
HP OmniBook 3000



Service Manual

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Introduction

This service manual provides reference information for the HP OmniBook 3000. 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/go/omnibook (http://www2.hp.com/go/omnibook , European mirror)	No usage restriction.
HP MCD Internal Web	http://webmcd.cv.hp.com	Restricted to HP intranet access 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**	(208) 344-1691 (US only)	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.
HP MCD Service Engineer	svc-eng_mcd@om.cv.hp.com	Email address for service related questions and issues.
* Baud rates = 300-28.8; Parity = E; Data bits = 7; Stop bits = 1.		
** Baud rates = 300-28.8; Parity = N, Data bits = 8; Stop bits = 1.		

Product Information

The HP OmniBook 3000 represents a new category of HP notebook computers featuring the latest mobile technologies available. It uses high-speed Intel Pentium processors with MMX technology, a large 13.3-inch TFT display, and high-capacity hard drives.

This chapter describes

- Features and operation (below).
- Specifications (page 1-7).
- Internal design (page 1-9).

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.

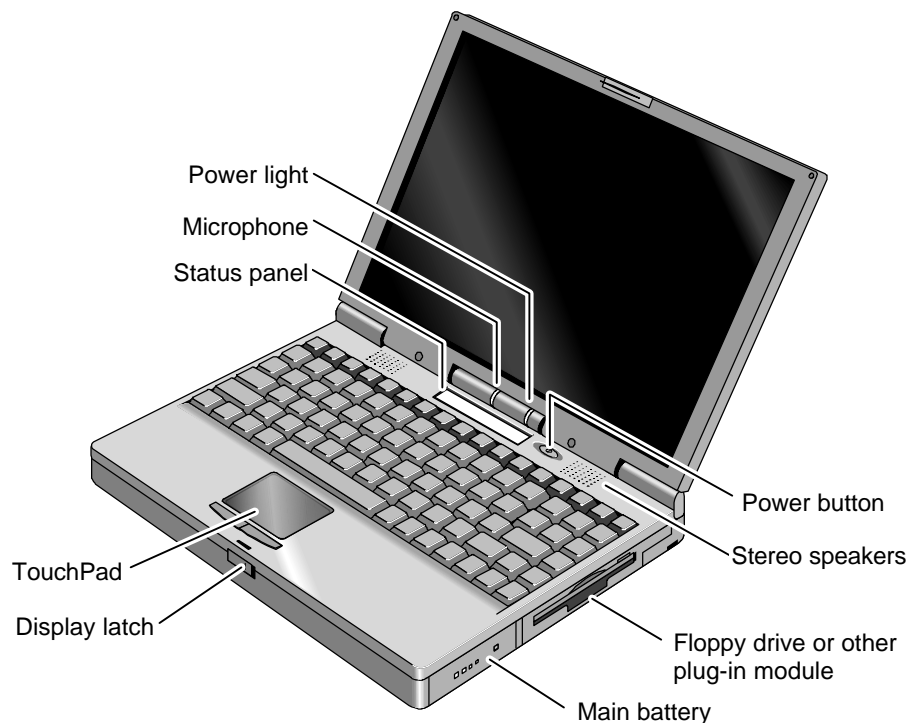


Figure 1-1. OmniBook - Front View

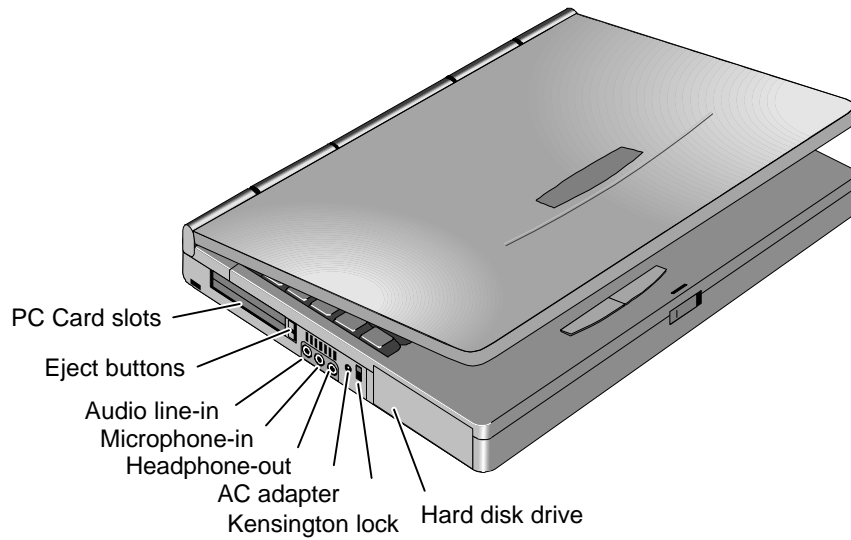


Figure 1-2. OmniBook - Side View

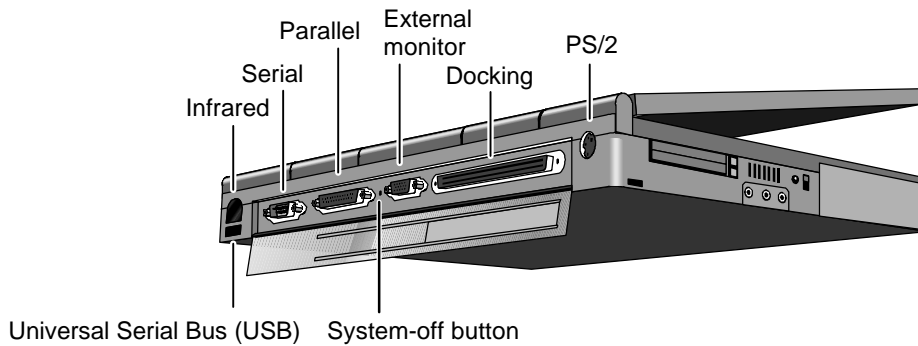


Figure 1-3. OmniBook - Back View

Table 1-1. Summary of Features

Processor	Intel Pentium, 233 or 200 MHz with MMX technology. 512-KB burst-synchronous L2 cache.
Memory	16 MB RAM on motherboard. Expandable to 144 MB.
Display	13.3-inch TFT XGA display. Up to 64K colors.
Video	PCI local bus video. 128-bit graphics controller with 2 MB video RAM. Zoomed Video enabled.
PC Card	One Type III or two Type II 16-/32-bit PC Card slots. CardBus enabled.
Operating System	Windows 95 preinstalled. Windows NT 4.0 certified.
Desktop Management Interface	Preinstalled DMI 1.1 software with HP TopTools.
Advanced Power Management	APM 1.2
Power States	On, Standby, Suspend, Hibernate, Off.

Turning the OmniBook On and Off

- **On.** Press the blue power button to turn the computer on.
- **Standby.** Occurs automatically if the computer is inactive for about 2 minutes.
- **Suspend.** Press the blue power button briefly (about 1 second) to suspend activity when the OmniBook is on. The computer resumes your previous work session when you turn it back on.
Closing the lid (for more than 2 seconds) also suspends the computer. (If an external monitor is connected, closing the lid merely turns off the built-in display and turns on the external display.)
- **Hibernate.** Press Fn+F12. The computer completely shuts down, but your current work session is first saved to disk. The computer will reboot and restore your previous session when you turn it back on.
- **Off.** Press the blue power button for more than 4 seconds to completely shut down the computer. Unsaved data is lost. The computer will reboot when you turn it back on.

Table 1-2. Activating Power Modes

Power Mode	To Enter Mode	To Turn Back On
Standby (display off)	Allow time-out or press Fn+S.	Press any key or the pointing device to display your current session.
Suspend (low power, "instant-on")	Press blue power button for about 1 second or close the lid (without external monitor) or click Start, Suspend or allow time-out.	Press blue power button for "instant-on" to your current session.
Hibernate (off, session saved)	Press Fn+F12 or allow time-out.	Press blue power button to turn on, reboot, and restore session.
Off (off, nothing saved)	Press blue power button longer than 4 seconds or click Start, Shut Down.	Press blue power button to turn on and reboot.









