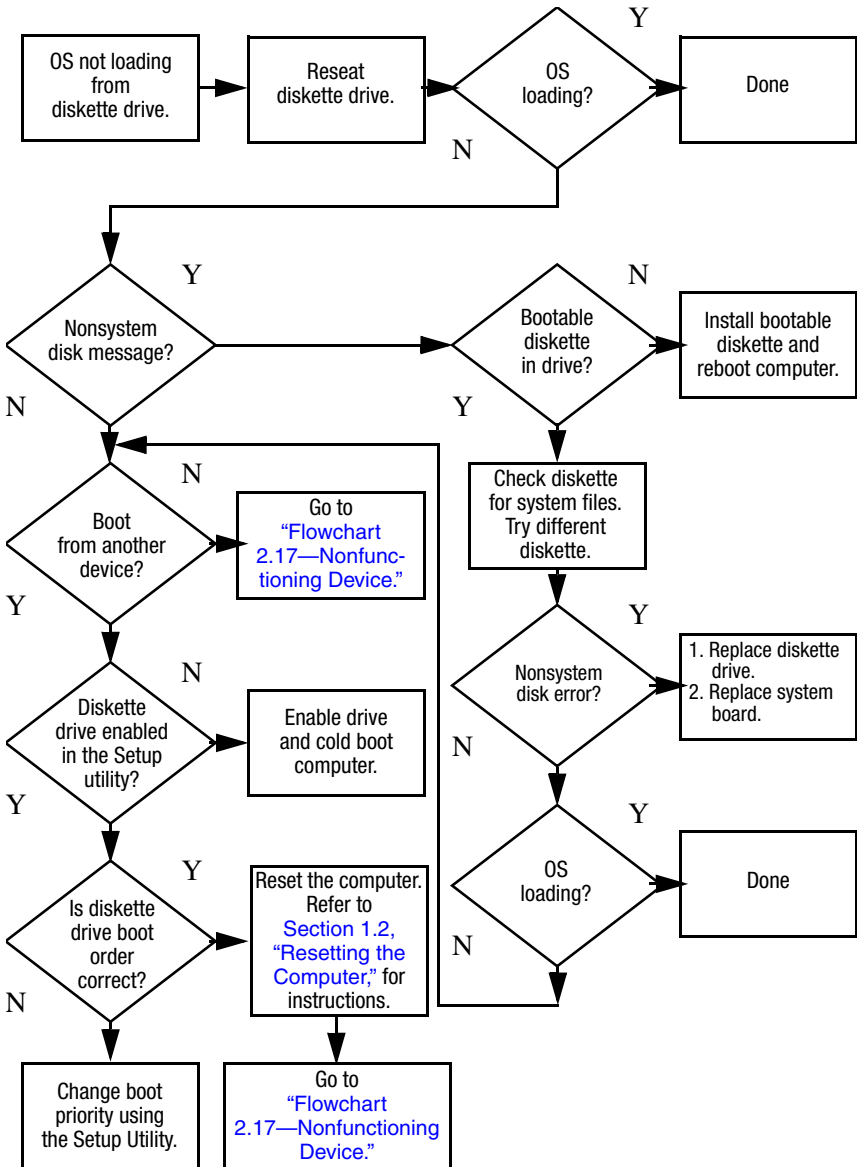
## Flowchart 2.11 – No OS Loading, Hard Drive, Part 2



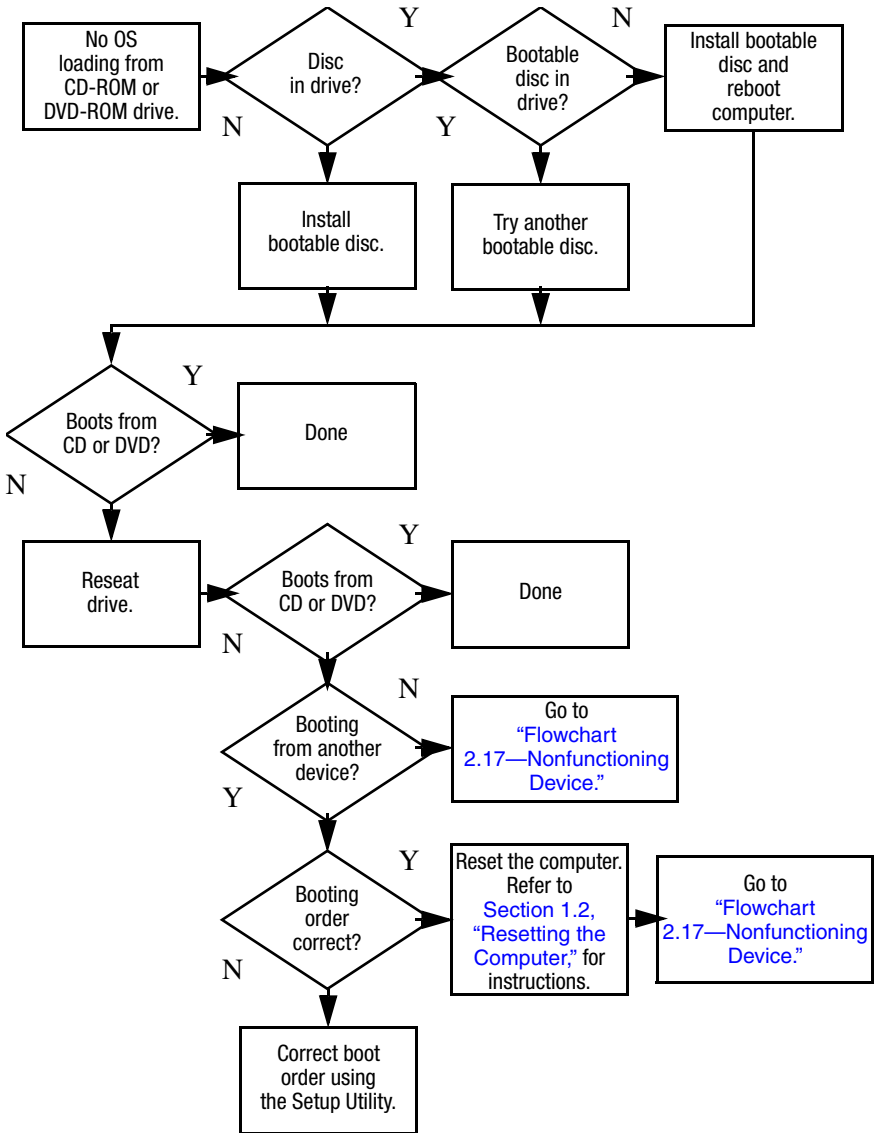
## Flowchart 2.12—No OS Loading, Hard Drive, Part 3



## Flowchart 2.13—No OS Loading, Diskette Drive

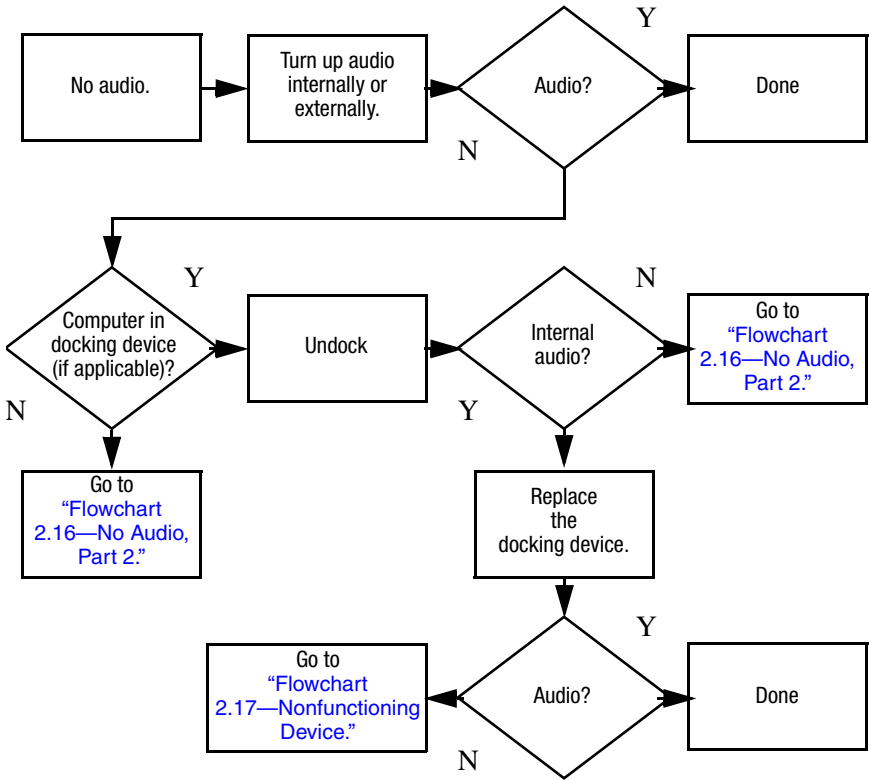


## Flowchart 2.14—No OS Loading, Optical Drive

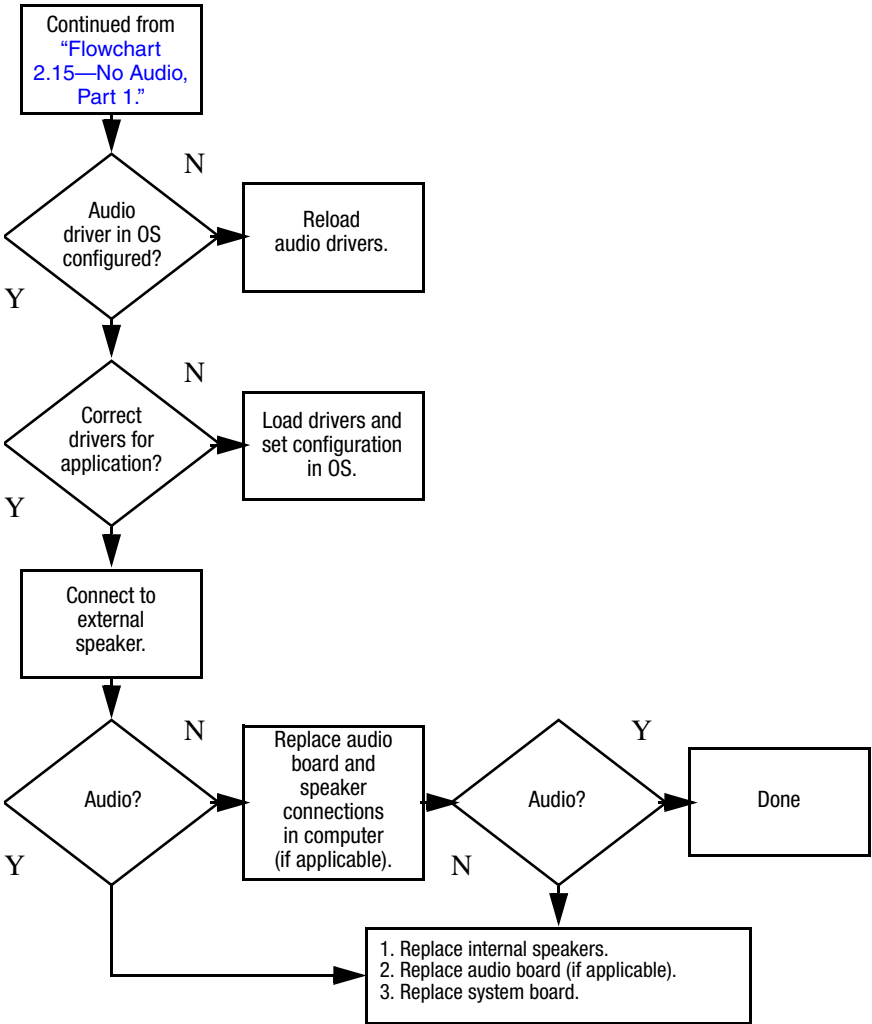




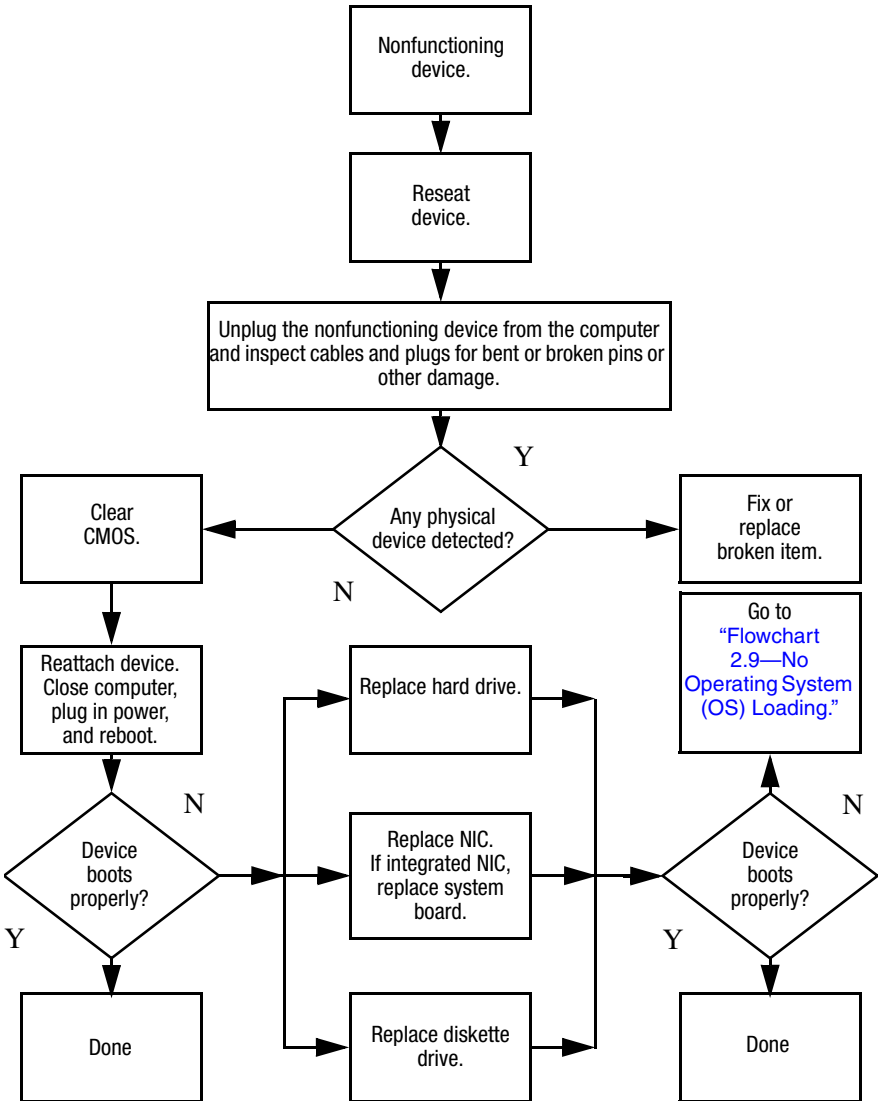
## Flowchart 2.15—No Audio, Part 1



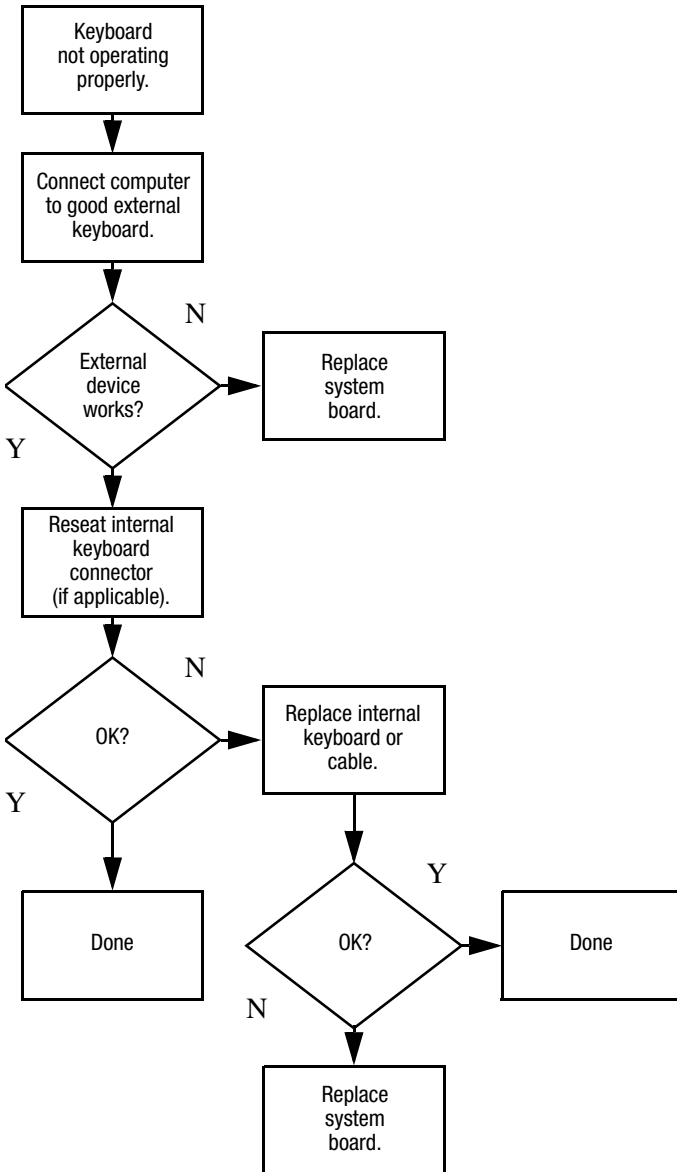
## Flowchart 2.16—No Audio, Part 2



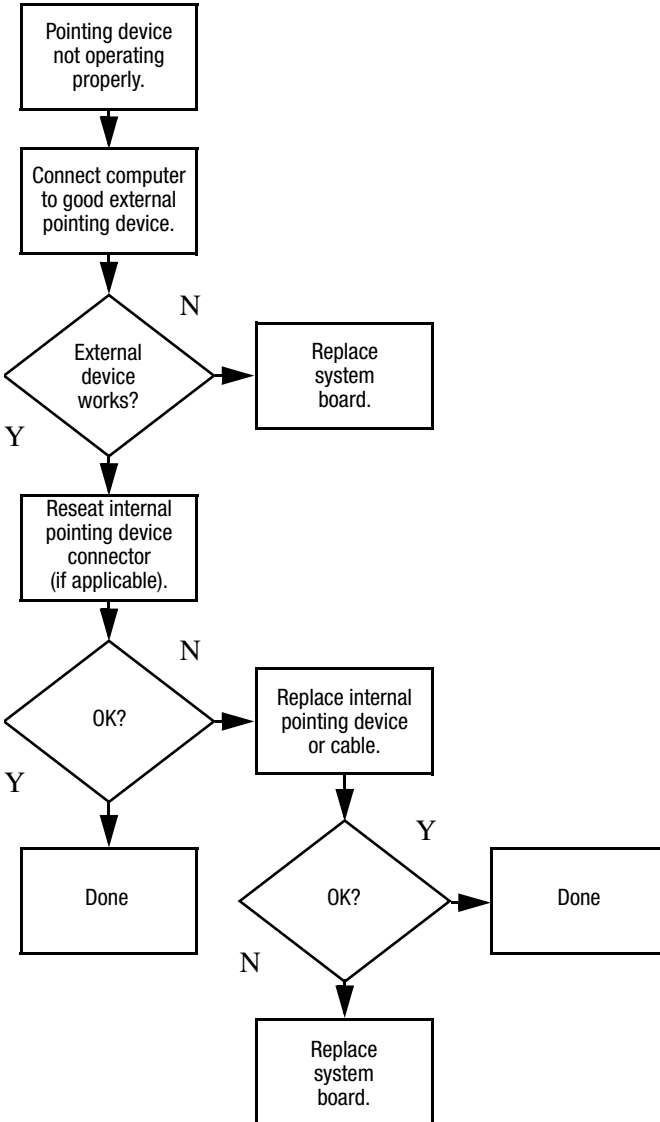
## Flowchart 2.17—Nonfunctioning Device



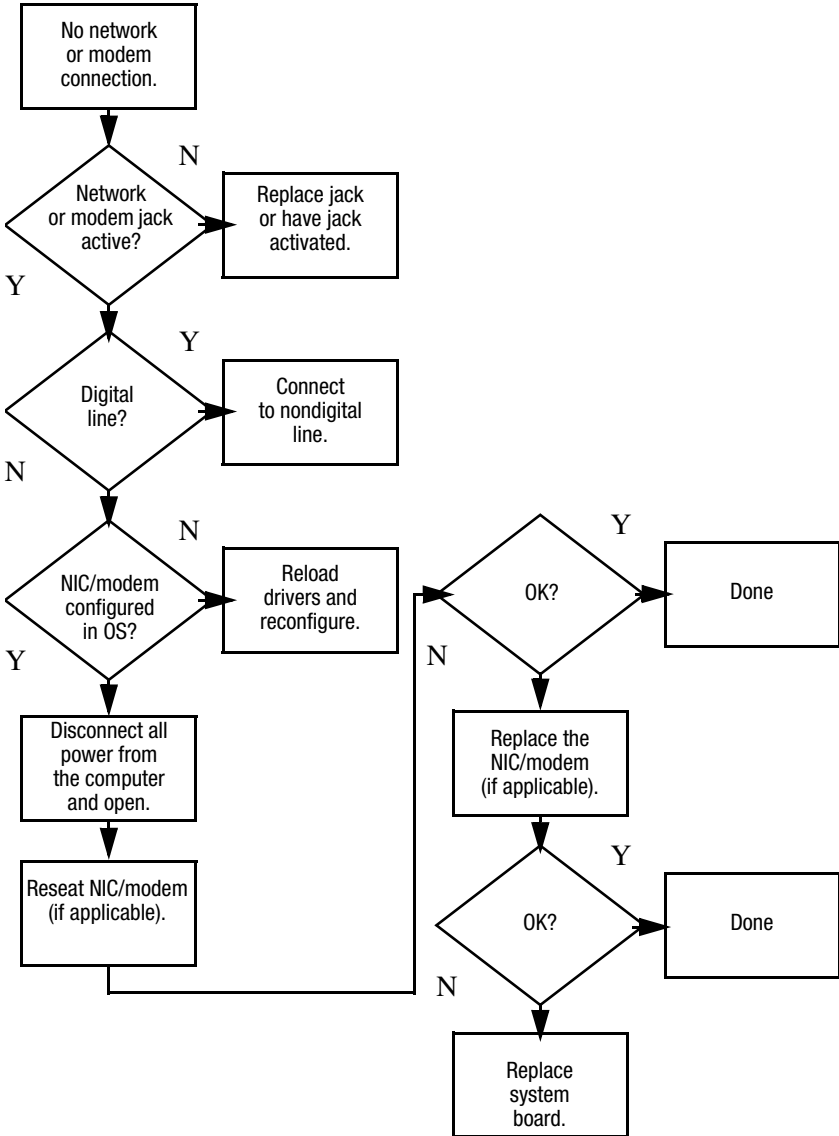
## Flowchart 2.18—Nonfunctioning Keyboard



## Flowchart 2.19—Nonfunctioning Pointing Device



## Flowchart 2.20—No Network/Modem Connection



---

# Software Updates and Recovery

## 3.1 Software Updates

To stay current with the newest technology and maintain optimal performance, install the latest versions of HP software on your computer as they become available.

To update HP software:

1. Identify your computer model, product category, and series or family. Prepare for a system ROM update by identifying the ROM version currently installed on the computer. For more information, refer to “[Accessing Computer Information](#).”



**CAUTION:** If your computer is connected to a network, it is recommended that you consult with your network administrator before installing any software updates, especially system ROM updates.

---



The computer system ROM stores the BIOS software. The BIOS initializes the operating system, determines how the computer will interact with the hardware devices, and provides for data transfer among hardware devices, including the time and date.

---

2. Access the updates through the HP Web site (<http://www.hp.com>) or the *Support Software* CD (purchased separately). For information about obtaining the *Support Software* CD, refer to “[Obtaining the Support Software CD](#).”
3. Install the updates.

## Accessing Computer Information

Before you access the updates for your computer, collect the following information:

- The product *category* is Notebook.
- The product *family* name and *series* number are printed on the display bezel.
- *Model* information is provided on the serial number label on the bottom of the computer.

To determine whether available ROM updates contain later ROM versions than those currently installed on the computer, you need to know the version of the system ROM currently installed.

ROM version information (also known as ROM date and System BIOS) can be displayed by pressing **fn+esc** (if you are already in Microsoft Windows) or by opening Computer Setup.

To use Computer Setup for displaying ROM information:

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 > System Information**, and then press **enter**.  
ROM date information is displayed.
3. To exit Computer Setup, use the arrow keys to select **File > Ignore changes and exit**. Then follow the instructions on the screen.



## Obtaining the Support Software CD

The *Support Software* CD provides HP software updates and installation instructions. The CD includes device drivers, ROM updates, and utilities.

To purchase the current *Support Software* CD or a subscription that provides both the current version and future versions of the CD, visit the HP Web site at <http://www.hp.com>.

## Software Updates and the HP Web Site

Most software on the HP Web site is packaged in compressed files called *SoftPaqs*. Some ROM updates may be packaged in compressed files called *ROMPaqs*.

Most download packages contain a file named *Readme.txt*. A *Readme.txt* file contains information regarding installing and troubleshooting the file. The *Readme.txt* files included with *ROMPaqs* are provided in English only.

## Downloading a ROM Update


---



**CAUTION:** To prevent damage to the computer or an unsuccessful installation, download and install a ROM update only when the computer is connected to reliable external power using the AC adapter. Do not download or install a ROM update while the computer is running on battery power, docked in an optional docking device, or connected to an optional power source. During the download and installation:

- Do not disconnect power from the computer by unplugging the power cord from the AC outlet.
  - Do not shut down the computer or initiate standby or hibernation.
  - Do not insert, remove, connect, or disconnect any device, cable, or cord.
- 

To download a ROM update:

1. Access the page on the HP Web site that provides software for your computer:
  - ❑ Select **Start > Help and Support**, and then click a software update link.
  - or –
  - ❑ Visit the HP Web site at <http://www.hp.com/support>.
2. Follow the instructions on the screen to identify your computer and access the ROM update you want to download.
3. At the download area:
  - a. Identify the ROM update that is later than the ROM version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
  - b. Follow the instructions on the screen to download your selection to the hard drive.
    -  Make a note of the path to the location on your hard drive where the ROM package will be downloaded. You may need to access the ROM package after it has been downloaded.

## Installing a ROM Update

---



If your computer is connected to a network, it is recommended that you consult with your network administrator before installing any software updates, especially system ROM updates.

---

ROM installation procedures vary. Follow any instructions that are displayed on the screen after the download is complete. If no instructions are displayed:

To install a ROM update:

1. Open Windows Explorer by selecting **Start > All Programs > Accessories > Windows Explorer**.
2. In the left pane of the Windows Explorer window:
  - a. Click **My Computer** and then your hard drive designation. (The hard drive designation is typically Local Disk C.)
  - b. Open the folder on your hard drive that contains the update.



Follow the path you made a note of before you downloaded the update.

3. Double-click the file with an .exe extension (for example, filename.exe).

The ROM installation begins.

4. Complete the installation by following the instructions on the screen.




After a message on the screen reports a successful installation, you may delete the downloaded file from your hard drive.

