Maintenance and Service Guide
HP Pavilion dv5100 Notebook PC

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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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2 Troubleshooting

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1

Product Description

The HP Pavilion dv5100 Notebook PC offers advanced modularity, Intel® Pentium® M processors, and extensive multimedia support.

HP Pavilion dv5100 Notebook PC

1.1 **Features**

✎ Numerous references are made throughout this *Maintenance and Service Guide* to "full-featured" and "defeatured" computer models. A model is considered to be full-featured if it has 3 Universal Serial Bus ports and the following components:

■ PC Card slot

■ IEEE 1394 port

■ Digital Media Slot

A model is considered to be defeatured if it has only two Universal Serial Bus ports and none of the components listed above.

■ The following processors, varying by computer model:

❏ Intel Pentium M 2.0- or 1.83-GHz

❏ Intel Celeron M 1.60-GHz or 410 1.46-GHz

❏ Intel Core Duo T2600 (2.16-GHz), T2250 (1.73-GHz), T2300E (1.66-GHz), or T2050 (1.60-GHz)

❏ Intel Core Solo T1350 1.86-, 1.83-GHz, or 1.66-GHz

■ 15.4-inch, WXGA, TFT (1280 × 800) display with antiglare or BrightView, varying by computer model

■ 120, 100-, 80-, 60-, or 40-GB high-capacity hard drive, varying by computer model

■ 256-MB DDR1 synchronous DRAM (SDRAM) at 667 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 dedicated vertical scroll region

- Integrated 10Base-T/100Base-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 Card IEEE 802.11a/b/g WLAN device

- Support for one Type I or Type II PC Card slot, with support for both 32-bit (CardBus) and 16-bit PC Cards

- Support for ExpressCard slot

- External 65-watt AC adapter with 3-wire power cord

- 12- or 6-cell Li-Ion battery

- Stereo speakers

- Volume up, volume mute, and volume down buttons

- Support for the following optical drives:

  ❏ DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe

  ❏ DVD±RW and CD-RW Super Multi Double-Layer Combo Drive

  ❏ DVD±RW and CD-RW Double-Layer Combo Drive with LightScribe and Hitachi LG Data Storage

  ❏ DVD±RW and CD-RW Double-Layer Combo Drive with LightScribe

  ❏ DVD/CD-RW Double-Layer Combo Drive with LightScribe

  ❏ DVD/CD-RW Combo Drive

  ❏ DVD-ROM drive

■ Connectors:

❏ Audio-in (microphone)

❏ Audio-out (headphone)

❏ Digital Media Slot (select models only)

❏ Expansion port 2

❏ ExpressCard slot

❏ External monitor

❏ IEEE 1394 (select models only)

❏ PC Card (select models only)

❏ Power

❏ RJ-11 (modem)

❏ RJ-45 (network)

❏ S-Video-out

❏ Universal Serial Bus (USB) v. 2.0 (2 or 3 ports, varying by computer model)

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 5.3, "Preparing the Computer for Disassembly," for more information.)

2. Remove the real-time clock (RTC) battery (refer to Section 5.8, "RTC Battery," for more information.)

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 batteries at this time.

6. Turn on the computer.

All passwords and 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.
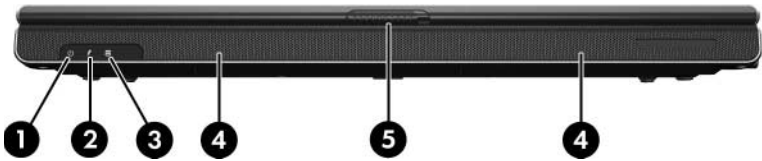
Front Components

Table 1-1

Front Components

Item	Component	Function
1	Power light	■ On: Computer is turned on. ■ Off: Computer is off or in hibernation. ■ Blinking: Computer is in standby.
2	Battery light	■ On: A battery is charging or is close to full charge capacity. ■ Off: If the computer is plugged into an external power source, the light is turned off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low-battery condition. ■ Blinking: A battery 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 quickly.
3	Drive light	On or blinking: The internal hard drive or an optical drive is being accessed.
4	Speakers	Produce stereo sound.
5	Display release latch	Opens the computer.

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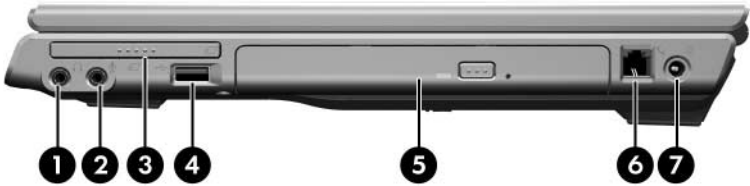
Right-Side Components

Table 1-2

Right-Side Components

Item	Component	Function
1	Audio-out (headphone) jack	Connects an optional headphone 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 stereo microphone.
3	ExpressCard slot	Supports an optional ExpressCard.
4	USB port (select models only)	Connects optional USB devices.
5	Optical drive	Supports an optical disc, such as a CD or DVD.
6	RJ-11 (modem) jack	Connects a modem cable (not included).
7	Power connector	Connects the AC adapter cable.

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

Rear Panel Components

Table 1-3

Rear Panel Components

Item	Component	Function
1	Wireless light	On: One or more internal wireless devices have been turned on.
		✎ To establish a wireless connection, a wireless network must already be set up.
2	Battery bay	Holds a battery.
3	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 or thick rugs or clothing, to block airflow.

The external components on the left side of the computer are
shown below and described in Table 1-4.
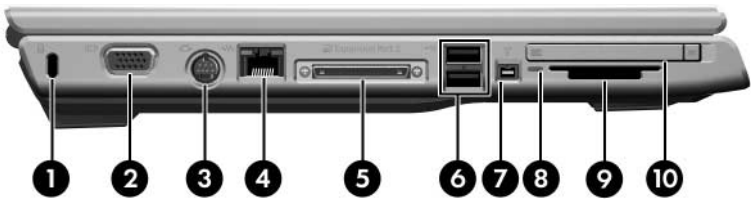
Left-Side Components

<div align="center">
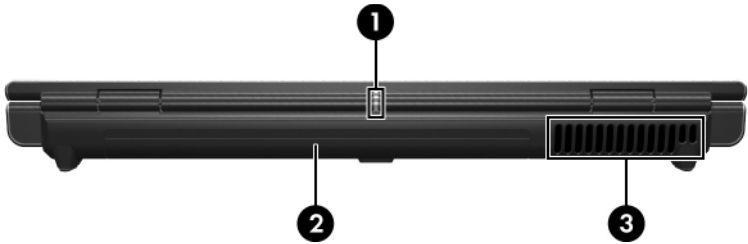
Table 1-4

Left-Side Components

</div>

Item	Component	Function
1	Security cable slot	Attaches an optional security cable to the computer. ✎ The security cable is designed to act as a deterrent, but may not prevent the product from being mishandled or stolen.
2	Monitor port	Connects an optional VGA monitor or projector.
3	S-Video-out jack	Connects the video function of an optional S-Video device, such as a television, VCR, or video capture card.
4	RJ-45 (network) jack	Connects a network cable (not included).

Table 1-4

Left-Side Components *(Continued)*

Item	Component	Function
5	Expansion port 2	Connects the computer to an optional expansion product. ✎ The computer has only one expansion port. The term *expansion port 2* describes the type of expansion port.
6	USB ports (2)	Connect optional USB devices.
7	1394 port (select models only))	Connects an optional 1394a device such as a scanner, a digital camera, or a digital camcorder.
8	Digital Media Slot light (select models only)	On: An optional digital card is being accessed.
9	Digital Media Slot (select models only)	Supports the following optional digital cards: Secure Digital (SD) Memory Card, SD I/O Card, Memory Stick, Memory Stick Pro, MultiMediaCard, xD-Picture Card, and SmartMedia.
10	PC Card slot (select models only)	Supports an optional Type I or Type II 32-bit (CardBus) or 16-bit PC Card.

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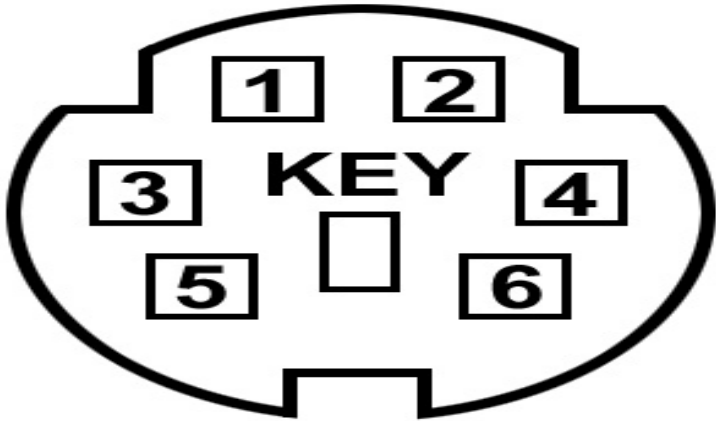
Standard Keyboard Components

Table 1-5

Standard Keyboard Components

Item	Component	Function
1	**f1** to **f12** keys (12)	Perform system and application tasks. When combined with **fn**, function keys perform additional tasks as hotkeys.
2	**caps lock** key	Enables caps lock and turns on the caps lock light.
3	**fn** key	Combines with other keys to perform system tasks as hotkeys. For example, pressing **fn+f7** decreases screen brightness.
4	Windows logo key	Displays the Microsoft Windows Start menu.
5	Windows applications key	Displays a shortcut menu for items beneath the pointer.
6	Arrow keys	Move the cursor around the screen.
7	Numeric keypad keys (15)	Can be used like the keys on an external numeric keypad.
8	**num lock** 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.
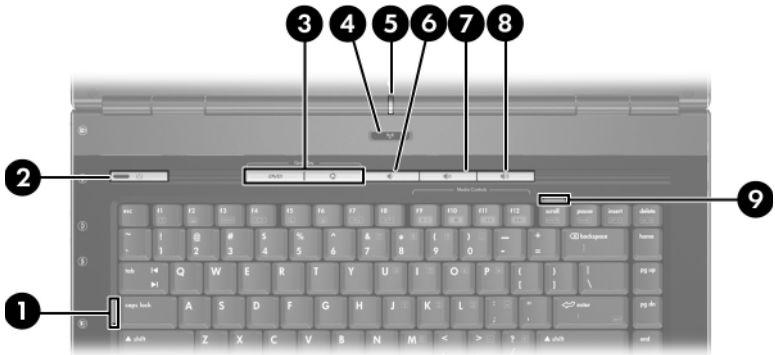
Top Components

Table 1-6

Top Components

Item	Component	Function
1	Caps lock light	On: Caps lock is enabled.
2	Power light	■ On: The computer is on.
		■ Blinking: The computer is in standby.
		■ Off: The computer is off or in hibernation.

Table 1-6

Top Components *(Continued)*

Item	Component	Function
2	Power button	When the computer is ■ Off, press to turn on the computer. ■ On, press to enter hibernation. ■ In standby, briefly press to exit standby. ■ In hibernation, briefly press to exit hibernation. If the computer has stopped responding and Microsoft® Windows® shutdown procedures cannot be used, press and hold the power button for at least 5 seconds to turn off the computer.
3	QuickLaunch buttons	Launch default multimedia, digital imaging, or music applications.
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.
5	Wireless light	On: One or more internal wireless devices have been turned on. ✎ To establish a wireless connection, a wireless network must already be set up.
6	Volume down button	Decreases speaker volume.
7	Volume mute button	Mutes or restores speaker volume.
8	Volume up button	Increases speaker volume.
9	Num lock light	On: Num lock is enabled.

The computer TouchPad components are shown below and described in Table 1-7.
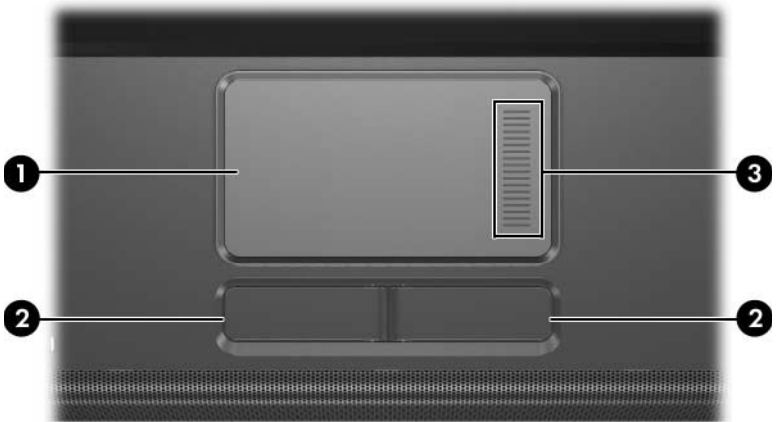
TouchPad Components

Table 1-7

TouchPad Components

Item	Component	Function
1	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.
2	Left and right TouchPad buttons	Function like the left and right buttons on an external mouse.
3	TouchPad vertical scroll zone	Scrolls up or down.

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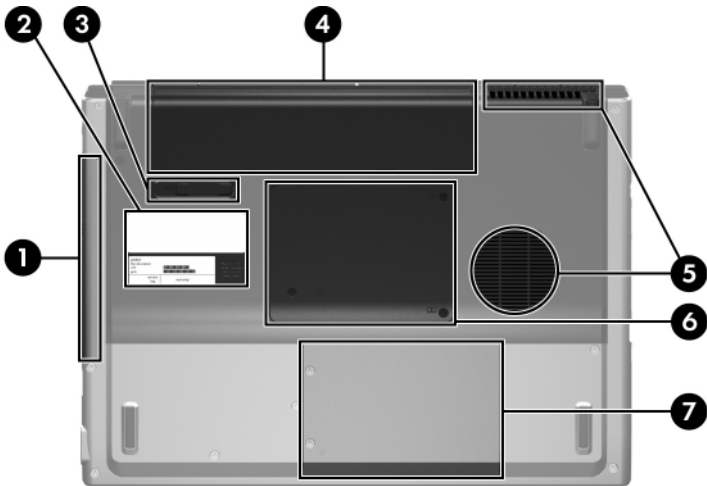
Bottom Components

Table 1-8

Bottom Components

Item	Component	Function
1	Optical drive	Supports an optical disc, such as a CD or DVD.
2	Labels area	Contains the serial number and other information labels.
3	Battery release latch	Releases a battery from the battery bay.
4	Battery bay	Holds a battery.

Table 1-8

Bottom Components *(Continued)*

Item	Component	Function
5	Vents (2)	Provide airflow to cool internal components.
		$\triangle$ To prevent overheating, do not obstruct vents. Use the computer only on a hard, flat surface. Do not allow a another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or thick rugs or clothing, to block airflow.
6	Memory/Mini Card module compartment cover	■ Contains 2 memory module slots that support replaceable memory modules. The number of preinstalled memory modules varies by computer model.
		■ Holds an optional wireless LAN device (select models only).
		$\triangle$ To prevent an unresponsive system and the display of a warning message, install only a Mini Card device authorized for use in your computer by the governmental agency that regulates wireless devices in your country. If you install an unauthorized device and then receive a warning message, remove the device to restore computer functionality. Then contact Customer Care.
7	Hard drive bay	Holds the hard drive.

1.5 **Design Overview**

This section presents a design overview of key parts and features of the computer. Refer to Chapter 3, "Illustrated Parts Catalog," to identify replacement parts, and Chapter 5, "Removal and Replacement Procedures," for disassembly steps.

The system board provides the following device connections:

■ Intel Pentium M processors

■ Audio

■ Digital media card

■ Display

■ ExpressCard

■ Hard drive

■ Keyboard

■ Memory module

■ Mini Card module

■ PC Card

■ TouchPad

△ **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 turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

2

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 File, Security, Diagnostics, or System Configuration 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 **System Configuration** menu.

   ❏ To view navigation information, press **f1**.

   ❏ To return to the Computer Setup menu, press **esc**.

2. Select the **File**, **Security**, **Diagnostics**, or
   System Configuration menu.

3. To close Computer Setup and restart the computer:

   ❏ Select **File > Save changes and exit**, and then press **enter**.

   – or –

   ❏ Select **File > Ignore changes and exit**, and then
     press **enter**.

   – or –

   ❏ Select **File > Restore defaults**, and then press **enter**.

4. When you are prompted to confirm your action, press **f10**.

Selecting from the File Menu

Table 2-1

File Menu

Select	To Do This
System Information	■ View identification information about the computer, processor, memory and cache size, and system ROM. ■ View BIOS revision, keyboard controller version, and battery pack serial number information.

Selecting from the Security Menu

Table 2-2

Security Menu

Select	To Do This
Setup Password	Enter, change, or delete an Setup password.
Power-On Password	Enter, change, or delete a power-on password.
Password Options (Password options can be selected only when a power-on password has been set.)	Enable/disable ■ Stringent security. ■ Requirement of password on restart.
DriveLock Passwords	Enable/disable DriveLock; change a DriveLock user or master password. ✎ DriveLock Settings are accessible only when you enter Computer Setup by turning on (not restarting) the computer.
Smart Card Security	Enable/disable smart card power-on support. ✎ A setup password must be established to use this feature.
TPM Embedded Security	Enable/disable ■ Embedded security device state. ■ Power-on authentication support. ■ Automatic DriveLock support.
System IDs	Establish ■ Notebook asset tracking number. ■ Notebook ownership tags.
Disk Sanitizer	Establish fast, optimum, or custom settings for disk sanitizing.
*Not applicable to SuperDisk LS-120 drives.	

Selecting from the Diagnostics Menu

Table 2-3

Diagnostics Menu

Select	To Do This
HDD Self-Test Options	Run a quick comprehensive self test on hard drives in the system that support the test features.
Memory Check	Run a quick comprehensive test on system memory on the following categories: ■ Walking 0s ■ Walking 1s ■ High Address line testing ■ Alternate Pattern testing

Selecting from the System Configuration Menu

Table 2-4

System Configuration Menu

Select	To Do This
Language	Change the Computer Setup language.
Boot Options	Enable/disable MultiBoot, which sets a startup sequence that can include most bootable devices and media in the system.
Device Configurations	Enable/disable ■ Swap **Fn/Ctrl** keys. ■ USB legacy support. ■ BIOS DMA data transfers. ■ Fan Always on while on AC Power. ■ Data Execution Prevention. ■ LAN Power save.
Built-In Device Options	Enable/disable ■ Embedded WLAN Device Radio. ■ Embedded Bluetooth Device Radio. ■ LAN/WLAN Switching. ■ Wake on LAN from Off.
Port Options	Enable/disable ■ USB Port. ■ 1394 Port. ■ CardBus Slot.

2.2 Troubleshooting Flowcharts

Table 2-5

Troubleshooting Flowcharts Overview

Flowchart 2.1—Initial Troubleshooting

```
        ┌────────────────┐
        │     Begin      │
        │ troubleshooting.│
        └────────┬───────┘
                 │
                 ▼                    N
            ◇ Is there ◇ ─────────►  ┌──────────────┐
              power?                  │   Go to      │
                 │ Y                  │ "Flowchart   │
                 ▼                    │ 2.2—No Power,│
                                      │  Part 1."    │
                                      └──────────────┘
```


Begin troubleshooting.

Is there power? — N → Go to "Flowchart 2.2—No Power, Part 1."

Beeps, LEDs, or error messages? — N → Check LED board, speaker connections.

Is there video? (no boot) — N → Go to "Flowchart 2.6—No Video, Part 1."

Is the OS loading? — N → Go to "Flowchart 2.9—No Operating System (OS) Loading."

Is there sound? — N → Go to "Flowchart 2.15—No Audio, Part 1."

All drives working? — N → Go to "Flowchart 2.17—Nonfunctioning Device."

Keyboard/pointing device working? — N → Go to "Flowchart 2.18—Nonfunctioning Keyboard" or "Flowchart 2.19—Nonfunctioning Pointing Device."

Connecting to network or modem? — N → Go to "Flowchart 2.20—No Network/Modem Connection."

End

Flowchart 2.2—No Power, Part 1

```
┌─────────────┐
│  No power   │
│ (power LED  │
│   is off).  │
└─────────────┘
       │
       ▼
┌─────────────┐
│ Remove from │
│docking device│
│(if applicable).│
└─────────────┘
       │
       ▼
```

Power up on battery power? — N → Reset power.* — N → Power up on battery power? — N → Go to "Flowchart 2.3—No Power, Part 2."

Power up on battery power? — Y (down)
Reset power.* → Power up on battery power? — Y (down)

Power up on AC power? — N → Reset power.* — N → Power up on AC power? — N → Go to "Flowchart 2.4—No Power, Part 3."

Power up on AC power? — Y (down)
Power up on AC power? — Y (down)

Power up in docking device? — Y → Done

Power up in docking device? — N (down)

1. Reset the power cables in the docking device and at the AC outlet.
2. Be sure the AC power source is active.
3. Be sure that the power strip is working.

Power up in docking device? — Y → Done
Power up in docking device? — N → Go to "Flowchart 2.8—Nonfunctioning Docking Device (if applicable)."

*NOTES
1. On select computer models, there is a separate reset button.
2. On select computer models, the computer can be reset using the standby switch and either the lid switch or the main power switch.

Flowchart 2.3—No Power, Part 2

Continued from "Flowchart 2.2—No Power, Part 1."

Visually check for debris in battery socket and clean if necessary.

Power on? — Y → Done

N

Check battery pack by recharging it, moving it to another computer,

Power on? — N → Replace power supply (if applicable).

Y → Done

Replace power supply → Power on? — N → Go to "Flowchart 2.4—No Power, Part 3."

Y → Done

Flowchart 2.4—No Power, Part 3

Continued from "Flowchart 2.3—No Power, Part 2."

Plug directly into AC outlet.

Power LED on?

Y → Done

N

Reseat AC adapter in computer and at power source.

Power on?

Y → Done

N

Power outlet active?

N → Try different outlet.

Y

Replace power cord.

Power on?

Y → Done

N

Internal or external AC adapter?

External → Replace external AC adapter.

Internal → Go to "Flowchart 2.5—No Power, Part 4."

Power on?

N → Replace external AC adapter.

Y → Done

Flowchart 2.5—No Power, Part 4

```
Continued from
"Flowchart
2.4—No Power,
Part 3."
```

```
Open
computer.
```

Loose or damaged parts? **Y** → Reseat loose components and boards and replace damaged items.

N

```
Close
computer and
retest.
```

Power on? **N** → Replace the following items (if applicable). Check computer operation after each replacement:
1. Internal DC-DC converter*
2. Internal AC adapter
3. Processor board*
4. System board*

*NOTE: Replace these items as a set to prevent shorting out among components.

Y

```
Done
```

Flowchart 2.6—No Video, Part 1

No video.

Stand-alone or docking device?

— Docking Device → Go to "Flowchart 2.7—No Video, Part 2."

*NOTE: To change from internal to external display, use the hotkey combination.

— Stand-alone →

Internal or external display*?

— Internal → Adjust brightness. → Video OK? — Y → Done

— N → Press lid switch to ensure operation. → Video OK? — Y → Done

— External → Adjust brightness. → Video OK? — Y → Done

— N → Check for bent pins on cable. → Video OK? — Y → Done

A

N → Replace the following one at a time. Test after each replacement.
1. Cable between computer and computer display (if applicable)
2. Display
3. System board

N → Try another display. → Internal and external video OK? — N → Replace system board.

— Y → Done

Flowchart 2.7—No Video, Part 2

Continued from "Flowchart 2.6—No Video, Part 1."

↓

Remove computer from docking device, if connected.

↓

Adjust display brightness.

↓

N

Video OK? → Go to "A" in "Flowchart 2.6—No Video, Part 1."

Y

↓

Check that computer is properly seated in docking device, for bent pins on cable, and for monitor connection.

↓

Y

Video OK? → Done

N

↓

Adjust external monitor display.

Check brightness of external monitor.

↓

Y

Video OK? → Done

N

↓

Try another external monitor.

↓

Y

Internal and external video OK? → Done

N

↓

Go to "Flowchart 2.8—Nonfunctioning Docking Device (if applicable)."

Flowchart 2.8—Nonfunctioning Docking Device (if applicable)

Flowchart 2.9—No Operating System (OS) Loading

No OS loading.*

Reset power cord in docking device and power outlet.

No OS loading from hard drive, go to "Flowchart 2.10—No OS Loading, Hard Drive, Part 1."

No OS loading from diskette drive, go to "Flowchart 2.13—No OS Loading, Diskette Drive."

No OS loading from CD-ROM or DVD-ROM drive, go to "Flowchart 2.14—No OS Loading, Optical Drive."

No OS loading from network, go to "Flowchart 2.20—No Network/Modem Connection."

*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

```
┌─────────────────┐
│ OS not          │
│ loading from    │
│ hard drive.     │
└─────────────────┘
         │
         ▼                          Y
     ╱─────────╲              ┌─────────────────┐
    ╱ Nonsystem ╲ ──────────▶ │ Go to           │
    ╲ disk      ╱             │ "Flowchart      │
     ╲message? ╱              │ 2.11—No OS      │
      ╲───────╱               │ Loading,        │
         │ N                  │ Hard Drive,     │
         ▼                    │ Part 2."        │
┌─────────────────┐          └─────────────────┘
│ Reseat          │
│ external        │
│ hard drive.     │
└─────────────────┘
         │
         ▼        Y
     ╱─────────╲          ┌─────────────────┐
    ╱ OS        ╲ ──────▶ │ Done            │
    ╲ loading? ╱          └─────────────────┘
     ╲───────╱
         │ N
         ▼                    N
     ╱─────────╲
    ╱ Boot      ╲ ────────────┐
    ╱ from       ╲             │
    ╲ CD?       ╱              │
     ╲───────╱                 ▼            N
         │ Y              ╱─────────╲          ┌─────────────────┐
         ▼               ╱ Boot      ╲ ──────▶ │ Go to           │
┌─────────────────┐     ╱ from        ╲        │ "Flowchart      │
│ Check the Setup │     ╲ diskette?   ╱        │ 2.13—No OS      │
│ utility for     │      ╲──────────╱          │ Loading,        │
│ correct         │         │ Y                │ Diskette Drive."│
│ booting order.  │         ▼                  └─────────────────┘
└─────────────────┘   ┌─────────────────┐
         │             │ Change boot     │
         ▼  N          │ priority through│
     ╱─────────╲       │ the Setup Utility│
    ╱ Boot      ╲      │ and reboot.     │
    ╱ from       ╲─┐   └─────────────────┘
    ╲ hard drive?╱ │         │
     ╲───────╱     │         ▼            N
         │ Y       │    ╱─────────╲          ┌─────────────────┐
         ▼         │   ╱ Boot      ╲ ──────▶ │ Go to           │
┌─────────────────┐│  ╱ from        ╲        │ "Flowchart      │
│ Done            │◀─╲ hard drive? ╱         │ 2.17—Nonfunction│
└─────────────────┘   ╲──────────╱          │ ing Device."    │
                          │ Y               └─────────────────┘
```

Flowchart 2.11—No OS Loading, Hard Drive, Part 2

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

```
┌──────────────────────┐
│ Continued from       │
│ "Flowchart           │
│ 2.11—No OS           │
│ Loading,             │
│ Hard Drive, Part 2." │
└──────────────────────┘
```

System files on hard drive? — N → Install OS and reboot.

Y

Virus on hard drive? — Y → Clean virus. → OS loading from hard drive? — Y → Done

N   N

Run SCANDISK and check for bad sectors.

OS loading from hard drive? — N → Diagnostics on diskette? — Y → Replace hard drive.

N

Can bad sectors be fixed? — N → Replace hard drive.

Diagnostics on diskette? — N → Run diagnostics and follow recommendations.