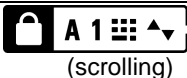
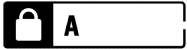
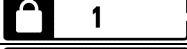
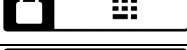
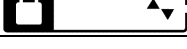
Table 1-3. Power Mode Descriptions

Power Mode	Condition
Standby	Reduced-power/stopped state. Everything is in a reduced-power state. Network devices are maintained. Your current work session continues at turn-on (any key-press).
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.
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).
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 (if plug-and-play).

Checking the Status of the OmniBook

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

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

Indicator	Meaning
	AC power. The ac adapter is plugged in. <i>Blinks</i> when the battery is being charged.
	Battery status. Shows the approximate charge level of the battery relative to a full charge. Each bar represents a 10% charge. The upper and lower triangles indicate the presence of main (upper) and secondary (lower) batteries. A triangle blinks when that battery is in use. The main battery charges first, discharges last. If two batteries are installed and the ac adapter is connected, the indicator shows the level of the battery being charged. If the ac adapter is not connected, indicator shows the combined charge of both batteries. Press Fn+F6 to show separate battery levels.
	Battery low. The outline blinks when the battery charge is critically low. The OmniBook also beeps.
	Defective battery. No battery activity; no charging.
	Overheated battery. The battery is too hot to charge.
	CD-ROM drive or hard disk drive. The OmniBook is accessing one of these built-in drives.
	Floppy disk drive. The OmniBook is accessing the floppy disk drive.
	PC Card. There is activity between the PC Card and the computer.
	Suspend mode. These symbols flash from left to right when the OmniBook is suspended (turned off by pressing the power button briefly). If ac power is not connected, the green power light also blinks slowly.
	Caps Lock. Caps Lock is active.
	Num Lock. Num Lock is active (Fn+F9).
	Keypad Lock. The built-in embedded keypad is active (Fn+F8). Num Lock must also be on for the numeric keys.
	Scroll Lock. Scroll Lock is active (Fn+F10).

The green power light (located on the icon PCA) indicates the power state. The green lights on the main battery or secondary battery indicate its charge level.

Table 1-5. Indicator Lights

Light	Meaning
Power Light Steady green light Blinking light No light	Battery is charging. Battery is not charging (ac power connected), or computer is Suspended (no ac power). Battery is not charging (no ac power).
Battery Lights	Show battery charge level only while the button is pressed on the battery.

Using Functions Keys (F1 through F12)

The top row of the keyboard has twelve function keys that serve as hot keys—shortcut key sequences—for various system controls.

Table 1-6. Function Keys (F1-F12)

Hot Keys	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, if available).
Fn + F4	Increases the display's contrast (non-TFT displays only, if available).
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, then resumes displaying the combined battery status.
Fn + F7	Toggles the sound on and off (mutes sound).
Fn + F8	Toggles the built-in 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 + F9	Toggles Num Lock (numeric functions for the keypad) on and off.
Fn + F10	Toggles Scroll Lock on and off.
Fn + F12	Enters Hibernate mode.
Fn + R	Enters Suspend mode.
Fn + S	Enters Standby mode.
Fn + UP-ARROW	Increases sound volume.
Fn + DOWN-ARROW	Decreases sound volume.

Resetting the OmniBook

1. Push the System-Off button—insert a pen or straightened paperclip into the hole on the back panel. (The switch is on the motherboard.)
—or—
Press the blue power button for 4 seconds. (The switch is on the icon PCA.)
2. After the computer shuts down, press the blue power button to turn it on.

Note

The OmniBook can boot from a CD under these conditions:

- If the boot order is defined in BIOS Setup with the CD-ROM drive before the hard drive,
- If you have an internal CD-ROM drive installed, and
- If you have a bootable CD in the drive, such as the OmniBook Recovery CD.

System Resources

Below are default values for system resources. To see other, non-default possibilities, use the BIOS Setup utility (see page 3-20), 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 (or MIDI, if enabled)
10	Universal Serial Bus (USB) - assigned by Windows 95 driver
11	CardBus controller - assigned by Windows 95 driver
12	TouchPad
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 - CBFFF	Video BIOS
CC000 - DFFFF	Free (see below)
E0000 - FFFFF	System BIOS

Valid uses for memory addresses CC000-DFFFF:

- Upper memory blocks (UMBs).
- PC card memory windows.

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

170-177	Secondary HDD controller (internal CD-ROM)
1F0-1F7	Internal hard disk
200-207	Joystick
220-22F	Crystal sound
376	Secondary HDD controller (internal CD-ROM)
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	Primary HDD 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 specifications for the OmniBook and its accessories.

Table 1-11. HP OmniBook 3000 Specifications

Physical Attributes	Size: 30.30 × 23.73 × 5.24 cm (11.93 × 9.34 × 2.06 in) closed. Weight: 3.03 kg (6.7 lb).
Processor and Bus Architecture	233- or 200-MHz Intel Pentium processor with MMX technology. Intel sub-2V low-power processor. 512-KB burst-synchronous L2 cache. 32-bit PCI bus.
Graphics	13.3-inch XGA active-matrix (TFT) display (1024 × 768 × 64K colors). PCI local bus video; 128-bit graphics controller with 2-MB video RAM. Zoomed Video enabled.
Power	Rechargeable Lithium Ion battery with built-in four-level fuel gauge. Battery recharges to full in less than 2.5 hrs using AC adapter while PC is on. Low-battery warning. Suspend/resume capability. Power states: On, Standby, Suspend, Hibernate, Off. Battery life: 2.5-3 hrs (varies with type of usage) for one battery. Optional secondary battery doubles operating time. AC adapter 100 to 240 Vac (50 to 60 Hz) input; 19 Vdc, 2.4 A output.

Mass Storage	4.0-billion-byte or 2.1-billion-byte removable hard drive. 1.44-MB internal/external floppy drive (swap with optional 20X CD-ROM drive or optional second battery). Optional 20X CD-ROM drive (20X maximum, 14X average).
RAM	16-MB RAM on motherboard. Two slots for RAM expansion up to 144 MB.
Audio System	16-bit, Sound Blaster Pro-compatible. MIDI support with optional port replicator. Stereo sound via two built-in speakers. Built-in microphone. Line-in, line-out, and microphone-in. 3D enhanced audio.
Keyboard and Pointing Device	87/88-key touch-type QWERTY keyboard. Embedded numeric keypad. 12 function Fn keys. TouchPad.
Input/Output	Universal Serial Bus (USB). 9-pin, 115,200-bps serial (16550 UART). 25-pin bidirectional ECP/EPP parallel. Video-out (up to 1024 x 768 x 64K colors) at up to 75-Hz refresh rate. PS/2 keyboard/mouse. 4-Mbps IrDA-compliant infrared.
Expandability	One Type III or two Type II 16-/32-bit PC Card slots. CardBus enabled. Plug-in module bay for floppy drive or optional accessory modules. Optional port replicator with two USB, serial, parallel, video-out (up to 1024 x 768 x 64K colors), keyboard, PS/2 mouse, audio, MIDI/joystick, and power-in ports.
Preinstalled Software	Microsoft Windows 95. Windows 95-compatible Plug and Play. Advanced Power Management (APM 1.2). DMI 1.1 under Windows 95 with HP TopTools. MacAfee VirusScan. Online documentation. OmniBook Recovery CD-ROM included. Centralized worldwide BIOS and driver update service.
Windows NT Support	Windows NT 4.0 certified. APM 1.2 and PC Card Plug-and-Play support for Windows NT 4.0.
Security Features	Password protection. DMI-accessible electronic serial number. Kensington Microsaver lock slot.
Environmental Limits	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).
OmniBook Models	
F1391A	HP OmniBook 3000 CTX 5/200 Model 2100, XGA TFT display.
F1392A	HP OmniBook 3000 CTX 5/233 Model 4000, XGA TFT display.

