HP Pavilion zt1000/xz300
Omnibook xt1500
(For use with
Technology Code ID)

Service Manual

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# Edition History

Edition 1..............................June 2002

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# Introduction

This manual provides reference information for servicing HP Pavilion zt1000/xz300 and Omnibook xt1500 notebook PCs. It is for use by HP-authorized service personnel while installing, servicing, and repairing these products.

The manual is designed as a self-paced guide that will train you to install, configure, and repair these notebooks. The manual is self-contained, so you can follow it without having equipment available.

The following table lists other sources of information about the notebook and related products.

| Source | Address or Number | Comments |
|---|---|---|
| HP Notebook Web site | http://www.hp.com/notebooks (European mirror: http://www.europe.hp.com/notebooks) | |
| HP Business Support Web Site | www.hp.com/go/bizsupport | |
| HP Partnership Web site | http://partner.americas.hp.com | Restricted to Authorized Resellers only. |
| HP Asia Pacific Channel Support Centre for DPSP Partners | http://www.hp.com.au | Restricted to DPSP Partners only. |
| HP/MCD Web site | http://www.mcd.hp.com | HP's internal Web site for division information. |
| America Online | Keyword: HP | Call (800) 827-6364 for membership within the US. |
| CompuServe | GO HP | Call (800) 524-3388 for membership within the US. |
| HP Support Assist CD | (800) 457-1762 | US and Canada. |
| | (801) 431-1587 | Outside US and Canada. |
| Microsoft Windows manual | | Information about Windows operating system. |
| Microsoft Web site | http://www.microsoft.com | Information and updates for Windows operating systems. |

# 1

# Product Information

The HP Pavilion zt1000/xz300 and Omnibook xt1500 series are reliable notebook computers for the budget-minded user—whether at school, at home, or as part of a growing business—who wants a thin, light notebook that will meet basic mobile computing needs.

**Table 1-1. Pavilion zt1000/xz300 and Omnibook xt1500 Series Models**

| Product | CPU [1] | Display | Hard Drive | Standard SDRAM | CD/DVD drive [2] | Full-featured [3] | Modem/ LAN | Wireless |
|---|---|---|---|---|---|---|---|---|
| **Pavilion zt1000/xz300** | | | | | | | | |
| F3448H / zt1260 | P4c 1.6 GHz | 15.0-in TFT XGA | 30 GB | 512 MB DDR (2x256) | Combo | Yes | 56K/LAN | |
| F3449H / zt1270 | P4c 1.6GHz | 15.0-in TFT XGA | 40 GB | 512 MB DDR (2x256) | Combo | Yes | 56K/LAN | 802.11 |
| F3450H / zt1290 | P4-M 1.8 GHz | 15.0-in TFT SXGA+ | 40 GB | 512 MB DDR (2x256) | Combo | Yes | 56K/LAN | 802.11 |
| F5540H / xz335 | P4c 1.6 GHz | 15.0-in TFT XGA | 40 GB | 256 MB DDR | Combo | Yes | 56K/LAN | |
| F3451H / xz355 | P4c 1.6 GHz | 15.0-in TFT XGA | 30 GB | 256 MB DDR | Combo | Yes | 56K/LAN | |
| F5532H / zt1261 | P4c 1.6 GHz | 14.1-in TFT XGA | 20 GB | 256 MB DDR | Combo | Yes | 56K/LAN | |
| F5549H / zt1271 | P4c 1.6 GHz | 15.0-in TFT XGA | 20 GB | 256 MB DDR | Combo | Yes | 56K/LAN | |
| F5538H / zt1233 | P4c 1.6 GHz | 14.1-in TFT XGA | 30 GB | 256 MB DDR | Combo | Yes | 56K/LAN | |
| F5539H / zt1243 | P4-M 1.8 GHz | 15.0-in TFT XGA | 40 GB | 512 MB DDR (2x256) | Combo | Yes | 56K/LAN | |
| **Omnibook xt1500** | | | | | | | | |
| F5535H/ xt1500 | P4c 1.6 GHz | 14.1-in TFT XGA | 20 GB | 256 MB DDR | 8X DVD | Yes | 56K/LAN | |
| F5536H/ xt1500 | P4c 1.6 GHz | 15.0-in TFT XGA | 20 GB | 256 MB DDR | Combo | Yes | 56K/LAN | |
| F5537H/ xt1500 | P4-M 1.7 GHz | 15.0-in TFT XGA | 30 GB | 512 MB DDR (2x256) | Combo | Yes | 56K/LAN | Blue-tooth |

This table lists only base product configurations—custom configurations are not included.

The exact configuration of a unit is captured in a Traceability database. Support agents can access this database to verify a product's configuration at this URL: http://www.pc-tracking.hp.com/

[1]   Intel Mobile P4-M or P4c processor.
[2]   Combo optical drive = DVD + CD-RW.
[3]   Full-featured SKUs include multimedia buttons, LCD status display, and IEEE1394.

# Technology Codes

HP does not change the name of a product every time the product's technology changes. While this helps ensure continuing market momentum for HP products, it complicates technology deployment and support processes.

To help solve this problem, HP has added a technology code to the serial number of each of its products. Since the BIOS must be matched to the notebook's hardware, the same code is used for the BIOS and the hardware. This manual refers to technology code differences where applicable.

The table below shows the technology codes and the changes they signify for the products. Before downloading software or drivers or performing repairs, note the technology code for the HP notebook model.

Note that the first two characters of the BIOS ID (for example, **IC**.M1.02) indicate the hardware technology. You can also determine the BIOS ID using the BIOS configuration utility, or by pressing Esc during the boot process when the HP logo appears.

This manual contains service information for products with the following technology code.

| Technology code | Product name | Details |
|---|---|---|
| ID | Pavilion zt1000/xz300 series<br>Omnibook xt1500 series | Intel P4-M based platform supported with Intel chipset and ATI graphics. |

# Features

The following illustrations show the notebook's main external features. For an exploded view of the notebook, see page 4-2.
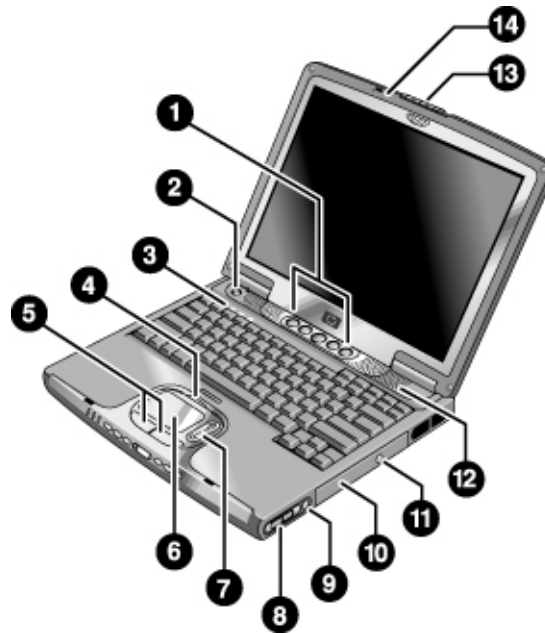


**Figure 1-1. Front View**

1. One-Touch buttons (programmable).
2. Power button.
3. Keyboard status lights: Caps Lock, Num Lock, CD or DVD drive activity.
4. Touch pad/scroll pad on-off button (with on-off indicators on either side).
5. Left and right click buttons.
6. Touch pad.
7. Scroll pad

8. Volume controls (selected models).
9. Mute button and indicator light (selected models).
10. Removable DVD or DVD/CD-RW drive.
11. CD/DVD eject button.
12. Speaker (one on each side).
13. Latch.
14. Built-in microphone.
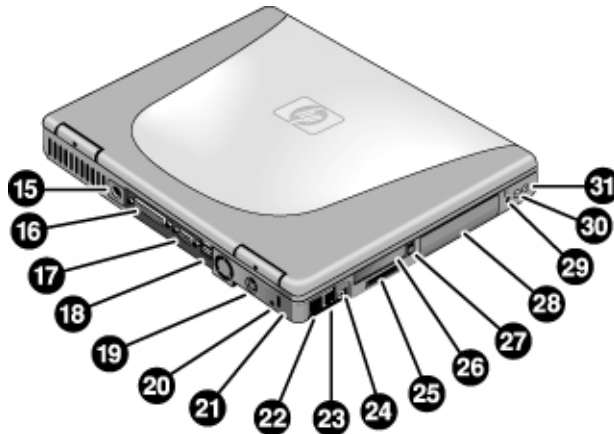
**Figure 1-2. Back View**

15. AC adapter jack.

16. Parallel port (LPT1) (colored burgundy).

17. External monitor (VGA) port (colored blue).

18. Universal serial bus (USB) ports (2).

19. S-video (TV out) port (colored yellow)

20. Reset switch.

21. Kensington lock slot (security connector).

22. LAN port and indicators.

23. Modem.

24. IEEE 1394 connector

25. SD-MMC Card slot.

26. PC Card slot (Type II).

27. PC Card eject button.

28. Hard disk drive.

29. Wireless on-off button and indicator light (selected models).

30. External microphone jack (colored pink).

31. Headphones jack (colored green).
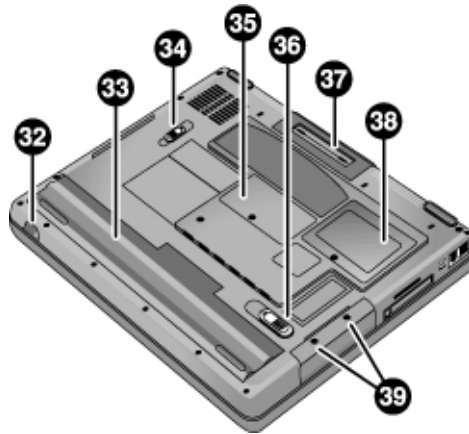
**Figure 1-3. Bottom View**

32. Infrared port (selected models).          36. Battery latch.

33. Battery.                                   37. Docking port.

34. CD/DVD drive latch.                        38. Mini-PCI cover.

35. RAM cover.                                 39. Hard disk drive retaining screws.

# Operation

This section gives an overview of the notebook's operation.

## Turning the Notebook On and Off

You can start and stop the notebook using its power button. However, at times you may want to use other methods to start or stop the notebook—depending on power considerations, types of active connections, and start-up time.

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**Note**

This manual describes the notebook in its original factory configuration, with all settings at their default values.

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**Table 1-2. Activating Power Modes**

| Power mode | To enter this mode | To turn on again |
|---|---|---|
| **On**<br>Power mode status light is green. | Press the power button. | |
| **Standby**<br>Maintains current session in RAM.<br>Turns off the display and other components.<br>Saves significant power.<br>Restarts quickly.<br>Restores network connections.<br>Power mode status light is amber. | Click Start, Turn Off Computer, Stand By<br>–or–<br>press the power button<br>–or–<br>allow timeout. | Press the power button to quickly resume your session. |
| **Hibernation**<br>Saves current session to disk, then turns off.<br>Saves maximum power.<br>Restores network connections.<br>Power mode status light is off. | Click Start, Turn Off Computer, then press and hold Shift and click Hibernate<br>–or–<br>allow timeout. | Press the power button to resume your session. |
| **Turn off**<br>Turns off without saving current session.<br>Saves maximum power.<br>At startup, resets everything, and starts a new session.<br>Power mode status light is off. | Click Start, Turn Off Computer, Turn Off<br>–or–<br>press and hold the power button for four seconds (only if the Start menu procedure doesn't work). | Press the power button to start with a new session. |

# Checking the Notebook's Status

The notebook's status lights report power and battery status, keyboard status, and drive activity.
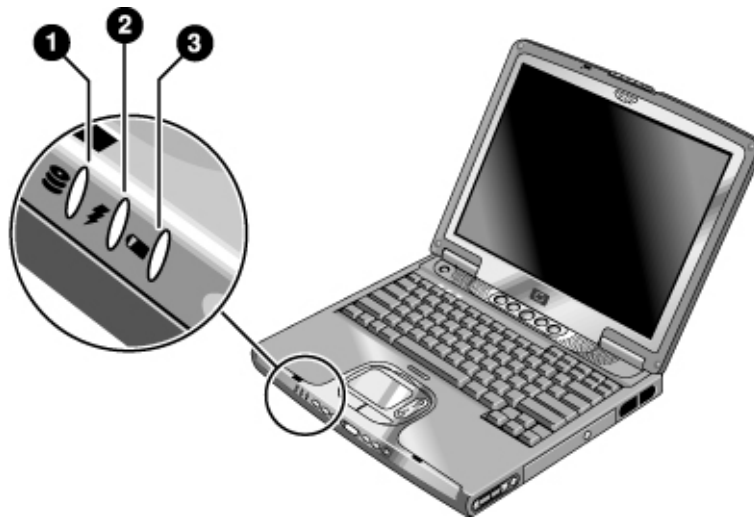


**Figure 1-4. Main Status Lights**

1. **Hard disk drive activity**.
   - On: the notebook is accessing the hard disk drive.

2. **Power mode**.
   - Green: the notebook is on (even if the display is off).
   - Amber: the notebook is on standby.
   - Off: the notebook is off or in hibernation.

3. **Battery charge status**.
   - Green: the AC adapter is connected and the battery is fully charged.
   - Amber: the AC adapter is connected and the battery is charging.
   - Red: the AC adapter is connected and the battery has a fault.
   - Off: the AC adapter is not connected or the battery is missing.
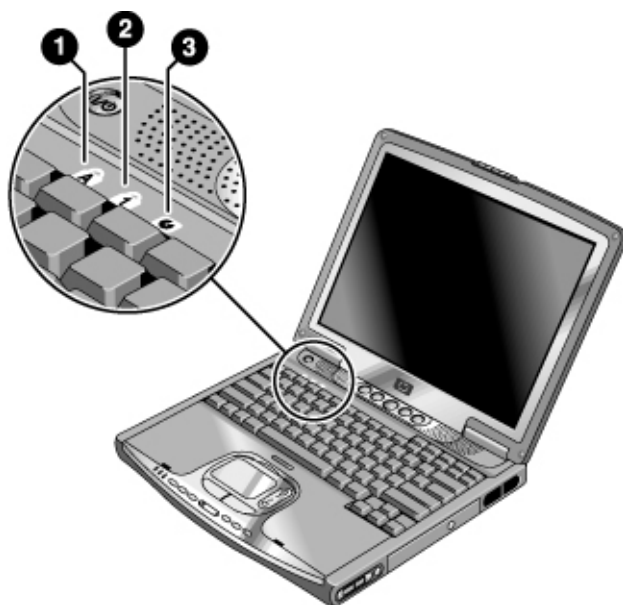
**Figure 1-5. Keyboard Status Lights**

1. **Caps Lock.** Caps Lock is active.
2. **Num Lock.** Num Lock is active. (The Keypad Lock must also be on to use the embedded keypad.)
3. **CD/DVD drive activity.** The CD/DVD drive is active.

## Using Fn Hot Keys

The combination of the Fn key plus another key creates a *hot key*—a shortcut key sequence—for various system controls. To use a hot key, press *and hold* Fn, press the appropriate second key, then release both keys.

**Table 1-3. Fn Hot Keys**

| Hot Key | Effect |
|---|---|
| Fn+F1 | Decreases the display brightness. |
| Fn+F2 | Increases the display brightness. |
| Fn+F5 | Toggles among the built-in display, an external display, and simultaneous display on both. |
| Fn+F8 | Toggles the built-in numeric keypad on and off. Does not affect an external keyboard. If Num Lock is on, the numeric functions are active; otherwise, cursor control is active. |
| Fn+Num Lock | Toggles Scroll Lock on and off. |
| Fn+Page Up | Increases the volume (and turns audio on if muted). |
| Fn+Page Down | Decreases the volume. |
| Fn+Backspace | Toggles the mute function on and off. |
| Fn+any One-Touch button | Toggles the One-Touch button LEDs on and off (selected models). |

# Resetting the Notebook

Occasionally, Windows or the notebook may stop responding, so that you cannot turn the notebook off. If this happens, try the following in the order listed:

- Press Ctrl+Alt+Del, then click Shut Down, Turn Off.

- Press and hold the power button for about four seconds, until the display turns off.

- Use a pen or straightened paper clip to press the reset switch on the back of the notebook.
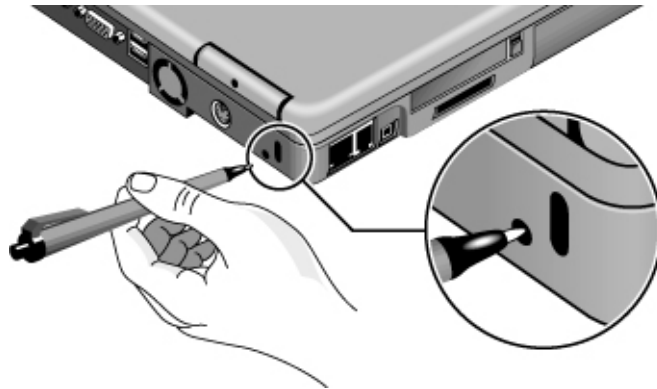


**Figure 1-6. Resetting the Notebook**

Press the power button to turn the notebook on again.

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**Note**

To boot from a CD or DVD, insert a bootable CD (such as the *Recovery CDs*) into the drive, then restart. Press Esc when the HP logo appears, then select the CD-ROM/DVD drive as the temporary boot device.

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# Using the CD or DVD Player (selected models)

The multimedia buttons on the front of the notebook control the CD/DVD player, and work in much the same way as do the controls of a standalone CD or DVD player. The player operates whether the notebook is on, off, on standby, or in hibernation. (When the notebook is on, the volume control buttons also govern the volume for most audio applications.)

If the notebook is off, on standby, or in hibernation, slide the multimedia power switch to the left to activate the player. For details about using the CD/DVD player, see the notebook's *Reference Guide*.
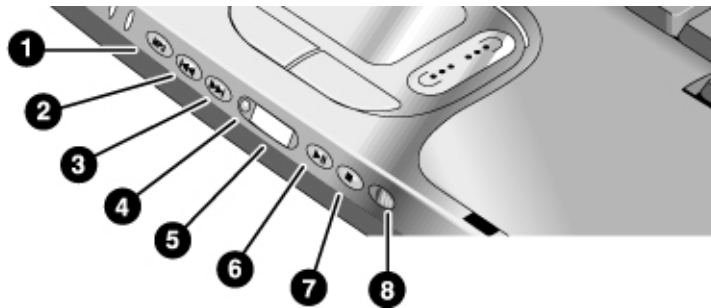


**Figure 1-7. Multimedia Buttons and Status Panel**

1. MP3 player launch button.
2. Previous track button.
3. Next track button.
4. Status panel button.

5. Status panel.
6. Play/Pause button.
7. Stop button.
8. Multimedia power switch and indicator light.

# Specifications

The following tables list the specifications for the notebook and its accessories. These are subject to change: for the latest versions, see the HP Notebook Web site, www.hp.com/notebooks (in Europe: www.europe.hp.com/notebooks).

