
HP OmniBook 7100



Service Manual

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Introduction

This service manual provides reference information for the HP OmniBook 7100. It is intended to be used by HP-authorized service personnel in the installation, servicing, and repair of these products.

The manual is designed as a self-paced guide. It is intended to train you to install, configure, and repair OmniBook computers. You can follow this manual without having equipment available.

The following table lists additional places where you can get supplementary information about OmniBook products.

Sources of OmniBook Information

Source	Address or Number	Comments
HP External Web	http://www.hp.com/omnibook (http://www2.hp.com/omnibook , European mirror)	No usage restriction.
HP US Reseller Web	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.
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 Bulletin Board Service		Refer to the latest Product Support Plan for non-US BBS numbers.
HP First (automated fax)	(800) 333-1917	US and Canada.
	(801) 344-4809	Outside US and Canada.
	(800) 544-9976	Reseller support number (enter outlet id number).
HP Support Assist CD-ROM	(800) 457-1762	US and Canada.
	(801) 431-1587	Outside US and Canada.
* Baud rates = 300-28,800; Parity = E; Data bits = 7; Stop bits = 1.		

Product Information

The HP OmniBook 7100 provides desktop performance and expandability as well as the latest in multimedia capabilities. It uses high-performance component technologies that make it capable of replacing a desktop computer or serving as a multimedia presentation tool.

Table 1-1. OmniBook 7100 Models

OmniBook Product *	CPU **	Display	Hard Drive	Floppy Drive	CD-ROM Drive	Standard RAM
F1441N F1441W	Pentium II 266 MHz	14.1-inch XGA TFT	6.4 GB (F1475A)	1.44 MB floppy and CD-ROM combination (F1446A)		32 MB
F1442N F1442W			8.1 GB (F1449A)			
* For the products listed: "N" suffix means Windows NT 4.0 Workstation installed. "W" suffix means Windows 95 installed. ** Intel Mobile Pentium or Pentium II processor.						

This chapter describes

- Features and operation (below).
- Specifications (page 1-9).
- Internal design (page 1-12).

Features and Operation

The following three illustrations point out the main external features of the computer. They are followed by highlights of the computer's operation. For an internal, exploded view, see page 4-2.

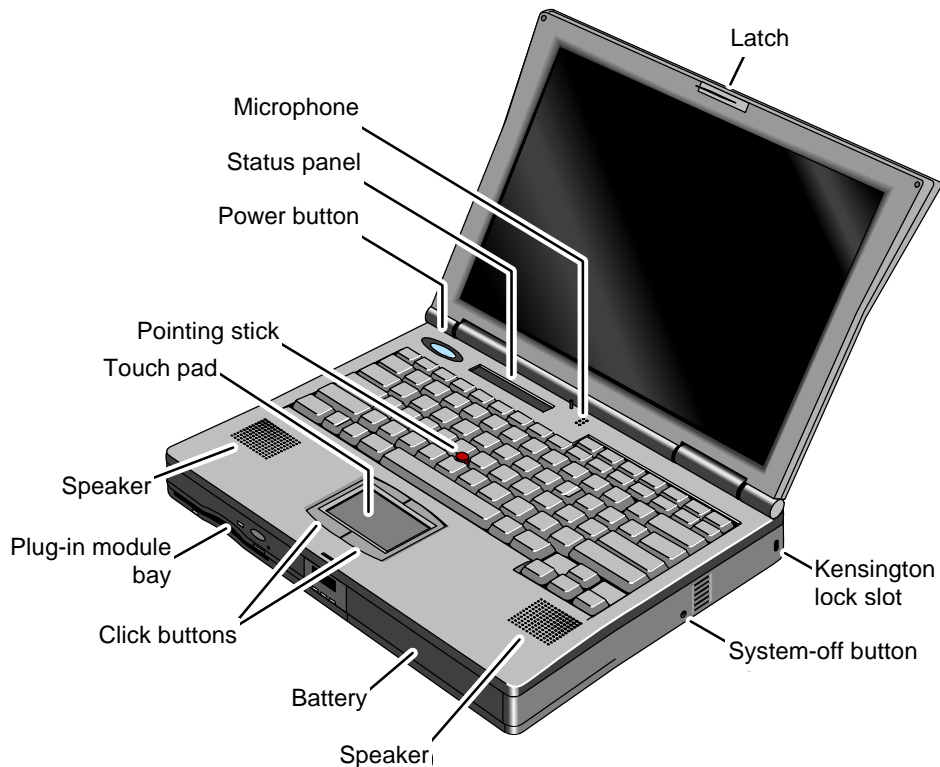


Figure 1-1. OmniBook - Front View

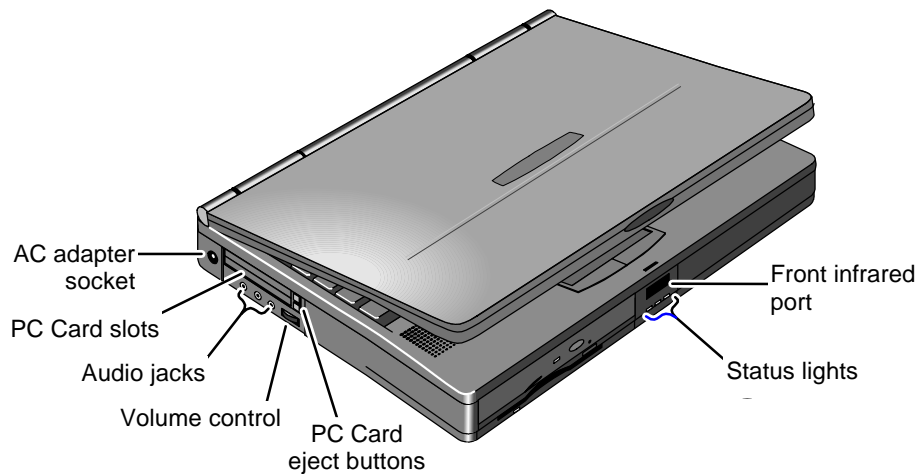


Figure 1-2. OmniBook - Side View

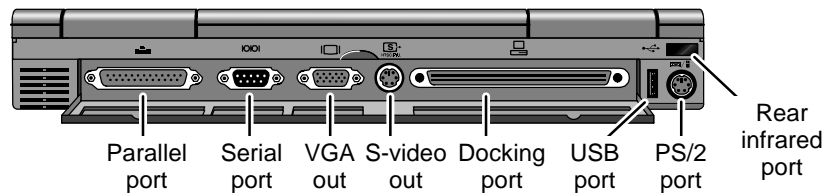


Figure 1-3. OmniBook - Rear View

Table 1-2. Product Comparisons

	OmniBook 7100	OmniBook 4100	OmniBook 2100/3100	OmniBook 3000
Processor *	Intel Pentium II (266 MHz), with MMX technology. 512-KB burst-synchronous L2 cache (high-speed bus).	Intel Pentium II (266 or 233 MHz), or Pentium (266 MHz), with MMX technology. 512-KB burst-synchronous L2 cache (high-speed bus for Pentium II).	Intel Pentium (266, 233, or 200 MHz), with MMX technology. 512-KB burst-synchronous L2 cache.	Intel Pentium (266, 233, or 200 MHz), with MMX technology. 512-KB burst-synchronous L2 cache.
Memory	32 MB RAM on motherboard. Expandable to 160 MB.	32 MB RAM on motherboard. Expandable to 96 MB.	32 MB RAM on motherboard. Expandable to 96 MB.	16 MB RAM on motherboard. Expandable to 144 MB.
Display	14.1-inch TFT XGA display.	14.1- or 13.3-inch TFT XGA display.	13.3-inch TFT XGA display, or 12.1-inch TFT or DSTN SVGA display.	13.3-inch TFT XGA display.
Video	PCI local bus video. 64-bit graphics controller with 4 MB external video RAM. Up to 16M colors (XGA). Zoomed Video enabled.	PCI local bus video. 128-bit graphics controller with 2 MB internal video RAM. Up to 64K colors (XGA). Zoomed Video enabled.	PCI local bus video. 128-bit graphics controller with 2 MB internal video RAM. Up to 64K colors (XGA), 16M colors (SVGA). Zoomed Video enabled.	PCI local bus video. 128-bit graphics controller with 2 MB internal video RAM. Up to 64K colors (XGA). Zoomed Video enabled.
Operating System	Windows 95 or Windows NT 4.0 preinstalled.	Windows 95 or Windows NT 4.0 preinstalled.	Windows 95 or Windows NT 4.0 preinstalled.	Windows 95 preinstalled. (Windows NT 4.0 certified.)
Desktop Management Interface	DMI 2.0. HP TopTools 2.6.	DMI 2.0. HP TopTools 2.6.	DMI 2.0. HP TopTools 2.6.	DMI 1.1. HP TopTools 2.0.
Power Management	APM 1.2. ACPI compliant.	APM 1.2. ACPI compliant.	APM 1.2. ACPI compliant.	APM 1.2.
Power States	On, Standby, Suspend, Hibernate, Off.	On, Standby, Suspend, Hibernate, Off.	On, Standby, Suspend, Hibernate, Off.	On, Standby, Suspend, Hibernate, Off.
Features at the time of product introduction. Not updated for later versions.				
* Intel Mobile Pentium or Mobile Pentium II processor.				

Turning the OmniBook On and Off

- **On.** Press the blue power button to turn on the OmniBook.
- **Standby.** The display turns off automatically if the computer is inactive for about 2 minutes.
- **Suspend.** Click Start, Suspend (Windows 95) or press the blue power button briefly (about 1 second) to suspend activity when the OmniBook is on. When you turn on the computer, it resumes your previous work session.

Closing the lid (for more than 2 seconds) also suspends the computer.

- **Hibernate.** Press Fn+F12. This is like Off, except that your current work session is first saved to disk. When you turn on the computer, it reboots and restores your previous session.
- **Off.** Click Start, Shut Down. If the OmniBook does not respond, press and hold the blue power button until the display shuts down. When you turn on the computer, it reboots. Unsaved data is lost.










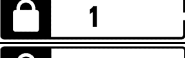
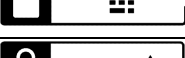
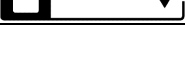
Table 1-3. Activating Power Modes

Power Mode	To Enter Mode	To Turn Back On
Standby Reduced-power/stopped state. Display is off. Everything is in a reduced-power state. Network devices are maintained. Your current work session continues at turn-on (any key or pointer action).	Press Fn+S –or– allow time-out.	Press any key or move a pointing device to display the current session ("Instant-On").
Suspend Low-power/stopped state. Lower power state than Standby. Everything is off or in a low-power state. Network devices are off. Your previous work session resumes at turn-on. For plug-and-play operating systems, network connections resume at turn-on.	Press blue power button for about 1 second –or– close the lid* –or– click Start, Suspend (Windows 95) –or– allow time-out.	Press blue power button to display the current session ("Instant-On").
Hibernate No-power/stopped state. Session is saved on the hard disk. Everything is shut down. Computer reboots at turn-on and restores previous session and network connections (if plug-and-play).	Press Fn+F12 –or– allow time-out.	Press blue power button to restart and restore the previous session.
Off No-power/stopped state. Everything is shut down (battery continues charging if ac adapter is connected). Computer reboots at turn-on and restores network connections.	Click Start, Shut Down –or– Press and hold the blue power button until the display shuts down.	Press blue power button to restart with a new session.
* Does not suspend if Video Display Device set to Both in BIOS Setup.		

Checking the Status of the OmniBook





The OmniBook status panel, located above the keyboard, contains indicators that show the current keyboard status, drive activity, and power status of the OmniBook. (These indicators are on the icon PCA.)

Table 1-4. Status Panel Indicators (Icon PCA)

Indicator	Meaning
	AC power. The ac adapter is plugged in.
	Battery status. Shows the approximate charge level of the battery relative to a full charge. Each bar represents 10% charge. The upper and lower triangles indicate the presence of the main battery (upper) and a second battery (lower). A triangle blinks when that battery is charging. The main battery charges first, discharges last. If two batteries are installed, the indicator shows the combined charge of both batteries. Press Fn+F6 to show separate battery levels.
	Battery low. (Triangle, but no bars.) The OmniBook also beeps.
	Defective battery. (No triangle, no bars.) No charging, even though ac adapter is present.
	Overheated battery. (No triangle, top bar.) The battery is too hot to charge. Not necessarily a defective battery.
	Internal drive. The OmniBook is accessing one of the internal drives: the hard disk drive, CD-ROM drive, or other plug-in module drive.
	Floppy disk drive. The OmniBook is accessing the floppy disk drive.
	PC Card. There is activity between the PC Card and the computer.
	Caps Lock. Caps Lock is active.
	Num Lock. Num Lock is active.
	Keypad Lock. The embedded keypad is active (Fn+F8). Num Lock must also be on for the numeric keys—otherwise, cursor control is active.
	Scroll Lock. Scroll Lock is active (Fn+ScrLk).

The OmniBook status lights, located at the front-center of the bottom case, indicate power status and drive activity. (These lights are on the front-IR PCA.)

Table 1-5. Status Lights (Front-IR PCA)

	Meaning
	Power mode Steady green light: OmniBook is running (On mode). Steady orange light: OmniBook is suspended (Suspend or Standby mode). No light: OmniBook is off (Off or Hibernate mode). Alternating green and orange light: OmniBook failed when resuming.
	Hard disk drive Green light: OmniBook is accessing the hard disk drive.
	Charging Steady green light: AC adapter is connected, battery is full. Blinking green light: AC adapter is connected, battery is charging. No light: AC adapter is not connected.

Using Fn Hot Keys

The Fn key combined with another key is a hot key—a shortcut key sequence for various system controls. For an external keyboard, CTRL+ALT is normally equivalent to the Fn key.

Table 1-6. Fn Hot Keys

Hot Key	Effect
Fn + F1	Decreases the display's brightness.
Fn + F2	Increases the display's brightness.
Fn + F3	Decreases the display's contrast (non-TFT displays only).
Fn + F4	Increases the display's contrast (non-TFT displays only).
Fn + F5	Switches among the built-in display, an external display, and simultaneous displays.
Fn + F6 (hold)	For use with two batteries: The battery indicator in the status panel briefly displays the individual battery status for each battery you have installed in the OmniBook.
Fn + F8	Toggles the embedded keypad on and off. Does not affect an external keyboard. If Num Lock is on, then the numeric functions are active—otherwise, cursor control is active.
Fn + F12	Enters Hibernate mode.
Fn + F	Toggles between front and rear infrared ports.
Fn + R	Enters Suspend mode.
Fn + S	Enters Standby mode.
Fn + ScrLk	Toggles Scroll Lock on and off.
Fn + UP ARROW Fn + DOWN ARROW	Increases and decreases the sound volume. The volume range is limited by the setting of the volume control knob.

Resetting the OmniBook

1. Use a pen or a straightened paper clip to push the system-off button on the right side of the OmniBook. (The switch is on the motherboard.)

–or–

Press and hold the blue power button until the display shuts down. (The switch is on the icon PCA.)

2. After the computer shuts down, press the blue power button to turn it back on.

Note

The OmniBook can boot from a CD if all these conditions are true:

- You have an internal CD-ROM/floppy drive installed,
- You have a bootable CD in the drive, such as the OmniBook Recovery CD, and
- You select the CD-ROM drive as the boot device. You can do this during reboot by pressing ESC to cancel the OmniBook screen, then ESC to display the boot-device menu for a one-time selection.

System Resources

Below are default values for system resources. To see other, non-default possibilities, use the BIOS Setup utility (see page 3-22), which lists port and audio device configurations in the System Devices menu.

The tables in this section show typical resource usage as set up by the OmniBook BIOS. Plug-and-play operating systems, drivers, and BIOS Setup settings may change some of the entries.

Table 1-7. System Interrupts

0	System timer
1	Keyboard
2	Cascade IRQ 9
3	Free (or COM2 infrared port, if enabled)
4	COM1 (serial port)
5	Crystal sound
6	Floppy drive
7	LPT1 (ECP parallel port)
8	Real-time clock
9	Free
10	USB and CardBus - assigned by Windows driver
11	Free (or MIDI, if enabled)
12	Pointing device
13	Numeric data processor
14	Internal hard disk (primary IDE controller)
15	Internal CD-ROM drive (secondary IDE controller)

Table 1-8. System Memory

00000 - 9FFFF	System memory
A0000 - BFFFF	Video
C0000 - CFFFF	Video BIOS
D0000 - DBFFF*	Free**
DC000*- FFFFF	System BIOS
* Approximate boundary.	
** Valid uses for memory addresses D0000-DBFFF: Upper memory blocks (UMBs). PC card memory windows.	

Table 1-9. System Input/Output Addresses (100-3FF)

170-177	Internal CD-ROM drive (secondary IDE controller)
1F0-1F7	Internal hard disk (primary IDE controller)
220-22F	Crystal sound
376	Internal CD-ROM drive (secondary IDE controller)
378-37F	LPT1 (printer port)
388-38B	Sound
3B0-3BB	VGA adapter
3C0-3DF	VGA adapter
3E0-3E1	PCMCIA controller
3F0-3F5	Floppy controller
3F6	Internal hard disk (primary IDE controller)
3F7	Floppy controller
3F8-3FF	COM1 (serial port)

Table 1-10. DMA Channels

0	Sound record
1	Sound playback
2	Floppy drive
3	LPT1 (ECP parallel port)
4	Cascade
5	Free
6	Free
7	Free

Specifications

The following tables list descriptions for the OmniBook and its accessories.

Table 1-11. OmniBook 7100 Specifications

Physical Attributes	Size: 324mm×252mm×56mm (12.76"×9.92"×2.22") closed. Weight: 3.95 kg (8.7 lb).
Processor and Bus Architecture	266-MHz Intel Pentium II processor with MMX technology. 1.6-V core, 2.5-V external, low-power processor. 32-KB (16-KB instruction, 16-KB data) L1 cache. 512-KB pipeline-burst-synchronous L2 cache. 32-bit PCI bus.
Graphics	14.1-inch XGA active-matrix (TFT) display (1024×768×16M colors). 64-bit ATI Rage LT Pro graphics controller with 4-MB 100-MHz SGRAM. 2D and 3D acceleration, SXGA-out and TV-out support. Zoomed Video support for both PC Card slots.
Power	Rechargeable 12-cell lithium ion battery with LED charge-level gauge (14.4 Vdc, 4.2 AH, 60 watt-hours). Battery life (one battery): 3.25 to 4.25 hours run time. Fast battery recharge: 80% in 1.5 hours, 100% in 2.0 hours. Low-battery warning. Suspend/resume capability. 60-watt ac adapter: 100 to 240 Vac (50 to 60 Hz) input, 19 Vdc, 3.16 A output.
Mass Storage	24X CD-ROM/floppy drive combination module. 8.1-GB or 6.4-GB removable hard drive. Optional LS-120 storage module. Optional 2X DVD module.
RAM	32-MB SDRAM on board. Two slots for RAM expansion up to 160 MB (288 MB maximum with future memory technologies).
Audio System	16-bit, Sound Blaster Pro-compatible. SRS 3D enhanced audio. Dolby Digital for DVD playback (with DVD module). Stereo sound via two built-in speakers. Built-in microphone. Line-in, headphone-out, and microphone-in.
Keyboard and Pointing Device	87/88-key touch-type QWERTY keyboard with 101/102 key emulation. Embedded numeric keypad. 12 function (Fn) keys. Two pointing devices: pointing stick (technology licensed from IBM) and touch pad.
Input/Output	Universal serial bus (USB). 9-pin, 115,200-bps serial (16550 UART). 25-pin bi-directional ECP/EPP parallel. Video-out (up to 1024×768×16M colors at 75-Hz refresh rate or 1280×1024×64K colors at 60-Hz refresh rate). S-video TV-out, composite video with optional adapter. PS/2 keyboard/mouse. Two 4-Mbps IrDA-compliant infrared ports.
Expandability	One Type III or two Type II 16-/32-bit PC Card slots (3.3- and 5-V support). CardBus enabled. Plug-in module bay for accessory modules. Optional port replicator, mini dock, and docking system.