---

## Downloading Other Software

To download and install software other than a ROM update:

1. Access the page on the HP Web site that provides software for your computer:
  - ❑ Select **Start > Help and Support**, and then click a software update link.
  - or –
  - ❑ Visit the HP Web site at <http://www.hp.com/support> and click **Download drivers and software** to download the software for your computer model.
2. Follow the instructions on the screen to find the software you want to update.
3. At the download area, select the software you want and follow the download instructions on the Web page.
  -  Make a note of the path to the location on your hard drive where the ROM package will be downloaded. You may need to access the ROM package after it has been downloaded.
4. When the download is complete, open Windows Explorer by selecting **Start > All Programs > Accessories > Windows Explorer**.

5. In the left pane of the **Windows Explorer** window, click **My Computer** and then your hard drive designation. (The hard drive designation is typically Local Disk C.)



Follow the path you made a note of earlier to the folder on your hard drive that contains the update.

6. Open the folder and double-click the file with an .exe extension (for example, filename.exe).

The installation begins.

7. Complete the installation by following the instructions on the screen.



After a message on the screen reports a successful installation, you may delete the download package from your hard drive.

---

## 3.2 System Recovery

The computer system recovery process provides several ways to recover optimal system functionality. For best results, attempt to recover optimal computer functionality by using the following procedures *in the order described here*.

### Safeguarding Your Data

Software or devices added to the computer can cause your system to become unstable. To safeguard your documents, store personal files in the My Documents folder and periodically create a backup copy of the My Documents folder.

### Altiris Local Recovery

Altiris Local Recovery is a preloaded application that protects the files on your computer by storing copies of files, called *snapshots*. If files on your computer are accidentally deleted or corrupted, you can easily restore the files yourself. You can also restore your complete file system to a previous state.

Altiris Local Recovery provides protection of files by backing up files to a hidden Altiris recovery partition. When you install the software, the Recovery Agent Partition Wizard guides you through the process of creating the recovery partition. After the partition is created, the computer restarts and creates the first snapshot. After the snapshot is created, the computer restarts, making the snapshot available for recovery through Windows.

By default, Local Recovery automatically takes snapshots of your files on a regular basis. You can change the snapshot schedule. For more information, refer to the Altiris Local Recovery Help.

To access your snapshots in the Altiris Recovery Agent folder:

1. Right-click the Altiris Recovery Agent icon on your desktop.
2. Click **Open**.

To restore one of the listed snapshots, drag the snapshot file to the appropriate location on your hard drive.

For more information on configuring and using Altiris Local Recovery, visit the HP Web site at <http://www.hp.com/go/easydeploy>, or open the software and click **Help** on the menu bar.

## Using System Restore Points

System Restore is an operating system feature that allows you to reverse undesirable changes to your computer by restoring the computer to an earlier state, called a *restore point*. A restore point is a “snapshot” of your software, drivers, and operating system files at a particular time. The computer automatically creates restore points at regular intervals and may create additional restore points when you change your personal settings or add software or hardware.

You can manually create additional restore points to provide increased protection for your system files and settings. It is recommended that you manually create restore points

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

Restoring to any restore point does not affect your data files. For example, restoring your system software to an earlier state will not affect documents or e-mails that you saved after that time.



If you do not like the results of your restoration, you can reverse the restoration.

---

## Creating a System Restore Point

To create a system restore point:

1. Select **Start > Help and Support**.
2. Click **System Restore**.  
The System Restore window opens.
3. Click **Create a restore point**, and then click **Next**.
4. Follow the on-screen instructions.

## Restoring to a Restore Point

To restore the computer to a previous date and time when it was functioning optimally:

1. Select **Start > Help and Support**.
2. Click **System Restore**.  
The System Restore window opens.
3. Click **Restore my computer to an earlier time**, and then click **Next**.
4. Follow the on-screen instructions.



## Reinstalling Applications

Applications preinstalled or preloaded on your computer can be reinstalled by using the *Recovery* disc or a third-party software disc.



In most cases, the applications preloaded on your computer, such as those available in the Software Setup Utility, can be reinstalled from your hard drive. To access the Software Setup Utility, select **Start > All Programs > Software Setup**.

---

The application reinstallation process replaces corrupted system files within the application and reinstalls deleted system files within the application.

- In most cases: If the application you are reinstalling is still installed on your computer, the reinstallation process does not affect your settings within the application.
- In all cases: If an application has been deleted from your computer, the reinstallation process reinstalls the application or utility to the factory image but cannot restore your personal settings.

## Reinstalling Applications from the Hard Drive

To reinstall a preloaded application or utility from your hard drive:

1. Select **Start > All Programs > Software Setup**, and then follow the instructions on the screen.
2. When you are prompted to select the software you want to reinstall, select or clear the appropriate check boxes.

## Reinstalling Applications from Discs

To reinstall applications from discs:

1. Insert the disc into the optical drive.
  - If autorun is enabled, an installation wizard opens.
  - If autorun is disabled, select **Start > Run**. Enter  
x:\setup.exe  
where *x* is your optical drive designation  
and then select **OK**.
2. When the installation wizard opens, follow the installation instructions on the screen.
3. Restart the computer if prompted.

## Repairing the Operating System

To attempt an operating system repair without deleting your personal data, use the *Operating System* disc that was shipped with the computer:



If your computer does not have an optical drive, you may need to connect to an optional external MultiBay.

---

1. Connect the computer to external power through the AC adapter and turn on the computer.
2. Immediately insert the *Operating System* disc into the computer.
3. Press and hold the power button for at least 5 seconds to turn off the computer.
4. Press the power button again to turn on the computer.
5. When prompted, press any key to start from the disc.

After a few minutes, you may need to select your language, and then the Setup Wizard opens.



On the “Welcome to Setup” page, do not press **R** (step 8 in this procedure) until you have completed steps 6 and 7.

6. Press **enter** to continue.

A licensing agreement page is displayed.

7. Press **f8** to accept the agreement and continue.

The “Setup” page is displayed.

8. Press **R** to repair the selected Windows installation.

The repair process begins. This process takes 1 to 2 hours to complete.

The computer restarts in Windows after the process is complete.

## Reinstalling the Operating System



**CAUTION:** To protect your personal data and the software installed on the computer, back up your data before reinstalling the operating system. See the Windows online Help utility to learn more about backing up your files. Select **Start > Help and Support**. Then type “backup” in the Search box.

---



During the reinstallation, you may be prompted for your Product Key. Your Product Key is provided on the Microsoft Certificate of Authenticity label on the bottom of the computer.

---

If other recovery efforts do not successfully repair the operating system, you can reinstall it.

To reinstall the operating system:


---



If your computer does not have an optical drive, you may need to connect to an optional external MultiBay.

---

1. Connect the computer to external power through the AC adapter and turn on the computer.
2. Immediately insert the *Operating System* disc into the computer.
3. Press and hold the power button for at least 5 seconds to turn off the computer.

4. Press the power button again to turn on the computer.
  5. When prompted, press any key to start from the disc.  
After a few minutes, you may need to select your language, and then the Setup Wizard opens.
  6. Press **enter** to continue.  
A licensing agreement page is displayed.
  7. Press **f8** to accept the agreement and continue.  
The “Setup” page is displayed.
  8. Press **esc** to continue installing a new copy of the operating system instead of repairing it.
  9. Press **enter** to set up the operating system.
  10. Press **C** to continue setup using this partition.
  11. Select **Format the partition using the NTFS file system (Quick)**, and then press **enter**.  
 Formatting this drive deletes all current files.
  12. Press **F** to format the drive.  
The reinstallation process begins. This process takes 1 to 2 hours to complete.
- The computer restarts in Windows when the process is complete.

## Reinstalling Device Drivers and Other Software

After the operating system installation process is complete, you must reinstall drivers.

To reinstall drivers, use the *Recovery* disc included with the computer:

1. While running Windows, insert the *Recovery* disc into the optical drive.
2. If you do not have autorun enabled:
  - a. Select **Start > Run**.
  - b. Then type `D:\SWSETUP\APPINSTL\SETUP.EXE`  
where *D* indicates the optical drive.
3. Follow the on-screen instructions for installing the drivers.

After the drivers are reinstalled, you must reinstall any software you added to the computer. Follow the installation instructions provided with the software.

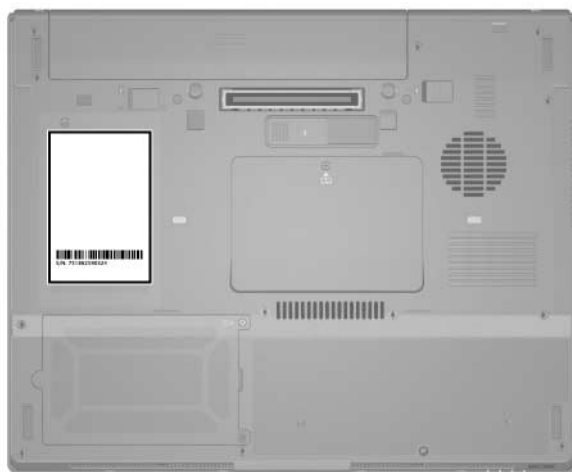
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# Illustrated Parts Catalog

This chapter provides an illustrated parts breakdown and a reference for spare part numbers.

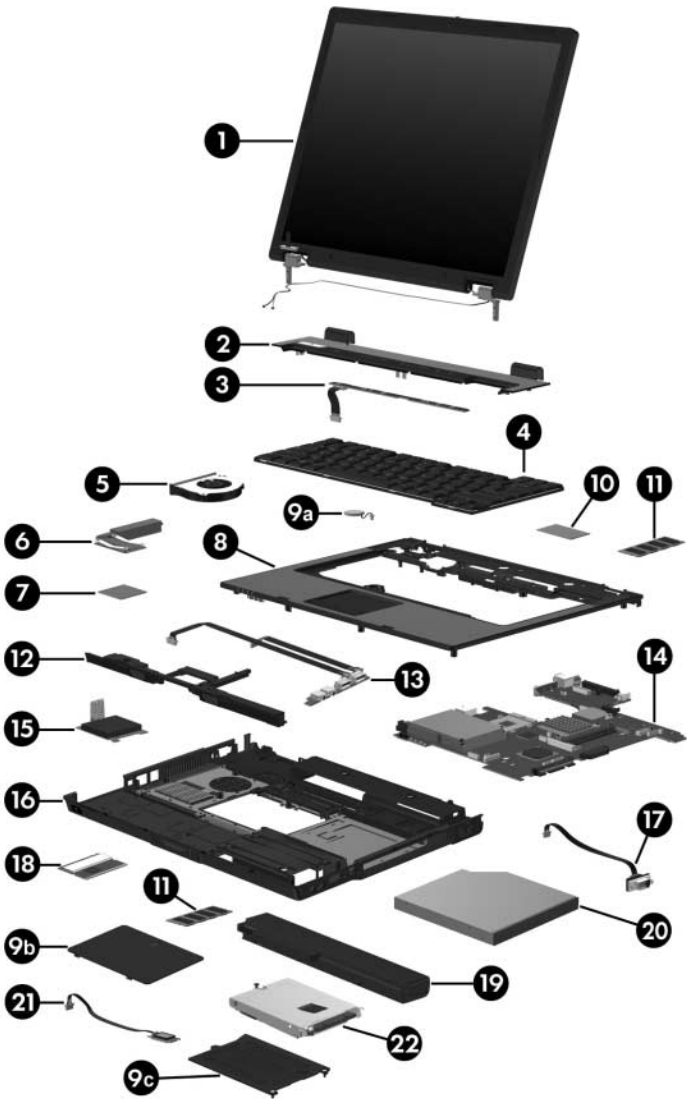
## 4.1 Serial Number Location

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



*Serial Number Location*

## 4.2 Computer Major Components

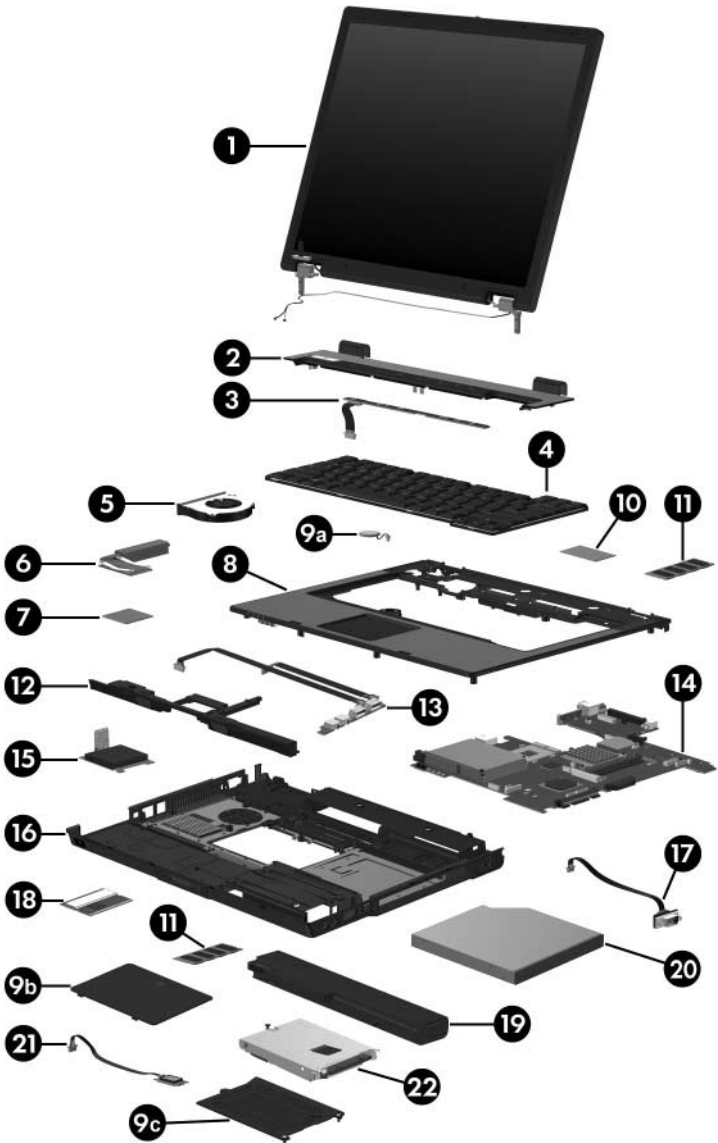


Computer Major Components



**Table 3-1**  
**Spare Parts: Computer Major Components**

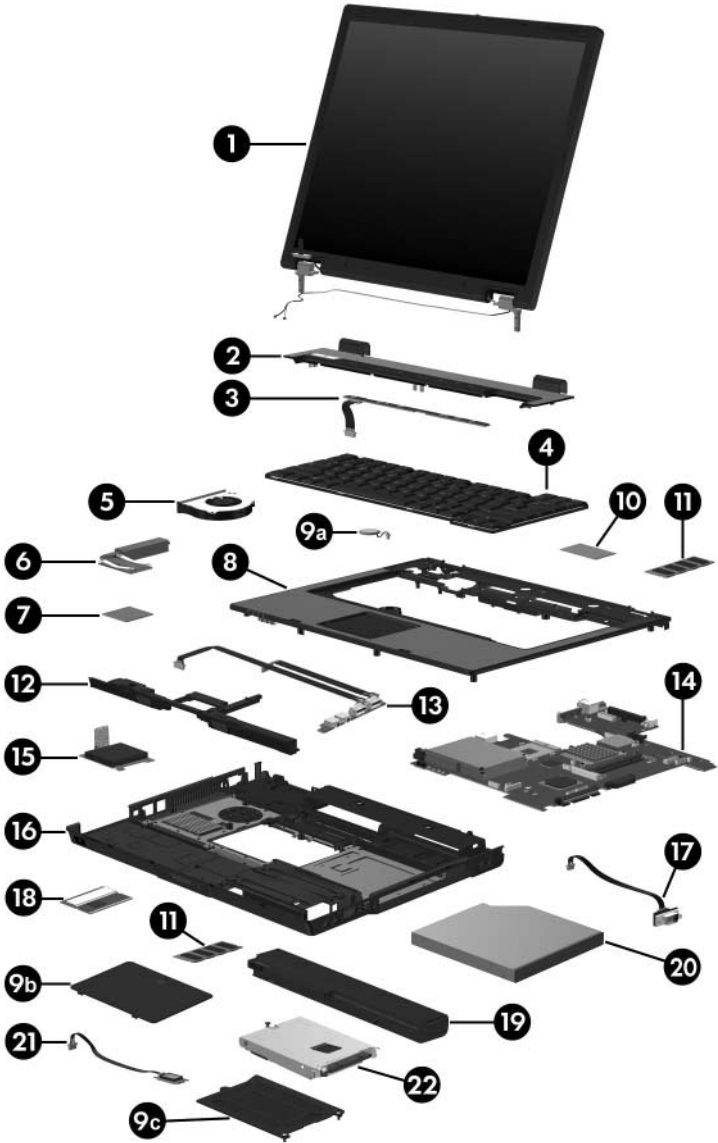
| <b>Item</b> | <b>Description</b>   | <b>Spare Part Number</b> |
|-------------|--|--------------------------|
| 1           | <b>Display assemblies</b> (include wireless antenna boards and cables)                       |                          |
|             | 15.0-inch, SXGA+WVA, TFT   | 378210-001               |
|             | 15.0-inch, XGA, TFT  | 378209-001               |
|             | 14.1-inch, XGA, TFT  | 378208-001               |
| 2           | <b>Switch covers</b>   |                          |
|             | For use with full-featured models  | 378232-001               |
|             | For use with defeatured models   | 378242-001               |
| 3           | <b>LED board</b> (for use only with full-featured models; includes LED board cable)          | 378228-001               |
| 4           | <b>Keyboards</b>   |                          |
|             | For use with computer models with Dual Stick (Pointing Stick and TouchPad) pointing devices: |                          |
|             | Brazil   | 398609-201               |
|             | Czech Republic   | 398609-221               |
|             | Denmark  | 398609-081               |
|             | France   | 398609-051               |
|             | French Canada  | 398609-121               |
|             | Germany  | 398609-041               |
|             | Greece   | 398609-151               |
|             | Hungary  | 398609-211               |
|             | Iceland  | 398609-DD1               |
|             | International  | 398609-002               |
|             | Israel   | 398609-BB1               |
|             | Italy  | 398609-061               |
|             | Japan  | 398609-291               |
|             | Korea  | 398609-AD1               |
|             | Latin America  | 398609-161               |
|             | Norway   | 398609-091               |
|             | Portugal   | 398609-131               |
|             | Russia   | 398609-251               |
|             | Saudi Arabia   | 398609-171               |
|             | Slovakia   | 398609-231               |
|             | Slovenia   | 398609-BA1               |
|             | Spain  | 398609-071               |
|             | Sweden   | 398609-101               |
|             | Switzerland  | 398609-111               |
|             | Taiwan   | 398609-AB1               |
|             | Thailand   | 398609-281               |
|             | Turkey   | 398609-141               |
|             | United Kingdom   | 398609-031               |
|             | United States  | 398609-001               |



Computer Major Components

**Table 3-1****Spare Parts: Computer Major Components (Continued)**

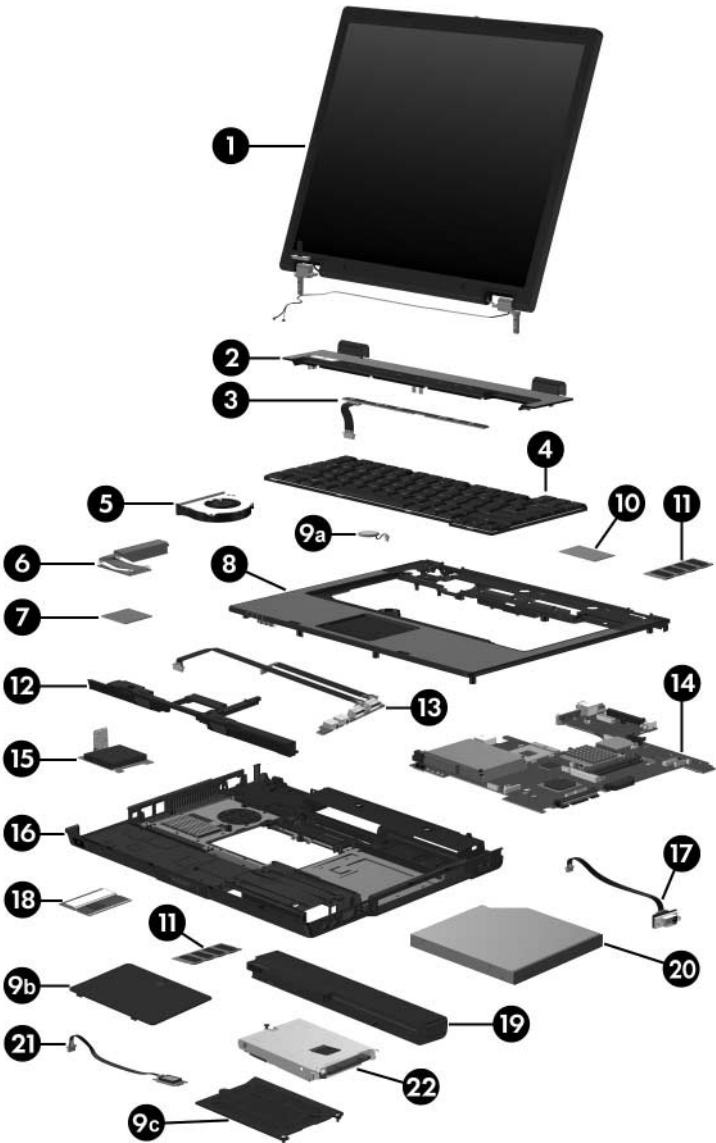
| <b>Item</b> | <b>Description</b>  | <b>Spare Part Number</b> |                |            |
|-------------|---|--------------------------|----------------|------------|
| 4           | <b>Keyboards</b> (Continued)                                      |                          |                |            |
|             | For use with computer models with TouchPad only pointing devices: |                          |                |            |
|             | Belgium   | 378248-181               | Latin America  | 378248-161 |
|             | Brazil  | 378248-201               | Norway         | 378248-091 |
|             | Czech Republic  | 378248-221               | Portugal       | 378248-131 |
|             | Denmark   | 378248-081               | Russia         | 378248-251 |
|             | France  | 378248-051               | Saudi Arabia   | 378248-171 |
|             | French Canada   | 378248-121               | Slovakia       | 378248-231 |
|             | Germany   | 378248-041               | Slovenia       | 378248-BA1 |
|             | Greece  | 378248-151               | Spain          | 378248-071 |
|             | Hungary   | 378248-211               | Sweden         | 378248-101 |
|             | Iceland   | 378248-DD1               | Switzerland    | 378248-111 |
|             | International   | 378248-002               | Taiwan         | 378248-AB1 |
|             | Israel  | 378248-BB1               | Thailand       | 378248-281 |
|             | Italy   | 378248-061               | Turkey         | 378248-141 |
|             | Japan   | 378248-291               | United Kingdom | 378248-031 |
|             | Korea   | 378248-AD1               | United States  | 378248-001 |
| 5           | <b>Fan</b>  | 378233-001               |                |            |
| 6           | <b>Heat sink</b> (includes thermal paste)                         | 379799-001               |                |            |



Computer Major Components

**Table 3-1**  
**Spare Parts: Computer Major Components (Continued)**

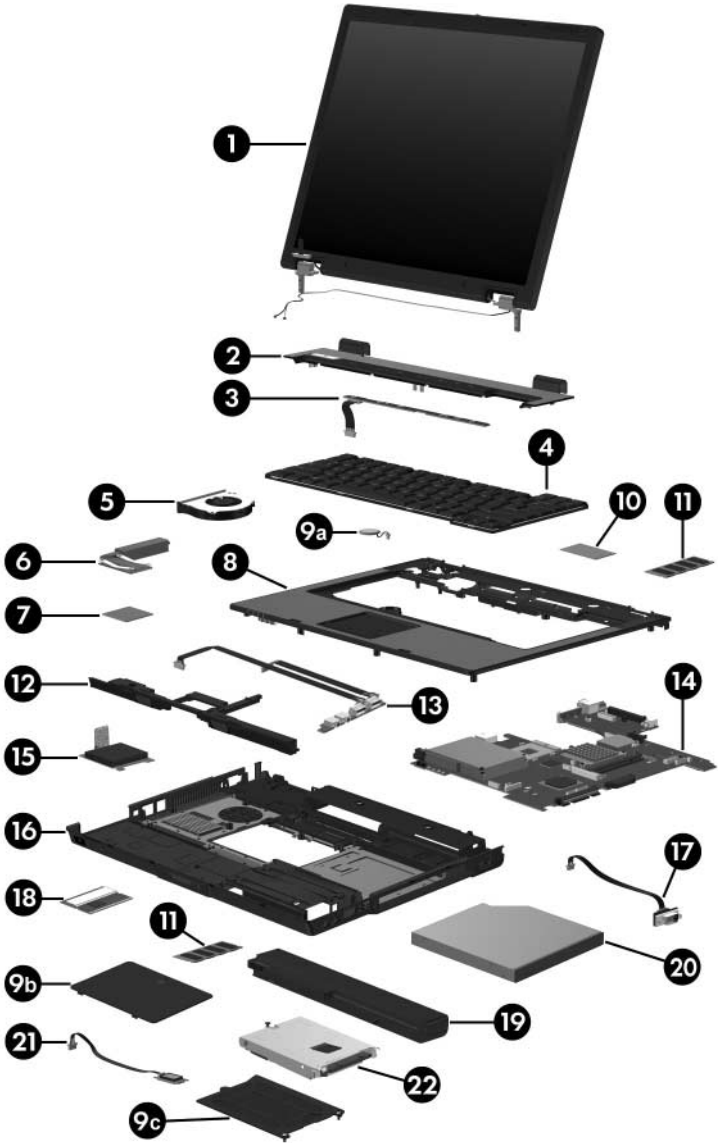
| <b>Item</b> | <b>Description</b>   | <b>Spare Part Number</b> |
|-------------|--|--------------------------|
| 7           | <b>Processors</b> (include thermal paste)  |                          |
|             | Intel Pentium M 2.13-GHz   | 378224-001               |
|             | Intel Pentium M 2.00-GHz   | 378223-001               |
|             | Intel Pentium M 1.86-GHz   | 378222-001               |
|             | Intel Pentium M 1.73-GHz   | 378221-001               |
|             | Intel Pentium M 1.60-GHz   | 378220-001               |
|             | Intel Pentium M 1.30-GHz   | 378219-001               |
|             | Intel Celeron M 1.5-GHz  | 378218-001               |
|             | Intel Celeron M 1.4-GHz  | 378217-001               |
|             | Intel Celeron M 1.3-GHz  | 378216-001               |
| 8           | <b>Top covers</b> (include TouchPad)   |                          |
|             | For use with computer models with Dual Stick (Pointing Stick and TouchPad) pointing devices:               | 399109-001               |
|             | For use with full-featured models  | 378230-001               |
|             | For use with defeatured models   | 378239-001               |
|             | Pointing stick board (not illustrated; for use only with computer models with Dual Stick pointing devices) | 399110-001               |
|             | <b>Miscellaneous Plastics Kit</b>  | 378236-001               |
|             | Includes:  |                          |
| 9a          | RTC battery  |                          |
| 9b          | Memory module/Mini PCI compartment cover (includes 1 captive screw)  |                          |
| 9c          | Hard drive cover (includes 2 captive screws)   |                          |
|             | Not illustrated:   |                          |
|             | Computer feet  |                          |
|             | PC Card slot space savers (2)  |                          |
| 10          | <b>Modem board</b>   | 325521-001               |