Table 1-12. HP OmniBook 3000 Accessories

Port Replicator F1381A	Video-out (up to 1024 × 768 × 64K colors) at up to 75-Hz refresh rate. Two Universal Serial Bus (USB) ports. PS/2 keyboard. PS/2 mouse. Parallel: 25-pin bidirectional printer port (EPP/ECP). Serial: 9-pin 115,200-bps RS-232. Audio: speaker-out, line-in, microphone-in. Power-in jack. MIDI/joystick port. Kensington lock slot.
CD-ROM Drive F1387A	Low-power, internal installation (plug-in module). 20X-maximum-speed, 14X-average-speed. IDE/ATAPI interface. Compatibility: CD-ROM modes 1 and 2, Photo CD, CD Plus, CDXA, CD-1.
Other Accessories	F1369A Monitor stand. F1363A 16-MB RAM expansion module. F1364A 32-MB RAM expansion module. F1365A 64-MB RAM expansion module. F1385A 2.1-billion-byte hard disk drive. F1386A 4.0-billion-byte hard disk drive. F1384A 3.5" internal/external floppy disk drive and cable (plug-in module). F1388A Internal 100-MB Zip drive (plug-in module). F1382A Standard Lithium-Ion battery pack. F1383A Secondary Lithium-Ion battery pack (plug-in module). F1377A AC adapter. F1379A Automobile adapter. F1380A Replacement floppy disk drive cable. 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 all 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 1-10—it lists the roles the replaceable modules play in each of the functional subsystems.

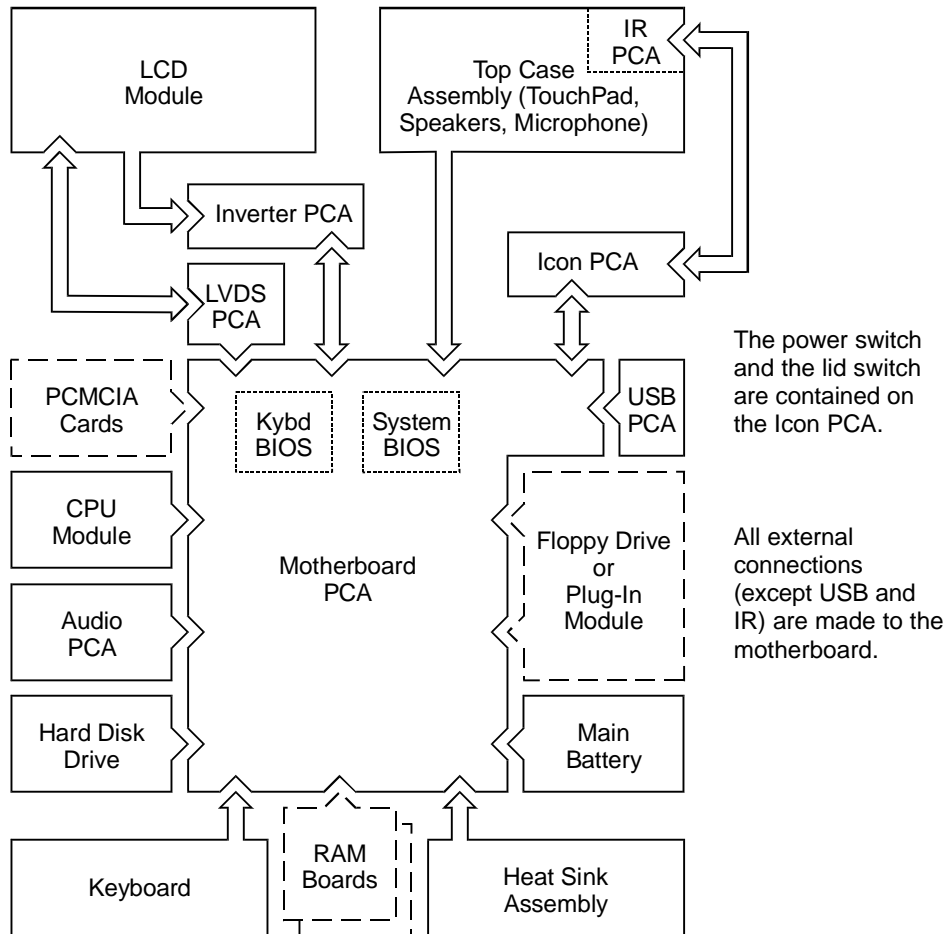


Figure 1-4. Replaceable Module Diagram

Table 1-13. Functional Structure

Function	Modules	Roles
Bootup	CPU module Motherboard System BIOS IC Keyboard BIOS IC Floppy disk drive Hard disk drive	Main processor (MMO). Primary system circuitry. Code for basic system functions. Code for keyboard 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	First 16 MB of RAM, video RAM. Optional, additional RAM.
Power	Battery Motherboard AC adapter	Power storage. Power supply, ac adapter socket. AC-to-dc converter.
Display	Motherboard LCD module LVDS PCA Inverter PCA	Display/graphics controller, video RAM. Display output, backlight. Display drivers, signal processing. (Low-Voltage Differential Signaling) Power converter for backlight.
Hard disk	Motherboard Hard disk drive	Hard disk controller. Hard disk mechanism.
Floppy drive	Motherboard Floppy disk drive	Floppy disk controller. Floppy disk mechanism.
Keyboard	Motherboard Keyboard BIOS IC Keyboard	Keyboard controller. Keyboard BIOS. Key switches.
TouchPad	Motherboard Top case assembly	Keyboard and PS/2 controller. TouchPad PS/2 device.
Audio	Motherboard Audio PCA Top case assembly	Speaker amplifier, external audio jacks. Audio controller, wave synthesizer, headphone amplifier. Microphone, speakers.
Serial	Motherboard	I/O controller, serial connector.
Parallel	Motherboard	I/O controller, parallel connector.
Infrared	Motherboard IR PCA Icon PCA	I/O controller. Infrared transmitter/receiver. Pass-through connection.
PS/2 port	Motherboard	Keyboard and PS/2 controller, PS/2 connector.
USB	Motherboard USB PCA	I/O controller. USB power controller, USB connector.
Docking port	Motherboard	Docking logic, docking connector.
PCMCIA	Motherboard	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 • are user-replaceable.

- AC adapter (table on page 2-27).
- Audio jack holder (table on page 2-27).
- Audio PCA (table on page 2-27).
- Battery (page 2-1).
- BIOS cover (page 2-8).
- Bottom case (page 2-21).
- CPU module (table on page 2-27).
- Display assembly (page 2-8).
- Display case (page 2-13).
- Display latch, spring (table on page 2-27).
- Feet (page 2-8).
- Hard disk drive (page 2-4).
- Hinge (table on page 2-27).
- Hinge cover (page 2-8).
- Icon/MB cable (table on page 2-27).
- Icon PCA (table on page 2-27).
- Icon window cover (page 2-8).
- Inverter PCA (table on page 2-27).
- Inverter/MB cable (table on page 2-27).
- I/O door (page 2-8).
- IR/icon cable (table on page 2-27).
- IR lens (table on page 2-27).
- IR PCA (table on page 2-27).
- Keyboard (page 2-16).
- Keyboard BIOS IC (page 2-25).
- LCD bracket (page 2-13).
- LCD module (page 2-11).
- LCD/LVDS cable (table on page 2-27).
- Lock plate (table on page 2-27).
- LVDS PCA (table on page 2-27).
- Motherboard (page 2-20).
- Plug-in accessory modules (page 2-3).
- Port replicator (table on page 2-27).
- RAM board (page 2-6).
- RAM cover (page 2-8).
- System BIOS IC (page 2-25).
- Top case and TouchPad (page 2-17).
- USB PCA (table on page 2-27).

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 2-1. Required Equipment

- Small Phillips screwdriver, preferably magnetized.
- 5 mm hex driver.
- Pointed knife or probe.
- Three small flat-blade screwdrivers (or equivalent tools for prying).
- IC insertion/removal tool (F1371-60904).

Table 2-2. Recommended Screw Torques

Screw Thread Size	Torque (kgf•cm)	Torque (in•lbf)
M2.0	2.0 – 2.5	1.7 – 2.2
M2.5	2.5 – 3.0	2.2 – 2.6
M3.0	4.5 – 5.5	3.9 – 4.8

Removing the Main Battery (User-Replaceable)

The main battery is located under the right corner of the palmrest. To remove a secondary battery (an accessory plug-in module), see the next topic below.

WARNING

Do not mutilate, puncture, or dispose of batteries in fire. A battery can burst or explode, releasing hazardous chemicals. A rechargeable battery must be recycled or disposed of properly.

Required Equipment

- None.

Removal Procedure

1. Slide the safety latch for the battery compartment into its recess.
2. Slide and hold the release latch, then slide out the battery.