## Hardware Specifications

**Table 1-4. Pavilion zt10100/xz300 and Omnibook xt1500 Series Hardware Specifications**

| | |
|---|---|
| **Physical Attributes** | **Dimensions:**<br>14.1-in models: 330 × 278.3 mm (12.99 × 10.94 in).<br>15-in models: 330 × 278.3 mm (12.99 × 10.94 in).<br>Thickness varies across unit.<br>Weight varies with configuration, vendor components, and manufacturing options and processes. Minimum weight (14.1-in model): 2.7 kg (5.9 lb). |
| **Processor and Bus Architecture** | Intel Mobile Pentium 4 processor (1.7, 1.8, or higher MHz) with SpeedStep technology (selected models).<br>Intel Pentium 4c processor (1.6 GHz) without SpeedStep technology (selected models). |
| **Graphics** | 14.1/15-in XGA (1024x768) or 15-in SXGA+ (1400x1050) TFT LCD display.<br>ATI Mobility Radeon graphics accelerator configurable for either 16- or 32-MB DDR graphics memory, 4x AGP graphics capability.<br>Supports 16 million colors and OpenGL graphics.<br>Supports hardware acceleration for MPEG. Display driver supports MPEG2 overlay.<br>Supports LCD+CRT or LCD + TV operation (dual view).<br>Separate video memory.<br>Supports NTSC and PAL TV.<br>Dual display for LCD and external monitor or TV.<br>External color support: starting at 640 x 480, up to 1600 x 1200 x 32 bit display resolution. |
| **Power** | Rechargeable 8-cell LiIon battery: 14.8 V, 3900 mAH or 4200 mAH.<br>Battery life: up to 2.5 hours (varies with model and usage).<br>Battery recharge (100%): up to approx. 3 hours with system off (varies with model).<br>Low-battery warning.<br>Standby/hibernate and resume capability.<br>Universal AC adapter: 100–240 Vac (50/60 Hz) input, 19 Vdc output, 75 W, 3.95-amp, 387.5g, 127.3 mm x 51.5 mm x 29.3 mm. |
| **Mass Storage** | 20- to 60-GB removable IDE hard disk drive. |
| **CD/DVD drive** | 8X DVD or 24X8X8X8X DVD/CD-RW (or higher) removable drive. |
| **RAM** | Two slots for DDR SDRAM expansion (PC-2100) up to 2x512 MB.<br>266-MHz RAM bus for MP chipset and 512 MB (2*256 MB) for MZ chipset. |
| **Audio System** | DirectSound.<br>MIDI (playback) support.<br>16-bit, full duplex stereo sound through two built-in speakers with integrated acoustic chambers. 1.5 W per channel, 64 voices.<br>Built-in microphone.<br>Polk Audio certified on 15-in models (pavilion).<br>Dedicated mute and volume controls (selected models).<br>CD player (can play while notebook is on standby, in hibernation, or off).<br>3D-enhanced audio. |
| **Communications** | 56 Kpbs Ambit modem.<br>10/100 LAN integrated. |

| Keyboard and Pointing Devices | 87/88/91-key touch-type QWERTY keyboard with 101/102 key emulation.<br>Embedded numeric keypad.<br>12 function (Fn) keys.<br>5 user-programmable One-Touch buttons.<br>Touch pad with lock button and on-off indicator.<br>Left and right click buttons, vertical scroll pad. |
|---|---|
| Wireless LAN (selected models) | Radio: IEEE 802.11b, WECA Wi-Fi compliant, direct-sequence spread-spectrum.<br>Operating frequency: 2.5-GHz ISM band, exact frequencies and channels depend on country.<br>Raw data rate: 1, 2, 5.5, or 11 Mbps.<br>Transmitter output: 15 dBm typical (approx. 30 mW), 16 dBm max (approx. 40 mW).<br>Receiver sensitivity: –84 dBm typical.<br>Range: up to 100 m (300 ft) or more, depending on environment and conditions.<br>On-off button and indicator.<br>Mini-PCI interface. |
| Input/Output | 2 universal serial bus (USB) ports.<br>15-pin VGA video-out (blue) with DDC support. (Resolution up to 1600 × 1200 × 64K or 16M colors. Refresh rate of 60 to 85 Hz, depending on resolution and color depth.)<br>RJ-11 jack for Mini-PCI type modem (selected models).<br>RJ-45 LAN jack.<br>25-pin bi-directional high-speed ECP/EPP parallel (burgundy).<br>S-video TV out (yellow) (selected models).<br>IEEE 1394 port (selected models).<br>4-Mbps IrDA-compliant infrared port (selected models).<br> One DC-in jack.<br>One microphone-in jack<br>One headphone-out jack. |
| Expandability | One Type II 16-/32-bit PC Card slot (3.3- and 5-V support).<br>CardBus enabled.<br>One integrated Secure Digital Multi-Media Card slot.<br>Optional simple port replicator (selected models). |
| Security Features | User and administrator passwords.<br>DMI-accessible electronic serial number.<br>Kensington MicroSaver lock slot. |
| Environmental Limits | Operating temperature: 0 to 40 °C (32 to 104 °F).<br>Operating humidity: 10 to 90 percent RH (0 to 40 °C).<br>Operating altitude: up to 10,000 ft (3000 m) at 25 °C (77 °F).<br>Storage (non-operating) temperature: –20 to 65 °C (–4 to 149 °F). |
| Major ICs | CPU: Intel Mobile Pentium 4 processor.<br>North Bridge: Intel 845MP or MZ.<br>South Bridge: Intel ICH3.<br>Display controller: ATI M7 with 32M DDR.<br>Audio controller: Intel ICH3/Realtek ALC202 AC97 Codec.<br>CD player controller: O2 OZ-163.<br>LAN: Realtek RTL8100L.<br>CardBus controller: ENE 1410<br>Keyboard/embedded controller: National NS87591.<br>Super I/O: SMSC LPC47N227.<br>SD/MMC controller: W83L518D<br>IEEE 1394 controller: VIA VT6306 |

**Table 1-5. Pavilion zt1000/xz300 and Omnibook xt1500 Series Accessories**

| Accessory | Description |
|---|---|
| **Specific  Accessories** | |
| F3494B | Simple port replicator for PL-KV only (This SPR is compatible with 4.0 and backwards-compatile with Z3x) |
| F5102A | SPR for PL-AN only |
| F3172A | 8-cell Li-Ion battery |
| F3172B | 8-cell high capacity battery |
| **Cross-Platform Accessories** | |
| F4494A | 128MB PC2100 DDR SDRAM 266 MHz |
| F4495A | 256MB PC2100 DDR SDRAM 266MHz |
| F4496A | 512MB PC2100 DDR SDRAM 266MHz |
| F2297A | 24V Car adapter (Europe only) |
| F4600A/F4814A | 75W AC adapter w/PFC |
| F2135C | Wireless Comm. Access point – AP 2000 |
| F2136B | Wireless Comm. PC Card (128-bit) – Gold card/Ruby card |
| F2196A/F4862A | 3COM Bluetooth PC Card |
| F4863A | Wireless AccessPoint for SMB |
| F2100A | USB optical mouse (PL-AN only) |
| F4815A | USB optical mouse (PL-KV only) |
| F5101A | MCD USB floppy (N. America PL-KV only) |
| F5103A | USB-to-serial adapter (PLAN only) |
| **Other Available Accessories** | |
| F1606/7/8A2297A | Carrying Cases (ballistic nylon/leather/executive) |
| F1771A | Universal Carrying Case |
| F1778A | Promotional Carrying Case (NAM & AP) |
| F1778B | Standard Carrying Case (Europe) |
| F2020A | Executive Leather Case (Europe) |
| F1645A | Kensington Lock |
| F1747A | Defcon Lock |
| **Other Accessories** | |
| D9510B | USB Floppy |

# Internal Design

The motherboard PCA is the central component of the notebook's design, and plays a role in virtually all system functions. The CPU module and most other subsystems connect to the motherboard.

The following figure shows the electrical connections among the notebook's replaceable electronic modules. In addition, the table on page 1-15 lists the roles that the replaceable modules play in each of the notebook's functional subsystems.
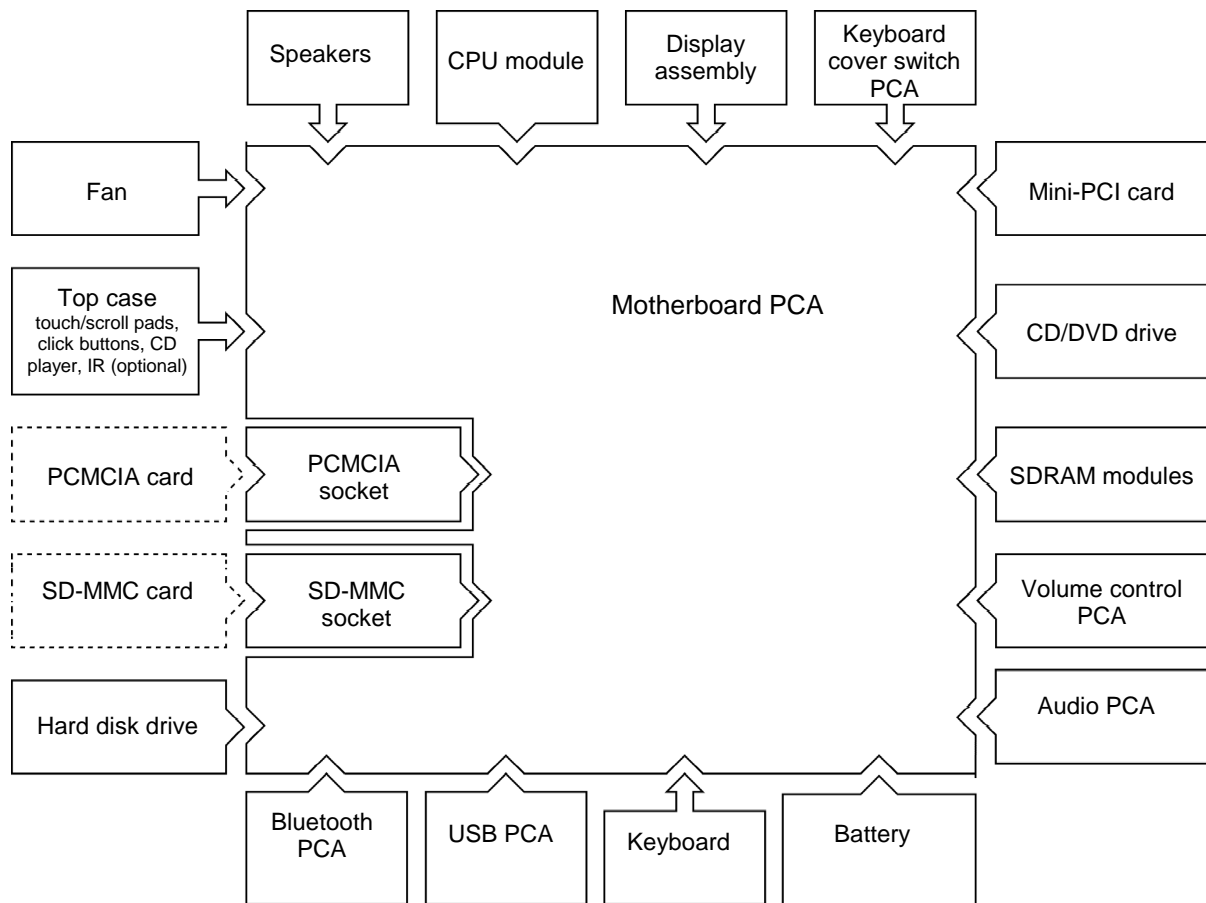
**Figure 1-8. Replaceable Module Diagram**

## Table 1-6. Functional Structure

| Function | Components Used | Component Roles |
|---|---|---|
| **Bootup** | CPU module<br>Motherboard<br>Hard disk drive<br>CD/DVD drive module | Main processor.<br>Primary system circuitry.<br>First source of disk-based startup code.<br>Second source of disk-based startup code. |
| **Processor** | CPU module<br>Motherboard | Main processor, numeric data processor, L1 and L2 cache.<br>Primary system circuitry. |
| **Memory** | SDRAM module | Video RAM (shared).<br>Changeable RAM (2 slots). |
| **Power** | Battery<br>Motherboard<br><br><br>Keyboard cover switch PCA<br>AC adapter | Power storage.<br>Power control circuitry, AC adapter socket, lid switch, reset switch, power supply.<br>Power button.<br>AC-to-DC converter. |
| **Display** | Motherboard<br><br>Display assembly | Video controller, display drivers, LVDS processing, display/graphics controller.<br>Display output, backlight, power converter for backlight. |
| **Hard disk** | Motherboard<br>Hard disk drive | Hard disk controller.<br>Hard disk mechanism. |
| **Keyboard** | Motherboard<br>Keyboard<br>Keyboard cover<br>CD player PCA | Keyboard controller, keyboard BIOS.<br>Key switches.<br>One-Touch buttons.<br>CD player buttons. |
| **Touch pad** | Motherboard<br>Top case | Keyboard BIOS.<br>Touch/scroll pad sensors, click buttons. |
| **Audio** | Motherboard<br><br>Display assembly<br>USB PCA<br>Volume control PCA<br>Speakers | Audio controller, audio decoder, speaker amplifier, external microphone jack.<br>Microphone.<br>Headphone jack.<br>Volume control.<br>Sound output. |
| **Status** | Motherboard<br>Top case<br>Keyboard cover switch PCA<br>CD player PCA | LED circuitry, keyboard controller.<br>Status LEDs.<br>Status LEDs.<br>CD/DVD status display. |
| **Parallel** | Motherboard | I/O controller, parallel connector. |
| **USB** | Motherboard<br>USB PCA | Bus controller, USB connectors.<br>USB connectors. |
| **PCMCIA** | Motherboard<br>PCMCIA sockets | PCMCIA controller.<br>PCMCIA connectors. |
| **SD-MMC** | Motherboard | SD/MMC controller<br>SD/MMC connector |
| **Infrared** | Motherboard<br>CD player PCA | I/O controller.<br>Infrared transmitter/receiver. |
| **Wireless** | Display assembly<br>Motherboard<br>Mini-PCI PCA<br>Bluetooth PCA<br>USB PCA | Antennas, on-off button, indicator light.<br>I/O controller.<br>Radio PCA circuitry.<br>Radio PCA circuitry.<br>On-off button, indicator light. |
| **Docking** | Motherboard | Docking logic, docking connector. |
| **PC card** | Motherboard | PC card controller, PC card connector. |

# 2

# Removal and Replacement

This chapter shows how to remove and replace the notebook's components, listed in the following table. The items marked by • are user-replaceable.

**Table 2-1. Removal Cross-Reference**

|  |  |  |  |
|---|---|---|---|
|  | Antenna, Bluetooth (page 2-20). |  | Guide, hard disk drive (page 2-38). |
|  | Antenna, wireless (page 2-20). |  | Heatsink (page 2-22). |
| • | Battery (page 2-4). | • | Keyboard (page 2-11). |
|  | Bezel, display (page 2-20). |  | Module, CPU (page 2-25). |
|  | Card, mini-PCI (page 2-16). | • | Module, plug-in (page 2-5). |
|  | Case, bottom (page 2-32). | • | Module, expansion SDRAM (page 2-13). |
|  | Case, top (page 2-27). | • | Module, system SDRAM (page 2-14). |
| • | Cover, expansion SDRAM (page 2-15). |  | PCA, audio (page 2-37) |
| • | Cover, keyboard (page 2-9). |  | PCA, inverter (page 2-20) |
| • | Cover, mini-PCI (page 2-15). |  | PCA, motherboard (page 2-32). |
| • | Covers, screw (page 2-15). |  | PCA, volume control (page 2-39). |
|  | Display assembly (page 2-18). |  | Saddles, hinge (page 2-30). |
|  | Doors, docking (page 2-35). |  | Socket, PCMCIA (page 2-39). |
|  | Doors, PCMCIA (page 2-35). |  | Speaker, left (page 2-39). |
| • | Drive, hard disk (page 2-6). |  | Speaker, right (page 2-39). |
|  | Fan (page 2-22). | • | Tray, hard disk drive (page 2-7). |
| • | Feet, rubber (page 2-15). |  |  |

---

**Caution**

Always provide proper grounding when performing repairs. Without proper grounding, an electrostatic discharge can damage the notebook and its components.

---

**Notes**

To reassemble a component, perform the removal procedure in reverse order. Any special notes required for reassembly are included at the end of each section.

▬ Symbols like this are used throughout this chapter to show approximate full-size screw outlines. Use these to verify the sizes of screws before you install them. Installing a wrong-size screw can damage the notebook. (The symbol shown represents an M2.5×5mm T-head screw.)

---

# Disassembly Flowchart

The following diagram shows the general "paths" you will use in disassembling the notebook to access any particular component.
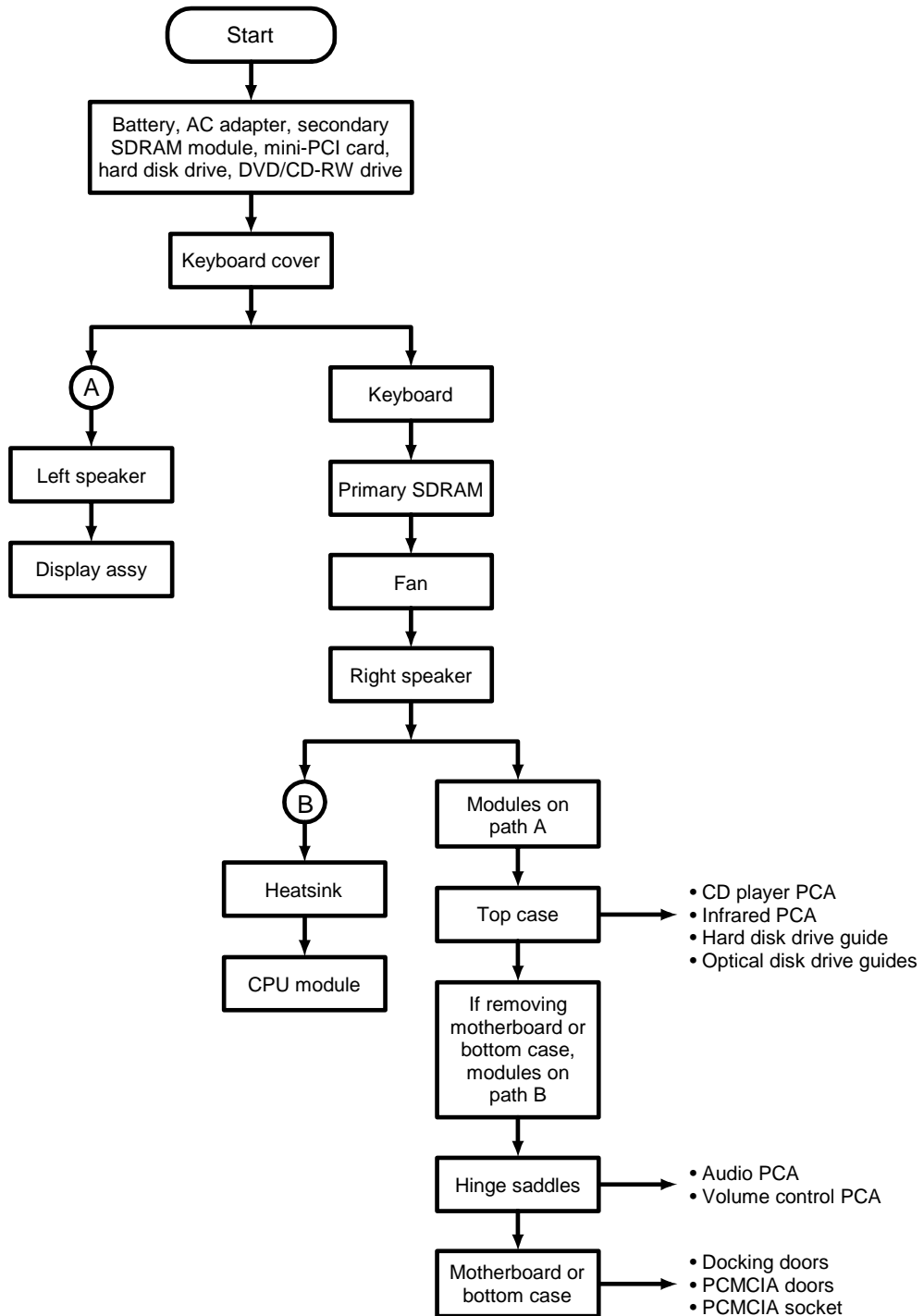


**Figure 2-1. Disassembly Flow**

**Table 2-2. Required Equipment**

- #0 Phillips screwdriver, preferably magnetized.
- Small flat-blade screwdriver.
- .5 mm hex driver.

**Table 2-3. Recommended Screw Torques**

| Screw Thread Size | Torque (cm-kgf) | Torque (in-lbf) |
|---|---|---|
| M2.5 (2–11 mm long) | 3.0 – 3.5 | 2.6 – 3.0 |
| M3 | 3.0 – 3.5 | 2.6 – 3.0 |

# NOTES

# Removing the Battery

(User-Replaceable)

**Required Equipment**

- None.

**Removal Procedure**

- Slide the battery's release latch in the direction of the arrow on the latch, then lift the battery out of its compartment.
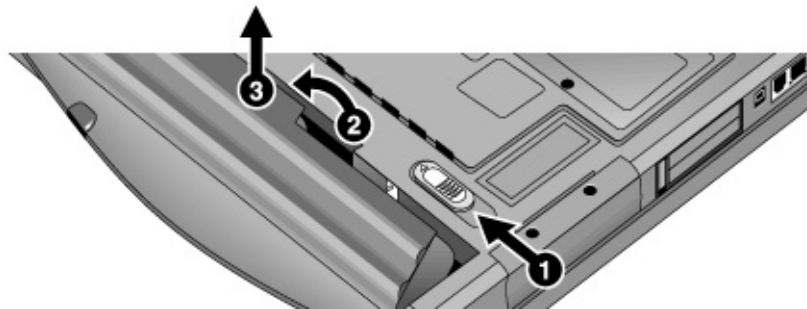
**Figure 2-2. Removing the Battery**

**Reassembly Notes**

- Insert the front end of the battery into the battery compartment, then press the back end in until the battery clicks into place.

# Removing a Plug-In Module

(User-Replaceable)

**Required Equipment**

- None.

**Removal Procedure**

- Slide the module release latch in the direction shown by the arrow on the latch, and remove the module.
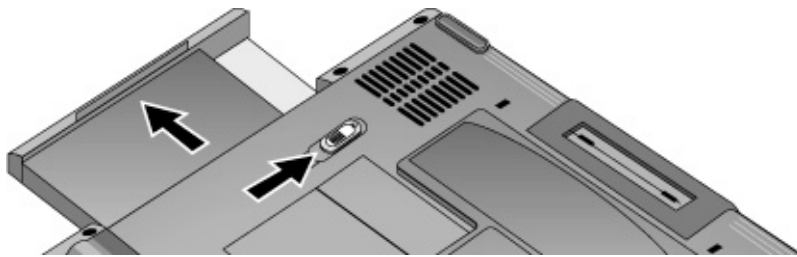


**Figure 2-3. Releasing the Plug-in Module**

# Removing the Hard Disk Drive
(User-Replaceable)

**Required Equipment**

- #0 Phillips screwdriver.