Computer Major Components

**Table 3-1**  
**Spare Parts: Computer Major Components (Continued)**

| <b>Item</b> | <b>Description</b>   | <b>Spare Part Number</b> |
|-------------|--|--------------------------|
| 11          | <b>Memory modules</b> (400-MHz DDR2)   |                          |
|             | 1024 MB  | 336579-001               |
|             | 512 MB   | 336578-001               |
|             | 256 MB   | 336577-001               |
|             | 128 MB   | 336576-001               |
| 12          | <b>Speaker</b>   | 378237-001               |
| 13          | <b>USB/audio board</b> (for use only with full-featured models; includes audio board cable, and USB board cable) | 378226-001               |
|             | <b>Audio board</b> (for use only with defeatured models; includes audio board cable)                             | 378241-001               |
| 14          | <b>System boards</b>   |                          |
|             | For use with full-featured models  | 378225-001               |
|             | For use with defeatured models-GML   | 378238-001               |
|             | For use with defeatured models-GM  | 383219-001               |
| 15          | <b>Digital media board</b> (for use only with full-featured models; includes digital media board cable)          | 378229-001               |
| 16          | <b>Base enclosure</b>  |                          |
|             | For use with full-featured models  | 378231-001               |
|             | For use with defeatured models   | 378240-001               |
| 17          | <b>Serial connector module</b> (for use only with full-featured models; includes serial connector board cable)   | 378227-001               |

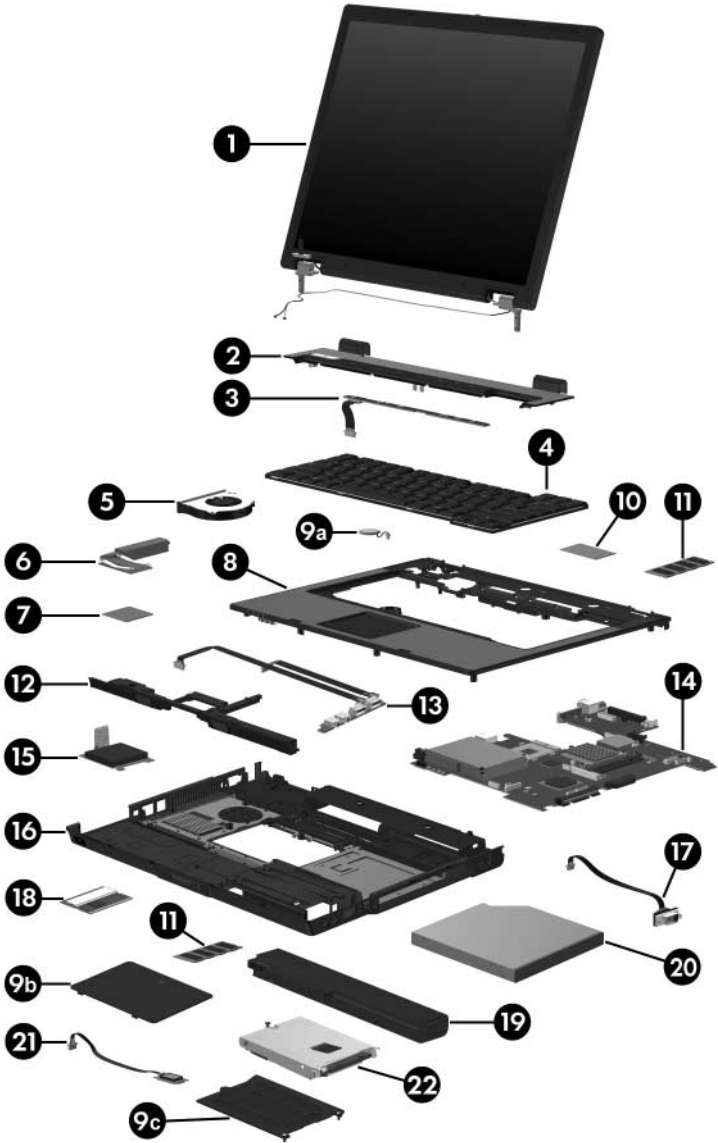


Computer Major Components



**Table 3-1****Spare Parts: Computer Major Components (Continued)**

| <b>Item</b> | <b>Description</b>  | <b>Spare Part Number</b> |
|-------------|---|--------------------------|
| 18          | <b>Mini PCI communications modules</b>                                    |                          |
|             | 802.11b WLAN card, for use in most of the world                           | 381580-001               |
|             | 802.11b WLAN card, for use in the rest of the world                       | 381581-001               |
|             | 802.11b/g WLAN card, for use in most of the world                         | 381582-001               |
|             | 802.11b/g WLAN card, for use in the the rest of the world                 | 381583-001               |
|             | 802.11b/g combination WLAN card, for use internationally                  | 373032-002               |
|             | 802.11b/g combination WLAN card, for use Japan                            | 373032-291               |
|             | 802.11b/g combination WLAN card, for use in the United States             | 373032-001               |
|             | 802.11a/b/g combination WLAN card, for use in Europe, Middle East, Africa | 373900-021               |
|             | 802.11a/b/g combination WLAN Mini PCI communications card for use Japan   | 373900-291               |
|             | 802.11a/b/g combination WLAN card, for use internationally                | 373033-002               |
|             | 802.11a/b/g combination WLAN card, for use Japan                          | 373033-291               |
|             | 802.11a/b/g combination WLAN card, for use in most of the world           | 373900-001               |
|             | 802.11a/b/g combination WLAN card, for use in the United States           | 373033-001               |
|             | 802.11a/b/g High Band combination WLAN card                               | 373901-001               |
| 19          | <b>Battery packs</b>  |                          |
|             | 6-cell, 4.8-AHr   | 367457-001               |
|             | 6-cell, 4.4-AHr   | 372772-001               |
|             | 6-cell, 4.4-AHr   | 383220-001               |
|             | 6-cell, 2.2-AHr   | 364602-001               |

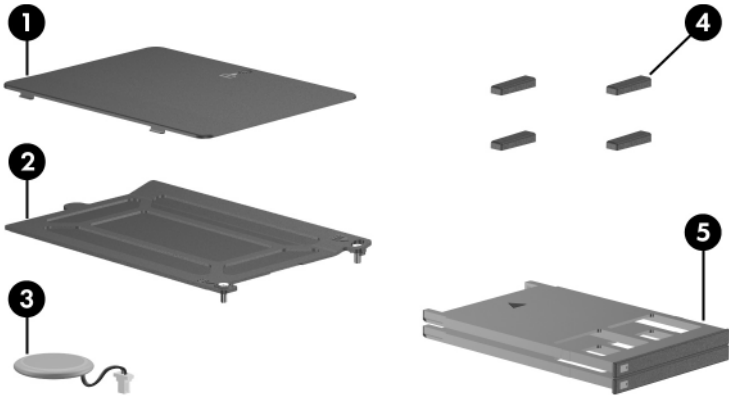


Computer Major Components

**Table 3-1****Spare Parts: Computer Major Components (Continued)**

| <b>Item</b> | <b>Description</b>  | <b>Spare Part Number</b> |       |            |
|-------------|---|--------------------------|-------|------------|
| 20          | <b>Optical drives</b> (include bezel)                                       |                          |       |            |
|             | 24X Max CD-ROM drive  | 380768-001               |       |            |
|             | 8X Max DVD-ROM drive  | 380770-001               |       |            |
|             | 8X Max DVD±RW and CD-RW Combo Drive   | 380773-001               |       |            |
|             | 4X Max DVD±RW and CD-RW Combo Drive   | 380771-001               |       |            |
|             | 2X Max DVD±RW and CD-RW Combo Drive   | 375557-001               |       |            |
|             | DVD/CD-RW Combo Drive   | 380772-001               |       |            |
|             | DVD±RW and CD-RW Double Layer Combo Drive                                   | 398608-001               |       |            |
|             | DVD±RW and CD-RW Combo Drive  | 403093-001               |       |            |
| 21          | <b>Broadcomm Bluetooth® wireless board</b> (includes Bluetooth board cable) | 367871-001               |       |            |
| 22          | <b>Hard drives</b> (include frame and connector)                            |                          |       |            |
|             | 5400-rpm  | 4200-rpm                 |       |            |
|             | 80-GB   | 380108-001               | 80-GB | 378214-001 |
|             | 60-GB   | 378215-001               | 60-GB | 378213-001 |
|             | 40-GB   | 380107-001               | 40-GB | 378212-001 |
|             |   |                          | 30-GB | 378211-001 |

### 4.3 Miscellaneous Plastics Kit



**Table 3-2**  
**Miscellaneous Plastics Kit**  
**Spare Part Number Information**

| Item | Description   | Spare Part Number |
|------|---|-------------------|
|      | <b>Miscellaneous Plastics Kit</b><br>Includes:                      | 378236-001        |
| 1    | Memory module/Mini PCI compartment cover (includes 1 captive screw) |                   |
| 2    | Hard drive cover (includes 2 captive screws)                        |                   |
| 3    | RTC battery   |                   |
| 4    | Computer feet (4)   |                   |
| 5    | PC Card slot space savers (2)                                       |                   |

## 4.4 Miscellaneous Cable Kit



**Table 3-3**

**Miscellaneous Cable Kit  
Spare Part Number Information**

| Item | Description  |
|------|--|
|      | <b>Miscellaneous Cable Kit</b> 381709-001<br>Includes: |
| 1    | Bluetooth board cable                                  |
| 2    | LED board cable  |
| 3    | RJ-11 connector module and cable                       |
| 4    | Audio board cable                                      |
| 5    | USB board cable  |
| 6    | Serial connector module cable                          |

## **4.5 Mass Storage Devices**



**Table 3-4**  
**Mass Storage Devices**  
**Spare Part Number Information**

| Item | Description                                      | Spare Part Number |
|------|--|-------------------|
| 1    | <b>Hard drives</b> (include frame and connector) |                   |
|      | 5400-rpm   | 4200-rpm          |
|      | 80-GB  | 380108-001        |
|      | 60-GB  | 378215-001        |
|      | 40-GB  | 380107-001        |
|      |  | 80-GB             |
|      |  | 60-GB             |
|      |  | 40-GB             |
|      |  | 30-GB             |
|      |  | 378214-001        |
|      |  | 378213-001        |
|      |  | 378212-001        |
|      |  | 378211-001        |
| 2    | <b>Optical drives</b> (include bezel)            |                   |
|      | 24X Max CD-ROM drive                             | 380768-001        |
|      | 8X Max DVD-ROM drive                             | 380770-001        |
|      | 8X Max DVD±RW and CD-RW Combo Drive              | 380773-001        |
|      | 4X Max DVD±RW and CD-RW Combo Drive              | 380771-001        |
|      | 2X Max DVD±RW and CD-RW Combo Drive              | 375557-001        |
|      | DVD/CD-RW Combo Drive                            | 380772-001        |
|      | DVD±RW and CD-RW Double Layer Combo Drive        | 398608-001        |
|      | DVD±RW and CD-RW Combo Drive                     | 403093-001        |

## 4.6 Miscellaneous (Not Illustrated)

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**Table 3-5**  
**Miscellaneous (Not Illustrated)**  
**Spare Part Information**

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| <b>Description</b>                                    | <b>Spare Part Number</b>        |
|---|---------------------------------|
| <b>65 watt AC adapter</b>                             | 239704-001                      |
| <b>HP Advanced Docking Station</b>                    | 374804-001                      |
| <b>HP Docking Station</b>                             | 374803-001                      |
| <b>Docking Device Miscellaneous Plastics Kit</b>      | 380089-001                      |
| <b>Carrying cases</b>                                 |                                 |
| Nylon top load  | 325815-001<br>and<br>325815-002 |
| Nylon entry-level                                     | 325814-001                      |
| <b>External MultiBay cradle</b>                       | 366143-001                      |
| <b>External MultiBay cradle power cable and stand</b> | 366144-001                      |
| <b>MultiBay 24X DVD/CD-RW Combo Drive</b>             | 373315-001                      |
| <b>MultiBay 8X DVD-ROM Drive</b>                      | 373314-001                      |
| <b>MultiBay hard drive, 80-GB, 5400-rpm</b>           | 375198-001                      |
| <b>8-cell travel battery</b>                          | 367456-001                      |
| <b>USB 1.1 diskette drive</b>                         | 359118-001                      |

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**Table 3-5**  
**Miscellaneous (Not Illustrated)**  
**Spare Part Information (Continued)**

| Description  | Spare Part Number  |
|--|--|
| <b>Screw Kit</b> (includes the following screws; refer to <a href="#">Appendix C, "Screw Listing,"</a> for more information on specifications and usage)   | 378235-001   |
| <ul style="list-style-type: none"> <li>■ Hex socket HM5.0x9.0 screw lock</li> <li>■ Phillips PM2.5x13.0 spring-loaded screw</li> <li>■ Phillips PM2.5x4.0 shoulder screw</li> <li>■ Phillips PM2.5x4.0 screw</li> <li>■ Phillips PM2.0x8.0 shoulder screw</li> <li>■ Phillips PM2.0x7.0 screw</li> </ul> | <ul style="list-style-type: none"> <li>■ Phillips PM2.0x4.0 screw</li> <li>■ Phillips PM2.0x3.0 screw</li> <li>■ Phillips PM1.5x4.0 screw</li> <li>■ Phillips PM1.5x3.5 screw</li> <li>■ Torx8 T8M2.0x9.0 screw</li> <li>■ Torx8 T8M2.0x4.0 screw</li> <li>■ Torx8 T8M2.0x2.0 screw</li> </ul> |

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**Table 3-5**  
**Miscellaneous (Not Illustrated)**  
**Spare Part Information (*Continued*)**

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| <b>Description</b>  | <b>Spare Part Number</b> |
|---|--------------------------|
| <b>Power cords</b>  |                          |
| For use in:   |                          |
| Australia and New Zealand   | 246959-011               |
| Belgium, Europe, Finland, France, Germany, Greece, the Netherlands, Norway, Portugal, Spain, and Sweden | 246959-021               |
| Brazil  | 246959-201               |
| Canada, French Canada, Latin America, Taiwan, Thailand, and the United States                           | 246959-001               |
| Denmark   | 246959-081               |
| Hong Kong and the United Kingdom  | 246959-031               |
| Israel  | 246959-BB1               |
| Italy   | 246959-061               |
| Japan   | 246959-291               |
| Korea   | 246959-AD1               |
| Sweden  | 246959-AG1               |

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## 4.7 Sequential Part Number Listing

**Table 3-6**  
**Sequential Part Number Listing**

| <b>Spare Part Number</b> | <b>Description</b>  |
|--------------------------|---|
| 239704-001               | 65-watt AC adapter  |
| 246959-001               | Power cord for use in Canada, French Canada, Latin America, Taiwan, Thailand, and the United States                           |
| 246959-011               | Power cord for use in Australia and New Zealand   |
| 246959-021               | Power cord for use in Belgium, Europe, Finland, France, Germany, Greece, the Netherlands, Norway, Portugal, Spain, and Sweden |
| 246959-031               | Power cord for use in Hong Kong and the United Kingdom  |
| 246959-061               | Power cord for use in Italy   |
| 246959-081               | Power cord for use in Denmark   |
| 246959-201               | Power cord for use in Brazil  |
| 246959-291               | Power cord for use in Japan   |
| 246959-AD1               | Power cord for use in Korea   |
| 246959-AG1               | Power cord for use in Sweden  |
| 246959-BB1               | Power cord for use in Israel  |
| 325521-001               | Modem board   |
| 325814-001               | Nylon entry-level carrying case   |
| 325815-001               | Nylon top load carrying case  |
| 325815-002               | Nylon top load carrying case  |
| 336576-001               | 128-MB memory module, 400-MHz DDR2  |
| 336577-001               | 256-MB memory module, 400-MHz DDR2  |
| 336578-001               | 512-MB memory module, 400-MHz DDR2  |

**Table 3-6**  
**Sequential Part Number Listing (*Continued*)**

| <b>Spare Part Number</b> | <b>Description</b>  |
|--------------------------|---|
| 336579-001               | 1024-MB memory module, 400-MHz DDR2   |
| 359118-001               | USB 1.1 diskette drive  |
| 364602-001               | 6-cell, 2.2-AHr battery pack  |
| 366143-001               | External MultiBay cradle  |
| 366144-001               | External MultiBay cradle power cable and stand  |
| 367456-001               | 8-cell travel battery   |
| 367457-001               | 6-cell, 4.8-AHr battery pack  |
| 367871-001               | Broadcomm Bluetooth wireless board, includes cable  |
| 372772-001               | 6-cell, 4.4-AHr battery pack  |
| 373032-001               | 802.11b/g combination WLAN Mini PCI communications card for use in the United States        |
| 373032-002               | 802.11b/g combination WLAN Mini PCI communications card for use internationally             |
| 373032-291               | 802.11b/g combination WLAN Mini PCI communications card for use Japan                       |
| 373033-001               | 802.11a/b/g combination WLAN card Mini PCI communications card for use in the United States |
| 373033-002               | 802.11a/b/g combination WLAN Mini PCI communications card for use internationally           |
| 373033-291               | 802.11a/b/g combination WLAN Mini PCI communications card for use in Japan                  |
| 373314-001               | MultiBay 8X DVD-ROM Drive   |
| 373315-001               | MultiBay 24X DVD/CD-RW Combo Drive  |
| 373900-001               | 802.11a/b/g combination WLAN card Mini PCI communications card for use in most of the world |

**Table 3-6**  
**Sequential Part Number Listing (*Continued*)**

| <b>Spare Part Number</b> | <b>Description</b>  |
|--------------------------|---|
| 373900-021               | 802.11a/b/g combination WLAN Mini PCI communications card for use Europe, Middle East, and Africa |
| 373900-291               | 802.11a/b/g combination WLAN Mini PCI communications card for use Japan                           |
| 373901-001               | 802.11a/b/g High Band combination WLAN Mini PCI communications card                               |
| 374803-001               | HP Docking Station  |
| 374804-001               | HP Advanced Docking Station   |
| 375198-001               | MultiBay hard drive, 80-GB, 5400-rpm  |
| 375557-001               | 2X Max DVD±RW and CD-RW Combo Drive, includes bezel   |
| 378208-001               | 14.1-inch, XGA, TFT, display assembly, includes wireless antenna boards and cables                |
| 378209-001               | 15.0-inch, XGA, TFT, display assembly, includes wireless antenna boards and cables                |
| 378210-001               | 15.0-inch, SXGA+WVA, TFT display assembly, includes wireless antenna boards and cables            |
| 378211-001               | 30-GB hard drive, 4200-rpm, includes frame and connector  |
| 378212-001               | 40-GB hard drive, 4200-rpm, includes frame and connector  |
| 378213-001               | 60-GB hard drive, 4200-rpm, includes frame and connector  |
| 378214-001               | 80-GB hard drive, 4200-rpm, includes frame and connector  |
| 378215-001               | 60-GB hard drive, 5400-rpm, includes frame and connector  |
| 378216-001               | Intel Celeron M 1.3-GHz processor, includes thermal paste   |
| 378217-001               | Intel Celeron M 1.4-GHz processor, includes thermal paste   |
| 378218-001               | Intel Celeron M 1.5-GHz processor, includes thermal paste   |
| 378219-001               | Intel Pentium M 1.30-GHz processor, includes thermal paste  |

**Table 3-6**  
**Sequential Part Number Listing (*Continued*)**

| <b>Spare Part Number</b> | <b>Description</b>  |
|--------------------------|---|
| 378220-001               | Intel Pentium M 1.60-GHz processor, includes thermal paste  |
| 378221-001               | Intel Pentium M 1.73-GHz processor, includes thermal paste  |
| 378222-001               | Intel Pentium M 1.86-GHz processor, includes thermal paste  |
| 378223-001               | Intel Pentium M 2.00-GHz processor, includes thermal paste  |
| 378224-001               | Intel Pentium M 2.13-GHz processor, includes thermal paste  |
| 378225-001               | System board, for use only with full-featured models  |
| 378226-001               | USB/audio board, includes audio board cable and USB board cable, for use only with full-featured models |
| 378227-001               | Serial connector board, includes serial connector board cable   |
| 378228-001               | LED board, includes LED board cable   |
| 378229-001               | Digital media board, includes digital media board cable   |
| 378230-001               | Top cover, includes TouchPad, for use only with full-featured models                                    |
| 378231-001               | Base enclosure, for use only with full-featured models  |
| 378232-001               | Switch cover, for use only with full-featured models  |
| 378233-001               | Fan   |
| 378235-001               | Miscellaneous Screw Kit   |
| 378236-001               | Miscellaneous Plastics Kit  |
| 378237-001               | Speaker   |
| 378238-001               | System board, for use only with defeatured models (GML)   |
| 378239-001               | Top cover, includes TouchPad, for use only with defeatured models                                       |
| 378240-001               | Base enclosure, for use only with defeatured models   |

**Table 3-6**  
**Sequential Part Number Listing (*Continued*)**

| <b>Spare Part Number</b> | <b>Description</b>   |
|--------------------------|--|
| 378241-001               | Audio board, includes audio cable, for use only with defeatured models |
| 378242-001               | Switch cover, for use only with defeatured models                      |
| 378248-001               | Keyboard for use in United States                                      |
| 378248-002               | Keyboard for use internationally                                       |
| 378248-031               | Keyboard for use in United Kingdom                                     |
| 378248-041               | Keyboard for use in Germany  |
| 378248-051               | Keyboard for use in France   |
| 378248-061               | Keyboard for use in Italy  |
| 378248-071               | Keyboard for use in Spain  |
| 378248-081               | Keyboard for use in Denmark  |
| 378248-091               | Keyboard for use in Norway   |
| 378248-101               | Keyboard for use in Sweden   |
| 378248-111               | Keyboard for use in Switzerland  |
| 378248-121               | Keyboard for use in French Canada                                      |
| 378248-131               | Keyboard for use in Portugal   |
| 378248-141               | Keyboard for use in Turkey   |
| 378248-151               | Keyboard for use in Greece   |
| 378248-161               | Keyboard for use in Latin America                                      |
| 378248-171               | Keyboard for use in Saudi Arabia                                       |
| 378248-181               | Keyboard for use in Belgium  |
| 378248-201               | Keyboard for use in Brazil   |
| 378248-211               | Keyboard for use in Hungary  |

**Table 3-6**  
**Sequential Part Number Listing (*Continued*)**

| <b>Spare Part Number</b> | <b>Description</b>   |
|--------------------------|--|
| 378248-221               | Keyboard for use in the Czech Republic                                       |
| 378248-231               | Keyboard for use in Slovakia   |
| 378248-251               | Keyboard for use in Russia   |
| 378248-281               | Keyboard for use in Thailand   |
| 378248-291               | Keyboard for use in Japan  |
| 378248-AB1               | Keyboard for use in Taiwan   |
| 378248-AD1               | Keyboard for use in Korea  |
| 378248-BA1               | Keyboard for use in Slovenia   |
| 378248-BB1               | Keyboard for use in Israel   |
| 378248-DD1               | Keyboard for use in Iceland  |
| 379799-001               | Heat sink, includes thermal paste  |
| 380089-001               | Docking Station Miscellaneous Plastics Kit                                   |
| 380108-001               | 80-GB hard drive, 5400-rpm, includes frame and connector                     |
| 380768-001               | 24X Max CD-ROM drive, includes bezel   |
| 380770-001               | 8X Max DVD-ROM drive, includes bezel   |
| 380771-001               | 4X Max DVD±RW and CD-RW Combo Drive, includes bezel                          |
| 380772-001               | DVD/CD-RW Combo Drive, includes bezel  |
| 380773-001               | 8X Max DVD±RW and CD-RW Combo Drive, includes bezel                          |
| 381580-001               | 802.11b/g WLAN Mini PCI communications card for use in most of the world     |
| 381581-001               | 802.11b/g WLAN Mini PCI communications card for use in the rest of the world |
| 381582-001               | 802.11b/g WLAN Mini PCI communications card for use in most of the world     |



**Table 3-6**  
**Sequential Part Number Listing (*Continued*)**

| <b>Spare Part Number</b> | <b>Description</b>   |
|--------------------------|--|
| 381583-001               | 802.11b/g WLAN Mini PCI communications card for use in the rest of the world |
| 381709-001               | Miscellaneous Cable Kit  |
| 383219-001               | System board, for use only with defeatured models (GM)                       |
| 383220-001               | 6-cell, 4.0-AHr battery pack   |
| 378242-001               | Switch cover, for use only with defeatured models                            |
| 398608-001               | DVD±RW and CD-RW Double Layer Combo Drive                                    |
| 398609-001               | Keyboard for use in United States  |
| 398609-002               | Keyboard for use internationally   |
| 398609-031               | Keyboard for use in United Kingdom   |
| 398609-041               | Keyboard for use in Germany  |
| 398609-051               | Keyboard for use in France   |
| 398609-061               | Keyboard for use in Italy  |
| 398609-071               | Keyboard for use in Spain  |
| 398609-081               | Keyboard for use in Denmark  |
| 398609-091               | Keyboard for use in Norway   |
| 398609-101               | Keyboard for use in Sweden   |
| 398609-111               | Keyboard for use in Switzerland  |
| 398609-121               | Keyboard for use in French Canada  |
| 398609-131               | Keyboard for use in Portugal   |
| 398609-141               | Keyboard for use in Turkey   |
| 398609-151               | Keyboard for use in Greece   |
| 398609-161               | Keyboard for use in Latin America  |

**Table 3-6**  
**Sequential Part Number Listing (*Continued*)**

| <b>Spare Part Number</b> | <b>Description</b>   |
|--------------------------|--|
| 398609-171               | Keyboard for use in Saudi Arabia   |
| 398609-201               | Keyboard for use in Brazil   |
| 398609-211               | Keyboard for use in Hungary  |
| 398609-221               | Keyboard for use in the Czech Republic   |
| 398609-231               | Keyboard for use in Slovakia   |
| 398609-251               | Keyboard for use in Russia   |
| 398609-281               | Keyboard for use in Thailand   |
| 398609-291               | Keyboard for use in Japan.   |
| 398609-AB1               | Keyboard for use in Taiwan   |
| 398609-AD1               | Keyboard for use in Korea  |
| 398609-BA1               | Keyboard for use in Slovenia   |
| 398609-BB1               | Keyboard for use in Israel   |
| 398609-DD1               | Keyboard for use in Iceland  |
| 399109-001               | Top cover, includes TouchPad, for use only with computer models with Dual Stick (Pointing Stick and TouchPad) pointing devices |
| 399110-001               | Pointing stick board (for use only with computer models with Dual Stick pointing devices)                                      |
| 403093-001               | DVD±RW and CD-RW Combo Drive   |

---

## Removal and Replacement Preliminaries

This chapter provides essential information for proper and safe removal and replacement service.

### 5.1 Tools Required

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

- Magnetic screwdriver
- Phillips P0 screwdriver
- Torx8 screwdriver
- 5.0-mm socket for system board locks
- Flat-bladed screwdriver
- Tool kit—includes connector removal tool, loopback plugs, and case utility tool

## 5.2 Service Considerations

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



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, ensure 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. Ensure 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.

## 5.3 Preventing Damage to Removable Drives

Removable drives are fragile components that must be handled with care. To prevent damage to the computer, damage to a removable drive, or loss of information, observe the following 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 removing a diskette drive or optical drive, ensure that a diskette or disc is not in the drive and ensure that the optical drive tray is closed.
- Before handling a drive, ensure that you are discharged of static electricity. While handling a drive, avoid touching the connector.
- Handle drives on surfaces covered with at least one inch of shock-proof foam.
- Avoid dropping drives from any height onto any surface.
- After removing a hard drive, an optical drive, or a diskette drive, place it in a static-proof bag.
- Avoid exposing a hard drive to products that have magnetic fields, such as monitors or speakers.
- Avoid exposing a drive to temperature extremes or liquids.
- If a drive must be mailed, place the drive in a bubble pack mailer or other suitable form of protective packaging and label the package “FRAGILE: Handle With Care.”