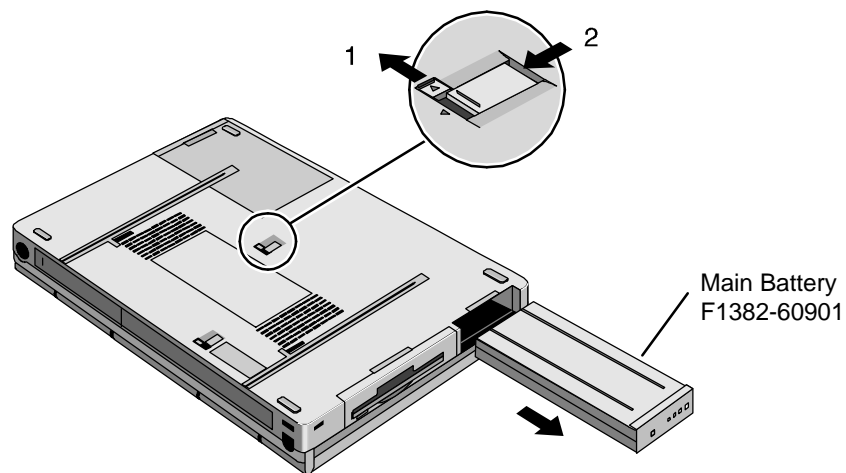


Figure 2-1. Removing the Main Battery

Reassembly Note

Caution

Be sure the safety latch is open before you insert the battery. Otherwise, the release latch could break if you force the battery in.

- After installing the battery, close the safety latch.

Removing a Plug-In Accessory Module (User-Replaceable)

The OmniBook is shipped with a floppy drive module installed in the plug-in slot. Other plug-in accessories are available, including a CD-ROM drive and secondary battery.

Note

Plug-in accessory modules have no repairable components. A defective module must be exchanged.

Required Equipment

- None.

Removal Procedure

1. Slide the safety latch for the plug-in slot into its recess.
2. Slide and hold the release latch, then slide out the module.

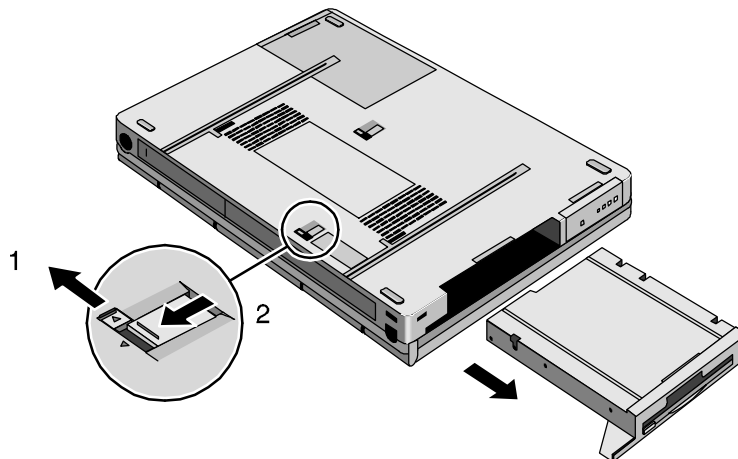


Figure 2-2. Removing a Plug-In Module

Reassembly Note

Caution

Be sure the safety latch is open before you insert the module. Otherwise, the release latch could break if you force the module in.

- After installing the module, close the safety latch.

Removing the Hard Disk Drive

(User-Replaceable)

Table 2-3. Hard Disk Drive Replacement Part Numbers

Description	Part Number	Exchange Part Number
Hard Disk Drive, 2.1 GB (IBM only)	0950-3193	F1360-69012
Hard Disk Drive, 4.0 GB (IBM only)	0950-2671	F1386-69100

Required Equipment

- Small Phillips screwdriver.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove the two screws from the bottom of the hard drive.
3. Pull out the hard drive.

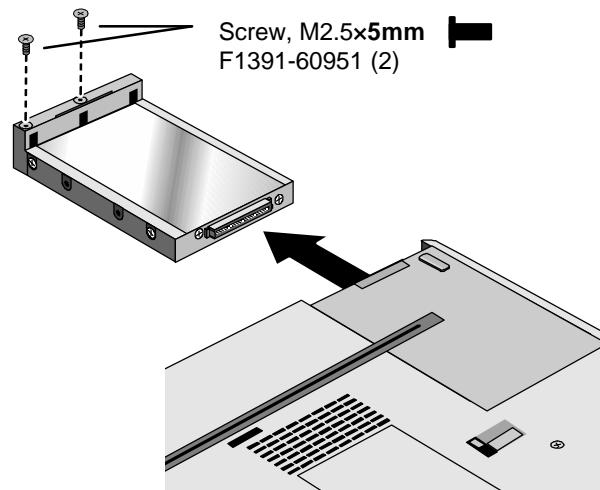


Figure 2-3. Removing the Hard Drive

Caution

Work the connector off the hard drive evenly, without pulling on the flex cable. Otherwise, you may bend connector pins on the hard drive or damage the flex cable.

4. If you are installing a new hard drive that does not have a plastic carrier, you can remove the carrier from the old hard drive:
 - Remove the four screws from the sides of the carrier.
 - Swing out the free end of the hard drive about 90°, then gently pry off the connector from the hard drive.

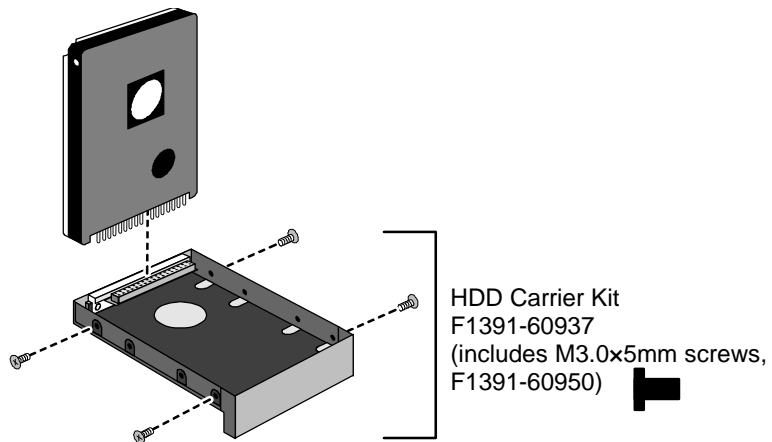


Figure 2-4. Installing a Hard Drive in the Carrier

Reassembly Notes

- Depending on the manufacturer of the replacement drive, the hole placement for the four screws may vary. However, only the indicated IBM drives are qualified at this time.

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 3000 Support Utility floppy disk, create one 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, run **makesupp** from the \OmniBook\Drivers\Hputils directory on the OmniBook 3000 Recovery CD.
 - On any computer, download the Support Utility software package from the OmniBook website (see page vi). Follow the instructions provided.
2. Insert the Support Utility disk in the OmniBook floppy drive.
3. Reboot the computer.
4. When prompted, select “Create Hibernate Partition.”

We recommend that you create a 144-MB partition, the same as the factory setup.

Removing a RAM Board

(User-Replaceable)

Table 2-4. RAM Board Replacement Part Numbers

Description	Part Number	Exchange Part Number
RAM board, 16-MB	F1363-60001	F1363-69001
RAM board, 32-MB	F1364-60001	F1364-69001
RAM board, 64-MB	F1365-60001	F1365-69001

Caution

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

Required Equipment

- Small Phillips screwdriver.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove the hard disk drive (see page 2-4).
3. Slide open the RAM cover about 3 mm, then lift off the cover.

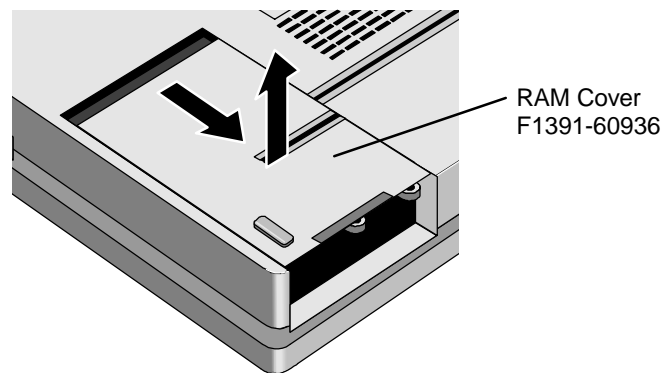


Figure 2-5. Removing the RAM Cover

4. Release the two metal latches at the sides of the RAM board, so the free edge of the board pops up.
5. Pull the board out of the connector.