Y

Fix bad sectors. → Boot from hard drive? — N → Replace hard drive.

Y

Done

Flowchart 2.13—No OS Loading, Diskette Drive

Flowchart 2.14—No OS Loading, Optical Drive
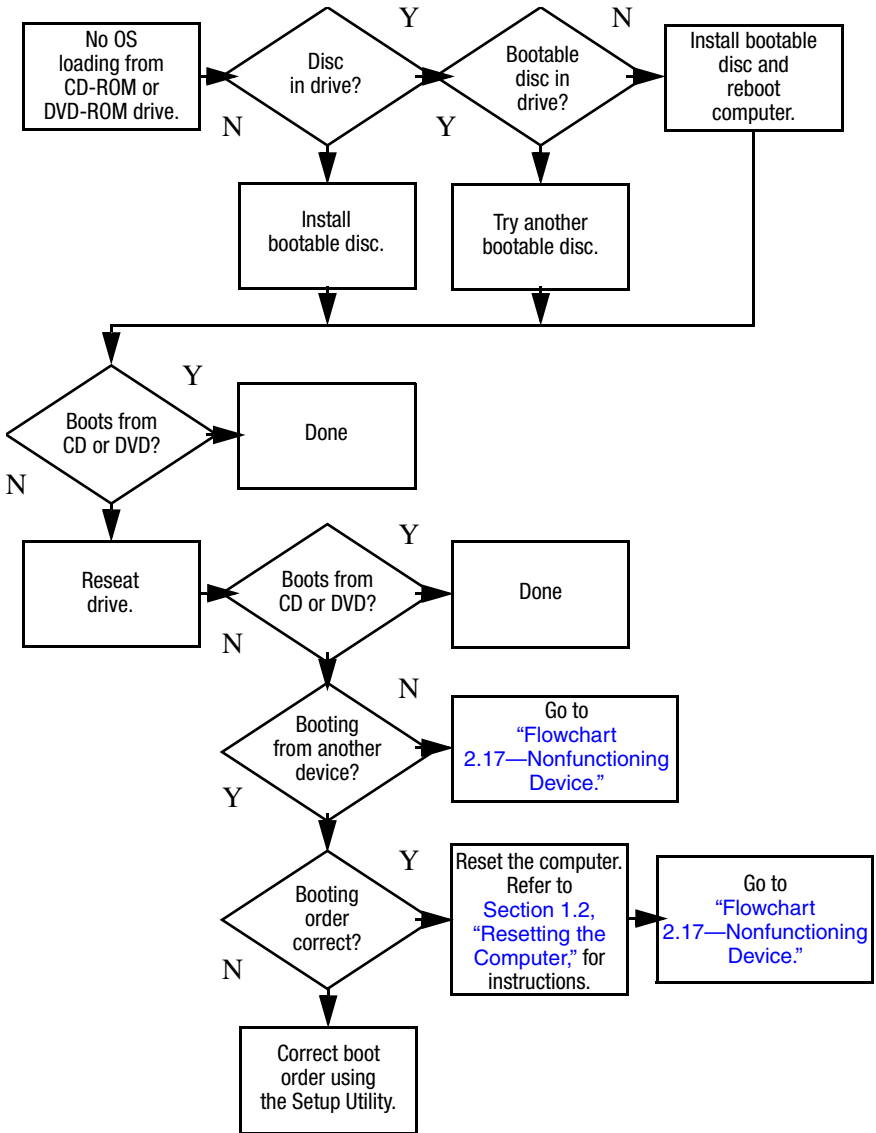
Flowchart 2.15—No Audio, Part 1
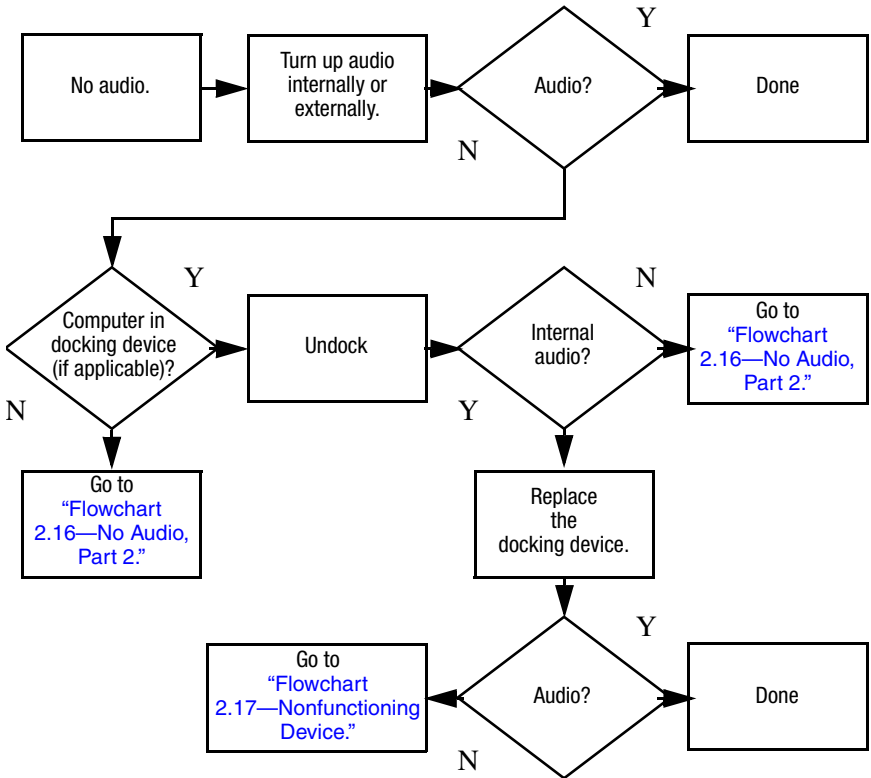
Flowchart 2.16—No Audio, Part 2

Continued from

N → Reload audio drivers.

Audio driver in OS configured?

Y

N → Load drivers and set configuration in OS.

Correct drivers for application?

Y

Connect to external speaker.

Audio?

N → Replace audio board and speaker connections in computer (if applicable). → Audio? → Y → Done

Y

N

1. Replace internal speakers.
2. Replace audio board (if applicable).
3. Replace system board.

Flowchart 2.17—Nonfunctioning Device

```
                    ┌─────────────────┐
                    │  Nonfunctioning │
                    │     device.     │
                    └─────────────────┘
                             │
                             ▼
                    ┌─────────────────┐
                    │     Reseat      │
                    │     device.     │
                    └─────────────────┘
                             │
                             ▼
        ┌──────────────────────────────────────────────┐
        │ Unplug the nonfunctioning device from the     │
        │ computer and inspect cables and plugs for     │
        │ bent or broken pins or other damage.          │
        └──────────────────────────────────────────────┘
                             │
                             ▼
```

```
┌──────────┐          ◇ Any physical ◇      Y      ┌──────────┐
│  Clear   │ ◄──────  ◇ device        ◇ ─────────► │ Fix or   │
│  CMOS.   │          ◇ detected?     ◇            │ replace  │
└──────────┘                                        │ broken   │
                            N                       │ item.    │
                                                    └──────────┘
```

Clear CMOS.

Reattach device. Close computer, plug in power, and reboot.

Replace hard drive.

Replace NIC. If integrated NIC, replace system board.

Replace diskette drive.

Any physical device detected? — Y — Fix or replace broken item.

N

Device boots properly? — N

Device boots properly? — N — Go to "Flowchart 2.9—No Operating System (OS) Loading."

Y

Done

Y

Done

Flowchart 2.18—Nonfunctioning Keyboard

Flowchart 2.19—Nonfunctioning Pointing Device

```
┌─────────────────┐
│ Pointing device │
│ not operating   │
│ properly.       │
└─────────────────┘
         │
         ▼
┌─────────────────┐
│ Connect computer│
│ to good external│
│ pointing device.│
└─────────────────┘
         │
         ▼           N        ┌─────────────┐
       ◇ External ◇──────────▶│ Replace     │
       ◇ device   ◇           │ system      │
       ◇ works?   ◇           │ board.      │
         │                    └─────────────┘
         │ Y
         ▼
┌─────────────────┐
│ Reseat internal │
│ pointing device │
│ connector       │
│ (if applicable).│
└─────────────────┘
         │
         ▼           N        ┌─────────────────┐
       ◇ OK? ◇───────────────▶│ Replace internal│
         │                    │ pointing device │
         │ Y                  │ or cable.       │
         ▼                    └─────────────────┘
┌─────────────────┐                   │
│ Done            │                   ▼         Y    ┌─────────┐
└─────────────────┘                 ◇ OK? ◇─────────▶│ Done    │
                                      │              └─────────┘
                                      │ N
                                      ▼
                              ┌─────────────┐
                              │ Replace     │
                              │ system      │
                              │ board.      │
                              └─────────────┘
```

Flowchart 2.20—No Network/Modem Connection

```
┌─────────────┐
│ No network  │
│ or modem    │
│ connection. │
└──────┬──────┘
       │
       ▼            N
   ◇ Network ◇ ───────→ ┌─────────────┐
   ◇ or modem jack ◇     │ Replace jack│
   ◇ active?  ◇          │ or have jack│
       │                 │ activated.  │
       Y                 └─────────────┘
       │
       ▼            Y
   ◇ Digital ◇ ───────→ ┌─────────────┐
   ◇ line?   ◇          │ Connect     │
       │                │ to nondigital│
       N                │ line.       │
       │                └─────────────┘
       ▼            N
   ◇ NIC/modem ◇ ──────→ ┌─────────────┐         Y
   ◇ configured ◇        │ Reload      │    ◇ OK? ◇ ───→ ┌──────┐
   ◇ in OS?    ◇         │ drivers and │                 │ Done │
       │                 │ reconfigure.│       │          └──────┘
       Y                 └─────────────┘       N
       │                                       │
       ▼                                       ▼
┌─────────────┐                        ┌─────────────┐
│ Disconnect  │                        │ Replace the │
│ all power   │                        │ NIC/modem   │
│ from the    │                        │ (if applicable).│
│ computer    │                        └─────────────┘
│ and open.   │                               │
└──────┬──────┘                               ▼         Y
       │                                   ◇ OK? ◇ ───→ ┌──────┐
       ▼                                       │         │ Done │
┌─────────────┐                                N         └──────┘
│ Reseat      │                                │
│ NIC/modem   │                                ▼
│ (if applicable).│                     ┌─────────────┐
└─────────────┘                         │ Replace     │
                                        │ system      │
                                        │ board.      │
                                        └─────────────┘
```

3

Illustrated Parts Catalog

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

3.1 Serial Number Location

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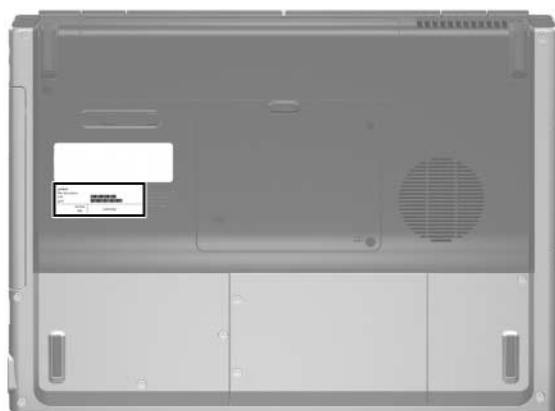
Serial Number Location

3.2 Computer Major Components
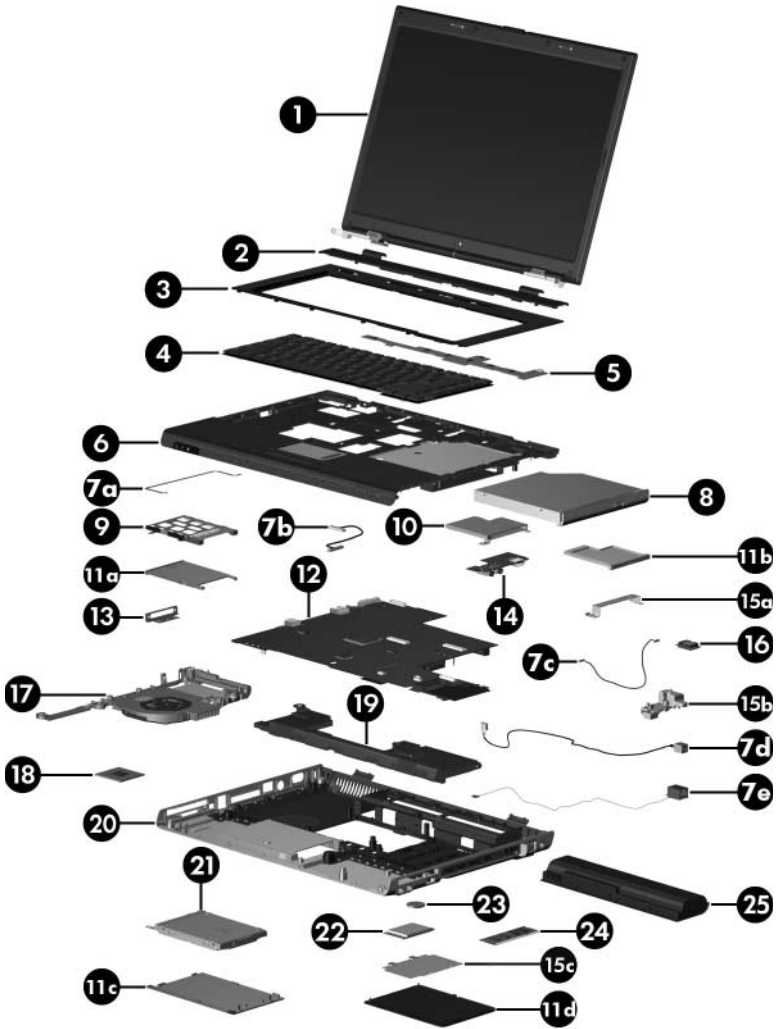
Computer Major Components

Table 3-1

Spare Parts: Computer Major Components

Item	Description			Spare Part Number
1	**Display assemblies** (include display cable, wireless antenna boards, and antenna cables)			
	For use with UMA system boards			
	15.4-inch, WXGA with BrightView			430527-001
	15.4-inch, WXGA antiglare			430525-001
	For use with discrete system boards			
	15.4-inch, WXGA with BrightView			430528-001
	15.4-inch, WXGA antiglare			430526-001
	✎ Refer to Section 3.3, "Display Assembly Subcomponents," for display assembly internal component spare part number information.			
2	**Switch cover**			407825-001
3	**Keyboard frame**			407786-001
4	**Keyboards**			
	Belgium	407857-A41	Portugal	407857-131
	Denmark	407857-081	Russia	407857-251
	France	407857-051	Spain	407857-071
	French Canada	407857-121	Saudi Arabia	407587-171
	Germany	407857-041	Sweden/Finland	407587-B71
	Greece	407857-151	Switzerland	407857-111
	International	407857-B31	Taiwan	407857-AB1
	Israel	407857-BB1	Thailand	407857-281
	Italy	407857-061	Turkey	407857-141
	Japan	407857-291	The United Kingdom	407857-031
	Korea	407857-AD1		
	Norway	407857-091	The United States	407857-001
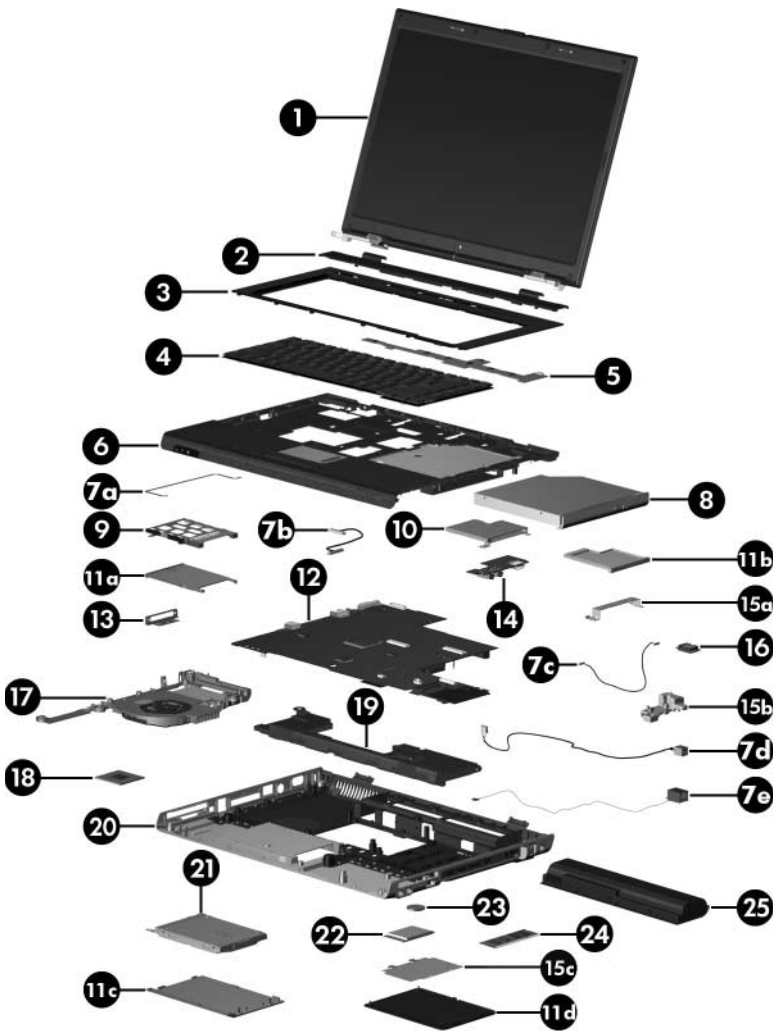
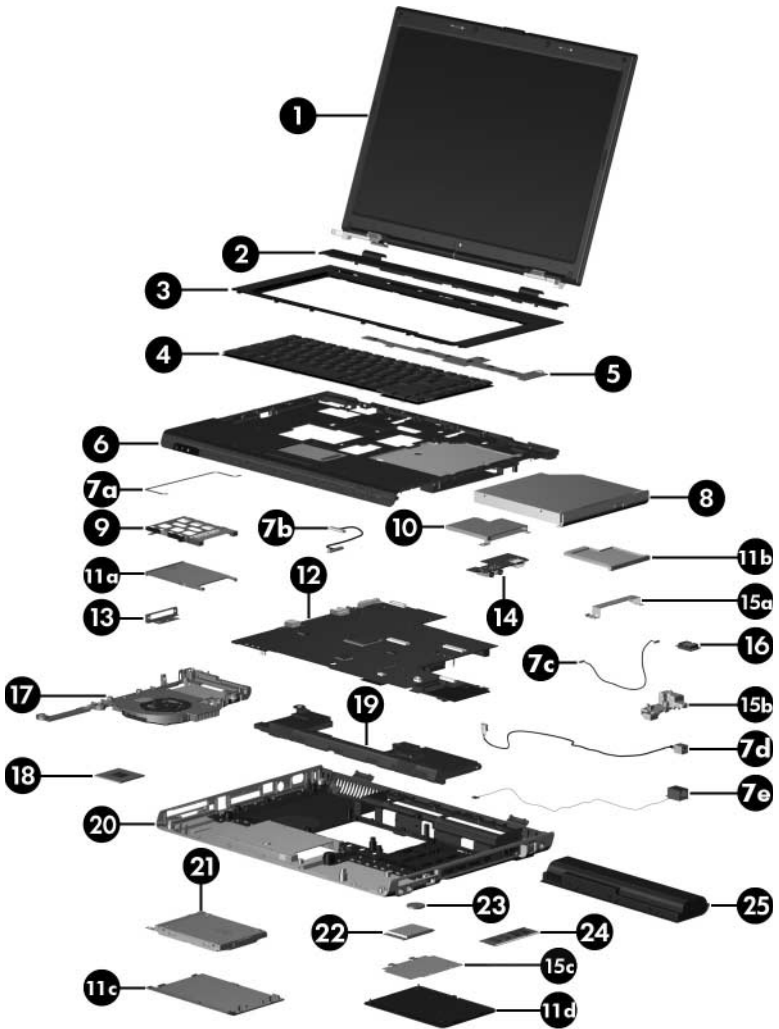*Computer Major Components*

Table 3-1

Spare Parts: Computer Major Components *(Continued)*

Item	Description	Spare Part Number
5	**LED board** (includes LED board cable)	409069-001
6	**Top cover** (includes TouchPad)	407822-001
	TouchPad bracket (not illustrated)	407811-001
	Cable Kit	407774-001
	Includes:	
7a	TouchPad cable	
7b	USB/audio board cable	
7c	Bluetooth module cable	
7d	Power connector and cable	
7e	Modem connector and cable	
8	**Optical drives**	
	DVD±RW and CD-RW Double-Layer Combo Drive with LightScribe and Hitachi LG Data Storage	417698-001
	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	430205-001
	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	430207-001
	DVD±RW and CD-RW Double-Layer Combo Drive	430206-001
	DVD/CD-RW Combo Drive	430203-001
	DVD-ROM drive	430204-001
9	**PC Card assembly**	407829-001
10	**ExpressCard assembly**	407809-001

Computer Major Components

Table 3-1

Spare Parts: Computer Major Components *(Continued)*

Item	Description	Spare Part Number
	Plastics Kit	407778-001
	Includes:	
11a	PC Card slot bezel	
11b	ExpressCard slot bezel	
11c	Hard drive cover (includes 2 captive screws)	
	Memory/Mini Card module compartment cover (includes 2 captive screws)	
11d	Computer feet (8, not illustrated)	
12	**System boards**	
	945PM NV72 for use with full-featured computer models	430195-001
	945GM for use with full-featured computer models	430196-001
	940GML for use with defeatured computer models	430197-001
13	**Expansion port 2 bracket**	407863-001
14	**USB/audio board** (includes USB/audio board cable)	409076-001
	Bracket Kit	407820-001
	Includes:	
15a	ExpressCard bracket	
15b	Display hinge support bracket	
15c	Memory shield	
16	**Bluetooth® module** (includes Bluetooth module cable)	397922-001
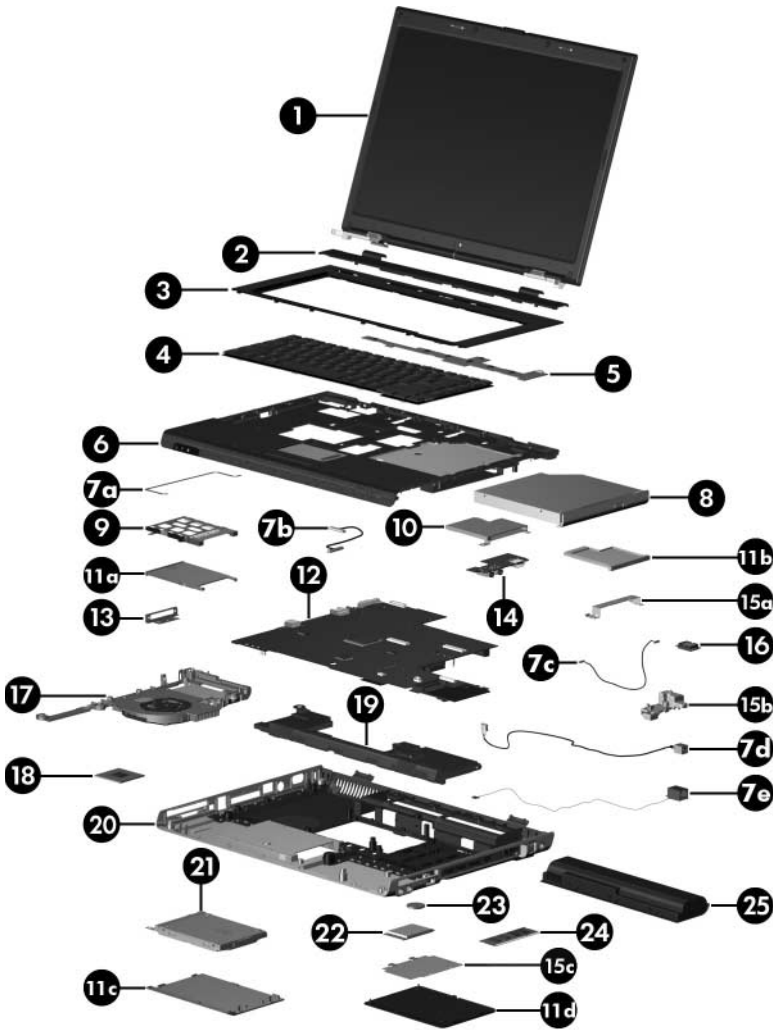
Computer Major Components

Table 3-1

Spare Parts: Computer Major Components *(Continued)*

Item	Description	Spare Part Number
17	**Fan/heat sink assemblies** (include thermal paste)	
	For use with UMA system boards	413453-001
	For use with discrete system boards	407862-001
	Not illustrated separately:	
	Heat sink	403827-001
	Fan assembly	407862-001
18	**Processors** (include thermal paste)	
	Intel Pentium M 2.0-GHz	407762-001
	Intel Pentium M 1.83-GHz	407761-001
	Intel Celeron M 1.60-GHz	430202-001
	Intel Celeron M 410 1.46-GHz	430849-001
	Intel Core Duo T2600 2.16-GHz	430847-001
	Intel Core Duo T2250 1.73-GHz	430851-001
	Intel Core Duo T2300E 1.66-GHz	430848-001
	Intel Core Duo T2050 1.60-GHz	430850-001
	Intel Core Solo T1350 1.86-GHz	430852-001
	Intel Core Solo 1.83-GHz	430200-001
	Intel Core Solo 1.66-GHz	430201-001
19	**Speakers**	407784-001
20	**Base enclosure**	413451-001
21	**Hard drives** (include frame and connector)	
	5400 rpm, 120-GB	430428-001
	5400 rpm, 100-GB	407770-001
	5400 rpm, 80-GB	407847-001
	5400 rpm, 60-GB	407769-001
	5400 rpm, 40-GB	407768-001

Computer Major Components

Table 3-1

Spare Parts: Computer Major Components *(Continued)*

Item	Description			Spare Part Number
22	**Mini Card modules**			
	802.11a/b/g Mini Card WLAN module for use in the countries listed below. These countries are categorized as most of the world (MOW) 1.			407576-001
	Antigua & Barbuda Argentina Australia Bahamas Barbados Brunei	Canada Chile Dominican Republic Guam Guatemala Hong Kong	Panama India Indonesia Malaysia Mexico New Zealand	Paraguay Saudi Arabia Taiwan The United States Vietnam
	802.11a/b/g Mini Card WLAN module for use in the countries listed below. These countries are categorized as MOW 2.			407576-002
	Aruba Austria Azerbaijan Bahrain Belgium Bermuda Bulgaria Cayman Islands Columbia Croatia Cyprus Czech Republic Denmark	Egypt El Salvador Estonia Finland France Georgia Germany Greece Hungary Iceland Ireland Italy Latvia Lebanon	Philippines Poland Portugal Romania Russia Serbia and Montenegro Singapore Slovakia Liechtenstein Lithuania Luxembourg Malta Monaco	The Netherlands Norway Oman Slovenia South Africa Spain Sri Lanka Sweden Switzerland Turkey The United Kingdom Uzbekistan