Preinstalled Software	<p>Microsoft Windows 95 or Windows NT 4.0. Windows 95-compatible Plug-and-Play. Windows NT 4.0 APM and PC Card Plug-and-Play. Advanced Power Management (APM 1.2). DMI 2.0 with HP TopTools 2.6. McAfee Virus Scan 3.1.5. Online documentation. OmniBook Recovery CD-ROM included. Centralized worldwide BIOS and driver update service.</p>
Security Features	<p>User and administrator passwords. System, hard drive, and docking passwords. PC identification displayed at boot. DMI-accessible electronic serial number. Kensington Microsaver lock slot.</p>
Environmental Limits	<p>Operating temperature: 5 to 35 °C (41 to 95 °F). Operating humidity: 20 to 90 percent RH (5 to 35 °C). Storage temperature: -20 to 50 °C (-4 to 122 °F).</p>
Major ICs	<p>CPU: Intel Mobile Pentium II. South Bridge: PIIX4E. Video: ATI Rage LT Pro. Audio: Crystal CS4237B (with Crystal CS9236 hardware wavetable). CardBus: TI PCI1250A. Keyboard controller: National PC87570. Super I/O: SMC FDC37N769.</p>

Table 1-12. OmniBook 7100 Accessories

OmniBook 7100-Only Accessories	
F1446A	24X CD-ROM drive / floppy drive combo module.
F1447A	2X DVD module.
F1448A	LS-120 SuperDisk drive module.
F1449A	8.1-GB internal hard disk drive.
F1475A	6.4-GB internal hard disk drive.
F1450A	Lithium-ion battery (primary and secondary).
F1459A	Composite video adapter.
OmniBook 7100, 4100, 3100, 2100 Accessories	
F1477A	Docking system and monitor stand (tall).
F1452A	Mini dock.
F1451A	Port replicator.
F1453A	Monitor stand (short).
F1456A	32-MB RAM expansion card (7100/4100 only).
F1457A	64-MB RAM expansion card (7100/4100 only).
F1454A	60-watt ac adapter.
F1455A	75-watt auto/airline power adapter.
F1469A	PS/2 Y adapter.
TMC3X575	10/100-Mbps Ethernet PC Card.
TMC3C589	10-Mbps Ethernet PC Card.
XIRCM56T	56-Kbps modem PC Card.
8120-6313	Replacement power cord (U.S., Canada, Taiwan).
8120-6314	Replacement power cord (Europe).
8120-6315	Replacement power cord (Hong Kong, Singapore, U.K.).
8120-6312	Replacement power cord (Australia).
8120-6316	Replacement power cord (Japan).
8120-6317	Replacement power cord (India, South Africa).
8120-8373	Replacement power cord (People's Republic of China).

Internal Design

The motherboard PCA is the central component of the OmniBook design. It plays a role in virtually all system functions. The CPU module (MMO) and most other subsystems connect to the motherboard.

The following figure shows the connections among the replaceable electrical modules. As a substitute for a functional block diagram, see the table on page 1-13—it lists the roles the replaceable modules play in each of the functional subsystems.

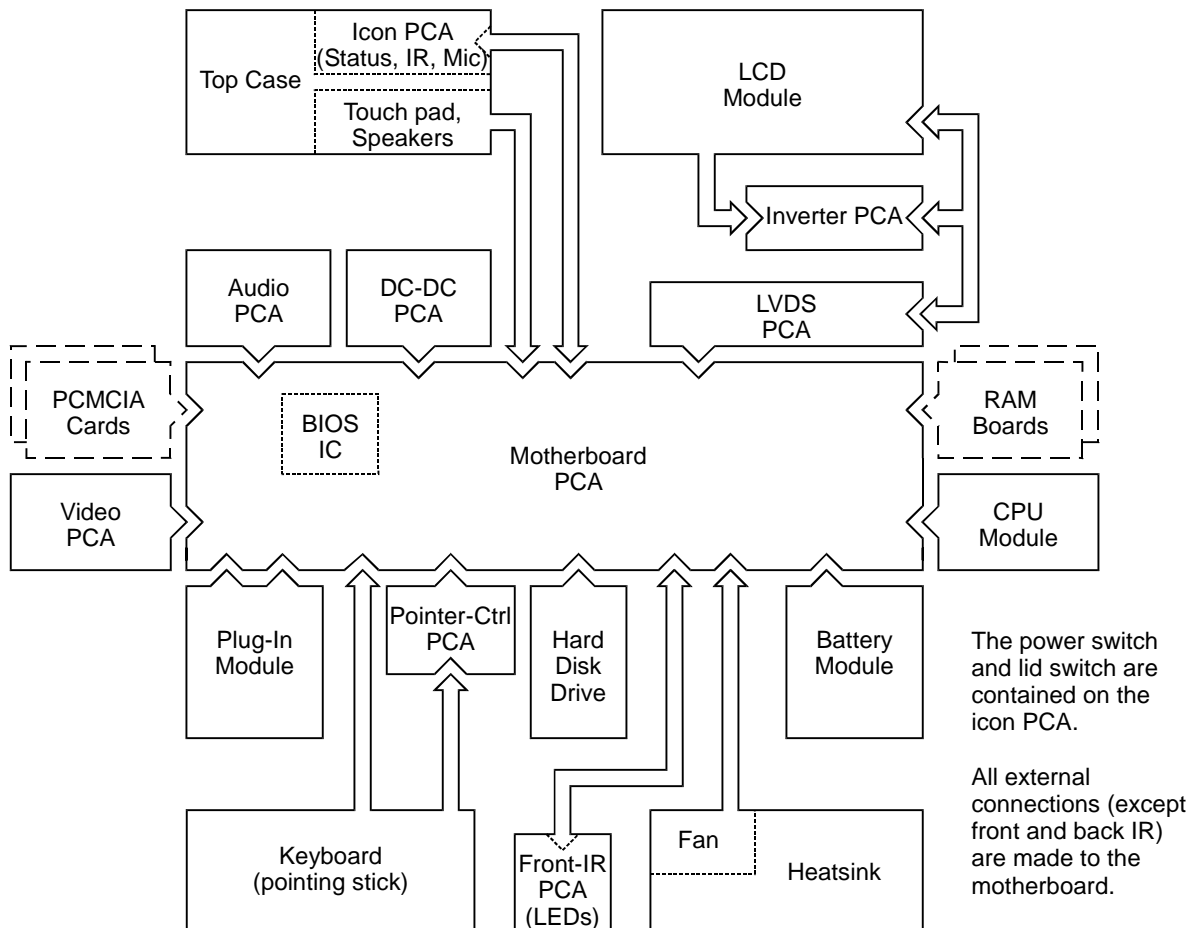


Figure 1-4. Replaceable Module Diagram

Table 1-13. Functional Structure

Function	Modules	Roles
Bootup	CPU module Motherboard BIOS IC Floppy disk module Hard disk drive	Main processor (MMO). Primary system circuitry. Code for basic system functions. First source of disk-based startup code. Second source of disk-based startup code.
Processor	CPU module Motherboard	Main processor, numeric data processor, L1 and L2 cache. Primary system circuitry.
Memory	Motherboard RAM boards Video PCA	First 32 MB of RAM. Optional, additional RAM. Video RAM.
Power	Battery DC-DC PCA Motherboard Icon PCA AC adapter	Power storage. Power supply. AC adapter socket, system-off switch. Power switch, lid switch. AC-to-dc converter.
Display	Motherboard LCD module Inverter PCA LVDS PCA Video PCA	PCMCIA/zoomed video controller. Display output, backlight. Power converter for backlight. Display switch, LVDS signal pass-through. Display/graphics controller, video RAM, LVDS processor/driver.
Hard disk	Motherboard Hard disk drive	Hard disk controller. Hard disk mechanism.
Floppy drive	Motherboard Floppy disk module	Floppy disk controller. Floppy disk mechanism.
Keyboard	Motherboard BIOS IC Keyboard	Keyboard controller. Keyboard BIOS. Key switches.
Pointer	Motherboard Pointer-control PCA Keyboard Top case	Keyboard controller. Pointing stick controller (PS/2 output). Pointing stick sensor. Touch pad sensor, controller (PS/2 output).
Audio	Motherboard Audio PCA Icon PCA Top case	Speaker amplifier, external audio jacks, headphone amplifier, zoomed video controller, volume knob. Audio controller, wavetable. Microphone. Speakers.
Status	Motherboard Icon PCA Front-IR PCA	Keyboard controller. Status panel. Front LEDs.
Serial	Motherboard	I/O controller, serial connector.
Parallel	Motherboard	I/O controller, parallel connector.
Infrared	Motherboard Icon PCA Front-IR PCA	I/O controller. Back infrared transmitter/receiver. Front infrared transmitter/receiver.
PS/2 port	Motherboard Pointer-control PCA	Keyboard controller, PS/2 connector. PS/2 processor.
USB	Motherboard	Bus controller (South Bridge), USB connector.
Docking port	Motherboard	Docking logic, docking connector.
PCMCIA	Motherboard PCMCIA socket	PCMCIA controller. PCMCIA connectors.

Removal and Replacement

This chapter tells you how to remove and replace the following components and assemblies. The ones marked by • below are user-replaceable.

Table 2-1. Removal Cross-Reference

Audio heatsink (table on page 2-23).	Hinge cover (table on page 2-22).
Audio jack cover (table on page 2-23).	Hinge mount (table on page 2-23).
Audio PCA (table on page 2-23).	Icon PCA (table on page 2-22).
• Battery (page 2-3).	Inverter PCA (table on page 2-21).
• Battery faceplate (table on page 2-7).	• I/O door (table on page 2-7).
• BIOS cover (table on page 2-7).	Keyboard (page 2-8).
BIOS IC (page 2-19).	LCD module (page 2-11).
Bottom case (page 2-15).	LCD shield (table on page 2-21).
CPU fence (table on page 2-23).	LVDS PCA (table on page 2-23).
CPU module (MMO) (table on page 2-23).	Motherboard PCA (page 2-15).
Display bezel (table on page 2-21).	Motherboard frame (table on page 2-23).
Display bracket (table on page 2-21).	PCMCIA shield (table on page 2-23).
Display cable (table on page 2-21).	PCMCIA socket (table on page 2-23).
Display case (table on page 2-21).	• Plug-in module (page 2-3).
Display latch (table on page 2-21).	Pointer-control PCA (table on page 2-23).
DC-DC PCA (table on page 2-23).	• RAM board (page 2-4).
End cap (table on page 2-21).	• RAM cover (table on page 2-7).
Fan (table on page 2-23).	• Screw cover (table on page 2-7).
• Feet (table on page 2-7).	Speaker (table on page 2-22).
Front-IR PCA (table on page 2-23).	Top case (page 2-14).
• Hard disk drive (page 2-5).	Touch-pad cable (table on page 2-22).
Heatsink, CPU (page 2-9).	Touch-pad PCA (table on page 2-22).
Hinge (table on page 2-21).	Video PCA (table on page 2-23).

Caution

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

Notes

Reassembly steps are the reverse of the removal steps. Reassembly notes are included at the end of each section below.


 Symbols like this throughout this chapter show approximate full-size screw outlines. You can use them to verify the sizes of screws before you install them. Installing a wrong-size screw can damage the unit. (The symbol at the left represents an M2.5x5mm screw.)

Table 2-2. Required Equipment

- Small Phillips screwdriver, preferably magnetized.
- 5 mm hex driver.
- Probe or tweezers.
- Small flat-blade screwdriver.
- Needle-nose pliers.
- IC insertion/removal tool.

Table 2-3. Recommended Screw Torques

Screw Thread Size	Torque (kgf•cm)	Torque (in•lbf)
M2	1.5 – 2.0	1.3 – 1.7
M2.5 except those below	1.5 – 2.5	1.3 – 2.2
M2.5 for display brackets and hinge mounts	4.5	3.9
M3	2.0 – 2.5	1.7 – 2.2

Removing the Battery or Plug-In Module (User-Replaceable)

Required Equipment

- None.

Removal Procedure

1. Unplug the ac adapter, if present.
2. Turn the unit bottom side up.
3. Slide the latch open and pull out the module.

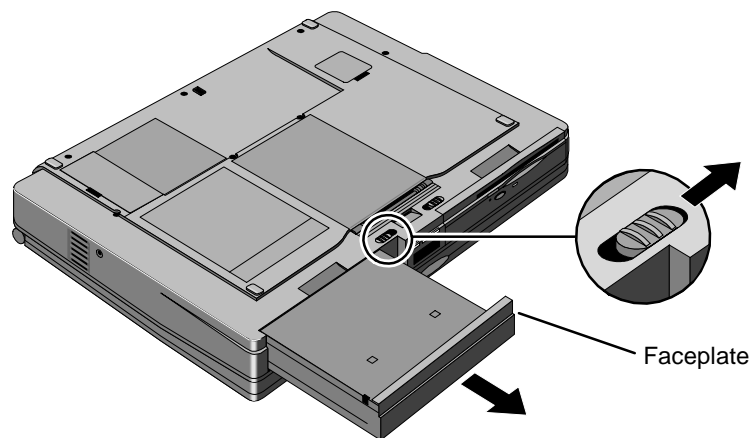


Figure 2-1. Removing the Battery or Module

Reassembly Notes

- You can install a battery in either bay. But any other type of module must be installed in only the left bay (on the right side when the unit is upside-down).
- For a battery, slide its faceplate to the left or right so it fits into the bay correctly.

Removing a RAM Board (User-Replaceable)

Table 2-4. RAM Board Replacement Part Numbers

Description	Part Number	Exchange Part Number
RAM board, 32-MB	1818-7413	F1456-69001
RAM board, 64-MB	1818-7414	F1457-69001

Caution

Handle the RAM board only by its edges and provide proper grounding. Otherwise, you may damage the board due to electrostatic discharge.

Required Equipment

- None.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Turn the unit bottom side up and unsnap the RAM cover.
3. Release the two metal latches at the sides of the RAM board, so the free edge of the board pops up.
4. Pull the board out of the connector.

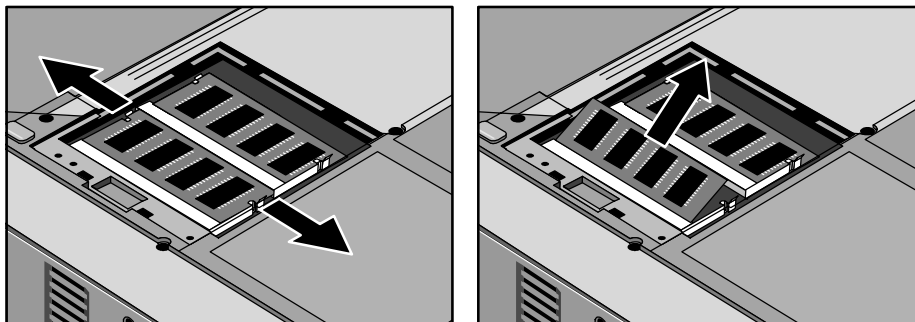


Figure 2-2. Removing a RAM Board

Reassembly Notes

- Insert the RAM board into the connector at about a 30° angle until it is fully inserted. Then press down at both sides until both latches snap closed.
- If only one RAM board is present, you can install it in either connector.

Removing the Hard Disk Drive

(User-Replaceable)

Table 2-5. Hard Disk Drive Replacement Part Numbers

Description	Part Number	Exchange Part Number
Drive, hard disk (6.4GB, IBM)	0950-2829	F1440-69100
Drive, hard disk (8.1GB, IBM)	0950-2830	F1449-69100

Required Equipment

- Small Phillips screwdriver.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Turn the unit bottom side up.
3. Use a key or flat-blade screwdriver to pop up the hard drive handle.
4. Slide the hard drive toward the front, then lift it out.

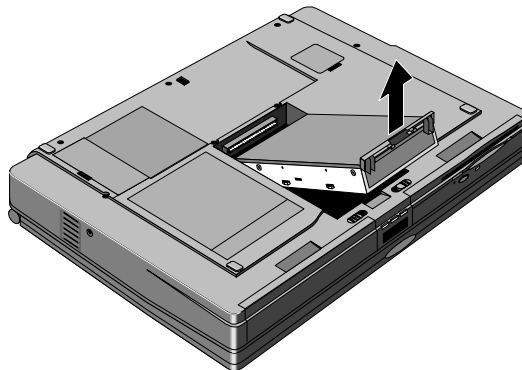


Figure 2-3. Removing the Hard Disk Drive

5. If you are installing a new hard drive that does not have a plastic case, you can remove the case parts from the old hard drive:
 - Unsnap the two plastic snaps next to the connector and remove the plastic tray.
 - Remove the four screws from the sides of the shield.
 - Remove the hard drive from the shield.
 - Unplug the connector from the hard drive.

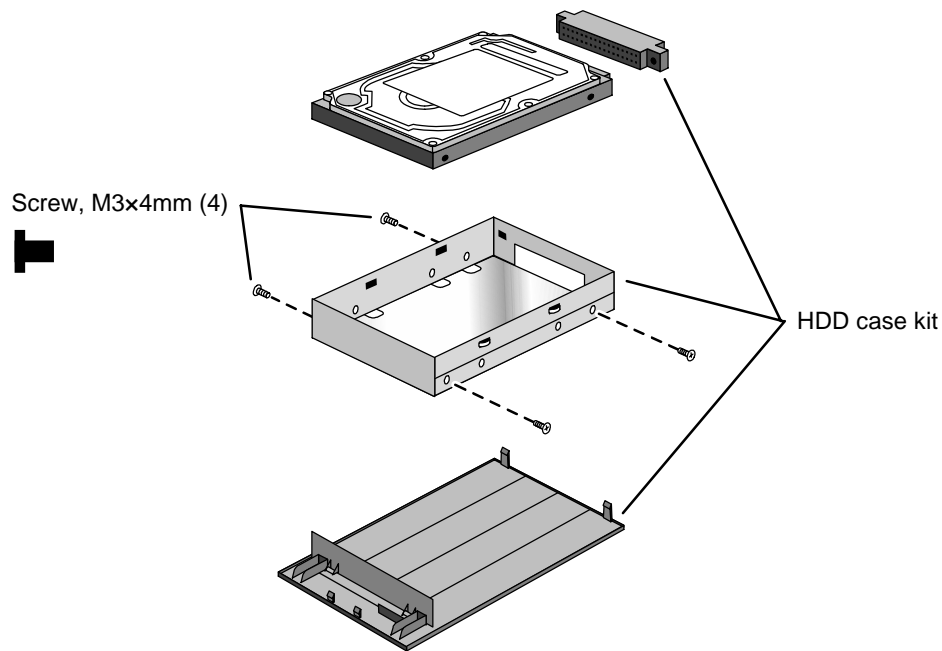


Figure 2-4. Installing a Hard Drive in the Case

Reassembly Notes

Caution

- Do not cover the vent hole in the top surface of the hard drive. If you cover the hole, the hard drive could fail prematurely.
- When installing the drive into the bottom case, first insert the complete assembly into the front of the opening, then slide it backward to make the connection. Otherwise, you could damage the hard drive case.

Important

If you are installing a new hard drive, you should create a Hibernate partition on the drive before loading any software—see the steps below.

Creating a Hibernate Partition

1. If you do not have an OmniBook Recovery CD and internal CD-ROM module for the computer you are repairing, create a Support Utility floppy disk now.