**Removal Procedure**

1. Unplug the AC adapter, if present, and remove the battery.

2. On the bottom of the unit, remove both hard drive retaining screws.
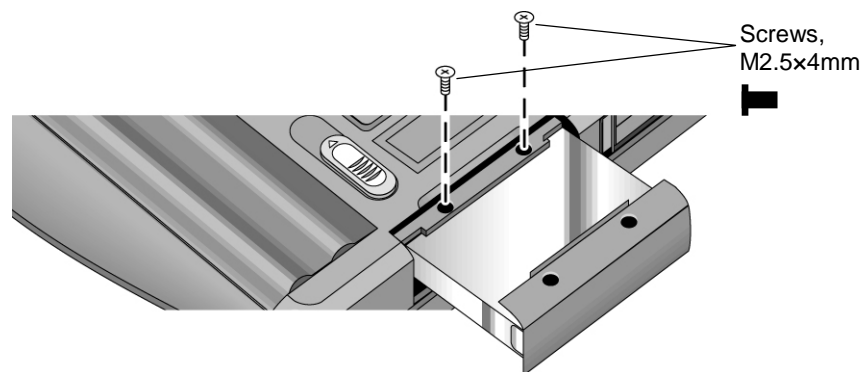


**Figure 2-4. Removing the Hard Disk Drive**

3. Carefully pull the hard drive out of the notebook.

4. Remove all four screws from the hard drive tray and drive case, then lift the drive out of the tray.
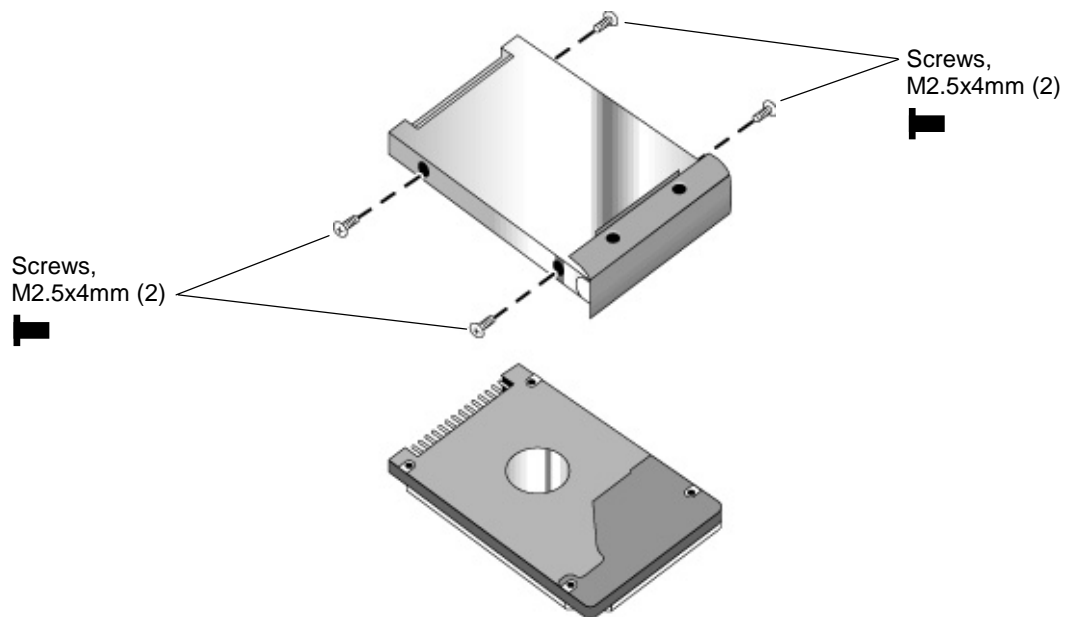
**Figure 2-5. Removing the Hard Disk Tray**

**Reassembly Notes**

- Insert the connector end of the drive through the opening in the tray, then lower the drive into place.

- Carefully slide the hard drive assembly into its compartment. Press firmly to make sure the connector seats properly.

---

**Important**

If you are installing a new hard disk drive, install the factory software and operating system on the drive before loading any additional software—see "Recovering and Reinstalling Software," below.

---

# Recovering and Reinstalling Software

Use the *Recovery CDs* to reinstall the original factory software and operating system. The *Recovery CDs* also provide all HP notebook–specific Windows drivers, which are available in the following locations:

- On the hard drive, under c:\hp\drivers.

- On the *Recovery CDs*, under \hp\drivers.

- On the HP Business Support Web site (www.hp.com/go/bizsupport). This Web site contains the latest updates of software drivers for various operating systems.

**To recover the factory software installation**

The following procedure describes how to recover the notebook's original software and operating system. This process can take up to 15 minutes to complete. (For more information about recovering the factory software installation, see the file readme.txt in the root directory of the *Recovery CDs*.)

---

**Caution**

Be sure to back up the hard disk before proceeding. This procedure formats the hard disk, which erases all data on the disk. After formatting, you must reinstall any applications.

Do not interrupt the following process or unplug the AC adapter until the process is complete.

---

1. Back up all data from the hard disk.

2. Connect the AC adapter to the notebook. **This is necessary to provide an uninterrupted power source: the notebook's battery alone is not adequate.**

3. Insert *Recovery CD* disk 1 into the notebook's CD/DVD drive. If the notebook is turned off, use a pin or straightened paper clip to press the release switch on the drive door to open it.

4. Turn on or restart the notebook.

5. When the HP logo appears, press Esc to display the Boot menu.

6. Use the arrow keys to select the CD/DVD drive as the first boot device, then press Enter.

7. When the *Recovery CD* dialog box appears, follow the displayed instructions. If prompted, accept the recommended partition size.

   To create the Utility partition without installing the factory software, click Advanced and select not to install the operating system.

   If the hard disk is partitioned into several drives, you can install the factory software on drive C without affecting other drives. Click Advanced and select to restore only the C partition.

8. When prompted to reboot the notebook, press Ctrl+Alt+Del and follow any instructions that appear.

---

**Note**

Windows XP supports the NTFS file system.

---

# Removing the Keyboard Cover

(User-Replaceable)

**Required Equipment**

- #0 Phillips screwdriver.

- Small flat-blade screwdriver.

**Removal Procedure**

1. Unplug the AC adapter, if present, and remove the battery.

2. Close the notebook's display, and remove both screws from the backs of the hinge covers.
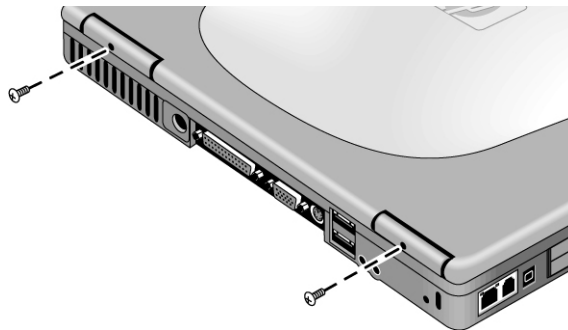
**Figure 2-6. Removing the Keyboard Cover Retaining Screws**

3. Open the display so that it lays flat.

4. Use the flat-blade screwdriver to carefully pry up the right end of the keyboard cover just above the Page Up key, then lift the end until the cover unsnaps.

---

**Caution**

When removing the keyboard cover, be careful not to pull on the cable that connects the keyboard cover to the notebook.

---

5. Carefully lift the cover to unsnap the latches above the center One-Touch button and the F1 key, then lift the cover about an inch off of the notebook.

6. Disconnect the keyboard cover switch cable from the motherboard, and remove the cover from the notebook.
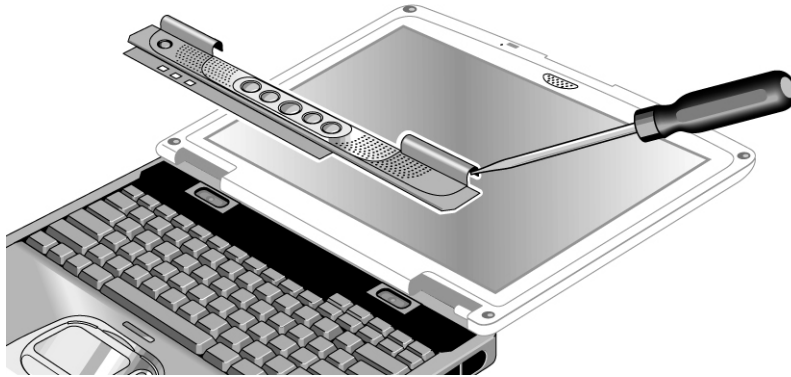


**Figure 2-7. Removing the Keyboard Cover**

**Reassembly Notes**

- Make sure the keyboard cover switch cable is securely connected to the motherboard.

- Bend the center of the keyboard cover upward slightly, and insert the tabs on the ends of the cover into the slots in the notebook's case. Fit the hinge covers over the hinges, and gently press the cover into place.

# Removing the Keyboard
(User-Replaceable)

**Required Equipment**

- #0 Phillips screwdriver.
- Small flat-head screwdriver.

**Removal Procedure**

1. Unplug the AC adapter, if present, and remove the battery.

2. Remove the keyboard cover (page 2-9).

3. Loosen the three retaining screws along the top of the keyboard (the keyboard may retain the screws).
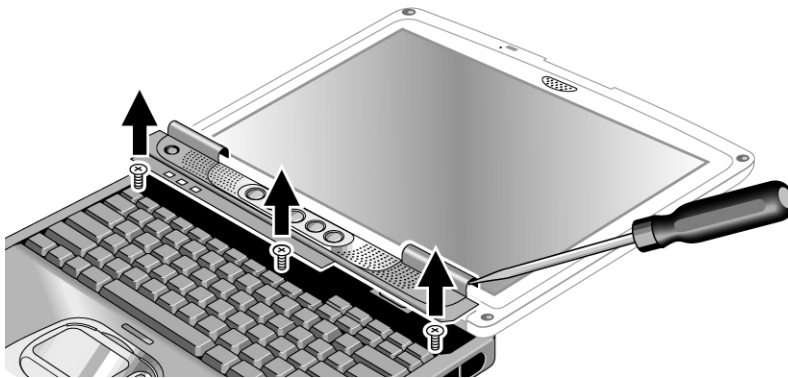


**Figure 2-8. Loosening the Keyboard Retaining Screws**

---

**Caution**

When opening the keyboard, be careful not to pull on the ribbon cable that connects the keyboard to the notebook.

---

4. Raise the top of the keyboard, then lift the keyboard up and out of the notebook.

5. Lay the keyboard face down on the top case, forward of its normal position, and disconnect the ribbon cable from the motherboard.
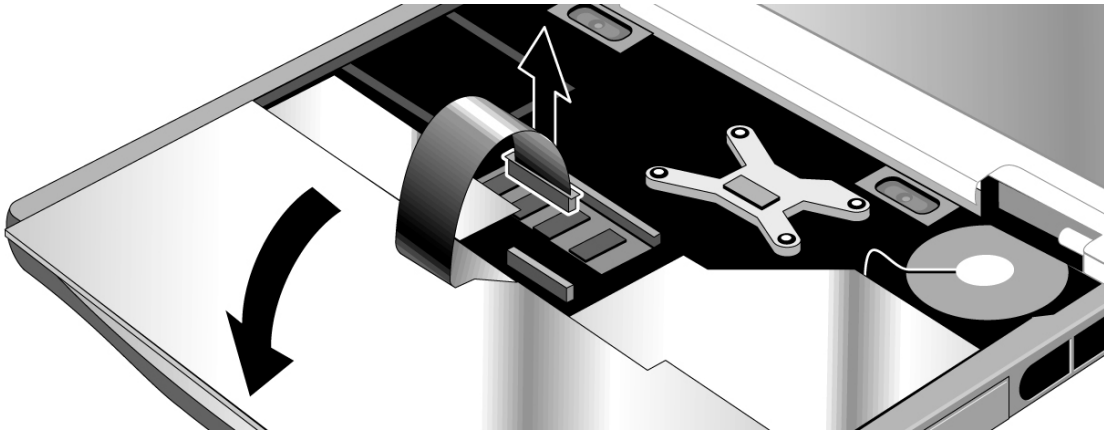
**Figure 2-9. Disconnecting the Keyboard**

**Reassembly Notes**

- Lay the keyboard face down on the top case, forward of its normal position, and reconnect the ribbon cable.

- Slip the metal tabs on the bottom of the keyboard into their slots in the top case, then lower the keyboard into place.

# Removing an SDRAM Module
## (User-Replaceable)

The notebook has no SDRAM built into its motherboard, but has two slots for PC133 SDRAM modules: a system SDRAM slot beneath the keyboard (containing an SDRAM module installed at the factory), and an expansion slot on the bottom of the unit.

---

**Caution**

Provide proper grounding and handle the SDRAM module only by its edges, or you could damage the module through electrostatic discharge.

---

**Required Equipment**

- #0 Phillips screwdriver.

## Removing an Expansion SDRAM Module

**Removal Procedure**

1. Unplug the AC adapter, if present, and remove the battery.

2. On the bottom of the notebook, loosen the screw holding the SDRAM cover (the cover retains the screws), and remove the cover.

3. Press outward to release the latches at the sides of the SDRAM module (so that the free edge of the module pops up), then pull the module out of the connector.
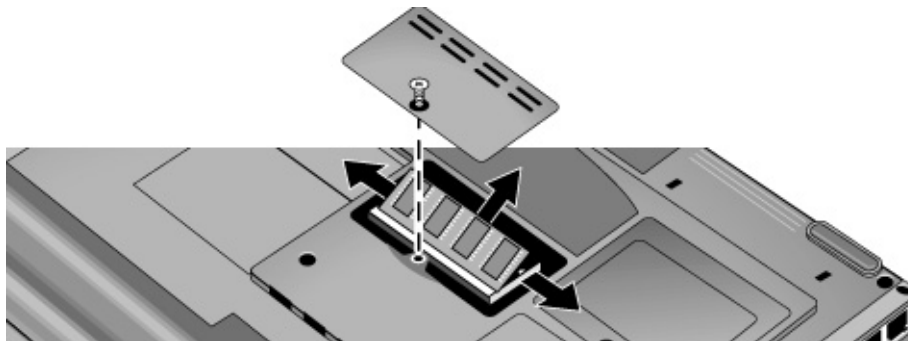


**Figure 2-10. Removing an Expansion SDRAM Module**

**Reassembly Notes**

- Carefully press the SDRAM module into the connector at an angle of about 30°, until it is fully inserted. Then press down on both sides of the module until the latches snap closed.
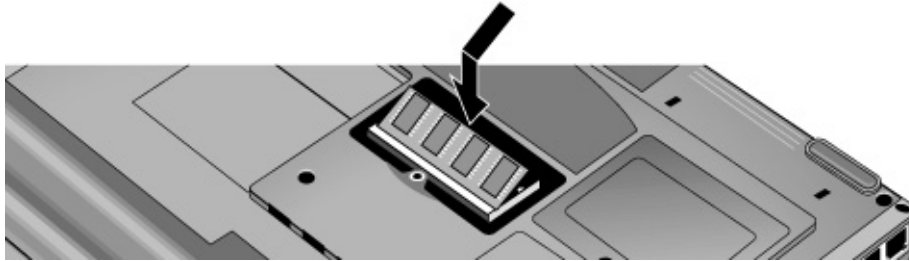
**Figure 2-11. Installing an Expansion SDRAM Module**

# Removing the System SDRAM Module

**Removal Procedure**

1. Unplug the AC adapter, if present, and remove the battery.

2. Remove the keyboard cover (page 2-9).

3. Open the keyboard (page 2-11, steps 1 though 4). You don't need to disconnect the keyboard cable.

4. Press outward to release the latches at the sides of the SDRAM module (so that the free edge of the module pops up), then pull the module out of the connector.
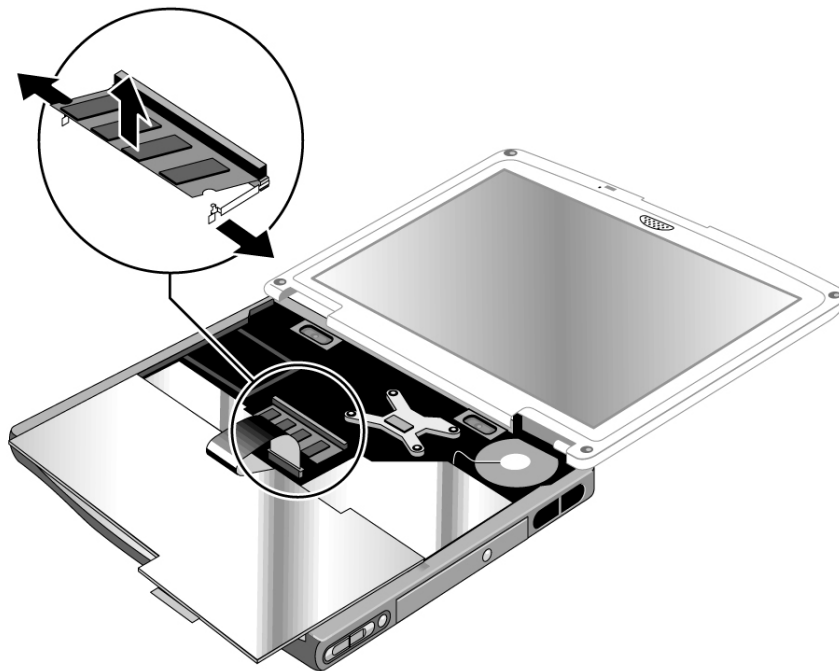
**Figure 2-12. Removing the System SDRAM Module**

**Reassembly Notes**

- Carefully press the SDRAM module into the connector at an angle of about 30°, until it is fully inserted. Then press down on both sides of the module until the latches snap closed.

# Replacing Small Parts
## (User-Replaceable)

The user can replace the following small parts.

**Table 2-4. Replacing Small Parts (User-Replaceable)**

| Part | Part Numbers | Replacement Procedure |
|------|--------------|----------------------|
| **Cover, mini-PCI** | Included in door kit F3377-60933 | On the bottom of the notebook, loosen the screw in the mini-PCI cover (the cover retains the screw) and remove the cover. |
| **Cover, expansion SDRAM** | Included in door kit F3377-60933 | On the bottom of the notebook, loosen the screw in the SDRAM module cover (the cover retains the screw) and remove the cover. |
| **Covers, screw (on display bezel)** | Included in feet/cover kit F3377-60967 | Insert a small flat-blade screwdriver under the cover and pry it loose. To replace, firmly press the adhesive side of the cover into the recess. |
| **Feet, rubber** | Included in feet/cover kit F3377-60967 | Insert a small flat-blade screwdriver under the foot and pry it loose. To replace, firmly press the adhesive side of the foot into the recess. |

# Removing the Mini-PCI Card
(HP Authorized Service Providers Only)

Certain notebook models include a mini-PCI card that contains either a modem or combined modem and 802.11 wireless.

---

**Caution**

Provide proper grounding and handle the card only by its edges, or you could damage it through electrostatic discharge.

---

**Required Equipment**

- #0 Phillips screwdriver.

**Removal Procedure**

1. Unplug the AC adapter, if present, and remove the battery.

2. On the bottom of the notebook, loosen the screw holding the mini-PCI cover (the cover may retain the screw), and remove the cover.

3. Press outward to release the latches at the sides of the card, and carefully lift its free edge up.

4. Disconnect the cable(s) from the card.

5. Gently pull the card out of its connector.
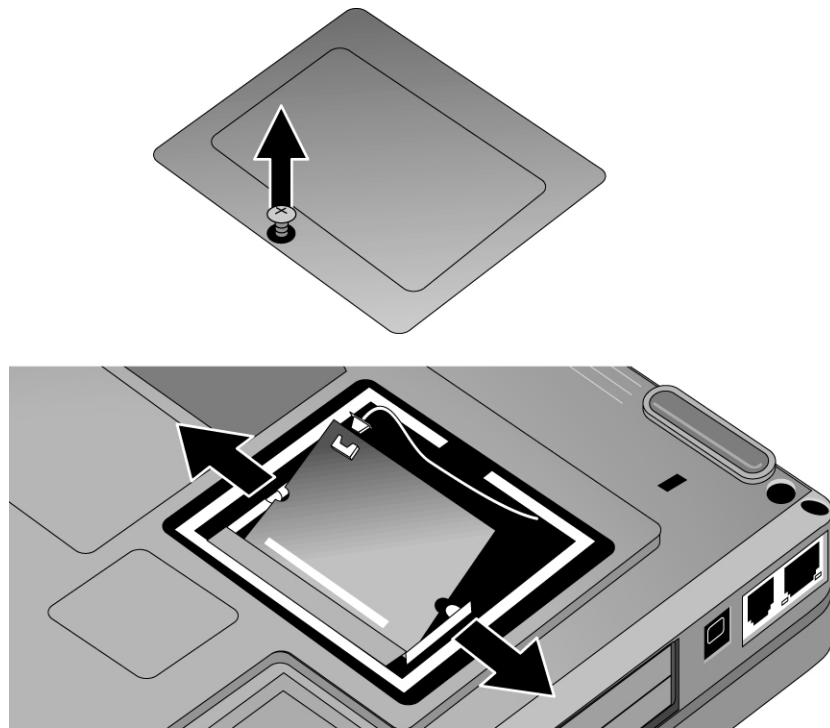
**Figure 2-13. Removing the Mini-PCI Card**

**Reassembly Notes**

- Reattach the cable(s) to the card, and tuck them into the compartment.
- Gently press the card into the connector at an angle of about 30°, until it is fully inserted. Then press down on both sides of the card until the latches snap closed.

# Removing the Display Assembly

(HP Authorized Service Providers Only)

**Required Equipment**

- #0 Phillips screwdriver.