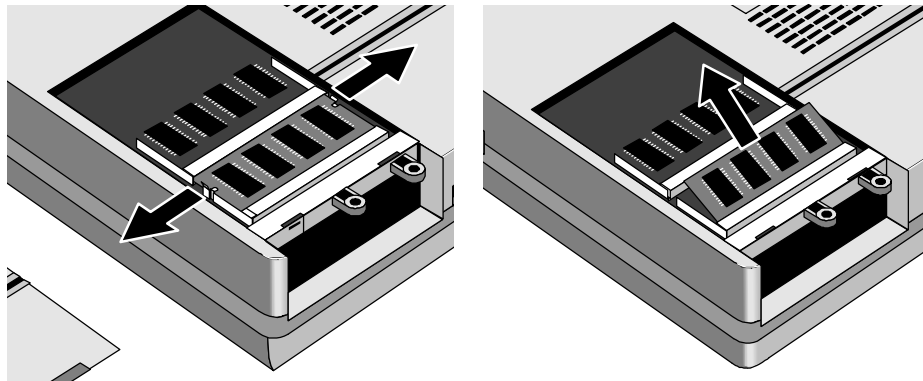


Figure 2-6. Removing a RAM Board

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.
- Place the RAM cover about 3 mm from its closed position, then slide it closed.

Replacing Small Parts (User-Replaceable)

The following small parts are user-replaceable.

Table 2-5. Replacing Small Parts (User-Replaceable)

Part	Part Number	Replacement Procedure
BIOS Cover	F1391-60929	On the bottom of the unit, insert a small flat-blade screwdriver into the slot at the edge of the BIOS cover and pry it off.
Feet	F1391-60931	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.
Hinge Cover	F1391-60935	With the display fully open, slide off the hinge cover about 5 mm, then lift it off. Use your finger or a small tool to push outward next to the hinge. To reinstall the cover, slide the open end of the cover onto the hinge, then lift the closed end over the bump and slide it in.
Icon Window Cover	F1391-60928	<ol style="list-style-type: none"> 1. Remove the floppy drive or other plug-in module. 2. With the display fully open, slide off the hinge cover about 5 mm, then lift it off. Use your finger or a small tool to push outward next to the hinge. 3. Pry out and pop up the right end of the icon window cover at the plug-in module slot, then pop off the cover.
I/O Door	F1391-60922	Open the door and flex the center of the door until one of the side tabs releases.
RAM Cover	F1391-60936	Remove the hard drive (see page 2-4). Slide the RAM cover about 3 mm toward the hard drive opening, then lift off the cover.

Removing the Display Assembly

(HP Authorized Service Providers Only)

Required Equipment

- Small Phillips screwdriver, preferably magnetized.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove the floppy drive or other plug-in module (see page 2-3).
3. Open the display fully.
4. Slide off the two plastic hinge covers about 5 mm, then lift them off. Use your finger or a small tool to push outward next to the hinge.
5. Pry out and pop up the right end of the icon window cover at the plug-in module slot, then pop off the cover.

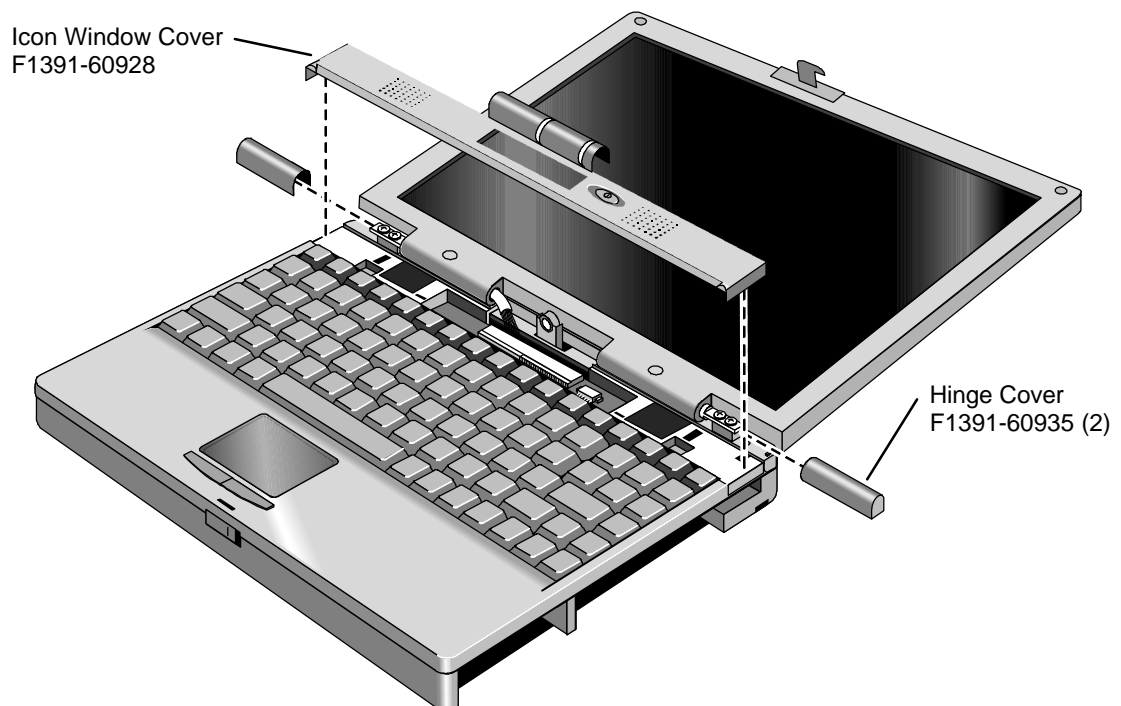


Figure 2-7. Removing the Hinge Covers and Icon Window Cover

6. Remove the icon PCA by doing the following:
 - Unplug the IR/icon cable near the right end of the icon PCA.
 - Remove the screw from the left end and lift up the PCA.
 - Unplug the cable from the motherboard.
7. For the LCD/LVDS cable emerging from the left hinge, remove the screw from the grounding lug and LVDS PCA, then unplug the cable from the LVDS PCA.

8. For the inverter/MB cable emerging from the right hinge, unplug the cable from the motherboard.
9. Remove the four screws from the hinges, and lift off the display assembly.