After inserting a formatted floppy disk in the floppy drive, do one of the following:

- On a factory software installation, click Start, Programs, OmniBook, Create Support Utility Disk.
- On any computer that has a CD-ROM drive, run **makesupp** from the \Omnibook\Drivers\Hputils directory on the OmniBook 7100 Recovery CD.
- On any computer with World Wide Web access, download the Support Utility software package from the OmniBook website (see page vi). Follow the instructions provided.

2. Insert the Recovery CD in the CD-ROM drive—or insert the Support Utility disk in the floppy drive.

3. Reboot the computer. If you are using the Recovery CD, press ESC during reboot to cancel the OmniBook screen, ESC to display the boot-device menu, then select the CD-ROM drive as the boot device, and choose the diagnostics boot option.
4. When prompted, select “Create Hibernate Partition.”

We recommend that you create a 160-MB partition, the same as the factory setup.

Replacing Small Parts (User-Replaceable)

The following small parts are user-replaceable.

Table 2-6. Replacing Small Parts (User-Replaceable)

Part	Replacement Procedure
Battery Faceplate	Slide the panel to one side. Pry off the top edge next to the overhanging end, then slide the panel to the opposite end and remove the panel. Reassembly Notes: Attach the bottom edge of the panel first, then snap on the top edge.
BIOS Cover	On the bottom of the unit, insert a flat-blade screwdriver into the slot at the edge of the BIOS cover and pry it off.
Feet	Insert a small flat-blade screwdriver under the end of the foot and pry it loose. To replace, firmly press the adhesive side of the foot into the recess.
I/O Door	Open the door and flex the center of the door until one of the side tabs releases. To replace an I/O door hinge, insert a small flat-blade screwdriver behind the middle of the flat plate and pop the hinge out of the case. When installing a hinge, make sure the hinge support curves downward.
Pointing Stick Cap	Pull the cap off the pointing stick.
RAM Cover	On the bottom of the unit, insert a flat-blade screwdriver into the slot at the edge of the RAM cover and pop it off.
Screw Cover	Use a small screwdriver or probe to pry out the screw cover on the display bezel. To replace, firmly press the adhesive side of the cover into the hole.

Removing the Keyboard

(HP Authorized Service Providers Only)

Required Equipment

- Small Phillips screwdriver.
- Small flat-blade screwdriver.
- Probe or tweezers.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove the four screws from the bottom case.
3. Use a flat-blade screwdriver to free the three tabs along the top edge of the keyboard. Be careful not to damage the case.
4. Lift the top edge of the keyboard, then slide the keyboard toward the back until the front-left corner is free.
5. Flip over the keyboard toward the back and lay it flat against the display.
6. Using a probe or tweezers, release the two flex cables from the connectors in the case.

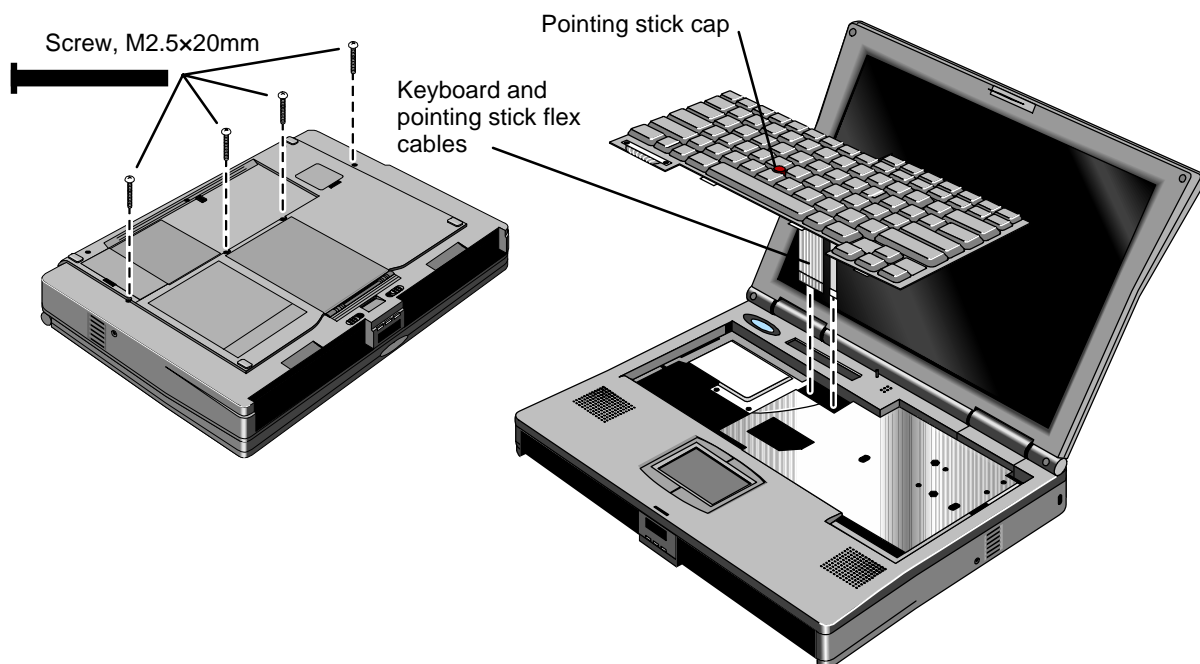


Figure 2-5. Removing the Keyboard

Reassembly Notes

- To connect the keyboard cables, do the following:

1. Lay the keyboard on the case slightly forward of its normal position, then connect the pointing stick cable (smaller cable).
2. Lean the keyboard against the display, then connect the keyboard cable (larger cable).

Caution

Before inserting the keyboard into the case, tuck the excess length of the keyboard flex cable under the top case behind the keyboard. Then pull the free end of the stiffener tab on the cable toward the front of the case—so the tab is not under the top case. *Check the cable again after lowering the keyboard into its final position.*

- When you lower the keyboard into the case, pull it toward the front so the three tabs at the back fit down into the case. Adjust the keyboard until the tabs lock under the top case.

Removing the Heatsink

(HP Authorized Service Providers Only)

Required Equipment

- Small Phillips screwdriver.
- Needle-nose pliers.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove the keyboard (see the previous topic).
3. Remove the screw from the CPU heatsink into the PCMCIA shield.
4. Remove the two screws from the middle area of the CPU heatsink.
5. Lift the front edge of the heatsink slightly and slide it to the front about 5 mm—until the front edge of the fan clears the top case.
6. Lift the left side of the heatsink until it reaches about 45°, then slide the fan out of the case.
7. Remove the right hinge cover. Pull the right-front corner forward until it unsnaps, then lift it off.
8. Use a needle-nose pliers to unplug the fan cable from the motherboard.

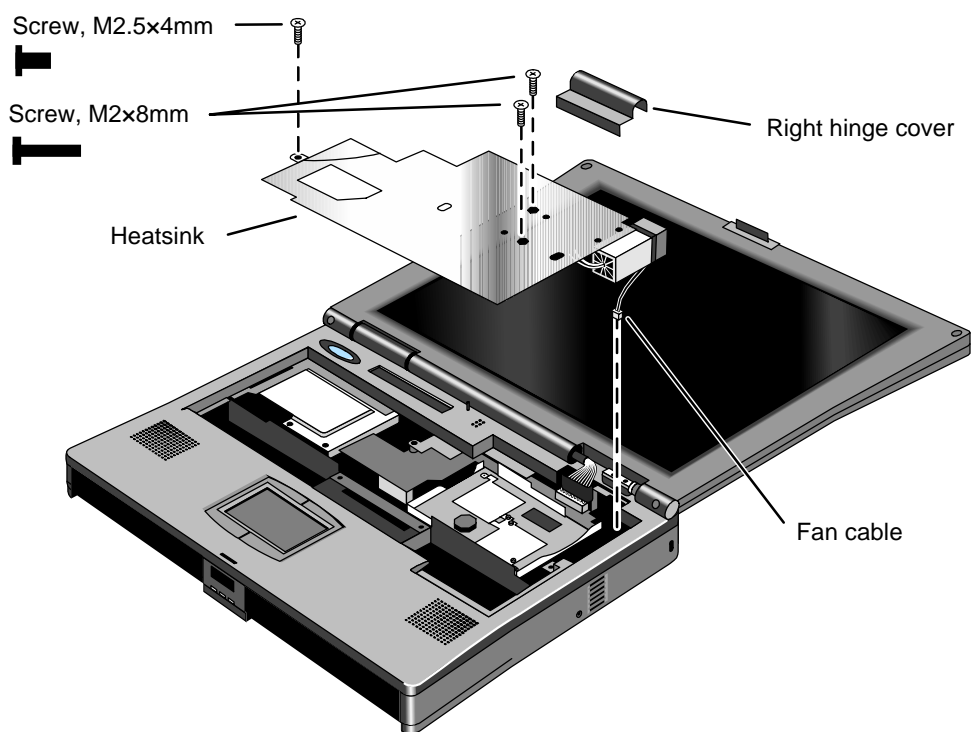


Figure 2-6. Removing the Heatsink

Reassembly Notes

Caution

Replace any thermal pads on the heatsink that are damaged.

- Plug in the fan cable before inserting the heatsink into the case.
- Tuck the fan cable under the heatsink.

Removing the Display Assembly

(HP Authorized Service Providers Only)

Required Equipment

- Small Phillips screwdriver.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove these additional assemblies:
 - Keyboard (page 2-8).
 - Heatsink and right hinge cover (page 2-9).
3. Open the display fully.
4. Remove the left hinge cover by pressing in and lifting the front edge.

Hint

In the next step, unplug the connector before removing the grounding screw. Otherwise, you may unseat the LVDS PCA.

5. Unplug the display cable from the LVDS PCA, then remove the screw holding the grounding strap.
6. Remove the four screws from the hinges and lift off the display assembly.

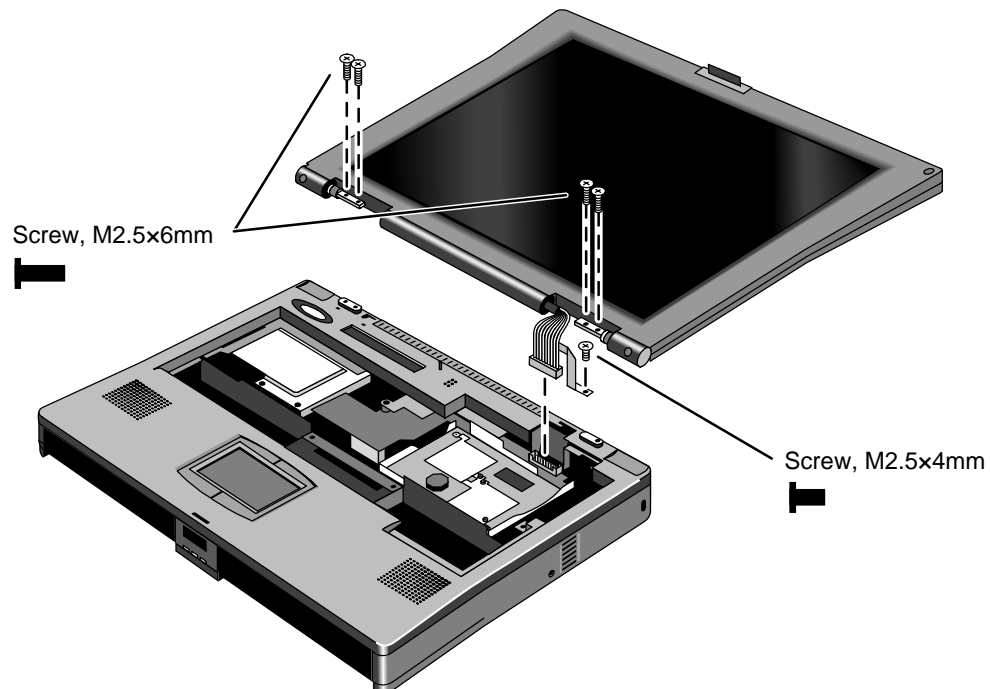


Figure 2-7. Removing the Display Assembly

Removing LCD Module

(HP Authorized Service Providers Only)

Required Equipment

- Small Phillips screwdriver.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove these additional assemblies:
 - Keyboard (page 2-8).
 - Heatsink and right hinge cover (page 2-9).
 - Display assembly (page 2-11).
3. Remove the rubber screw covers at the top corners of the display, then remove the screws at all four corners.
4. Press inward on one side of the display bezel until it unsnaps from the case. Continue across the top and along the opposite side—until only the bottom is attached.
5. Lift the top edge of the bezel until the bottom edge unsnaps from the case, then remove the bezel.
6. Remove the four screws from the bottom corners of the display brackets. Remove the hinges.
7. Unplug the wires from the right end of the inverter PCA.
8. Unplug the main display cable from the left end of the inverter PCA.
9. Remove the screw from the inverter PCA and lift out the PCA.
10. Slide the LCD module forward slightly, then lift the bottom edge of the LCD module until you can remove the module and brackets from the case.
11. Remove the four screws from the sides of the module, and remove the display brackets and LCD shield.
12. Unplug the main display cable from the LCD module.

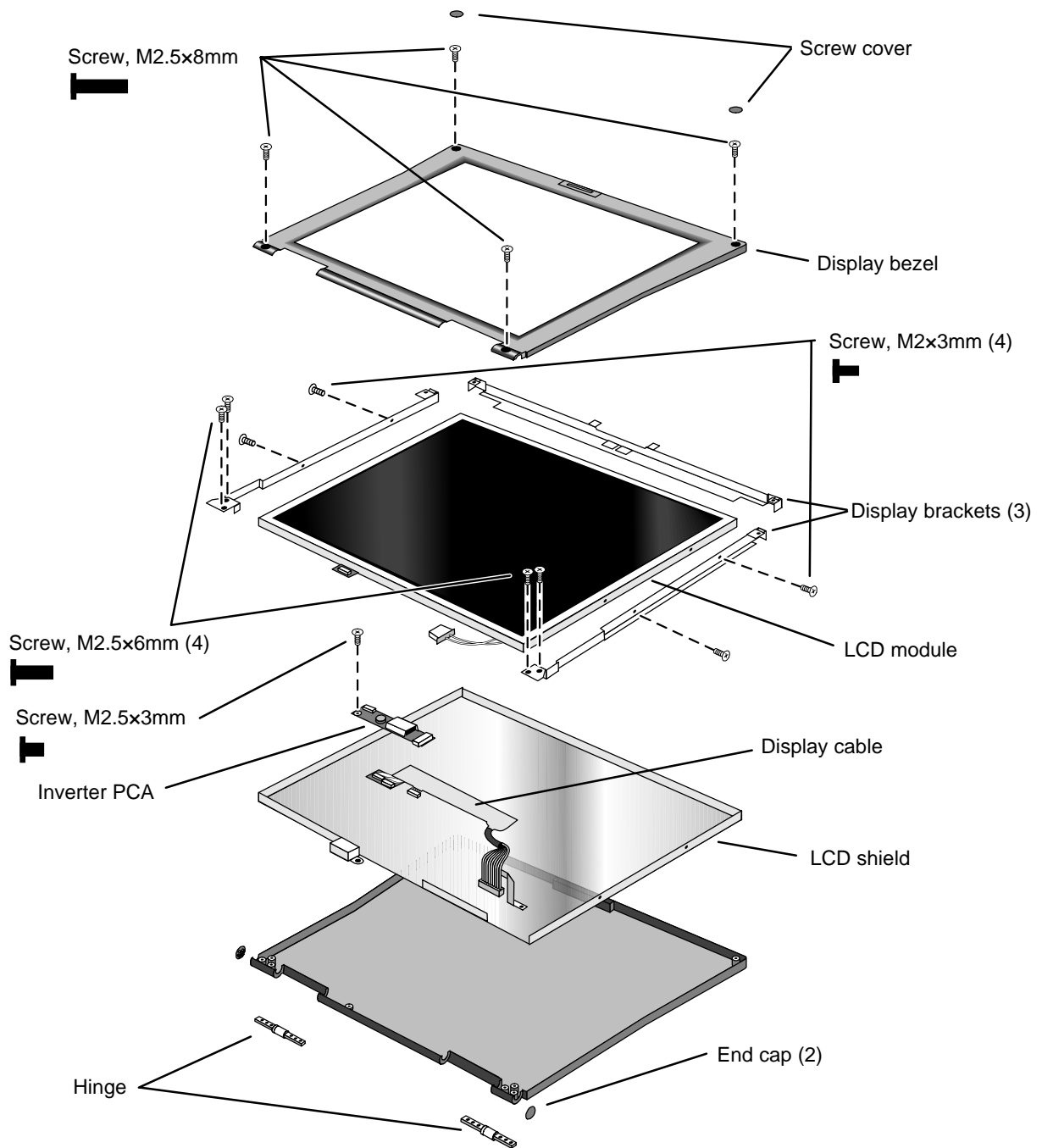


Figure 2-8. Removing the LCD Module

Reassembly Notes

- Make sure the connector on the main display cable seats correctly on the LCD connector.
- Install the LCD shield and three display brackets on the LCD module, then install the complete assembly onto the posts at the top of the display case. Lower the assembly into the case.
- Route the LCD wires under the main display cable near the right hinge.

- Install each hinge so the brighter half is attached to the display case.
- When installing the hinges, do not install the outer screws until the bezel is attached.
- Install the hinge end caps into the case before attaching the bezel. The mark molded into the cap should be vertical when the display is laying flat.
- Install the left hinge cover with its flat wall toward the front.

Removing the Top Case

(HP Authorized Service Providers Only)

Required Equipment

- Small Phillips screwdriver.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove these additional assemblies:
 - Floppy/CD-ROM module or other module (page 2-3).
 - Hard disk drive (page 2-5).
 - Keyboard (page 2-8).
 - Heatsink (page 2-9).
 - Display assembly (page 2-11).
3. Unplug the icon/MB cable from the motherboard.
4. Unplug the speaker/touch-pad cable from the motherboard.
5. Turn the unit bottom side up and remove the two screws from the bottom case in the hard drive compartment.
6. Turn the unit face up and remove the three screws from the top case.
7. Along the right side, press inward on the top case and outward on the bottom case until the top case unsnaps along the side. Repeat along the left side, then lift up the back edge of the top case about 5 cm. Slide the top case forward to disengage the front edge.