**Removal Procedure**

1. Unplug the AC adapter, if present, and remove the battery.

2. Remove the keyboard cover (page 2-9).

3. Remove both retaining screws from the bottom of the notebook.
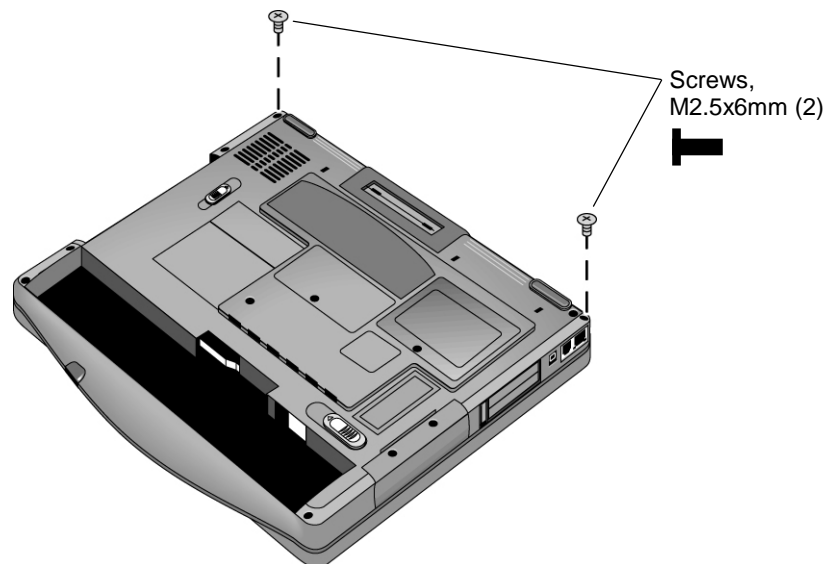


Screws,
M2.5x6mm (2)

**Figure 2-14. Removing the Display (1)**

4. Open the display so that it lays flat.

5. Remove the screw from the left speaker, and move the speaker to the side. Be careful not to pull on the wires connecting the speaker to the motherboard.

6. Disconnect the display cable and ground wire from the motherboard, and carefully remove the cable from the retaining clip near the left display hinge.

7. If present, disconnect the wireless cables near the right display hinge.

8. Remove the retaining screws from the lugs just below the display hinges.

9. Lift the display off of the notebook.
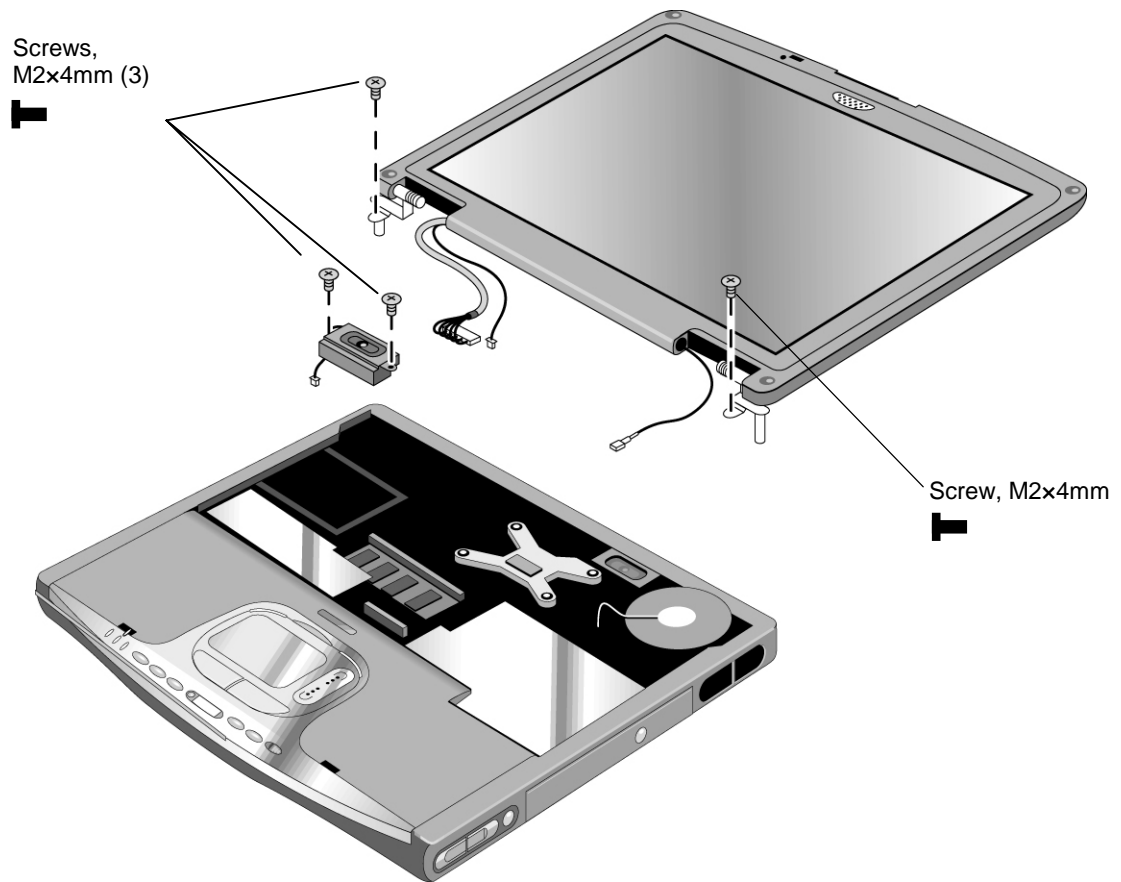
**Figure 2-15. Removing the Display (2)**

**Reassembly Notes**

- While installing the hinge screws, support the display so that it remains approximately flat.

- Make sure the cable fits into its slot in the bottom case, and reinsert the cable into the retaining clip near the left display hinge.

- Make sure the tabs on the left side of the left speaker fit between the corresponding tabs in the bottom case, and the speaker wires fit through their notch in the bottom case.

# Removing Display Assembly Components

(HP Authorized Service Providers Only)

> **Note**
>
> This procedure describes how to remove the display bezel, the inverter PCA, and (if present) the wireless antenna. Although these components can be replaced individually, in many cases it is preferable to replace the display assembly as a unit.

**Required Equipment**

- #0 Phillips screwdriver.

**Removal Procedure**

1. Unplug the AC adapter, if present, and remove the battery.

2. Remove these additional assemblies:

    - Keyboard cover (page 2-9).

    - Display assembly (page 2-18).

3. Use a screwdriver or similar object to carefully pry the screw covers from the display bezel.

4. Remove the four screws from the display bezel.

5. Beginning at the top center of the display, carefully pry up the inner edge of the bezel with thumbs and fingers. Work your way around the inside edge to unsnap the latches, then remove the bezel from the display.

6. Remove the retaining screw from the inverter PCA. Carefully turn the PCA over, unplug the cable from the left end, and disconnect the wires extending from its right end.

7. If present, remove both retaining screws from the Bluetooth or 802.11b antenna, and remove the antenna from the display.
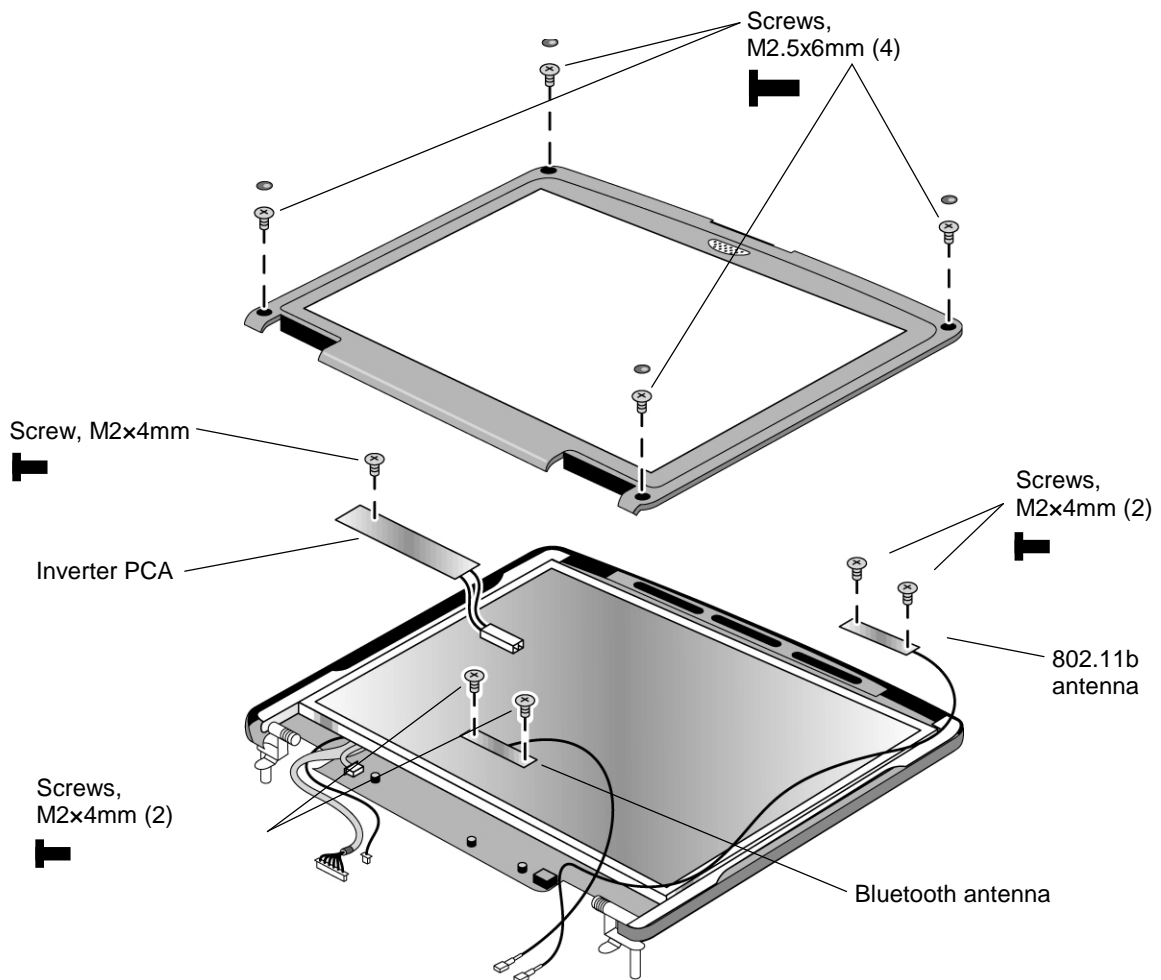
**Figure 2-16. Removing Display Assembly Components**

**Reassembly Notes**

- Make sure the alignment hole in the inverter PCA fits over the corresponding post in the display case.

- Make sure the alignment hole in the wireless antenna fits over the corresponding post in the display case.

- Set the bezel in place on the display, then work your way around the bezel, firmly snapping the bezel latches shut.

- The rounded screw co

- vers go on the screws at the top of the display bezel, and the flat covers go on the screws at the bottom of the bezel.

# Removing the Fan and Heatsink

(HP Authorized Service Providers Only)

**Required Equipment**

- #0 Phillips screwdriver.

**Removal Procedure**

1. Unplug the AC adapter, if present, and remove the battery.

2. Remove these additional assemblies:

    - Keyboard cover (page 2-9).

    - Keyboard (page 2-11).

3. Remove the retaining screw from the right speaker. Disconnect the speaker wires from the motherboard, and lift the speaker out of the notebook.

4. Disconnect the fan wires from the motherboard.

5. Remove both retaining screws from the fan.

6. Lift the fan out of the notebook.

---

**Caution**

Do not spin the fan blades with your finger, or you could damage the fan's bearings.

---

7. Remove the heatsink's four retaining screws (with springs attached).

8. Lift the heatsink out of the notebook.

Screws, M2×4mm (2)

Screws, heatsink
(with springs) (4)

Screw,
M2.5x8mm

Screw,
M2.5x6mm
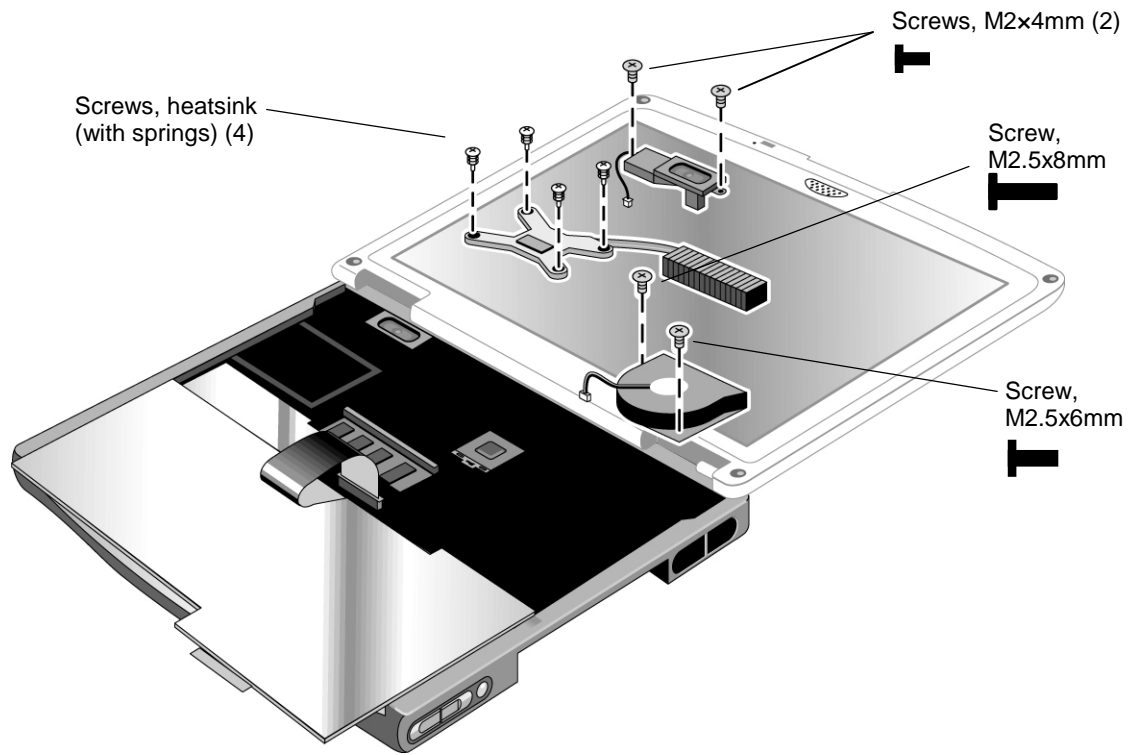
**Figure 2-17. Removing the Fan and Heatsink**

**Caution**

Be careful not to touch the upper surface of the CPU module, or you could damage it.
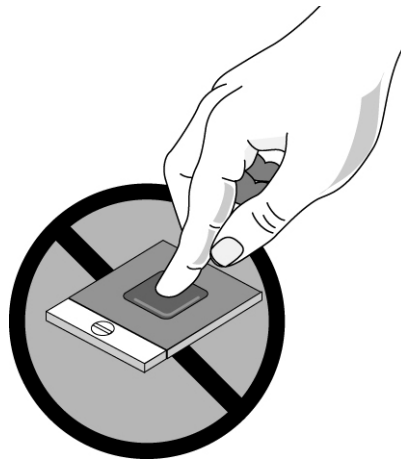
**Reassembly Notes**

- Make sure the fan wires are not pinned under the fan, and is securely plugged into its socket.

- If present, make sure the wireless cables are not trapped under or behind the fan, or beneath the cooling fins.

- Insert the cooling fins into the opening in the bottom case, then set the heatsink onto its standoffs.

- Tighten the heatsink screws in the order indicated by the numbers on the heatsink.

- Make sure the upper surface of the heatsink is clean, and install a new thermal pad. Be careful not to scratch the upper surface of the pad, and make sure the pad lies flat on the heatsink.
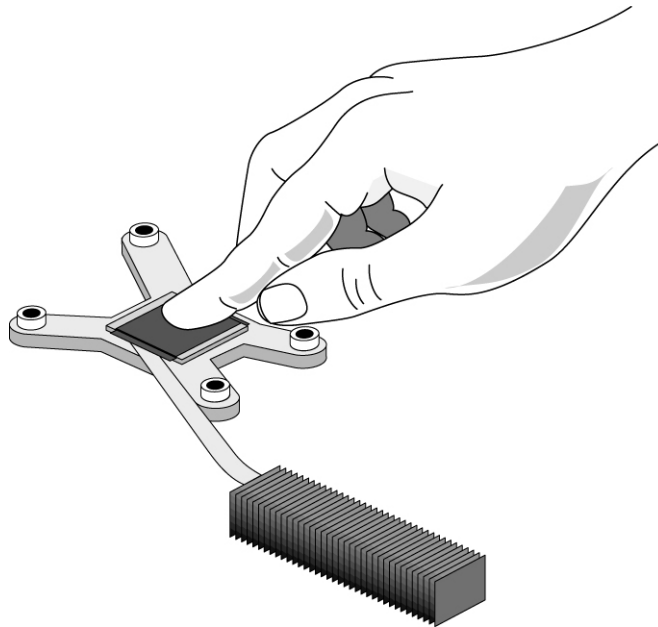


**Figure 2-18. Installing a New Thermal Pad**

# Removing the CPU Module

(HP Authorized Service Providers Only)

**Required Equipment**

- #0 Phillips screwdriver.
- Small flat-blade screwdriver.

**Removal Procedure**

---

**Caution**

Be careful not to touch the upper surface of the CPU module. Handle it only by its edges, or you could damage it.
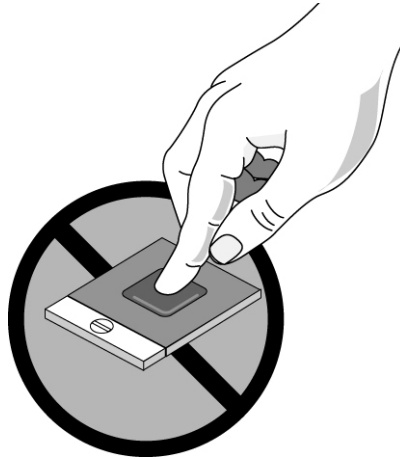


---

1. Unplug the AC adapter, if present, and remove the battery.

2. Remove these additional assemblies:

   - Keyboard cover (page 2-9).
   - Keyboard (page 2-11).
   - Fan and heatsink (page 2-22).

3. Carefully insert the tip of a flat-blade screwdriver in the CPU module lock mechanism, and turn the screwdriver a few degrees counterclockwise until the mechanism clicks into its OPEN position. (The CPU socket moves slightly to the left when this happens.)

   Grasp the CPU module by its edges, and carefully lift it straight up and off of its socket.
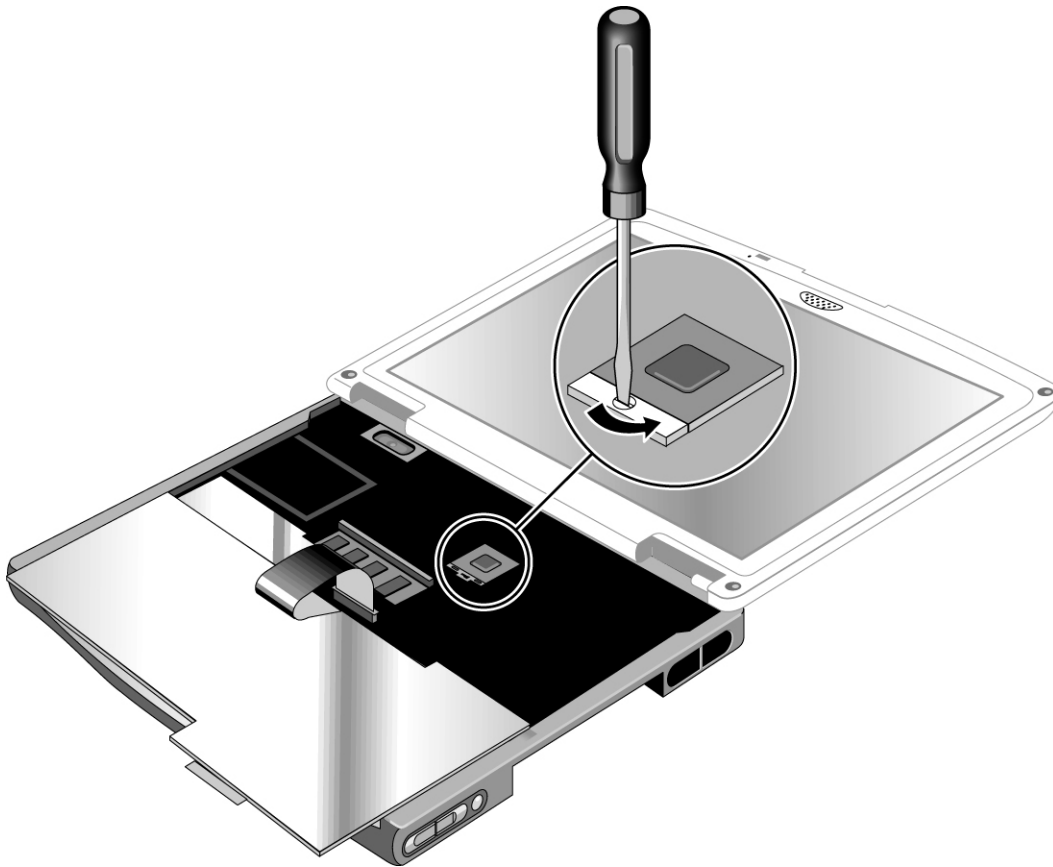
**Figure 2-19. Removing the CPU Module**

**Reassembly Notes**

- Carefully reinsert the module into its socket. Make sure the module is fully seated, and that none of its pins are bent or otherwise damaged.

- Carefully insert the tip of the flat-blade screwdriver in the CPU module lock mechanism, and turn the screwdriver a few degrees clockwise until the mechanism clicks into its LOCK position. (The CPU socket moves slightly to the right when this happens.)