## **5.4 Preventing Electrostatic Damage**

Many 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, the discharge contains enough power to alter device parameters or melt silicon junctions.

A sudden discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt nor heard, but damage occurs.

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

## 5.5 Packaging and Transporting Precautions

Use the following grounding precautions when packaging and transporting equipment:

- To avoid hand contact, transport products in static-safe containers, such as tubes, bags, or boxes.
- Protect all electrostatic-sensitive parts and assemblies with conductive or approved containers or packaging.
- Keep electrostatic-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 sensitive component or assembly.
- Store reusable electrostatic-sensitive parts from assemblies in protective packaging or nonconductive foam.
- Use transporters and conveyors made of antistatic belts and roller bushings. Ensure 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.

## 5.6 Workstation Precautions

Use the following grounding precautions at workstations:

- Cover the workstation with approved static-shielding material (refer to [Table 4-2, “Static-Shielding Materials”](#)).
- 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 electrostatic-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.



## 5.7 Grounding Equipment and Methods

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

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

Other grounding equipment recommended for use in preventing electrostatic damage includes:

- 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

Table 4-1 shows how humidity affects the electrostatic voltage levels generated by different activities.

---

**Table 4-1**  
**Typical Electrostatic Voltage Levels**

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



A product can be degraded by as little as 700 V.

---

Table 4-2 lists the shielding protection provided by antistatic bags and floor mats.

---

**Table 4-2**  
**Static-Shielding Materials**

| 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                  |

---

# 6

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## Removal and Replacement Procedures

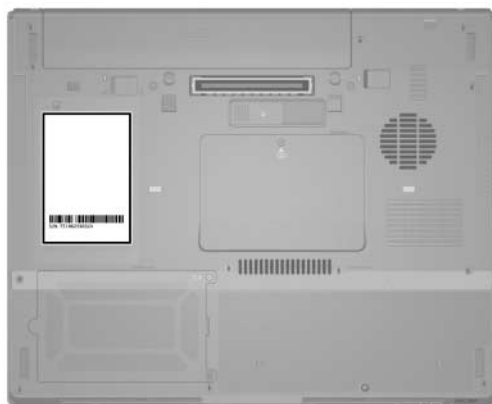
This chapter provides removal and replacement procedures.

There are 62 screws and screw locks, in 11 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.

Refer to [Appendix C, “Screw Listing”](#) for detailed information on screw and screw lock sizes, locations, and usage.

### 6.1 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.



*Serial Number Location*

## 6.2 Disassembly Sequence Chart

Use the chart below to determine the section number to be referenced when removing computer components.

| Disassembly Sequence Chart |   |   |
|----------------------------|---|---|
| Section                    | Description   | # of Screws Removed   |
| 6.3                        | <a href="#">Preparing the Computer for Disassembly</a><br>Battery pack  | 0   |
| 6.4                        | <a href="#">Hard Drive</a>  | 2 loosened to remove the hard drive cover<br>1 loosened to remove the hard drive<br>6 to disassemble hard drive |
| 6.5                        | <a href="#">Computer Feet</a>   | 0   |
| 6.6                        | <a href="#">Bluetooth Board</a>   | 0   |
| 6.7                        | <a href="#">External Memory Module</a>  | 1 loosened to remove the memory module/Mini PCI compartment cover   |
| 6.8                        | <a href="#">Mini PCI Communications Module</a><br> To prevent an unresponsive system and the display of a warning message, install only a Mini PCI device authorized for use in your computer by the governmental agency that regulates wireless devices in your country. If you install a device and then receive a warning message, remove the device to restore computer functionality. Then contact Customer Care. | 0   |
| 6.9                        | <a href="#">Optical Drive</a>   | 1   |

---

**Disassembly Sequence Chart (Continued)**

| <b>Section</b> | <b>Description</b>      | <b># of Screws Removed</b>  |
|----------------|-------------------------|---|
| 6.10           | Keyboard                | 2   |
| 6.11           | Switch Cover            | 2   |
| 6.12           | LED Board               | 4   |
| 6.13           | Fan                     | 2 loosened  |
| 6.14           | Heat Sink               | 4 loosened  |
| 6.15           | Processor               | 1 loosened  |
| 6.16           | Modem Board             | 2   |
| 6.17           | Internal Memory Module  | 0   |
| 6.18           | RTC Battery             | 0   |
| 6.19           | Display Assembly        | 6   |
| 6.20           | Top Cover               | 15  |
| 6.21           | Speaker                 | 4   |
| 6.22           | Digital Media Board     | 0   |
| 6.23           | USB/Audio Board         | 1   |
| 6.24           | System Board            | 1 screw<br>4 screw locks on<br>HP Compaq nc6110 and<br>nc6120 models<br>2 screw locks on<br>HP Compaq nx6110 and<br>nx6120 models |
| 6.25           | Serial Connector Module | 2 screw locks   |

---

## 6.3 Preparing the Computer for Disassembly

Before you begin any removal or installation procedures:

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 cord.

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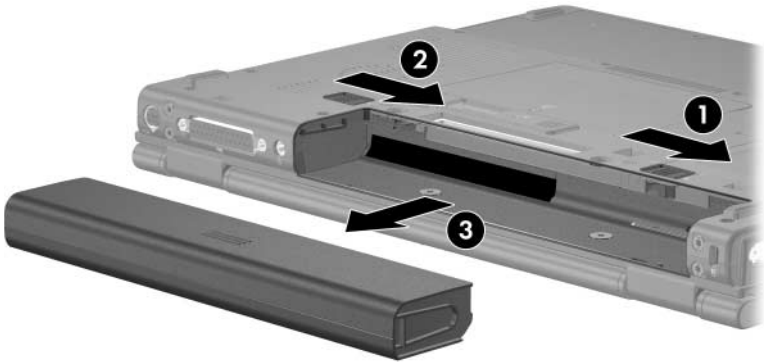
### Battery Pack Spare Part Number Information

---

|                 |            |
|-----------------|------------|
| 6-cell, 4.8-AHr | 367457-001 |
| 6-cell, 4.4-AHr | 372772-001 |
| 6-cell, 4.4-AHr | 383220-001 |
| 6-cell, 2.2-AHr | 364602-001 |

---

4. Remove the battery pack by following these steps:
  - a. Turn the computer upside down with the rear panel toward you.
  - b. Slide and hold the battery pack lock latch **1** to the right.
  - c. Slide the battery pack release latch **2** to the right. (The battery pack disengages from the computer.)
  - d. Slide the battery pack **3** straight back and remove it.



### *Removing the Battery Pack*

Reverse the above procedure to install the battery pack.

## 6.4 Hard Drive

---

### Hard Drive Spare Part Number Information

---

|          |            |          |            |
|----------|------------|----------|------------|
| 5400-rpm |            | 4200-rpm |            |
| 80-GB    | 380108-001 | 80-GB    | 378214-001 |
| 60-GB    | 378215-001 | 60-GB    | 378213-001 |
| 40-GB    | 380107-001 | 40-GB    | 378212-001 |
|          |            | 30-GB    | 378211-001 |

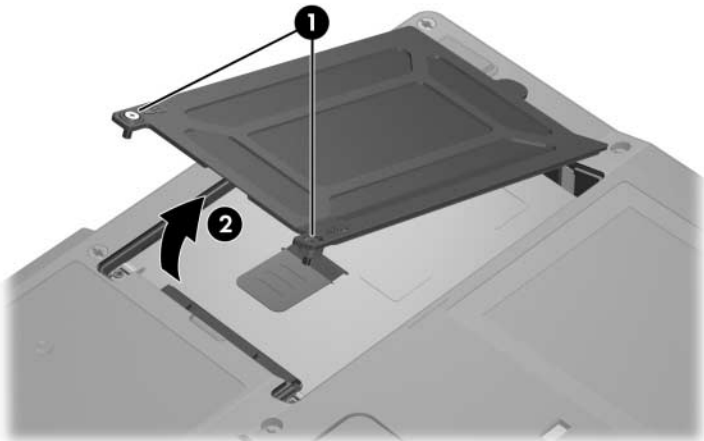
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1. Prepare the computer for disassembly (refer to [Section 6.3](#)).
2. Loosen the 2 Phillips PM2.0×4.0 screws ❶ that secure the hard drive cover to the computer.
3. Lift the left side of the hard drive cover ❷ and swing it to the right.
4. Remove the hard drive cover.



The hard drive cover is included in the Miscellaneous Plastics Kit, spare part number 378236-001.

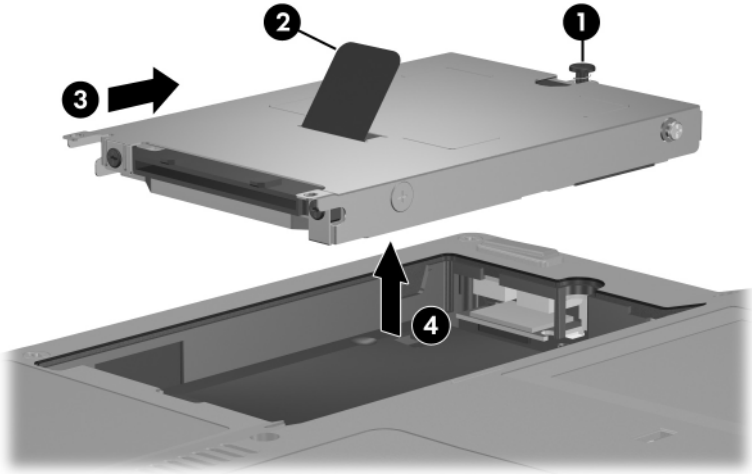
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*Removing the Hard Drive Cover*

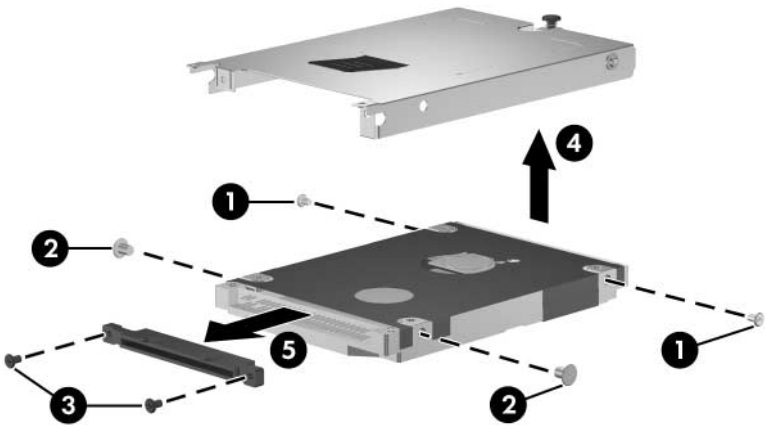


5. Loosen the Phillips PM2.5×13.0 spring-loaded hard drive retention screw ❶.
6. Grasp the mylar tab ❷ on the left side of the hard drive and slide the hard drive to the right ❸ to disconnect it from the system board.
7. Remove the hard drive ❹ from the hard drive bay.



*Removing the Hard Drive*

8. Remove the 2 Phillips PM2.5×4.0 hard drive frame shoulder screws ❶ from each side of the hard drive.
9. Remove the 2 Phillips PM2.5×4.0 hard drive frame screws ❷ from each side of the hard drive.
10. Remove the 2 Phillips PM1.5×3.5 hard drive frame screws ❸ from the front of the hard drive.
11. Lift the frame ❹ straight up to remove it from the hard drive.
12. Remove the hard drive connector ❺ from the hard drive.



*Removing the Hard Drive Frame and Connector*

Reverse the above procedure to reassemble and install the hard drive.

## 6.5 Computer Feet

The computer feet are adhesive-backed rubber pads. The feet are included in the Miscellaneous Plastics Kit, spare part number 378236-001.



*Replacing the Computer Feet*

## 6.6 Bluetooth Board

---

### Bluetooth Board Spare Part Number Information

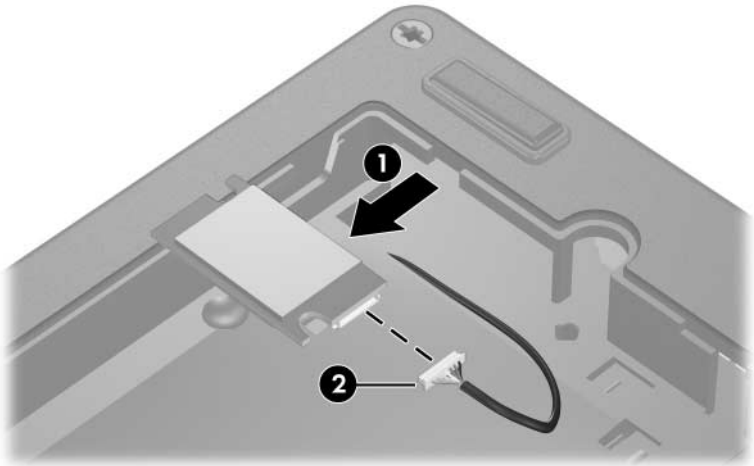
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**Broadcomm Bluetooth wireless board** (includes Bluetooth board cable) 367871-001

---

1. Prepare the computer for disassembly (refer to [Section 6.3](#)).
2. Remove the hard drive ([Section 6.4](#)).

3. Slide the Bluetooth board ❶ out of the clip in the hard drive compartment.
4. Disconnect the Bluetooth board cable ❷ from the board.



*Removing the Bluetooth Board*

Reverse the above procedure to install a Bluetooth board.

## 6.7 External Memory Module

---

### Memory Module Spare Part Number Information

---

|         |            |
|---------|------------|
| 1024 MB | 336579-001 |
| 512 MB  | 336578-001 |
| 256 MB  | 336577-001 |
| 128 MB  | 336576-001 |

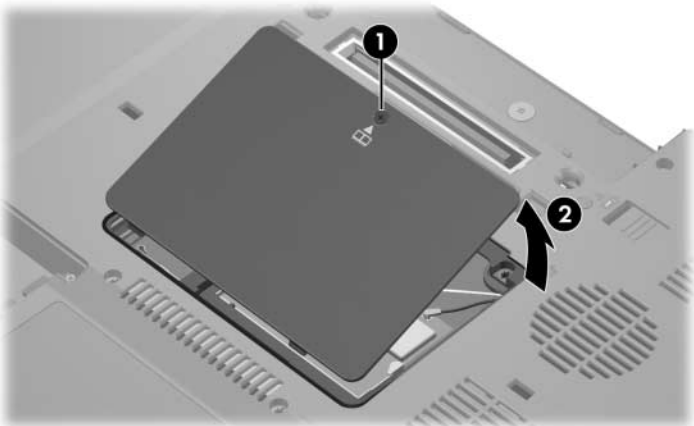
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1. Prepare the computer for disassembly (refer to [Section 6.3](#)).
2. Position the computer with the front toward you.
3. Loosen the Phillips PM2.0×4.0 screw ❶ that secures the memory module/Mini PCI compartment cover to the computer.
4. Lift the rear edge of the cover ❷ up and swing it toward you.
5. Remove the memory module/Mini PCI compartment cover.



The memory module/Mini PCI compartment cover is included in the Miscellaneous Plastics Kit, spare part number 378236-001.

---



*Removing the Memory Module/Mini PCI Compartment Cover*

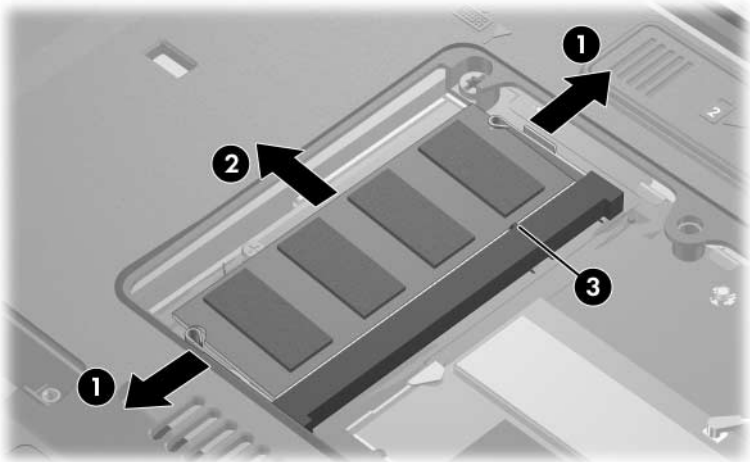
6. Spread the retaining tabs **1** on each side of the memory module socket to release the memory module. (The edge of the module opposite the socket rises away from the computer.)
7. Slide the module **2** away from the socket at an angle.
8. Remove the memory module.



---

Memory modules are designed with notches **3** to prevent incorrect installation into the memory module socket.

---



### *Removing the Memory Module*

Reverse the above procedure to install a memory module.

## 6.8 Mini PCI Communications Module

---

### Mini PCI Communications Module Spare Part Number Information

---

|   |                          |
|---|--------------------------|
| 802.11b/g WLAN module, for use in most of the world                             | 381582-001               |
| 802.11b/g WLAN module, for use in the rest of the world                         | 381583-001               |
| 802.11b/g combination WLAN module, for use internationally                      | 373032-002               |
| 802.11b/g combination WLAN module, for use Japan                                | 373032-291               |
| 802.11b/g combination WLAN module, for use in the United States                 | 373032-001               |
| 802.11a/b/g combination WLAN module, for use in Europe, Middle East, and Africa | 373900-021               |
| 802.11a/b/g combination WLAN Mini PCI communications module for use Japan       | 373900-291               |
| 802.11a/b/g combination WLAN module, for use internationally                    | 373033-002               |
| 802.11a/b/g combination WLAN module, for use Japan                              | 373033-291               |
| 802.11a/b/g combination WLAN module, for use in most of the world               | 373900-001<br>373033-001 |
| 802.11a/b/g combination WLAN module, for use in the United States               | 373901-001               |
| 802.11a/b/g High Band combination WLAN module                                   |                          |

---

1. Prepare the computer for disassembly ([Section 6.3](#)).
2. Remove the memory module/Mini PCI compartment cover ([Section 6.7](#)).
3. Position the computer with the front toward you.



4. Disconnect the auxiliary and main antenna cables ❶ from the Mini PCI communications module.

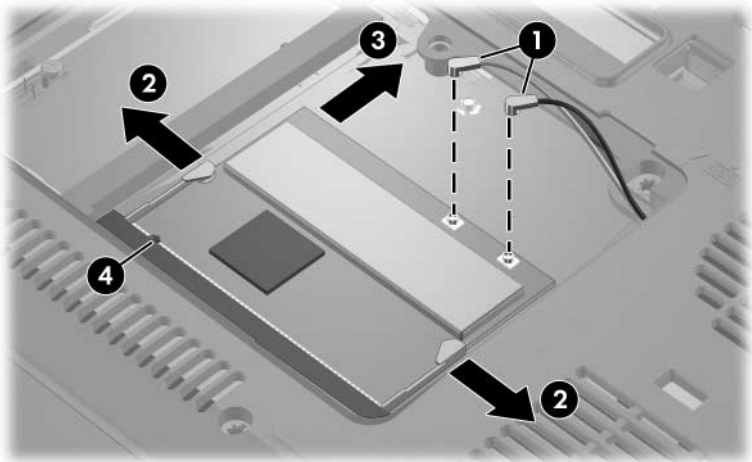


Make note of which antenna cable is attached to which antenna clip on the Mini PCI communications module before disconnecting the cables.

5. Spread the two retaining tabs ❷ on each side of the Mini PCI socket to release the Mini PCI communications module. (The edge of the module opposite the socket rises away from the computer.)
6. Remove the Mini PCI communications module ❸ by pulling the card away from the socket at a 45-degree angle.



Mini PCI communications modules are designed with notches ❹ to prevent incorrect installation.



*Removing a Mini PCI Communications Module*

Reverse the above procedure to install a Mini PCI communications module.

## 6.9 Optical Drive

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### Optical Drive Spare Part Number Information

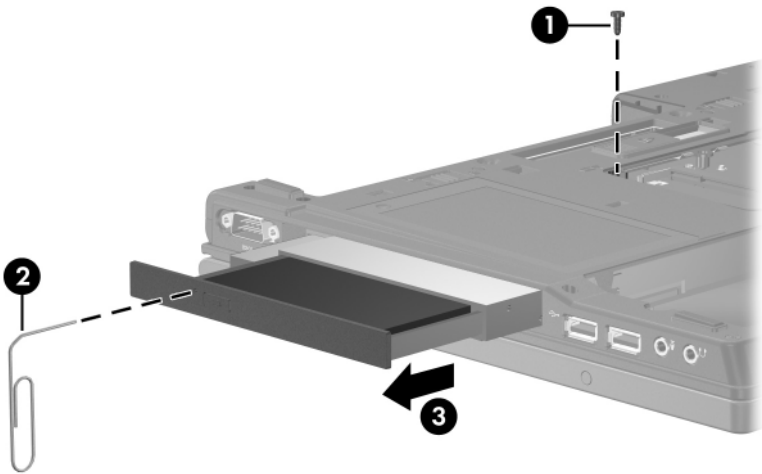
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|   |            |
|---|------------|
| 24X Max CD-ROM drive                      | 380768-001 |
| 8X Max DVD-ROM drive                      | 380770-001 |
| 8X Max DVD±RW and CD-RW Combo Drive       | 380773-001 |
| 4X Max DVD±RW and CD-RW Combo Drive       | 380771-001 |
| 2X Max DVD±RW and CD-RW Combo Drive       | 375557-001 |
| DVD/CD-RW Combo Drive                     | 380772-001 |
| DVD±RW and CD-RW Double Layer Combo Drive | 398608-001 |
| DVD±RW and CD-RW Combo Drive              | 403093-001 |

---

1. Prepare the computer for disassembly ([Section 6.3](#)).
2. Remove the memory module/Mini PCI compartment cover ([Section 6.7](#)).
3. Position the computer with right side toward you.

4. Remove the Torx8 T8M2.0×9.0 screw ❶ that secures the optical drive to the computer.
5. Insert a thin tool, such as an unbent paper clip ❷, into the media tray release hole and release the media tray.
6. Use the media tray to slide the optical drive ❸ to the left and out of the computer.
7. Remove the optical drive.



*Removing the Optical Drive*

Reverse the above procedure to install an optical drive.

## 6.10 Keyboard

---

### Keyboard Spare Part Number Information

---

For use with computer models with Dual Stick (Pointing Stick and TouchPad) pointing devices:

|                |            |                |            |
|----------------|------------|----------------|------------|
| Brazil         | 398609-201 | Norway         | 398609-091 |
| Czech Republic | 398609-221 | Portugal       | 398609-131 |
| Denmark        | 398609-081 | Russia         | 398609-251 |
| France         | 398609-051 | Saudi Arabia   | 398609-171 |
| French Canada  | 398609-121 | Slovakia       | 398609-231 |
| Germany        | 398609-041 | Slovenia       | 398609-BA1 |
| Greece         | 398609-151 | Spain          | 398609-071 |
| Hungary        | 398609-211 | Sweden         | 398609-101 |
| Iceland        | 398609-DD1 | Switzerland    | 398609-111 |
| International  | 398609-002 | Taiwan         | 398609-AB1 |
| Israel         | 398609-BB1 | Thailand       | 398609-281 |
| Italy          | 398609-061 | Turkey         | 398609-141 |
| Japan          | 398609-291 | United Kingdom | 398609-031 |
| Korea          | 398609-AD1 | United States  | 398609-001 |
| Latin America  | 398609-161 |                |            |

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**Keyboard Spare Part Number Information (Continued)**


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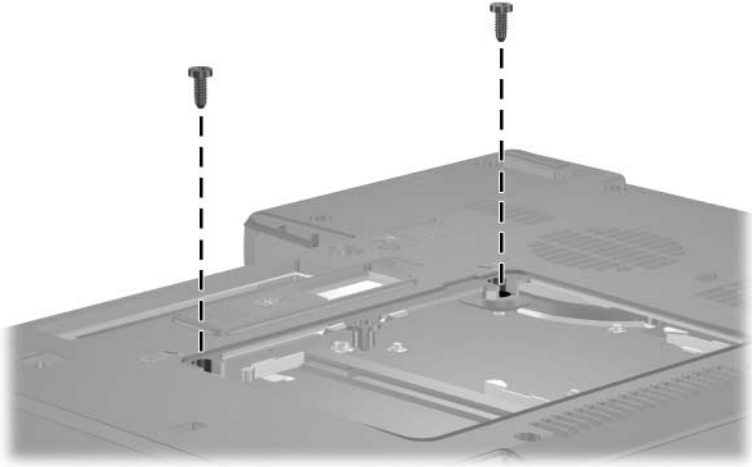
For use with computer models with TouchPad only pointing devices:

|                |            |                |            |
|----------------|------------|----------------|------------|
| Belgium        | 378248-181 | Latin America  | 378248-161 |
| Brazil         | 378248-201 | Norway         | 378248-091 |
| Czech Republic | 378248-221 | Portugal       | 378248-131 |
| Denmark        | 378248-081 | Russia         | 378248-251 |
| France         | 378248-051 | Saudi Arabia   | 378248-171 |
| French Canada  | 378248-121 | Slovakia       | 378248-231 |
| Germany        | 378248-041 | Slovenia       | 378248-BA1 |
| Greece         | 378248-151 | Spain          | 378248-071 |
| Hungary        | 378248-211 | Sweden         | 378248-101 |
| Iceland        | 378248-DD1 | Switzerland    | 378248-111 |
| International  | 378248-002 | Taiwan         | 378248-AB1 |
| Israel         | 378248-BB1 | Thailand       | 378248-281 |
| Italy          | 378248-061 | Turkey         | 378248-141 |
| Japan          | 378248-291 | United Kingdom | 378248-031 |
| Korea          | 378248-AD1 | United States  | 378248-001 |

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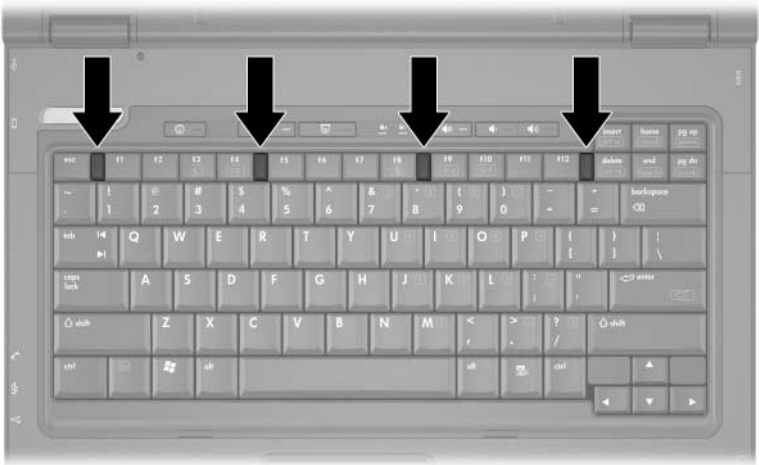
1. Prepare the computer for disassembly ([Section 6.3](#)).
2. Remove the memory module/Mini PCI compartment cover ([Section 6.7](#)).