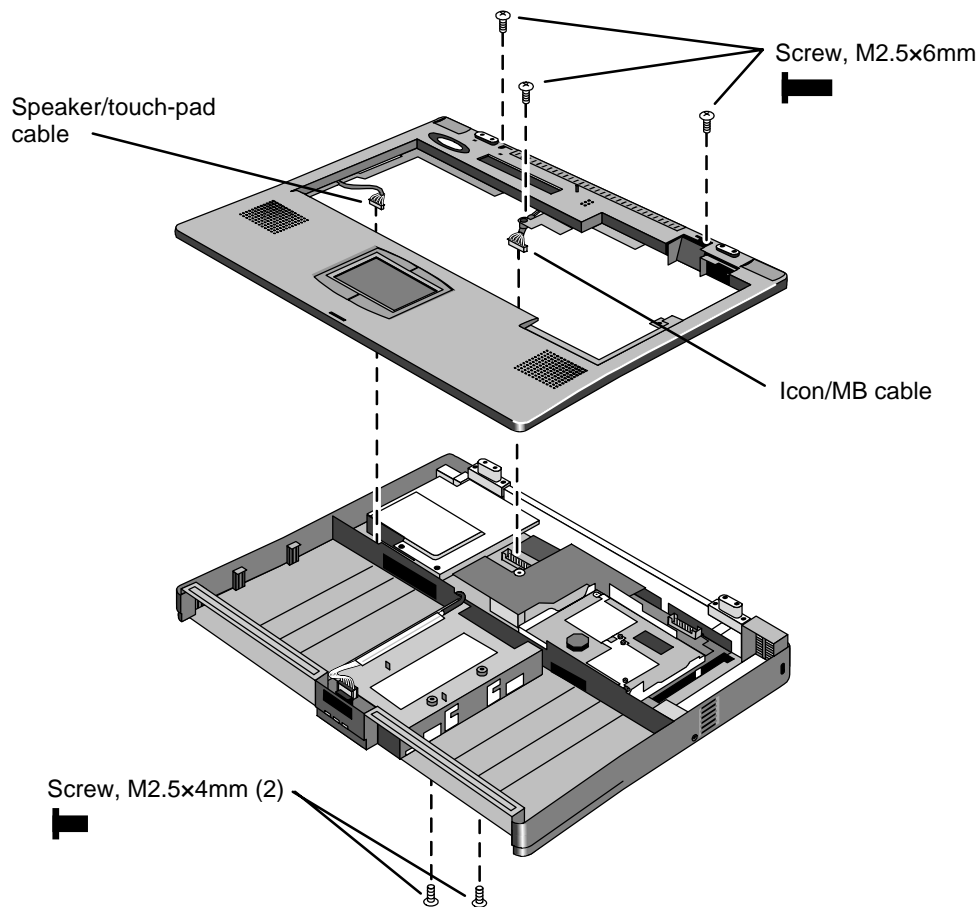


Figure 2-9. Removing the Top Case

Reassembly Notes

Note: Installing a New Top Case Assembly

Transfer the icon PCA from the old top case to the new one.

- Starting at one corner, fully engage the tabs across the front edge of the top case, then lower it onto the bottom case.

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

Required Equipment

- Small Phillips screwdriver.
- 5 mm hex driver.

Removal Procedure

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

2. Remove these additional assemblies:
 - Floppy/CD-ROM module or other module (page 2-3).
 - Hard disk drive (page 2-5).
 - Keyboard (page 2-8).
 - Heatsink (page 2-9).
 - Display assembly (page 2-11).
 - Top case (page 2-14).
3. Remove the three screws from the CPU module.

Caution

Keep the CPU module and fence flat while removing it. Otherwise, you could damage the connectors.

4. Lift the CPU fence to unplug the CPU module from the motherboard. Lift out the fence and module together.
5. Unplug the DC-DC PCA from the motherboard.
6. Remove the screw from the LVDS PCA, then unplug the PCA from the motherboard.
7. Remove the screw from the pointer-control PCA, then unplug the PCA from the motherboard.

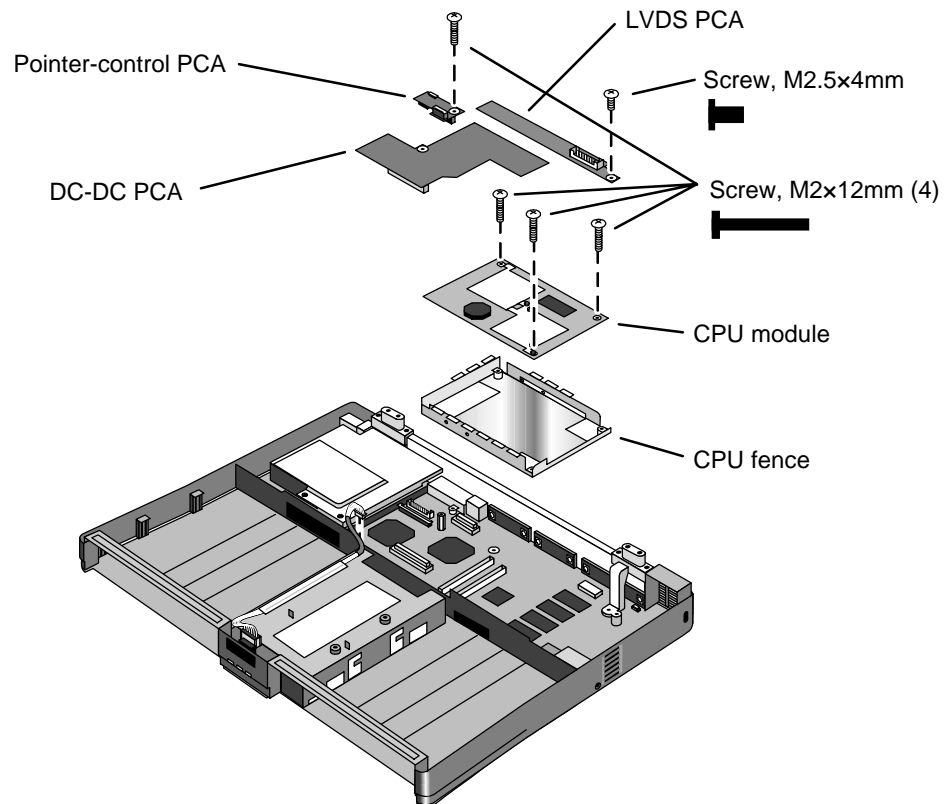


Figure 2-10. Removing the Motherboard (Part 1)

8. Unplug the front-IR cable from the motherboard.

9. Using a 5 mm hex driver, remove the standoff from the middle of the motherboard
10. Remove two screws that hold the motherboard to the bottom case.
11. Remove the screw that holds the left hinge mount to the motherboard, and the screw that holds the right hinge mount to the motherboard.
12. Remove eight screws that hold the I/O plate:
 - Three screws on the bottom of the unit.
 - Four screws inside the I/O door near the hinge mounts.
 - One screw from the top-center of the I/O plate.
13. Lift the front edge of the motherboard until it clears the bottom case, then slide the board forward and lift it out.

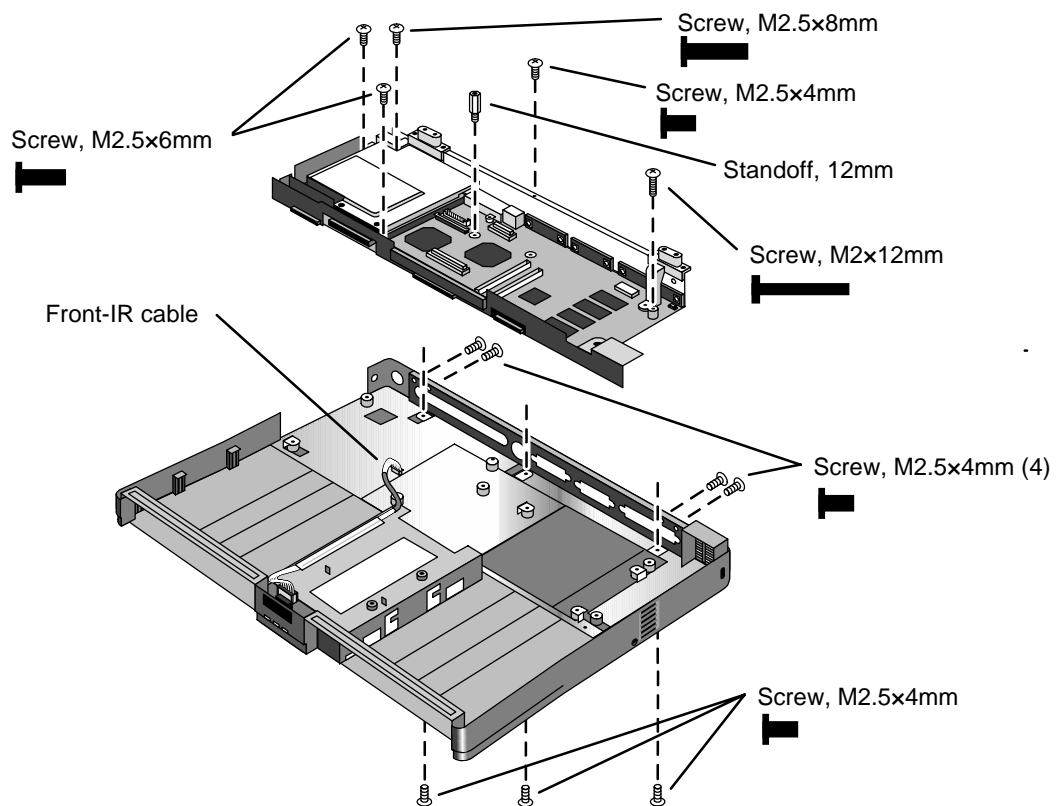


Figure 2-11. Removing the Motherboard (Part 2)

Reassembly Notes

Note: Installing a New Motherboard

- Transfer these parts from the old motherboard to the new one:
 - Hinge mounts, left and right.
 - PCMCIA shield and socket, audio PCA and heatsink.
 - Video PCA, video heatsink, and RAM board (if present) on the underside.
 - All other PCAs, including CPU module and fence.
 - Plastic motherboard frame and plastic audio jack cover.
- Reprogram the BIOS IC—see the note below.
- Store the serial number electronically in the new motherboard—see the steps below.

Note: Installing a New Bottom Case

- Transfer these parts from the old bottom case to the new one:
 - Front-IR PCA (with cable).
 - Plastic parts (I/O door, RAM cover, BIOS cover).
 - Install a new business card overlay and regulatory label.
 - Install a new serial number label and overlay—see the steps below.
- When installing the motherboard, make sure the audio jack cover is inside the bottom case.
 - Make sure the front-IR cable is taped along the top of the housing and is retained by the plastic tab near where it plugs into the motherboard.

Caution

Replace any heatsink thermal pads that are damaged.

Keep the CPU module flat while installing it. Press it down only directly above the connectors underneath. Otherwise, you could damage the connectors or damage pressure-sensitive components on the module.

- Do *not* install a screw into the DC-DC PCA until the top case is installed.

Note

If you installed a new motherboard with a new BIOS IC, the IC contains only enough basic programming to boot the OmniBook. After installing the IC, you must reprogram it. Hewlett-Packard prefers that you program the IC with the latest BIOS—follow the directions carefully. You can download it from the OmniBook website (see page vi).

Storing the Serial Number Electronically

1. Exit Windows and boot to a DOS prompt.
2. Run ESN.EXE from one of these sources:
 - On a factory software installation, in MS-DOS change to the \OMNIBOOK\DRIVERS\HPUTILS directory and type **esn** at the prompt.
 - Otherwise, copy \Omnibook\Drivers\Hputils\Esn.exe from the OmniBook 7100 Recovery CD, then run it on the OmniBook.

3. Store the serial number:

- 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.

Installing a New Serial Number Label

If you do not have a master file that creates serial number labels, get a copy from the Reseller website (see page vi).

1. Using any PC connected to a laser printer, open the master serial label file, enter the serial number and product number from the old serial label, and print the new label on plain white paper. The new label does not have barcodes.
2. 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.
3. While holding the paper label in place, attach a serial label overlay into the outer recess. It covers and protects the serial label.

Removing the BIOS IC

(HP Authorized Service Providers Only)

Note

A replacement BIOS IC contains only enough basic programming to boot the OmniBook. After installing the IC, you must reprogram it. Hewlett-Packard prefers that you program the IC with the latest BIOS—follow the directions carefully. You can download it from the OmniBook website (see page vi).

Required Equipment

- Flat-blade screwdriver.
- IC insertion/removal tool.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. On the bottom of the unit, insert a flat-blade screwdriver into the slot at the edge of the BIOS cover and pry it off.
3. Use an IC insertion/removal tool to remove the BIOS IC from its socket.

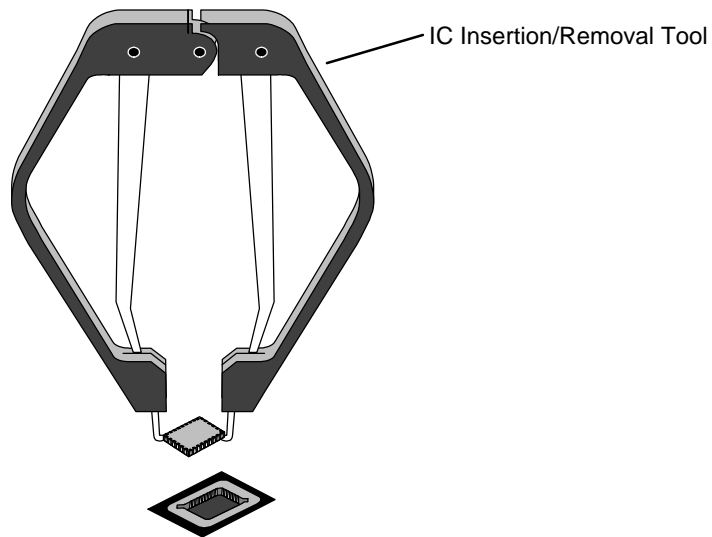


Figure 2-12. Removing the BIOS IC

Reassembly Notes

Caution

Align the IC with the slot in the socket. The IC is keyed to fit correctly. If you insert the IC backward, the IC or motherboard could be damaged.

- Press down firmly on the IC with your thumb to ensure a proper connection.
- Reprogram the IC by programming the BIOS—see the note above.

Removing Other Components

(HP Authorized Service Providers Only)

Required Equipment

- Small Phillips screwdriver.
- 5 mm hex driver (for motherboard-related components).
- Probe or tweezers.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove the additional assemblies and follow the special steps indicated in the tables below. Components are separated into these groups:
 - Display components (below).
 - Top case components (page 2-22).
 - Bottom case components (page 2-23).

Table 2-7. Removing Display Components

Component	Removal Procedures	Additional Steps (See figure on page 4-5)
Display Bezel	Keyboard (page 2-8). Heatsink (page 2-9).	Remove the bezel (page 2-11). Reassembly Notes: Install the hinge end caps into the case before attaching the bezel.
Display Bracket, Left, Right, or Top	Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). LCD module (page 2-11).	
Display Cable	Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). LCD module (page 2-11).	Reassembly Notes: Make sure the two-wire cable to the inverter PCA is under the main display cable near the hinge opening.
Display Case	Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). LCD module (page 2-11).	Reassembly Notes: Make sure the two-wire cable to the inverter PCA is under the main display cable near the hinge opening.
Display Latch	Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). LCD module (page 2-11).	<ol style="list-style-type: none"> 1. Press the middle of the top bracket away from the latch until it unhooks from the case, then lift out the bracket. 2. Turn the case so the latch is closest to you. 3. Use your thumb to push the latch away from you until it rolls out of the case. This takes some force. Reassembly Notes: Make sure the ends of the spring point up when inserted into the case. Make sure the latch locks in place.
End Cap	Keyboard (page 2-8). Heatsink (page 2-9).	<ol style="list-style-type: none"> 1. Remove the bezel (page 2-11). 2. Lift out the end cap. Reassembly Notes: The mark molded into the cap should be vertical when the display is laying flat.
Hinge	Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11).	<ol style="list-style-type: none"> 1. Remove the bezel (page 2-11). 2. Remove the four screws from the bottom corners of the display brackets. Remove the hinges. Reassembly Notes: Install each hinge so the brighter half is attached to the display case. Do not install the outer screw until the bezel is attached.
Icon PCA	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14).	Remove the two screws that hold the PCA.
Inverter PCA	Keyboard (page 2-8). Heatsink (page 2-9).	<ol style="list-style-type: none"> 1. Do not remove the display assembly, but remove the bezel as described (page 2-11). 2. Unplug the two cables from the inverter PCA. 3. Remove the screw from the PCA and remove the PCA. Reassembly Notes: Make sure the insulator covers the inverter PCA.
LCD Module	See page 2-11.	

Component	Removal Procedures	Additional Steps (See figure on page 4-5)
LCD Shield	Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). LCD module (page 2-11).	
Screw Cover (Display)		Lift off the cover. Reassembly Notes: Do not install a cover on the lower display screws.

Table 2-8. Removing Top Case Components

Component	Removal Procedures	Additional Steps (See figure on page 4-6)
Hinge Cover, Left		Open the display fully, then press on the front of the hinge cover until it releases from the top case. Reassembly Notes: Install the flat wall toward the front.
Hinge Cover, Right	Plug-in module (page 2-3). Keyboard (page 2-8). Heatsink (page 2-9).	
Keyboard	See page 2-8.	
Speaker	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14).	<ol style="list-style-type: none"> 1. On the underside of the top case, remove the screws from the speaker cover and remove the cover. 2. Release the four tabs protruding through the metal plate—you do not need to disconnect the touch-pad assembly. 3. Remove the screws from the edges of the metal plate. Then remove the two screws from the PCA beneath. 4. Lift up the front of the metal plate and two PCAs, then unplug the speaker cable. Reassembly Notes: During assembly, make sure the speaker wires do not affect the touch-pad buttons, and the speaker/touch-pad cable routes through the cutout in the speaker cover.
Touch-pad Cable	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14).	<ol style="list-style-type: none"> 1. On the underside of the top case, release the four plastic tabs protruding through the metal plate. 2. Release the flex cable from the top case and from the touch-pad PCA.
Touch-pad PCA	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14).	<ol style="list-style-type: none"> 1. On the underside of the top case, release the four plastic tabs protruding through the metal plate. 2. Release the flex cable from the top case. 3. Release the two snaps along one side of the plastic housing, then lift off the plastic cover and pop out the touch-pad PCA.

Table 2-9. Removing Bottom Case Components

Component	Removal Procedures	Additional Steps (See figure on page 4-6)
Audio Heatsink	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14). Motherboard (page 2-15).	<ol style="list-style-type: none"> 1. Remove the five screws from the PCMCIA shield and remove the shield. 2. On the bottom of the motherboard, remove the four screws that hold the PCMCIA socket. Do not lose the mylar washers. 3. Unplug the PCMCIA socket from the motherboard. 4. Unplug the audio PCA from the motherboard. 5. Lift off the audio heatsink. <p>Reassembly Notes: Be sure the audio heatsink is properly installed before installing the audio PCA. Be sure to install the grounding clip on the PCMCIA screw next to the volume control.</p>
Audio Jack Cover	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14). Motherboard (page 2-15).	On the bottom of the motherboard, remove the screw from the audio jack cover and remove the cover.
Audio PCA	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14). Motherboard (page 2-15).	<ol style="list-style-type: none"> 1. Remove the five screws from the PCMCIA shield and remove the shield. 2. On the bottom of the motherboard, remove the four screws that hold the PCMCIA socket. 3. Unplug the PCMCIA socket from the motherboard. 4. Unplug the audio PCA from the motherboard. <p>Reassembly Notes: Be sure the audio heatsink is properly installed before installing the audio PCA. Be sure to install the grounding clips on the PCMCIA screws. Make sure they do not touch any nearby components.</p>
Bottom Case	See page 2-15.	
CPU (MMO) Fence	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14).	<ol style="list-style-type: none"> 1. Unplug the DC-DC PCA. 2. Remove the screw from the LVDS PCA and unplug the PCA. 3. Remove the three screws from the CPU module. 4. Lift the CPU fence to unplug the CPU module from the motherboard. Lift out the fence and module together.
CPU Module (MMO)	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14).	<ol style="list-style-type: none"> 1. Remove the three screws from the CPU module. 2. Lift the CPU fence to unplug the CPU module from the motherboard. Lift out the fence and module together. <p>Caution: When installing the module, press directly above the connectors. Otherwise, you could damage pressure-sensitive components.</p> <p>Caution: Replace any heatsink thermal pads that are damaged.</p>
DC-DC PCA	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14).	Unplug the PCA from the motherboard.