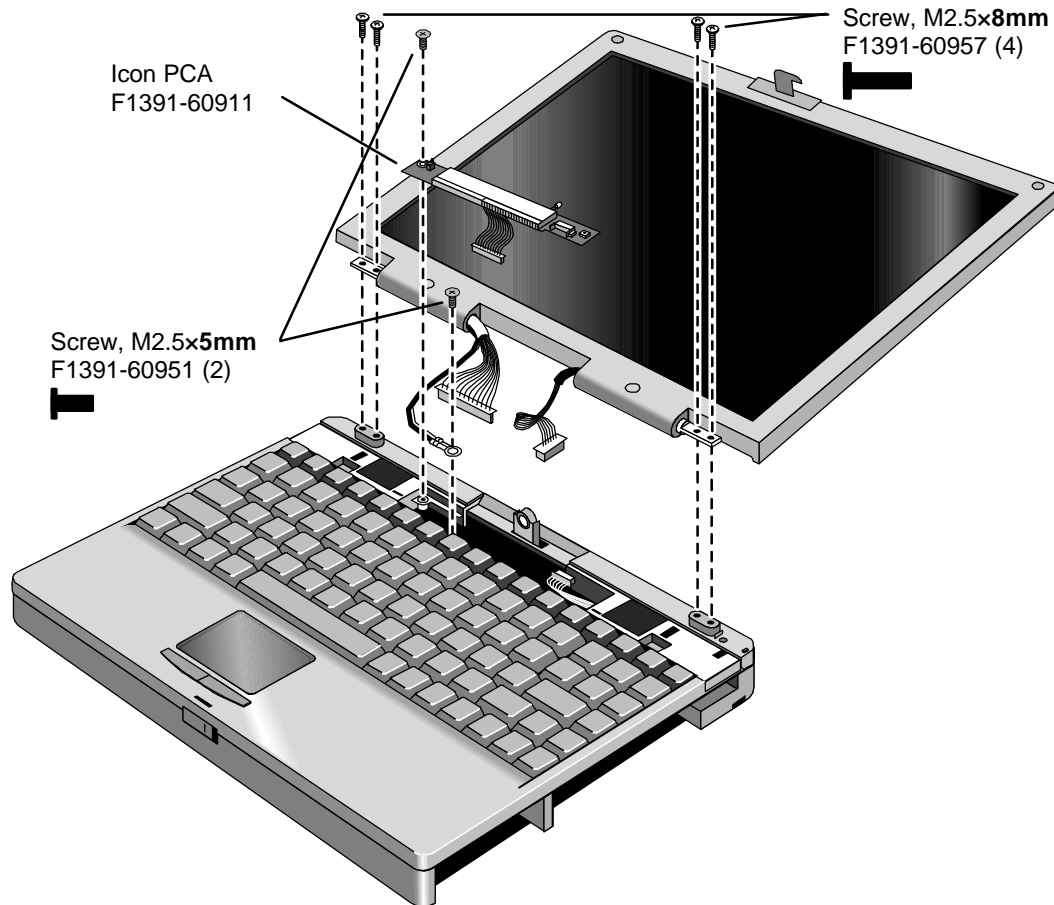


Figure 2-8. Removing the Icon PCA and Display Assembly

Reassembly Notes

- After connecting the inverter/MB cable from the right hinge, carefully dress the wires into the cutout and support in the case.

Caution

Use a **5 mm** screw to fasten the grounding lug through the LVDS PCA. If you use a longer screw, it will damage the motherboard.

Do not overtighten the grounding screw for the LCD/LVDS cable from the left hinge. It fastens to a sheet-metal bracket and the threads could strip.

- Insert the right end of the icon PCA between the plastic tabs on the case. Check that the IR/icon cable is not pinched and emerges above the PCA.
- Slide the open end of the hinge cover onto the hinge, then lift the closed end over the bump and slide it in.

Removing the LCD Module

(HP Authorized Service Providers Only)

Required Equipment

- Small Phillips screwdriver, preferably magnetized.
- Pointed knife or probe.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove the floppy drive or other plug-in module (see page 2-3).
3. Open the display fully.
4. Slide off the two plastic hinge covers about 5 mm, then lift them off. Use your finger or a small tool to push outward next to the hinge.
5. Pry out and pop up the right end of the icon window cover at the plug-in module slot, then pop off the cover.

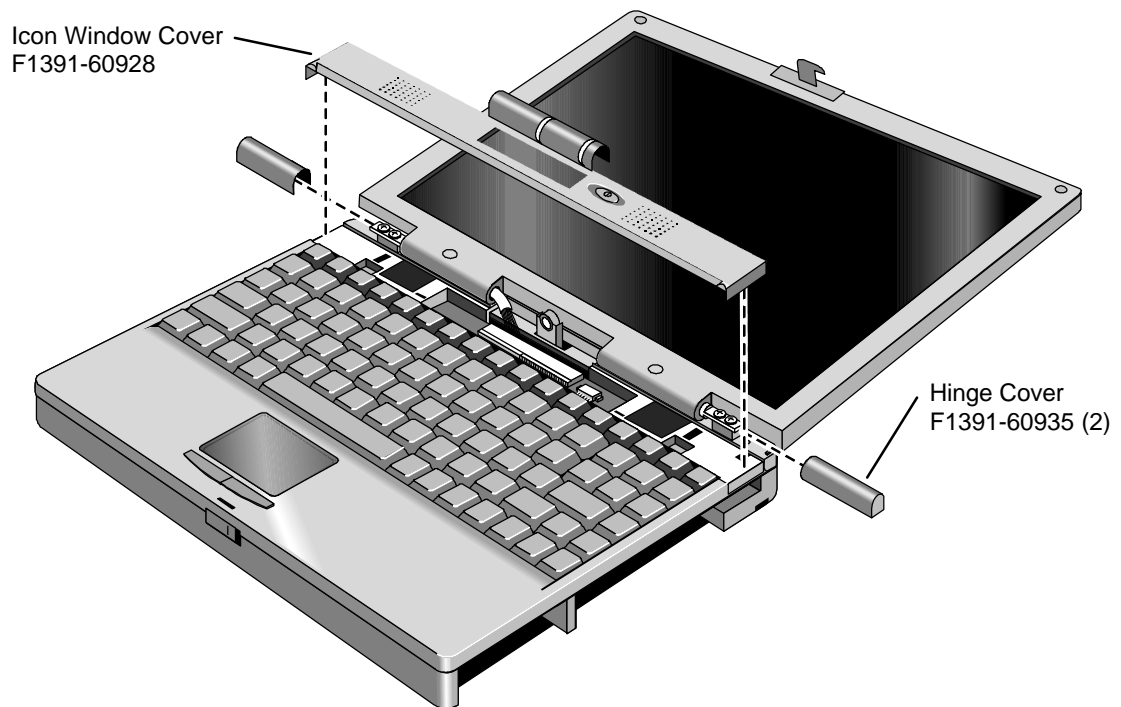


Figure 2-9. Removing the Hinge Covers and Icon Window Cover

6. Pry off the two screw covers by the display hinges (use a pointed knife or probe), then remove the two screws.

7. Starting at the left side of the display, use your fingers to gently pull the display bezel toward the edge of the display case until the snaps release. As the snaps release, work your way up the left side, across the top, and down the right side—until only the bottom edge is attached.

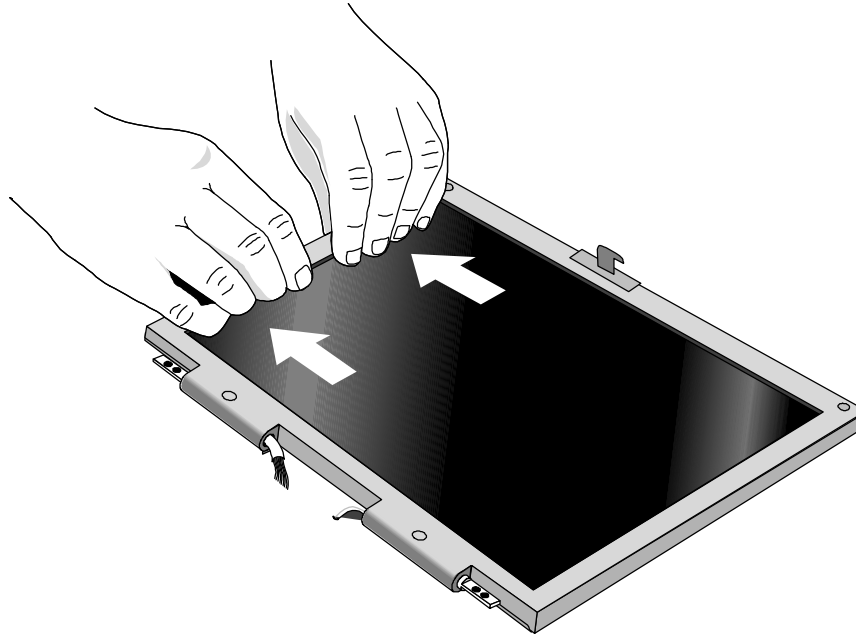


Figure 2-10. Removing the Display Bezel

8. Now use your fingers to gently lift up the inner, lower edge of the bezel away from the LCD until the lower snaps release.
9. Remove the four screws from the corners of the LCD module.
10. Lift out the LCD module and move it to the left until you can unplug the two-wire cable at the inverter PCA.
11. Tip up the top of the LCD module and gently unplug the connector near the top of the LCD module. You have to remove a piece of Kapton tape to do this.