Computer Major Components

Table 3-1

Spare Parts: Computer Major Components *(Continued)*

Item	Description			Spare Part Number
22	**Mini Card modules** *(Continued)*			
	802.11a/b/g Mini Card WLAN module for use in the countries listed below. These countries are categorized as the rest of the world (ROW).			407576-003
	China Ecuador Haiti	Honduras Pakistan Peru	Qatar South Korea	Uruguay Venezuela
	802.11b/g Mini Card WLAN module for use in the MOW1 countries listed below.			407107-001
	Antigua & Barbuda Argentina Australia Bahamas Barbados Brunei	Canada Chile Dominican Republic Guam Guatemala Hong Kong	Panama India Indonesia Malaysia Mexico New Zealand	Paraguay Saudi Arabia Taiwan The United States Vietnam
	802.11a/b/g Mini Card WLAN module for use in the ROW countries listed below.			407107-002
	China Ecuador Haiti	Honduras Pakistan Peru	Qatar South Korea	Uruguay Venezuela
	802.11b/g WLAN module for use in the following countries:			409250-004
	Jordan Israel	Kuwait Thailand	United Arab Emirates	Ukraine
23	**RTC battery** (includes 2-sided tape)			407816-001

Computer Major Components

Table 3-1

Spare Parts: Computer Major Components *(Continued)*

Item	Description	Spare Part Number
24	**Memory modules**, 1-DIMM	
	PC2-5300	
	1024 MB	409060-001
	512 MB	409059-001
	256 MB	409058-001
	SD Memory Cards (not illustrated)	
	512 MB	407316-001
	256 MB	403573-001
25	**Battery**	
	12-cell, 8.8-Amp hour	407835-001
	6-cell, 4.0-Amp hour	407834-001

3.3 Display Assembly Subcomponents
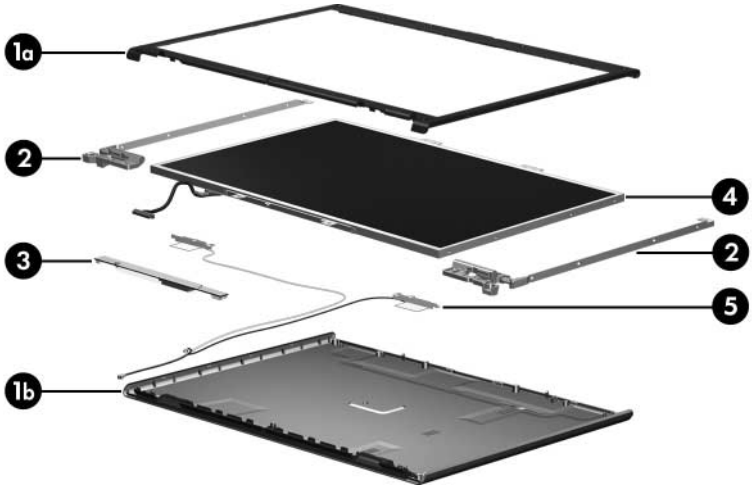
Table 3-2

Display Assembly Subcomponents

Spare Part Number Information

Item	Description	
1a 1b	**Display Plastics Kit**, includes: ■ Display bezel ■ Display enclosure ■ Display release latch actuator and hooks (not illustrated)	407792-001
2	**Display Hinge Kit**	407796-001
3	**Display inverter board**	407800-001
4	**Display Panel Kit** (includes display panel cable) 15.4-inch, WXGA with BrightView 15.4-inch, WXGA antiglare	407799-001 407798-001
5	**Wireless Antenna Kit** (includes cable, transceivers, and tape)	407791-001
	Display Cable Kits (not illustrated) For use with UMA system boards For use with discrete system boards	430531-001 430532-001
	Display Label Kit (not illustrated)	430215-001
	Display Screw Kit (not illustrated), includes: ■ Phillips PM2.5×7.0 screws ■ Phillips PM2.0×4.0 screws ■ Rubber screw covers	407794-001

3.4 Plastics Kit

Table 3-3

Plastics Kit

Spare Part Number Information

Item	Description	Spare Part Number
	Plastics Kit, includes:	407778-001
1	Memory/Mini Card module compartment cover (includes 2 captive screws, secured by C-clips)	
2	Hard drive cover (includes 2 captive screws, secured by C-clips)	
3	Computer feet for use on base enclosure (6)	
4	Computer feet for use on 12-cell battery	
5	ExpressCard slot bezel	
6	PC Card slot bezel	

3.5 Cable Kit
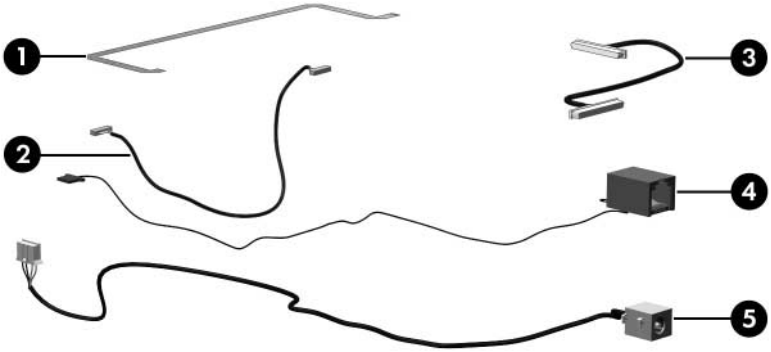
Table 3-4

Cable Kit

Spare Part Number Information

Item	Description	Spare Part Number
	Cable Kit, includes:	407774-001
1	TouchPad cable	
2	Bluetooth module cable	
3	USB/audio board cable	
4	Modem connector cable	
5	Power connector cable	

3.6 Mass Storage Devices

Table 3-5

Mass Storage Devices

Spare Part Number Information

Item	Description	Spare Part Number
1	**Hard drives** (include frame and connector)	
	5400 rpm, 100-GB	407770-001
	5400 rpm, 80-GB	407847-001
	5400 rpm, 60-GB	407769-001
	5400 rpm, 40-GB	407768-001
2	**Optical drives**	
	DVD±RW and CD-RW Double-Layer Combo Drive with LightScribe and Hitachi LG Data Storage	417698-001
	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	430205-001
	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	430207-001
	DVD±RW and CD-RW Double-Layer Combo Drive	430206-001
	DVD/CD-RW Combo Drive	430203-001
	DVD-ROM drive	430204-001
	USB digital drive (not illustrated)	364727-001

3.7 Miscellaneous (Not Illustrated)

Table 3-6

Miscellaneous (Not Illustrated)

Spare Part Information

Description	Spare Part Number
Analog TV tuner	407941-001
Composite S-Video and audio cable	407939-001
DVB-T TV tuner	412175-001
DVB-T TV tuner antenna	412176-001
HP Remote Control II	407313-001
RF cable	408485-001
RF input adapter cable	407940-001
TV tuner remote control	408479-001
USB infrared receiver	408843-001
Screw Kit (includes the following screws; refer to Appendix A, "Screw Listing," for more information on specifications and usage)	409067-001

- Phillips PM3.0×6.0 Screw
- Phillips PM3.0×3.0 screw
- Phillips PM2.5×11.0 screw
- Phillips PM2.5×7.0 Screw
- Phillips PM2.5×6.0 screw
- Black Phillips PM2.5×5.0 screw
- Silver Phillips PM2.5×5.0 Screw
- Phillips PM2.5×3.0 screw
- Phillips PM2.0×6.0 Screw
- Phillips PM2.0×4.0 Screw
- Phillips PM2.0×3.0 Screw
- Slotted SM1.5×9.0 screw

Description	Spare Part Number
USB travel mouse	309674-001
USB digital drive	364727-001
Wired headset with volume control	371693-001

Table 3-6

Miscellaneous (Not Illustrated)

Spare Part Information *(Continued)*

Description	Spare Part Number
Power supply, 65 watt	403810-001
Power cords	
For use in:	
Australia	403811-011
Canada, French Canada, and the United States	403811-001
Denmark	403811-081
France, Germany, and Spain	403811-B31
India	403811-D61
Israel	403811-BB1
Italy	403811-061
Japan	403811-291
Korea	403811-AD1
The People's Republic of China	403811-AA1
Switzerland	403811-111
Taiwan	403811-AB1
The United Kingdom	403811-031

3.8 Sequential Part Number Listing

Table 3-7

Sequential Part Number Listing

Spare Part Number	Description
309674-001	USB travel mouse
364727-001	USB digital drive
371693-001	Wired headset with volume control
397922-001	Bluetooth module (includes Bluetooth module cable)
403573-001	SD Memory Card 256-MB
403810-001	Power supply, 65 watt
403811-001	Power cord for use in The United States
403811-011	Power cord for use in Australia
403811-031	Power cord for use in the United Kingdom
403811-061	Power cord for use in Italy
403811-081	Power cord for use in Denmark
403811-111	Power cord for use in Sweden and Finland
403811-291	Power cord for use in Japan
403811-AA1	Power cord for use in the People's Republic of China
403811-AB1	Power cord for use in Taiwan
403811-AD1	Power cord for use in Korea
403811-B31	Power cord for use internationally
403811-BB1	Power cord for use in Israel
403811-D61	Power cord for use in India
403827-001	Heat sink (includes thermal paste)

Table 3-7

Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
407107-001	802.11b/g Mini Card WLAN module for use in the following MOW countries:

Antigua & Barbuda	Canada	Panama	Paraguay
Argentina	Chile	India	Saudi Arabia
Australia	Dominican	Indonesia	Taiwan
Bahamas	Republic	Malaysia	The United
Barbados	Guam	Mexico	States
Brunei	Guatemala	New Zealand	Vietnam
	Hong Kong		

Spare Part Number	Description
407107-002	802.11a/b/g Mini Card WLAN module for use in the following ROW countries:

China	Honduras	Qatar	Uruguay
Ecuador	Pakistan	South Korea	Venezuela
Haiti	Peru		

Spare Part Number	Description
407313-001	HP Remote Control II
407316-001	SD Memory Card 512-MB
407576-001	802.11a/b/g Mini Card WLAN module for use in the following MOW 1 countries:

Antigua & Barbuda	Canada	Panama	Paraguay
Argentina	Chile	India	Saudi Arabia
Australia	Dominican	Indonesia	Taiwan
Bahamas	Republic	Malaysia	The United
Barbados	Guam	Mexico	States
Brunei	Guatemala	New Zealand	Vietnam
	Hong Kong		

Table 3-7

Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
407576-002	802.11a/b/g Mini Card WLAN module for use in the following MOW 2 countries:

Aruba	Egypt	Philippines	The Netherlands
Austria	El Salvador	Poland	Norway
Azerbaijan	Estonia	Portugal	Oman
Bahrain	Finland	Romania	Slovenia
Belgium	France	Russia	South Africa
Bermuda	Georgia	Serbia and Montenegro	Spain
Bulgaria	Germany	Singapore	Sri Lanka
Cayman Islands	Greece	Slovakia	Sweden
Columbia	Hungary	Liechtenstein	Switzerland
Croatia	Iceland	Lithuania	Turkey
Cyprus	Ireland	Luxembourg	The United Kingdom
Czech Republic	Italy	Malta	Uzbekistan
Denmark	Latvia	Monaco	
	Lebanon		

Spare Part Number	Description
407576-003	802.11a/b/g Mini Card WLAN module for use in the following ROW countries:

China	Honduras	Qatar	Uruguay
Ecuador	Pakistan	South Korea	Venezuela
Haiti	Peru		

Spare Part Number	Description
407576-291	802.11a/b/g Mini Card WLAN module for use in Japan
407761-001	Intel Pentium M 1.83-GHz processor (include thermal paste)
407762-001	Intel Pentium M 2.0-GHz processor (include thermal paste)

Table 3-7

Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
407768-001	5400 rpm, 40-GB hard drive (include frame and connector)
407769-001	5400 rpm, 60-GB hard drive (include frame and connector)
407770-001	5400 rpm, 100-GB hard drive (include frame and connector)
407774-001	Cable Kit
407778-001	Plastics Kit
407780-001	Rubber Pad Kit
407784-001	Speakers
407786-001	Keyboard frame
407791-001	Wireless antenna transceivers and cables (includes tape)
407792-001	Display Plastics Kit
407794-001	Display Screw Kit
407796-001	Display HInge Kit
407798-001	Display panel kit for use with antiglare displays
407799-001	Display panel kit for use with BrightView displays
407800-001	Display inverter board
407809-001	ExpressCard assembly
407811-001	TouchPad bracket
407816-001	RTC battery (includes 2-sided tape)
407820-001	Bracket Kit

Table 3-7

Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
407822-001	Top cover (includes TouchPad)
407825-001	Switch cover
407829-001	PC Card assembly
407834-001	6-cell, 4.0-Amp hour battery
407835-001	12-cell, 8.8-Amp hour battery
407839-001	15.4-inch, WXGA antiglare display assembly (includes display cable, wireless antenna boards, and antenna cables)
407841-001	15.4-inch, WXGA with BrightView display assembly (includes display cable, wireless antenna boards, and antenna cables)
407847-001	5400 rpm, 80-GB hard drive (includes frame and connector)
407857-001	Keyboard for use in the United States
407857-031	Keyboard for use in The United Kingdom
407857-041	Keyboard for use in Germany
407857-051	Keyboard for use in France
407857-061	Keyboard for use in Italy
407857-071	Keyboard for use in Spain
407857-081	Keyboard for use in Denmark
407857-091	Keyboard for use in Norway
407857-111	Keyboard for use in Switzerland
407857-121	Keyboard for use in French Canada

Table 3-7

Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
407857-131	Keyboard for use in Portugal
407857-141	Keyboard for use in Turkey
407857-151	Keyboard for use in Greece
407857-171	Keyboard for use in Saudi Arabia
407857-251	Keyboard for use in Russia
407857-281	Keyboard for use in Thailand
407857-291	Keyboard for use in Japan
407857-A41	Keyboard for use in Belgium
407857-AB1	Keyboard for use in Taiwan
407857-AD1	Keyboard for use in Korea
407857-B31	Keyboard for use internationally
407857-B71	Keyboard for use in Sweden and Finland
407857-BB1	Keyboard for use in Israel
407862-001	Thermal module
407863-001	Expansion port 2 bracket
407939-001	Composite S-Video and audio cable
407940-001	RF input adapter cable
407941-001	Analog TV tuner
408479-001	TV tuner remote control

Table 3-7

Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
408485-001	RF cable
408843-001	USB infrared receiver
409058-001	1-DIMM, PC2-5300 256 MB memory module
409059-001	1-DIMM, PC2-5300 512 MB memory module
409060-001	1-DIMM, PC2-5300 1024 MB memory module
409067-001	Screw Kit
409069-001	LED board (includes LED board cable)
409076-001	USB/audio board (includes USB/audio board cable)
409250-004	802.11b/g Mini Card WLAN module for use in the following countries:
	Jordan Kuwait United Arab Ukraine Israel Thailand Emirates
412175-001	DVB-T TV tuner
410055-001	Fan/heat sink assembly (includes thermal paste)
412176-001	DVB-T TV tuner antenna
413451-001	Base enclosure
413453-001	Fan assembly UMA (includes thermal paste)
417698-001	DVD±RW and CD-RW Double-Layer Combo Drive with LightScribe and Hitachi LG Data Storage
430195-001	945PM NV72 system board for use with full-featured computer models

Table 3-7

Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
430196-001	945GM system board for use with full-featured computer models
430197-001	940GML system board for use with defeatured computer models
430200-001	Intel Core Solo 1.83-GHz processor
430201-001	Intel Core Solo 1.66-GHz processor
430202-001	Intel Celeron M 1.60-GHz processor
430203-001	DVD/CD-RW Combo Drive
430204-001	DVD-ROM drive
430205-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive
430206-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive
430207-001	DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe
430215-001	Display Label Kit
430328-001	5400 rpm, 120-GB hard drive
430525-001	15.4-inch, WXGA, antiglare display assembly for use with UMA system boards
430526-001	15.4-inch, WXGA, antiglare display assembly for use with discrete system boards
430527-001	15.4-inch, WXGA, BrightView display assembly for use with UMA system boards
430528-001	15.4-inch, WXGA, BrightView display assembly for use with discrete system boards

Table 3-7

Sequential Part Number Listing *(Continued)*

Spare Part Number	Description
430531-001	Display Cable Kit for use with UMA system boards
430532-001	Display Cable Kit for use with discrete system boards
430847-001	Intel Core Duo T2600 2.16-GHz processor
430848-001	Intel Core Duo T2300E 1.66-GHz processor
430849-001	Intel Celeron M 410 1.46-GHz processor
430850-001	Intel Core Duo T2050 1.60-GHz processor
430851-001	Intel Core Duo T2250 1.73-GHz processor
430852-001	Intel Core Solo T1350 1.86-GHz processor

4

Removal and Replacement Preliminaries

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

4.1 Tools Required

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

- Magnetic screwdriver
- Phillips P0 screwdriver
- Flat-bladed screwdriver

4.2 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.

4.3 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."

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

4.5 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.

4.6 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.

4.7 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 ±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

5

Removal and Replacement Procedures

This chapter provides removal and replacement procedures.

There are as many as 98 screws, in 12 different sizes, that may have to be removed, replaced, or loosened when servicing the computer. Make special note of each screw size and location during removal and replacement.

Refer to Appendix A, "Screw Listing," for detailed information on screw sizes, locations, and usage.

5.1 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.
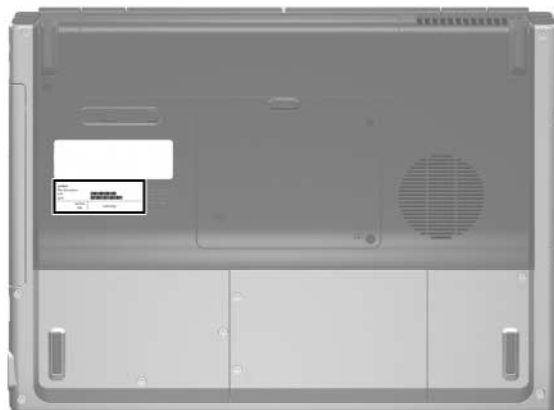
Serial Number Location

5.2 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
5.3	Preparing the Computer for Disassembly	
	Battery	0
5.4	Hard Drive	2 loosened to remove the hard drive cover 2 to remove the hard drive 4 to disassemble the hard drive
5.5	Computer Feet	0
5.6	Memory Module	2 loosened to remove the memory/Mini Card module compartment cover
5.7	Mini Card Module	0
	⚠ To prevent an unresponsive system and the display of a warning message, install only a Mini Card 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.	
5.8	RTC Battery	0

Disassembly Sequence Chart *(Continued)*

Section	Description	# of Screws Removed
5.9	Optical Drive	1 to remove to optical drive 2 to remove the optical drive bracket
5.10	Switch Cover	7
5.11	Keyboard Frame	1
5.12	LED Board	5
5.13	Keyboard	4
5.14	Display Assembly	4 to remove the display assembly 8 to remove the display bezel 2 to remove the display panel 4 to remove each display hinge 1 to remove each wireless antenna transceiver
5.15	Top Cover	21
5.16	Bluetooth Module	1
5.17	System Board	6
5.18	USB/Audio Board	1
5.19	Fan/Heat Sink Assembly	9
5.20	Processor	1 loosened
5.21	Speakers	1
5.22	PC Card Assembly	2
5.23	ExpressCard Assembly	2

5.3 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.

Battery Spare Part Number Information

12-cell, 8.8-Amp hour	407835-001
6-cell, 4.0-Amp hour	407834-001

4. Remove the battery by following these steps:

   a. Turn the computer upside down with the front toward you.

b. Slide the battery release latch ❶ to the left. (The battery disengages from the computer.)

c. Lift the front edge of the battery ❷ and swing it back to remove it.

Removing the Battery

Reverse the above procedure to install the battery.

5.4 Hard Drive

Hard Drive Spare Part Number Information	
5400 rpm, 120-GB	430428-001
5400 rpm, 100-GB	407770-001
5400 rpm, 80-GB	407847-001
5400 rpm, 60-GB	407769-001
5400 rpm, 40-GB	407768-001

1. Prepare the computer for disassembly (refer to Section 5.3).

2. Loosen the two black Phillips PM2.5×5.0 screws ❶ that secure the hard drive cover to the computer.

3. Lift the left edge of the hard drive cover ❷ and swing it up and to the right and remove it.

✎ The hard drive cover is included in the Plastics Kit, spare part number 407778-001.
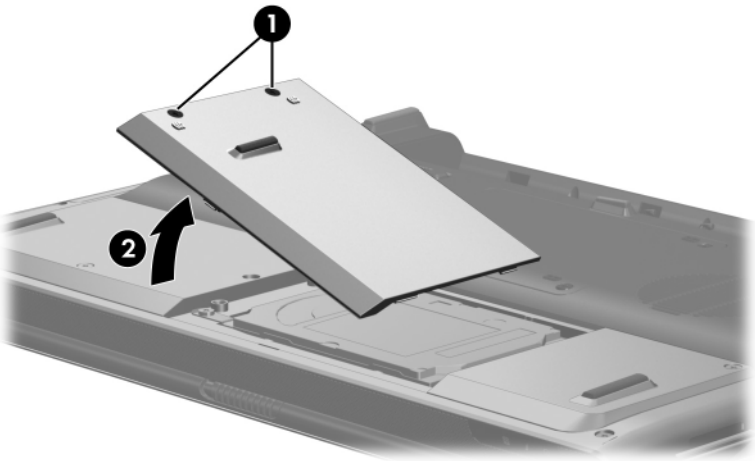
Removing the Hard Drive Cover

4. Remove the two Phillips PM2.5×6.0 hard drive retention screws ❶ that secure the hard drive to the computer.

5. Slide the hard drive ❷ to the right to disconnect if from the system board.

6. Remove the hard drive ❸ from the hard drive bay.
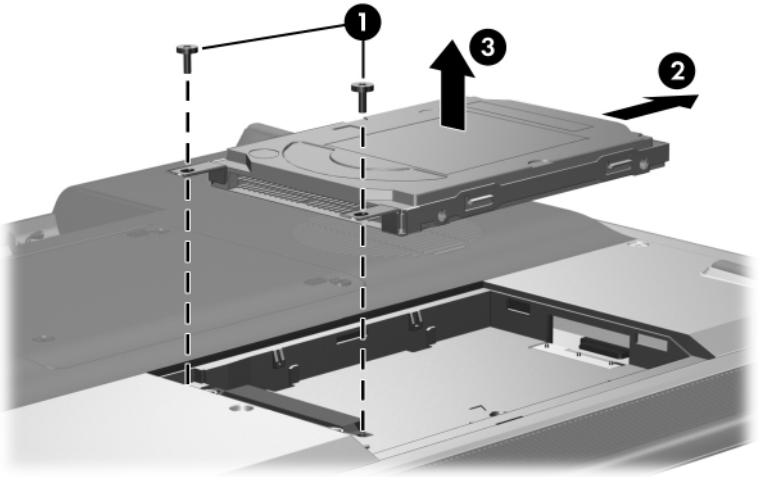
Removing the Hard Drive

7. Remove the four Phillips PM3.0×3.0 hard drive frame screws ❶ that secure the hard drive frame to the hard drive.

8. Lift the hard drive ❷ straight up and remove the hard drive frame.
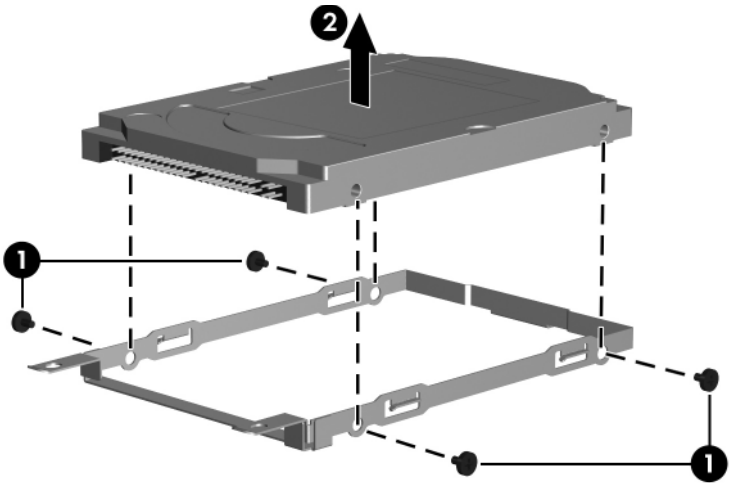
Removing the Hard Drive Frame

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

5.5 **Computer Feet**

The computer feet are adhesive-backed rubber pads. The feet are included in the Plastics Kit, spare part number 407778-001.

✍ There are two additional computer feet that are installed on the 12-cell battery. These additional feet are not shown in the following illustration.
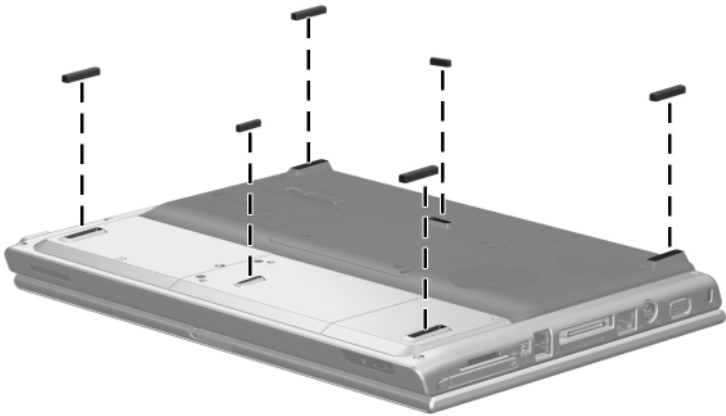
Replacing the Computer Feet

5.6 Memory Module

Memory Module Spare Part Number Information

1 DIMM, PC2-5300	
1024 MB	409060-001
512 MB	409059-001
256 MB	409058-001

1. Prepare the computer for disassembly (refer to Section 5.3).

2. Loosen the two black Phillips PM2.5×5.0 screws ❶ that secure the memory/Mini Card module compartment cover to the computer.

3. Lift the right side of the cover ❷ and swing it up and to the left and remove it.

✎ The memory/Mini Card module compartment cover is included in the Plastics Kit, spare part number 407778-001.
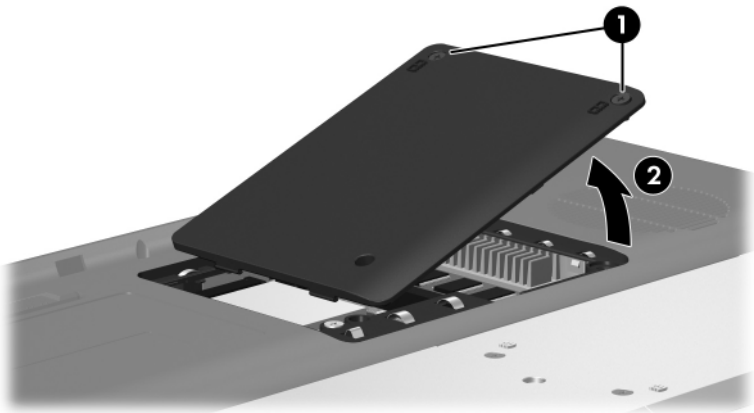
Removing the Memory/Mini Card Module Compartment Cover

4. Spread the retaining tabs ❶ 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.)

5. Remove the memory module by pulling the module away from the socket at an angle ❷.

✎ Memory modules are designed with a notch ❸ to prevent incorrect installation into the memory module socket.
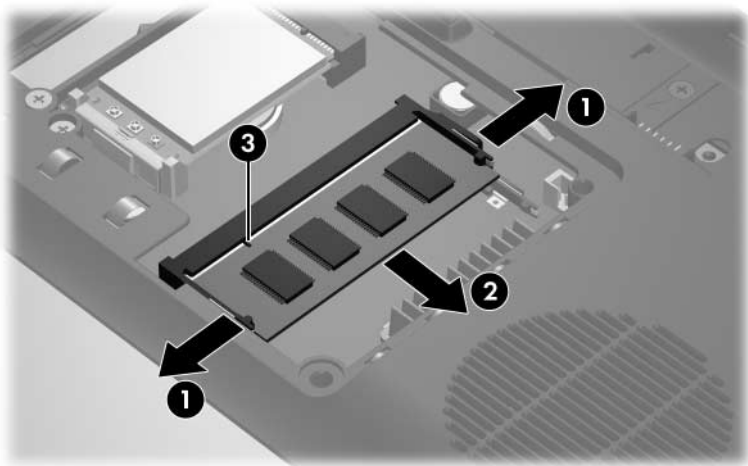
Removing the Memory Module

Reverse the above procedure to install a memory module.