# Removing the Top Case
(HP Authorized Service Providers Only)

**Required Equipment**

- #0 Phillips screwdriver.

**Removal Procedure**

1. Unplug the AC adapter, if present, and remove the battery.

2. Remove these additional assemblies:

   - Plug-in module (page 2-5).

   - Hard disk drive (page 2-6).

   - Keyboard cover (page 2-9).

   - Keyboard (page 2-11).

   - Display assembly (page 2-18).

3. Remove the retaining screws from the bottom of the notebook.

4. Remove the screws from just inside the hard disk drive compartment, and just inside the plug-in module compartment.
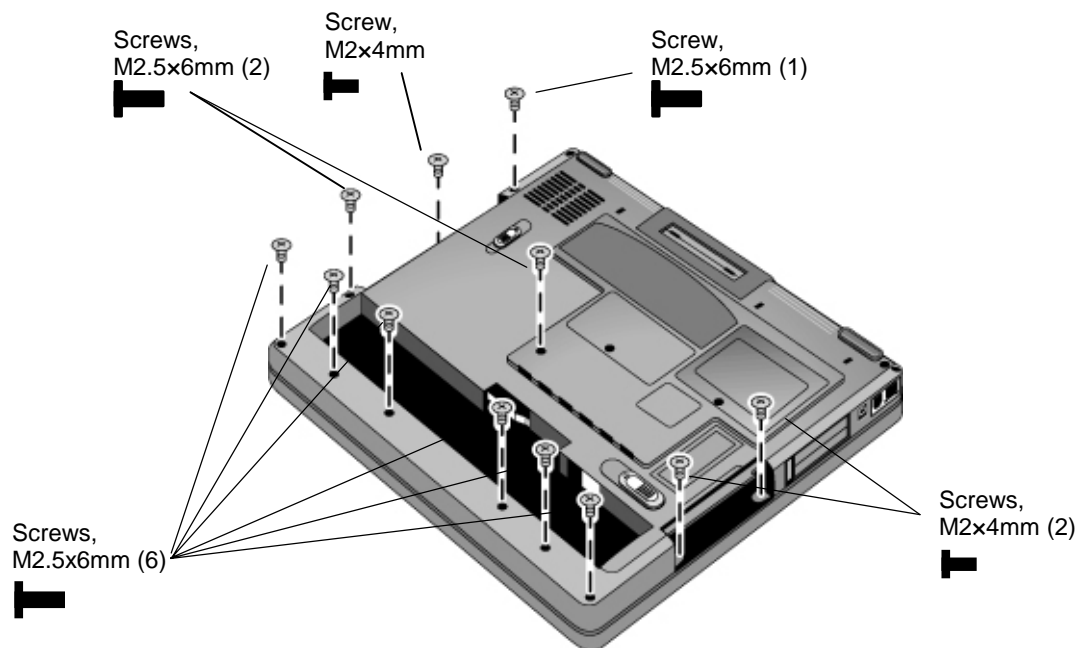


**Figure 2-20. Removing the Top Case Retaining Screws**

5. Disconnect the touch pad cable and the CD player PCA cable from the motherboard.

6. If present, remove the wireless cables from their slot in the top case.

7. Remove the retaining screws from the top case.

8. Remove the retaining screw from the right speaker, disconnect its wires from the motherboard, and lift the speaker out of the notebook.

9. Raise the back of the top case, then gradually loosen it, moving around the edges of the case toward the front of the notebook.

---

**Caution**

When removing the top case, be careful not to pull on the cable that connects the CD player PCA in the top case to the notebook.

---

10. Carefully lift the top case forward and off of the notebook.

11. Disconnect the volume control PCA cable from the motherboard (if present).

Screws,
M2×4mm (3)

Screws,
M2×4mm (5)

Screws,
M2×4mm (2)

Screws,
M2.5x6mm  (2)

Screws,
M2×4mm (3)
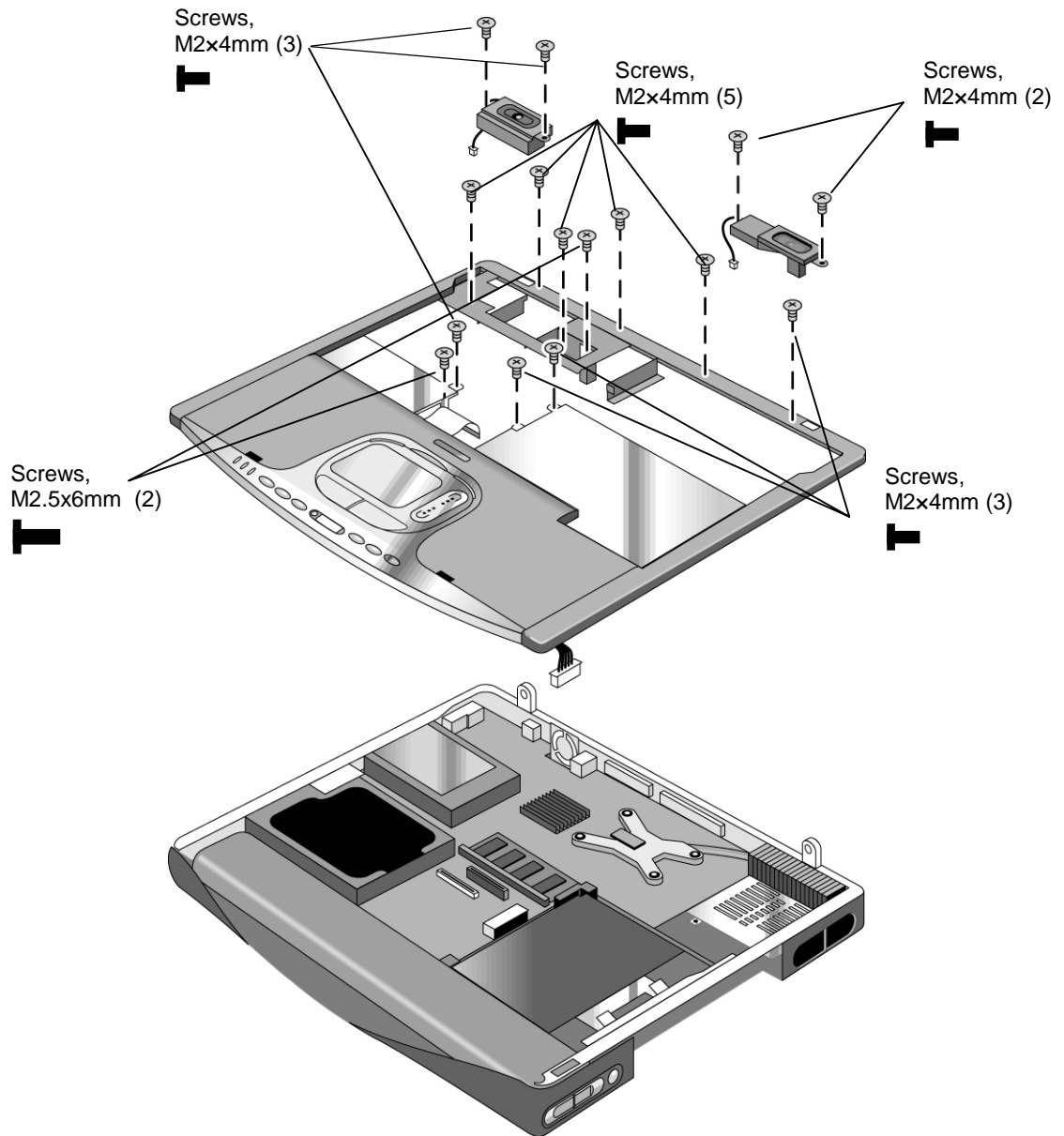
**Figure 2-21. Removing the Top Case**

**Reassembly Notes**

- Make sure the touch pad cable, and CD/DVD player PCA cable, and volume PCA cable (if present) are securely connected.

- If present, reinsert the wireless cables into their slot in the top case.

- Make sure the tabs along the edges of the case snap shut.

# Removing the Hinge Saddles

(HP Authorized Service Providers Only)

**Required Equipment**

- #0 Phillips screwdriver.

**Removal Procedure**

1. Unplug the AC adapter, if present, and remove the battery.

2. Remove these additional assemblies:

   - Keyboard cover (page 2-9).

   - Keyboard (page 2-11).

   - Display assembly (page 2-18).

   - Top case (page 2-27).

3. Remove the retaining screws from the right hinge saddle, and lift the hinge saddle out of the notebook.

4. Remove the retaining screws from the left hinge saddle, and lift the hinge saddle out of the notebook.

---

**Caution**

Be careful not to damage the volume control PCA (if present) after removing the right hinge saddle. If excessive handling of the bottom case is anticipated, it is recommended that you remove the PCA to avoid accidentally displacing it.

---
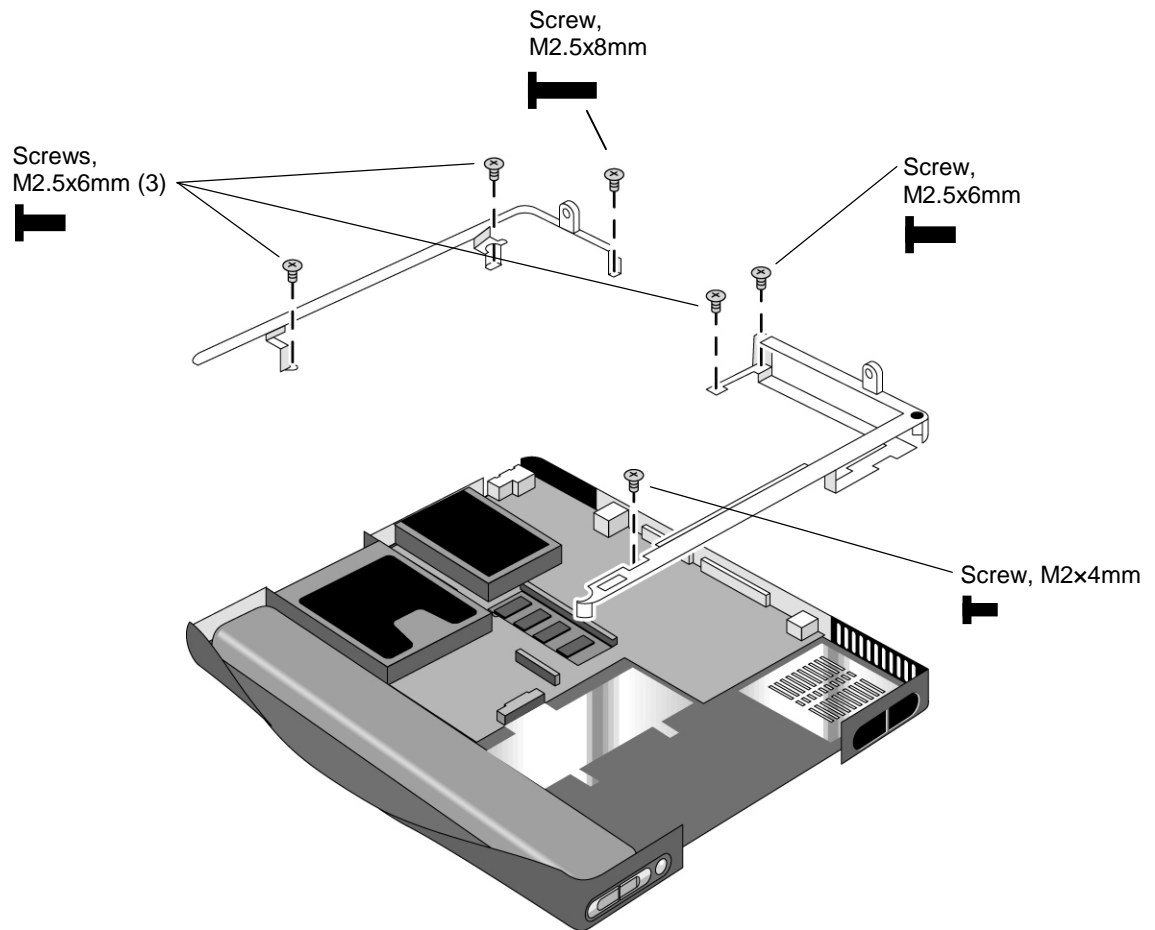
**Figure 2-22. Removing the Hinge Saddles**

**Reassembly Notes**

- Make sure the posts on the underside of the hinge saddles line up with the openings in the bottom case, and that the holes in the front ends of the saddle fit over the alignment posts in the bottom case.

# Removing the Motherboard or Bottom Case
(HP Authorized Service Providers Only)

**Required Equipment**

- #0 Phillips screwdriver.

- .5 mm hex driver

**When Installing a New Motherboard**

Before replacing the motherboard, you must (if possible) electronically store the motherboard's serial number and service ID for transfer to the new motherboard.

1. Exit Windows and boot to a DOS prompt.

2. Run ESN.EXE from one of these sources:

   - On a factory software installation, change to the \hp\drivers\hputils directory and type **esn** at the prompt.

   - Otherwise, copy \hp\drivers\hputils\ESN.EXE from the *Recovery CD*, then run it on the notebook.

3. Store the serial number and service ID as directed.

**Removal Procedure**

1. Unplug the AC adapter, if present, and remove the battery.

2. Remove these additional assemblies:

   - Battery (page 2-4).

   - Plug-in module (page 2-5).

   - Hard disk drive (page 2-6).

   - Keyboard cover (page 2-9).

   - Keyboard (page 2-11).

   - SDRAM modules (page 2-13).

   - Mini-PCI card (page 2-16).

   - Display assembly (page 2-18).

   - Fan and heatsink (page 2-22).

   - CPU module (page 2-25).

   - Top case (page 2-27).

   - Hinge saddles (page 2-30).

3. Remove the retaining screws from the hard disk drive guide, and lift the guide off of the motherboard.

4. Remove the retaining screw from each CD/DVD disk drive guide, and life the guides off of the motherboard.

5. Remove both retaining screws from the motherboard.

6. Remove the four standoffs located near the CPU module.

7. Disconnect the audio PCA and remove it from the motherboard.

8. Lift the front edge of the motherboard slightly, then carefully lift the motherboard forward and out of the bottom case.
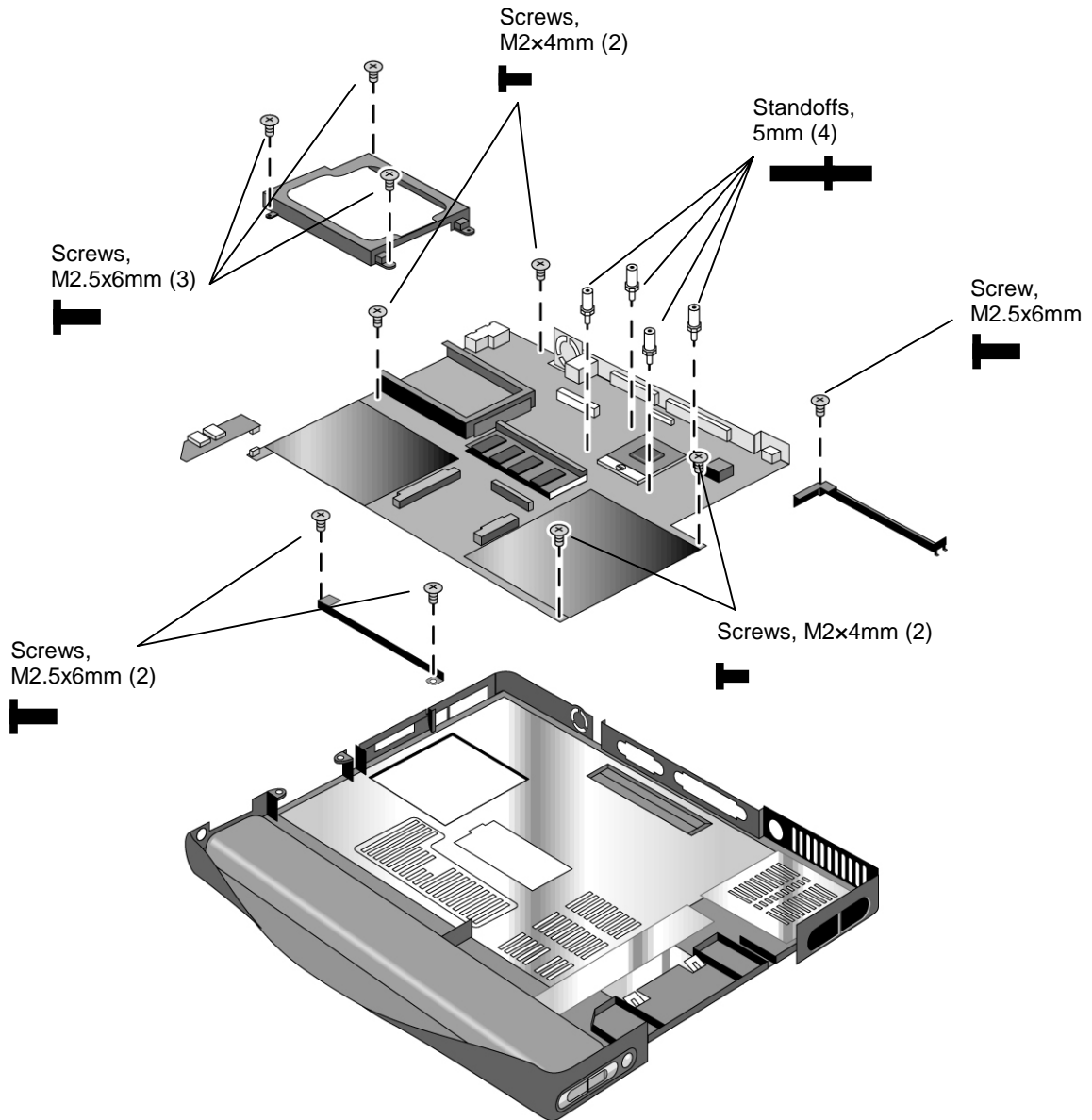


**Figure 2-23. Removing the Motherboard**

**Reassembly Procedure**

- When reinstalling the motherboard, see "Reinstalling the Motherboard" on page 2-34.

- When reinstalling the bottom case, see "Replacing the Bottom Case" on page 2-35.

# Reinstalling the Motherboard

**Reassembly Procedure**

1. Insert the I/O connectors through their openings in the bottom case, then lower the motherboard into place.

2. Make sure the PC card eject button fits into its slot in the bottom case.

3. Make sure the alignment posts in the bottom case—near the CPU module and PC card guide—fit through the corresponding openings in the motherboard.

**When Installing a New Motherboard**

After installing a new motherboard, you must electronically transfer to it the serial number and service ID from the previous motherboard.

1. Exit Windows and boot to a DOS prompt.

2. Run ESN.EXE from the same source you used when saving the serial number and service ID from the previous motherboard:

   - On a factory software installation, change to the \hp\drivers\hputils directory and type **esn** at the prompt.

   - Otherwise, copy \hp\drivers\hputils\ESN.EXE from the *Recovery CD*, then run it on the notebook.

3. Install the serial number and service ID.

   - If you are prompted for the serial number, type the serial number shown on the bottom of the case.

   - If a serial number has already been stored, you must call an HP support center to change it (see page vi).

# Replacing the Bottom Case

**Installation Procedure**

1. Install a new Microsoft Product ID label.

2. Transfer the old serial number label and install a new overlay, or create a new serial number label using the steps on the following page.

3. If you need to install or replace the docking doors or PCMCIA doors, refer to the figures below.
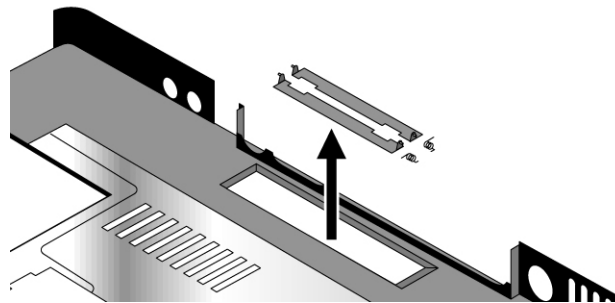


**Figure 2-24. Installing the Docking Doors**
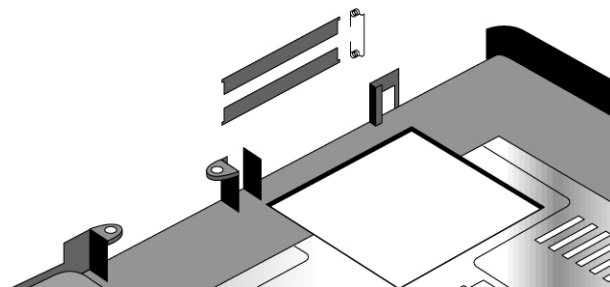


**Figure 2-25. Installing the PCMCIA Doors**

**Installing a New Serial Number Label**

Download the latest version of the serial number label template (Microsoft Word format) from the Partnership Web site (see page vi) under Support/Service in Technical Support Information, or from http://www.mcd.hp.com. Store it with other Word templates on a PC connected to a laser printer. The latest version includes fields for warranty period and manufacturing location.

1. Open a new document based on the serial label template.

2. Enter the information from the old serial label, and print the new label on plain white paper. The new label does not have barcodes.

3. Carefully cut out the new serial label just inside the border and place it into the inner recess in the bottom case. The bottom of the label goes toward the front of the case.