3. Remove the 2 Torx8 T8M2.0×9.0 screws that secure the keyboard to the computer.



*Removing the Keyboard Screws*

4. Turn the computer display-side up with the front toward you.
5. Open the computer as far as possible.
6. Slide the 4 keyboard retaining latches toward you.



*Releasing the Keyboard Latches*

7. Lift the rear edge of the keyboard up and swing it toward you until it rests on the palm rest.



*Releasing the Keyboard*



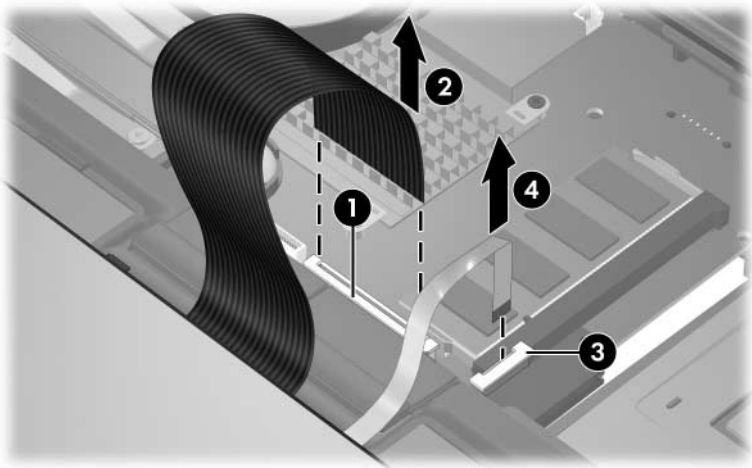
8. Release the zero insertion force (ZIF) connector **1** to which the keyboard cable is attached and disconnect the keyboard cable **2**.



Step 9 applies only to computer models equipped with a pointing stick.

---

9. Release the ZIF connector **3** to which the pointing stick cable is attached and disconnect the pointing stick cable **4**.



*Disconnecting the Keyboard and Pointing Stick Cables*

10. Remove the keyboard.

Reverse the above procedure to install the keyboard.

## 6.11 Switch Cover

---

### Switch Cover Spare Part Number Information

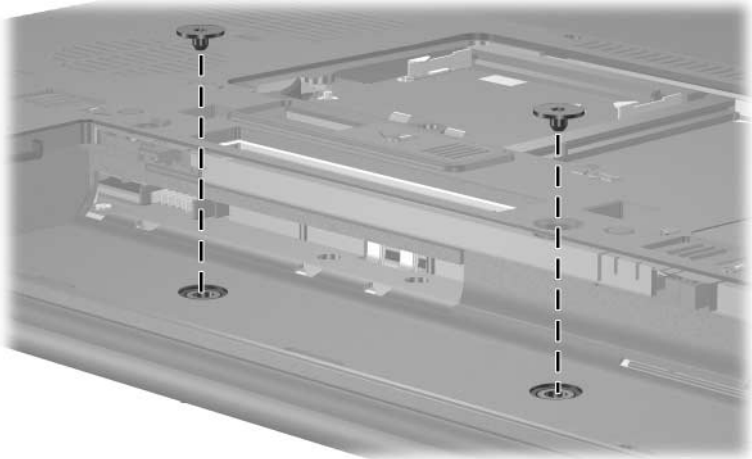
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#### Switch covers

|                                   |            |
|-----------------------------------|------------|
| For use with full-featured models | 378232-001 |
| For use with defeatured models    | 378242-001 |

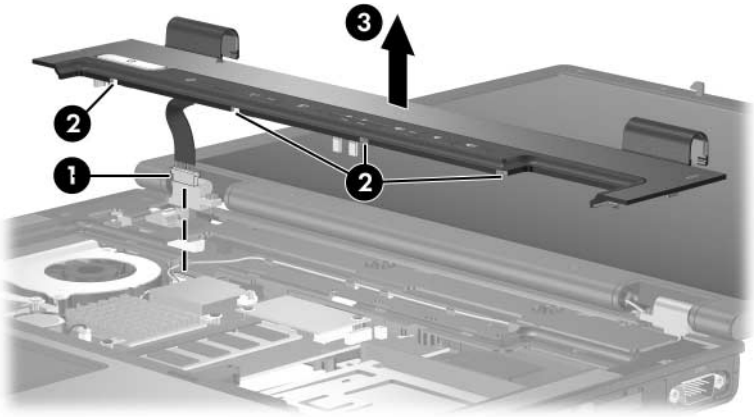
---

1. Prepare the computer for disassembly ([Section 6.3](#)).
2. Remove the keyboard ([Section 6.10](#)).
3. Turn the computer upside down with the rear panel toward you.
4. Remove the 2 Torx8 T8M2.0×2.0 screws that secure the switch cover to the computer.



*Removing the Switch Cover Screws*

5. Turn the computer display-side up with front toward you.
6. Open the computer as far as possible.
7. Disconnect the LED board cable ❶ from the system board.
8. Insert a flat-bladed screwdriver into the four notches ❷ on the front edge of the switch cover ❸ and lift up until the cover disengages from the computer.
9. Remove the switch cover.



*Removing the Switch Cover*

Reverse the above procedure to install the switch cover.

## 6.12 LED Board



---

This section applies only to full-featured models.

---

---

### LED Board Spare Part Number Information

---

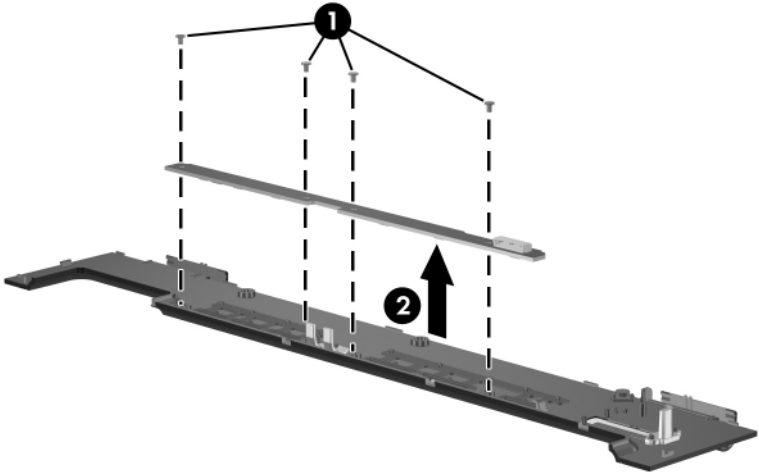
**LED board** (includes LED board cable)

378228-001

---

1. Prepare the computer for disassembly ([Section 6.3](#)).
2. Remove the keyboard ([Section 6.10](#)).
3. Remove the switch cover ([Section 6.11](#)).
4. Turn the computer upside down with the rear panel toward you.
5. Turn the switch cover upside down.

6. Remove the 4 Phillips PM1.5×4.0 screws ❶ that secure the LED board to the switch cover.
7. Remove the LED board ❷.



*Removing the LED Board*

Reverse the above procedure to install the LED board.

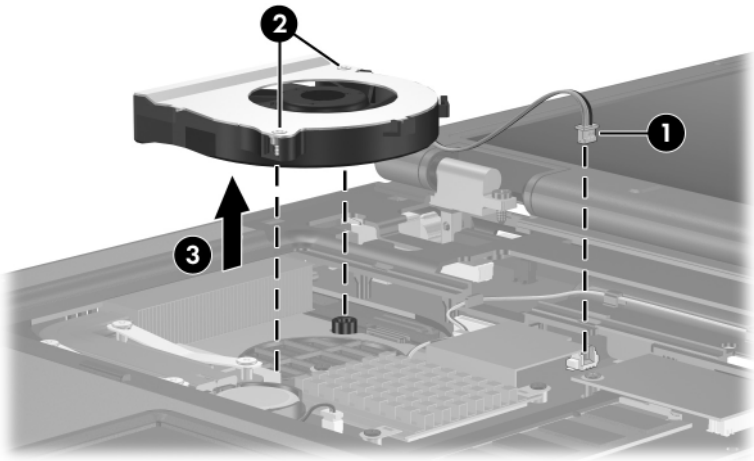
## 6.13 Fan

### Fan Spare Part Number Information

Fan

378233-001

1. Prepare the computer for disassembly ([Section 6.3](#)).
2. Release the keyboard ([Section 6.10](#)).
3. Disconnect the fan cable ❶ from the system board.
4. Loosen the 2 Phillips PM2.0×7.0 screws ❷ that secure the fan to the computer.
5. Remove the fan ❸.



*Removing the Fan*

Reverse the above procedure to install the fan.

## 6.14 Heat Sink

### Heat Sink Spare Part Number Information

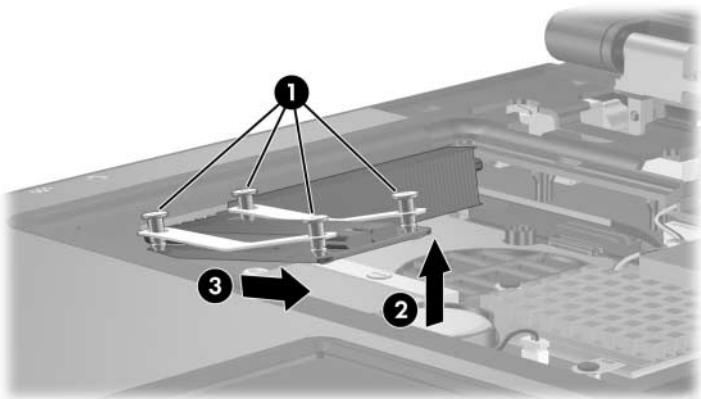
Heat sink (includes thermal paste)

379799-001

1. Prepare the computer for disassembly ([Section 6.3](#)).
2. Release the keyboard ([Section 6.10](#)).
3. Remove the fan ([Section 6.13](#)).
4. Loosen the 4 Phillips PM2.0×8.0 shoulder screws **1** that secure the heat sink to the computer.
5. Lift the right side of the heat sink **2** to disengage it from the processor.
6. Slide the heat sink **3** up and to the right to remove it.



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.



*Removing the Heat Sink*

Reverse the above procedure to install the heat sink.

## 6.15 Processor

---

### Processor Spare Part Number Information

---

|                          |            |
|--------------------------|------------|
| Intel Pentium M 2.13-GHz | 378224-001 |
| Intel Pentium M 2.00-GHz | 378223-001 |
| Intel Pentium M 1.86-GHz | 378222-001 |
| Intel Pentium M 1.73-GHz | 378221-001 |
| Intel Pentium M 1.60-GHz | 378220-001 |
| Intel Pentium M 1.30-GHz | 378219-001 |
| Intel Celeron M 1.5-GHz  | 378218-001 |
| Intel Celeron M 1.4-GHz  | 378217-001 |
| Intel Celeron M 1.3-GHz  | 378216-001 |

---

1. Prepare the computer for disassembly ([Section 6.3](#)).
2. Release the keyboard ([Section 6.10](#)).
3. Remove the fan ([Section 6.13](#)).
4. Remove the heat sink ([Section 6.14](#)).



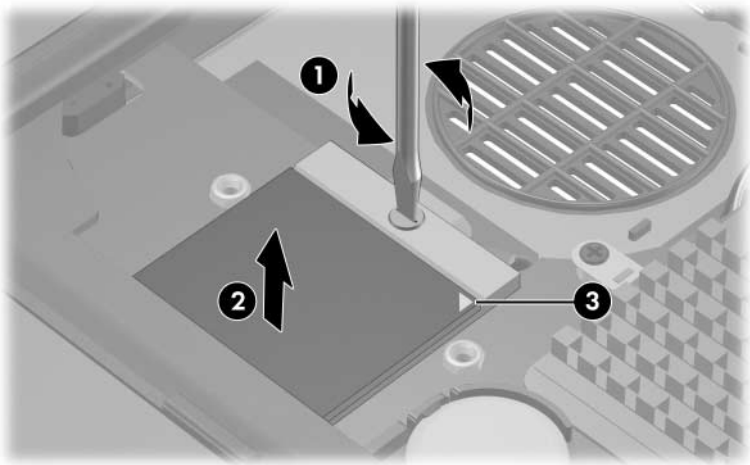
5. Use a flat-bladed screwdriver to turn the processor locking screw **1** one-quarter turn counterclockwise until you hear a click.
6. Lift the processor **2** straight up and remove it.



---

The gold triangle **3** on the processor should be aligned in the front right corner when you install the processor.

---



### Removing the Processor

Reverse the above procedure to install the processor.

## 6.16 Modem Board

---

### Modem Board Spare Part Number Information

---

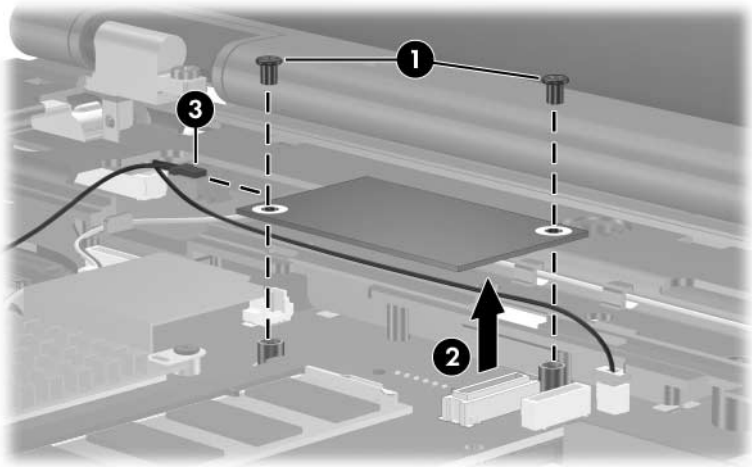
**Modem board**

325521-001

---

1. Prepare the computer for disassembly ([Section 6.3](#)).
2. Release the keyboard ([Section 6.10](#)).

3. Remove the 2 Phillips PM2.0×3.0 screws **1** that secure the modem board to the computer.
4. Lift the right side of the modem board **2** to disconnect it from the system board.
5. Disconnect the modem cable **3** from the modem board.
6. Remove the modem board.



*Removing the Modem Board*

Reverse the above procedure to install the modem board.

## 6.17 Internal Memory Module

---

### Memory Module Spare Part Number Information

---

|         |            |
|---------|------------|
| 1024 MB | 336579-001 |
| 512 MB  | 336578-001 |
| 256 MB  | 366577-001 |

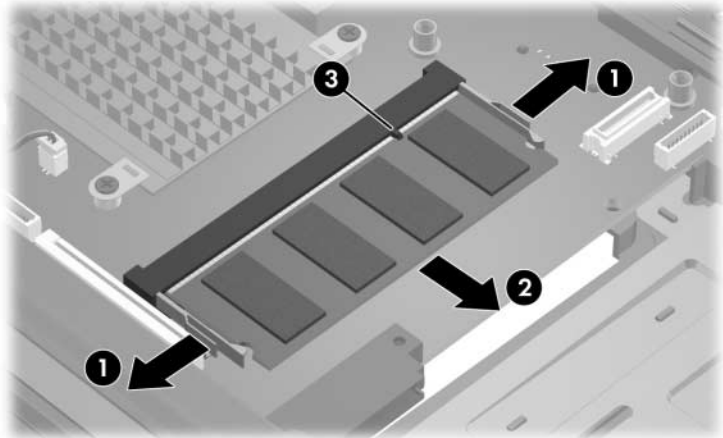
---

1. Prepare the computer for disassembly ([Section 6.3](#)).
2. Release the keyboard ([Section 6.10](#)).
3. Spread the retaining tabs **1** on each side of the memory module socket to release the memory module. (The edge of the module opposite the socket rises away from the computer.)
4. Slide the module **2** away from the socket at an angle .
5. Remove the memory module.



Memory modules are designed with notches **3** to prevent incorrect installation into the memory module socket.

---



#### *Removing the Memory Module*

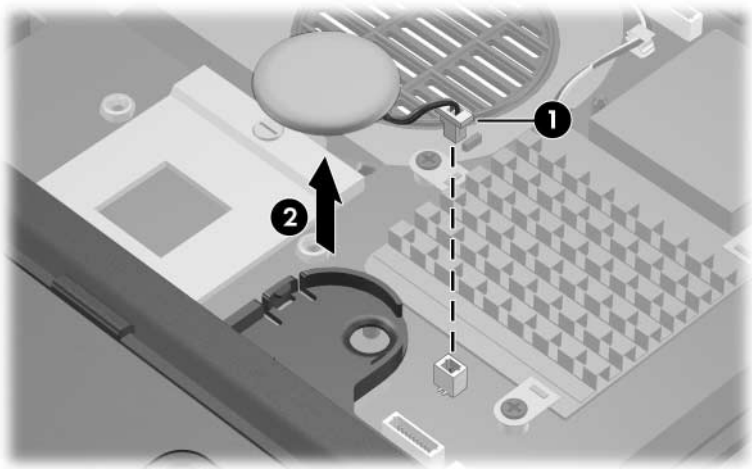
Reverse the above procedure to install a memory module.

## 6.18 RTC Battery



The RTC battery is included in the Miscellaneous Plastics Kit, spare part number 378236-001.

1. Prepare the computer for disassembly ([Section 6.3](#)).
2. Release the keyboard ([Section 6.10](#)).
3. Disconnect the RTC battery cable **1** from the system board.
4. Remove the RTC battery **2** from the clip in the top cover.



*Removing the RTC Battery*

Reverse the above procedure to install an RTC battery.

## 6.19 Display Assembly

---

### Display Assembly Spare Part Number Information

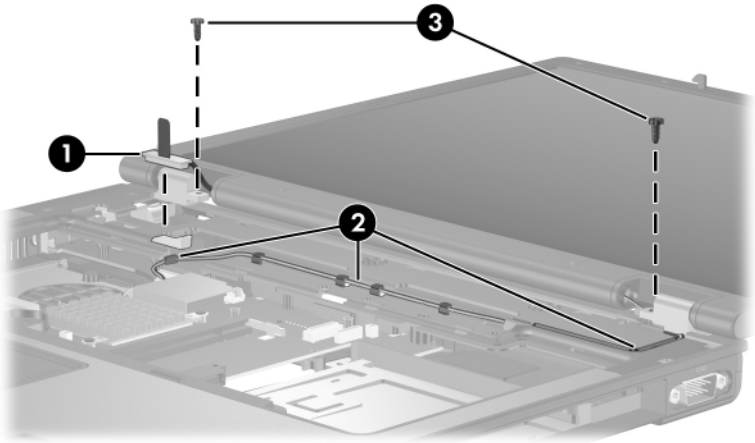
---

|                          |            |
|--------------------------|------------|
| 15.0-inch, SXGA+WVA, TFT | 378210-001 |
| 15.0-inch, XGA, TFT      | 378209-001 |
| 14.1-inch, XGA, TFT      | 378208-001 |

---

1. Prepare the computer for disassembly ([Section 6.3](#)).
2. Remove the Memory module/Mini PCI compartment cover ([Section 6.7](#)) and disconnect the wireless antenna cables from the Mini PCI communications module ([Section 6.8](#)).
3. Remove the keyboard ([Section 6.10](#)).
4. Remove the switch cover ([Section 6.11](#))


5. Disconnect the display cable ❶ from the system board.
6. Remove the wireless antenna cables ❷ from the Mini PCI compartment and the top cover clips.
7. Remove the 2 Torx8 T8M2.0×9.0 screws ❸ that secure the display assembly to the computer.



*Disconnecting the Display Cable and Removing the Display Screws*

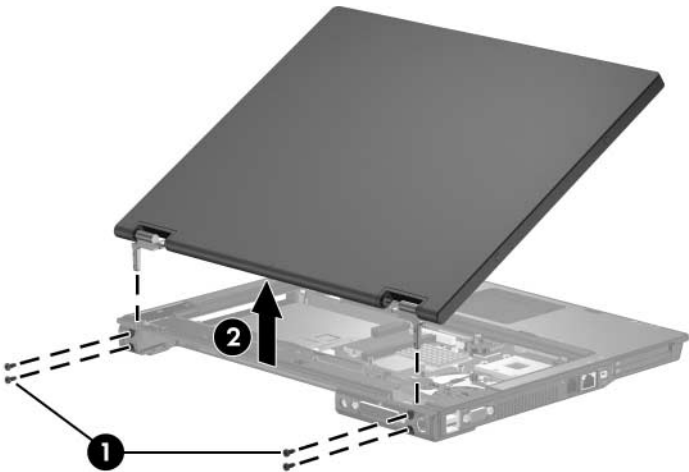
8. Swing the display assembly into a partially closed position.
9. Position the computer with the rear panel toward you.

---

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

---

10. Remove the 4 Torx8 T8M2.0×9.0 screws ❶ that secure the display assembly to the computer.
11. Lift the display assembly ❷ straight up and remove it.



*Removing the Display Assembly*

Reverse the above procedure to install the display assembly.



## 6.20 Top Cover

---

### Top Cover Spare Part Number Information

---

#### Top cover (include TouchPad)

|  |            |
|--|------------|
| For use with computer models with Dual Stick (Pointing Stick and TouchPad) pointing devices: | 399109-001 |
| For use with full-featured models  | 378230-001 |
| For use with defeatured models   | 378239-001 |

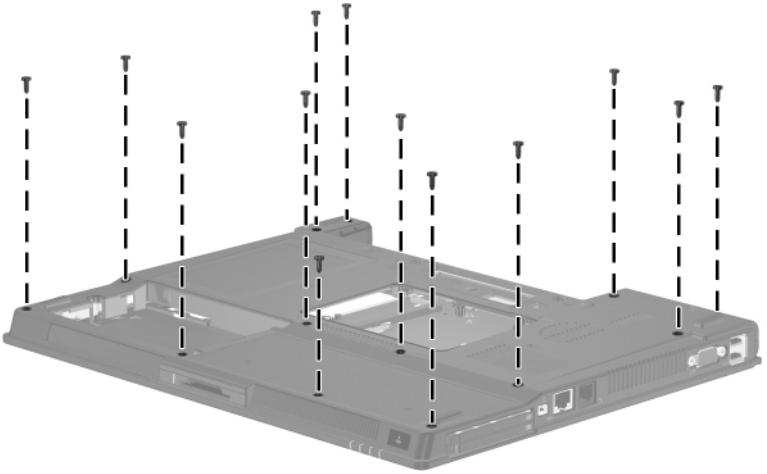
---

|  |            |
|--|------------|
| <b>Pointing stick board</b> (for use only with computer models with Dual Stick pointing devices) | 399110-001 |
|--|------------|

---

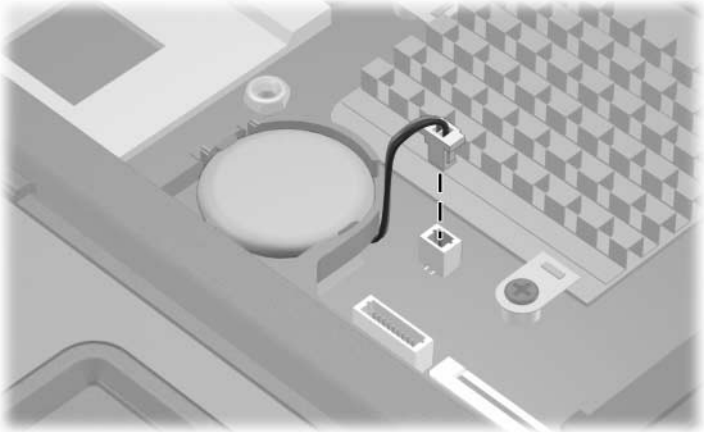
1. Prepare the computer for disassembly ([Section 6.3](#)), and then remove the following components:
  - a. Hard drive ([Section 6.4](#))
  - b. Memory module/Mini PCI compartment cover ([Section 6.7](#))
  - c. Optical drive ([Section 6.9](#))
  - d. Keyboard ([Section 6.10](#))
  - e. Switch cover ([Section 6.11](#))
  - f. Display assembly ([Section 6.19](#))

2. Turn the computer upside down with the rear panel toward you.
3. Remove the 13 Torx8 T8M2.0×9.0 screws that secure the top cover to the computer.



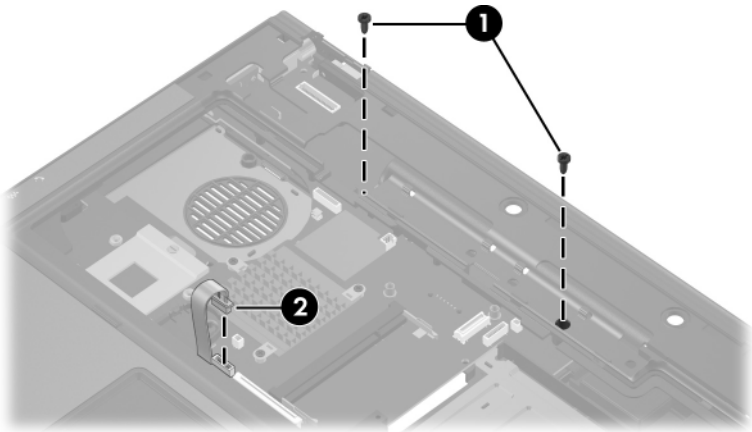
*Removing the Top Cover Screws, Part 1*

4. Turn the computer right-side up with the front toward you.
5. Disconnect the RTC battery cable from the system board.



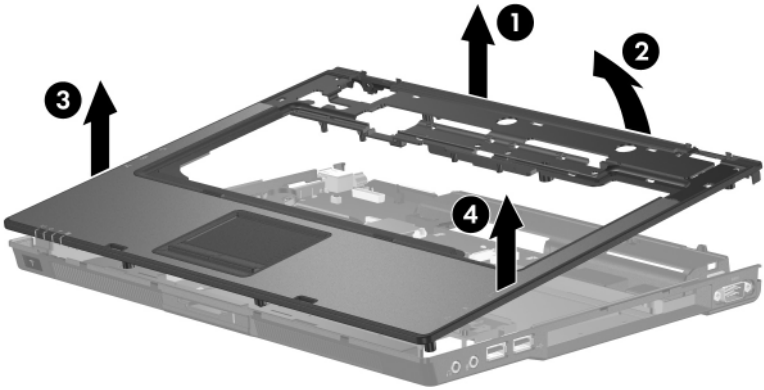
*Disconnecting the RTC Battery Cable*

6. Remove the 2 Torx8 T8M2.0×9.0 screws ❶ that secure the top cover to the computer.
7. Disconnect the TouchPad cable ❷ from the system board.



*Removing the Top Cover Screws, Part 2*

8. Lift up the rear edge of the top cover ❶ until it disengages from the base enclosure.
9. Swing the top cover ❷ toward you until the left and right sides of the top cover disengage from the base enclosure.
10. Lift up on the left ❸ and right sides ❹ of the top cover until the top cover disengages from the base enclosure.



#### *Releasing the Top Cover*

11. Lift the top cover straight up until the front edge of the top cover disengages from the base enclosure and remove the top cover.

Reverse the above procedure to install the top cover.