Component	Removal Procedures	Additional Steps (See figure on page 4-6)
Fan	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9).	Remove the three screws at the face of the fan. Reassembly Notes: Install the fan wires next to the rounded corner of the block.
Front-IR PCA	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14).	1. Unplug the front-IR cable from the motherboard. 2. Remove the screw from the front-IR PCA and remove the PCA. Reassembly Notes: Make sure the front-IR cable is taped along the top of the housing and is retained by the plastic tab near where it plugs into the motherboard.
Heatsink, CPU	See page 2-9.	
Hinge Mount, Left	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14).	Remove the five screws holding the hinge mount, including two behind the I/O door.
Hinge Mount, Right	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14).	1. Remove the two screws from the hinge mount holding the LVDS PCA and motherboard. 2. Remove the two screws from the top of the hinge mount and two screws holding it from behind the I/O door. 3. Slide out the hinge mount.
LVDS PCA	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14).	1. Unplug the DC-DC PCA from the motherboard. 2. Remove the screw from the LVDS PCA and unplug the PCA from the motherboard.
Motherboard	See page 2-15.	
Motherboard Frame	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14). Motherboard (page 2-15).	1. Remove the remaining screw at the front edge of the PCMCIA shield. 2. On the bottom of the motherboard, remove the two screws at the corners of the motherboard. One screw also holds the audio jack cover.
PCMCIA Shield	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14).	Remove the three remaining screws from the PCMCIA shield and remove the shield.
PCMCIA Socket	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14). Motherboard (page 2-15).	1. Remove the three remaining screws from the PCMCIA shield and remove the shield. 2. On the bottom of the motherboard, remove the four screws that hold the PCMCIA socket. 3. Unplug the PCMCIA socket from the motherboard. Reassembly Notes: Be sure to install the grounding clips on the PCMCIA screws. Make sure they do not touch any nearby components.

Component	Removal Procedures	Additional Steps (See figure on page 4-6)
Pointer-control PCA	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14).	Remove the screw from the PCA and unplug it from the motherboard.
Video Heatsink	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14). Motherboard (page 2-15).	<ol style="list-style-type: none"> 1. Unplug the PCA from the bottom of the motherboard. 2. Remove the two screws holding the video heatsink.
Video PCA	Plug-in module (page 2-3). Hard drive (page 2-5). Keyboard (page 2-8). Heatsink (page 2-9). Display (page 2-11). Top case (page 2-14). Motherboard (page 2-15).	Unplug the PCA from the bottom of the motherboard.

Troubleshooting and Diagnostics

This chapter includes troubleshooting and diagnostic information for testing the functionality of the OmniBook and identifying faulty modules:

- Troubleshooting information
 - Troubleshooting the problem (page 3-2).
 - Verifying the repair (page 3-3).
 - Suggestions for troubleshooting (page 3-4).
- Diagnostic tools
 - OmniBook hardware diagnostic program (page 3-11).
 - Power-on self-test (page 3-16).
 - Sycard PCCtest 450 PC Card (page 3-16).
 - Desktop Management Interface (page 3-20).
 - BIOS Setup utility (page 3-22).

Troubleshooting

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

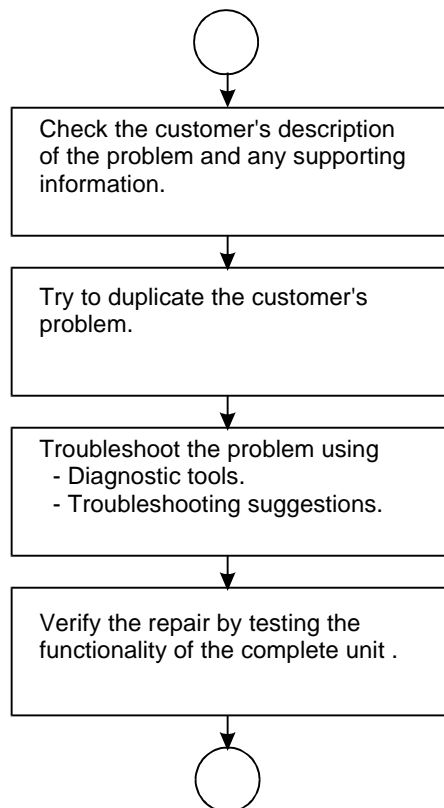


Figure 3-1. Basic Troubleshooting Steps

Troubleshooting the Problem

Record pertinent information about the unit:

- Model and serial number.
- Operating system and version.
- 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, take note of 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 possible causes.
 - The OmniBook diagnostic program is the primary troubleshooting tool—it tests most components using automatic and interactive tests. The table on page 3-4 shows how you can use the different diagnostic tools to isolate the cause.
 - The troubleshooting suggestions on page 3-5 include general suggestions for repairing units with certain failure symptoms.

Swapping easily replaced modules with known-good modules is an ideal way to isolate the cause down to the module level. It is rare for more than one module to be responsible for one failure symptom. Therefore, replacement of more than one module for a particular symptom should be the exception rather than the normal expectation.

After replacing a module, it is normal for the unit to be in a confused state and lock up when power is applied. If this occurs, press the system-off button to restart the computer in a known state.

Verifying the Repair

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

- **Basic Diagnostic Test.** Run the basic test of the OmniBook diagnostic program (page 3-11).
–and–
- **Function Tests.** Run tests that check the repaired function, such as in the OmniBook diagnostic program (page 3-11).
–and–
- **Failed Tests.** Run any other tests that failed during troubleshooting.

Suggestions for Troubleshooting

Table 3-1. Scope of Diagnostic Tools

Function	OmniBook Diagnostics	Power-On Self-Test	Sycard PCCtest 450	DMI/TopTools (if installed)	BIOS Setup
Bootup		Tests		Describes (SafeTools)	Configures
Processor	Tests (System menu)	Tests		Describes (AssetTools)	
Memory	Tests (Memory menu)	Tests		Describes (AssetTools)	Describes
Batteries				Describes (AssetTools)	
Display	Tests (Video, Mem, User menus)			Describes (AssetTools)	
Hard disk	Tests (IDE menu)	Tests		Describes (AssetTools)	Configures
Floppy drive	Tests (FDD menu)	Tests		Describes (AssetTools)	Describes
Keyboard	Tests (KBD menu)	Tests		Describes (AssetTools)	
Pointer	Tests (Misc menu)			Describes (AssetTools)	Configures
Audio	Tests (System, Misc menus)				Configures
Serial	Tests* (Misc menu)			Describes (AssetTools)	Configures
Parallel	Tests* (Misc menu)			Describes (AssetTools)	Configures
Infrared	Tests† (Misc menu)			Describes (AssetTools)	Configures
PS/2 port	Tests† (KBD, Misc menus)				
USB	Tests† (System menu)			Describes (AssetTools)	
Docking port	Tests (using docks)				
PCMCIA			Tests	Describes (AssetTools)	
AC adapter				Status (AssetTools)	
Docking products	Tests ports and internal bus			Status (AssetTools)	Configures
CD-ROM drive	Tests (IDE menu)	Tests (with boot CD)		Describes (AssetTools)	Configures
Other plug-in modules				Describes (AssetTools)	

* The diagnostic test is more thorough if you use a loopback connector.

† Use an appropriate external device to exercise the port. See the help text for the tests in the menu.

If you can't isolate the cause of a problem using the diagnostic tools, you can 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 the table on page 1-13.			
Startup			
Does not boot on ac or battery	Check the power source. Push system-off button. Unplug the ac adapter and remove all batteries, then reconnect power. Remove any RAM boards and try again. Reinsert and try again.	AC adapter. DC-DC PCA. RAM board. CPU module. Motherboard. Video PCA. LCD module. Hard drive.	Check ac adapter. Remove any RAM boards and retry. If status panel does not turn on, reprogram BIOS, replace DC-DC PCA, replace motherboard. If status panel turns on but display remains off, try external monitor. If monitor shows successful boot, replace LCD module. If monitor shows activity but BIOS does not complete, replace CPU module. If monitor is blank, replace video PCA, replace CPU module, replace motherboard. If status panel and display turn on, 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, reload hard drive, replace hard drive.
Does not boot on battery (boots on ac)	Check battery level on status panel and battery LEDs. Check battery contacts. If available, try another battery.	Battery or contacts. DC-DC PCA. Motherboard.	
Does not boot from floppy drive	Check floppy drive contacts. Check boot order in BIOS Setup. Check that floppy boot is enabled in BIOS Setup.	Floppy drive or contacts. Motherboard.	
Error message such as "Invalid system disk" or "Auto IDE error"	Check for a disk in floppy drive. Remove and reinsert hard drive. Check boot order in BIOS Setup.	Hard drive contacts. Hard drive.	If unit boots from floppy drive, check for corrupt files on hard drive, reload hard drive, replace hard drive.
Sluggish startup or shutdown	Run ScanDisk and Disk Defragmenter to check and optimize the hard drive. Delete temporary and unneeded files.		Use same suggestions shown at left.

Symptom	Call Center: Suggestions	Repair Center: Likely Causes	Repair Center: Comments
Password has been forgotten	Verify proper ownership, then follow the removal procedure with the owner and log the appropriate data—see page 5-1.		The user must call Technical Support and provide proof of ownership. Password removal is restricted to certain sites. See page 5-1.
Power/Battery			
Short battery operating time	Turn down display brightness. Check power management settings in BIOS Setup. Try the default settings. Inform user that certain applications can cause excess power usage. (User can get power monitor from www.intel.com and monitor CPU load.) Heavy modem use can affect battery operating time.	Battery. Motherboard.	Battery capacity often decreases after a year or more.
Does not run on battery, empty battery indicator	Check battery contacts. If available, try another battery.	Battery or contacts. Motherboard.	
Battery does not charge	Check the power source. Check battery contacts. If available, try another battery and ac adapter. Check for high ambient temperature and blocked air vents.	Battery or contacts. AC adapter. Motherboard. Heatsink (fan). DC-DC PCA.	Check ac adapter. Check fan.
Second battery does not work, main battery works	Try swapping the two batteries. Check contacts on second battery. Second battery does not charge until main battery is fully charged.	Second battery or contacts. Motherboard.	
Battery indicator is inaccurate	Completely charge and discharge the battery 2 to 4 cycles in the unit.	DC-DC PCA. Motherboard.	Try cycling the battery charge.
Display			
Dark display, no light	Adjust display brightness. Press Fn+F5 several times. Try external monitor.	LCD module (backlight). Display cable or connections. Inverter PCA. LVDS PCA.	If an external monitor displays no image, replace the video PCA instead, then motherboard.
White display	Adjust display brightness.	LCD module. Inverter PCA. LVDS PCA.	
Erratic display		Display cable or connections. LCD module.	
Bright or missing pixels or lines	See quality statement on page 5-2.	LCD module. Display cable or connections.	See quality statement on page 5-2.

Symptom	Call Center: Suggestions	Repair Center: Likely Causes	Repair Center: Comments
Hard disk			
Hard disk never spins	Check the power source. Remove and reinsert the hard drive. Check the contacts.	Hard drive or contacts. Motherboard.	If the drive case is damaged, it can prevent proper operation.
Hard disk makes clunking or scratching noise	Back up the drive immediately. Was the computer or drive dropped?	Hard drive.	Check the computer and drive for evidence of customer abuse.
Hard disk makes buzzing or whining noise	Back up the drive immediately. Check for alternate noise sources, such as a PCMCIA drive or fan. If a keystroke causes the sound to change, it may be power supply noise.	Depends on the source of the noise.	
Files are corrupted	Run a virus scan program. Check the disk surface by running Scandisk (Windows 95) or Disk Administrator (Windows NT). Or boot to DOS and run CHKDSK to look for problems, run CHKDSK /f to fix. Use Recovery CD to restore original factory software.		Use same suggestions shown at left.
Drive capacity is less than normal	Check the disk surface by running Scandisk (Windows 95) or Disk Administrator (Windows NT). Check partitions using FDISK (Windows 95) or Disk Administrator (Windows NT).	Hard drive.	Use same suggestions shown at left. Recreate the Hibernate partition, then partition and format the disk.
Floppy drive			
General problems	Check floppy module contacts. Check settings in BIOS Setup.	Floppy module or contacts. Motherboard.	
Keyboard			
Some or all keys do not work properly		Keyboard. Motherboard. BIOS IC.	
PS/2 keyboard and mouse with Y adapter do not work	Check devices separately.	Y adapter. PS/2 device. Motherboard.	
Pointing stick			
General problems	Check settings in Control Panel. Check that the pointing stick is enabled in BIOS Setup.	Keyboard assembly. Pointer-control PCA. Motherboard.	

Symptom	Call Center: Suggestions	Repair Center: Likely Causes	Repair Center: Comments
Special TrackPoint driver features not working	If installed, remove TouchPad driver support using Add/Remove Program. In Mouse Properties, select the IBM TrackPoint driver from the track-point directory under \OmniBook\Drivers.	Keyboard assembly. Pointer-control PCA. Motherboard.	
Click button doesn't work		Top case. Pointer-control PCA. Motherboard.	
Touch pad			
General problems	Check settings in Control Panel. Check pointing stick settings in Control Panel. The IBM TrackPoint driver can redefine touch pad operation. Check that the touch pad is not disabled in BIOS Setup.	Touch-pad PCA. Top case. Pointer-control PCA. Motherboard.	
Special TouchPad driver features not working	If installed, remove IBM TrackPoint support using Add/Remove Program, then in Mouse Properties, select the standard PS/2 mouse. Disable the pointing stick in BIOS Setup. Run Setup.exe from the touch-pad subdirectory under \OmniBook\Drivers.	Touch-pad PCA. Top case. Pointer-control PCA. Motherboard.	
Click button doesn't work		Top case. Pointer-control PCA. Motherboard.	
Audio			
Sound does not play	Check settings in BIOS Setup. Increase sound volume (volume knob and software controls). Check whether mute is active (software controls). Check for sound resource conflicts.	Audio PCA. Top case (speakers). Motherboard.	Check operation using headphones or external speakers.
Sound does not record	Check settings in BIOS Setup. Check software controls for microphone—it should not be muted in recording panel. Note: The microphone should normally be muted in the master output panel.	Icon PCA (mic). Audio PCA. Motherboard.	Check operation using external microphone.

Symptom	Call Center: Suggestions	Repair Center: Likely Causes	Repair Center: Comments
Serial/Parallel			
General problems	Check settings in BIOS Setup. Check settings in Control Panel (and in Windows NT Diagnostics).	Motherboard.	
Infrared			
General problems	Infrared communication is not supported in Windows NT 4.0. Infrared is disabled and no drivers installed as shipped. (Drivers are included.) Check settings in BIOS Setup. Standard IrDA and fast-IrDA are incompatible (they use different drivers). For fast-IrDA, check for DMA conflict with ECP parallel port.	Front-IR PCA (front IR port). Icon PCA (back IR port). Motherboard.	
USB			
General problems	USB is not supported in Windows NT 4.0.	Motherboard.	
PCMCIA			
Setup problems	Make sure Card Executive is installed for Windows NT. If the card requires an IRQ, check that there is one available. Check for conflicts or refresh the device list in Device Manager (Windows 95) or Administrative Tools or Control Panel System (Windows NT). Reboot the computer. Try the card in the other slot or in another computer. Check the OmniBook website for installation instructions (page vi). Download current drivers from the card manufacturer's website.	Motherboard. PCMCIA socket.	If both slots have problems, replace the motherboard. If only one slot has a problem, try replacing the PCMCIA socket.
AC adapter			
Does not power the OmniBook	Try another ac adapter, if available.	AC adapter. DC-DC PCA. Motherboard.	The ac adapter is not repairable—it must be replaced.
Miscellaneous			
Clock loses time	Plug in ac adapter for 24 hours to charge backup battery.	Motherboard.	Charge backup battery.

Symptom	Call Center: Suggestions	Repair Center: Likely Causes	Repair Center: Comments
Computer gets hot	It is normal for the computer to get hot. Make sure the air vents are clear. DOS games and other programs that drive CPU usage toward 100% can contribute.	Fan. Thermal connections. Heatsink damage.	Check the fan. Check for proper contact between CPU and heatsink, and between fan and heatsink.
Computer pauses or runs sluggishly	May be normal Windows behavior (background processing can affect response time). If the hard disk has spun down to conserve power, it can take several seconds to spin up. You can hear this. You can run BIOS Setup and change the hard disk time-out to match the Suspend time-out. Certain background operations (such as HP COE virus scans) can affect performance while they're running. Some file browsers may be unresponsive while they're processing a graphic image or waiting for broken network connections to time out. Run BIOS Setup and try turning off smart CPU mode.	CPU module. Motherboard.	If computer slows after a period of continuous activity, check thermal connections and parts.
Accessories			
Docking product I/O problems	Check that ac power is connected. Check settings in BIOS Setup. Try using the corresponding OmniBook port.	Docking product. Motherboard.	Test the corresponding OmniBook ports while undocked. The port replicator and mini dock are not repairable—they must be exchanged. The docking system is repairable—see its service manual.
Can not boot from CD in CD-ROM drive	Check that the CD is bootable. Check ESC key timing during boot, or check boot order in BIOS Setup.	CD-ROM drive.	The CD-ROM drive is not repairable—it must be exchanged.
General plug-in module problems	Check module contacts. Push system-off button.	Plug-in module or contacts. Motherboard.	Plug-in modules are not repairable—they must be exchanged.

Diagnostic Tools

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

- OmniBook hardware diagnostic program (below).
- Power-on self-test (page 3-16).
- Sycard PCCtest 450 PC Card (page 3-16).
- Desktop Management Interface (page 3-20).
- BIOS Setup utility (page 3-22).

OmniBook Diagnostic Program

The OmniBook hardware diagnostic program provides two levels of testing:

- User-level testing using the basic hardware test.
- Advanced testing using the individual hardware tests.

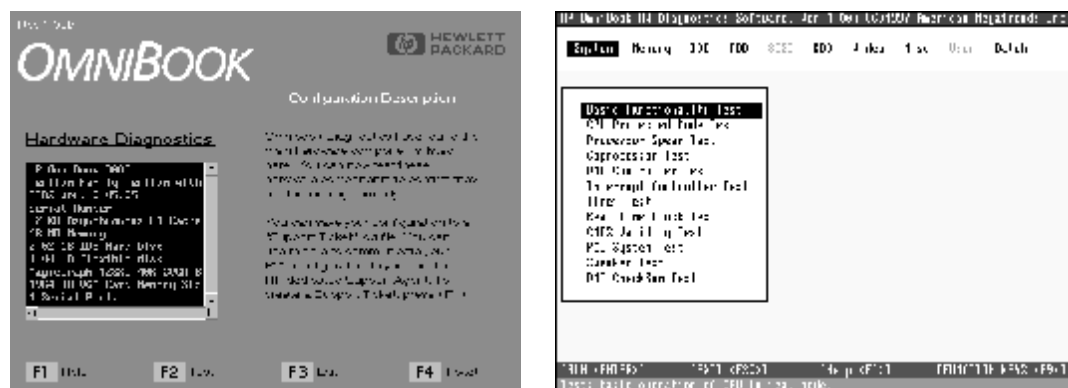


Figure 3-2. OmniBook Diagnostic Screens — Basic and Advanced

The tests are designed to run after the system reboots. This ensures that the computer will be in a predictable state, so the diagnostic program can properly test the hardware components. The tests are non-destructive and are intended to preserve the state of the computer. The OmniBook reboots when you exit the program so drivers can be loaded.

Creating a Diagnostic Floppy Disk

After inserting a formatted floppy disk in the floppy drive, do one of the following to create a diagnostic floppy disk:

- On an OmniBook with a factory software installation, run **diaginst** from the \Dmi\Hpdiags directory on the hard disk.
—or—
If HP TopTools is installed, use the DiagTools page to create the disk.
- On any computer with a CD-ROM drive, run **diaginst** from the \Omniobook\Dmi\Hpdiags directory on the OmniBook 7100 Recovery CD.

- On any computer with World Wide Web access, download the diagnostic software package from the OmniBook website (see page vi), run this file to unpack the files, then run **diaginst** to create the diagnostic disk.