5.7 Mini Card Module

Mini Card Module

Spare Part Number Information

802.11a/b/g WLAN module for use in the MOW 1 category countries listed below.		407576-001

Antigua & Barbuda	Chile	Panama	Paraguay
Argentina	Dominican Republic	India	Saudi Arabia
Australia	Guam	Indonesia	Taiwan
Bahamas	Guatemala	Malaysia	The United States
Barbados	Hong Kong	Mexico	Vietnam
Brunei		New Zealand	
Canada			

802.11a/b/g WLAN module for use in the MOW 2 category countries listed below.		407576-002

Aruba	El Salvador	Philippines	The Netherlands
Austria	Estonia	Poland	Norway
Azerbaijan	Finland	Portugal	Oman
Bahrain	France	Romania	Slovenia
Belgium	Georgia	Russia	South Africa
Bermuda	Germany	Serbia and Montenegro	Spain
Bulgaria	Greece	Singapore	Sri Lanka
Cayman Islands	Hungary	Slovakia	Sweden
Columbia	Iceland	Liechtenstein	Switzerland
Croatia	Ireland	Lithuania	Turkey
Cyprus	Italy	Luxembourg	The United Kingdom
Czech Republic	Latvia	Malta	Uzbekistan
Denmark	Lebanon	Monaco	
Egypt			

Mini Card Module

Spare Part Number Information *(Continued)*

802.11a/b/g Mini Card WLAN module for use in the ROW category countries listed below.			407576-003

China	Honduras	Qatar	Uruguay
Ecuador	Pakistan	South Korea	Venezuela
Haiti	Peru		

802.11b/g Mini Card WLAN module for use in the MOW1 countries listed below.			407107-001

Antigua & Barbuda	Canada	Panama	Paraguay
Argentina	Chile	India	Saudi Arabia
Australia	Dominican Republic	Indonesia	Taiwan
Bahamas	Guam	Malaysia	The United States
Barbados	Guatemala	Mexico	Vietnam
Brunei	Hong Kong	New Zealand	

802.11a/b/g Mini Card WLAN module for use in the ROW countries listed below.			407107-002

China	Honduras	Qatar	Uruguay
Ecuador	Pakistan	South Korea	Venezuela
Haiti	Peru		

802.11b/g Mini Card WLAN module for use in the following countries:			409250-004

Israel	Kuwait	United Arab Emirates	Ukraine
Jordan	Thailand		

1. Prepare the computer for disassembly (Section 5.3).

2. Remove the memory/Mini Card module compartment cover (Section 5.6).

3. Make note of which wireless antenna cable is attached to which terminal on the Mini Card module, then disconnect the auxiliary and main antenna cables ❶ from the Mini Card module.

4. Flex the Mini Card release tab ❷ forward to release the Mini Card module. (The edge of the module opposite the socket rises away from the computer.)

5. Remove the Mini Card module by pulling the module away from the socket at an angle ❸.

✎ Mini Card modules are designed with a notch ❹ to prevent incorrect installation into the Mini Card module socket.
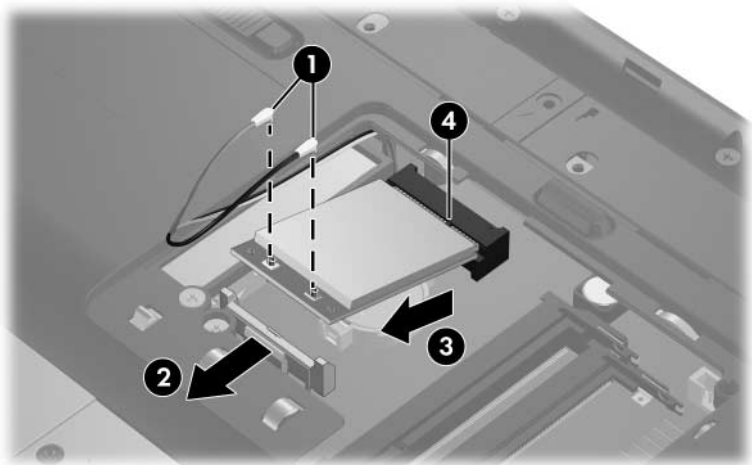
Removing a Mini Card Module

Reverse the above procedure to install a Mini Card module.

5.8 **RTC Battery**

RTC Battery Spare Part Number Information

RTC battery (includes 2-sided tape)   407816-001

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the memory/Mini Card module compartment cover (Section 5.6).
3. Remove the Mini Card module (Section 5.7).
4. Remove the RTC battery from the socket on the system board.
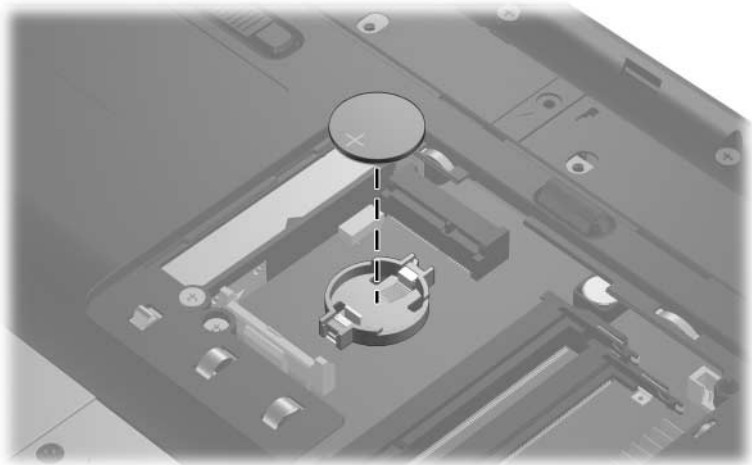
Removing the RTC Battery

Reverse the above procedure to install an RTC battery.

5.9 Optical Drive

Optical Drive Spare Part Number Information

DVD±RW and CD-RW Double-Layer Combo Drive with LightScribe and Hitachi LG Data Storage	417698-001
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive with LightScribe	430205-001
DVD±RW and CD-RW Super Multi Double-Layer Combo Drive	430207-001
DVD±RW and CD-RW Double-Layer Combo Drive	430206-001
DVD/CD-RW Combo Drive	430203-001
DVD-ROM drive	430204-001

1. Prepare the computer for disassembly (Section 5.3).

2. Position the computer with the left side toward you.

3. Remove the Phillips PM2.5×11.0 screw ❶ that secures the optical drive to the computer.

4. Push the rear edge of the optical drive ❷ to disconnect the drive from the system board.

5. Remove the optical drive ❸.

Removing the Optical Drive

6. If it is necessary to replace the optical drive bracket, remove the two Phillips PM2.0×4.0 screws ❶ that secure the bracket to the optical drive.

7. Remove the optical drive bracket ❷.
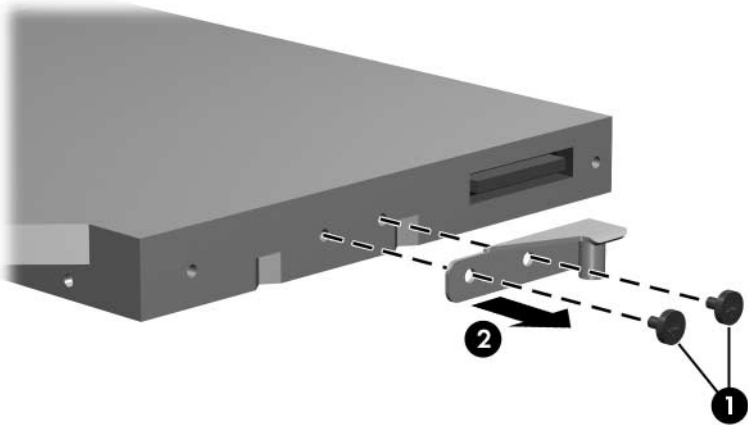
Removing the Optical Drive Bracket

Reverse the above procedure to install an optical drive.

5.10 Switch Cover

Switch Cover Spare Part Number Information	
Switch cover	407825-001

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the following screws:
   ❶ Two Phillips PM2.5×11.0 screws
   ❷ Three Phillips PM2.5×6.0 screws
   ❸ Two silver Phillips PM2.5×5.0 screws
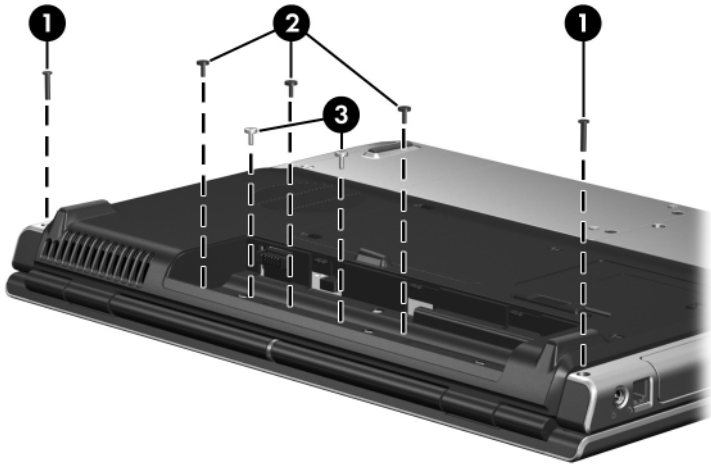
Removing the Switch Cover Screws

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

4. Open the computer as far as possible.

5. Insert a flat-bladed tool under the display hinge cover sections ❶ of the switch cover.

6. Lift the switch cover until the left and right sides ❷ of the switch cover disengage from the computer.

7. Remove the switch cover.
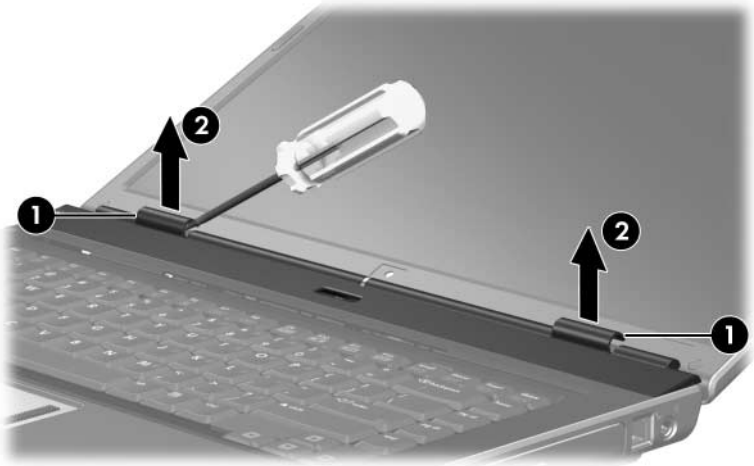
Removing the Switch Cover

Reverse the above procedure to install the switch cover.

5.11 Keyboard Frame

Keyboard Frame Spare Part Number Information

Keyboard frame	407786-001

1. Prepare the computer for disassembly (Section 5.3).

2. Remove the memory/Mini Card module compartment cover (Section 5.6).

3. Remove the switch cover (Section 5.10).

4. Turn the computer upside down with the rear panel toward you.

5. Remove the Phillips PM2.0×6.0 screw in the battery bay that secures the keyboard frame to the computer.
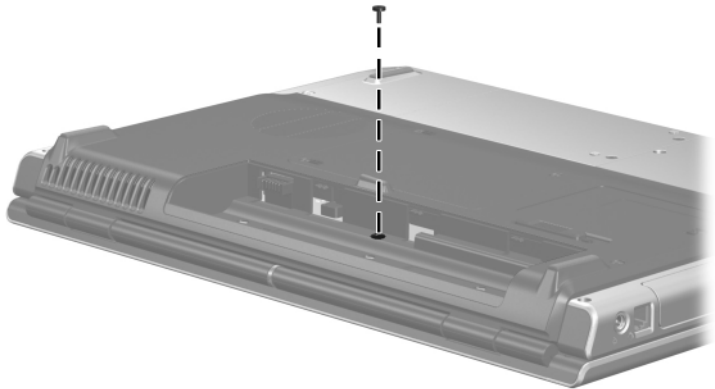
Removing the Keyboard Frame Screw

6. Turn the computer display-side up with front toward you.

7. Open the computer as far as possible.

8. Slide the keyboard frame ❶ toward the back of the computer.

9. Lift and hold the rear edge of the keyboard frame ❷ until the LED board cable connector is accessible.
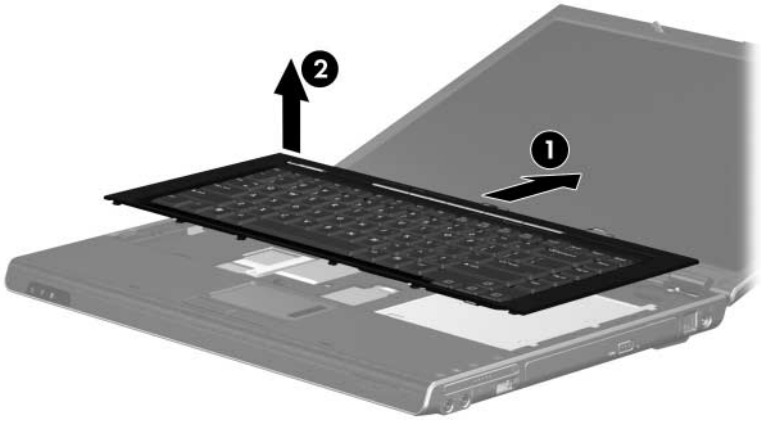
Releasing the Keyboard Frame

10. Release the zero insertion force (ZIF) connector ❶ to which the LED board cable is connected and disconnect the cable ❷.
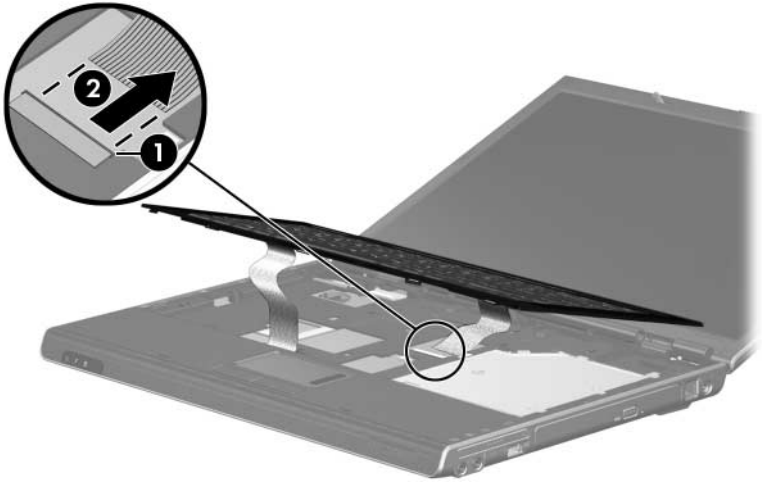
Disconnecting the LED Board Cable

11. Swing the keyboard frame ❶ up and forward until it rests upside down on the palm rest.

12. Release the ZIF connector to which the keyboard cable ❷ is attached and disconnect the keyboard cable ❸.

13. Remove the keyboard frame.
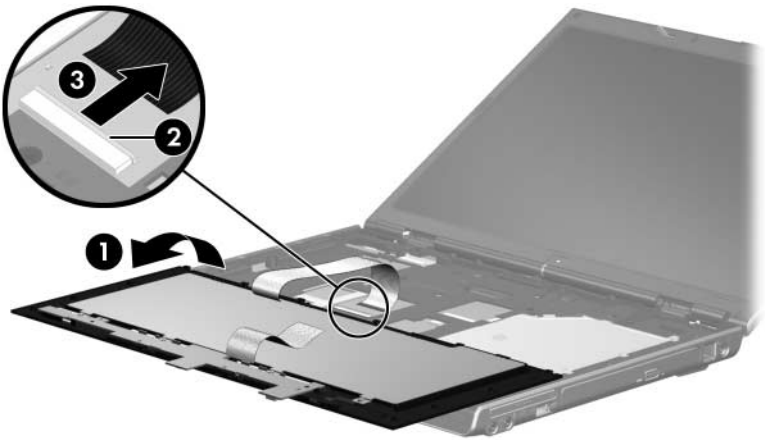
Removing the Keyboard Frame

Reverse the above procedure to install the keyboard frame.

5.12 LED Board

LED Board Spare Part Number Information

✎ The LED board spare part kit includes the LED board cable.

LED board   409069-001

1. Prepare the computer for disassembly (Section 5.3) and then remove the following components:

   a. Memory/Mini Card module compartment cover (Section 5.6)

   b. Switch cover (Section 5.10)

   c. Keyboard frame (Section 5.11)

2. Turn the keyboard frame upside down with the LED board toward you.

3. Remove the five Phillips PM2.0×4.0 screws ❶ that secure the LED board to the keyboard frame.

4. Remove the LED board ❷.
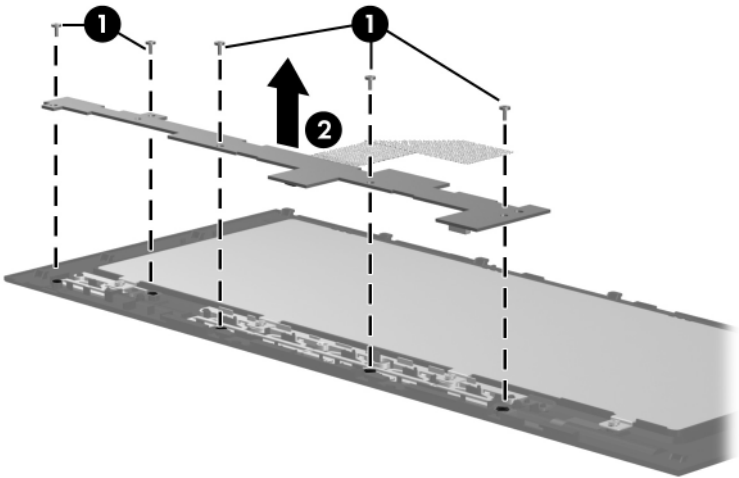
Removing the LED Board

Reverse the above procedure to install the LED board.

5.13 Keyboard

Keyboard Spare Part Number Information

Belgium	407857-A41	Portugal	407857-131
Denmark	407857-081	Russia	407857-251
France	407857-051	Spain	407857-071
French Canada	407857-121	Saudi Arabia	407587-171
Germany	407857-041	Sweden/Finland	407587-B71
Greece	407857-151	Switzerland	407857-111
International	407857-B31	Taiwan	407857-AB1
Israel	407857-BB1	Thailand	407857-281
Italy	407857-061	Turkey	407857-141
Japan	407857-291	The United Kingdom	407857-031
Korea	407857-AD1	The United States	407857-001
Norway	407857-091		

1. Prepare the computer for disassembly (Section 5.3).

2. Remove the switch cover (Section 5.10).

3. Remove the keyboard frame (Section 5.11).

4. Turn the keyboard assembly upside down with the LED board toward you.

5. Remove the four Phillips PM2.0×3.0 screws ❶ that secure the keyboard to the keyboard frame.

6. Remove the tabs on the bottom of the keyboard from the slots in the keyboard frame.

7. Remove the keyboard ❷.
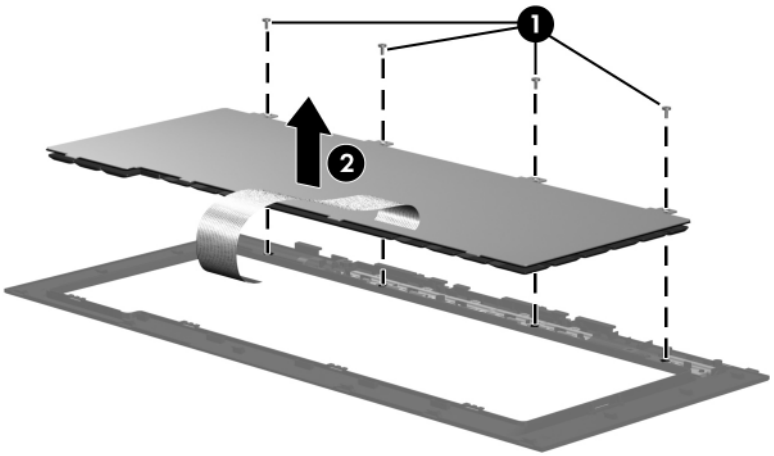
Removing the Keyboard

Reverse the above procedure to install the keyboard.

5.14 Display Assembly

Display Assembly Spare Part Number Information

✎ Display assemblies include display cable, wireless antenna boards, and antenna cables.

For use with UMA system boards	
15.4-inch, WXGA with BrightView	430527-001
15.4-inch, WXGA antiglare	430525-001
For use with discrete system boards	
15.4-inch, WXGA with BrightView	430528-001
15.4-inch, WXGA antiglare	430526-001

1. Prepare the computer for disassembly (Section 5.3).

2. Remove the memory/Mini Card module compartment cover (Section 5.6).

3. Disconnect the wireless antenna cables from the Mini Card module (Section 5.7).

4. Remove the switch cover (Section 5.10).

5. Remove the keyboard frame (Section 5.11).

6. Remove the keyboard (Section 5.13).

7. Disconnect the display cable ❶ from the system board.

8. Remove the wireless antenna cables from the clips ❷ in the top cover.
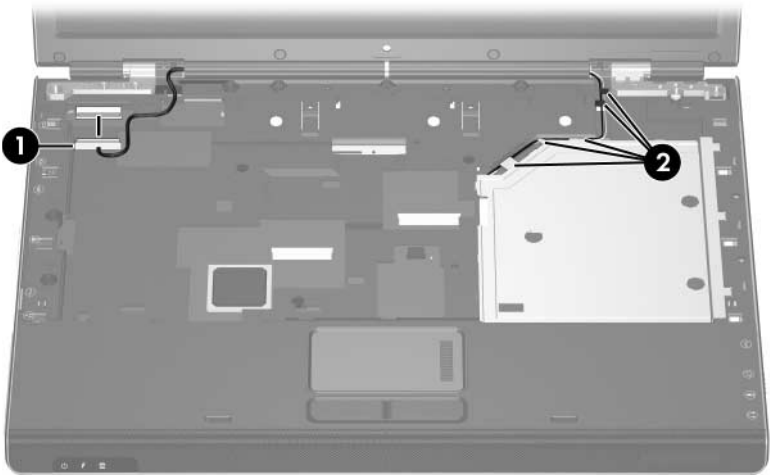
Disconnecting the Display and Wireless Antenna Cables

△ **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.

9. Remove the four Phillips PM2.5×7.0 screws ❶ that secure the display assembly to the computer.

10. Lift the display assembly straight up and remove it ❷.
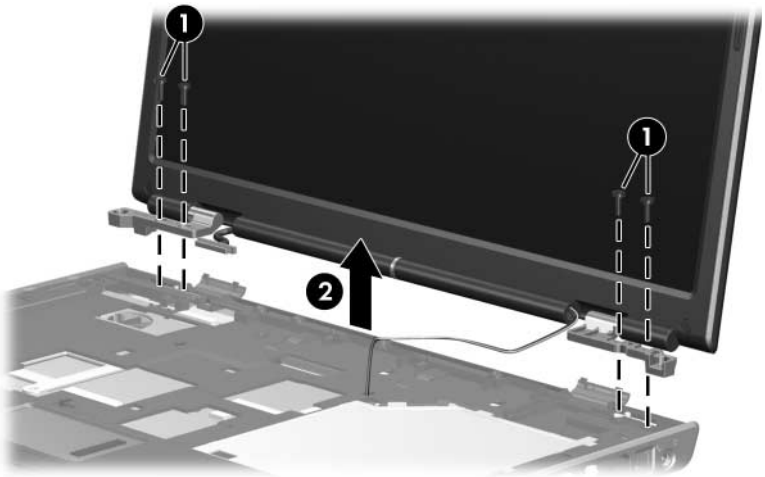
Removing the Display Assembly

Display Assembly Subcomponents

Spare Part Number Information

Display Plastics Kit, includes: ■ Display bezel ■ Display enclosure ■ Display release latch actuator and hooks	407792-001
Display Hinge Kit	407796-001
Display inverter board	407800-001
Display Panel Kit (includes display panel cable) ■ 15.4-inch, WXGA with BrightView ■ 15.4-inch, WXGA antiglare	407799-001 407798-001
Wireless Antenna Kit (includes cable and transceivers)	407791-001
Display Cable Kits (not illustrated) ■ For use with UMA system boards ■ For use with discrete system boards	430531-001 430532-001
Display Label Kit (not illustrated)	430215-001
Display Screw Kit (not illustrated), includes: ■ Phillips PM2.5×7.0 screws ■ Phillips PM2.0×4.0 screws ■ Rubber screw covers	407794-001

11. Remove the eight rubber screw covers ❶ and ❷ and the eight Phillips PM2.5×7.0 screws ❸ that secure the display bezel to the display assembly.

✎ The rubber screw covers are included in the Display Screw Kit, spare part number 407794-001.

The four rubber screw covers ❶ on the top edge of the display bezel are thicker than the four rubber screw covers ❷ on the bottom edge of the display bezel.
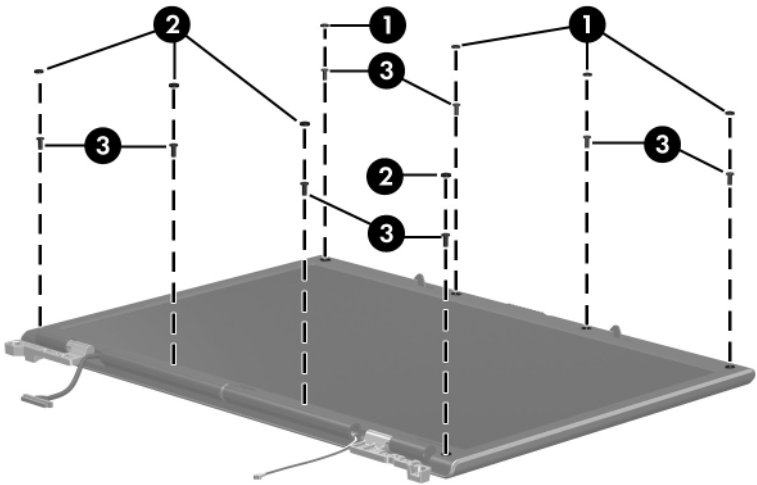
Removing the Display Bezel Screws

✎ The display bezel and display enclosure are available in the Display Plastics Kit, spare part number 407792-001.

12. Flex the inside edges of the left and right sides ❶ and the top and bottom sides ❷ of the display bezel until the bezel disengages from the display enclosure.