4. While holding the paper label in place, attach a serial label overlay into the outer recess. It covers and protects the serial label.

```
HP Serial Number (S)TW711A1234          1YR

(1P) F2072 W   EA   MFG# TW711A1234

Made in Taiwan
```
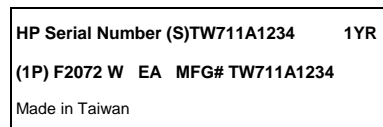
**Figure 2-26. Example of Serial Number Label**

# Removing Notebook Components
## (HP Authorized Service Providers Only)

**Required Equipment**

- #0 Phillips screwdriver.

- Small flat-blade screwdriver.

**Removal Procedure**

1. Unplug the AC adapter, if present, and remove the battery.

2. Remove the assemblies and follow the additional steps given in the table below.

**Table 2-5. Removing Notebook Components**

| Component | Removal Procedure | Additional Steps |
|---|---|---|
| **Antenna, wireless** | See page 2-20. | |
| **Bezel, display** | See page 2-20. | |
| **Card, mini-PCI** | See page 2-16. | |
| **Case, bottom** | See page 2-32. | |
| **Case, top** | See page 2-27. | |
| **Cover, keyboard** | See page 2-9. | |
| **Display assembly** | See page 2-18. | |
| **Doors, docking** | Plug-in module (page 2-5). Hard disk drive (page 2-6). Keyboard cover (page 2-9). Keyboard (page 2-11). SDRAM modules (page 2-13). Mini-PCI card (page 2-16). Display assembly (page 2-18). Fan and heatsink (page 2-22). CPU module (page 2-25). Top case (page 2-27). Hinge saddles (page 2-30). Motherboard (page 2-32). | See Figure 2-24 on page 2-35. |

| Component | Removal Procedure | Additional Steps |
|---|---|---|
| **Doors, PCMCIA** | Plug-in module (page 2-5). <br> Hard disk drive (page 2-6). <br> Keyboard cover (page 2-9). <br> Keyboard (page 2-11). <br> SDRAM modules (page 2-13). <br> Mini-PCI card (page 2-16). <br> Display assembly (page 2-18). <br> Fan and heatsink (page 2-22). <br> CPU module (page 2-25). <br> Top case (page 2-27). <br> Hinge saddles (page 2-30). <br> Motherboard (page 2-32). | See Figure 2-25 on page 2-35. |
| **Fan** | See page 2-22. | |
| **Guide, hard disk drive** | Keyboard cover (page 2-9). <br> Keyboard (page 2-11). <br> Display assembly (page 2-18). <br> Top case (page 2-27). | Remove the retaining screws, and lift the guide off of the motherboard. |
| **Guides, optical disk drive** | Keyboard cover (page 2-9). <br> Keyboard (page 2-11). <br> Display assembly (page 2-18). <br> Top case (page 2-27). | Remove the retaining screw on each guide, and lift the guides off of the motherboard |
| **Heatsink** | See page 2-22. | |
| **Keyboard** | See page 2-11. | |
| **Module, CPU** | See page 2-25. | |
| **PCA, Audio** | Keyboard cover (page 2-9). <br> Keyboard (page 2-11). <br> Display assembly (page 2-18). <br> Top case (page 2-27). <br> Hinge saddle, left (page 2-30). | Carefully lift the PCA off of its connector, gently pull the audio jacks out of their openings in the bottom case, and lift the PCA out of the notebook. <br><br> **Reassembly Notes:** Make sure that the audio jacks fit through their openings in the bottom case, and the PCA is set securely on its connector. |
| **PCA, inverter** | See page 2-20. | |
| **PCA, Modem/Mini-PCI** | See page 2-15 | |
| **PCA, motherboard** | See page 2-32. | |

| Component | Removal Procedure | Additional Steps |
|---|---|---|
| **PCA, volume control** | Keyboard cover (page 2-9).<br>Keyboard (page 2-11).<br>Display assembly (page 2-18).<br>Top case (page 2-27).<br>Hinge saddle, right (page 2-30). | Carefully lift the PCA off of its connector and out of the notebook. |
| **Saddles, hinge** | See page 2-30. | |
| **Socket, PCMCIA** | Plug-in module (page 2-5).<br>Hard disk drive (page 2-6).<br>Keyboard cover (page 2-9).<br>Keyboard (page 2-11).<br>SDRAM modules (page 2-13).<br>Mini-PCI card (page 2-16).<br>Display assembly (page 2-18).<br>Fan and heatsink (page 2-22).<br>CPU module (page 2-25).<br>Top case (page 2-27).<br>Hinge saddles (page 2-30).<br>Motherboard (page 2-32). | Remove the four screws (M2x3.5) attaching the PCMCIA socket to the motherboard, and remove the socket. |
| **Speaker, left** | See page 2-18. | |
| **Speaker, right** | See page 2-22. | |
| **Tray, hard disk drive** | See page 2-7. | |

# 3

# Troubleshooting and Diagnostics

This chapter includes troubleshooting and diagnostic information for testing the functionality of the notebook, and for identifying faulty components:

- Troubleshooting information
  - ☐ Checking for customer abuse (page 3-3).
  - ☐ Troubleshooting the problem (page 3-4).
  - ☐ Verifying the repair (page 3-4).
  - ☐ Suggestions for troubleshooting (page 3-5).
- Diagnostic tools
  - ☐ e-DiagTools diagnostic program (page 3-22).
  - ☐ Power-on self-test (page 3-25).
  - ☐ Sycard PCCtest 450 PC Card (page 3-26).
  - ☐ BIOS configuration utility (page 3-27).

# Troubleshooting

The suggestions in this section can help isolate and repair the cause of a problem. To ensure quality repairs, follow the basic troubleshooting steps shown below.

```
                    ( )
                     |
                     v
      +-------------------------------+
      | Check the customer's          |
      | description of the problem    |
      | and any supporting            |
      | information.                  |
      +-------------------------------+
                     |
                     v
      +-------------------------------+
      |                               |
      | Check for customer abuse.     |
      |                               |
      +-------------------------------+
                     |
                     v
      +-------------------------------+
      | Try to duplicate the          |
      | customer's problem.           |
      |                               |
      +-------------------------------+
                     |
                     v
      +-------------------------------+
      | Troubleshoot the problem      |
      | using:                        |
      |   - Diagnostic tools.         |
      |   - Troubleshooting           |
      |     suggestions.              |
      +-------------------------------+
                     |
                     v
      +-------------------------------+
      | Verify the repair by testing  |
      | the functionality of the      |
      | complete unit.                |
      +-------------------------------+
                     |
                     v
                    ( )
```
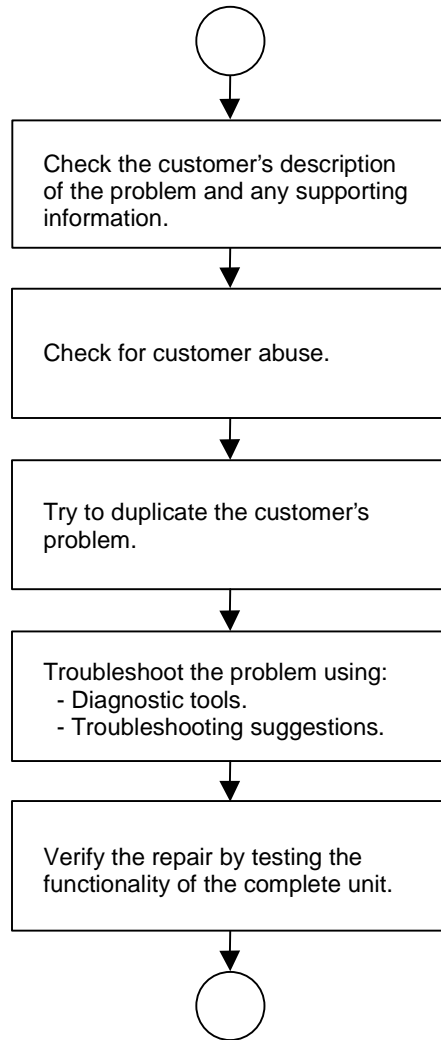
**Figure 3-1. Basic Troubleshooting Steps**

# Checking for Customer Abuse

Some units may appear to have been damaged by customer abuse. Use these guidelines to help determine if this is the case:

- If the shipping box is seriously damaged, customer abuse *cannot* be declared.

- If the damage *could have* a cause other than customer abuse, customer abuse *cannot* be declared.

- If the unit shows any of the following, customer abuse is declared:

  □ Missing parts.

  □ Broken plastic parts.

  □ Parts not original to the unit.

  □ Damaged or missing keys on the keyboard.

Table 3-2 on page 3-5 includes additional criteria for determining customer abuse to specific parts of the unit.

---

**Important**

Parts damaged by customer abuse are not covered by the warranty.

---

# Troubleshooting the Problem

Record pertinent information about the notebook:

- Model and serial number.

- Operating system and version.

- Software version (hidden file c:\version.inf).

- BIOS version.

- Accessories and peripherals used.

Analyze the problem:

- **Observe Symptoms.** Using the customer's information, try to duplicate the problem. Determine how the problem differs from proper behavior. Also, note the functions that *do* work properly.

- **Separate Problems.** If there is more than one symptom, separate them into distinct problems.

- **Consider Causes.** Keep in mind possible causes for each problem. Use the diagnostic tools and troubleshooting suggestions to help find the possible causes.

  - The e-DiagTools diagnostic program tests most of the notebook's components using automatic and interactive tests, and will be your primary troubleshooting tool. Other tools include the power-on self-test, the BIOS configuration utility, and the Sycard PCCtest. Table 3-1 on page 3-5 shows how you can use these tools to isolate the cause of the notebook's problem.

  - The troubleshooting suggestions on page 3-5 include general suggestions for repairing units that show specific failure symptoms.

Swapping modules that may be defective with others known to be good is generally an ideal way to find the module responsible for the problem. A failure symptom is rarely caused by more than one module, so you will not usually need to replace more than one to correct a particular failure.

After you replace a module, the notebook will normally be in a confused state and lock up when you apply power. If this happens, press the reset switch: this resets the notebook, so that you can restart it in a known state.

# Verifying the Repair

Before returning the repaired notebook to the customer, verify the repair by running the following tests:

- **e-DiagTools Basic Diagnostic Test.** Run the basic test of the e-DiagTools diagnostic program (page 3-22).

  –and–

- **Function Tests.** Run tests that check the repaired function, such as in the e-DiagTools diagnostic program (page 3-22).

  –and–

- **Failed Tests.** Run any other tests that failed during troubleshooting.

# Suggestions for Troubleshooting

**Table 3-1. Scope of Diagnostic Tools**

| Function | e-DiagTools | Power-on self-test | Sycard PCCtest 450 | BIOS |
|---|---|---|---|---|
| **Bootup** | | Tests | | Configures |
| **Processor** | Tests | Tests | | |
| **Memory** | Tests | Tests | | |
| **Fan** | Tests | | | |
| **Batteries** | | Tests (CMOS battery only) | | <F6> at boot to calibrate |
| **Display** | Tests | | | |
| **Hard disk** | Tests | Tests | | |
| **Keyboard** | Tests | Tests | | |
| **Parallel** | Tests | | | |
| **LAN** | Tests | | | |
| **Modem** | Tests | | | |
| **PCMCIA/ PC Cardbus** | Tests | | Tests † | |
| **CD/DVD drive** | Tests | Tests (with boot CD) | | |
| † Use an appropriate external device to exercise the port. See the help text for the tests. | | | | |

If you cannot isolate the cause of a problem using the above diagnostic tools, use the suggestions in the following table to help find the problem.