Running the Diagnostic Test

1. Insert the diagnostic disk in the floppy drive.
2. Reboot the OmniBook.
3. Go through the first several screens.
4. When the hardware detection finishes, check the list of detected hardware. The following information and devices should be listed if applicable:

Product name	Main memory	Graphics adapter
Processor type	IDE drives	Serial ports
BIOS version	Floppy drives	Parallel port
Serial number	Keyboard	Audio device
Cache memory		

Note

If a device is not detected or fails its test below, it may be configured incorrectly in the BIOS Setup utility (page 3-22). You can confirm the problem by running BIOS Setup and checking the settings.

5. **Run the basic test.** Press F2 to start the basic hardware test.
6. If you intend to exit without running advanced tests, press F4 to save system and test information in the Support Ticket log file, HPSUPPT.TXT. Then remove the diagnostic disk and press F3 to exit.
7. **Run the advanced tests.** Press F2 to open the advanced test screen.
8. Select and run the appropriate tests. Tests are not listed if no such hardware is detected. Press the following keys to run tests:

ENTER	Runs the highlighted test.
F5 or SPACE	Marks or unmarks the highlighted test.
F6	Marks or unmarks all tests in the current menu.
F7	Marks or unmarks all tests in all menus.
F10	Runs all marked tests.

If any test fails, the error is logged (error code and description) and displayed temporarily (error code). If several errors occur, look for patterns that might indicate a common cause. See the table on page 3-13 for repair suggestions. Consider these suggestions in combination with other troubleshooting information.
9. When you are finished running tests, press ESC to exit the advanced tests.
10. Press F4 to save system and test information in the Support Ticket log file, HPSUPPT.TXT.
11. **Exit.** Press F3 to exit and reboot.
12. **Optional: Check the log.** On any computer, open the HPSUPPT.TXT log file on the diagnostic disk using Notepad or other text editor. It contains a hardware summary and a list of all test results and errors.

Note that the serial and parallel port tests are more thorough if you connect a loopback connector to the port before running the test for that port. See the wiring diagrams below.

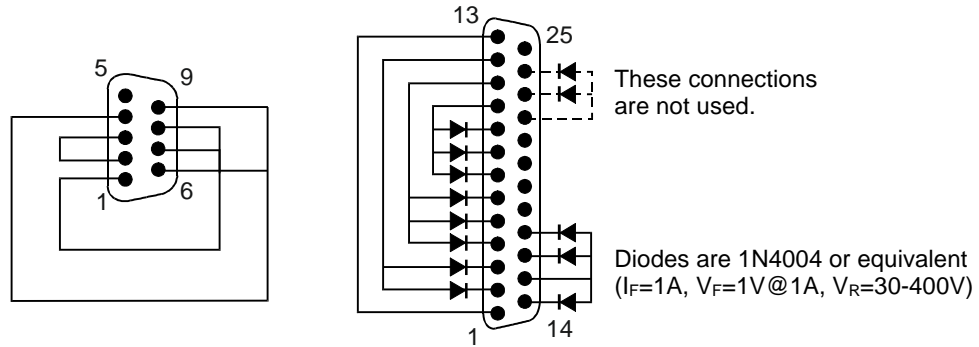


Figure 3-3. Serial and Parallel Loopback Connectors

Interpreting the Results

- The following table lists test groups, error codes, and suggestions for followup actions. Consider these suggestions in combination with other troubleshooting information.

Table 3-3. OmniBook Diagnostic Error Codes

Code	Suggestions
System Tests	
0001h - 0008h	Reseat or replace the CPU module.
0009h	Replace the motherboard.
0010h - 002Fh	Reseat or replace the CPU module.
0030h - 0040h	Replace the motherboard.
0041h	Unrecognized interrupts. Run BIOS Setup and check IRQ assignments for all devices.
0050h - 0070h	Replace the motherboard.
0071h	Bad CMOS checksum. Reset the system, then run BIOS Setup and check settings. Replace motherboard.
0072h	Configuration mismatch in CMOS. Reset the system, then run BIOS Setup and check settings. Replace motherboard.
0073h	Bad CMOS RAM size. Reset the system, then run BIOS Setup and check settings. Replace motherboard.
0074h	Bad CMOS time. Reset the system, then run BIOS Setup and check settings. Replace motherboard.
0075h - 0076h	Reset the system. Replace the motherboard.
0077h	Replace the motherboard.
0078h	Bad CMOS checksum. Reset the system, then run BIOS Setup and check settings. Replace motherboard.
0079h	Replace the motherboard.
0083h - 0086h	Replace the BIOS IC. Replace the motherboard.
0087h	Replace the motherboard.
0088h	Replace the BIOS IC.
0090h - 009Eh	Replace the BIOS IC. Replace the motherboard.
009Fh	Insufficient DOS memory. Load fewer device drivers.
00A0h	No repair. (ESCD not supported.)
00A1h	Replace the BIOS IC. Replace the motherboard.
00A2h - 00A3h	No repair. (ESCD not supported.)
00A4h	Replace the BIOS IC.
00A5h - 00A6h	No repair. (ESCD not supported.)
00A7h	Replace the BIOS IC. Replace the motherboard.
00FFh	Rerun the test. (Possible diagnostic programming error.)
Memory Tests	
The addresses below are absolute (32-bit) address. These addresses are not in the segment:offset format.	
0100h - 0101h	Replace the motherboard.
0102h	Replace the BIOS IC.
0120h - 0150h	For 01FFFFFFh and below, replace the motherboard. For 02000000h and above, replace the corresponding RAM board (each 01000000h represents 16MB).
0160h	Address bus short. Remove any RAM boards and rerun the test. Check the CPU module for shorts. Replace the motherboard.
0170h - 0172h	Replace the motherboard.
0180h	For 01FFFFFFh and below, replace the motherboard. For 02000000h and above, replace the corresponding RAM board (each 01000000h represents 16MB).
0181h	Replace the CPU module.

0182h	Make sure that another application is not using all extended memory allocated by HIMEM.SYS.
0183h	No extended memory. Check installation of RAM boards. Replace the motherboard.
0190h - 01A0h	For 01FFFFFFh and below, replace the motherboard. For 02000000h and above, replace the corresponding RAM board (each 01000000h represents 16MB).
Hard Disk Tests	
0201h	Replace the hard disk. Replace the motherboard.
0202h - 0204h	Rerun the test. If error persists, replace the hard disk.
0205h	Replace the motherboard.
0207h	Run BIOS Setup and check the hard disk type. Check internal and external hard disk connectors and motherboard connector. Replace the hard disk.
0208h - 0209h	Transient DMA error. Rerun the test.
020Ah - 0211h	Rerun the test. Run SCANDISK or equivalent.
0220h	Replace the motherboard.
0240h	Replace the hard disk. Replace the motherboard.
0280h	Check internal and external hard disk connectors and motherboard connector. Replace the hard disk.
0281h	Replace the hard disk.
02AAh	Check internal and external hard disk connectors and motherboard connector. Replace the hard disk.
02CCh	Run BIOS Setup and check the hard disk type. Replace the hard disk or the motherboard.
02EEh	For the performance test, run BIOS Setup and temporarily select a drive type that has more than 200 cylinders.
02F1h	Recreate the Hibernate partition, then run FDISK to partition the hard disk.
02F2h	Run FDISK to make one partition active. If necessary, recreate the Hibernate partition, then run FDISK to partition the hard disk.
02F3h	Run FDISK to check for overlapping partitions. If necessary, recreate the Hibernate partition, then run FDISK to partition the hard disk.
02F4h	Check for the presence of a boot sector virus. If necessary, recreate the Hibernate partition, then run FDISK to partition the hard disk.
02F5h	Reformat the partition.
02F6h	Recreate the Hibernate partition, then run FDISK to partition the hard disk.
02FFh	Check internal and external hard disk connectors and motherboard connector. Replace the hard disk. Replace the motherboard.
Floppy Disk Tests	
0301h	Replace the floppy drive. Replace the motherboard.
0302h	Run BIOS Setup and check the floppy drive type. Replace the floppy drive.
0303h	Insert a floppy disk without write protection.

0304h	Run BIOS Setup and check the floppy drive type. Replace the floppy drive.
0305h	Replace the motherboard.
0307h	Run BIOS Setup and check the floppy drive type. Check the connectors on the floppy drive and motherboard. Replace the floppy drive.
0308h - 0309h	Transient DMA error. Rerun the test.
030Ah - 0310h	Rerun the test with a good floppy disk. Replace the floppy drive.
0311h	Rerun the test with another floppy disk.
0321h - 0322h	Replace the floppy drive.
0340h	Replace the motherboard.
0380h - 03AAh	Make sure the floppy disk is fully inserted. Check the connectors on the floppy drive and motherboard. Replace the floppy drive.
03CCh	Run BIOS Setup and check the floppy drive type. Rerun the test with another floppy disk. Replace the floppy drive. Replace the motherboard.
03EEh - 03FFh	Check the connectors on the floppy drive and motherboard. Rerun the test with another floppy disk. Replace the floppy drive. Replace the motherboard.
Keyboard Tests	
0400h - 0401h	Replace the motherboard.
0410h - 0414h	Check the keyboard flex cable connection. Replace the keyboard. Replace the motherboard.
0415h	Check icon PCA connections. Replace the icon PCA. Replace the motherboard.
0416h - 0418h	Replace the keyboard. Replace the motherboard.
Serial Port Tests	
0601h	For the external loopback test, make sure the loopback connector is installed and constructed properly. For the external or internal loopback test, replace the motherboard.
0602h	Replace the motherboard.
0603h	For the external loopback test, make sure the loopback connector is installed and constructed properly. For the external or internal loopback test, replace the motherboard.
0604h - 0605h	Replace the motherboard.
0606h	For the external loopback test, make sure the loopback connector is installed and constructed properly. For the external or internal loopback test, replace the motherboard.
0607h	Make sure the loopback connector is installed and constructed properly. Replace the motherboard.
0608h - 0611h	Replace the motherboard.
Parallel Port Tests	
0701h	For the external loopback test, make sure the loopback connector is installed and constructed properly. For the external or internal loopback test, replace the motherboard.
0702h	Replace the motherboard.

0703h	Run BIOS Setup and disable ECP for the parallel port, then rerun the test. Replace the motherboard.
0704h - 0706h	Replace the motherboard.
0707h	Connect the loopback connector.
0708h	Replace the motherboard.
Audio Tests	
0801h - 0806h	If this error also occurs for an external headphone, replace the audio PCA, then motherboard. Otherwise, check the top case cable connection, replace the speakers or top case.
0810h	If this error also occurs for an external headphone, replace the motherboard. Otherwise, check the top case cable connection, replace the speakers or top case.
0812h	If this error also occurs for an external headphone, replace the audio PCA, then motherboard. Otherwise, check the top case cable connection, replace the speakers or top case.
9003h - 9004h	(See Microphone Tests near end of table.)
Video Tests	
0900h - 0901h	Replace the video PCA.
0903h - 0906h	Replace the LVDS PCA. Replace the video PCA.
0907h - 0908h	Replace the video PCA.
0909h - 090Ah	Replace the LVDS PCA. Replace the video PCA.
090Ch - 090Fh	Replace the video PCA.
8000h	(See LCD Test near end of table.)
CD-ROM Tests	
0A00h	Insert a CD in the drive.
0A01h	Rerun the test. Replace the CD-ROM drive.
0A02h	No repair. (Automatic close not supported.)
0A03h	Insert a different CD in the drive. Check the connectors on the CD-ROM drive and motherboard. Replace the CD-ROM drive.
0A04h	Insert a different CD in the drive. Check the connectors on the CD-ROM drive and motherboard. Replace the CD-ROM drive.
0A05h	Insert a computer CD in the drive.
0A06h	Insert an audio CD in the drive.
USB Tests	
1301h	Reprogram the BIOS IC. Replace the BIOS IC. Replace the motherboard.
1302h - 1306h	Replace the motherboard.
9006h	(See USB Port Test near end of table.)

LCD Test	
8000h	If the test fails with an external monitor (must support VESA mode 105h), replace the video PCA, replace the motherboard. Otherwise: - If the shaded-band test fails, check the display cable connections in the bottom case, replace the LVDS PCA, replace the LCD/LVDS cable, replace the video PCA, replace the motherboard. - If only a solid-color test fails, see chapter 5 for cosmetic guidelines, replace the LCD module.
Microphone/Line-In Tests	
9003h	If the error occurs for built-in and external microphones, replace the audio PCA, replace the motherboard. If it occurs for only the built-in microphone, check the top case cable connection, replace the icon PCA.
9004h	Replace the audio PCA. Replace the motherboard.
Suspend/Resume Test	
9005h	Run BIOS Setup and restore default settings. Reprogram the BIOS IC. Replace the BIOS IC. Replace the motherboard.
USB Port Test	
9006h	Make sure a USB device is connected to the port you are testing. Select the correct speed for the device. Replace the motherboard (or dock component, if applicable).
IR Tests (FIR enabled, undocked)	
9002h, 9007h - 9008h	Rerun the test. Replace the motherboard.
9009h	Do not run this test in Windows. For the two-unit test, make sure the IR ports on the reflector and test computers are lined up. If the rear IR port passes but the front fails, check IR cable connections, replace the front-IR PCA. If the front IR port passes but the rear fails, check IR cable connections, replace the icon PCA. Replace the motherboard.
900Ah	Rerun the test. For the two-unit test, make sure the IR ports on the reflector and test computers are lined up. If the front IR port passes but the rear fails, check IR cable connections, replace the icon PCA. Replace the motherboard.
900Bh	Rerun the test. For the two-unit test, make sure the IR ports on the reflector and test computers are lined up. If the rear IR port passes but the front fails, check IR cable connections, replace the front-IR PCA. Replace the motherboard.
900Ch	Rerun the test. Make sure the IR ports on the reflector and test computers are lined up. Restart the reflector unit. If the rear IR port passes but the front fails, check IR cable connections, replace the front-IR PCA. If the front IR port passes but the rear fails, check IR cable connections, replace the icon PCA. Replace the motherboard.

Power-On Self-Test

Note

If Quiet Boot is enabled in BIOS Setup (the default setting), press ESC during boot to see POST messages.

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

You should not interpret the failure of one or more POST tests as a hardware, software, or firmware failure. First, confirm the failure with a “clean” boot:

- Remove all accessories, including RAM boards, floppy drive, port replicator, PC Cards, printer, external monitor, pointing device, and keyboard.
- Provide “clean” ac power—no auto adapter or unusual ac adapter configuration.
- Press the system-off button to start from a known state.

If the computer fails to boot with a clean boot, it requires repair. If an error message is displayed, *confirm the problem using other diagnostic tools*. Not all POST messages indicate a hardware, software, or firmware failure—some messages are informational messages.

If the BIOS detects a terminal error condition, it halts POST after issuing a terminal error beep code—up to four groups of 1 to 4 short beeps. The beep code indicates the POST routine in which the terminal error occurred. The BIOS also issues a beep code (one long tone followed by two short tones) during POST if the video configuration fails (no card installed or faulty) or if an external ROM module does not properly checksum to zero.

Table 3-4. POST Terminal-Error Beep Codes

Beep Codes	POST Description
1	One short beep before boot
1-2	Search for option ROMs. One long, two short beeps on checksum failure
1-2-2-3	BIOS ROM checksum
1-3-1-1	Test DRAM refresh
1-3-1-3	Test 8742 Keyboard Controller
1-3-4-1	RAM failure on address line xxxx
1-3-4-3	RAM failure on data bits xxxx of low byte of memory bus
1-4-1-1	RAM failure on data bits xxxx of high byte of memory bus
2-1-2-3	Check ROM copyright notice
2-2-3-1	Test for unexpected interrupts

The following table lists POST messages and explanations for reported problems. If the system fails after you make changes in BIOS Setup, reset the computer, enter BIOS Setup, and install the defaults or correct the error.

Table 3-5. POST Messages

Message	Description
0200 Failure Fixed Disk	Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.
0210 Stuck key	Stuck key on keyboard.
0211 Keyboard error	Keyboard not working.
0212 Keyboard Controller Failed	Keyboard controller failed test. May require replacing keyboard controller.
0213 Keyboard locked - Unlock key switch	Unlock the system to proceed.
0220 Monitor type does not match CMOS - Run SETUP	Monitor type not correctly identified in Setup
0230 Shadow Ram Failed at offset: <i>nnnn</i>	Shadow RAM failed at offset <i>nnnn</i> of the 64k block at which the error was detected.
0231 System RAM Failed at offset: <i>nnnn</i>	System RAM failed at offset <i>nnnn</i> of in the 64k block at which the error was detected.
0232 Extended RAM Failed at offset: <i>nnnn</i>	Extended memory not working or not configured properly at offset <i>nnnn</i> .
0250 System battery is dead - Replace and run SETUP	The CMOS clock battery indicator shows the battery is dead. Connect the ac adapter for at least 24 hours, replace the motherboard.
0251 System CMOS checksum bad - Default configuration used	System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery. Connect the ac adapter for at least 24 hours, replace the motherboard.
0260 System timer error	The timer test failed. Requires repair of system board.
0270 Real time clock error	Real-time clock fails BIOS test. May require board repair.
0280 Previous boot incomplete - Default configuration used	Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. This error is cleared the next time the system is booted.
0281 Memory Size found by POST differed from CMOS	Memory size found by POST differed from CMOS.
02B0 Diskette drive A error 02B1 Diskette drive B error	Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.
02B2 Incorrect Drive A type - run SETUP	Type of floppy drive A: not correctly identified in Setup.
02B3 Incorrect Drive B type - run SETUP	Type of floppy drive B: not correctly identified in Setup.
02D0 System cache error - Cache disabled	RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.
02F0: CPU ID:	CPU socket number for Multi-Processor error.
02F4: EISA CMOS not writeable	ServerBIOS2 test error: Cannot write to EISA CMOS.
02F5: DMA Test Failed	ServerBIOS2 test error: Cannot write to extended DMA (Direct Memory Access) registers.
02F6: Software NMI Failed	ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).

Message	Description
02F7: Fail-Safe Timer NMI Failed	ServerBIOS2 test error: Fail-Safe Timer takes too long.
device Address Conflict	Address conflict for specified device.
Allocation Error for: device	Run ISA or EISA Configuration Utility to resolve resource conflict for the specified device.
CD ROM Drive	CD ROM Drive identified.
Entering SETUP ...	Starting Setup program
Failing Bits: nnnn	The hex number nnnn is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.
Fixed Disk n	Fixed disk n (0-3) identified.
Invalid System Configuration Data	Problem with NVRAM (CMOS) data.
I/O device IRQ conflict	I/O device IRQ conflict error.
PS/2 Mouse Boot Summary Screen:	PS/2 Mouse installed.
nnnn kB Extended RAM Passed	Where nnnn is the amount of RAM in kilobytes successfully tested.
nnnn Cache SRAM Passed	Where nnnn is the amount of system cache in kilobytes successfully tested.
nnnn kB Shadow RAM Passed	Where nnnn is the amount of shadow RAM in kilobytes successfully tested.
nnnn kB System RAM Passed	Where nnnn is the amount of system RAM in kilobytes successfully tested.
Operating system not found	Operating system cannot be located on either drive A: or drive C:.. Enter Setup and see if fixed disk and drive A: are properly identified.
Parity Check 1 nnnn	Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ?????. Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.
Parity Check 2 nnnn	Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ?????.
Press <F1> to resume, <F2> to Setup, <F3> for previous	Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an Option ROM, such as an add-on card). Write down and follow the information shown on the screen.
Press <F2> to enter Setup	Optional message displayed during POST.
PS/2 Mouse:	PS/2 mouse identified.
System BIOS shadowed	System BIOS copied to shadow RAM.
UMB upper limit segment address: nnnn	Displays the address nnnn of the upper limit of Upper Memory Blocks, indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.
Video BIOS shadowed	Video BIOS copied to shadow RAM.