13. Remove the display bezel ❸.
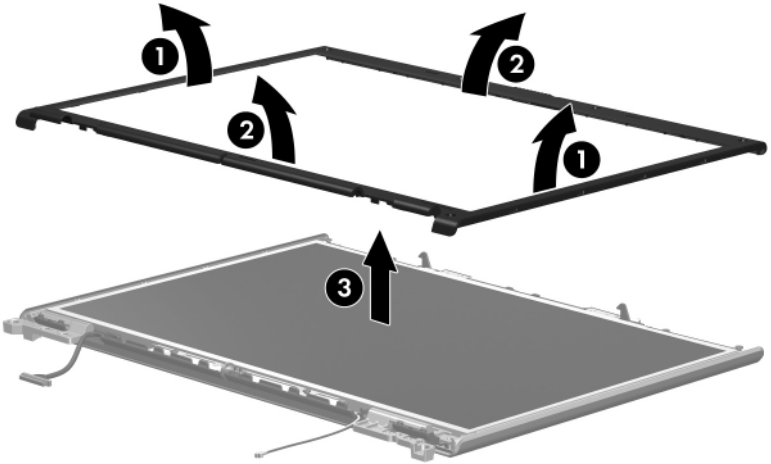
Removing the Display Bezel

14. Disconnect the following cables:
    ❶ Display panel cable
    ❷ Wireless light cable
    ❸ Display inverter board cable
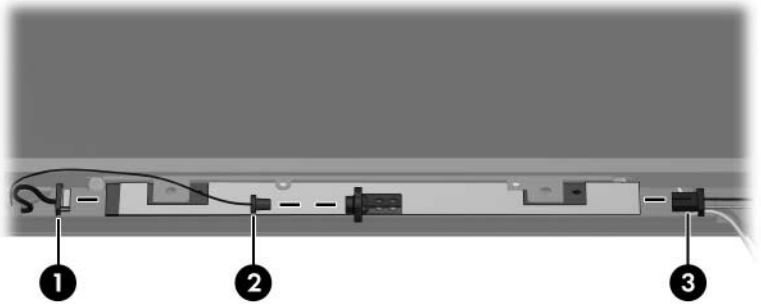
Disconnecting the Display Panel Cables

Display Assembly Subcomponents

Spare Part Number Information

Display Panel Kit (includes display panel cable)	
■ 15.4-inch, WXGA with BrightView	407799-001
■ 15.4-inch, WXGA antiglare	407798-001
Display inverter board	407800-001

15. Remove the two Phillips PM2.5×7.0 screws ❶ that secure the display panel to the display enclosure.

16. Remove the display panel ❷ and inverter board ❸.
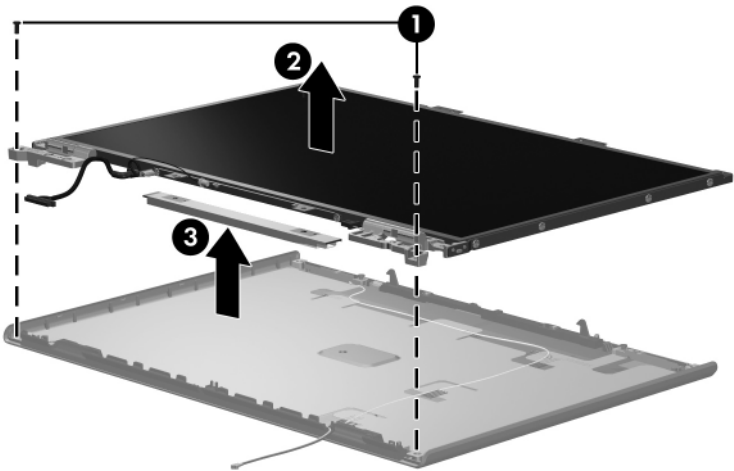
Removing the Display Panel and Inverter Board

✎ The display release hook arm and spring are available in the Display Hinge Kit, spare part number 407796-001.

17. If it is necessary to replace the display release hook arm, slide and hold the arm ❶ to the right.

18. Slide the right side of the arm ❷ forward until it clears the tab ❸ on the display enclosure.

19. Lift the arm ❹ out of the display enclosure.

20. Detach the display release hook arm spring ❺ from the tab on the display enclosure.

21. Remove the display release hook arm.
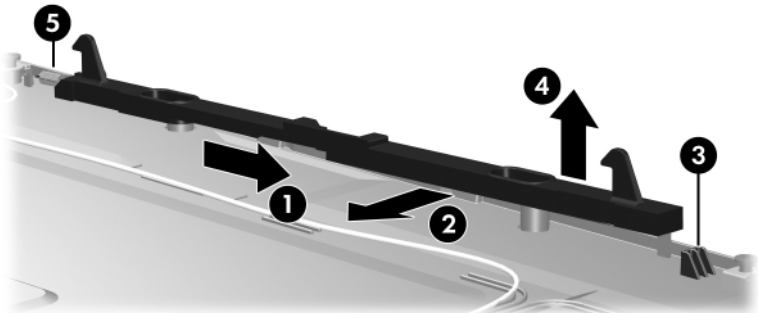
Removing the Display Release Hook Arm

✎ The display hinges are available in the Display Hinge Kit, spare part numbers 407796-001.

22. If it is necessary to replace the display hinges, remove the four Phillips PM2.0×4.0 screws ❶ that secure each hinge to the display panel.

23. Remove the display hinges ❷.
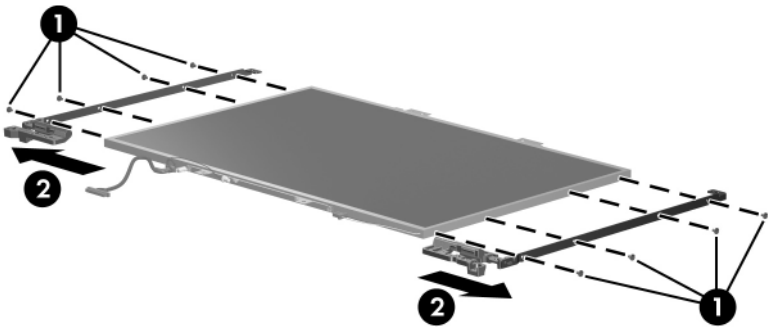
Removing the Display Hinges

24. Remove the Phillips PM2.0×4.0 screws ❶ that secure the left and right wireless antenna transceivers to the display enclosure.

25. Release the retention tabs ❷ built in to the display enclosure lining that secure the wireless antenna cables to the display enclosure.

26. Detach the wireless antenna transceivers ❸ from the display enclosure.

27. Remove the wireless antenna transceivers and cables ❹.

✎ The wireless antenna transceivers and cables are available in the Wireless Antenna Kit, spare part number 407791-001.
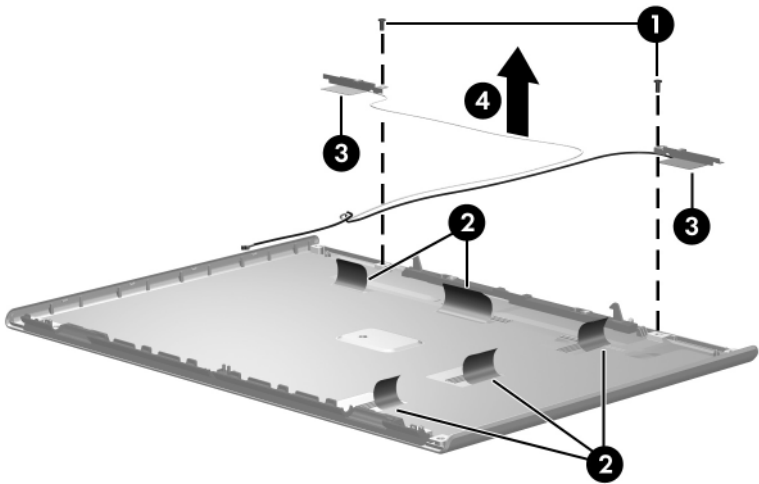
Removing the Wireless Antenna Transceivers and Cables

Reverse the above procedure to reassemble and install the display assembly.

5.15 Top Cover

Top Cover

Spare Part Number Information

Top cover (includes TouchPad)	407822-001
TouchPad bracket	407811-001

1. Prepare the computer for disassembly (Section 5.3) and then remove the following components:

   a. Hard drive (Section 5.4)

   b. Memory/Mini Card module compartment cover (Section 5.6)

   c. Optical drive (Section 5.9)

   d. Switch cover (Section 5.10)

   e. Keyboard assembly (Section 5.11)

   f. Display assembly (Section 5.14)

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

3. Remove the two Phillips PM2.5×3.0 screws ❶ in the optical drive bay and the silver Phillips PM2.5×5.0 screw ❷ in the hard drive bay that secure the top cover to the computer.
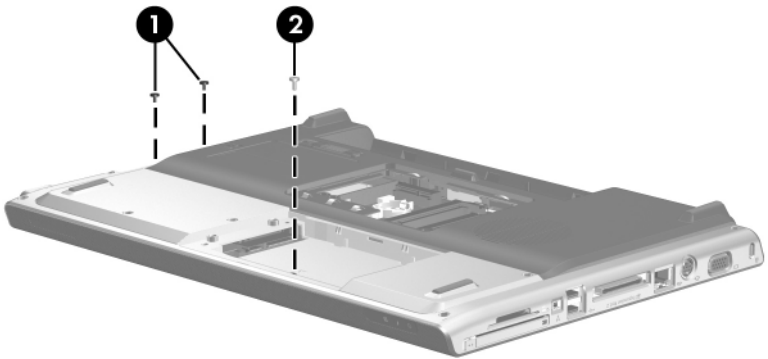
Removing the Top Cover Screws, Part 1

4. Remove the eight Phillips PM2.5×11.0 screws that secure the top cover to the computer.
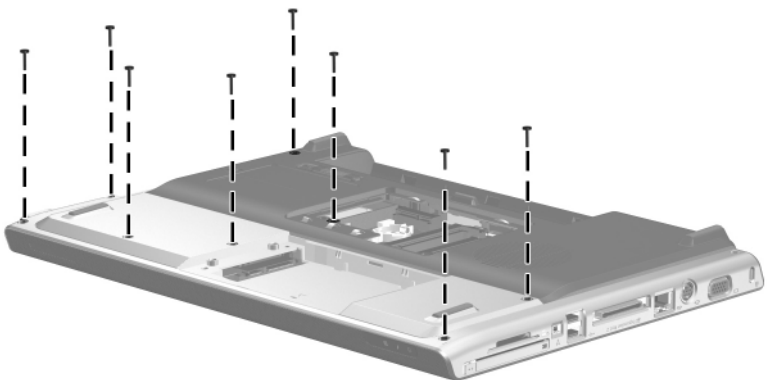
Removing the Top Cover Screws, Part 2

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

6. Release the ZIF connector to which the TouchPad cable ❶ is connected and disconnect the TouchPad cable ❷ from the system board.

✎ The TouchPad cable is included in the Cable Kit, spare part number 407774-001.
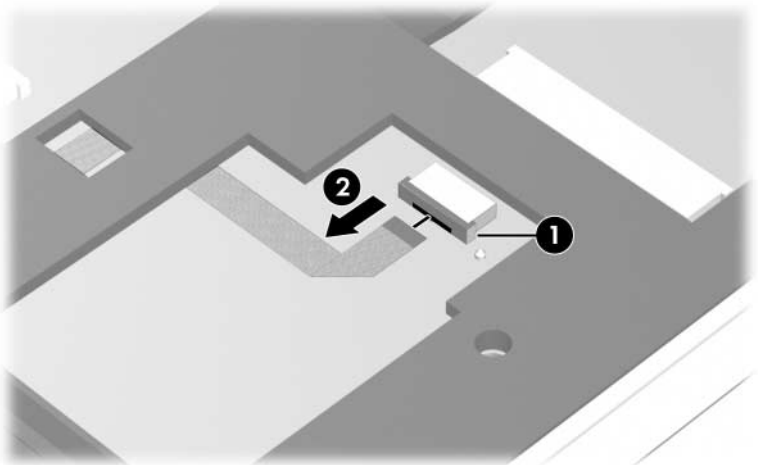
Disconnecting the TouchPad Cable

7. Remove the seven Phillips PM2.5×11.0 screws that secure the top cover to the computer.
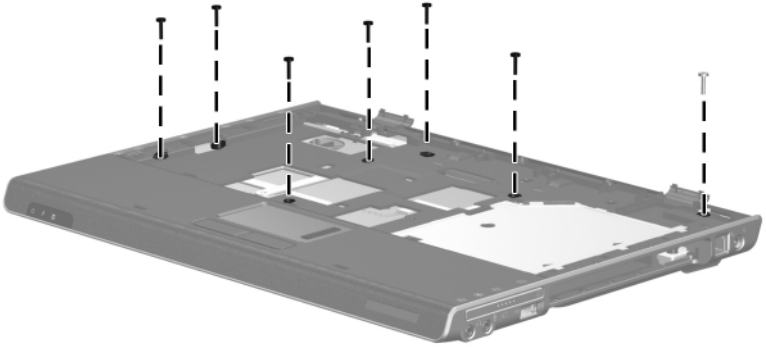
Removing the Top Cover Screws, Part 3

8. Remove the three silver PM2.5×5.0 screws that secure the top cover to the computer.
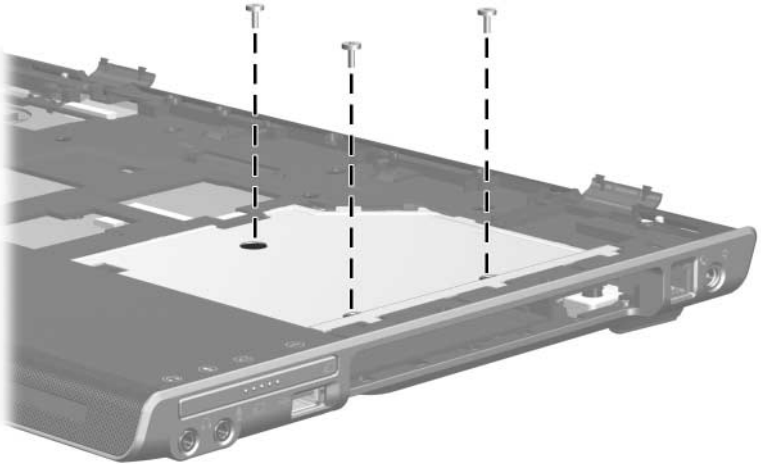
Removing the Top Cover Screws, Part 4

9. Lift up the rear edge of the top cover ❶ until it disengages from the base enclosure.

10. Lift the top cover ❷ straight up and remove it.
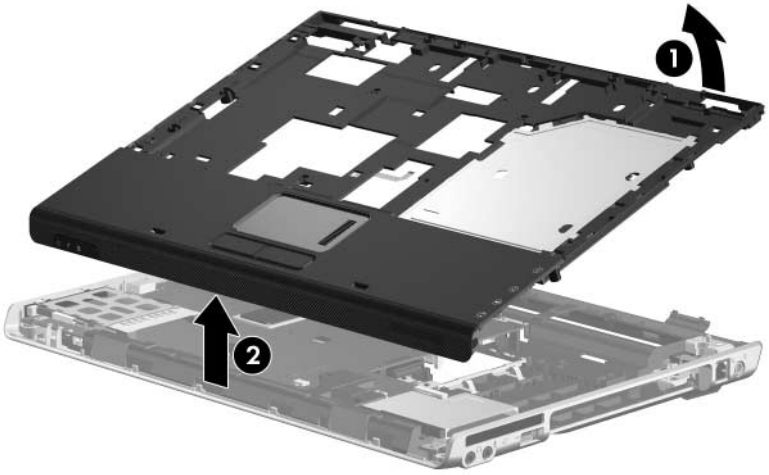
Removing the Top Cover

11. If it is necessary to replace the TouchPad cable, release the
    ZIF connector to which the TouchPad cable ❶ is connected
    and disconnect the TouchPad cable from the TouchPad board.

12. Remove the TouchPad cable ❷.

✎ The TouchPad cable is included in the Cable Kit, spare part
   number 407774-001.
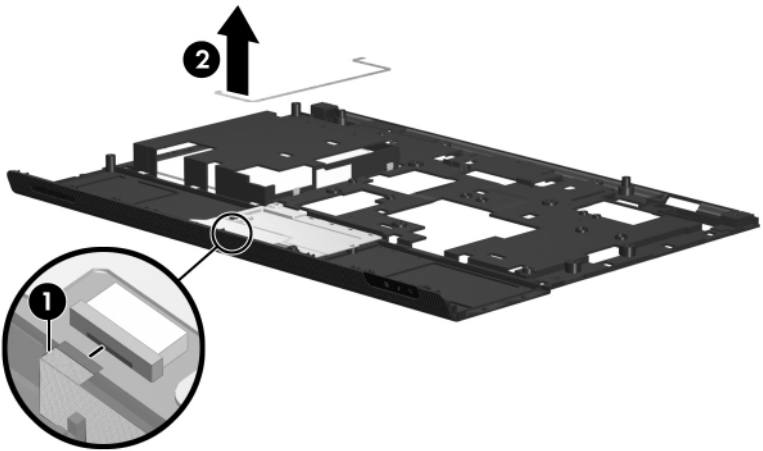
Removing the TouchPad Cable

Reverse the above procedure to install the top cover.

5.16 Bluetooth Module

Bluetooth Module Spare Part Number Information
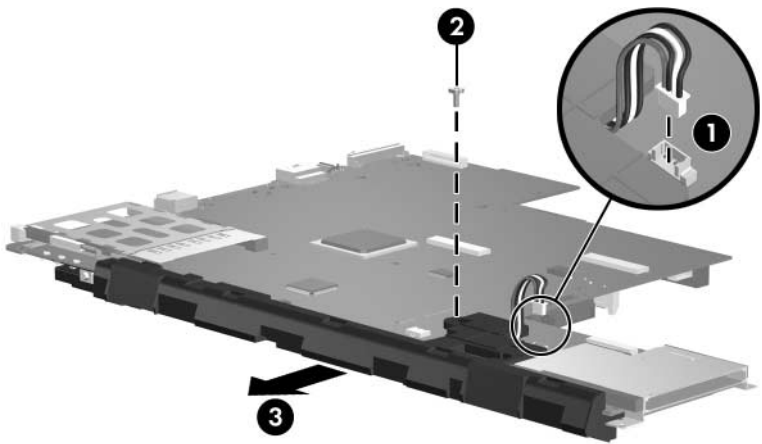
Bluetooth module (includes Bluetooth module cable)	397922-001

1. Prepare the computer for disassembly (Section 5.3), and then remove the following components:

   a. Hard drive (Section 5.4)

   b. Memory/Mini Card module compartment cover (Section 5.6)

   c. Optical drive (Section 5.9)

   d. Switch cover (Section 5.10)

   e. Keyboard assembly (Section 5.11)

   f. Display assembly (Section 5.14)

   g. Top cover (Section 5.15)

2. Remove the Phillips PM2.0×4.0 screw ❶ that secures the Bluetooth module to the base enclosure.

3. Remove the Bluetooth module from the base enclosure ❷.

4. Remove the Bluetooth module cable ❸ from the routing channel in the base enclosure.

5. Disconnect the Bluetooth module cable ❹ from the Bluetooth board.

✎ The Bluetooth module cable is included with the Bluetooth module and is also available in the Cable Kit, spare part number 407774-001.
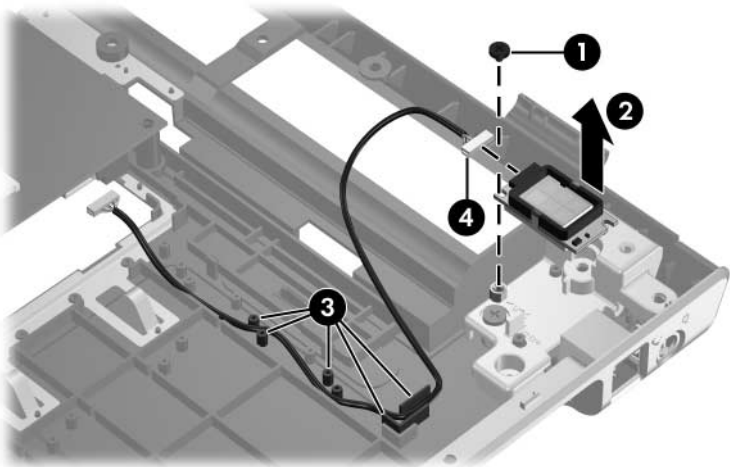
Removing the Bluetooth Board

Reverse the above procedure to install the Bluetooth board.

5.17 System Board

System Board Spare Part Number Information

▌ 945PM NV72 for use with full-featured computer models	430195-001
945GM for use with full-featured computer models	430196-001
940GML for use with defeatured computer models	430197-001

✎ 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 5.6)
- Mini Card module (Section 5.7)
- RTC battery (Section 5.8)
- Power connector and cable (Section 5.17)
- Fan/heat sink assembly(Section 5.19)
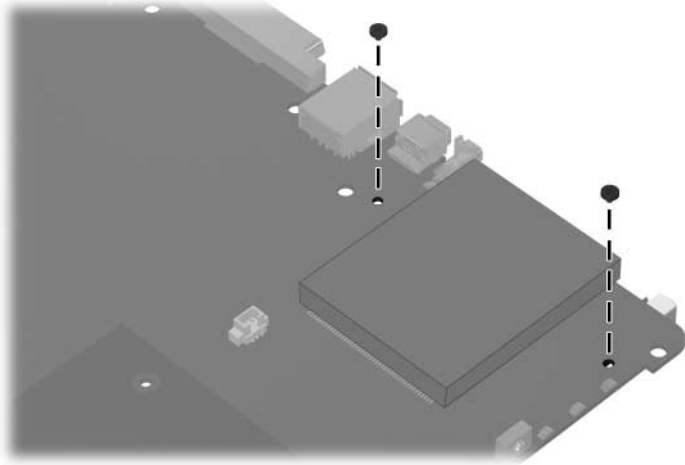- Processor (Section 5.20)
- PC Card assembly (Section 5.22)
- ExpressCard assembly (Section 5.22)

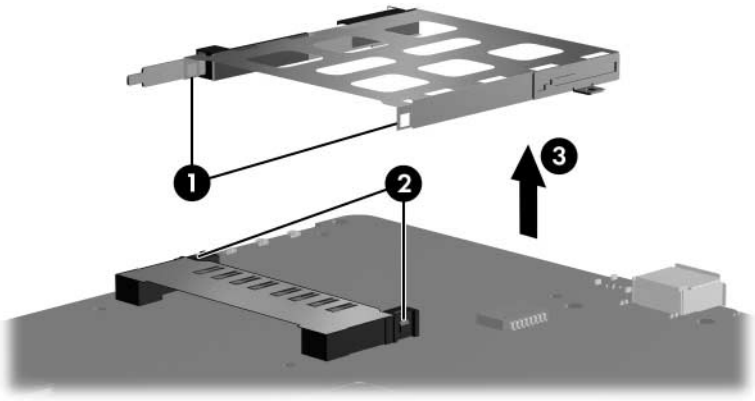
1. Prepare the computer for disassembly (Section 5.3), and then remove the following components:

   a. Hard drive (Section 5.4)

   b. Optical drive (Section 5.9)

   c. Switch cover (Section 5.10)

   d. Keyboard assembly (Section 5.11)

   e. Display assembly (Section 5.14)

   f. Top cover (Section 5.15)

   g. Bluetooth board (Section 5.16)

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

3. Press in on the ExpressCard slot bezel ❶ to release it.

4. Remove the ExpressCard slot bezel ❷.

✎ The ExpressCard slot bezel is included in the Plastics Kit, spare part number 407778-001.
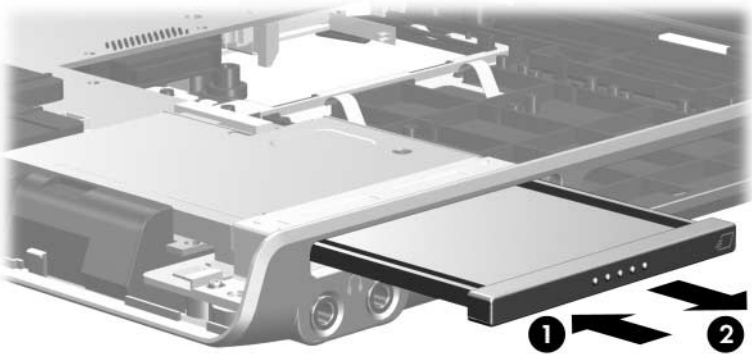
Removing the ExpressCard Slot Bezel

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5. Remove the Phillips PM2.5×6.0 screw ❶ that secures the display hinge support to the base enclosure.

6. Remove the display hinge support ❷.

7. Remove the power connector ❸ from the clip in the base enclosure.

8. Remove the power connector cable ❹ from the clips in the base enclosure.

✎ The display hinge support is included in the Bracket Kit, spare part number 407820-001.
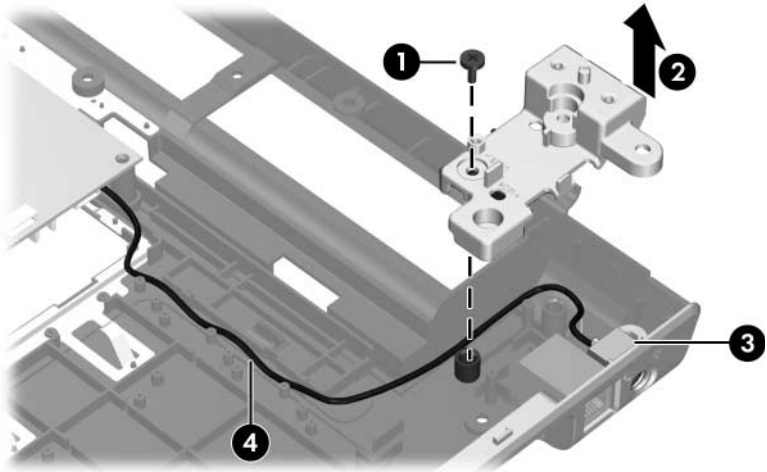
Removing the Display Hinge Support and Power Connector

9. Disconnect the USB/audio board cable ❶ and modem cable ❷ from the system board.
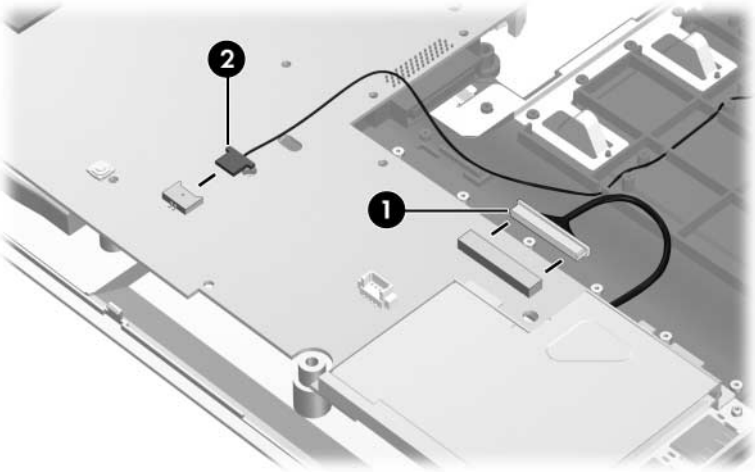
Disconnecting the Modem and USB/Audio Board Cables

10. Remove the two Phillips PM2.5×11.0 screws ❶ and the three Phillips PM2.5×6.0 screws ❷ that secure the system board to the base enclosure.

11. Remove the ExpressCard bracket ❸.

✎ The ExpressCard bracket is included in the Bracket Kit, spare part number 407820-001.
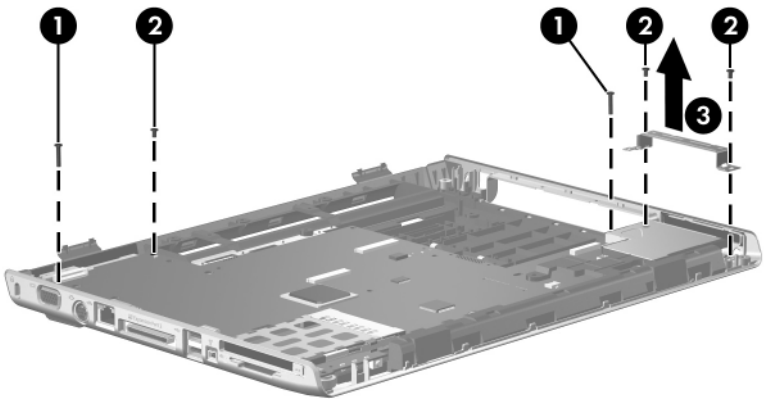
Removing the System Board Screws

12. Use the optical drive connector ❶ to lift the right side of the system board ❷ until it is clear of the base enclosure.