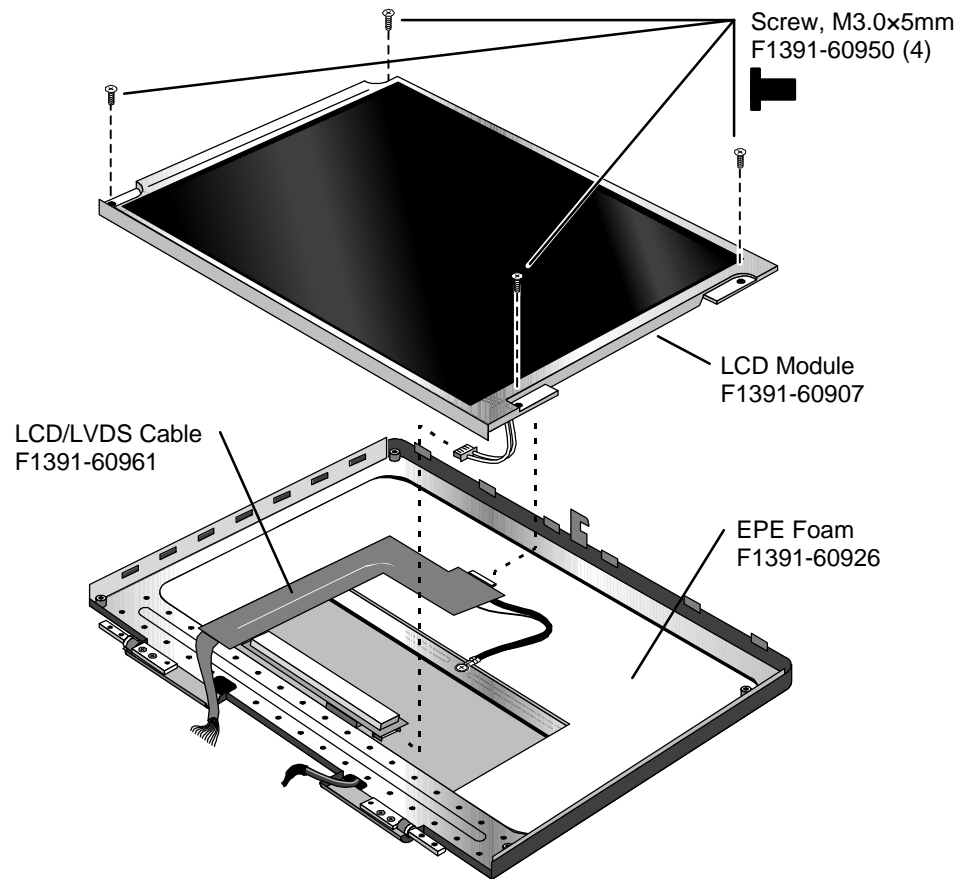


Figure 2-11. Removing the LCD Module

Reassembly Notes

- Secure the LCD/LVDS cable to the LCD module with a piece of Kapton tape next to the LCD connector.
- Before installing the LCD module, make sure the EPE foam is properly positioned inside the LCD bracket. The two flaps should be on top of the center bar of the bracket.
- Position the cables properly in the hinges before installing the bezel.
- Make sure the bezel snaps to the case along all edges. Pull to the side to help seat the snaps.
- Make sure the screw covers stick securely in place.

Removing the Display Case or LCD Bracket

(HP Authorized Service Providers Only)

Required Equipment

- Small Phillips screwdriver, preferably magnetized.
- Pointed knife or probe.
- Three small flat-blade screwdrivers (or equivalent tools for prying).

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove these additional assemblies:
 - Floppy drive or other plug-in module (see page 2-3).
 - Display assembly (see page 2-8).
 - LCD module (see page 2-11).
3. Remove the four screws holding the hinges and remove the hinges.
4. Remove the screw holding the LCD bracket to the display case near the hinge area.
5. If the EPE foam does not stick to the display case, remove the foam. If it does stick, you can leave it in place.

Important

In the next steps, you *must* start at the left side of the display case. Otherwise, the LCD bracket will not be able to tip up out of the display case.

Also, we suggest that you disengage all three tabs along the left edge at the same time. It is difficult to disengage them one at a time.

6. Using two or three small flat-blade screwdrivers or equivalent, separate the left side of the display case from the LCD bracket to disengage the three tabs.
7. Pry up the left side of the LCD bracket. There will be some friction due to the snug fit at the corners. You can use a small flat-blade screwdriver to pry at the corners between the metal screw tabs and the plastic posts underneath. (If the EPE foam sticks to the display case, fold back the foam as the bracket lifts out of the display case.)
8. After the bracket clears the case, slide the bracket toward the left until it is freed from the right side of the case. Lift out the bracket and LCD/LVDS cable. The EPE foam remains attached to the case.
9. To replace the display case, unsnap the inverter PCA from the case and remove it with the inverter/MB cable. You have to remove a piece of Kapton tape to do this.

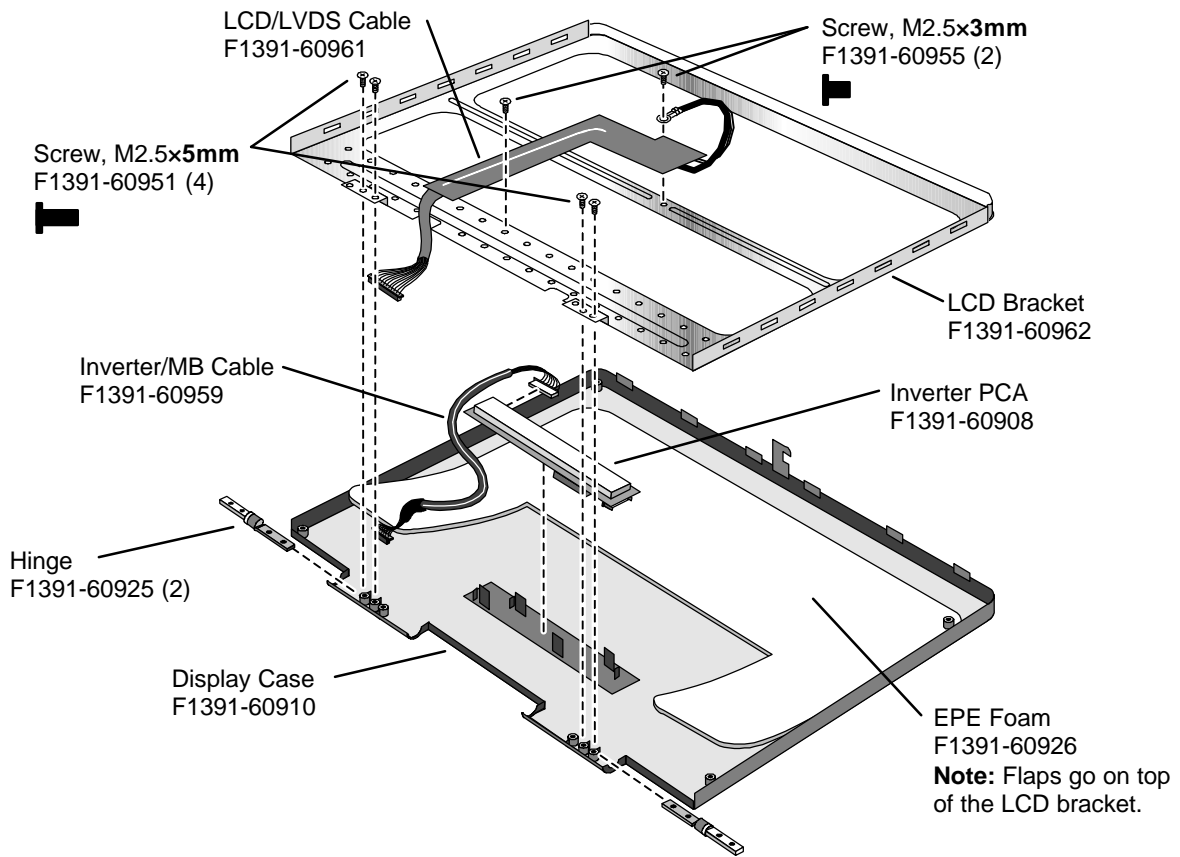


Figure 2-12. Removing the Display Case and LCD Bracket

Reassembly Notes

- Before you install the LCD bracket, secure the inverter/MB cable to the case near the hinge area with a piece of Kapton tape.
- Make sure the EPE foam is *not* placed under the LCD bracket. The two flaps go on top of the bracket.
- After you install the LCD bracket, secure the LCD/LVDS cable to the bracket near the hinge area with a piece of Kapton tape.
- Position the two cables correctly before you install the hinge screws. Both cables should protrude from the case almost 6 cm (about 2 inches).
- Install each hinge so the slit in the housing faces into the display case.
- Before installing the LCD module, make sure the EPE foam is properly positioned inside the LCD bracket. The two flaps should be on top of the center bar of the bracket.
- Secure the LCD/LVDS cable to the LCD module with a piece of Kapton tape next to the LCD connector.
- Position the cables properly in the hinges before installing the bezel.
- Make sure the bezel snaps to the case along all edges. Pull to the side to help seat the snaps.
- Make sure the screw covers stick securely in place.