Sycard PCCtest 450 CardBus Card (Optional)

The PCCtest 450 CardBus Card (version 1.05) available from Sycard Technology is an optional diagnostic tool. It is the only recommended tool that tests the functionality of the PCMCIA slots. It is a Type II CardBus Card that works with compatible test software to exercise PCMCIA functions. (See the Sycard Technology website, <http://www.sycard.com>.) The PCCtest 450 product contains these components:

- PCCtest 450 CardBus Card, version 1.05.
- PCCtest 450 software disk. (Software updates are available at the Sycard Technology website, <http://www.sycard.com>.)
- Configuration headers (PC Card/16-bit and CardBus/32-bit), which attach to the card.

You will also need:

- CardBus extender card to avoid wear on the Sycard PCMCIA connector. The Sycard PCCextend 70 extender card is an example.

The Sycard PCCtest 450 provides the following tests. See the Sycard documentation for details about running the tests.

- PC Card (16-bit) test, PCT450.
Requires the PC Card configuration header. Run the test for the Texas Instruments PCI1250A socket controller (command line switch **-b65**).
- CardBus (32-bit) test, TESTCB.
Requires the CardBus configuration header. Run the test for the Texas Instrument PCI1250A socket controller (command line switches **-b65** and **-jsd000**).

Desktop Management Interface (DMI)

The Desktop Management Interface (DMI) is basically a set of rules for accessing information about a personal computer. Using DMI, an application program can determine, for example, which hardware and software components are present in a personal computer, the operating system that is being used, and the number of accessory board slots that are available. Using the DMI interface, a local or remote application program can check what hardware and software components are installed on your computer, and may be able to tell how well they are working or whether any needs replacing. All this information is stored in a special Management Information Format (MIF) file, installed on each personal computer as part of the DMI package.

Installing the DMI Package

The DMI package is included with the OmniBook, but it must be properly installed before it can be used. The following steps explain how.

To install the DMI preloaded on the hard disk:

1. Start Windows, if it is not already running.
2. Click Start, Programs, HP DMI, Setup.

To install the DMI from floppy disks or from the OmniBook 7100 Recovery CD:

1. For floppy disks, copy the DMI software from the `\omnibook\drivers\os_version\dmi` directory of either the hard disk or Recovery CD to two or more floppy disks (for example, copy the contents of the `\disk1` subdirectory to disk #1).
2. Start Windows, if it is not already running.
3. Insert disk #1 into the floppy drive, or insert the Recovery CD into the CD-ROM drive.
4. Select and run the SETUP program from floppy disk #1 or from the `\omnibook\drivers\os_version\dmi\disk1` directory on the CD.

Uninstalling the DMI Package

1. Click Start, Programs, HP DMI, Uninstall DMI.
2. Reboot the PC.

Using the DMI Interface

For a complete explanation of how to fully take advantage of DMI, the following documentation is provided with the OmniBook:

- A README.TXT file.
- A Windows online help file describing Hewlett-Packard's implementation of DMI (group and attribute definitions). Since not all Hewlett-Packard enhanced features are supported on all models, this document also describes any restrictions that apply.

Description of DMI

The Desktop Management Interface (DMI) is the result of the efforts of the Desktop Management Task Force (DMTF). This task force was founded in 1992 by a group of leading computer manufacturers, including Hewlett-Packard, to define a standard method of managing the physical and logical components of personal computers.

Hewlett-Packard has developed a number of extensions to DMI to allow the enhanced features of HP OmniBook computer to be managed with DMI, including features such as passwords and tattooing (identifying a computer using a unique string of characters).

For full details of the structure of the MIF file, including an explanation of the meaning of the fields of groups and attributes and how to write an application program that accesses this information, you can access the DMTF FTP server <ftp.dmtf.org> or the DMTF web pages at the <http://www.dmtf.org>.

Contents of the DMI Package

The DMI software and associated documentation is supplied either preinstalled on the OmniBook's hard disk drive or on two floppy disks. The contents of the package are the same in both cases.

Since the information accessed by the DMI software is specific to a particular computer, it must be installed on each computer separately. The DMI package included with the OmniBook can be used only with the OmniBook.

The following software is supplied with the DMI package:

- A Microsoft Windows utility, SETUP.EXE, to install and initialize the DMI software.
- A Windows utility, HP TopTools. After DMI is installed, this utility can be used to display information about the computer through the DMI.
- A Management Information Format (MIF) file. This file contains information about everything on the computer that can be controlled using DMI facilities, and is initialized during installation.
- A component code, identifying the version of MIF file to use for specific models of HP OmniBook computers.
- Windows-compatible DMTF Service Layer software, which controls access to the DMI.
- A client agent. The HP Remote DMI Agent is a DMI application and also a network server-side stream-based application. The Remote Agent is listening for Remote Application connection requests. If the main window of the Remote Agent is hidden, then no icon will appear on the screen when it is running.

The following illustration shows a representation of several components of the DMI package.

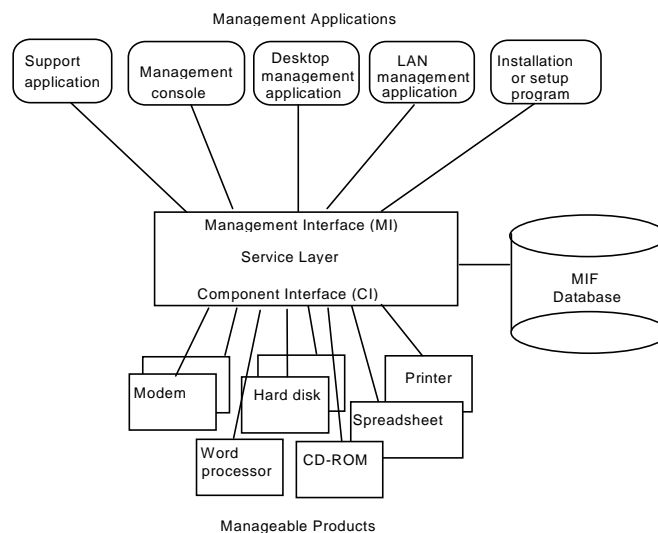


Figure 3-4. DMI Components

BIOS Setup Utility

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

Running the BIOS Setup Utility

1. Close all applications, then shut down Windows and reboot the OmniBook. If necessary, you can press CTRL+ALT+DEL to reboot.
2. During reboot, press F2 to start the BIOS Setup utility.
3. The pointing device or mouse is not active in the BIOS Setup utility. Press the RIGHT and LEFT arrow keys to move among menus. Press the DOWN and UP arrow keys to move among parameters in a menu. Press ENTER to change a setting. See the table below for more information.
4. After you select the options you want, press F10 or use the Exit menu to exit the BIOS Setup utility.

If the settings cause a conflict between devices during reboot, the system prompts you to run BIOS Setup, and the conflicting settings are marked.

Table 3-6. BIOS Setup Menus and Parameters

Main Menu		Default
Language	Sets the language for this utility and BIOS messages.	English.
BIOS Revision	Shows the current BIOS version.	Detected automatically.
System Time	Sets the time using 24-hour format. Values set take effect immediately.	
System Date	Sets the date using mm/dd/yy (English) or dd/mm/yy format.	
Floppy Drive	Sets the floppy drive type.	Detected and set automatically.
Hard Disk	Sets the hard disk drive type and various parameters.	Detected and set automatically.
Quiet Boot	When enabled, hides summary of power-on self-test and messages during boot.	Enabled
Video Display Device	Sets whether the built-in and external display signals automatically switch when an external display is detected, or whether both signals are active. Pressing Fn+F5 temporarily switches displays. Setting to Both prevents suspending when lid closes.	Auto
Television Type	Sets the format for video output.	Depends on country.
System Memory	Shows the system memory size.	640KB
Extended Memory	Shows the extended memory size.	Detected automatically.
System Devices Menu		Default
Internal Pointing Devices	Enables one or both built-in PS/2 devices.	Both
External Fn Key	Sets whether left-CTRL + left-ALT on an external keyboard is interpreted as the Fn key.	Enabled
IDE Controller	Enables the primary (hard drive) and secondary (optional CD-ROM drive) controllers.	Both
FDD Controller	Enables the floppy drive.	Enabled

Serial Port	Sets how the serial port is configured by the BIOS (specified or automatic).	Enabled
Base I/O address	Sets the I/O address and interrupt.	3F8h, IRQ4
Infrared Port	Sets how the infrared port is configured by the BIOS (specified or automatic).	Disabled
Mode	Sets the hardware to support SIR (Standard IR), ASK IR (amplitude shift keyed IR), or FIR (Fast IR) infrared communications. (Driver installation required.)	SIR
Base I/O address	Sets the I/O address and interrupt.	2F8h, IRQ3
DMA channel	For Fast IR mode, sets the DMA channel.	DMA3
Front/Back	Sets which infrared port is active.	Back
Parallel Port	Sets how the parallel port is configured by the BIOS (specified or automatic).	Enabled
Mode	Sets the port to normal, bi-directional, EPP, or ECP.	ECP
Base I/O address	Sets the I/O address.	378h
Interrupt	Sets the interrupt.	IRQ7
DMA channel	For ECP mode, sets the DMA channel.	DMA3
Audio	Sets how the audio system is configured by the BIOS (specified or automatic).	Enabled
SB I/O address	Sets the Sound Blaster I/O address.	220h
WSS I/O address	Sets the Windows Sound System I/O address.	530h
AdLib I/O address	Sets the AdLib synthesizer I/O address.	388h
Interrupt	Sets the interrupt.	IRQ5
1st DMA channel	Sets the DMA channel for playback.	DMA1
2nd DMA channel	Sets the DMA channel for recording.	DMA0
MPU Device	Sets how the MIDI capability (hardware wavetable) is configured by the BIOS (specified or automatic).	Disabled
MPU I/O address	Sets the MIDI I/O address.	330h
Interrupt	Sets the interrupt.	IRQ11
Security Menu		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 user password. Password length can be no longer than 8 characters, 0-9, A-Z.	
Set Administrator Password	Press ENTER to set, change, or clear administrator password. This password protects BIOS Setup settings.	
Boot	Sets whether a user password is required when the computer boots.	Enabled
Resume	If boot security is enabled, sets whether a user password is required when resuming from a suspended state.	Enabled
Undock	If boot security is enabled, sets whether a user password is required when undocking the OmniBook.	Disabled
Hard Disk Drive Lock	If boot security is enabled, sets whether a password is stored on the hard disk. Secures data on the disk if the disk is moved to another computer.	Disabled
Floppy Boot	Sets whether the floppy drive is a boot device.	Enabled
Power Menu		Default
Power Management Mode	Disables time-outs, selects a combination of time-outs, or allows customized time-outs.	Max Power Savings
Smart CPU Mode	Enables automatic CPU power savings. Absence of keyboard, mouse, and hard disk activity could cause slower CPU response.	Off
Standby Time-out	Sets the period of inactivity after which the computer goes from On to Standby power mode.	2 minutes

Suspend Time-out	Sets the period of inactivity after which the computer goes from Standby to Suspend power mode. (Skips Standby mode if that time-out is disabled.)	4 minutes
Hibernate Time-out	Sets whether the computer goes from Suspend to Hibernate power mode after the indicated period of inactivity. (Skips Suspend mode if that time-out is disabled.)	4 hours
Hard Disk Time-out	Sets the period of hard disk inactivity after which the hard disk stops spinning.	2 minutes
Time-out on AC	Sets whether power management time-outs occur while the ac adapter is connected.	Disabled
Power Button Mode	Sets the action of the blue power button when pressed for less than 4 seconds.	Suspend
Resume on Modem Ring	Sets whether the system resumes from Suspend if a ring signal is received.	Enabled
Resume on Time of Day	Sets whether the system resumes from Suspend at a defined time of day.	Disabled
Resume Time	Sets the 24-hour time when the system resumes from Suspend if enabled.	
Auto Suspend on Undock	Sets whether the OmniBook suspends after undocking.	When Lid Closed
Boot Menu		Default
Diskette Drive Hard Drive CD-ROM Drive	Shows the order of boot devices. Move the entries to change the order.	1. Diskette drive 2. Hard drive 3. CD-ROM drive
Exit Menu		
Save Changes and Exit	Saves Setup changes, exits, and reboots.	
Discard Changes and Exit	Discards Setup changes since last save, exits, and reboots. Does not affect Security and date/time changes.	
Get Default Values	Restores default settings, stays in Setup. Does not affect Security and date/time settings.	
Load Previous Values	Discards Setup changes since last save, stays in Setup. Does not affect Security and date/time changes.	
Save Changes	Saves Setup changes, and stays in Setup. Security settings are saved when changed.	

Replaceable Parts

This chapter contains an exploded view of the OmniBook and the following lists of parts:

- OmniBook replaceable parts (page 4-3).
- Assembly-component breakout (page 4-7)
- Accessory replacement parts (page 4-7).
- Part number reference (page 4-8).

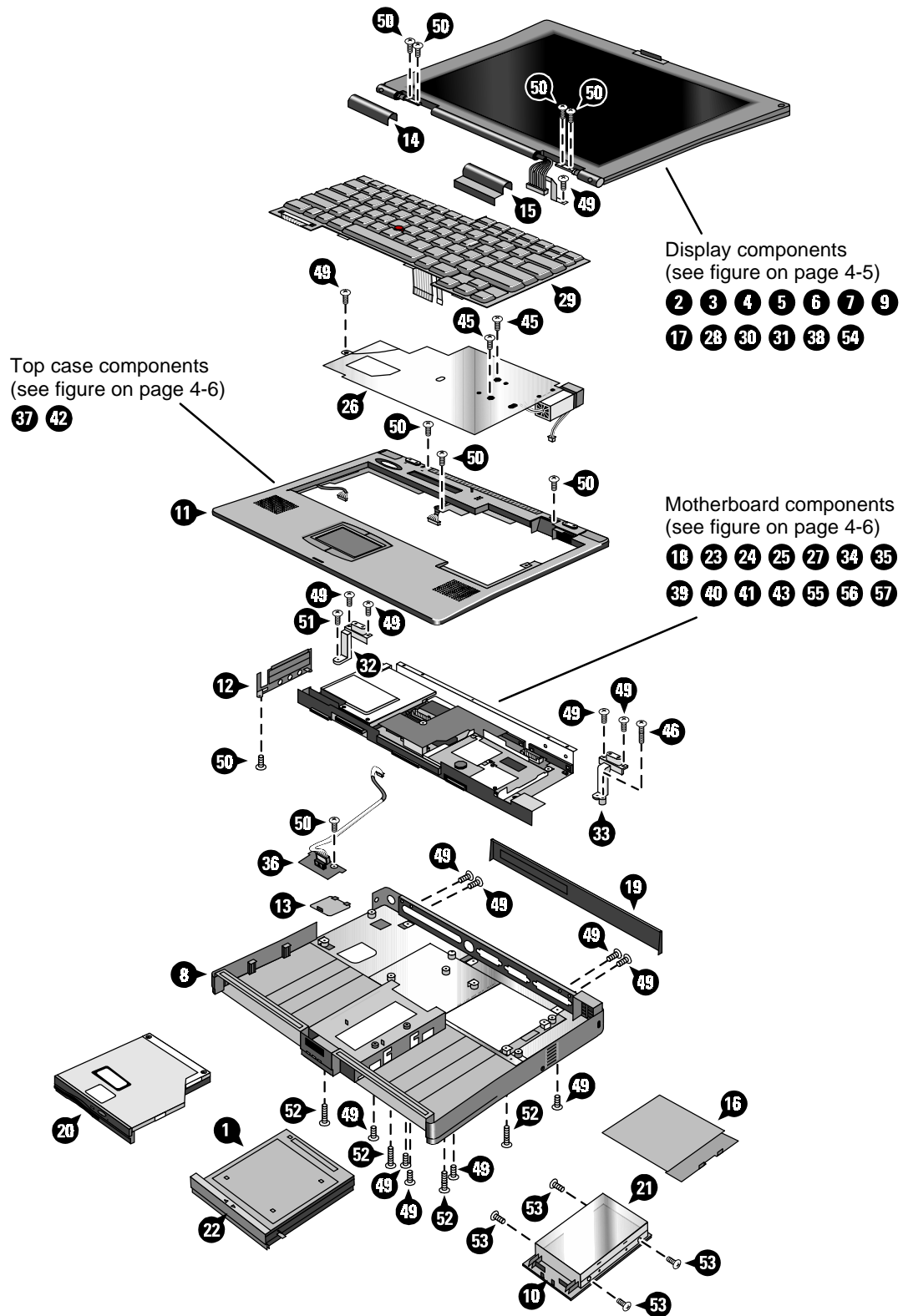


Table 4-1. OmniBook Replaceable Parts

	Description	Part Number	Exchange Part Number	User-Replaceable
1	Battery, lithium-ion	F1450-80001		Yes
2	Bezel, display	F1440-60965		
3	Bracket, display (left)	F1440-60959		
4	Bracket, display (right)	F1440-60960		
5	Bracket, display (top)	F1440-60961		
6	Cable, display	F1440-60964		
	Cable, touch-pad	F1440-60947		
7	Cap, hinge end	F1440-60962		
	Cap, pointing stick	F1320-60971		Yes
8	Case, bottom *	F1440-60957		
9	Case, display *	F1440-60966		
10	Case, HDD kit	F1449-60001		
11	Case, top *	F1440-60940		
12	Cover, audio jack	F1440-60954		
13	Cover, BIOS	F1440-80001		Yes
14	Cover, hinge (left)	F1440-60942		
15	Cover, hinge (right)	F1440-60943		
16	Cover, RAM	F1440-80015		Yes
17	Cover, screw (display)	F1440-60967		
18	CPU module (MMO), 266MHz Pentium II (MD)	1821-4304	F1440-69104	
19	Door, I/O	F1440-60946		Yes
20	Drive, floppy/CD-ROM module	F1446-80001		Yes
21	Drive, hard disk (6.4GB, IBM) *	0950-2829	F1440-69100	
21	Drive, hard disk (8.1GB, IBM) *	0950-2830	F1449-69100	
22	Faceplate, battery	F1440-60941		Yes
	Fan	F1440-60945		
23	Fence, CPU	F1440-60955		
	Foot, rubber	F1440-60973		Yes
24	Frame, motherboard	F1440-60956		
25	Heatsink, audio	F1440-60950		
26	Heatsink, CPU (with fan) *	F1440-60944		
27	Heatsink, video			
28	Hinge, display	F1440-60963		
	IC, BIOS	F1440-12007		
29	Keyboard, Danish	F1440-60932		
29	Keyboard, French	F1440-60923		
29	Keyboard, French-Canadian	F1440-60927		
29	Keyboard, German	F1440-60924		
29	Keyboard, International English	F1440-60922		
29	Keyboard, Italian	F1440-60926		
29	Keyboard, Norwegian	F1440-60930		
29	Keyboard, Spanish	F1440-60925		
29	Keyboard, Swedish	F1440-60929		
29	Keyboard, Swiss	F1440-60928		
29	Keyboard, UK English	F1440-60931		
29	Keyboard, US English	F1440-60921		
	Label, regulatory	F1440-60971		

	Description	Part Number	Exchange Part Number	User-Replaceable
30	Latch, display	F1440-60968		
31	LCD module (LG 14")	F1440-60995	F1440-69095	
32	Mount, hinge (left)	F1440-60953		
33	Mount, hinge (right)	F1440-60952		
	Overlay, business card	F1440-60972		
	Overlay, serial number	7121-7525		
34	PCA, audio	F1440-60911		
35	PCA, DC-DC	F1440-60910		
36	PCA, front-IR (with cable)	F1440-60949		
37	PCA, icon (with cable)	F1440-60912		
38	PCA, inverter	F1440-60914		
39	PCA, LVDS	F1440-60916		
40	PCA, motherboard *	F1440-60901	F1440-69005	
41	PCA, pointer-control	F1440-60913		
42	PCA, touch-pad	F1440-60915		
43	PCA, video	F1440-60905	F1440-69005	
44	Screw, M2x3mm	F1440-60988		
45	Screw, M2x8mm	F1440-60983		
46	Screw, M2x12mm	F1440-60981		
47	Screw, M2x18mm	F1440-60979		
48	Screw, M2.5x3mm	F1440-60986		
49	Screw, M2.5x4mm	F1440-60978		
50	Screw, M2.5x6mm	F1440-60975		
	Screw, M2.5x6mm	F1440-60982		
51	Screw, M2.5x8mm	F1440-60987		
52	Screw, M2.5x20mm	F1440-60984		
53	Screw, M3x4mm			
	Screw, M3x5mm	F1440-60985		
54	Shield, LCD (LG 14")	F1440-60958		
55	Shield, PCMCIA	F1440-60951		
56	Socket, PCMCIA	F1440-60917		
	Speaker	F1440-60948		
57	Standoff, 12mm (motherboard)	F1440-60980		
	Standoff, 4-11258-2 (docking port)	F1440-60977		
	Standoff, 4-4OUNC-2 (I/O ports)	F1440-60976		
	Thermal pad, CPU heatsink	F1440-60970		
* See Table 4-2 for components.				