13. Slide the system board ❸ to the right at an angle and remove it.
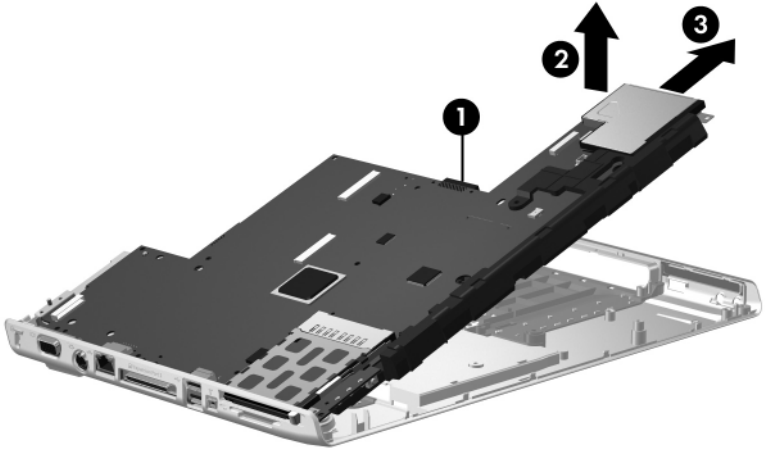
Removing the System Board

14. If it is necessary to replace the power connector cable, turn the system board upside down with the expansion port 2 toward you.

15. Disconnect the power connector cable ❶ from the system board.

16. Remove the power connector cable ❷.

✎ The power connector cable is available in the Cable Kit, spare part number 407774-001.
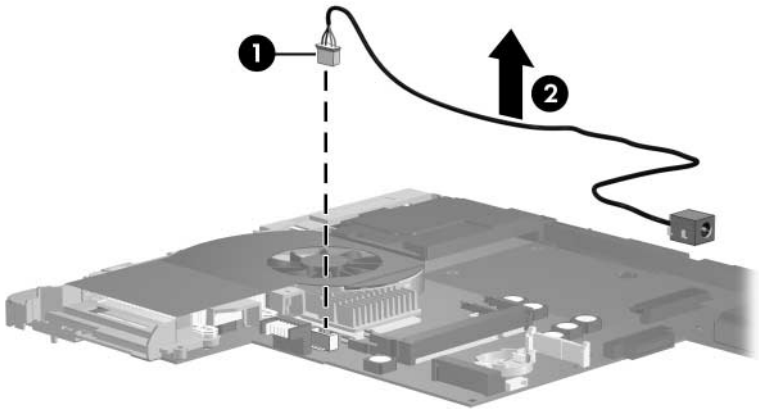
Removing the Power Connector Cable

17. If it is necessary to replace the modem connector and cable, remove the modem connector ❶ and cable ❷ from the clips and routing channel in the base enclosure.

✎ The modem connector and cable is available in the Cable Kit, spare part number 407774-001.
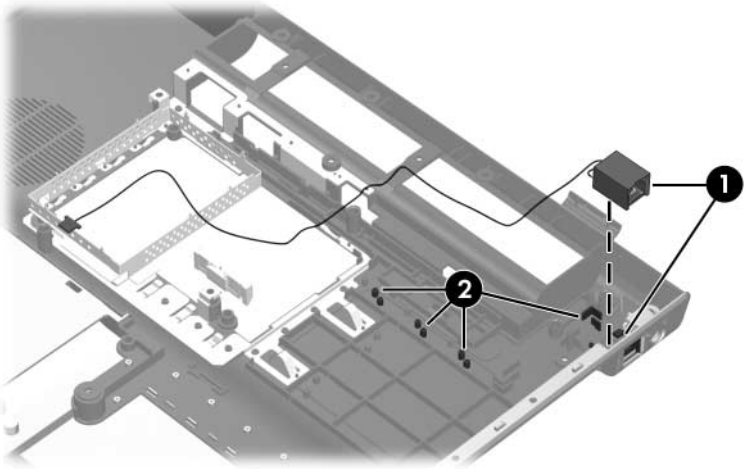
Removing the Modem Connector Cable

5.18   USB/Audio Board

USB/Audio Board Spare Part Number Information

✎ The USB/audio board includes the USB/audio board cable.

USB/audio board   409076-001

1. Prepare the computer for disassembly (Section 5.3),
   and then remove the following components:

   a. Hard drive (Section 5.4)

   b. Optical drive (Section 5.9)

   c. Switch cover (Section 5.10)

   d. Keyboard assembly (Section 5.11)

   e. Display assembly (Section 5.14)

   f. Top cover (Section 5.15)

   g. System board (Section 5.17)

2. Remove the Phillips PM2.5×6.0 screw ❶ that secures the USB/audio board to the base enclosure.

3. Remove the USB/audio board ❷ from the base enclosure.

4. Disconnect the USB/audio board cable ❸ from the USB/audio board.

✎ The USB/audio board cable is available in the Cable Kit, spare part number 407774-001.
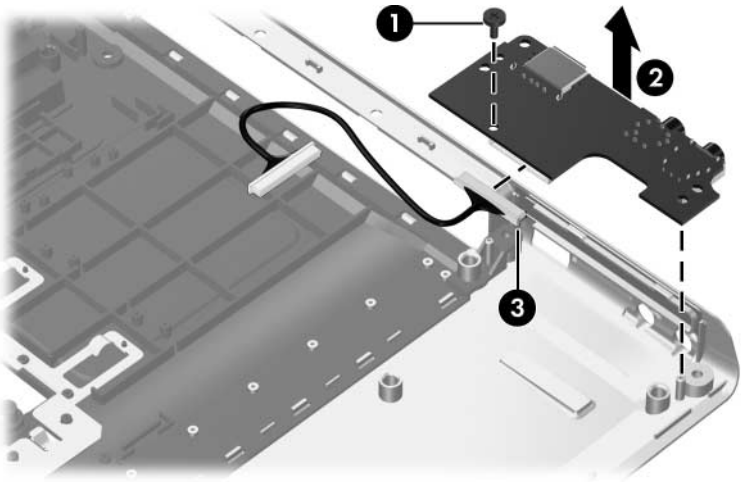
Removing the USB/Audio Board

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

5.19 Fan/Heat Sink Assembly

Fan/Heat Sink Assembly Spare Part Number Information

For use with UMA system boards	413453-001
For use with discrete system boards	407862-001
Heat sink	403827-001
Fan assembly	407862-001

1. Prepare the computer for disassembly (Section 5.3), and then remove the following components:

   a. Hard drive (Section 5.4)

   b. Memory/Mini Card module compartment cover (Section 5.6)

   c. Optical drive (Section 5.9)

   d. Switch cover (Section 5.10)

   e. Keyboard assembly (Section 5.11)

   f. Display assembly (Section 5.14)

   g. Top cover (Section 5.15)

   h. System board (Section 5.17)

2. Turn the system board upside down with the expansion port 2 toward you.

3. Disconnect the fan cable ❶ from the system board.

4. Remove the four Phillips PM2.5×6.0 screws ❷ that secure the heat sink to the system board.
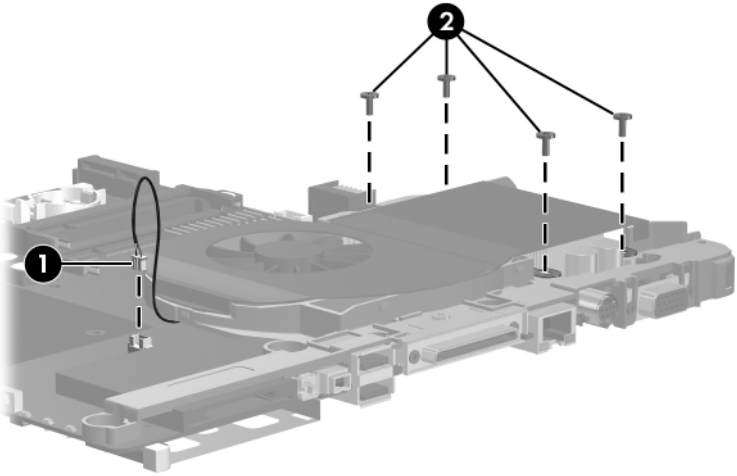
Removing the Fan/Heat Sink Assembly Screws, Part 1

5. Remove the following screws:

❶ One Phillips PM2.5×3.0 screw that secures the expansion port 2 bracket to the system board

❷ Two slotted SM1.5×9.0 screws on each side of the expansion port 2 that secure the expansion port 2 bracket to the system board

❸ Two Phillips PM3.0×6.0 screws on each side of the external monitor port that secure the fan/heat sink assembly to the system board
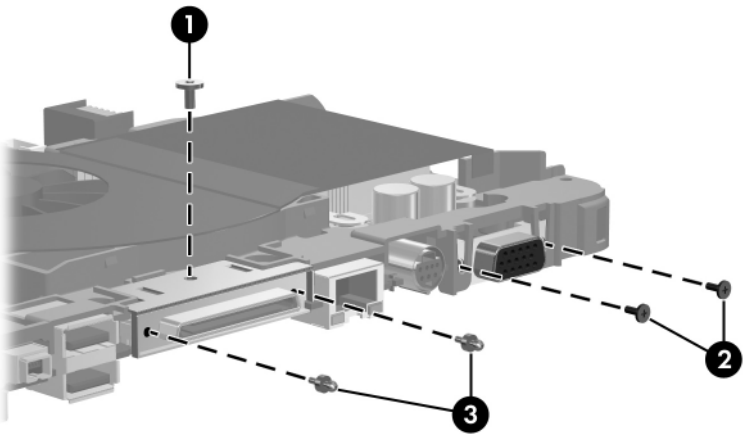
Removing the Fan/Heat Sink Assembly Screws, Part 1

6. Slide the expansion port 2 bracket ❶ away from the system board.

✎ The spare part number for the expansion port 2 bracket is 407863-001.

7. Remove the fan/heat sink assembly ❷.

✎ Due to the adhesive quality of the thermal paste located between the fan/heat sink assembly and processor, it may be necessary to move the fan/heat sink assembly from side to side to detach the it from the processor.
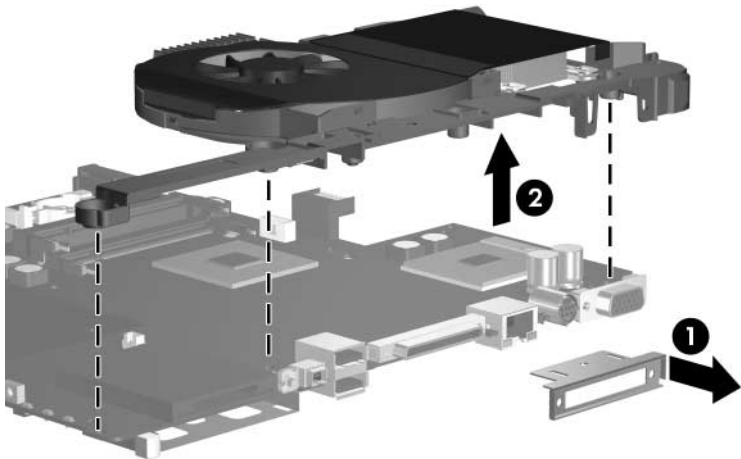
Removing the Fan/Heat Sink Assembly

✎ The thermal paste should be thoroughly cleaned from the surfaces of the processor ❶ and fan/heat sink assembly ❷ each time the fan/heat sink assembly is removed. Thermal paste should be reapplied to both surfaces before the fan/heat sink assembly is reinstalled. Thermal paste is included with all fan/heat sink assembly and processor spare part kits.
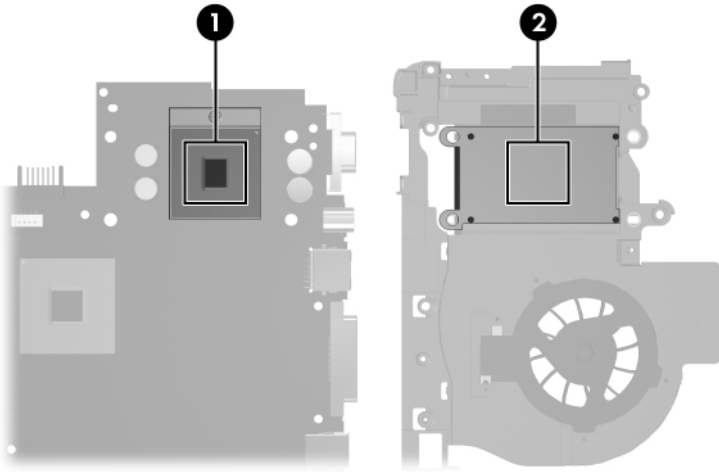
Replacing the Thermal Paste

Reverse the above procedure to install the fan/heat sink assembly.

5.20 Processor

Processor Spare Part Number Information

Intel Pentium M 2.0-GHz	407762-001
Intel Pentium M 1.83-GHz	407761-001
Intel Celeron M 1.60-GHz	430202-001
Intel Celeron M 410 1.46-GHz	430849-001
Intel Core Duo T2600 2.16-GHz	430847-001
Intel Core Duo T2250 1.73-GHz	430851-001
Intel Core Duo T2300E 1.66-GHz	430848-001
Intel Core Duo T2050 1.60-GHz	430850-001
Intel Core Solo T1350 1.86-GHz	430852-001
Intel Core Solo 1.83-GHz	430200-001
Intel Core Solo 1.66-GHz	430201-001

1. Prepare the computer for disassembly (Section 5.3),
   and then remove the following components:

   a. Hard drive (Section 5.4)

   b. Memory/Mini Card module compartment cover
      (Section 5.6)

   c. Optical drive (Section 5.9)

   d. Switch cover (Section 5.10)

   e. Keyboard assembly (Section 5.11)

   f. Display assembly (Section 5.14)

   g. Top cover (Section 5.15)

   h. System board (Section 5.17)

   i. Fan/heat sink assembly (Section 5.19)

2. Use a flat-bladed screwdriver to turn the slotted locking screw ❶ one-half turn counterclockwise.

3. Lift the processor straight up and remove it ❷.

✎ The gold triangle ❸ on the processor should be aligned with the triangle ❹ embossed on the processor socket when you install the processor.
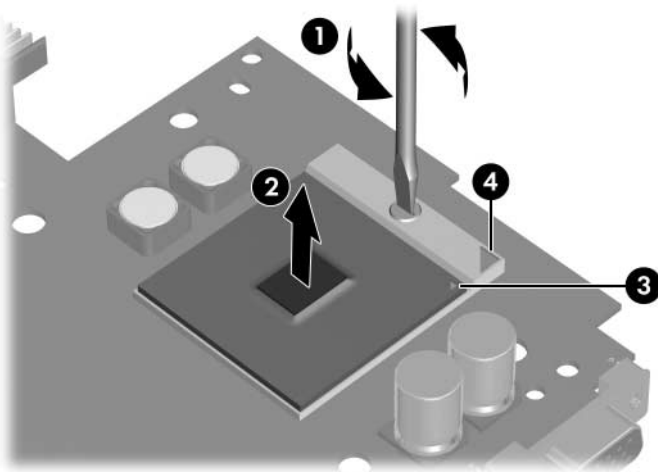
Removing the Processor

Reverse the above procedure to install the processor.

5.21 Speakers

Speaker Spare Part Number Information

Speakers	407784-001

1. Prepare the computer for disassembly (Section 5.3), and then remove the following components:

   a. Hard drive (Section 5.4)

   b. Memory/Mini Card module compartment cover (Section 5.6)

   c. Optical drive (Section 5.9)

   d. Switch cover (Section 5.10)

   e. Keyboard assembly (Section 5.11)

   f. Display assembly (Section 5.14)

   g. Top cover (Section 5.15)

   h. System board (Section 5.17)

   i. Fan/heat sink assembly (Section 5.19)

2. Turn the system board top-side up with the expansion port 2 toward you.

3. Disconnect the speaker cable ❶ from the system board.

4. Remove the Phillips PM2.5×6.0 screw ❷ that secures the speaker to the system board.

5. Slide the speaker ❸ forward and remove it from the system board.

Removing the Speaker

Reverse the above procedure to install the speaker.

5.22 PC Card Assembly

PC Card Assembly Spare Part Number Information

PC Card assembly	407829-001

1. Prepare the computer for disassembly (Section 5.3), and then remove the following components:

   a. Hard drive (Section 5.4)

   b. Memory/Mini Card module compartment cover (Section 5.6)

   c. Optical drive (Section 5.9)

   d. Switch cover (Section 5.10)

   e. Keyboard assembly (Section 5.11)

   f. Display assembly (Section 5.14)

   g. Top cover (Section 5.15)

   h. System board (Section 5.17)

2. Turn the system board upside down with the expansion port 2 toward you.

3. Remove the two Phillips PM2.0×4.0 screws that secure the PC Card assembly to the system board.

Removing the PC Card Assembly Screws

4. Turn the system board top-side up with the expansion port 2 toward you.

5. Disengage the hooks ❶ on the PC Card assembly from the slots on the PC Card connector ❷.

6. Remove the PC Card assembly from the system board.

Removing the PC Card Assembly

Reverse the above procedures to install the PC Card assembly.

5.23 ExpressCard Assembly

ExpressCard Assembly Spare Part Number Information

ExpressCard assembly	407809-001

1. Prepare the computer for disassembly (Section 5.3), and then remove the following components:

    a. Hard drive (Section 5.4)

    b. Memory/Mini Card module compartment cover (Section 5.6)

    c. Optical drive (Section 5.9)

    d. Switch cover (Section 5.10)

    e. Keyboard assembly (Section 5.11)

    f. Display assembly (Section 5.14)

    g. Top cover (Section 5.15)

    h. System board (Section 5.17)

2. Turn the system board upside down with the expansion port 2 toward you.

3. Remove the two Phillips PM2.0×4.0 screws that secure the ExpressCard assembly to the system board.
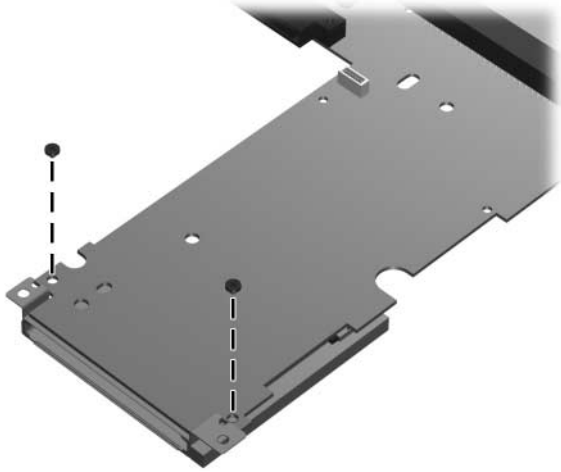
Removing the ExpressCard Assembly Screws

4. Turn the system board top-side up with the expansion port 2 toward you.

5. Remove the ExpressCard assembly from the system board.
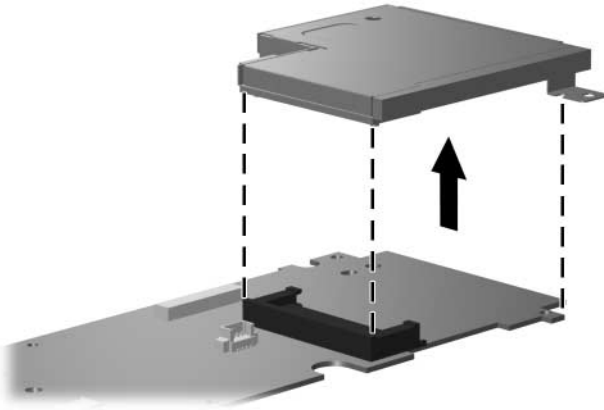
Removing the ExpressCard Assembly

Reverse the above procedures to install the ExpressCard assembly.

6

Specifications

This chapter provides physical and performance specifications.

Table 6-1

Computer

Dimensions	Metric	U.S.
Height		
Front	3.50 cm	1.38 in
Rear	4.50 cm	1.77 in
Width	35.79 cm	14.09 in
Depth	26.39 cm	10.39 in
Weight		
With 15.4-inch display, optical drive and 8-cell battery	2.99 kg	6.60 lbs
Input Power		
Operating voltage	18.5 V dc to 19.0 V dc	
Operating current	3.5 A or 4.74 A or 4.9 A	
Temperature		
Operating	10°C to 35°C	50°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F

Table 6-1

Computer *(Continued)*

Relative humidity (noncondensing)		
Operating	10% to 90%	10% to 90%
Nonoperating	5% to 95%	5% to 95%
Maximum altitude (unpressurized)		
Operating (14.7 to 10.1 psia)	-15 m to 3,048 m	-50 ft to 10,000 ft
Nonoperating (14.7 to 4.4 psia)	-15 m to 12,192 m	-50 ft to 40,000 ft
Shock		
Operating	125 g, 2 ms, half-sine	
Nonoperating	200 g, 2 ms, half-sine	
Random Vibration		
Operating	0.75 g zero-to-peak, 10 Hz to 500 Hz, 0.25 oct/min sweep rate	
Nonoperating	1.50 g zero-to-peak, 10 Hz to 500 Hz, 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 6-2

15.4-inch, WXGA, Display

Dimensions		
Height	20.7 cm	8.15 in
Width	33.1 cm	13.03 in
Diagonal	39.1 cm	15.39 in
Number of colors	Up to 16.8 million	
Contrast ratio	200:1	
Brightness	180 nits typical	
Pixel resolution		
Pitch	0.259 × 0.259 mm	
Format	1280 × 800	
Configuration	RGB vertical stripe	
Backlight	Edge lit	
Character display	80 × 25	
Total power consumption	4 W	
Viewing angle	+/-65° horizontal, +50° vertical typical	

Table 6-3

Hard Drives

	120-GB*	100-GB*	80-GB*
Dimensions			
Height	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm
Weight	102 g	102 g	99 g
Interface type	ATA-5	ATA-5	ATA-5
Transfer rate			
Synchronous (maximum)	100 MB/sec	100 MB/sec	100 MB/sec
Security	ATA security	ATA security	ATA security
Seek times (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
Logical blocks†	234,428,430	195,364,233	156,301,488
Disc rotational speed	4200 rpm	4200 rpm	5400 rpm
Operating temperature	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.

†Actual drive specifications may differ slightly.

Table 6-3

Hard Drives *(Continued)*

	80-GB*	60-GB*	40-GB*
Dimensions			
Height	9.5 mm	9.5 mm	9.5 mm
Width	70 mm	70 mm	70 mm
Weight	99 g	99 g	99 g
Interface type	ATA-5	ATA-5	ATA-5
Transfer rate			
Synchronous (maximum)	100 MB/sec	100 MB/sec	100 MB/sec
Security	ATA security	ATA security	ATA security
Seek times (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
Logical blocks†	156,301,488	117,210,240	78,140,160
Disc rotational speed	4200 rpm	4200 rpm	4200 rpm
Operating temperature	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.

†Actual drive specifications may differ slightly.

Table 6-4

DVD/CD-RW Combo Drive

Applicable disc	**Read:**	**Write:**
	DVD-R, DVD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), CD-ROM (Mode 1 and 2) CD Digital Audio, CD-XA ready (Mode 2, Form 1 and 2), CD-I ready (Mode 2, Form 1 and 2), CD-R, CD-RW, Photo CD (single and multisession), and CD-Bridge	CD-R and CD-RW
Center hole diameter	1.5 cm (0.59 in)	
Disc diameter		
Standard disc	12 cm (4.72 in)	
Mini disc	8 cm (3.15 in)	
Disc thickness	1.2 mm (0.047 in)	
Track pitch	0.74 µm	

Table 6-4

DVD/CD-RW Combo Drive *(Continued)*

Access time	CD media	DVD media
Random	< 110 ms	< 130 ms
Full stroke	< 210 ms	< 225 ms
Audio output level	Line-out, 0.7 V rms	
Cache buffer	2 MB	

Data transfer rate

CD-R (24X)	3600 KB/s (150 KB/s at 1X CD rate)	
CD-RW (10X)	1500 KB/s (150 KB/s at 1X CD rate)	
CD-ROM (24X)	3600 KB/s (150 KB/s at 1X CD rate)	
DVD (8X)	10,800 KB/s (1352 KB/s at 1X DVD rate)	
Multiword DMA mode 2	16.6 MB/s	
Startup time	< 15 seconds	
Stop time	< 6 seconds	

Table 6-5

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

Applicable disc	Read:	Write:
	DVD-R, DVD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), CD-ROM (Mode 1 and 2), CD Digital Audio, CD-XA ready (Mode 2, Form 1 and 2), CD-I ready (Mode 2, Form 1 and 2), CD-R, CD-RW, Photo CD (single and multisession), CD-Bridge	CD-R and CD-RW DVD-R and DVD-RW
Center hole diameter	1.5 cm (0.59 in)	
Disc diameter		
Standard disc	12 cm (4.72 in)	
Mini disc	8 cm (3.15 in)	
Disc thickness	1.2 mm (0.047 in)	
Track pitch	0.74 µm	

Table 6-5

DVD±RW and CD-RW Double-Layer Combo Drive *(Continued)*

Access time	CD	DVD
Random	< 175 ms	< 230 ms
Full stroke	< 285 ms	< 335 ms
Audio output level	Audio-out, 0.7 Vrms	
Cache buffer	2 MB	
Data transfer rate		
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	
Startup time	< 15 seconds	
Stop time	< 6 seconds	

Table 6-6

System Interrupts

Hardware IRQ	System Function
IRQ0	System timer
IRQ1	Standard 101-/102-Key or Microsoft Natural Keyboard
IRQ2	Cascaded
IRQ3	USB2 Enhanced Host Controller—24CD
IRQ4	COM1
IRQ5*	Conexant AC—Link Audio Data Fax Modem with SmartCP
IRQ6	Diskette drive
IRQ7*	Parallel port
IRQ8	System CMOS/real-time clock
IRQ9*	Microsoft ACPI-compliant system
IRQ10*	Realtek RTL8139 Family PCI fast Ethernet Controller

Table 6-6

System Interrupts *(Continued)*

IRQ11	TI OHCI 1394 host controller
	TI PCI1410 CardBus controller
IRQ12	Synaptics PS/2 TouchPad
IRQ13	Numeric data processor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE channel

*Default configuration; audio possible configurations are IRQ5, IRQ7, IRQ9, IRQ10, or none.