## 6.21 Speaker

---

### Speaker Spare Part Number Information

---

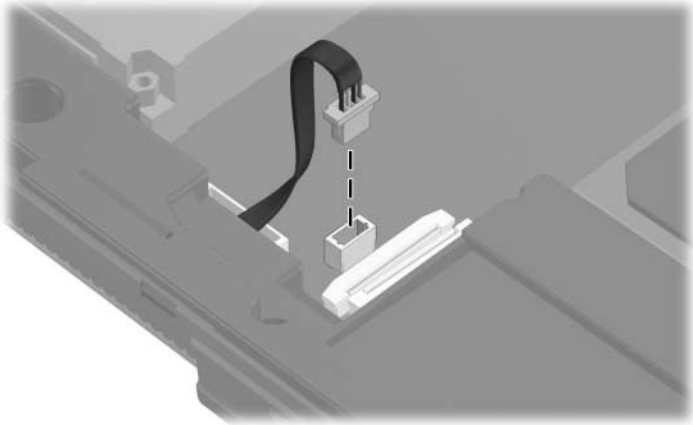
**Speaker**

378237-001

---

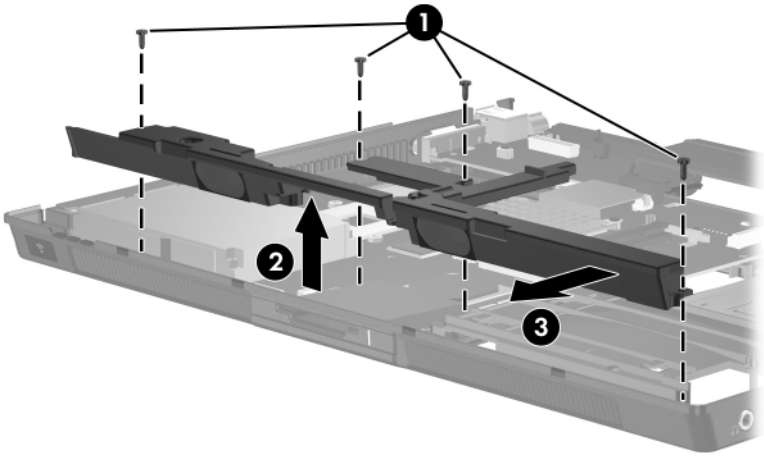
1. Prepare the computer for disassembly ([Section 6.3](#)), and then remove the following components:
  - a. Hard drive ([Section 6.4](#))
  - b. Memory module/Mini PCI compartment cover ([Section 6.7](#))
  - c. Optical drive ([Section 6.9](#))
  - d. Keyboard ([Section 6.10](#))
  - e. Switch cover ([Section 6.11](#))
  - f. Display assembly ([Section 6.19](#))
  - g. Top cover ([Section 6.20](#))

2. Disconnect the speaker cable from the system board.



*Disconnecting the Speaker Cable*

3. Remove the 4 Torx8 T8M2.0×4.0 screws ❶ that secure the speaker to the computer.
4. Lift the speaker ❷ until it clears the system board.
5. Slide the speaker ❸ toward you and remove it.



### *Removing the Speaker*

Reverse the above procedure to install the speaker.

## 6.22 Digital Media Board



---

This section applies only to full-featured models.

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---

### Digital Media Board Spare Part Number Information

---

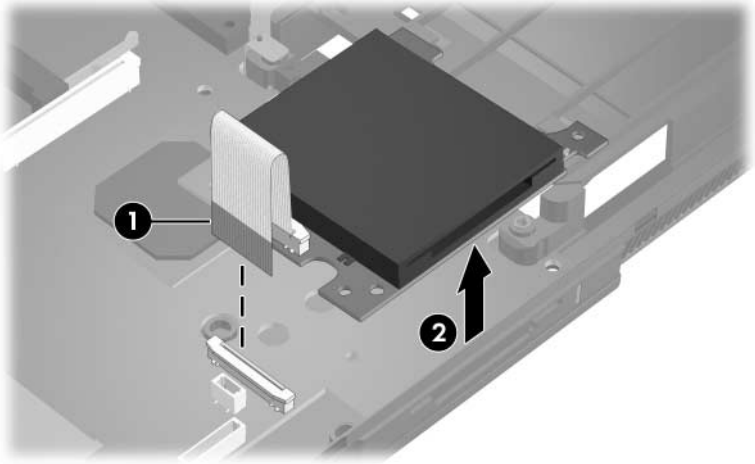
|   |            |
|---|------------|
| <b>Digital media board</b> (includes digital media board cable) | 378229-001 |
|---|------------|

---

1. Prepare the computer for disassembly ([Section 6.3](#)), and then remove the following components:
  - a. Hard drive ([Section 6.4](#))
  - b. Memory module/Mini PCI compartment cover ([Section 6.7](#))
  - c. Optical drive ([Section 6.9](#))
  - d. Keyboard ([Section 6.10](#))
  - e. Switch cover ([Section 6.11](#))
  - f. Display assembly ([Section 6.19](#))
  - g. Top cover ([Section 6.20](#))
  - h. Speaker ([Section 6.21](#))



2. Release the ZIF connector to which the digital media board cable is attached and disconnect the digital media board cable ❶ from the system board.
3. Remove the digital media board ❷.



*Removing the Digital Media Board*

Reverse the above procedure to install the digital media board.

## 6.23 USB/Audio Board



---

Full-featured models are equipped with a USB/audio board. Defeatured models are equipped with an audio board. The removal procedures are identical for both boards.

---

---

### USB/Audio Board Spare Part Number Information

---

|   |            |
|---|------------|
| <b>USB/audio board</b> (for use only with full-featured models; includes audio board cable and USB board cable) | 378226-001 |
| <b>Audio board</b> (for use only with defeatured models; includes audio board cable)                            | 378241-001 |

---

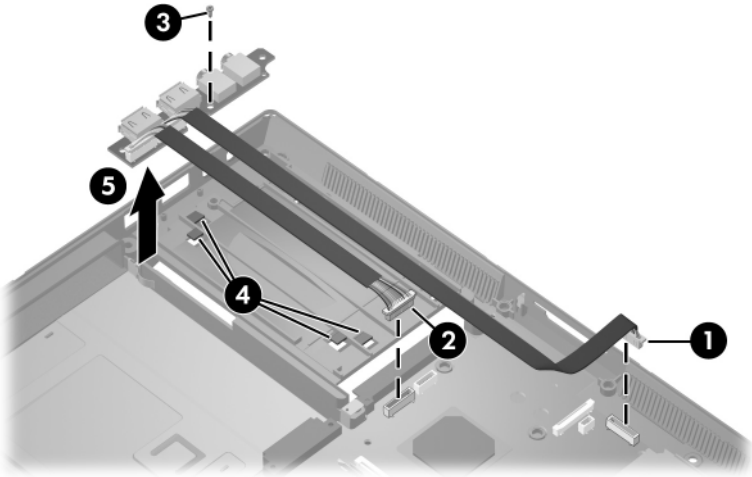
1. Prepare the computer for disassembly ([Section 6.3](#)), and then remove the following components:
  - a. Hard drive ([Section 6.4](#))
  - b. Memory module/Mini PCI compartment cover ([Section 6.7](#))
  - c. Optical drive ([Section 6.9](#))
  - d. Keyboard ([Section 6.10](#))
  - e. Switch cover ([Section 6.11](#))
  - f. Display assembly ([Section 6.19](#))
  - g. Top cover ([Section 6.20](#))

2. Position the computer with the rear panel toward you.
3. Disconnect the USB cable **1** and audio cable **2** from the system board.



The USB cable is present only on full-featured models.

4. Remove the Phillips PM1.5×3.0 screw **3** that secures the USB/audio board and shield to the base enclosure.
5. Remove the cables from the clips **4** in the base enclosure.
6. Remove the USB/audio board **5**.



*Removing the USB/Audio Board*

Reverse the above procedure to install the USB/audio board.

## 6.24 System Board

---

### System Board Spare Part Number Information

---

|                                    |            |
|------------------------------------|------------|
| For use with full-featured models  | 378225-001 |
| For use with defeatured models-GML | 378238-001 |
| For use with defeatured models-GML | 383219-001 |

---



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

- Memory modules ([Section 6.7](#) and [Section 6.17](#))
  - Mini PCI communications card ([Section 6.8](#))
  - Processor ([Section 6.15](#))
  - Modem board ([Section 6.16](#))
-

1. Prepare the computer for disassembly ([Section 6.3](#)), and then remove the following components:
  - a. Hard drive ([Section 6.4](#))
  - b. Bluetooth board ([Section 6.6](#))
  - c. Optical drive ([Section 6.9](#))
  - d. Keyboard ([Section 6.10](#))
  - e. Switch cover ([Section 6.11](#))
  - f. Fan ([Section 6.13](#))
  - g. Heat sink ([Section 6.14](#))
  - h. RTC battery ([Section 6.18](#))
  - i. Display assembly ([Section 6.19](#))
  - j. Top cover ([Section 6.20](#))
  - k. Speaker ([Section 6.21](#))
  - l. Digital media board ([Section 6.22](#))
  - m. USB/audio board ([Section 6.23](#))

2. Disconnect the serial connector cable ❶ and the Bluetooth cable ❷ from the system board.
3. Remove the Torx8 T8M2.0×4.0 screw ❸ that secures the system board to the base enclosure next to the RJ-11 connector.

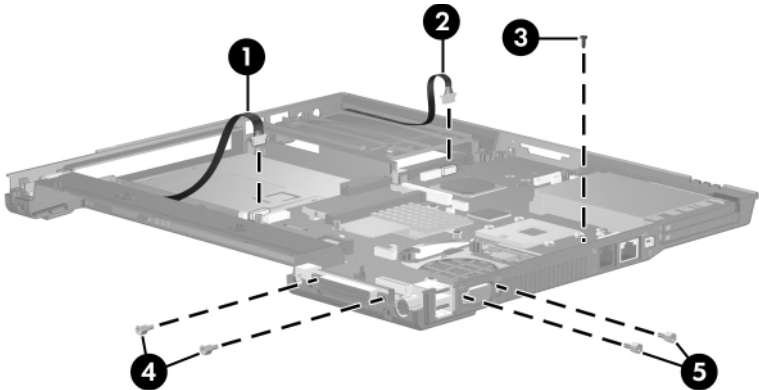


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Step 4 applies only to full-featured models.

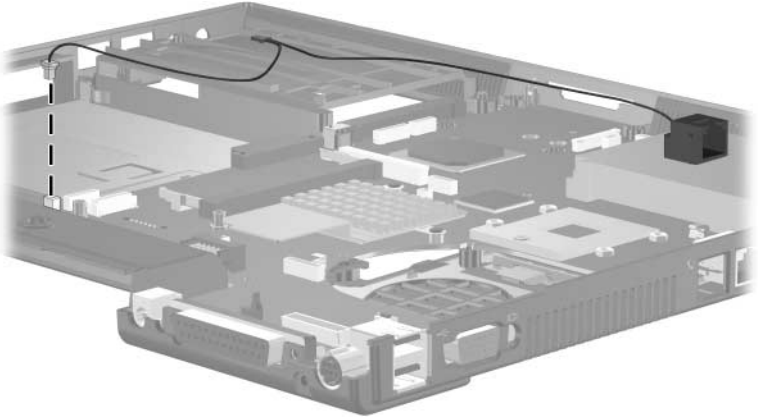
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4. Remove the 2 HM5.0×9.0 screw locks ❹ on each side of the parallel connector.
5. Remove the 2 HM5.0×9.0 screw locks ❺ on each side of the external monitor connectors.



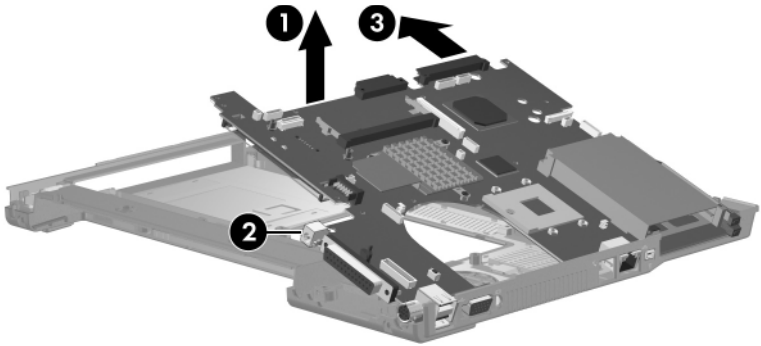
*Removing the System Board Screws and Screw Locks*

6. If necessary, disconnect the RJ-11 connector module cable from the system board and remove the RJ-11 connector module and cable.



*Removing the RJ-11 Connector Module and Cable*

7. Use the optical drive connector to lift the system board **1** until the power connector **2** is clear of the base enclosure.
8. Slide the system board **3** to the left at an angle and remove it.



#### *Removing the System Board*

Reverse the above procedures to install the system board.



## 6.25 Serial Connector Module



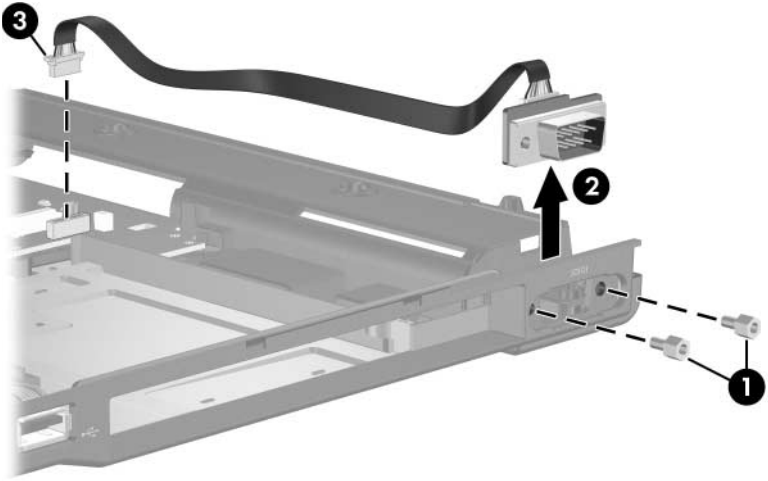
This section applies only to full-featured models.

### Serial Connector Module Spare Part Number Information

|   |            |
|---|------------|
| <b>Serial connector module</b> (includes serial connector module cable) | 378227-001 |
|---|------------|

1. Prepare the computer for disassembly ([Section 6.3](#)), and then remove the following components:
  - a. Hard drive ([Section 6.4](#))
  - b. Bluetooth board ([Section 6.6](#))
  - c. Optical drive ([Section 6.9](#))
  - d. Keyboard ([Section 6.10](#))
  - e. Switch cover ([Section 6.11](#))
  - f. Fan ([Section 6.13](#))
  - g. Heat sink ([Section 6.14](#))
  - h. RTC battery ([Section 6.18](#))
  - i. Display assembly ([Section 6.19](#))
  - j. Top cover ([Section 6.20](#))
  - k. Speaker ([Section 6.21](#))
  - l. Digital media board ([Section 6.22](#))
  - m. USB/audio board ([Section 6.23](#))

2. Remove the 2 HM5.0×9.0 screw locks **1** on each side of the serial connector.
3. Lift the serial connector module and cable **2** out of the base enclosure.
4. Disconnect the serial connector module cable **3** from the system board.



*Removing the Serial Connector Module*

---

## Specifications

This chapter provides physical and performance specifications.

---

**Table 7-1**  
**Computer**

| <b>Dimensions</b>  | <b>Metric</b>            | <b>U.S.</b>   |
|--|--------------------------|---------------|
| Height   | 32.8 cm                  | 12.91         |
| Width  | 26.7 cm                  | 10.51         |
| Depth  | 3.1 cm                   | 1.22          |
| <b>Weight</b>  |                          |               |
| Full-featured model with 15.0-inch display, optical drive, and 6-cell battery pack | 2.86 kg                  | 6.31 lbs      |
| Defeatured model with 14.1-inch display, optical drive, and 6-cell battery pack    | 2.72 kg                  | 5.99 lbs      |
| <b>Input Power</b>   |                          |               |
| Operating voltage  | 18.5 V dc @ 3.5 A - 65 W |               |
| Operating current  | 3.5 A                    |               |
| <b>Temperature</b>   |                          |               |
| 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 |

---

**Table 7-1**  
**Computer (Continued)**

|  |  |                     |
|--|--|---------------------|
| <b>Relative humidity</b> (noncondensing) |  |                     |
| Operating                                | 10% to 90%   | 10% to 90%          |
| Nonoperating                             | 5% to 95%  | 5% to 95%           |
| <b>Maximum altitude</b> (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 |
| <b>Shock</b>                             |  |                     |
| Operating                                | 125 g, 2 ms, half-sine   |                     |
| Nonoperating                             | 200 g, 2 ms, half-sine   |                     |
| <b>Random Vibration</b>                  |  |                     |
| Operating                                | 0.75 g zero-to-peak, 10 Hz to 500 Hz,<br>0.25 oct/min sweep rate |                     |
| Nonoperating                             | 1.50 g zero-to-peak, 10 Hz to 500 Hz,<br>0.5 oct/min sweep rate  |                     |



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

**Table 7-2**  
**15.0-inch, SXGA+WVA, TFT Display**

| <b>Dimensions</b>              |                     |  |
|--------------------------------|---------------------|--|
| Height                         | 30.0 cm             | 11.8 in                                      |
| Width                          | 22.9 cm             | 9.0 in                                       |
| Diagonal                       | 38.1 cm             | 15.0 in                                      |
| <b>Number of colors</b>        |                     | Up to 16.8 million                           |
| <b>Contrast ratio</b>          |                     | 250:1  |
| <b>Brightness</b>              |                     | 150 nits typical                             |
| <b>Pixel resolution</b>        |                     |  |
| Pitch                          | 0.264 × 0.264 mm    |  |
| Format                         | 1400 × 1050         |  |
| Configuration                  | RGB vertical stripe |  |
| <b>Backlight</b>               |                     | Edge lit                                     |
| <b>Character display</b>       |                     | 80 × 25                                      |
| <b>Total power consumption</b> |                     | 5.5 W  |
| <b>Viewing angle</b>           |                     | +/-35° horizontal, +15/-35° vertical typical |

---

**Table 7-3**  
**15.0-inch, XGA, TFT Display**

---

|                                |  |         |
|--------------------------------|--|---------|
| <b>Dimensions</b>              |  |         |
| Height                         | 30.0 cm                                      | 11.8 in |
| Width                          | 22.9 cm                                      | 9.0 in  |
| Diagonal                       | 38.1 cm                                      | 15.0 in |
| <b>Number of colors</b>        | Up to 16.8 million                           |         |
| <b>Contrast ratio</b>          | 250:1  |         |
| <b>Brightness</b>              | 150 nits typical                             |         |
| <b>Pixel resolution</b>        |  |         |
| Pitch                          | 0.264 × 0.264 mm                             |         |
| Format                         | 1024 × 768                                   |         |
| Configuration                  | RGB vertical stripe                          |         |
| <b>Backlight</b>               | Edge lit                                     |         |
| <b>Character display</b>       | 80 × 25                                      |         |
| <b>Total power consumption</b> | 5.5 W  |         |
| <b>Viewing angle</b>           | +/-35° horizontal, +15/-35° vertical typical |         |

---

**Table 7-4**  
**14.1-inch, XGA, TFT Display**

| <b>Dimensions</b>              |                     |  |
|--------------------------------|---------------------|--|
| Height                         | 28.5 cm             | 11.2 in                                      |
| Width                          | 21.3 cm             | 8.4 in                                       |
| Diagonal                       | 35.8 cm             | 14.1 in                                      |
| <b>Number of colors</b>        |                     | Up to 16.8 million                           |
| <b>Contrast ratio</b>          |                     | 250:1  |
| <b>Brightness</b>              |                     | 180 nits typical                             |
| <b>Pixel resolution</b>        |                     |  |
| Pitch                          | 0.279 × 0.279 mm    |  |
| Format                         | 1024 × 768          |  |
| Configuration                  | RGB vertical stripe |  |
| <b>Backlight</b>               |                     | Edge lit                                     |
| <b>Character display</b>       |                     | 80 × 25                                      |
| <b>Total power consumption</b> |                     | 4.0 W  |
| <b>Viewing angle</b>           |                     | +/-40° horizontal, +20/-40° vertical typical |

**Table 7-5**  
**Hard Drives**

|   | <b>80-GB*</b>               | <b>60-GB*</b> | <b>60-GB*</b> |
|---|-----------------------------|---------------|---------------|
| <b>Dimensions</b>                                   |                             |               |               |
| Height  | 9.5 mm                      | 9.5 mm        | 9.5 mm        |
| Width   | 70 mm                       | 70 mm         | 70 mm         |
| Weight  | 99 g                        | 99 g          | 102 g         |
| <b>Interface type</b>                               | ATA-5                       | ATA-5         | ATA-5         |
| <b>Transfer rate</b>                                |                             |               |               |
| Synchronous (maximum)                               | 100 MB/sec                  | 100 MB/sec    | 100 MB/sec    |
| Security  | ATA security                | ATA security  | ATA security  |
| <b>Seek times</b> (typical read, including setting) |                             |               |               |
| Single track  | 3 ms                        | 3 ms          | 3 ms          |
| Average   | 13 ms                       | 13 ms         | 13 ms         |
| Maximum   | 24 ms                       | 24 ms         | 24 ms         |
| <b>Logical blocks</b> <sup>†</sup>                  | 156,301,488                 | 156,301,488   | 117,210,240   |
| <b>Disc rotational speed</b>                        | 4200 rpm                    | 4200 rpm      | 5400 rpm      |
| <b>Operating temperature</b>                        | 5°C to 55°C (41°F to 131°F) |               |               |



Certain restrictions and exclusions apply. Consult Customer Care for details.

\*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.

<sup>†</sup>Actual drive specifications may differ slightly.



**Table 7-5**  
**Hard Drives (Continued)**

|   | 60-GB*                      | 40-GB*       | 30-GB*       |
|---|-----------------------------|--------------|--------------|
| <b>Dimensions</b>                                   |                             |              |              |
| Height  | 9.5 mm                      | 9.5 mm       | 9.5 mm       |
| Width   | 70 mm                       | 70 mm        | 70 mm        |
| Weight  | 102 g                       | 99 g         | 99 g         |
| <b>Interface type</b>                               | ATA-5                       | ATA-5        | ATA-5        |
| <b>Transfer rate</b>                                |                             |              |              |
| Synchronous (maximum)                               | 100 MB/sec                  | 100 MB/sec   | 100 MB/sec   |
| Security  | ATA security                | ATA security | ATA security |
| <b>Seek times (typical read, including setting)</b> |                             |              |              |
| Single track  | 3 ms                        | 3 ms         | 2.5 ms       |
| Average   | 13 ms                       | 13 ms        | 12 ms        |
| Maximum   | 24 ms                       | 24 ms        | 23 ms        |
| <b>Logical blocks<sup>†</sup></b>                   | 117,210,240                 | 78,140,160   | 58,605,120   |
| <b>Disc rotational speed</b>                        | 4200 rpm                    | 4200 rpm     | 4200 rpm     |
| <b>Operating temperature</b>                        | 5°C to 55°C (41°F to 131°F) |              |              |



Certain restrictions and exclusions apply. Consult Customer Care for details.

\*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.

<sup>†</sup>Actual drive specifications may differ slightly.

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**Table 7-6**  
**Primary 6-cell, Li-Ion Battery Pack**

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**Dimensions**

|        |          |         |
|--------|----------|---------|
| Height | 2.00 cm  | 0.79 in |
| Width  | 9.40 cm  | 3.70 in |
| Depth  | 13.40 cm | 5.28 in |
| Weight | 0.34 kg  | 0.75 lb |

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**Energy**

|                    |        |
|--------------------|--------|
| Voltage            | 11.1 V |
| Amp-hour capacity  | 4.4 Ah |
| Watt-hour capacity | 48 Wh  |

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**Temperature**

|              |             |               |
|--------------|-------------|---------------|
| Operating    | 5°C to 45°C | 41°F to 113°F |
| Nonoperating | 0°C to 60°C | 32°F to 140°F |

---

**Table 7-7**  
**DVD-ROM Drive**

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

**Table 7-8**  
**DVD/CD-RW Combo Drive**

| <b>Applicable disc</b>      | <b>Read:</b>   | <b>Write:</b>  |
|-----------------------------|--|----------------|
|                             | DVD-R, DVD-RW,<br>DVD-ROM (DVD-5,<br>DVD-9, DVD-10,<br>DVD-18),<br>CD-ROM (Mode 1 and 2)<br>CD Digital Audio<br>CD-XA ready (Mode 2,<br>Form 1 and 2)<br>CD-I ready (Mode 2,<br>Form 1 and 2)<br>CD-R, CD-RW<br>Photo CD (single and<br>multisession)<br>CD-Bridge | CD-R and CD-RW |
| <b>Center hole diameter</b> | 1.5 cm (0.59 in)   |                |
| <b>Disc diameter</b>        |  |                |
| Standard disc               | 12 cm (4.72 in)  |                |
| Mini disc                   | 8 cm (3.15 in)   |                |

**Table 7-8**  
**DVD/CD-RW Combo Drive (Continued)**

|                           |  |           |
|---------------------------|--|-----------|
| <b>Disc thickness</b>     | 1.2 mm (0.047 in)                      |           |
| <b>Track pitch</b>        | 0.74 $\mu$ m                           |           |
| <b>Access time</b>        | CD media                               | DVD media |
| Random                    | < 110 ms                               | < 130 ms  |
| Full stroke               | < 210 ms                               | < 225 ms  |
| <b>Audio output level</b> | Line-out, 0.7 V rms                    |           |
| <b>Cache buffer</b>       | 2 MB                                   |           |
| <b>Data transfer rate</b> |  |           |
| CD-R (24X)                | 3600 KB/s (150 KB/s at 1X CD rate)     |           |
| CD-RW (10X)               | 1500 KB/s (150 KB/s at 1X CD rate)     |           |
| CD-ROM (24X)              | 3600 KB/s (150 KB/s at 1X CD rate)     |           |
| DVD (8X)                  | 10,800 KB/s (1352 KB/s at 1X DVD rate) |           |
| Multiword DMA mode 2      | 16.6 MB/s                              |           |
| <b>Startup time</b>       | < 15 seconds                           |           |
| <b>Stop time</b>          | < 6 seconds                            |           |

**Table 7-9**  
**DVD±RW and CD-RW Combo Drive**

| <b>Applicable disc</b>      | <b>Read:</b>  | <b>Write:</b>                         |
|-----------------------------|---|---------------------------------------|
|                             | DVD-R, DVD-RW,<br>DVD-ROM (DVD-5,<br>DVD-9, DVD-10,<br>DVD-18),<br>CD-ROM (Mode 1<br>and 2)<br>CD Digital Audio<br>CD-XA ready (Mode<br>2, Form 1 and 2)<br>CD-I ready (Mode 2,<br>Form 1 and 2)<br>CD-R, CD-RW<br>Photo CD (single<br>and multisession)<br>CD-Bridge | CD-R and CD-RW<br>DVD-R and<br>DVD-RW |
| <b>Center hole diameter</b> | 1.5 cm (0.59 in)  |                                       |
| <b>Disc diameter</b>        |   |                                       |
| Standard disc               | 12 cm (4.72 in)   |                                       |
| Mini disc                   | 8 cm (3.15 in)  |                                       |

**Table 7-9**  
**DVD±RW and CD-RW Combo Drive (*Continued*)**

|                           |   |          |
|---------------------------|---|----------|
| <b>Disc thickness</b>     | 1.2 mm (0.047 in)                       |          |
| <b>Track pitch</b>        | 0.74 $\mu$ m                            |          |
| <b>Access time</b>        | CD                                      | DVD      |
| Random                    | < 175 ms                                | < 230 ms |
| Full stroke               | < 285 ms                                | < 335 ms |
| <b>Audio output level</b> | Audio-out, 0.7 Vrms                     |          |
| <b>Cache buffer</b>       | 2 MB                                    |          |
| <b>Data transfer rate</b> |   |          |
| CD-R (16X)                | 2,400 KB/s (150 KB/s at 1X CD rate)     |          |
| CD-RW (8X)                | 1,200 KB/s (150 KB/s at 1X CD rate)     |          |
| CD-ROM (24X)              | 3,600 KB/s (150 KB/s at 1X CD rate)     |          |
| DVD (8X)                  | 10,800 KB/s (1,352 KB/s at 1X DVD rate) |          |
| DVD-R (4X)                | 5,400 KB/s (1,352 KB/s at 1X DVD rate)  |          |
| DVD-RW (2X)               | 2,700 KB/s (1,352 KB/s at 1X DVD rate)  |          |
| Multiword DMA mode 2      | 16.6 MB/s                               |          |
| <b>Startup time</b>       | < 15 seconds                            |          |
| <b>Stop time</b>          | < 6 seconds                             |          |

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**Table 7-10**  
**CD-ROM Drive**

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|                             |  |
|-----------------------------|--|
| <b>Applicable disc</b>      | CD-ROM (Mode 1 and 2)<br>CD Digital Audio<br>CD-XA ready (Mode 2, Form 1 and 2)<br>CD-I ready (Mode 2, Form 1 and 2)<br>CD-R<br>CD-RW<br>Photo CD (single and multisession)<br>CD-Bridge |
| <b>Center hole diameter</b> | 1.5 cm (0.59 in)   |
| <b>Disc diameter</b>        |  |
| Standard disc               | 12 cm (4.72 in)  |
| Mini disc                   | 8 cm (3.15 in)   |
| <b>Disc thickness</b>       | 1.2 mm (0.047 in)  |

---



**Table 7-10**  
**CD-ROM Drive (Continued)**

|                           |                                    |           |
|---------------------------|------------------------------------|-----------|
| <b>Track pitch</b>        | 1.6 $\mu$ m                        |           |
| <b>Access time</b>        | CD media                           | DVD media |
| Random                    | < 110 ms                           | < 125 ms  |
| Full stroke               | < 220 ms                           | < 225 ms  |
| <b>Audio output level</b> | Line-out, 0.7 Vrms                 |           |
| <b>Cache buffer</b>       | 128 KB/s                           |           |
| <b>Data transfer rate</b> |                                    |           |
| CD-R (24X)                | 3600 KB/s (150 KB/s at 1X CD rate) |           |
| Multiword DMA mode 2      | 16.6 MB/s                          |           |
| <b>Startup time</b>       | < 8 seconds                        |           |
| <b>Stop time</b>          | < 4 seconds                        |           |

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**Table 7-11**  
**System DMA**

| <b>Hardware DMA</b> | <b>System Function</b>          |
|---------------------|---------------------------------|
| 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.