**Table 3-2. Troubleshooting Suggestions**

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---|---|---|---|
| To help determine likely causes, check to see what replaceable modules are involved in the system function and what roles they play. See Figure 1-8 on page 1-14 and Table 1-6 on page 1-15. | | | |
| **Startup** | | | |
| Does not boot on battery, but boots on AC. | Make sure battery is properly installed and fully charged. Check battery contacts. If available, try another battery. | Battery or contacts. Motherboard. | |
| Does not boot from CD in CD/DVD drive. | Make sure CD is bootable. Use BIOS configuration utility to check boot order. Restart notebook. | CD/DVD drive. Motherboard. | |
| Sluggish startup or shutdown. | Check disk using Tools tab in disk's Properties sheet, and use Disk Defragmenter to optimize hard drive. Delete temporary and unneeded files. | Hard drive. | Use suggestions shown at left. |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---------|--------------------------|------------------------------|-------------------------|
| Does not boot on AC or battery. | Check power source.<br>Press reset switch to reset notebook, then press power button to turn notebook on.<br>Unplug AC adapter, remove battery and any PC cards, then reconnect power and try again.<br>Do not use touch pad while booting or resuming.<br>Remove battery, AC adapter, and any PC cards. Plug in AC adapter, reset notebook using reset switch, then press power button to turn notebook on.<br>Remove all but one SDRAM module and try again. Reinsert any other SDRAM modules and try again. | AC adapter.<br>SDRAM module.<br>CPU module.<br>Motherboard.<br>Display assembly.<br>Hard drive. | Check AC adapter. Remove any SDRAM modules and try again.<br>If power status light does not turn on, replace top case.<br>If power status light turns on but display remains off, try external monitor. If monitor shows successful boot, replace display assembly. If monitor shows activity but BIOS does not complete, replace display assembly. If monitor is blank, replace motherboard.<br>If power status light and display turn on and BIOS completes, but OS does not start from hard disk or from floppy drive, replace CPU module, then motherboard. If OS starts from floppy drive, use *Recovery CDs* to reinstall factory software onto hard drive; replace hard drive. |
| Beeps once, spins hard disk, repeats, but does not boot. | | SDRAM module. | Make sure at least one SDRAM module is installed. |
| Error message such as "Invalid system disk" or "Auto IDE error". | Check for disk in floppy drive.<br>Check boot order using BIOS configuration utility.<br>Remove and reinstall hard drive. | Hard drive contacts.<br>Hard drive. | If notebook boots from floppy drive, check for corrupt files on hard drive; use *Recovery CDs* to reinstall factory software onto hard drive; replace hard drive. |
| Password forgotten. | Verify proper ownership, then follow removal procedure with owner and record appropriate data. See page 5-1. | | User must call Technical Support and provide proof of ownership. Password removal is restricted to certain sites. See page 5-1. |
| **Power/Battery** | | | |
| No power. | Make sure charged battery is installed or AC adapter connected.<br>Try another battery or AC adapter if available. | AC adapter.<br>Battery.<br>Motherboard. | |
| Does not run on battery; empty battery indication. | Check battery and contacts. Try another battery if available. | Battery or contacts.<br>Motherboard. | |
| Beeps repeatedly. | Notebook beeps repeatedly when battery is low. Connect AC adapter or replace battery. | Battery. | |
| Notebook turns off immediately after turning on. | Battery is probably extremely low. Connect AC adapter or replace battery. | Battery. | |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---|---|---|---|
| Battery does not charge. | Make sure AC adapter is connected properly and battery installed properly. Check battery contacts. If available, try another battery and AC adapter. Move notebook away from any nearby heat source. Unplug AC adapter and allow battery to cool down. Check for blocked air vents. | Battery or contacts. AC adapter. Motherboard. Fan. Heatsink. | Check battery and AC adapter. Check fan and heatsink. |
| AC adapter does not power notebook. | Try another AC adapter, if available. | AC adapter. Motherboard. | AC adapter cannot be repaired, and must be replaced. |
| Notebook has short operating time. | Turn down display brightness. Check timeout settings in Power Options in Control Panel. Battery gauge may need calibration. Restart notebook, press F6 when HP logo appears, and follow onscreen instructions. This calibrates the battery, and requires four to five hours. You cannot use notebook during this process. Certain applications can cause excess CPU and power usage. (Users can get Intel Power Monitor from www.intel.com and monitor CPU load.) When playing DVD movies on battery power, use Power Options in Control Panel to select Portable/Laptop power scheme. When using applications with automatic save feature (such as MS Word), extend save time or disable to reduce hard disk access and power usage. PCMCIA card use can affect battery life. Some PCMCIA cards draw power even while not in use. Heavy modem use can affect battery operating time. | Battery. Motherboard. | Rechargeable batteries tend to degrade over time. Appropriate battery training and calibration is required for maximum battery life. Battery life may vary depending on notebook model. Approximate battery life by type (depending on usage and battery calibration): • 8-cell LiIon: up to 3.5 hrs. • 6-cell LiIon: up to 2.5 hrs. • 8-cell NiMH: up to 2 hrs. |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---------|--------------------------|------------------------------|--------------------------|
| Battery indicator is inaccurate. | Time Remaining is an estimate based on how much power the notebook is using at that moment. It therefore depends on the current task, and assumes power will be used at the same rate until the battery runs out. So, for example, if the notebook is performing a task requiring a good deal of power (such as reading from a CD or DVD), the value will probably show too little time remaining. | | |
| **Standby/resume** | | | |
| General problems | Close all applications before entering (or allowing notebook to enter) standby or hibernation.<br>If problem appears after installing new software (including drivers), uninstall that software. Contact software vendor for additional support. | | |
| Notebook resumes slowly from standby | Notebook can take a minute or longer to resume if network card is installed. Blinking cursor appears while system is loading and checking hardware and network connections. When hardware is reinitialized, Windows desktop appears. | | |
| Does not go on standby as expected. | The notebook won't suspend if it has an active connection to another computer.<br>If the notebook is busy, it normally waits to finish the current operation before suspending. | | |
| Does not automatically enter hibernation as expected. | Make sure hibernate support is enabled in Power Options in Control Panel. Also, make sure the hibernate timeouts (Power Schemes tab) for AC and battery power are not set to Never. | | |
| Notebook with Bluetooth won't enter standby or hibernation. | Disable Bluetooth. If Bluetooth device is transmitting, notebook may not be able to enter standby or hibernation. | | |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---|---|---|---|
| **Display** | | | |
| Dark display, no light. | Make sure notebook is turned on and warmed up. Check power supply. Adjust display brightness. Press Fn+F5 several times. Make sure SDRAM modules are installed properly. Make sure display cables are properly connected. Make sure CPU module is installed properly. Try external monitor. | Display cable connection. SDRAM modules. CPU module. Display assembly. Motherboard. | Check cable connections. Replace SDRAM modules. Replace CPU module. Replace display assembly. If external monitor displays no image, replace motherboard. |
| White display. | Adjust display brightness. | Display assembly. | |
| Erratic display. | | Display cable connection. Display assembly. Motherboard. | Check display cable connection. |
| Bright or missing pixels or lines. | See quality statement on page 5-2. | Display cable connection. Display assembly. | Check display cable connection. See quality statement on page 5-2. |
| Punctured display. | | | Declared to be caused by customer abuse. |
| Vertical crack near center of display. | | Usually caused by closing display with pencil-sized object on keyboard. | Declared to be caused by customer abuse. |
| Scratched display glass. | | | Declared to be caused by customer abuse. |
| Local area of dark or light discoloration visible when display is on. | | Caused by excessive pressure applied to area on screen. | Declared to be caused by customer abuse. |
| External display does not work. | Check connections. Press Fn+F5 several times. Try display on another computer. | External display. Motherboard. | |
| Display difficult to read or part of desktop not visible. | Check display resolution (default is 1024 × 768). Use HP Desktop Zoom to adjust size of desktop icons and labels. | | |
| Cannot switch to TV display by pressing Fn+F5 | Fn+F5 switches only between internal LCD and external display connected to VGA port, and will not switch to TV display connected to TV output port. | | |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---|---|---|---|
| If you cannot change the display resolution or color depth while playing a DVD or a video file in AVI or MPEG format | Set display resolution and color depth before starting DVD or video file player. You cannot change these settings once player is started. | | |
| If a DVD or a video file in AVI or MPEG format doesn't play with two displays | Before starting DVD or video file player, press Fn+F5 to switch to one display. You cannot switch displays once player is started.<br><br>If using both displays, DVD or video image will not appear on any display set up as "secondary". Click Start, Control Panel, Appearance and Themes, Display. Click Advanced on Settings tab, then click S3Display tab and change settings. | | |
| Display problems while using a TV set as a monitor | Notebook's S-video (TV-out) port is optimized for DVD display. Performance may vary when using S-video port for other applications.<br><br>Before using TV set as monitor, switch notebook's display resolution to 800 by 600 pixels:<br><br>1. Connect video cable from TV set to notebook's S-video port.<br>2. Turn on TV.<br>3. Click Start, Control Panel, Appearance and Themes, Display, Settings, then click Advanced button.<br>4. On S3Display tab, select TV as Display Device, then click OK.<br>5. Set screen resolution to 800 by 600 pixels, then click OK. | | |
| **Hard disk** | | | |
| Hard disk never spins. | Check power source.<br>Remove and reinstall hard drive. Check connector. | Hard drive or connector.<br>Motherboard. | If drive case is damaged, drive may not operate properly. |
| Hard disk makes clunking or scratching noise. | Back up drive immediately.<br>Was notebook or drive dropped? | Hard drive. | Check notebook and drive for evidence of customer abuse. |
| Hard disk makes buzzing or whining noise. | Back up drive immediately.<br>Check hard drive installation.<br>Check for alternate noise sources, such as PCMCIA drive or fan. | Depends on source of noise. | |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---|---|---|---|
| Files are corrupted. | Run virus scan program.<br>Check disk using Tools tab in disk's Properties sheet.<br>Back up files if possible, then use *Recovery CDs* to reformat hard disk and reinstall factory software. | | Use suggestions shown at left. |
| Disk capacity is less than normal. | Check disk using Tools tab in disk's Properties sheet.<br>Check partitions using Control Panel, Administrative Tools, Computer Management under Storage.<br>Use *Recovery CDs* to reformat hard disk and reinstall factory software. | Hard drive. | Use suggestions shown at left. |
| Disk's reported capacity is less than actual size | Hard disk allocates space to diagnostic software. This space is unavailable for other uses, and not included hard disk capacity reported by Windows. | | |
| **CD/DVD drive** | | | |
| Particular CD or DVD not playing properly. | Check disk for proper insertion, dirt, or damage. Clean with soft cloth or replace as needed.<br>If CD was created on CD-RW drive, try using HP certified media. Read and write quality may vary for other media. | | |
| Cannot read any CD or DVD. | Restart the notebook.<br>Make sure the CD/DVD drive is inserted properly. | CD/DVD drive. | |
| DVD movie stops playing. | DVD may be double-sided.<br>Movie may be paused. Press Play button. | | |
| Region Code error. | DVDs contain embedded regional codes that prevent them from playing outside the region in which they are sold. This error occurs when trying to play DVD intended for different region.<br>**Important:** most DVD drives allow region code to be changed only a limited number of times (usually no more than four). When this limit is reached, the last change is hard-coded on the DVD drive, and is permanent. Refer to the DVD player software help for details. | | HP warranty does not cover expense of correcting this situation. |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---|---|---|---|
| "System Error: Unable to read drive" message. | Make sure disk is clean, undamaged, and inserted correctly. Clean with soft cloth or replace as needed.<br>Wait 5 to 10 seconds after closing tray before pressing Play.<br>Restart notebook.<br>Make sure CD/DVD drive is installed properly. | CD/DVD drive.<br>Motherboard. | |
| DVD doesn't play with two displays | Before starting DVD player, press Fn+F5 to switch to one display. You cannot switch displays once DVD player is started.<br>If using both displays, DVD image will not appear on any display set up as "secondary". Open Display in Control Panel, click Advanced on Settings tab, and change settings. | | |
| Problems with display resolution or color when playing DVDs | Set resolution or color depth before starting DVD player. You cannot change these once DVD player is started.<br>Some combinations of color depth and resolution not supported in DVD playback. If needed, reduce color depth or display resolution. | | |
| No DVD or CD-RW software on notebook | CD/DVD drive module may not have been properly installed first time notebook was booted. Make sure drive is correctly installed, and use *Recovery CDs* to reinstall factory software. | | |
| All DVD play is erratic | Some DVDs include software called "PC Friendly". This software can cause errors or erratic play. If needed, uninstall PC Friendly and restart notebook. | | |
| **Keyboard** | | | |
| Some or all keys do not work properly. | Try reinserting ribbon cable in connector on motherboard. | Keyboard.<br>Motherboard. | |
| External keyboard does not work. | Check connections. | External keyboard.<br>Motherboard. | |
| Embedded numeric keypad does not work. | Press Fn+F8 to activate numeric keypad, and Lock key to turn on number lock.<br>Avoid touching touch pad while booting or resuming. | Keyboard.<br>Motherboard. | |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---|---|---|---|
| **Touch pad** | | | |
| General problems. | Restart notebook. Press and hold power button four seconds to reset notebook. Avoid touching touch pad while booting or resuming. Check settings in Control Panel. | Top case. Motherboard. | |
| Click button does not work. | | Top case. Motherboard. | |
| **Memory** | | | |
| Out of memory error. | Make sure C drive is not running out of free space. Use memory troubleshooter in Windows Help. Not all third-party memory cards have been tested for use with notebook. Check HP Notebook Web site for list of approved memory cards. | SDRAM module. | |
| Memory doesn't increase after adding SDRAM | Use only PC133 or higher SDRAM modules. | SDRAM module. | |
| **Audio** | | | |
| No sound is audible. | Increase sound volume. Make sure sound is enabled (software controls). Check for sound resource conflicts in Device Manager. Sound may not operate properly in MS-DOS mode. Check speaker cable connections. | Speakers. Motherboard. | Check operation using headphones or external speakers. |
| Built-in microphone does not record. | Check software controls for recording sound. Make sure display assembly is connected properly. | Display assembly. Motherboard. | Check operation using external microphone. |
| Feedback from speakers. | Reduce sound volume. In Volume Control, click Options, Properties, select Playback, and enable microphone. Then make sure microphone is muted. | | |
| PC card detection beep at startup is loud and cannot be adjusted. | Download latest audio driver from technical support area of HP Notebook Web site (see page vi). | | |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---|---|---|---|
| **Parallel/USB** | | | |
| General problems. | Check connections. Restart notebook. Check port settings in Device Manager. Check settings in Control Panel. Use troubleshooters in Windows Help. For USB: contact device vendor and HP Notebook Web site (see page vi) for latest USB drivers. For USB: if the device is powered by the USB port, try the other port. | Parallel/USB device. Motherboard. | Use loop-back connector when testing parallel port— see page 3-24. |
| Does not boot from external USB floppy drive. | Make sure floppy disk is bootable. Make sure floppy drive is connected correctly. Use BIOS configuration utility to check boot order. | Floppy drive. Motherboard. | |
| **Modem** | | | |
| Modem will not connect at 56K. | Verify that host modem supports 56K (V.90) connection speed. Try connecting later in case line quality or other external factor is cause of problem. | | |
| Modem doesn't dial or no dial tone. | Check all cables and connections. Connect a standard telephone to the phone line and make sure the line is working. Try another telephone line, preferably one used for a fax machine or modem. If you're in a foreign country, the dial tone may not be recognized by the modem. In Control Panel, disable option that waits for dial tone. Phone message recording services provided by phone companies use "broken dial tone" to indicate waiting message. This can prevent notebook from detecting dial tone. | Mini-PCI card. Motherboard. | |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---|---|---|---|
| Modem will not connect at any speed. | Make sure notebook's modem is properly connected to wall telephone jack. Check cables. <br><br> Verify settings in Control Panel. Make sure parity, speed, word length, and stop bits match on sending and receiving modems. <br><br> Restart notebook. <br><br> Run Windows modem diagnostics or modem troubleshooter in Windows Help. <br><br> Open Device Manager. If modem is disabled, enable it. If it has a conflict, try disabling another device. <br><br> Use analog telephone line, not PBX or digital line. In a hotel, ask for data line. <br><br> Try disabling error correction and data compression. <br><br> Download latest modem driver from technical support area of HP notebook Web site (see page vi). | Mini-PCI card. <br> Motherboard. | |
| Modem dials incorrectly. | Check number you entered, including digits required for outside access or long distance. <br><br> Check dialing options in Control Panel—look for duplicate digits for outside access or long distance. <br><br> In foreign country, modem may not recognize dial tone. In Control Panel, disable option that waits for dial tone. <br><br> Disable call-waiting. | | |
| Modem seems slow. | Check for excess line noise or static (often difficult to eliminate on international calls). Contact telephone company if needed. <br><br> Disable call-waiting. <br><br> Eliminate extra connections in the line. If possible, connect directly to wall jack. <br><br> Try another telephone line, preferably one used for a fax machine or modem. | Mini-PCI card. | |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---|---|---|---|
| Modem isn't detected. | Check modem setup in Control Panel. Check COM port.<br><br>Open Device Manager. If modem is disabled, enable it. If conflict exists, try disabling another device.<br><br>If running fax software using fax Class 2, try Class 1. | Mini-PCI card.<br>Motherboard. | |
| Modem connects, but transferred data is bad. | Verify settings in Control Panel. Make sure parity, speed, word length, and stop bits match on sending and receiving modems.<br><br>Disable error correction and data compression. | Mini-PCI card. | |
| Modem doesn't fax. | If using fax Class 2 in fax software, try Class 1.<br><br>Close any other communications programs.<br><br>If faxing by printing from application, make sure fax printer is selected.<br><br>Turn off power management features temporarily. | | |
| General problems. | If PC card modem is not working, disable internal modem in Control Panel.<br><br>Download latest modem driver from technical support area of HP Notebook Web site (see page vi). | Mini-PCI card.<br>Motherboard. | |
| **One-Touch button problems** | | | |
| Buttons not working properly. | Make sure correct applications are associated with buttons in One-Touch tab of Keyboard in Control Panels. | Keyboard cover.<br>Keyboard cover PCA.<br>Motherboard. | |
| On-screen display does not appear when button is pressed. | Make sure Onscreen Display is enabled in One-Touch tab of Keyboard in Control Panels. | | |
| **Printing** | | | |
| Printer doesn't print | Make sure printer is on.<br><br>Make sure printer cable is securely attached at both ends.<br><br>Make sure cable or cable adapter is appropriate for printer type.<br><br>Use print troubleshooter in Windows Help. | Cable.<br>Motherboard. | |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---------|--------------------------|------------------------------|--------------------------|
| **LAN/Network** | | | |
| General problems. | Check cables and connections. Try connecting notebook to another network station (if applicable). Try connecting cable to another computer or network station. If green light next to LAN port does not light, LAN cable may not be connected to network or network may be down. Check settings in Device Manager. If network adapter is disabled, enable it. If conflict exists, try disabling another device. Use networking troubleshooter in Windows Help. Make sure LAN cable is Category 3, 4, or 5 for 10Base-T operation, or Category 5 for 100Base-TX operation. Maximum cable length is 100 m (330 ft). | Mini-PCI card. Motherboard. | |
| Can't browse My Network Places | Check with network administrator to make sure network supports NetBEUI protocol. Use Windows Search to locate computer on network. | | |
| Can't log in to Netware servers. | If Netware server uses IPX/SPX protocol, may need to force frame type to match server's frame type. Check with network administrator. | | |
| Notebook stops responding after booting | If using a TCP/IP network with no DHCP server, long delay can occur at startup because DHCP is enabled. Contact network administrator for proper TCP/IP configuration. | | |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---------|--------------------------|------------------------------|-------------------------|
| **Infrared** | | | |
| General problems. | Make sure correct drivers are installed. In Device Manager, double-click Infrared devices, then double-click IrDA Fast Infrared Port. On Advanced tab, click Infrared Transceiver A in Property window, then select IBM 31T1100 from pull-down menu. Make sure the line between the two infrared ports is not blocked, ports face each other squarely and are no more than 1 meter apart. Sunlight, heat from nearby equipment, or other sources of infrared radiation can cause transmission errors. Make sure only one application is using infrared port. Remove any PC Cards from notebook (possible IRQ conflict). For fast-IrDA, check for DMA conflict with ECP parallel port. | Motherboard. | |
| **Wireless** | | | |
| General problems. | Check TCP/IP setup in Control Panel. Check SSID and channel settings: click wireless link icon in taskbar and select Advanced Configuration. Stop USB devices that may perform large data transfers, or adjust application settings to reduce transfer rate. Make sure wireless PCA and antenna are installed properly. | Display assembly. Wireless PCA. Antenna. Motherboard. | |
| Notebook with Bluetooth won't enter standby or hibernation. | Disable Bluetooth. If Bluetooth device is transmitting, notebook may not be able to enter standby or hibernation. | | |

| Symptom | Call Center:<br>Suggestions | Repair Center:<br>Likely Causes | Repair Center:<br>Comments |
|---|---|---|---|
| **PC card** | | | |
| Miscellaneous problems. | Remove and reinsert PC card.<br>Restart notebook.<br>Try card in other slot or in another computer.<br>Check for conflicts or refresh device list in Device Manager. If card requires an IRQ, make sure one is available.<br>Check HP Notebook Web site for installation instructions and information about supported PC cards (page vi).<br>Download current drivers from card manufacturer's Web site. | PC card.<br>PCMCIA socket.<br>Motherboard. | Using a flashlight, look for bent pins inside PCMCIA socket.<br>If both slots have problems, replace motherboard. If only one slot has a problem, try replacing PCMCIA socket. |
| Data loss. | Stop PC card before removing it to avoid data loss. | | |
| PC card modem not working. | Disable internal modem. | | |
| **Video file playback** | | | |
| AVI or MPEG file doesn't play with two displays. | Before playing, press Fn+F5 to switch to one display. Cannot switch displays after play begins.<br>If using both displays, video image will not appear on any display set up as "secondary". Open Display in Control Panel, click Advanced on Settings tab, and change settings. | | |
| Resolution or color depth problems when playing an AVI or MPEG file. | Set the resolution or color depth before starting the video file player. You cannot change these settings after play begins.<br>Some combinations of color depth and resolution are not supported in video file playback. If you receive an error message, reduce color depth or display resolution. | | |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---|---|---|---|
| **Performance** | | | |
| Notebook still on but stops responding. | Press Ctrl+Alt+Del and end any application not responding. <br><br> Press and hold the power button four seconds to turn off and reset notebook, then press the power button to turn the notebook back on. <br><br> If this fails, use a pen to press reset switch, then press power button to turn notebook back on. | | |
| Notebook pauses or runs sluggishly. | May be normal Windows behavior (background processing can affect response time). <br><br> Certain background operations (such as virus scanning software) can affect performance. <br><br> Press Ctrl+Alt+Del to see if an application is not responding. <br><br> Restart notebook. <br><br> If hard disk has spun down to conserve power, it can take several seconds to spin up. If needed, use Power Options in Control Panels to change hard disk time-out to match standby time-out. <br><br> Some file browsers respond slowly while processing graphics or waiting for broken network connections to time out. <br><br> Check for overheating—see previous symptom. <br><br> If notebook's hard disk drive runs frequently (as indicated by notebook's hard disk drive access light) while notebook appears to be paused or running slowly, consider installing additional SDRAM. <br><br> Check available free disk space. Delete temporary and unneeded files. | Fan. <br> Heatsink. <br> CPU module. <br> Motherboard. | If notebook slows after period of continuous activity, check heatsink—see previous symptom. |

| Symptom | Call Center: Suggestions | Repair Center: Likely Causes | Repair Center: Comments |
|---|---|---|---|
| Notebook gets abnormally hot. | Always set notebook on a flat surface, so air can flow freely around and underneath.<br><br>Make sure air vents are clear.<br><br>Check fan and heatsink installation.<br><br>Games and other programs that drive CPU usage toward 100% can contribute, as can charging battery. | Fan.<br>Heatsink. | Check fan and heatsink for proper operation or damage. |
| Clock loses time. | Plug in AC adapter for 24 hours to charge CMOS battery. | Motherboard. | |

# Diagnostic Tools

This section describes the following diagnostic tools you can use for troubleshooting and repairing the notebook:

- e-DiagTools diagnostic program (below).

- Power-on self-test (page 3-25).

- Sycard PCCtest 450 PC Card (page 3-26).

- BIOS configuration utility (page 3-27).

## e-DiagTools Diagnostic Program

The e-DiagTools hardware diagnostic program provides two levels of testing:

- Basic user-level hardware test.

- Advanced individual hardware tests.
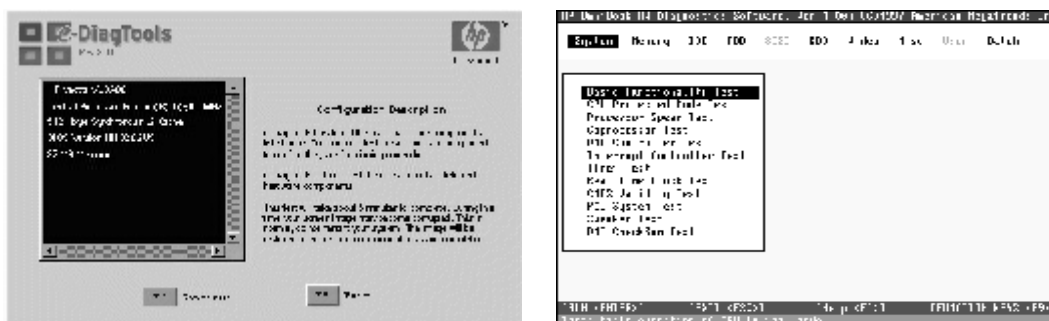


**Figure 3-2. e-DiagTools Screens — Basic and Advanced**

The tests are designed to run after the system restarts, so that the notebook will be in a predictable state during the tests. The tests are non-destructive, and are intended to preserve the state of the notebook. The notebook restarts when you exit the program so drivers can be loaded.

### Updating e-DiagTools

You can download the latest version of e-DiagTools from the HP Notebook Web site (see page vi). Follow the instructions included with the new version.

**Running e-DiagTools**

1. Restart the notebook: click Start, Turn Off Computer, Restart.

2. When the HP logo appears, press F10 to start the diagnostic test.

3. When the menu appears, press F2 to run e–DiagTools.

   The first time you run the program, you are prompted to select the language for the program.

4. When the Configuration Description appears, verify the list of detected hardware.

---

**Note**

If a device is not detected or fails its test, it might be configured incorrectly in BIOS. You can confirm this by running the BIOS configuration utility and checking the settings—see "BIOS Configuration Utility" on page 3-27.

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5. Run the basic test. Press F2 to start the basic hardware test. The results appear when the test is complete.

   You can also proceed directly to the advanced tests from this point by pressing Ctrl-F9 (in which case skip to step 10, below). ??still true??

   If the basic test fails, you can press F6 and start a Wizard that runs a set of advanced tests for the failed component. Then generate a support ticket. ??still true??

6. **Optional: Run the advanced tests.** Press F2 to open the advanced test screen.

7. Use the arrow keys and ENTER to select the tests that you want to run. Tests are listed only for detected hardware.

   If a test fails, the error code and description are logged, and the error code is displayed temporarily. If several errors occur, look for patterns that might indicate a common cause.

8. Press F2 to run the selected tests and add the results to the Support Ticket.

9. Press F12 to run the selected tests in a loop until you press ESC. When running advanced tests in a loop, ESC does not stop all tests immediately.

10. After each run, press F2 to go back to the advanced tests screen, press F4 to view the support ticket, or press F3 to exit.

**Viewing the support ticket**

1. In Windows, click Start, All Programs, Hewlett-Packard, Notebook, HP e–DiagTools, e–DiagTools for Windows.

2. Click View to display the Support Ticket.

3. To add information about your problem, click Comments and type the information, then click OK.

   To save or print the Support Ticket, click Save As or Print.

---

Note that the parallel port test is more thorough if you connect a loop-back connector to the port before running the test. See the wiring diagrams below.
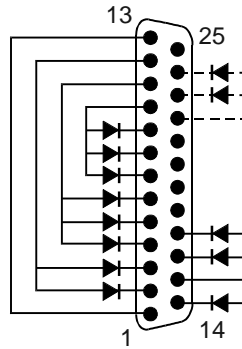


**Figure 3-3. Parallel Loopback Connector**

## Interpreting the Results

The e-DiagTools diagnostic program returns test groups, error codes, and suggestions for repair and/or follow-up actions. Consider these suggestions in combination with other troubleshooting information in servicing the notebook.

# Power-On Self-Test

The POST (Power-On Self-Test) is a series of initialization routines and diagnostic tests that the system BIOS runs when the notebook boots. The system BIOS will not boot the operating system if system memory, the CPU, DMA, or interrupt controller fails the POST diagnostic tests. POST progress is indicated by a sequence of codes, and error messages are displayed if possible.

You should not necessarily interpret the failure of one or more POST tests as a hardware, software, or firmware failure. If an error message appears, *confirm the problem using other diagnostic tools.* Not all POST messages indicate a hardware, software, or firmware failure—some messages are for information only.

First, confirm the failure by performing a "clean" boot, as described below: If the notebook fails to restart with a clean boot, it requires repair.

1. Remove all accessories, including SDRAM modules, PC cards, printer, external monitor, pointing device, and keyboard.

2. Provide "clean" AC power—no auto adapter or unusual AC adapter configuration.

3. Press the reset switch to return the notebook to a known state.

If the BIOS detects a terminal error condition, it halts POST after issuing a terminal error beep code and/or displaying a message (see the following table). The beep code indicates the POST routine in which the terminal error occurred.

If the system fails after you make changes using the BIOS configuration utility, reset the notebook, enter the BIOS configuration utility, and install the defaults or correct the error.