✎ 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 6-7

System I/O Addresses

I/O Address (hex)	System Function (shipping configuration)
000 - 00F	DMA controller no. 1
010 - 01F	Unused
020 - 021	Interrupt controller no. 1
022 - 024	Opti chipset configuration registers
025 - 03F	Unused
02E - 02F	87334 "Super I/O" configuration for CPU
040 - 05F	Counter/timer registers
044 - 05F	Unused
060	Keyboard controller
061	Port B
062 - 063	Unused
064	Keyboard controller
065 - 06F	Unused
070 - 071	NMI enable/RTC
072 - 07F	Unused
080 - 08F	DMA page registers
090 - 091	Unused
092	Port A
093 - 09F	Unused
0A0 - 0A1	Interrupt controller no. 2

Table 6-7

System I/O Addresses *(Continued)*

I/O Address (hex)	System Function (shipping configuration)
0A2 - 0BF	Unused
0C0 - 0DF	DMA controller no. 2
0E0 - 0EF	Unused
0F0 - 0F1	Coprocessor busy clear/reset
0F2 - 0FF	Unused
100 - 16F	Unused
170 - 177	Secondary fixed disk controller
178 - 1EF	Unused
1F0 - 1F7	Primary fixed disk controller
1F8 - 200	Unused
201	Joystick (decoded in ESS1688)
202 - 21F	Unused
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 6-7

System I/O Addresses *(Continued)*

I/O Address (hex)	System Function (shipping configuration)
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)

Table 6-8

System Memory Map

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

Table 6-9

System DMA

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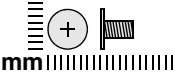
A

Screw Listing

This appendix provides specification and reference information for the screws and screw locks used in the computer. All screws listed in this appendix are available in the Computer Screw Kit, spare part number 407782-001, and the Display Screw Kit, spare part number 407794-001.

Table A-1

Black Phillips PM2.5×5.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Black	4	5.0 mm	2.5 mm	6.0 mm

Where used:
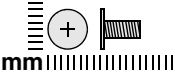
❶ Two screws that secure the hard drive cover to the computer (screws are captured on the cover by C clips; documented in Section 5.4)

❷ Two screws that secure the memory/Mini Card module compartment cover to the computer (screws are captured on the cover by C clips; documented in Section 5.6)

Black Phillips PM2.5×5.0 Screw Locations

Table A-2

Phillips PM2.5×6.0 Screw

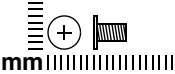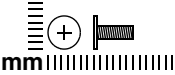|	Color	Qty.	Length	Thread	Head Width
	Black	15	6.0 mm	2.5 mm	6.0 mm
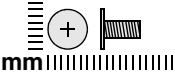
Where used:

2 screws that secure the hard drive to the computer (documented in Section 5.4)

Phillips PM2.5×6.0 Screw Locations

Table A-2

Phillips PM2.5×6.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	15	6.0 mm	2.5 mm	6.0 mm
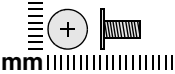
Where used:

3 screws that secure the switch cover to the computer (documented in Section 5.10)

Phillips PM2.5×6.0 Screw Locations

Table A-2

Phillips PM2.5×6.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	15	6.0 mm	2.5 mm	6.0 mm

Where used:

One screw that secures the display hinge support to the base enclosure (documented in Section 5.17)

Phillips PM2.5×6.0 Screw Location

Table A-2

Phillips PM2.5×6.0 Screw *(Continued)*

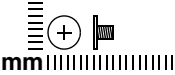| mm	Color	Qty.	Length	Thread	Head Width
	Black	15	6.0 mm	2.5 mm	6.0 mm
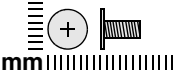
Where used:

3 screws that secure the top cover to the computer (documented in Section 5.15)

Phillips PM2.5×6.0 Screw Locations

Table A-2

Phillips PM2.5×6.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	15	6.0 mm	2.5 mm	6.0 mm
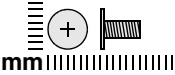
Where used:

One screw that secures the USB/audio board to the base enclosure (documented in Section 5.18)

Phillips PM2.5×6.0 Screw Location

Table A-2

Phillips PM2.5×6.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	15	6.0 mm	2.5 mm	6.0 mm
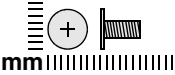
Where used:

4 screws that secure the fan/heat sink assembly to the system board (documented in Section 5.19)
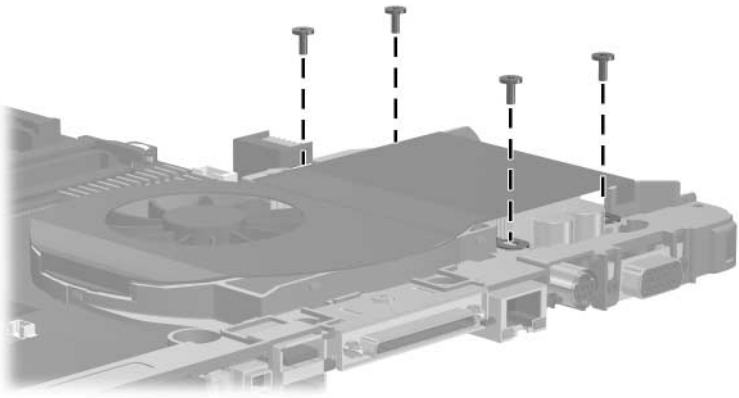
Phillips PM2.5×6.0 Screw Locations

Table A-2

Phillips PM2.5×6.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	15	6.0 mm	2.5 mm	6.0 mm
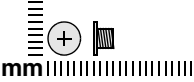
Where used:

One screw that secures the speakers to the system board (documented in Section 5.21)
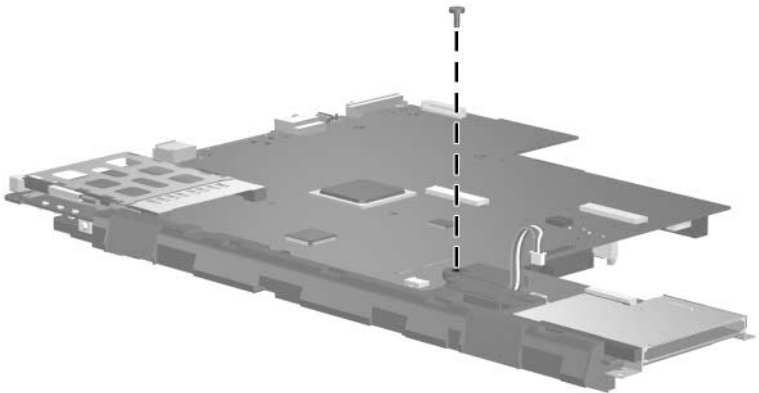
Phillips PM2.5×6.0 Screw Location

Table A-3

Phillips PM3.0×3.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Black	4	3.0 mm	3.0 mm	5.0 mm

Where used:
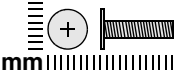
4 screws that secure the hard drive frame to the hard drive (documented in Section 5.4)
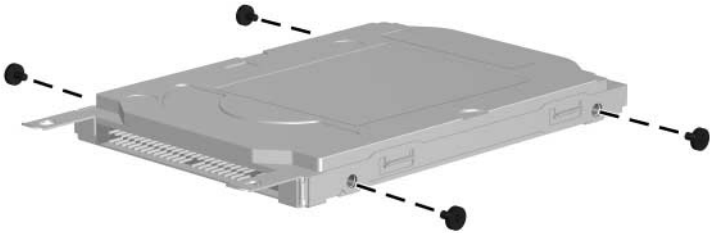
Phillips PM3.0×3.0 Screw Locations

Table A-4

Phillips PM2.5×11.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Black	20	11.0 mm	2.5 mm	6.0 mm
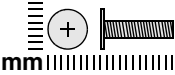
Where used:

❶ One screw that secures the optical drive to the computer (documented in Section 5.9)

❷ Two screws that secure the switch cover to the computer (documented in Section 5.10)

Phillips PM2.5×11.0 Screw Locations

Table A-4

Phillips PM2.5×11.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	20	11.0 mm	2.5 mm	6.0 mm
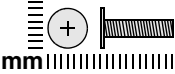
Where used:

8 screws that secure the top cover to the computer (documented in Section 5.15)
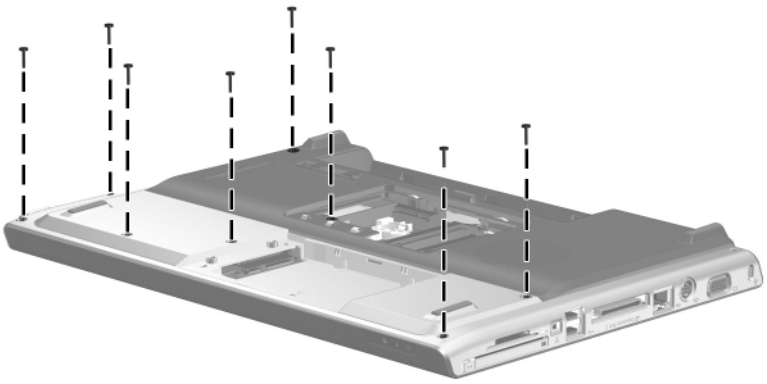
Phillips PM2.5×11.0 Screw Locations

Table A-4

Phillips PM2.5×11.0 Screw *(Continued)*

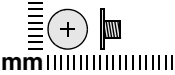| mm	Color	Qty.	Length	Thread	Head Width
	Black	20	11.0 mm	2.5 mm	6.0 mm
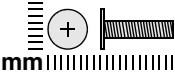
Where used:

7 screws that secure the top cover to the computer (documented in Section 5.15)
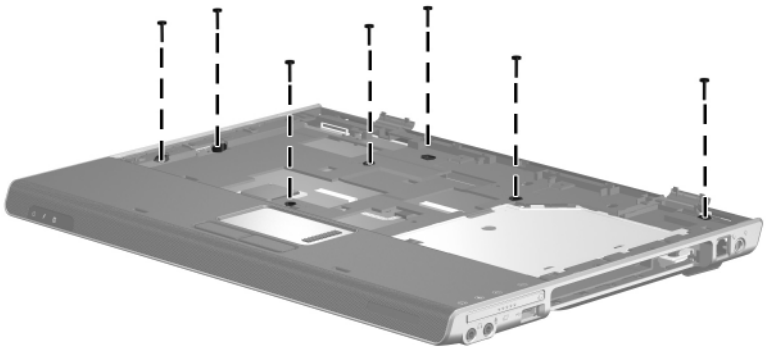
Phillips PM2.5×11.0 Screw Locations

Table A-4

Phillips PM2.5×11.0 Screw *(Continued)*

	Color	Qty.	Length	Thread	Head Width
	Black	20	11.0 mm	2.5 mm	6.0 mm
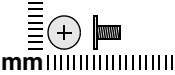
Where used:

2 screws that secure the system board to the base enclosure (documented in Section 5.17)
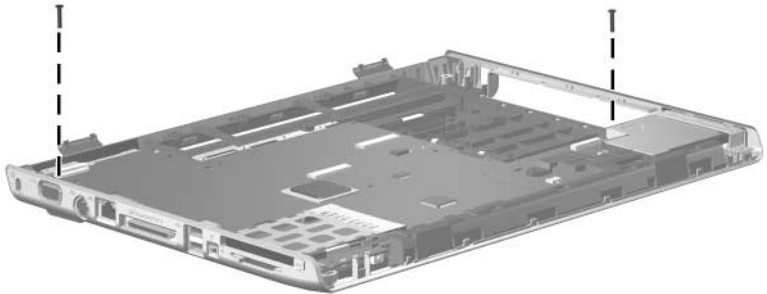
Phillips PM2.5×11.0 Screw Locations

Table A-5

Phillips PM2.0×4.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Black	22	4.0 mm	2.0 mm	5.0 mm
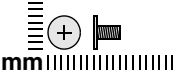
Where used:

2 screws that secure the optical drive bracket to the optical drive (documented in Section 5.9)
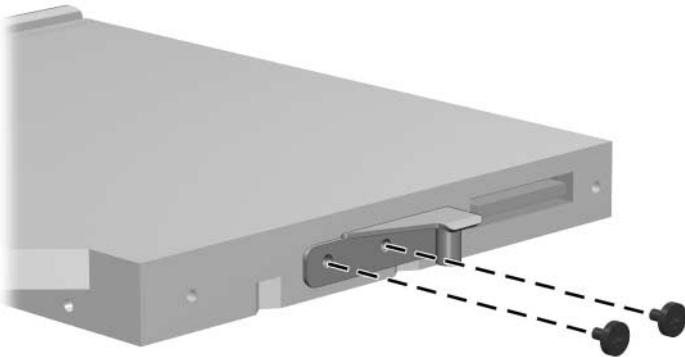
Phillips PM2.0×4.0 Screw Locations

Table A-5

Phillips PM2.0×4.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	22	4.0 mm	2.0 mm	5.0 mm
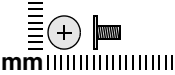
Where used:

5 screws that secure the LED board to the keyboard frame (documented in Section 5.12)
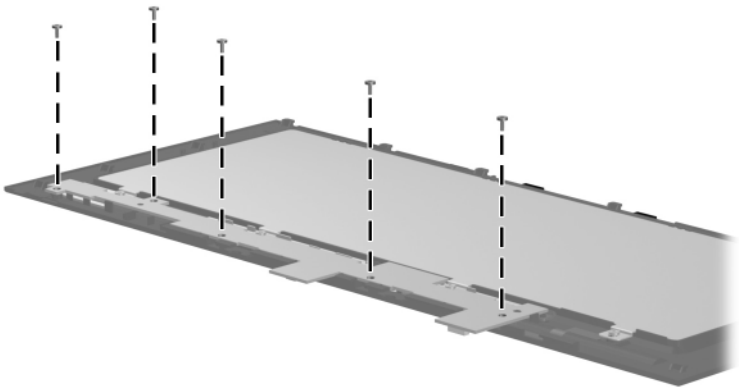
Phillips PM2.0×4.0 Screw Locations

Table A-5

Phillips PM2.0×4.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	22	4.0 mm	2.0 mm	5.0 mm
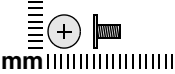
Where used:

8 screws that secure the display hinges to the display panel (documented in Section 5.14)

Phillips PM2.0×4.0 Screw Locations

Table A-5

Phillips PM2.0×4.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	22	4.0 mm	2.0 mm	5.0 mm

Where used:
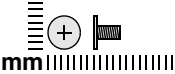
2 screws that secure the wireless transceivers to the display enclosure (documented in Section 5.14)
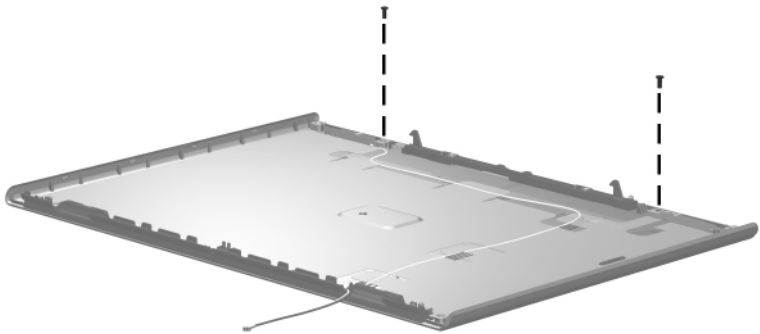
Phillips PM2.0×4.0 Screw Locations

Table A-5

Phillips PM2.0×4.0 Screw *(Continued)*

	Color	Qty.	Length	Thread	Head Width
	Black	22	4.0 mm	2.0 mm	5.0 mm

Where used:
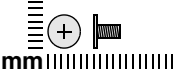
One screw that secures the Bluetooth module to the display hinge support (documented in Section 5.16)
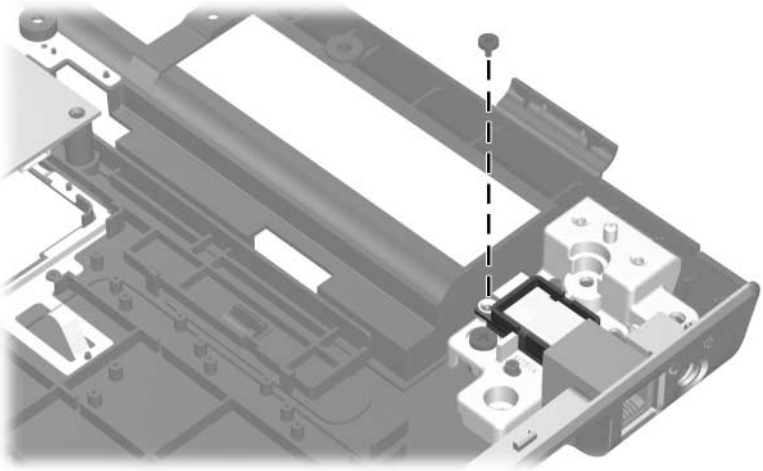
Phillips PM2.0×4.0 Screw Location

Table A-5

Phillips PM2.0×4.0 Screw *(Continued)*

	Color	Qty.	Length	Thread	Head Width
mm	Black	22	4.0 mm	2.0 mm	5.0 mm
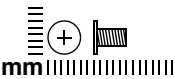
Where used:

❶ Two screws that secure the PC Card assembly to the system board (documented in Section 5.22)

❷ Two screws that secure the ExpressCard assembly to the system board (documented in Section 5.23)
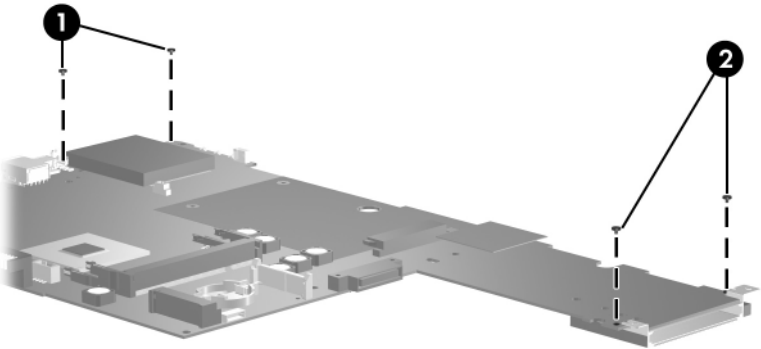
Phillips PM2.0×4.0 Screw Locations

Table A-6

Silver Phillips PM2.5×5.0 Screw

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

Where used:

2 screws that secure the switch cover to the computer (documented in Section 5.10)
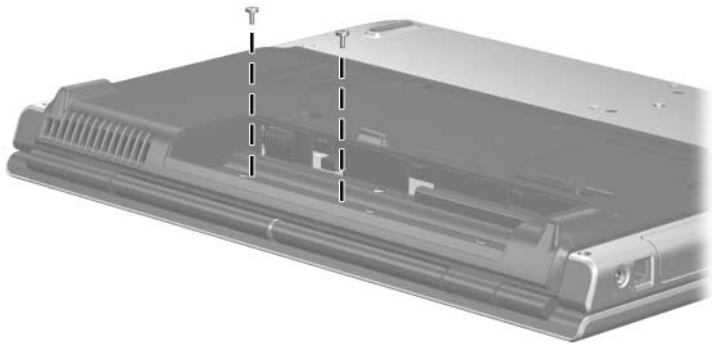
Silver Phillips PM2.5×5.0 Screw Locations

Table A-6

Silver Phillips PM2.5×5.0 Screw *(Continued)*
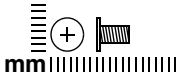
mm	Color	Qty.	Length	Thread	Head Width
	Silver	6	5.0 mm	2.5 mm	5.0 mm

Where used:

One screw that secures the top cover to the computer (documented in Section 5.15)
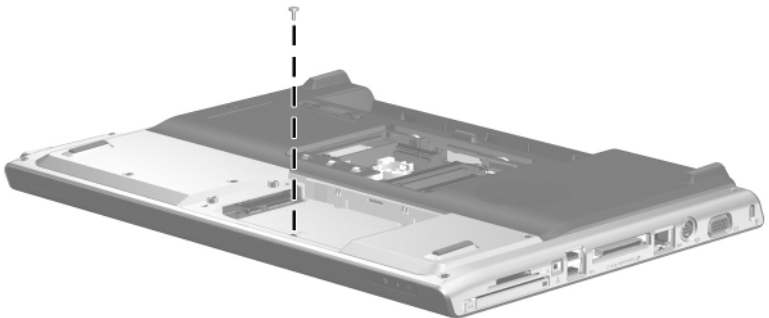
Silver Phillips PM2.5×5.0 Screw Location

Table A-6

Silver Phillips PM2.5×5.0 Screw *(Continued)*

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

Where used:
3 screws that secure the top cover to the computer (documented in Section 5.15)
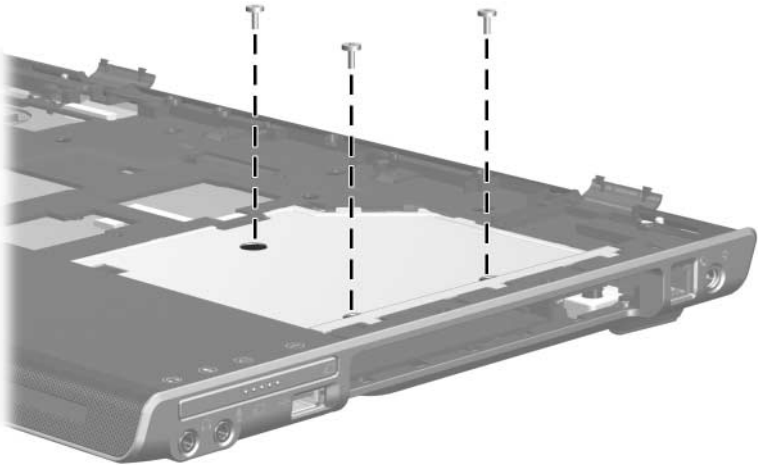
Silver Phillips PM2.5×5.0 Screw Locations

Table A-7

Phillips PM2.0×6.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Silver	1	6.0 mm	2.0 mm	5.0 mm

Where used:
One screw that secures the keyboard frame to the computer (documented in Section 5.11)
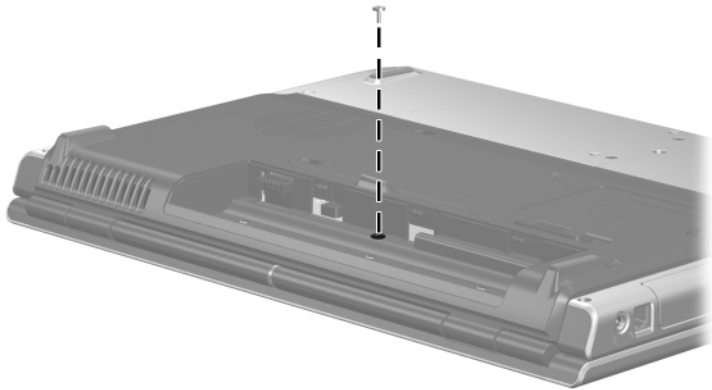
Phillips PM2.0×6.0 Screw Location

Table A-8

Phillips PM2.0×3.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Silver	4	3.0 mm	2.0 mm	5.0 mm
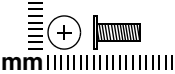
Where used:

4 screws that secure the keyboard to the keyboard frame (documented in Section 5.13)
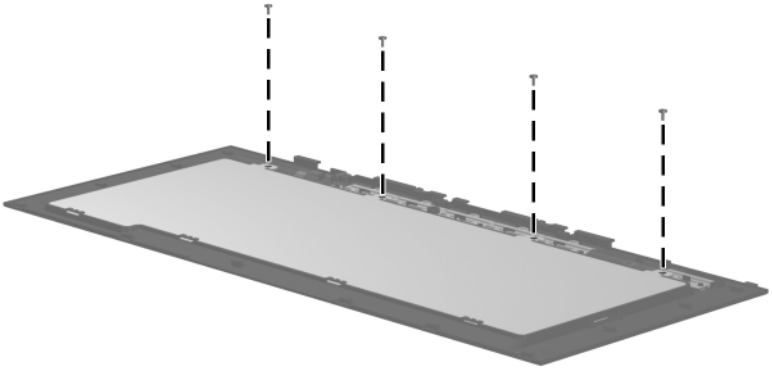
Phillips PM2.0×3.0 Screw Locations

Table A-9

Phillips PM2.5×7.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Silver	14	7.0 mm	2.5 mm	5.0 mm

Where used:

4 screws that secure the display assembly to the computer (documented in Section 5.14)

Phillips PM2.5×7.0 Screw Locations

Table A-9

Phillips PM2.5×7.0 Screw *(Continued)*

	Color	Qty.	Length	Thread	Head Width
	Silver	14	7.0 mm	2.5 mm	5.0 mm

Where used:

8 screws that secure the display bezel to the display enclosure (documented in Section 5.14)

Phillips PM2.5×7.0 Screw Locations

Table A-9

Phillips PM2.5×7.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Silver	14	7.0 mm	2.5 mm	5.0 mm

Where used:

2 screws that secure the display panel to the display enclosure (documented in Section 5.14)

Phillips PM2.5×7.0 Screw Locations

Table A-10

Phillips PM2.5×3.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Black	3	3.0 mm	2.5 mm	6.0 mm

Where used:

2 screws that secure the top cover to the computer (documented in Section 5.15)

Phillips PM2.5×3.0 Screw Locations

Table A-10

Phillips PM2.5×3.0 Screw *(Continued)*

mm	Color	Qty.	Length	Thread	Head Width
	Black	3	3.0 mm	2.5 mm	6.0 mm
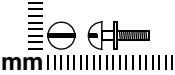
Where used:

One screw that secures the fan/heat sink assembly to the system board (documented in Section 5.19)
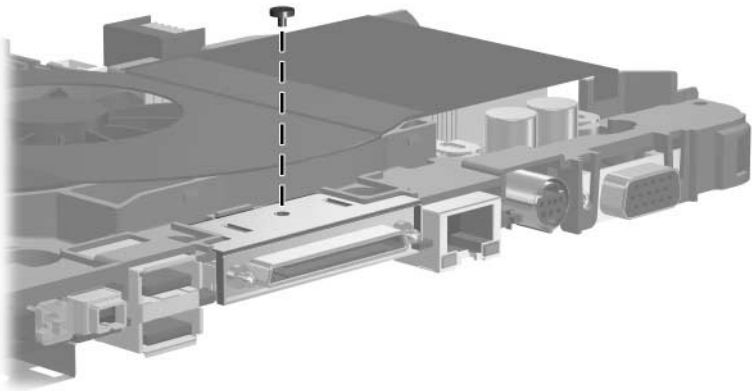
Phillips PM2.5×3.0 Screw Location

Table A-11

Slotted SM1.5×9.0 Screw

	Color	Qty.	Length	Thread	Head Width
	Silver	2	9.0 mm	1.5 mm	2.0 mm
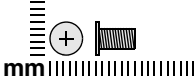
Where used:

2 screws that secure the expansion port 2 bracket and fan/heat sink assembly to the system board (documented in Section 5.19)
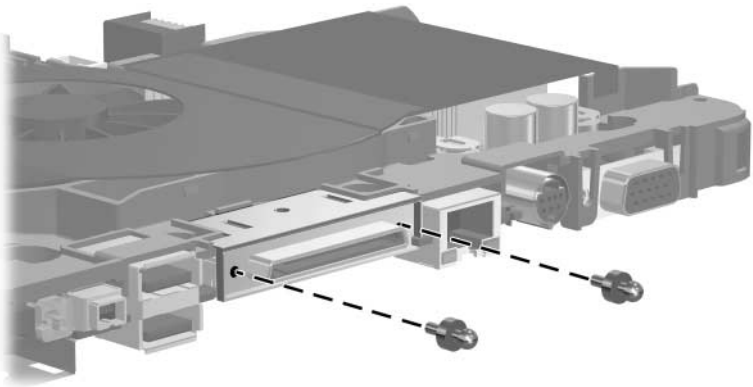
Slotted SM1.5×9.0 Screw Locations

Table A-12

Phillips PM3.0×6.0 Screw

mm	Color	Qty.	Length	Thread	Head Width
	Black	2	6.0 mm	3.0 mm	5.0 mm

Where used:

2 screws that secure the fan/heat sink assembly to the system board (documented in Section 5.19)

Phillips PM3.0×6.0 Screw Locations

B
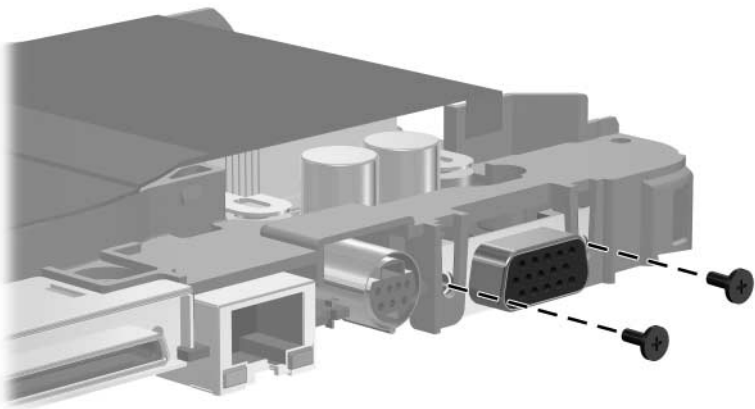
Software Update and Recovery

Updating Software

Updated versions of the software provided with your computer may be available on the HP Web site.