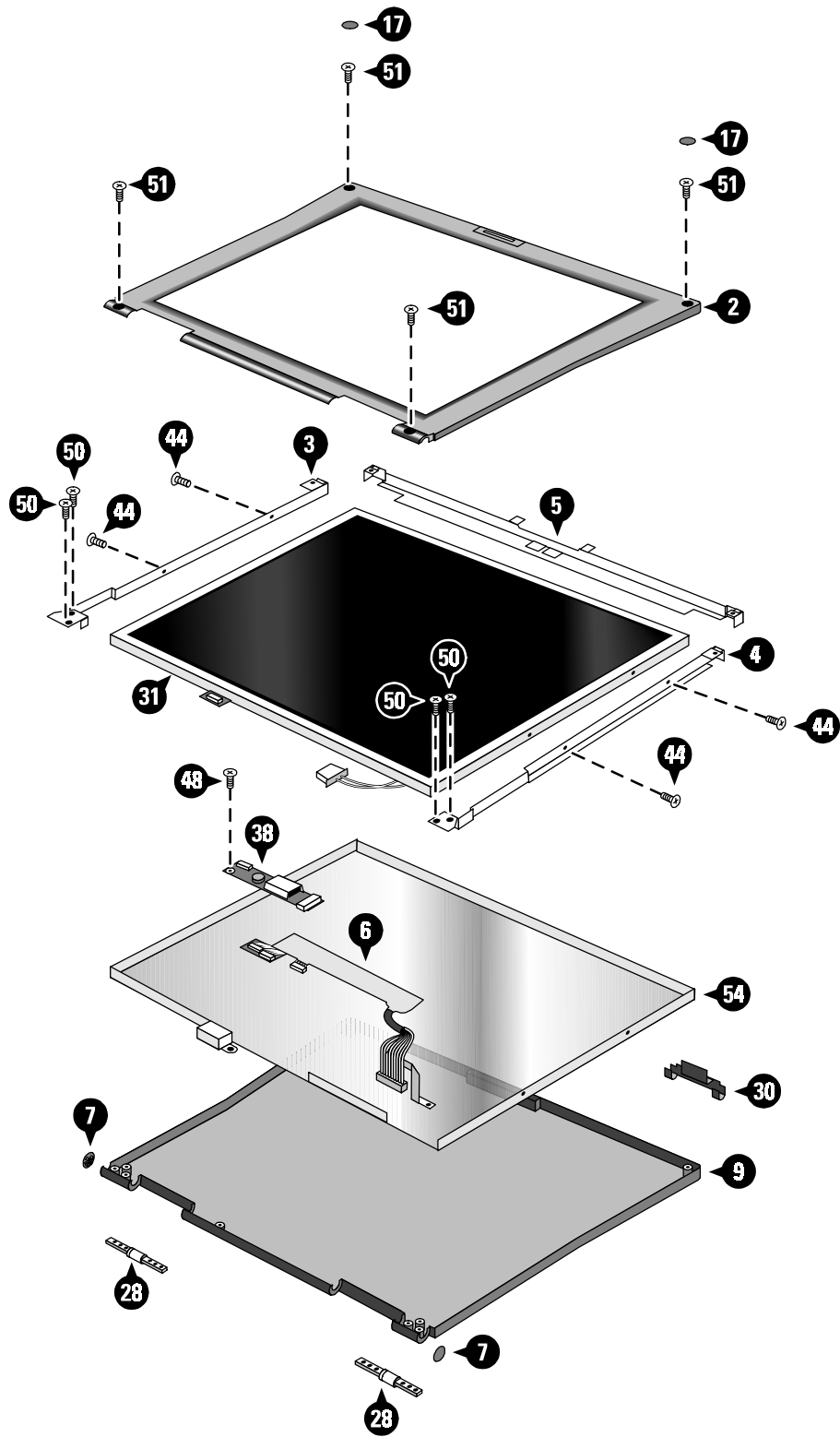


Figure 4-2. Display Components

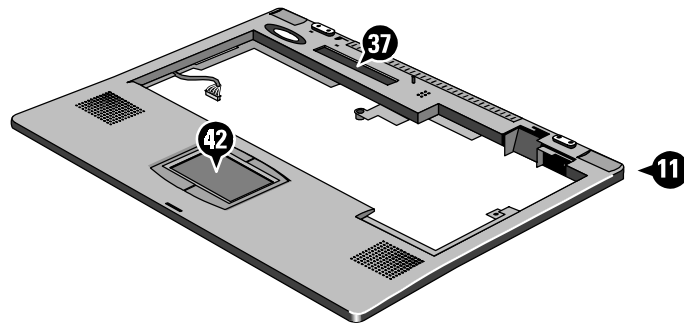


Figure 4-3. Top Case Components

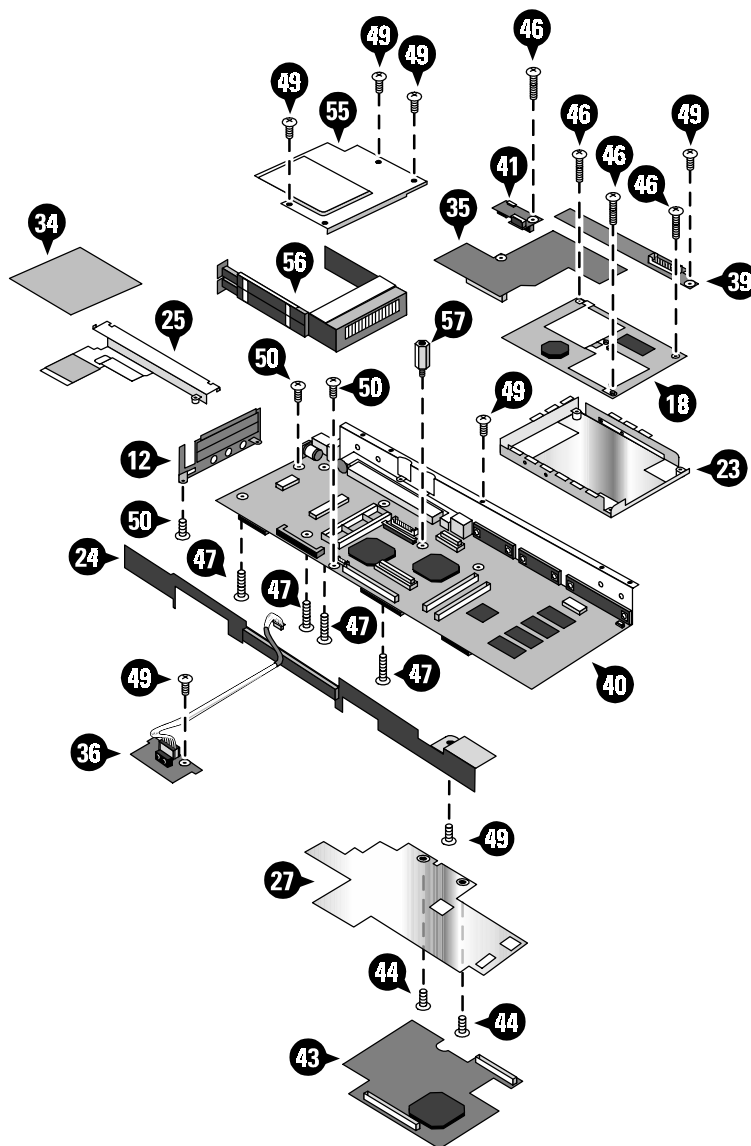


Figure 4-4. Motherboard-Related Components

Table 4-2. Assembly-Component Breakdown

Assembly	Part Number	Exchange Part Number	Components	Part Number	Included in Assembly
Bottom case	F1440-60957		Audio jack holder	F1440-60954	No
			BIOS cover	F1440-80001	No
			Feet (4)	F1440-60973	Yes
			I/O door	F1440-60946	No
			Label, regulatory	F1440-60971	No
			Overlay, business card	F1440-60972	No
			Overlay, serial	7121-7525	No
			RAM cover	F1440-80015	No
Display case	F1440-60966		Display latch	F1440-60968	Yes
Hard disk drive	(all)	(all)	HDD case kit	F1449-60001	No
Heatsink, CPU	F1440-60944		Fan	F1440-60945	Yes
			Thermal pads	F1440-60970	Yes
PCA, motherboard	F1440-60901	F1440-69005	Audio jack holder	F1440-60954	No
			BIOS IC	F1440-12007	Yes
			CPU fence	F1440-60955	No
			Motherboard frame	F1440-60956	No
			PCMCIA socket	F1440-60917	No
Top case	F1440-60940		Cable, touch-pad	F1440-60947	Yes
			PCA, icon	F1440-60912	No
			PCA, touch-pad	F1440-60915	Yes
			Speaker (2)	F1440-60948	Yes

Table 4-3. Accessory Replaceable Parts

Description	Part Number	Exchange Part Number	User-Replaceable
Adapter, ac (60W)	0950-2790		Yes
Adapter, auto plug (from airline)	5182-5131		Yes
Adapter, auto/airline (75W)	F1455-60001		Yes
Adapter, composite video cable	F1459-80001		Yes
Adapter, PS/2 "Y"	F1469-80001		Yes
Battery, lithium-ion	F1450-80001		Yes
Drive, DVD module	F1447-80001		Yes
Drive, floppy/CD-ROM module	F1446-80001		Yes
Drive, LS-120 module	F1448-80001		Yes
Monitor stand (short)	F1453-60901		Yes
RAM board, 32MB	1818-7413	F1456-69001	Yes
RAM board, 64MB	1818-7414	F1457-69001	Yes

Table 4-4. Part Number Reference

Part Number	Exchange Part Number	Description	User-Replaceable
		Heatsink, video	
		Screw, M3x4mm	
0950-2790		Adapter, ac (60W)	Yes
0950-2829	F1440-69100	Drive, hard disk (6.4GB, IBM)	
0950-2830	F1449-69100	Drive, hard disk (8.1GB, IBM)	
1818-7413	F1456-69001	RAM board, 32MB	Yes
1818-7414	F1457-69001	RAM board, 64MB	Yes
1821-4304	F1440-69104	CPU module (MMO), 266MHz Pentium II (MD)	
5182-5131		Adapter, auto plug (from airline)	Yes
7121-7525		Overlay, serial number	
F1320-60971		Cap, pointing stick	Yes
F1440-12007		IC, BIOS	
F1440-60901	F1440-69005	PCA, motherboard	
F1440-60905	F1440-69005	PCA, video	
F1440-60910		PCA, DC-DC	
F1440-60911		PCA, audio	
F1440-60912		PCA, icon (with cable)	
F1440-60913		PCA, pointer-control	
F1440-60914		PCA, inverter	
F1440-60915		PCA, touch-pad	
F1440-60916		PCA, LVDS	
F1440-60917		Socket, PCMCIA	
F1440-60921		Keyboard, US English	
F1440-60922		Keyboard, International English	
F1440-60923		Keyboard, French	
F1440-60924		Keyboard, German	
F1440-60925		Keyboard, Spanish	
F1440-60926		Keyboard, Italian	
F1440-60927		Keyboard, French-Canadian	
F1440-60928		Keyboard, Swiss	
F1440-60929		Keyboard, Swedish	
F1440-60930		Keyboard, Norwegian	
F1440-60931		Keyboard, UK English	
F1440-60932		Keyboard, Danish	
F1440-60940		Case, top	
F1440-60941		Faceplate, battery	Yes
F1440-60942		Cover, hinge (left)	
F1440-60943		Cover, hinge (right)	
F1440-60944		Heatsink, CPU (with fan)	
F1440-60945		Fan	
F1440-60946		Door, I/O	Yes
F1440-60947		Cable, touch-pad	
F1440-60948		Speaker	
F1440-60949		PCA, front-IR (with cable)	
F1440-60950		Heatsink, audio	

Part Number	Exchange Part Number	Description	User-Replaceable
F1440-60951		Shield, PCMCIA	
F1440-60952		Mount, hinge (right)	
F1440-60953		Mount, hinge (left)	
F1440-60954		Cover, audio jack	
F1440-60955		Fence, CPU	
F1440-60956		Frame, motherboard	
F1440-60957		Case, bottom	
F1440-60958		Shield, LCD (LG 14")	
F1440-60959		Bracket, display (left)	
F1440-60960		Bracket, display (right)	
F1440-60961		Bracket, display (top)	
F1440-60962		Cap, hinge end	
F1440-60963		Hinge, display	
F1440-60964		Cable, display	
F1440-60965		Bezel, display	
F1440-60966		Case, display	
F1440-60967		Cover, screw (display)	
F1440-60968		Latch, display	
F1440-60970		Thermal pad, CPU heatsink	
F1440-60971		Label, regulatory	
F1440-60972		Overlay, business card	
F1440-60973		Foot, rubber	Yes
F1440-60975		Screw, M2.5x6mm	
F1440-60976		Standoff, 4-4OUNC-2 (I/O ports)	
F1440-60977		Standoff, 4-11258-2 (docking port)	
F1440-60978		Screw, M2.5x4mm	
F1440-60979		Screw, M2x18mm	
F1440-60980		Standoff, 12mm (motherboard)	
F1440-60981		Screw, M2x12mm	
F1440-60982		Screw, M2.5x6mm	
F1440-60983		Screw, M2x8mm	
F1440-60984		Screw, M2.5x20mm	
F1440-60985		Screw, M3x5mm	
F1440-60986		Screw, M2.5x3mm	
F1440-60987		Screw, M2.5x8mm	
F1440-60988		Screw, M2x3mm	
F1440-60995	F1440-69095	LCD module (LG 14")	
F1440-80001		Cover, BIOS	Yes
F1440-80015		Cover, RAM	Yes
F1441-60910		Recovery CD, English (OB7100, W95)	
F1441-60911		Recovery CD, German (OB7100, W95)	
F1441-60912		Recovery CD, French (OB7100, W95)	
F1441-60913		Recovery CD, Spanish (OB7100, W95)	
F1441-60914		Recovery CD, Italian (OB7100, W95)	
F1441-60915		Recovery CD, Swedish (OB7100, W95)	
F1441-60916		Recovery CD, English (OB7100, WNT)	
F1441-60917		Recovery CD, German (OB7100, WNT)	

Part Number	Exchange Part Number	Description	User-Replaceable
F1441-60918		Recovery CD, French (OB7100, WNT)	
F1441-60919		Recovery CD, Spanish (OB7100, WNT)	
F1441-60920		Recovery CD, Italian (OB7100, WNT)	
F1441-60921		Recovery CD, Swedish (OB7100, WNT)	
F1446-80001		Drive, floppy/CD-ROM module	Yes
F1447-80001		Drive, DVD module	Yes
F1448-80001		Drive, LS-120 module	Yes
F1449-60001		Case, HDD kit	
F1450-80001		Battery, lithium-ion	Yes
F1453-60901		Monitor stand (short)	Yes
F1455-60001		Adapter, auto/airline (75W)	Yes
F1459-80001		Adapter, composite video cable	Yes
F1462-60901		OmniBook Performance 98 Group training kit	
F1469-80001		Adapter, PS/2 "Y"	Yes

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 Technical Support to determine the proper removal procedure. The user must provide proof of ownership, and the OmniBook 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. It 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 OmniBook being “cleansed” is actually in the possession of the unit’s actual and current owner. This requires a sales receipt showing the unit serial number and owner’s name, or a written statement from the owner attesting that he or she is the owner of the unit. The statement can be a fax copy of the document. The fact that the unit 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 unit 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 unit.

Hewlett-Packard Display Quality Statement

TFT display manufacturing is a high precision but imperfect technology and manufacturers cannot currently produce large displays that are cosmetically perfect. Most, if not all, TFT displays will 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 OmniBook display.*

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

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

1. The unit should be viewed in the customer's normal operating condition.

This means if the customer uses the unit predominately in DOS, in Windows, or in some other application or combination of applications, that is where you should make the determination. Self test is not a normal operating condition and is not a sufficient tool to interpret 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, it should be clear to the customer that cosmetic variations on the replacement display may also exist, and may require the customer to use a work-around to obscure the cosmetic imperfection.
4. Customers with cosmetic-based complaints only, that do not conform to the above conditions and tests will not normally be considered for display replacement. It will be left to the judgment of the HP-responsible person working with the customer, to identify work-arounds that are reasonable and appropriate for the individual customer. Customers who must have a more perfect display solution should consider switching to an OmniBook with a DSTN display.

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

Table 5-1. OmniBook 7100 LCD Guidelines (TFT)

Type of Imperfection	Imperfections Not Allowed
LG 14" TFT, XGA	
Electrical Imperfections: Bright dots (a) Dark dots (a)	<ul style="list-style-type: none"> • 7 or more single bright dots. • 7 or more single dark dots. • 3 or more double bright dots. • 3 or more double dark dots. • 11 or more total bright and dark dot imperfections. • Any occurrence of triple bright dots (or triple dark dots). • Any occurrence of 3 bright dots within 20 mm (or 3 dark dots).
Mechanical Imperfections: Spots (b) Lines (c) Polarizer scratches (d) Polarizer dents, bubbles (e)	<ul style="list-style-type: none"> • 6 or more spots 0.2-0.5 mm avg. dia. • 4 or more lines 0.3-3 mm long and over 0.07 mm wide. • 5 or more scratches 5-20 mm long and over 0.02 mm wide. • 9 or more dents or bubbles 0-0.5 mm avg. dia. • Any spot over 0.5 mm avg. dia. • Any line over 3 mm long or 0.1 mm wide. • Any scratch over 20 mm long or 0.05 mm wide. • Any dent or bubble over 0.5 mm avg. dia.
Definitions of imperfections: a Bright or dark dot: A subpixel (red, green, or blue dot) that is stuck on or off. b Spot: A point on the display that appears dark or bright and does not change in size. Caused by foreign circular matter on the backlight. c Line: A line on the display that appears dark or light and does not change in size. Caused by contamination (lint, hair) behind the display. d Polarizer scratch: A light line that is visible on a darker background and does not change in size. e Polarizer dent or bubble: A light spot with a darker border that appears on a lighted display and does not change in size.	

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