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**Table 7-12**  
**System Interrupts**

| <b>Hardware IRQ</b> | <b>System Function</b>   |
|---------------------|--|
| 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<br>Intel 82801DB/DBM SMBus Controller—24C3<br>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<br>Intel 82852/82855 GM/GME Graphic Controller<br>Realtek RTL8139 Family PCI fast Ethernet Controller |

**Table 7-12**  
**System Interrupts (Continued)**

|       |  |
|-------|--|
| IRQ11 | Intel USB EHCI controller—24CD<br>Intel USB UHCI controller—24C4<br>Intel USB UHCI controller—24C7<br>Intel Pro/Wireless 2200BG<br>TI OHCI 1394 host controller<br>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.



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.

**Table 7-13**  
**System I/O Addresses**

| <b>I/O Address (hex)</b> | <b>System Function (shipping configuration)</b> |
|--------------------------|---|
| 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                      |

**Table 7-13**  
**System I/O Addresses (Continued)**

| <b>I/O Address (hex)</b> | <b>System Function (shipping configuration)</b> |
|--------------------------|---|
| 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  |
| 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                            |

**Table 7-13**  
**System I/O Addresses (Continued)**

| <b>I/O Address (hex)</b> | <b>System Function (shipping configuration)</b> |
|--------------------------|---|
| 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)     |

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**Table 7-14**  
**System Memory Map**

| <b>Size</b> | <b>Memory Address</b> | <b>System Function</b>       |
|-------------|-----------------------|------------------------------|
| 640 KB      | 00000000-0009FFFF     | Base memory                  |
| 128 KB      | 000A0000-000BFFFF     | Video memory                 |
| 48 KB       | 000C0000-000CBFFF     | Video BIOS                   |
| 160 KB      | 000C8000-000E7FFF     | Unused                       |
| 64 KB       | 000E8000-000FFFFFF    | System BIOS                  |
| 15 MB       | 00100000-00FFFFFF     | Extended memory              |
| 58 MB       | 01000000-047FFFFFF    | Super extended memory        |
| 58 MB       | 04800000-07FFFFFF     | Unused                       |
| 2 MB        | 08000000-080FFFFFF    | Video memory (direct access) |
| 4 GB        | 08200000-FFFEFFFF     | Unused                       |
| 64 KB       | FFFF0000-FFFFFFFF     | System BIOS                  |

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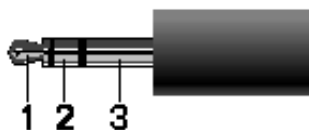
# A

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## Connector Pin Assignments

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**Table A-1**  
**Audio-Out (Headphone)**

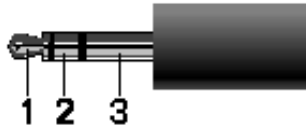


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| <b>Pin</b> | <b>Signal</b>            | <b>Pin</b> | <b>Signal</b> |
|------------|--------------------------|------------|---------------|
| 1          | Audio out, left channel  | 3          | Ground        |
| 2          | Audio out, right channel |            |               |

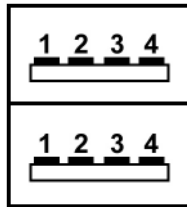
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**Table A-2**  
**Audio-In (Microphone)**



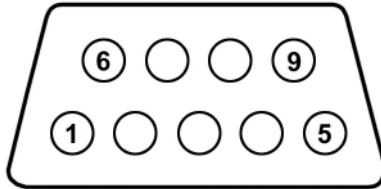
| Pin | Signal          | Pin | Signal |
|-----|-----------------|-----|--------|
| 1   | Audio signal in | 3   | Ground |
| 2   | Audio signal in |     |        |

**Table A-3**  
**Universal Serial Bus**



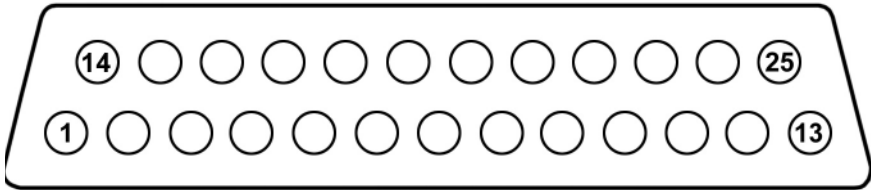
| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| 1   | +5 VDC | 3   | Data + |
| 2   | Data - | 4   | Ground |

**Table A-4**  
**Serial**



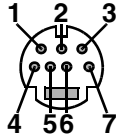
| <b>Pin</b> | <b>Signal</b>       | <b>Pin</b> | <b>Signal</b>  |
|------------|---------------------|------------|----------------|
| 1          | Carrier detect      | 6          | Data set ready |
| 2          | Receive data        | 7          | Ready to send  |
| 3          | Transmit data       | 8          | Clear to send  |
| 4          | Data terminal ready | 9          | Ring indicator |
| 5          | Ground              |            |                |

**Table A-5**  
**Parallel Port**



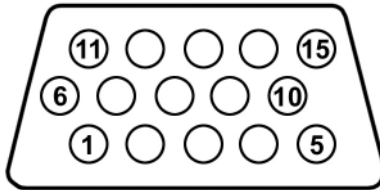
| Pin | Signal      | Pin | Signal             |
|-----|-------------|-----|--------------------|
| 1   | Strobe      | 14  | Auto linefeed      |
| 2   | Data bit 0  | 15  | Error              |
| 3   | Data bit 1  | 16  | Initialize printer |
| 4   | Data bit 2  | 17  | Select in          |
| 5   | Data bit 3  | 18  | Ground             |
| 6   | Data bit 4  | 19  | Ground             |
| 7   | Data bit 5  | 20  | Ground             |
| 8   | Data bit 6  | 21  | Ground             |
| 9   | Data bit 7  | 22  | Ground             |
| 10  | Acknowledge | 23  | Ground             |
| 11  | Busy        | 24  | Ground             |
| 12  | Paper end   | 25  | Ground             |
| 13  | Select      |     | Ground             |

**Table A-6**  
**S-Video-Out**



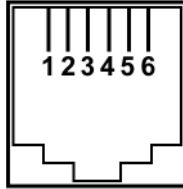
| Pin | Signal                     | Pin | Signal                 |
|-----|----------------------------|-----|------------------------|
| 1   | S-VHS color (C) signal     | 5   | TV-CD                  |
| 2   | Composite video signal     | 6   | S-VHS intensity ground |
| 3   | S-VHS intensity (Y) signal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

**Table A-7**  
**External Monitor**



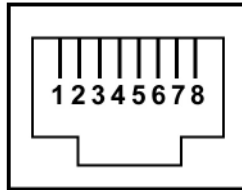
| Pin | Signal        | Pin | Signal          |
|-----|---------------|-----|-----------------|
| 1   | Red analog    | 9   | +5 VDC          |
| 2   | Green analog  | 10  | Ground          |
| 3   | Blue analog   | 11  | Monitor detect  |
| 4   | Not connected | 12  | DDC 2B data     |
| 5   | Ground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

**Table A-8**  
**RJ-11 (Modem)**



| <b>Pin</b> | <b>Signal</b> | <b>Pin</b> | <b>Signal</b> |
|------------|---------------|------------|---------------|
| 1          | Unused        | 4          | Unused        |
| 2          | Tip           | 5          | Unused        |
| 3          | Ring          | 6          | Unused        |

**Table A-9**  
**RJ-45 (Network)**



| <b>Pin</b> | <b>Signal</b> | <b>Pin</b> | <b>Signal</b> |
|------------|---------------|------------|---------------|
| 1          | Transmit +    | 5          | Unused        |
| 2          | Transmit –    | 6          | Receive –     |
| 3          | Receive +     | 7          | Unused        |
| 4          | Unused        | 8          | Unused        |



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## Power Cord Set Requirements

### 3-Conductor Power Cord Set

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

The power cord set included with the computer meets the requirements for use in the country where the equipment is purchased.

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

## General Requirements

The requirements listed below are applicable to all countries.

- The length of the power cord set must be at least 1.5 m (5.0 ft) and a maximum of 2.0 m (6.5 ft).
- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country 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'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.

## Country-Specific Requirements

### 3-Conductor Power Cord Set Requirements

| 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                      |



#### NOTES:

1. The flexible cord must be <HAR> Type HO5VV-F, 3-conductor, 1.0 mm<sup>2</sup> 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 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 mm<sup>2</sup> conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.

### 3-Conductor Power Cord Set Requirements (*Continued*)

| Country/Region             | Accredited Agency | Applicable Note Number |
|----------------------------|-------------------|------------------------|
| Korea                      | EK                | 4                      |
| The Netherlands            | KE A              | 1                      |
| Norway                     | NEMKO             | 1                      |
| People's Republic of China | CCC               | 5                      |
| Sweden                     | SEMKO             | 1                      |
| Switzerland                | SEV               | 1                      |
| Taiwan                     | BSMI              | 4                      |
| United Kingdom             | BSI               | 1                      |
| United States              | UL                | 2                      |



**NOTES:**

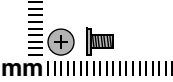
1. The flexible cord must be <HAR> Type HO5VV-F, 3-conductor, 1.0 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.
2. The flexible cord must be Type 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 mm<sup>2</sup> 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 mm<sup>2</sup> 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 where it will be used.
5. The flexible cord must be Type VCTF, 3-conductor, 0.75 mm<sup>2</sup> 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 where it will be used.

---

## Screw Listing

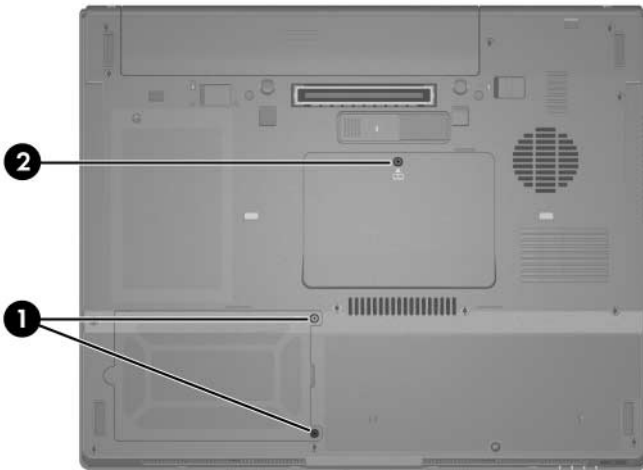
This appendix provides specification and reference information for the screws and screw locks used in the computer. All screws and screw locks listed in this appendix are available in the Screw Kit, spare part number 378235-001.

**Table C-1**  
**Phillips PM2.0×4.0 Screw**

|  | Color | Qty. | Length | Thread | Head Width |
|---|-------|------|--------|--------|------------|
|   | Black | 3    | 4.0 mm | 2.0 mm | 4.0 mm     |

**Where used:**

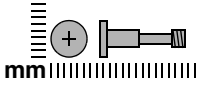
- ➊ Two screws that secure the hard drive cover to the computer (screws are captured on the cover by C clips; documented in [Section 6.4](#))
- ➋ One screw that secures the memory module/Mini PCI compartment cover to the computer (screw is captured on the cover by a C clip; documented in [Section 6.7](#))



*Phillips PM2.0×4.0 Screw Locations*

Table C-2

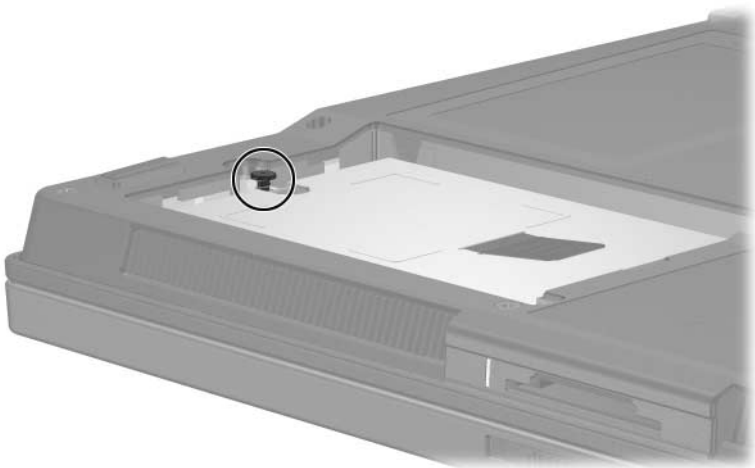
## Phillips PM2.5×13.0 Spring-loaded Hard Drive Retention Screw



| Color  | Qty. | Length  | Thread | Head Width |
|--------|------|---------|--------|------------|
| Silver | 1    | 13.0 mm | 2.5 mm | 5.5 mm     |

**Where used:**

One screw that secures the hard drive to the computer (screw is captured on the hard drive frame by a C clip; documented in [Section 6.4](#))



Phillips PM2.5×13.0 Screw Location

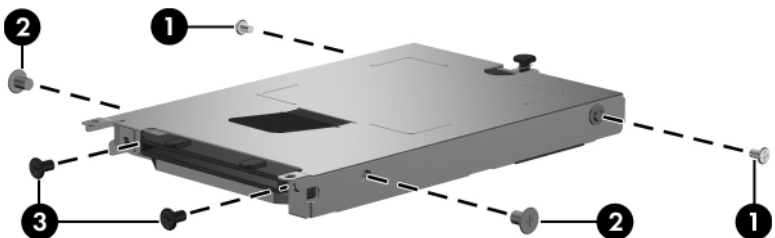
**Table C-3**

**Phillips PM2.5×4.0 Shoulder Screw, Phillips PM2.5×4.0 Screw, and Phillips PM1.5×3.5 Screw**

|   |              |             |               |               |                   |
|---|--------------|-------------|---------------|---------------|-------------------|
|  | <b>Color</b> | <b>Qty.</b> | <b>Length</b> | <b>Thread</b> | <b>Head Width</b> |
|   | Silver       | 2           | 4.0 mm        | 2.5 mm        | 4.0 mm            |
|  | <b>Color</b> | <b>Qty.</b> | <b>Length</b> | <b>Thread</b> | <b>Head Width</b> |
|   | Silver       | 2           | 4.0 mm        | 2.5 mm        | 4.5 mm            |
|  | <b>Color</b> | <b>Qty.</b> | <b>Length</b> | <b>Thread</b> | <b>Head Width</b> |
|   | Black        | 2           | 3.5 mm        | 1.5 mm        | 4.5 mm            |

**Where used:**

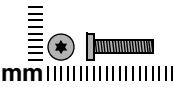
- ❶ Two screws that secure the hard drive frame to the hard drive (documented in [Section 6.4](#))
- ❷ Two screws that secure the hard drive frame to the hard drive (documented in [Section 6.4](#))
- ❸ Two screws that secure the hard drive frame to the hard drive (documented in [Section 6.4](#))



*Phillips PM2.5×4.0 Shoulder Screw, Phillips PM2.5×4.0 Screw, and Phillips PM1.5×3.5 Screw Locations*

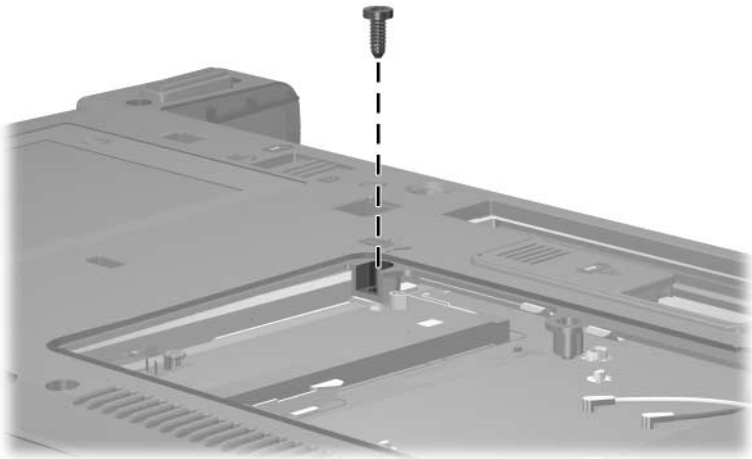


**Table C-4**  
**Torx8 T8M2.0×9.0 Screw**

|  | Color | Qty. | Length | Thread | Head Width |
|---|-------|------|--------|--------|------------|
|   | Black | 24   | 9.0 mm | 2.0 mm | 4.0 mm     |

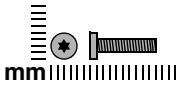
**Where used:**

One screw that secures the optical drive to the computer (documented in [Section 6.9](#))



*Torx8 T8M2.0×9.0 Screw Location*

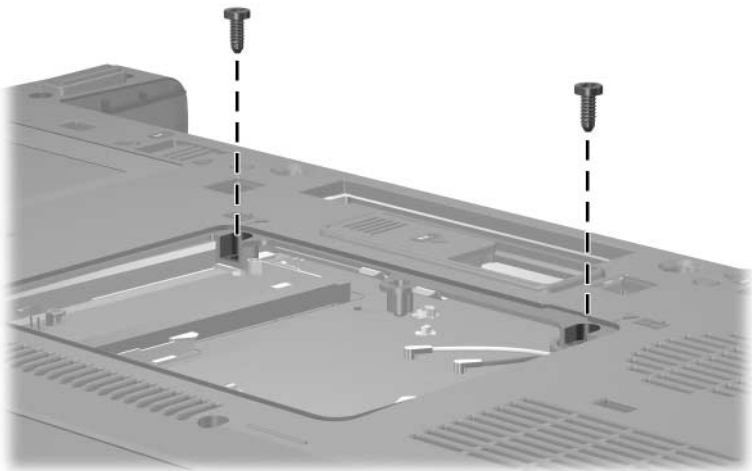
**Table C-4**  
**Torx8 T8M2.0×9.0 Screw (Continued)**



| Color | Qty. | Length | Thread | Head Width |
|-------|------|--------|--------|------------|
| Black | 24   | 9.0 mm | 2.0 mm | 4.0 mm     |

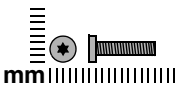
**Where used:**

2 screws that secure the keyboard to the computer (documented in [Section 6.10](#))



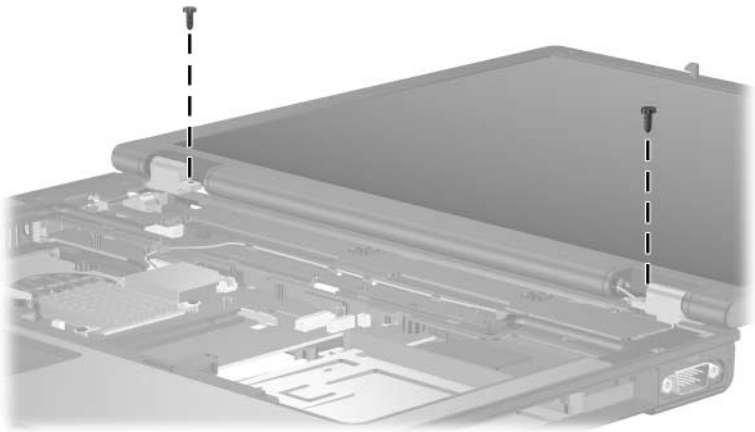
*Torx8 T8M2.0×9.0 Screw Locations*

**Table C-4**  
**Torx8 T8M2.0×9.0 Screw (Continued)**

|  | Color | Qty. | Length | Thread | Head Width |
|---|-------|------|--------|--------|------------|
|   | Black | 24   | 9.0 mm | 2.0 mm | 4.0 mm     |

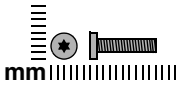
**Where used:**

2 screws that secure the display assembly to the computer (documented in [Section 6.19](#))



*Torx8 T8M2.0×9.0 Screw Locations*

**Table C-4**  
**Torx8 T8M2.0×9.0 Screw (Continued)**



| Color | Qty. | Length | Thread | Head Width |
|-------|------|--------|--------|------------|
| Black | 24   | 9.0 mm | 2.0 mm | 4.0 mm     |

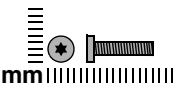
**Where used:**

4 screws that secure the display assembly to the computer (documented in [Section 6.19](#))



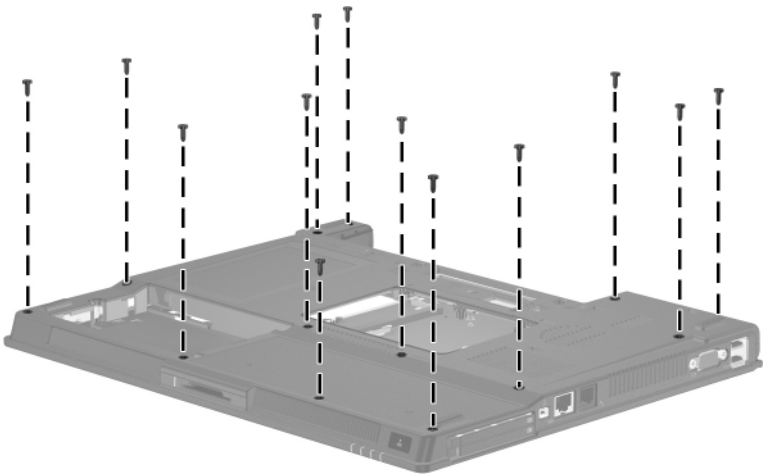
*Torx8 T8M2.0×9.0 Screw Locations*

**Table C-4**  
**Torx8 T8M2.0×9.0 Screw (Continued)**

|  | Color | Qty. | Length | Thread | Head Width |
|---|-------|------|--------|--------|------------|
|   | Black | 24   | 9.0 mm | 2.0 mm | 4.0 mm     |

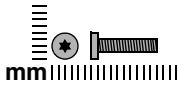
**Where used:**

13 screws that secure the top cover to the computer (documented in [Section 6.20](#))



*Torx8 T8M2.0×9.0 Screw Locations*

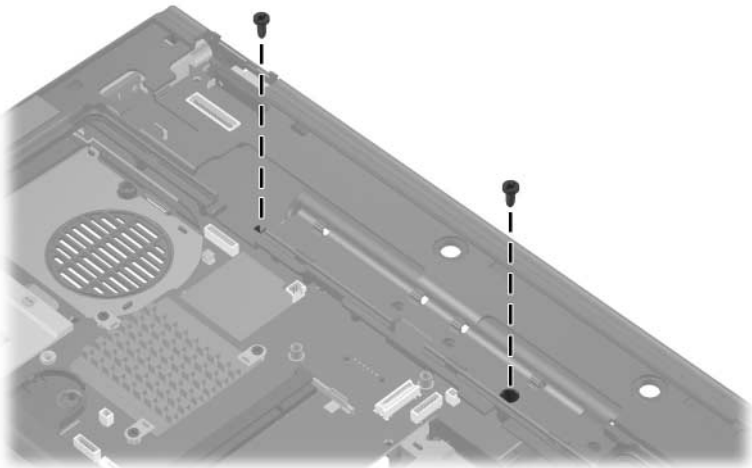
**Table C-4**  
**Torx8 T8M2.0×9.0 Screw (Continued)**



| Color | Qty. | Length | Thread | Head Width |
|-------|------|--------|--------|------------|
| Black | 24   | 9.0 mm | 2.0 mm | 4.0 mm     |

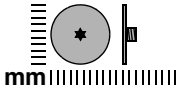
**Where used:**

2 screws that secure the top cover to the computer (documented in [Section 6.20](#))



*Torx8 T8M2.0×9.0 Screw Locations*

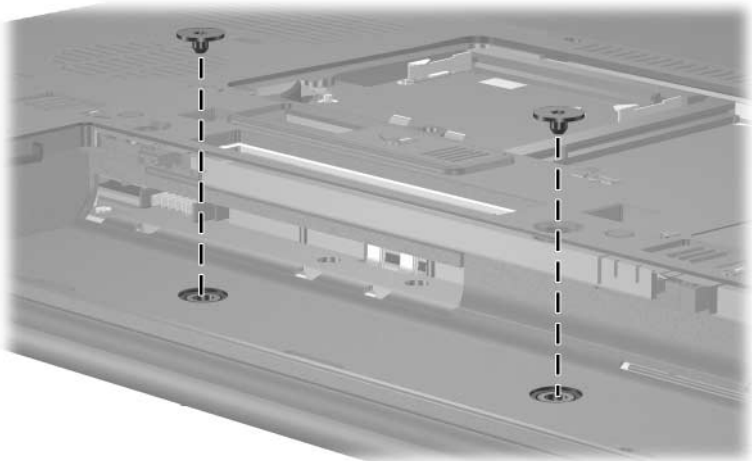
**Table C-5**  
**Torx8 T8M2.0×2.0 Screw**



| Color | Qty. | Length | Thread | Head Width |
|-------|------|--------|--------|------------|
| Black | 2    | 2.0 mm | 2.0 mm | 6.0 mm     |

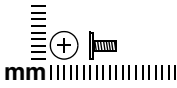
**Where used:**

2 screws that secure the switch cover to the computer (documented in [Section 6.11](#))