Most software and BIOS updates on the HP Web site are packaged in compressed files called *SoftPaqs*.

Some download packages contain a file named Readme.txt, which contains information regarding installing and troubleshooting the file.

To update the software:

1. Identify your computer model, product category, and series or family. Prepare for a system BIOS update by identifying the BIOS version currently installed on the computer.

   If your computer is connected to a network, consult the network administrator before installing any software updates, especially system BIOS updates.

✎ The computer system BIOS is stored on the system ROM. 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 by visiting the HP Web site at http://www.hp.com.

3. Install the updates.

Updating the BIOS

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

BIOS 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 the Setup Utility.

To use the Setup Utility for displaying BIOS information:

1. Open the Setup Utility by turning on or restarting the computer, and then pressing **f10** while the "Press <F10> to enter Setup" message is displayed in the lower-left corner of the screen.

2. If the Setup Utility does not open with the system information displayed, use the arrow keys to select the **Main** menu.

   When the Main menu is selected, BIOS and other system information is displayed.

3. To exit the Setup Utility, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.

$\triangle$ **CAUTION:** To prevent damage to the computer or an unsuccessful installation, download and install a BIOS update only when the computer is connected to reliable external power using the AC adapter. Do not download or install a BIOS 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, follow these instructions:

■ 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 BIOS update:

1. Access the page on the HP Web site that provides software for your computer:

   Select **Start > Help and Support**, and then select the software and drivers update.

2. Follow the instructions on the screen to identify your computer and access the BIOS update you want to download.

3. At the download area:

   a. Identify the BIOS update that is later than the BIOS 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 BIOS update will be downloaded. You will need to access this path when you are ready to install the update.

✎ If you connect your computer to a network, consult the network administrator before installing any software updates, especially system BIOS updates.

BIOS installation procedures vary. Follow any instructions that are displayed on the screen after the download is complete. If no instructions are displayed, follow these steps:

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. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.

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

   The BIOS installation begins.

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

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

Updating Software Programs and Drivers

To download and install software other than a BIOS update:

1. Access the page on the HP Web site that provides software for your computer:

   Select **Start > Help and Support**, and then select the software and drivers update.

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 to download and follow the instructions on the screen.

✎ Make a note of the path to the location on your hard drive where the software will be downloaded. You will need to access this path when you are ready to install the software.

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:

   a. Click **My Computer** and then your hard drive designation. The hard drive designation is typically Local Disk (C:).

   b. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.

6. Double-click the file that has 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 can delete the download package from your hard drive.

Recovering System Information

Tools provided by the operating system and PC Recovery software are designed to help you with the following tasks for safeguarding your information and restoring it in case of a system failure:

■ Back up your information regularly to protect your important system files.

■ Make a set of recovery discs (PC Recovery software feature). Recovery discs are used to start up (boot) your computer and restore the operating system and software programs to factory settings in case of system failure or instability.

■ Create system restore points (operating system feature). System restore points allow you to reverse undesirable changes to your computer by restoring the computer to an earlier state.

■ Recover a program or driver (PC Recovery software feature). This feature helps you reinstall a program or driver without performing a full system recovery.

■ Perform a full system recovery (PC Recovery software feature). With PC Recovery, you can recover your full factory image if you experience system failure or instability. PC Recovery works from a dedicated recovery partition on the hard drive or from recovery discs you create.

Backing Up Your Information

When to Back Up

■ On a regularly scheduled basis.

✎ Set reminders to back up your information periodically.

■ Before the computer is repaired or restored.

■ Before you add or modify hardware or software.

Backup Suggestions

■ Create system restore points using Windows XP Professional System Restore feature.

■ Store personal files in the My Documents folder and back up these folders periodically.

■ Back up templates stored in their associated programs.

■ Save customized settings in a window, toolbar, or menu bar by taking a screen shot of your settings.

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

   To copy the screen and paste it into a Word document:

   a. Display the screen.

   b. Copy the screen:

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

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

   c. To paste the copied images into a document, open Word, and then select **Edit > Paste**.

Using System Restore Points

When you back up your system, you are creating a system restore point. A system restore point allows you to save and name a snapshot of your hard drive at a specific point in time. You can then recover back to that point if you want to reverse subsequent changes made to your system.

✎ Recovering to an earlier restore point does not affect data files saved or e-mails created since the last restore point.

You also can create additional restore points to provide increased protection for your system files and settings.

When to Create Restore Points

- Before you add or extensively modify software or hardware.

- Periodically, whenever the system is performing optimally.

✎ If you revert to a restore point and then change your mind, you can reverse the restoration.

Create a System Restore Point

1. Select **Start > Help and Support**, and then click **System Restore**.

   The System Restore window opens.

2. Click **Create a restore point**, and then click **Next**.

3. Follow the on-screen instructions.

Restore to a Previous Date and Time

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

1. Select **Start > Help and Support**, and then click S**ystem Restore**.

   The System Restore window opens.

2. Click **Restore my computer to an earlier time**, and then click **Next**.

3. Follow the on-screen instructions.

Creating Recovery Discs

PC Recovery Disc Creator creates a set of recovery CDs or DVDs for the computer. Use recovery discs to restore the operating system and software programs to factory settings, in case of system failure or instability.

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

Note the following guidelines before creating recovery discs:

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

✎ DVD±RW/R and double-layer DVD±RW are not compatible with the PC Recovery Disc Creator software.

■ The computer must be connected to AC power during this process.

■ Only one set of recovery discs can be created per computer.

■ Number each disc before inserting it into the computer optical drive.

■ If necessary, you can exit the program before you have finished creating the recovery discs. The next time you open PC Recovery Disc Creator, you will be prompted to continue the disc creation process.

To create a set of recovery discs:

1. Select **Start > All Programs > System Recovery > PC Recovery Disc Creator**.

   The PC Recovery Disc Creator tool opens.

2. Click **Next**.

✎ If you are operating the computer on battery power, you will be prompted to connect to AC power before you can go to the next step.

3. Select the type of disc you want to use and click **Next**.

✎ The software examines the image and displays the number of blank discs needed to create your recovery discs.

4. Insert the first disc and follow the on-screen instructions to complete the creation of the recovery discs.

Reinstalling Software Programs and Drivers

If a program or driver preinstalled at the factory is accidentally erased or is damaged, the Application and Driver Recovery tool allows you to reinstall it.

✎ Software not provided with this computer must be reinstalled from the disc provided by the manufacturer or downloaded from the manufacturer's Web site.

✎ Before reinstalling the program, be sure it is fully uninstalled.

The Application and Driver Recovery tool replaces corrupted system files and reinstalls deleted system files within the program.

■ In most cases, if the program you are reinstalling is still on your computer, the reinstallation process does not affect your personal settings.

■ In all cases, if a program has been deleted from your computer, the reinstallation process reinstalls the program or utility to the factory image but cannot restore your personal settings.

Reinstalling Preinstalled Programs and Drivers

1. Remove the program or driver:

✎ In some cases, drivers are not listed in the Add or Remove Programs list. If the driver is not listed, it does not need to be removed.

    a. Select **Start > Control Panel > Add or Remove Programs**.

    b. Click the program or driver you want to remove, and then click **Change/Remove**.

2. Select **Start > All Programs > System Recovery > Application and Driver Recovery**.

   The Application and Driver Recovery tool opens.

3. Select **Application Installation or Driver Installation**, and then click **Next**.

4. Follow the on-screen instructions to complete the program or driver recovery.

5. Restart the computer if prompted.

Reinstalling Programs from Discs

1. Insert the disc into the optical drive.

2. When the installation wizard opens, follow the installation instructions on the screen.

3. Restart the computer if prompted.

Performing a Recovery

PC Recovery software allows you to repair or restore the system if you experience system failure or instability. PC Recovery works from recovery discs that you create or from a dedicated recovery partition on the hard drive.

✎ Microsoft Windows XP has its own built-in repair features, such as System Restore and driver roll-back capabilities. If you have not already tried these features, try them before using PC Recovery.

✎ PC Recovery only recovers software that was preinstalled at the factory. Software not provided with this computer must be reinstalled from the disc provided by the manufacturer or downloaded from the manufacturer's Web site.

Recovering from the Recovery Discs

To restore the system from the recovery discs:

1. Back up all personal files.

2. Insert the first recovery disc into the optical drive and restart the computer.

3. Follow the on-screen instructions.

Recovering from the Partition on the Hard Drive

You can perform a recovery from the partition on the hard drive from either the Start button or **f11**.

To restore the system from the partition:

1. Access the PC Recovery tool:

   ❏ To access PC Recovery from the Start button, select **Start > All Programs > System Recovery > PC Recovery**.

   ❏ To access PC Recovery from **f11**, restart the computer and press **f11** while the "Press <F11> for recovery" message is displayed on the screen.

   The PC Recovery tool opens.

2. Select **PC Recovery** and click **Next**.

   The computer restarts and the PC Recovery tool opens.

3. Click **OK**.

4. Follow the on-screen instructions to complete the system recovery.

   If you want to perform a *destructive* recovery:

✎ A destructive recovery formats the hard drive and restores the computer to its factory state. Select this option only as a last resort.

---

a. Click **Advanced Options** on the System Recovery screen.

b. Select **Destructive Recovery** and follow the on-screen instructions.

Deleting the Recovery Partition on the Hard Drive

The PC Recovery Advanced Options menu provides the option of deleting the recovery partition, which will increase space on the hard drive. Delete the recovery partition only if you have already created recovery discs.

$\triangle$ **CAUTION:** After you create the recovery discs, you can increase space on the hard drive by deleting the recovery partition. However, doing this is not recommended. If you delete this partition, you will lose any information that is on the partition, including the PC Recovery software. Thereafter, you must use the recovery discs to access PC Recovery software.

To delete the recovery partition:

1. If you have not already created recovery discs, create them now.

2. Select **Start > All Programs > System Recovery > PC Recovery**.

   The PC Recovery tool opens.

3. Select **PC Recovery** and click **Next**.

   The computer restarts and the PC Recovery tools opens.

4. Click **OK**.

5. At the System Recovery screen, click **Advanced Options**.

6. Select **Delete Recovery Partition (not recommended)** and follow the on-screen instructions.

Updating Reinstalled Software

After you perform a system recovery, connect to the Internet to update all reinstalled software.

To access update links for the operating system and other software provided on your computer:

»   Select **Start > Help and Support**.

To update optional software, follow the instructions provided by the software manufacturer. Some programs include an update feature you can access from a Help button or menu within the program.

C

Display Component Recycling

⚠ **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 display assembly backlight and may 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 visit the Electronic Industries Alliance (EIA) at http://www.eiae.org.

This appendix provides disassembly instructions for the display assembly. The display assembly must be disassembled to gain access to the backlight ❶ and the 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.

Refer to Section 5.14, "Display Assembly," for display assembly disassembly steps.

Perform the following steps to disassemble the display assembly:

1. Remove all screw covers ❶ and screws ❷ that secure the display bezel to the display assembly.
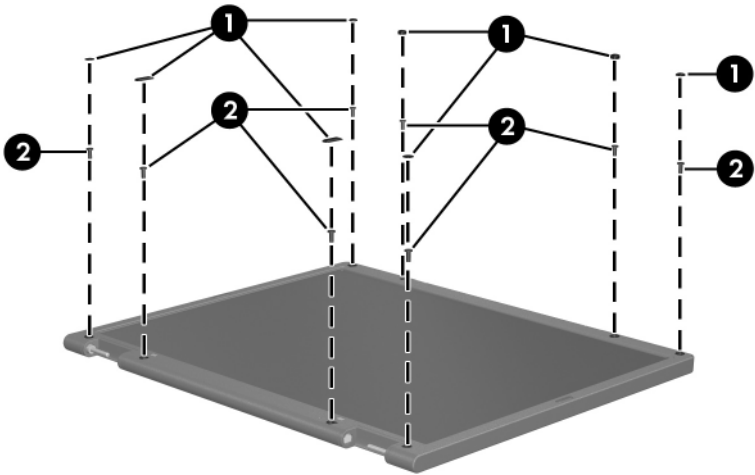
Removing the Display Bezel Screw Covers and Screws

2. Lift up and out on the left and right inside edges ❶ and the top and bottom inside edges ❷ of the display bezel until the bezel disengages from the display assembly.

3. Remove the display bezel ❸.
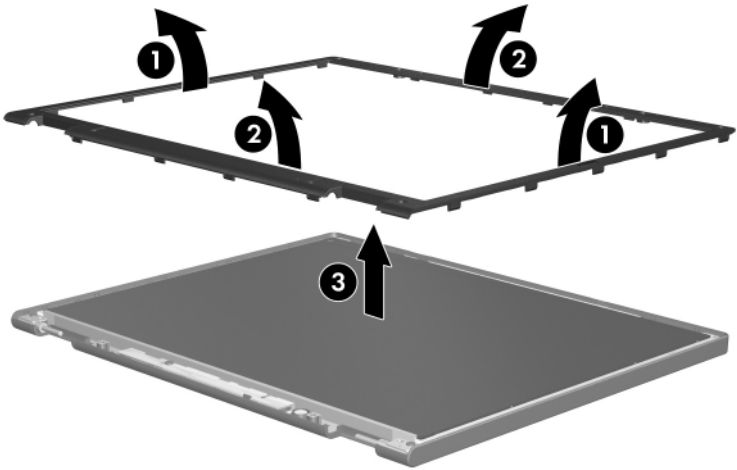
Removing the Display Bezel

4. Disconnect all LCD panel cables ❶ from the display inverter and remove the inverter ❷.
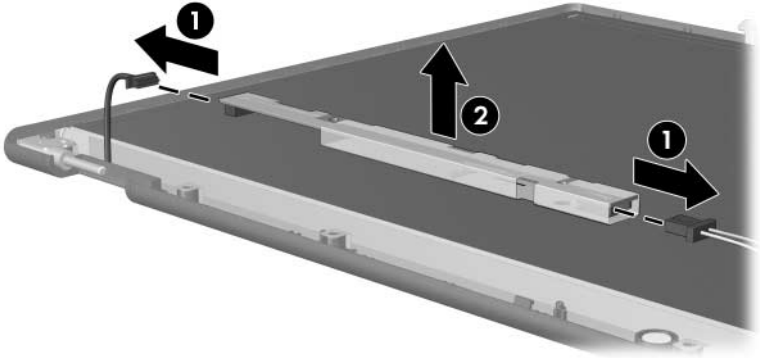
Removing the Display Inverter

5. Remove all screws ❶ that secure the LCD panel to the display enclosure.

6. Remove the LCD panel ❷ from the display enclosure.
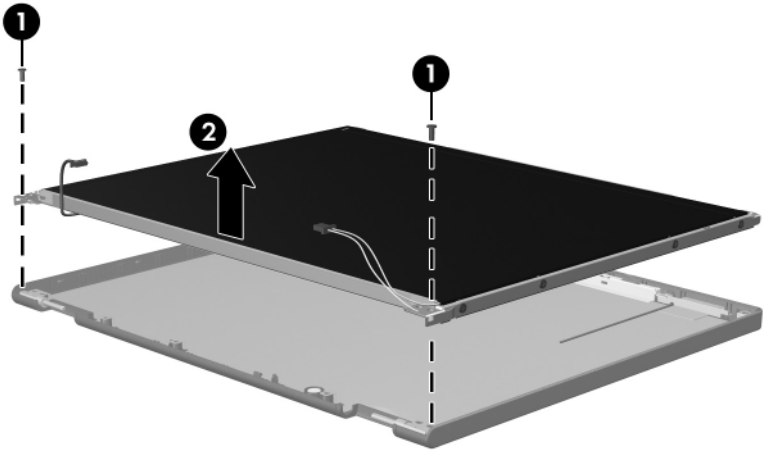
Removing the LCD Panel

7. Turn the LCD panel upside down.

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

Removing the LCD Panel Frame Screws

9. Use a sharp-edged tool to cut the tape ❶ that secures the side of the LCD panel to the LCD panel frame.

10. Remove the LCD panel frame ❷ from the display panel.
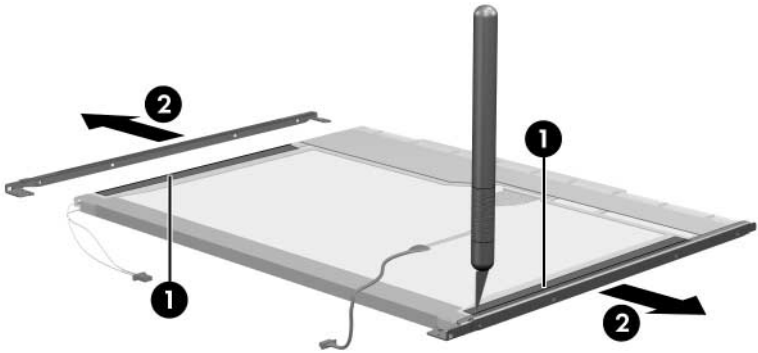
Removing the LCD Panel Frame

11. Remove the screws ❶ that secure the backlight cover to the LCD panel.

12. Lift the top edge of the backlight cover ❷ and swing it forward.

13. Remove the backlight cover.
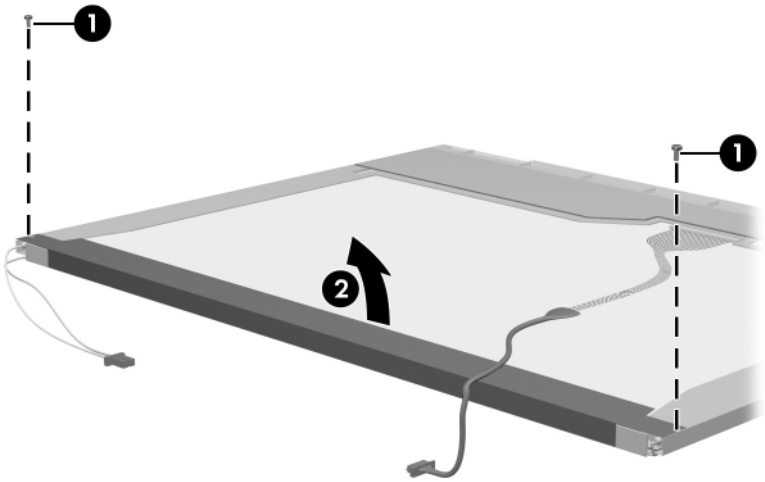
Removing the Backlight Cover

14. Turn the LCD panel right-side up.

15. Remove the backlight cables ❶ from the clip ❷ in the LCD panel.
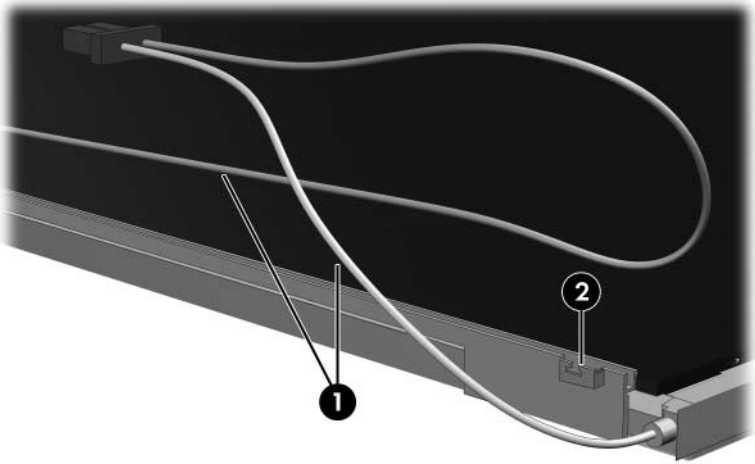
Releasing the Backlight Cables

16. Turn the LCD panel upside down.

17. Remove the backlight frame from the LCD panel.
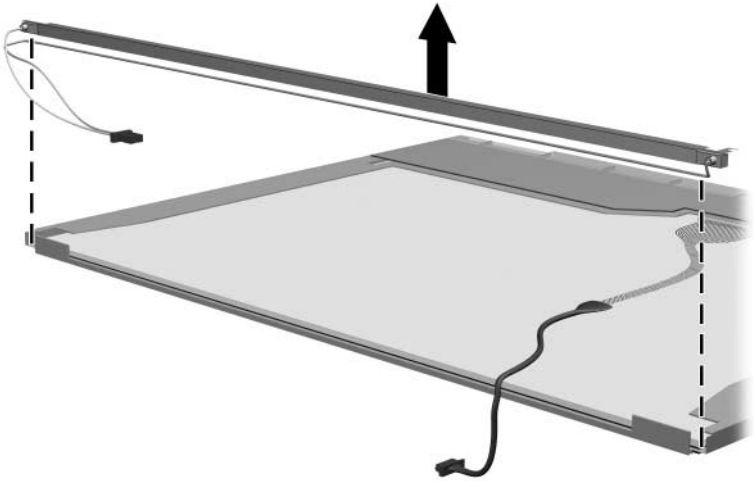
Removing the Backlight Frame

⚠ **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.
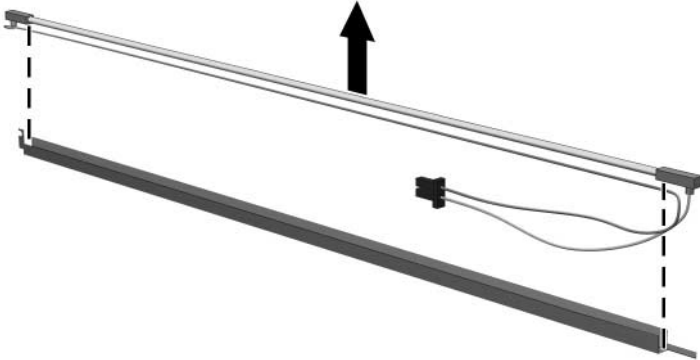
Removing the Backlight

19. Disconnect the display cable ❶ from the LCD panel.

20. Remove the screws ❷ that secure the LCD panel to the LCD rear panel.

21. Release the LCD panel ❸ from the LCD rear panel.

22. Release the tape ❹ that secures the LCD panel to the LCD rear panel.
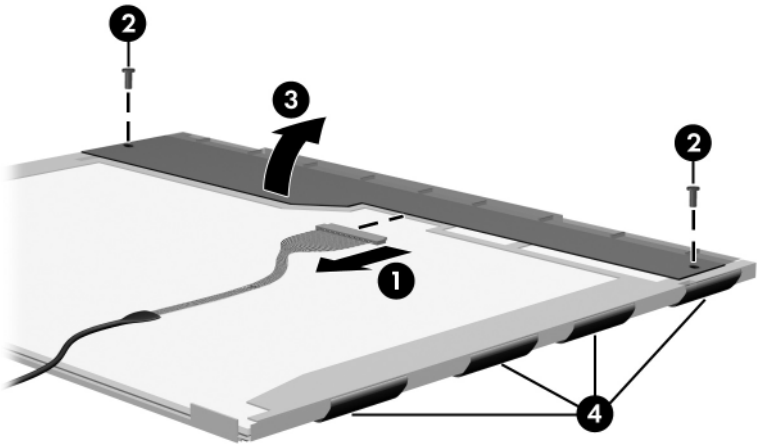
Releasing the LCD Panel

23. Remove the LCD panel.
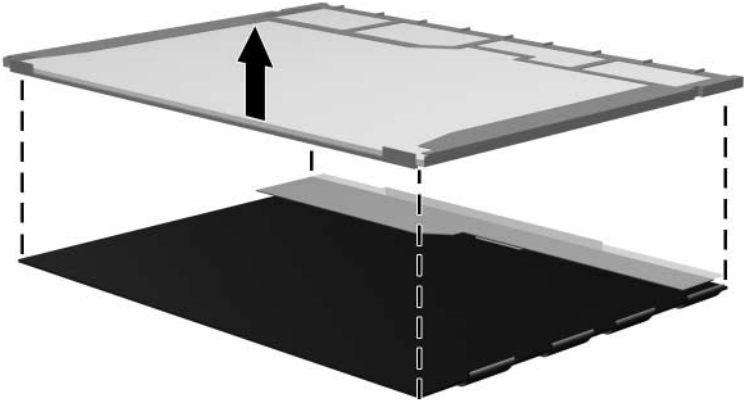
Removing the LCD Panel

24. Recycle the backlight and LCD panel.

D

Connector Pin Assignments

Table D-1

Audio-Out (Headphone)
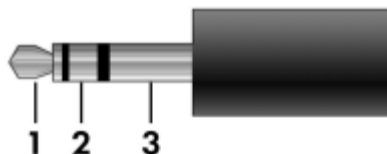
Pin	Signal	Pin	Signal
1	Audio out, left channel	3	Ground
2	Audio out, right channel		

Table D-2

Audio-In (Microphone)
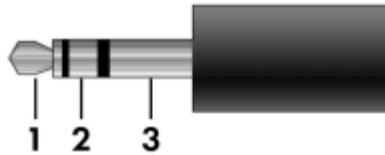
Pin	Signal	Pin	Signal
1	Audio signal in	3	Ground
2	Audio signal in		

Table D-3

Universal Serial Bus
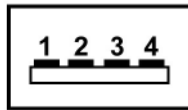
Pin	Signal	Pin	Signal
1	+5 VDC	3	Data +
2	Data –	4	Ground

Table D-4

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 D-5

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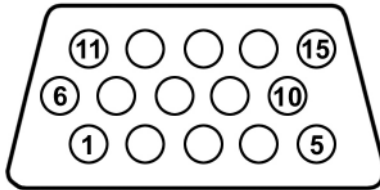
Pin	Signal	Pin	Signal
1	Red analog	9	+5 VDC
2	Green analog	10	Ground
3	Blue analog	11	Monitor detect
4	Not connected	12	DDC 2B data
5	Ground	13	Horizontal sync
6	Ground analog	14	Vertical sync
7	Ground analog	15	DDC 2B clock
8	Ground analog		

Table D-6

RJ-11 (Modem)
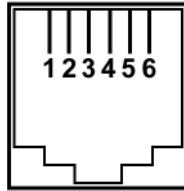
Pin	Signal	Pin	Signal
1	Unused	4	Unused
2	Tip	5	Unused
3	Ring	6	Unused

Table D-7

RJ-45 (Network)
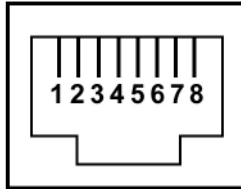
Pin	Signal	Pin	Signal
1	Transmit +	5	Unused
2	Transmit –	6	Receive –
3	Receive +	7	Unused
4	Unused	8	Unused

E

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 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.

2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.

3. The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00 mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.

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

Country/Region	Accredited Agency	Applicable Note Number
Korea	EK	4
The Netherlands	KEMA	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 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.

2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.

3. The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00 mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.

4. The flexible cord must be Type RVV, 3-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.

5. The flexible cord must be Type VCTF, 3-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.

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