**Table 3-3. Insyde MobilePRO BIOS POST Beep Codes and Messages**

| Beep Code | Message | Description |
|---|---|---|
| 5 short, 1 long | FAULTY DMA PAGE REGISTERS | DMA page registers do not function properly. |
| 4 short, 1 long, 1 short | FAULTY REFRESH CIRCUIT | RAM refresh circuit does not function properly. |
| 4 short, 2 long | ROM CHECKSUM INCORRECT | BIOS ROM checksum failed. |
| 3 short; 1 long, 2 short | CMOS RAM TEST FAILED | CMOS RAM test failed. |
| 3 short, 1 long, 1 short, 1 long | DMA CONTROLLER FAULTY | DMA controller does not work properly. |
| 3 short; 2 long, 1 short | INTERRUPT CONTROLLER FAILED | Interrupt controller does not work properly. |
| 3 short; 3 long | (None) | Keyboard controller failed to respond to the self-test command. |
| 2 short, 1 long; 3 short | (None) | No video device found. |
| 2 short, 1 long; 2 short, 1 long | (None) | No RAM installed. |
| (None) | KEYBOARD CONTROLLER FAILURE | Keyboard controller failed during system inquiry about connected devices. |
| (None) | KEYBOARD FAILURE | Keyboard fails to respond or no keyboard is connected. |
| (None) | CMOS FAILURE - RUN SCU | CMOS data error, probably due to loss of battery power. |
| (None) | CMOS CHECKSUM INVALID - RUN SCU | CMOS checksum error. |

| Beep Code | Message | Description |
|-----------|---------|-------------|
| (None) | RAM ERROR AT LOCATION *xxxxx* : WROTE : *xxxx* READ : *xxxx* | RAM failed during memory test at the indicated location. |
| (None) | PARITY ERROR AT UNKNOWN LOCATION | Parity error during memory test at unknown location. |
| (None) | PARITY ERROR AT LOCATION *xxxxx* | Parity error during memory test at the indicated location. |
| (None) | NO INTERRUPTS FROM TIMER 0 | Timer 0 of the clock timer controller does not generate system interrupts correctly. |
| (None) | UNEXPECTED AMOUNT OF MEMORY - RUN SCU | System memory size does not match the CMOS record. |
| (None) | CLOCK NOT TICKING CORRECTLY | System clock does not work correctly. |
| (None) | TIME/DATE CORRUPT - RUN SCU | Time/date information in CMOS is invalid. |
| (None) | MACHINE IS LOCKED - TURN KEY | Keyboard operation is locked. |
| (None) | BOOT SECTOR 0 HAS CHANGED | Hard disk boot sector has been changed, probably because of a virus attack. |
| (None) | Suspend-to-Disk partition MISSING! | No Suspend-to-Disk partition found. |
| (None) | Hard Disk ERROR! | Access to the Suspend-to-Disk partition failed. |
| (None) | Suspend-to-Disk partition signature NOT FOUND! | No Suspend-to-Disk partition signature found. |
| (None) | Suspend-to-Disk partition size TOO SMALL! | Suspend-to-Disk partition has insufficient capacity. |
| (None) | MEMORY SIZE HAS CHANGED -- REBOOTING | Memory size has changed after previous Suspend-to-Disk operation. |

## Sycard PCCtest 450/460 CardBus Card (Optional)

The PCCtest 450 and 460 CardBus Cards (version 1.05) available from Sycard Technology are the only recommended diagnostic tool that tests the functionality of the PCMCIA slots using a PCMCIA card. Each is a Type II PC Card that works with compatible test software to exercise PCMCIA functions. (For details, see the Sycard Technology Web site: http://www.sycard.com.)

The PCCtest product contains these components:

- PCCtest 450 or 460 (revision 1.05) PC Card.

- PCCtest 450/460 test software disk. (Software updates are available at the Sycard Technology Web site: http://www.sycard.com.)

- Configuration headers (PC Card/16-bit and CardBus/32-bit) that attach to the card.

You will also need a CardBus extender card (such as the Sycard PCCextend 70) to avoid wear on the Sycard PCMCIA connector.

The Sycard PCCtest 450 and 460 provide the following tests. See the Sycard documentation for details about running the tests.

**Table 3-4. Sycard PCCtest Commands**

| | Slot | PCMCIA PC Card (16-bit) test (PC Card configuration header) | CardBus (32-bit) test (CardBus configuration header) |
|---|------|-----|-----|
| **zt1000/xz300/xt1500 (technology code ID)** | N/A | PCT450 -bc1b -0 -v | TESTCB -b92b -0 –v |

# BIOS Configuration Utility

The BIOS configuration utility provides access to basic system settings. It is independent of the operating system.

**Running the BIOS configuration utility**

1. Restart the notebook.

2. When the HP logo appears, press F2 to enter the BIOS configuration utility.

3. The pointing devices are not active in the BIOS configuration utility, so you will need to use the keyboard to navigate:

   - Press the left and right arrow keys to move among menus.

   - Press the up and down arrow keys to move among parameters in a menu.

   - Press Enter to open the dialog for the current parameter, or to select the parameter.

   - Press Tab or the left and right arrow keys to move among selections in a dialog.

   - Press the up and down arrow keys to move through values for the setting.

   - Press Enter to close the dialog and accept the settings.

4. After you select the options you want, use the Exit menu to exit the utility.

**Table 3-5. BIOS Configuration Menus and Parameters**

| Pavilion zt1000/xz300 and Omnibook xt1500: Settings for BIOS version IB.M1.00 (Spring 2002). | | |
|---|---|---|
| **Main Menu** | **Description** | **Default** |
| BIOS Revision | Shows the current BIOS version. | Detected automatically. |
| Service ID (Born On Date) | Displays an identifier used for repair service. | Detected automatically. |
| Serial Number | Displays the serial number as shown on the back of the unit. | Detected automatically. |
| UUID Number | Displays the value of the 16-byte UUID (Universally Unique ID) as 32 hex characters. | Detected automatically. |
| Platform Branding ID | Displays the product family. | Detected automatically. |
| System Time | Sets the time using 24-hour format. Values set take effect immediately. | |
| System Date | Sets the date using dd/mm/yy format (except English, which uses mm/dd/yy format). | |
| Internal Hard Disk | Sets the hard disk drive type and various parameters. | Detected automatically. |
| Extended Memory | Shows the extended memory size. | Detected automatically. |
| LCD Status Panel Display | Sets whether the status panel on the front of the notebook is enabled. | Enabled |
| LCD Status Panel Date Format | Sets the date format for the status panel. | mm/dd/yy |
| LCD Status Panel Time Format | Sets the time format for the status panel. | hh:mm AM/PM |

| Language | Sets the language for the BIOS menus. | English (US) |
|---|---|---|
| **Security Menu** | **Description** | **Default** |
| User Password is | Shows if a user password is set. | Clear |
| Administrator Password is | Shows if an administrator password is set. | Clear |
| Set User Password | Press ENTER to set, change, or clear the user password. The password can have no more than 8 characters (0-9, A-Z), and cannot include special or accented characters. | Enter |
| Set Administrator Password | Press ENTER to set, change, or clear the administrator password, which protects BIOS Setup settings. The password can have no more than 8 characters (0-9, A-Z), and cannot include special or accented characters. | Enter |
| Password Required to Boot | Sets whether a user password is required when the computer boots. Requires the administrator password for changes. | Disabled |
| **Boot Menu** | **Description** | **Default** |
| Hard Drive CD-ROM/DVD USB Floppy Network Boot | Shows the order of boot devices. Move the entries to change the order. Network Boot provides diskless boot from a network server. | 1. Hard Drive 2. CD-ROM/DVD 3. USB Floppy 4. Built-in LAN |
| **Exit Menu** | **Description** | **Default** |
| Save Changes and Exit | Saves Setup changes, and then exits and reboots. | |
| Discarding Changes | Discards any Setup changes made since last save, and then exits and reboots. Does not affect password, date, or time changes. | |
| Get Default Values | Restores default settings, and remains in Setup. Does not affect password, date, or time changes. | |

### Updating the Notebook's BIOS

Hewlett-Packard may provide updates to the notebook's BIOS to enhance the capabilities of your system. Check the HP Business Support Web site (www.hp.com/go/bizsupport). Installation utilities and instructions will be provided with the updates.

# 4

# Replaceable Parts

This chapter contains an exploded view of the notebook, and lists of replaceable parts:
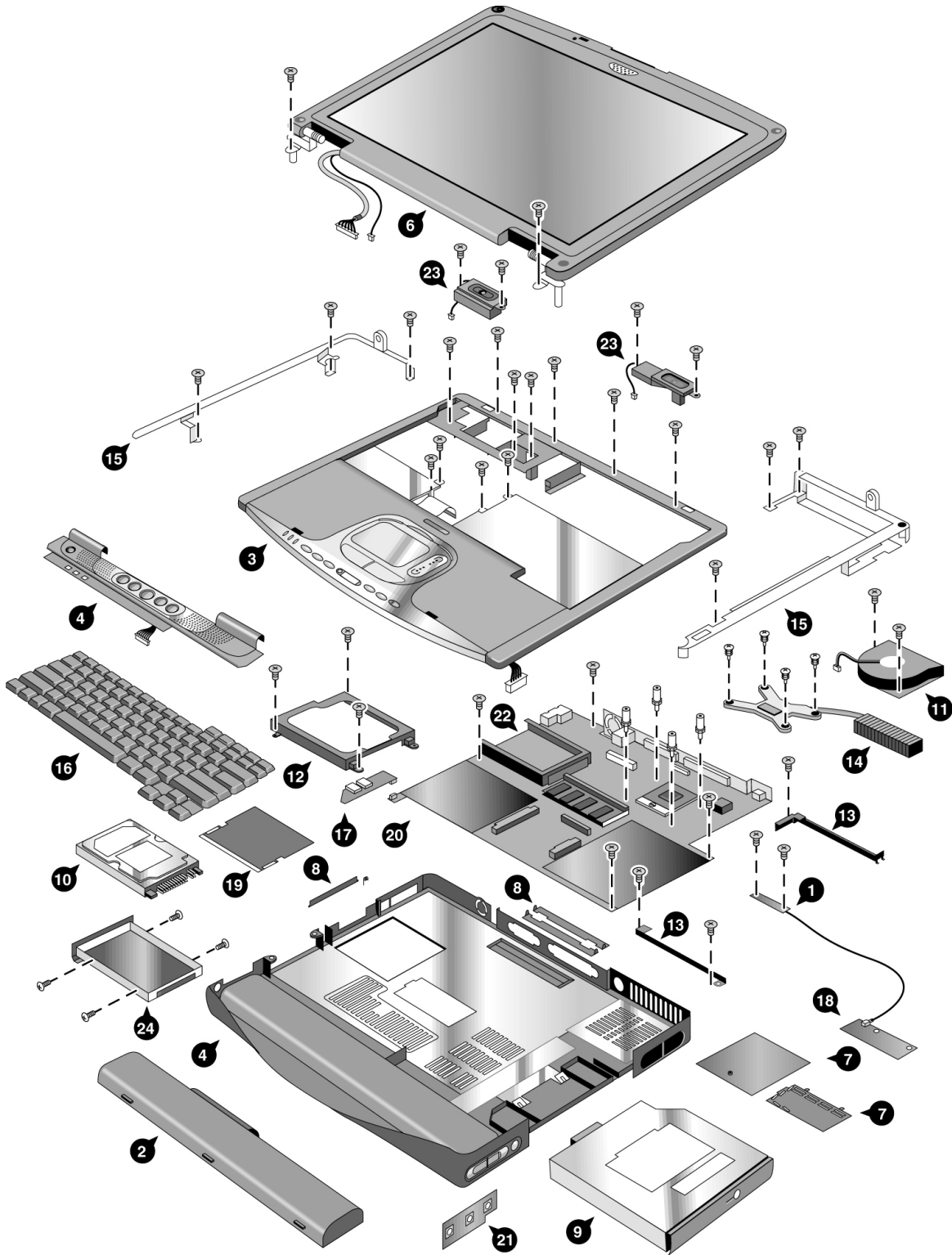
**Figure 4-1. Exploded View**

**Table 4-1. Replaceable Parts for the Pavilion zt1000/xz300 Series**

| Item | Description | Part Number | Exchange Part Number | User Replace |
|------|-------------|-------------|----------------------|--------------|
| 1 | Antenna Kit, Bluetooth | F3377-60922 | | No |
| 2 | Battery, LiIon 8-cell | F3172-60901 | | Yes |
| 3 | Case, Top | F5535-60916 | | No |
| 4 | Case, Bottom | F5535-60926 | | No |
| 4 | Case, Bottom-Wireless | F5535-60925 | | No |
| 5 | Cover, Kybrd w/Lens | F3398-60917 | | Yes |
| 6 | Display, 14" XGA | F3398-60970 | F3398-69070 | No |
| 6 | Display, 14" XGA w/BT | F3398-60972 | F3398-69072 | No |
| 6 | Display, 14" XGA w/WL | F3398-60974 | F3398-69074 | No |
| 6 | Display, 15" SXGA+ | F3398-60977 | F3398-69077 | No |
| 6 | Display, 15" SXGA+w/BT | F3398-60979 | F3398-69079 | No |
| 6 | Display, 15" SXGA+w/WL | F3398-60981 | F3398-69081 | No |
| 6 | Display, 15" XGA | F3398-60976 | F3398-69076 | No |
| 6 | Display, 15" XGA w/BT | F3398-60978 | F3398-69078 | No |
| 6 | Display, 15" XGA w/WL | F3398-60980 | F3398-69080 | No |
| 7 | Door Kit | F3377-60933 | | Yes |
| 8 | Door Kit, Service | F5535-60923 | | No |
| 9 | Drive, DVD Module | F5535-60911 | | Yes |
| 9 | Drive, DVD/CDRW Module | F5535-60912 | | Yes |
| 9 | Weight Saving Module | F3398-60913 | | Yes |
| 10 | HDD-20GB 9.5mm, IBM ATA100 FDB | 0950-4318 | F3257-69501 | Yes |
| 10 | HDD-20GB 9.5mm, TOSH ATA100 FDB | 0950-4287 | F3476-69002 | Yes |
| 10 | HDD-30.0GB 9.5mm, IBM ATA100 FDB (Cascade) | 0950-4319 | F3414-69500 | Yes |
| 10 | HDD-40.0GB 9.5mm, IBM ATA100 FDB | 0950-4320 | F3428-69500 | Yes |
| 10 | HDD-40GB 9.5mm, Toshiba ATA100 | 0950-4288 | F3378-69102 | Yes |
| 11 | Fan, Heatsink | F3398-60935 | | Yes |
| 12 | Guide, HDD Tray | F3398-60932 | | No |
| 13 | Guides, ODD L&R | F3398-60943 | | No |
| 14 | Heatsink, CPU | F5535-60930 | | No |
| 15 | Hinge Saddle Kit, L/R | F3398-60938 | | No |
| 16 | Keybd,  French | F3428-60903 | | Yes |
| 16 | Keybd,  Italian | F3428-60904 | | Yes |
| 16 | Keybd,  UK Eng | F3428-60902 | | Yes |
| 16 | Keybd,  US Eng | F3428-60901 | | Yes |
| 16 | Keybd, French Canadian | F3428-60909 | | Yes |
| 16 | Keybd, German | F3428-60911 | | Yes |
| 16 | Keybd, Int'l English (Europe Only) | F3428-60912 | | Yes |
| 16 | Keybd, Spanish | F3428-60905 | | Yes |
| 16 | Keybd, Swiss | F3428-60908 | | Yes |
| 17 | PCA, Audio w/button | F5535-60920 | | No |
| 18 | PCA, Bluetooth | F3377-60938 | | No |
| 19 | PCA, Modem Mini-PCI | F3377-60950 | | Yes |
| 19 | PCA, Modem/802.11 Mini-PCI | F3377-60951 | | Yes |
| 20 | Sys Bd, P4 w/BT | F5535-60901 | F5535-69001 | No |

| 21 | PCA, Volume Control | F3377-60939 | | No |
|---|---|---|---|---|
| 22 | PCMCIA Socket Assy | F3398-60936 | | No |
| 23 | Speaker Kit, L/R | F5535-60921 | | Yes |
| 24 | Tray, HDD | F3398-60914 | | Yes |
| | 128MB DDR266B | F4694-60901 | | Yes |
| | 256MB DDR266B | F4695-60901 | | Yes |
| | 512MB DDR266B | F4696-60901 | | Yes |
| | AC-Adapter-Ultraslim Delta 75W s/PFC | F4600-60901 | | Yes |
| | Antenna, 802.11b 15" | F3379-60926 | | No |
| | Bezel, LCD 14.1" | F3398-60915 | | No |
| | Bezel, LCD 15" | F3379-60912 | | No |
| | CD,Rcvy XPHome DUT/ENG | RIDXH00ABH | | Yes |
| | CD,Rcvy XPHome French | RIDRH00ABF | | Yes |
| | CD,Rcvy XPHome GER | RIDXH00ABD | | Yes |
| | CD,Rcvy XPHome ITA | RIDXH00ABZ | | Yes |
| | CD,Rcvy XPHome NA Eng | RIDRH00ABA | | Yes |
| | CD,Rcvy XPHome SPA | RIDXH00ABE | | Yes |
| | CD,Rcvy XPHome Spanish -Mexico | RIDRH00AR9 | | Yes |
| | CD,Rcvy XPHome UK Eng | RIDRH00ABU | | Yes |
| | Cord, Pwr, Europe #ABB (2w) | 8120-6314 | | Yes |
| | Cord, Pwr, UK & Singapore #ARS (2w) | 8120-6315 | | Yes |
| | Cord, Pwr, US #ABA (2w) | 8120-6313 | | Yes |
| | Cover, LCD 15" | F3379-60913 | | No |
| | CPU, P4 1.6 GHz Northwood uFCPGA | 1822-0780 | F3398-69202 | No |
| | CPU, P4 1.7 GHz Northwood uFCPGA | 1822-0781 | F3398-69201 | No |
| | CPU, P4 1.8 GHz Northwood uFCPGA | 1822-0819 | F5535-69202 | No |
| | CPU, P4-c 1.6 GHz Northwood uFCPGA | 1822-0917 | F5535-69201 | No |
| | Dongle, USB-Serial | 5184-2172 | | Yes |
| | Feet/Cover Kit, Rubber | F3377-60967 | | Yes |
| | Label Kit, OB Base (Europe Only) | F3398-60940 | | No |
| | Label Kit, Pav Base | F3398-60941 | | No |
| | Label, OB xt1500 (Europe Only) | F3444-60911 | | Yes |
| | Label, Pav zt1000 | F3377-60983 | | Yes |
| | LBL-XP Home POD COA | N09-00319 | | No |
| | Overlay, serial label | 7121-7525 | | No |
| | PCA, Inverter 14/15" | F3398-60916 | | No |
| | Port Replicator Assy | F3494-60902 | | Yes |
| | Screw Kit | F3398-60942 | | No |
| | Thermal Pad, CPU | F3398-60934 | | No |

# 5

# Reference Information

This chapter includes the following reference information:

- Password removal policy.
- Display quality statement.

## Password Removal Policy

If the user forgets the system password, the user calls HP Customer Care to determine the proper password removal procedure. The user must provide proof of ownership, and the notebook must be operated during the procedure.

The password removal procedure is protected as HP Company Private information. There are a restricted number of locations that can perform password removal. The procedure may not be disclosed or distributed outside those locations.

Password removal is strictly controlled. Hewlett-Packard and authorized support providers must ensure with written evidence that the notebook being "cleansed" is actually in the possession of the notebook's actual and current owner. This requires a sales receipt showing the notebook serial number and owner's name, or a written statement from the owner attesting that he or she is the owner of the notebook. The statement can be a fax copy of the document. The fact that the notebook is in the hands of an HP representative on behalf of the customer is not evidence of ownership. In addition, HP will not remove the password of a notebook for any non-owner, even if it is requested by law enforcement agencies. If you receive such a request, you should notify management and HP Corporate Legal immediately. (These requests may require a court order prior to our participation.)

Further, the entity removing the password must log the name, serial number, and date of the removal, and file the written backup with the log. The log and backup are subject to standard record retention process and review.

The final issue relating to removal of passwords is that HP cannot provide information to users that would assist them in improperly removing a password and opening a notebook.

# Hewlett-Packard Display Quality Statement

TFT display manufacturing is a highly precise but imperfect technology, and manufacturers cannot produce large displays that are cosmetically perfect. Most, if not all, TFT displays exhibit some level of cosmetic imperfection. These cosmetic imperfections may be visible to the customer under varying display conditions, and can appear as bright, dim, or dark spots. *This issue is common across all vendors supplying TFT displays in their products and is not specific to the HP notebook display.*

HP notebook TFT displays meet or exceed all HP standards for cosmetic quality of TFT displays. HP does not warrant that the displays will be free of cosmetic imperfections. *TFT displays can have a small number of cosmetic imperfections and still conform to HP's cosmetic quality specifications.*

Here are some guidelines for determining what action to take on customers' complaints of cosmetic imperfections in their TFT displays:

1. View the notebook under the customer's normal operating conditions.

   This means that if the customer uses the notebook predominately in DOS, in Windows, or in some other application or combination of applications, you should make the determination under those same applications. Self test is not a normal operating condition and is not a sufficient tool for interpreting display quality.

2. Use the table below to determine whether the display should be considered for replacement. These are the only conditions in this guideline that may call for a replacement due to a defect in material or workmanship based on the HP Limited Warranty Statement.

3. If a display is considered for replacement, make sure the customer understands that cosmetic variations may also exist on the replacement display, and may require the customer to use a work-around to obscure the cosmetic imperfection.

4. Displays with cosmetic imperfections that do not conform to the above conditions and tests will not normally be considered for display replacement. The HP-responsible person working with the customer should identify work-arounds that are reasonable and appropriate for that customer. Customers who require a more perfect display solution should consider switching to a notebook with a DSTN display.

We expect that over time the industry will continue to produce displays with fewer inherent cosmetic imperfections, and we will adjust our HP guidelines as these improvements are implemented.

**Table 5-1. TFT LCD Guidelines (14.1/15.0-in XGA)**

| Type of Imperfection | Imperfections Not Allowed |
|---|---|
| **Electrical Imperfections:**<br>Bright dots [a]<br>Dark dots [a] | • 7 or more single bright dots.<br><br>• 7 or more single dark dots.<br><br>• 9 or more total (bright and dark combined) defective dots.<br><br>• Any occurrence of multiple defective dots within 15 mm. |
| **Mechanical Imperfections:**<br>Discoloration<br>Polarizer bubbles, dents [b] | • Any polarizer bubble, discoloration, or dent that is visible from at least 36 cm (14 in). |
| Definitions of imperfections:<br>[a]    A bright or dark dot is a subpixel (red, green, or blue dot) that is stuck on or off.<br>[b]    A polarizer dent or bubble is a light spot with a darker border that appears on a lighted display and does not change size. In contrast, a polarizer scratch is a light line that is visible on a darker background and does not change size. | |

1. **Product Information**
2. **Removal and Replacement**
3. **Troubleshooting and Diagnostics**
4. **Replaceable Parts**
5. **Reference Information**