*Torx8 T8M2.0×2.0 Screw Locations*

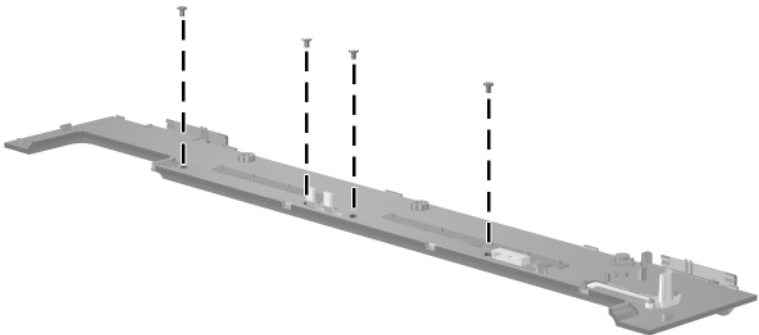
**Table C-6**  
**Phillips PM1.5×4.0 Screw**



| Color  | Qty. | Length | Thread | Head Width |
|--------|------|--------|--------|------------|
| Silver | 4    | 4.0 mm | 1.5 mm | 4.0 mm     |

**Where used:**

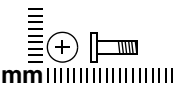
4 screws that secure the LED board to the switch cover (documented in [Section 6.12](#))



*Phillips PM1.5×4.0 Screw Locations*

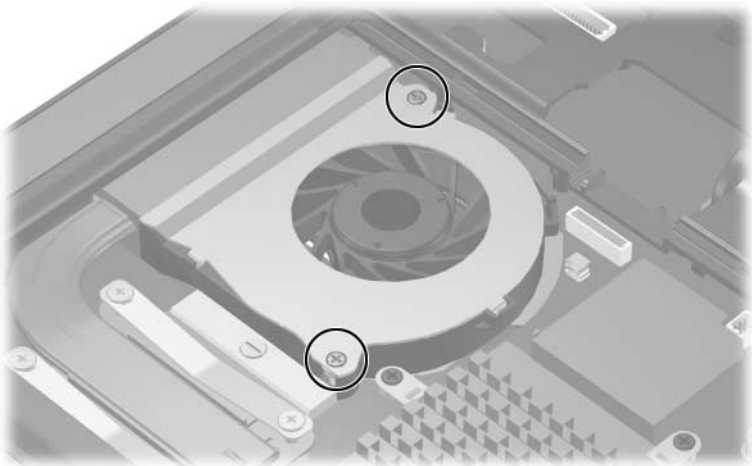


**Table C-7**  
**Phillips PM2.0x7.0 Screw**

|  | Color  | Qty. | Length | Thread | Head Width |
|---|--------|------|--------|--------|------------|
|   | Silver | 2    | 7.0 mm | 2.0 mm | 4.5 mm     |

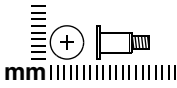
**Where used:**

2 screws that secure the fan to the computer (screws are captured on the fan assembly by an O clip; documented in [Section 6.13](#))



*Phillips PM2.0x7.0 Screw Locations*

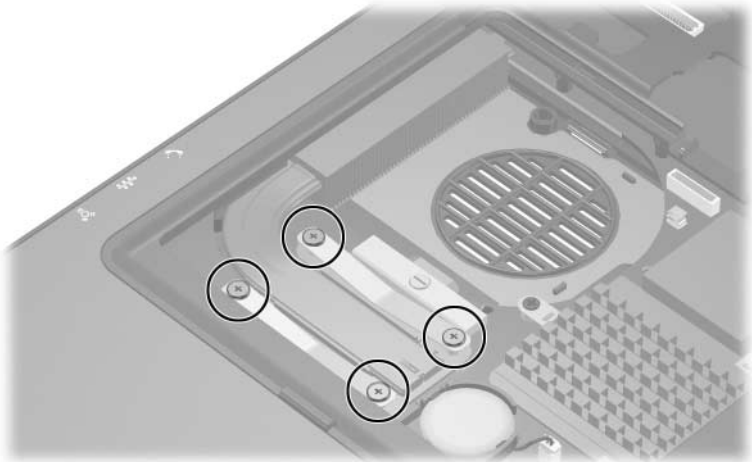
**Table C-8**  
**Phillips PM2.0x8.0 Shoulder Screw**



| Color  | Qty. | Length | Thread | Head Width |
|--------|------|--------|--------|------------|
| Silver | 4    | 8.0 mm | 2.0 mm | 5.0 mm     |

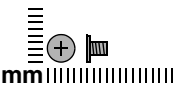
**Where used:**

4 screws that secure the heat sink to the computer (screws are captured on the heat sink by C clips; documented in [Section 6.14](#))



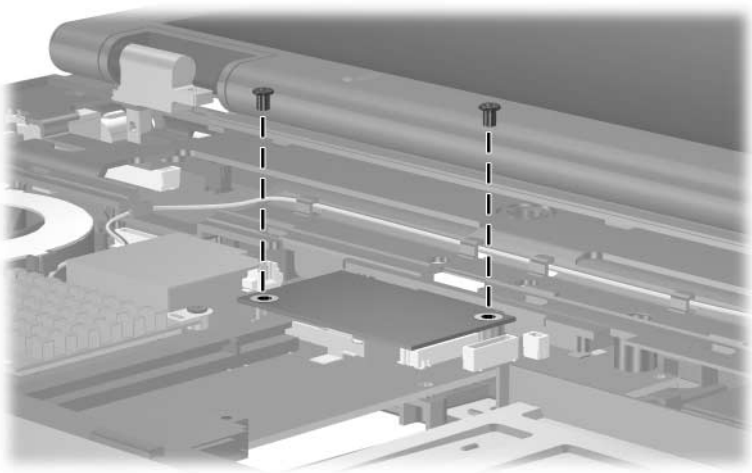
*Phillips PM2.0x8.0 Shoulder Screw Locations*

**Table C-9**  
**Phillips PM2.0×3.0 Screw**

|  | Color | Qty. | Length | Thread | Head Width |
|---|-------|------|--------|--------|------------|
|   | Black | 2    | 3.0 mm | 2.0 mm | 4.0 mm     |

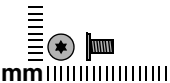
**Where used:**

2 screws that secure the modem board to the computer (documented in [Section 6.16](#))



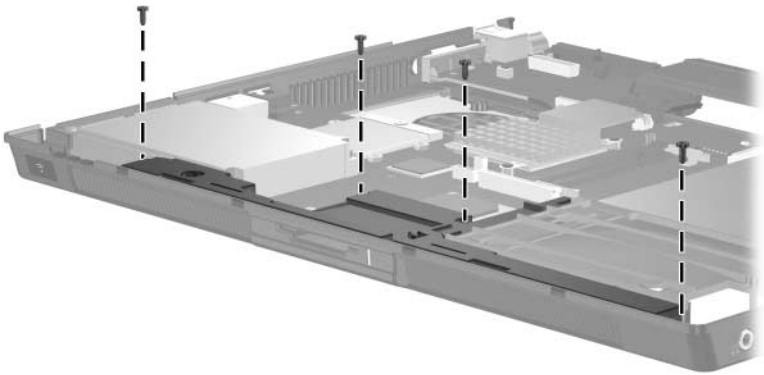
*Phillips PM2.0×3.0 Screw Locations*

**Table C-10**  
**Torx8 T8M2.0x4.0 Screw**

|  | Color | Qty. | Length | Thread | Head Width |
|---|-------|------|--------|--------|------------|
|   | Black | 6    | 4.0 mm | 2.0 mm | 4.0 mm     |

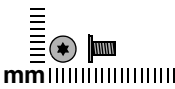
**Where used:**

4 screws that secure the speaker to the computer (documented in [Section 6.21](#))



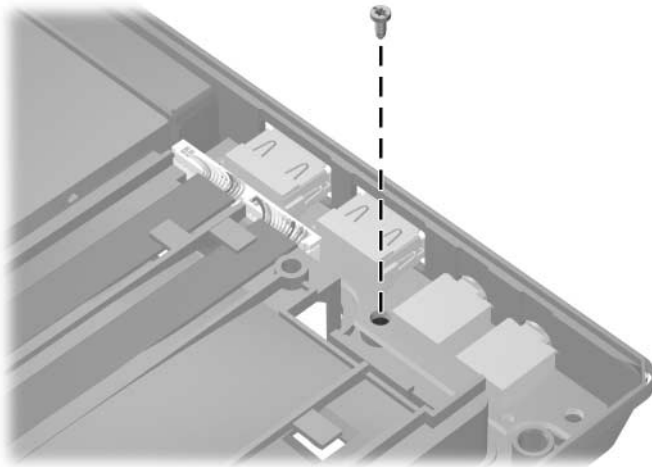
*Torx8 T8M2.0x4.0 Screw Locations*

**Table C-10**  
**Torx8 T8M2.0×4.0 Screw (Continued)**

|  | Color | Qty. | Length | Thread | Head Width |
|---|-------|------|--------|--------|------------|
|   | Black | 6    | 4.0 mm | 2.0 mm | 4.0 mm     |

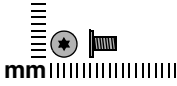
**Where used:**

One screw that secures the USB/audio board the computer (documented in [Section 6.23](#))



*Torx8 T8M2.0×4.0 Screw Location*

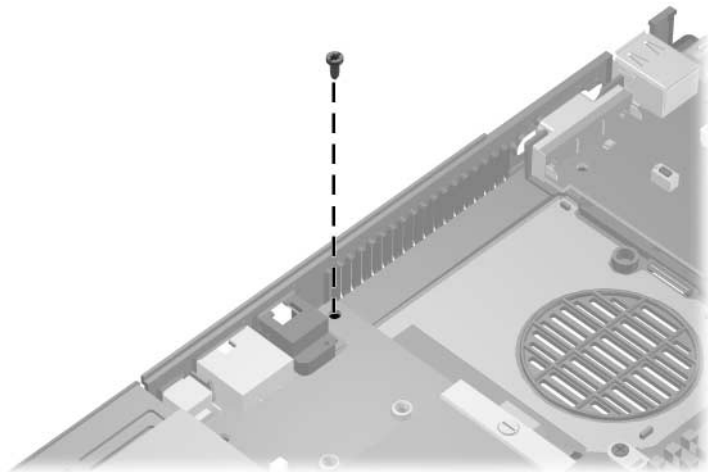
**Table C-10**  
**Torx8 T8M2.0×4.0 Screw (Continued)**



| Color | Qty. | Length | Thread | Head Width |
|-------|------|--------|--------|------------|
| Black | 6    | 4.0 mm | 2.0 mm | 4.0 mm     |

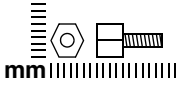
**Where used:**

One screw that secures the system board the computer (documented in [Section 6.24](#))



*Torx8 T8M2.0×4.0 Screw Location*

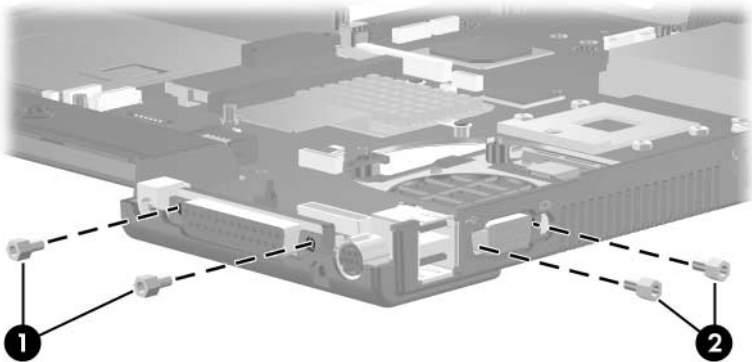
**Table C-11**  
**Hex Socket HM5.0×9.0 Screw Lock**



| Color  | Qty. | Length | Thread | Head Width |
|--------|------|--------|--------|------------|
| Silver | 6    | 9.0 mm | 2.5 mm | 5.0 mm     |

**Where used:**

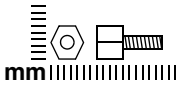
- ❶ Two screw locks that secure the system board to the computer only on HP Compaq nc6110 and nc6120 computer models (documented in [Section 6.24](#))
- ❷ Two screw locks that secure the system board to the computer (documented in [Section 6.24](#))



*Hex Socket HM5.0×9.0 Screw Lock Locations*

**Table C-11**

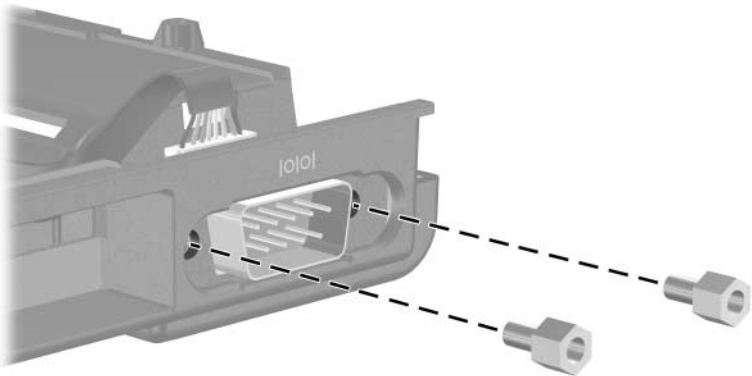
**Hex Socket HM5.0×9.0 Screw Lock (*Continued*)**



| Color  | Qty. | Length | Thread | Head Width |
|--------|------|--------|--------|------------|
| Silver | 6    | 9.0 mm | 2.5 mm | 5.0 mm     |

**Where used:**

2 screw locks that secure the serial connector board to the system board (documented in [Section 6.25](#))



*Hex Socket HM5.0×9.0 Screw Lock Locations*



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## Display Component Recycling

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**WARNING:** The backlight contains mercury. Caution should be exercised when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

---



**CAUTION:** The procedures in this appendix can result in damage to display components. The only components intended for recycling purposes are the liquid crystal display (LCD) panel and the backlight. Careful handling should be exercised when removing these components.

---



### 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 the Electronic Industries Alliance (EIA) at <http://www.eiae.org>.

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

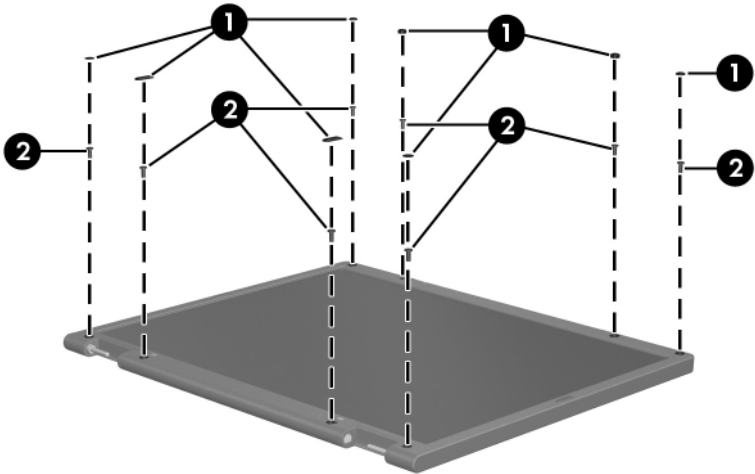


Disassembly procedures differ from one display assembly to another. The procedures provided in this appendix are general disassembly instructions. Specific details, such as screw sizes, quantities, and locations, and component shapes and sizes, can vary from one computer model to another.

---

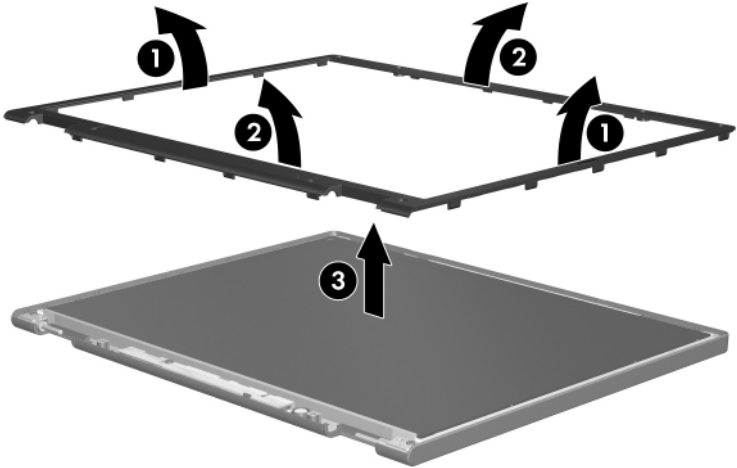
Perform the following steps to disassemble the display assembly:

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



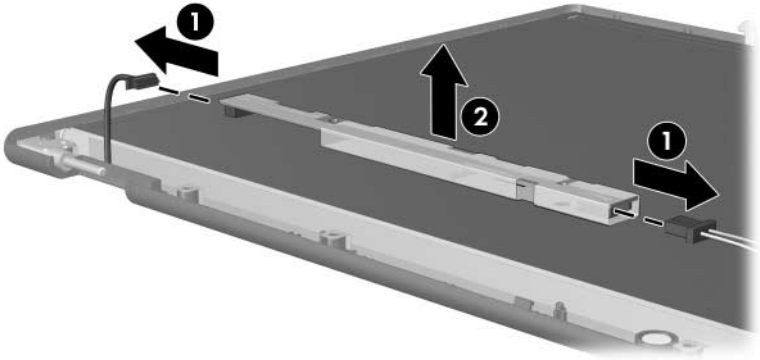
*Removing the Display Bezel Screw Covers and Screws*

- 
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.



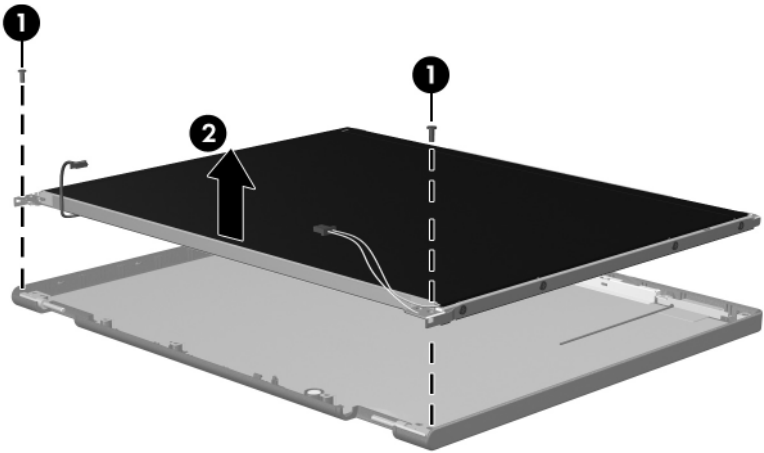
*Removing the Display Bezel*

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



*Removing the Display Inverter*

5. Remove all screws ❶ that secure the display panel assembly to the display enclosure.
6. Remove the display panel assembly ❷ from the display enclosure.



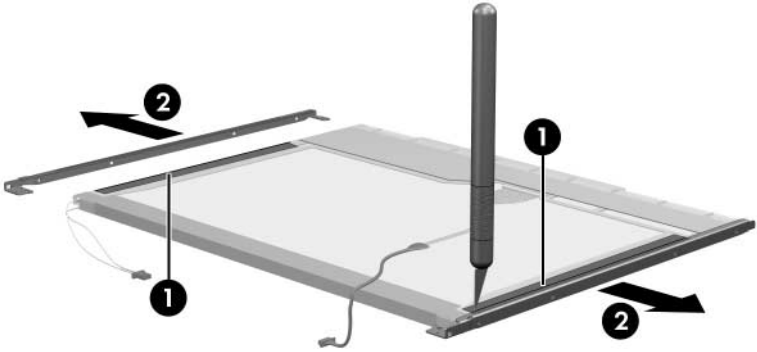
*Removing the Display Panel Assembly*

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



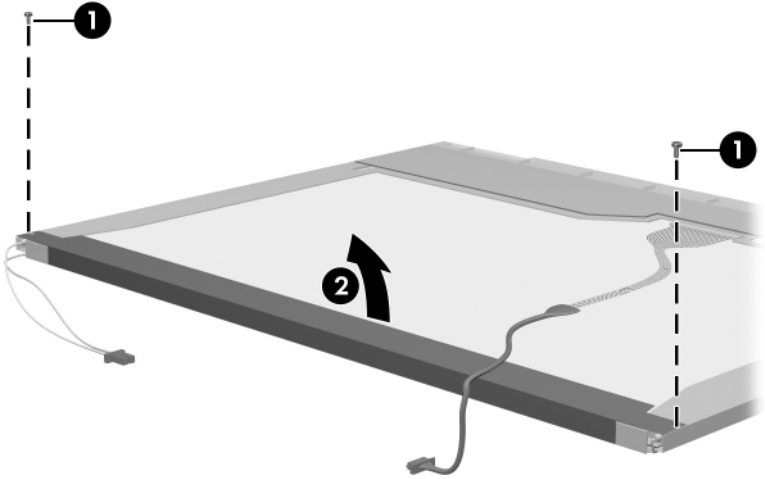
*Removing the Display Panel Frame Screws*

9. Use a sharp-edged tool to cut the tape ❶ that secures the sides of the display panel to the display panel frame.
10. Remove the display panel frame ❷ from the display panel.



*Removing the Display Frame*

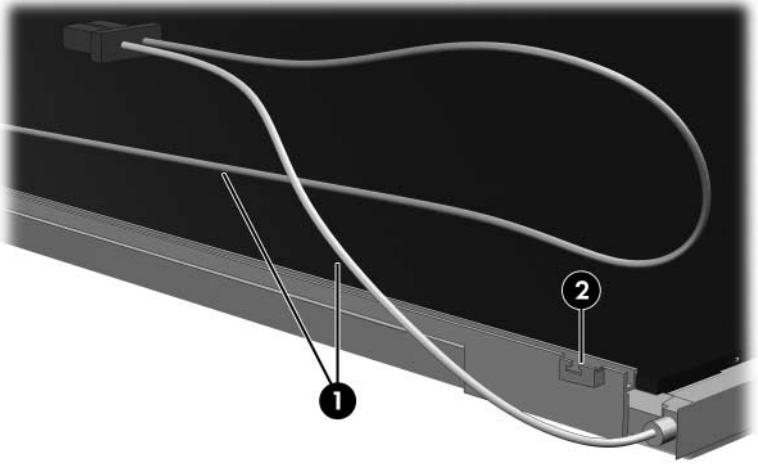
11. Remove the screws ❶ that secure the backlight cover to the display panel.
12. Lift the top edge of the backlight cover ❷ and swing it forward.
13. Remove the backlight cover.



*Removing the Backlight Cover*

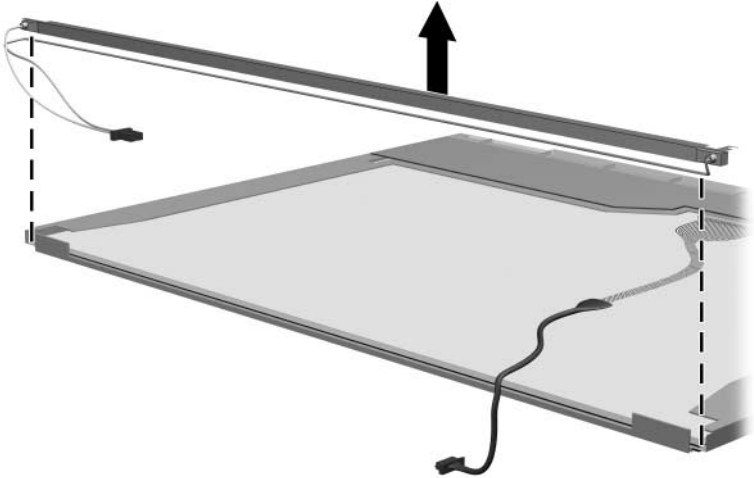


14. Turn the display panel right-side up.
15. Remove the backlight cables **1** from the clip **2** in the display panel.



*Releasing the Backlight Cables*

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



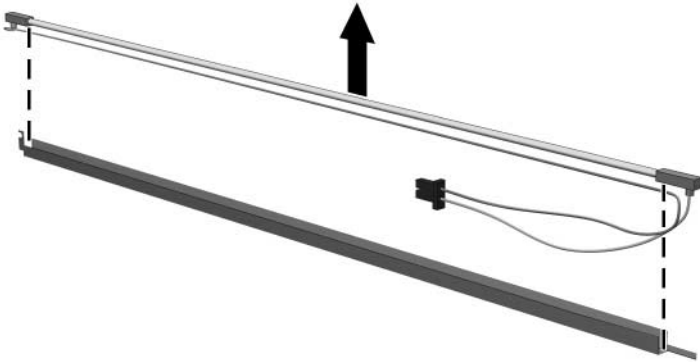
*Removing the Backlight Frame*



**WARNING:** The backlight contains mercury. Caution should be exercised when removing and handling the backlight to avoid damaging this component and causing exposure to the mercury.

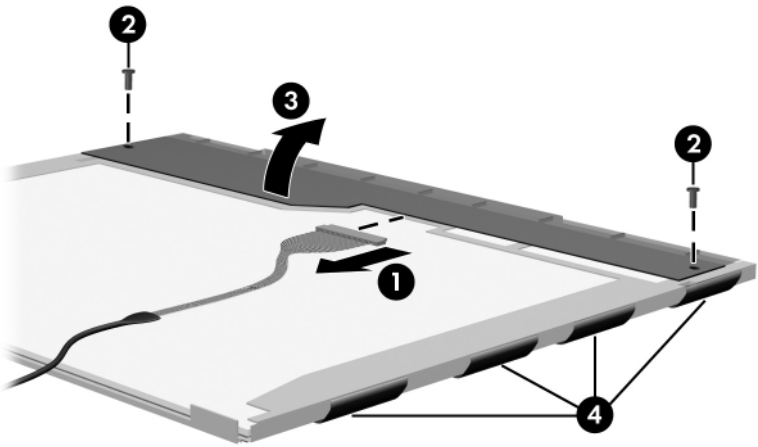
---

18. Slide the backlight out of the backlight frame.



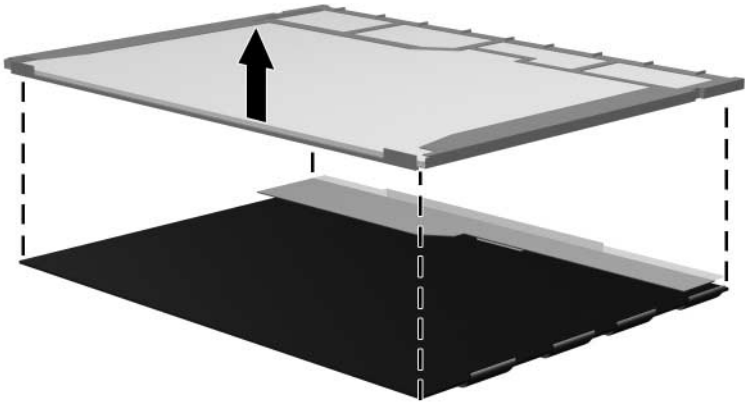
*Removing the Backlight*

19. Disconnect the display cable ❶ from the LCD panel.
20. Remove the screws ❷ that secure the LCD panel to the display rear panel.
21. Release the LCD panel ❸ from the display rear panel.
22. Release the tape ❹ that secures the LCD panel to the display rear panel.



*Releasing the LCD Panel*

23. Remove the LCD panel.



*Removing the LCD Panel*

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