Removing the Keyboard

(HP Authorized Service Providers Only)

Required Equipment

- Small Phillips screwdriver, preferably magnetized.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove the floppy drive or other plug-in module (see page 2-3).
3. Open the display fully.
4. Slide off the two plastic hinge covers about 5 mm, then lift them off. Use your finger or a small tool to push outward next to the hinge.
5. Pry out and pop up the right end of the icon window cover at the plug-in module slot, then pop off the cover.

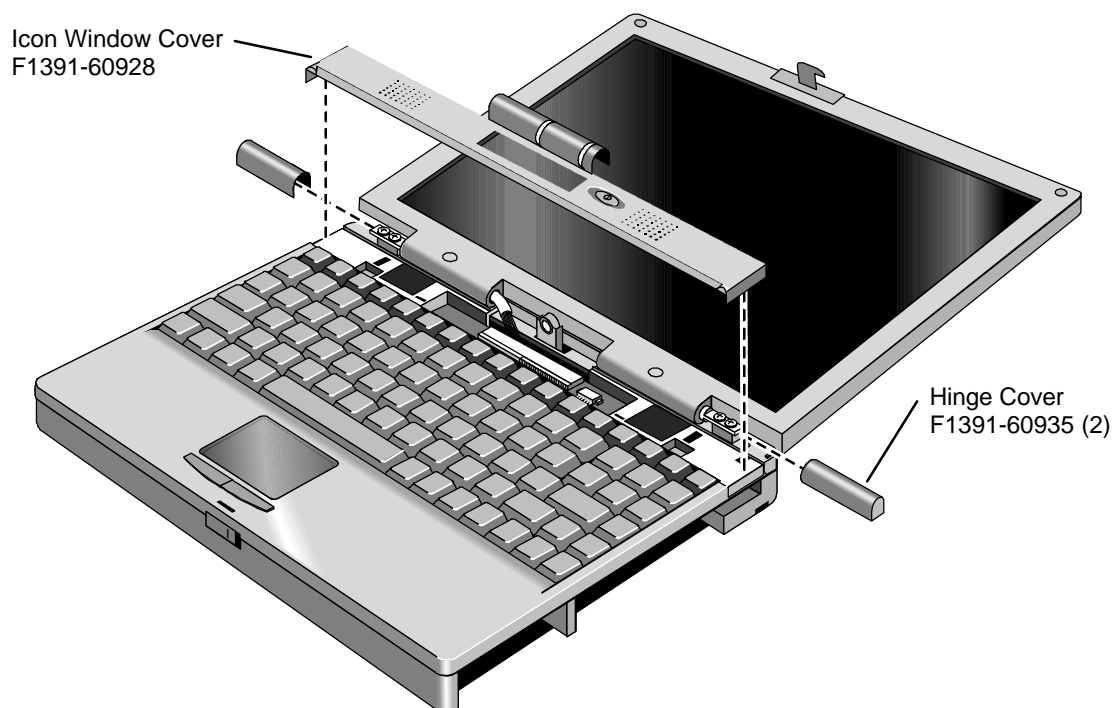


Figure 2-13. Removing the Hinge Covers and Icon Window Cover

6. Remove the two screws at the top ends of the keyboard.
7. Slide the keyboard toward the front of the computer until the top edge of the keyboard releases from the four plastic lugs at the top.
8. Being careful of the flex cable underneath, slide the keyboard toward the front of the computer, then lift the top edge and pivot the keyboard onto the palmrest.
9. Release the flex cable from the motherboard by lifting the locking tab.

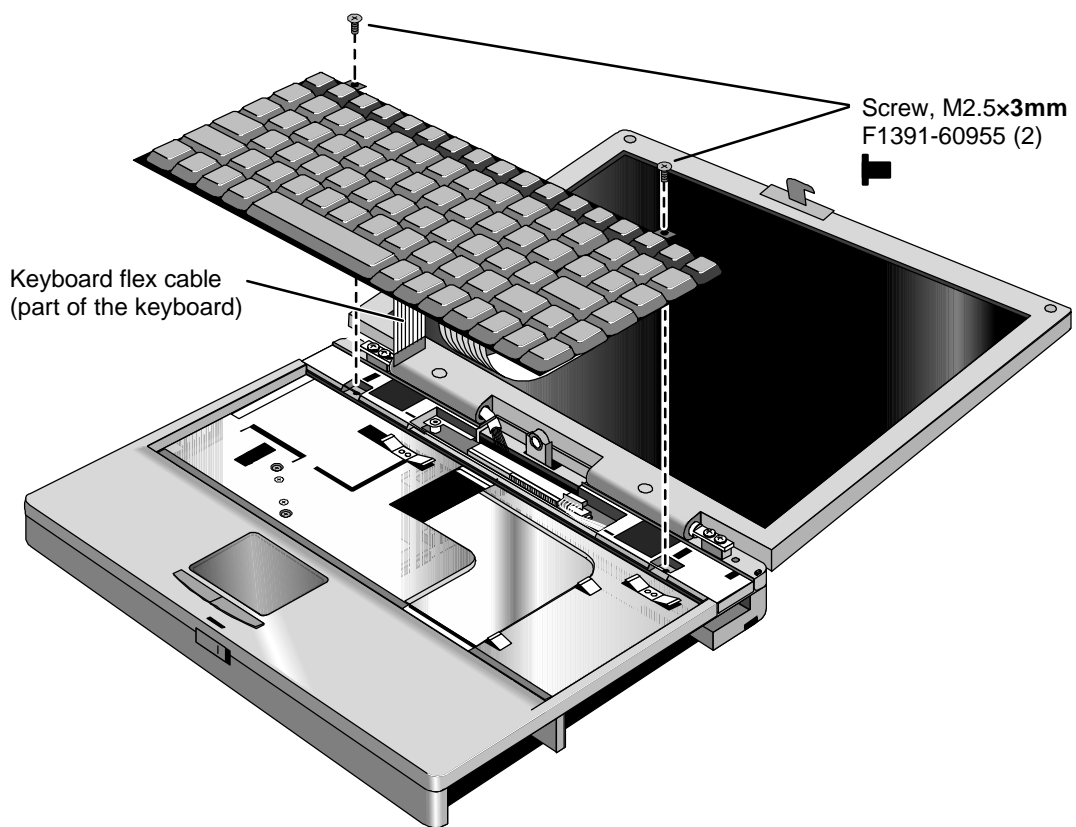


Figure 2-14. Removing the Keyboard

Reassembly Notes

- After connecting the keyboard flex cable, insert the front edge of the keyboard into the front slots, then slide it back. Make sure it is underneath the four plastic tabs along the back edge.
- Slide the open end of the hinge cover onto the hinge, then lift the closed end over the bump and slide it in.

Removing the Top Case and TouchPad (HP Authorized Service Providers Only)

Required Equipment

- Small Phillips screwdriver, preferably magnetized.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove these additional assemblies:
 - Floppy drive or other plug-in module (see page 2-3).
 - Hard drive (see page 2-4).

- Display assembly (see page 2-8).
 - Keyboard (see page 2-11).
3. Remove the heat sink assembly by doing the following:
- Remove the three *recessed* screws from the heat sink assembly.
Note: Do *not* remove the two middle screws from the heat sink assembly. They hold a permanent part of the assembly.
 - Using your fingers or a small flat-blade screwdriver, press the heat sink assembly toward the back of the computer until the three tabs along the front edge are free from the case.
 - Disengage the front edge, then lift the right end of the assembly and unplug the fan cable from the motherboard.

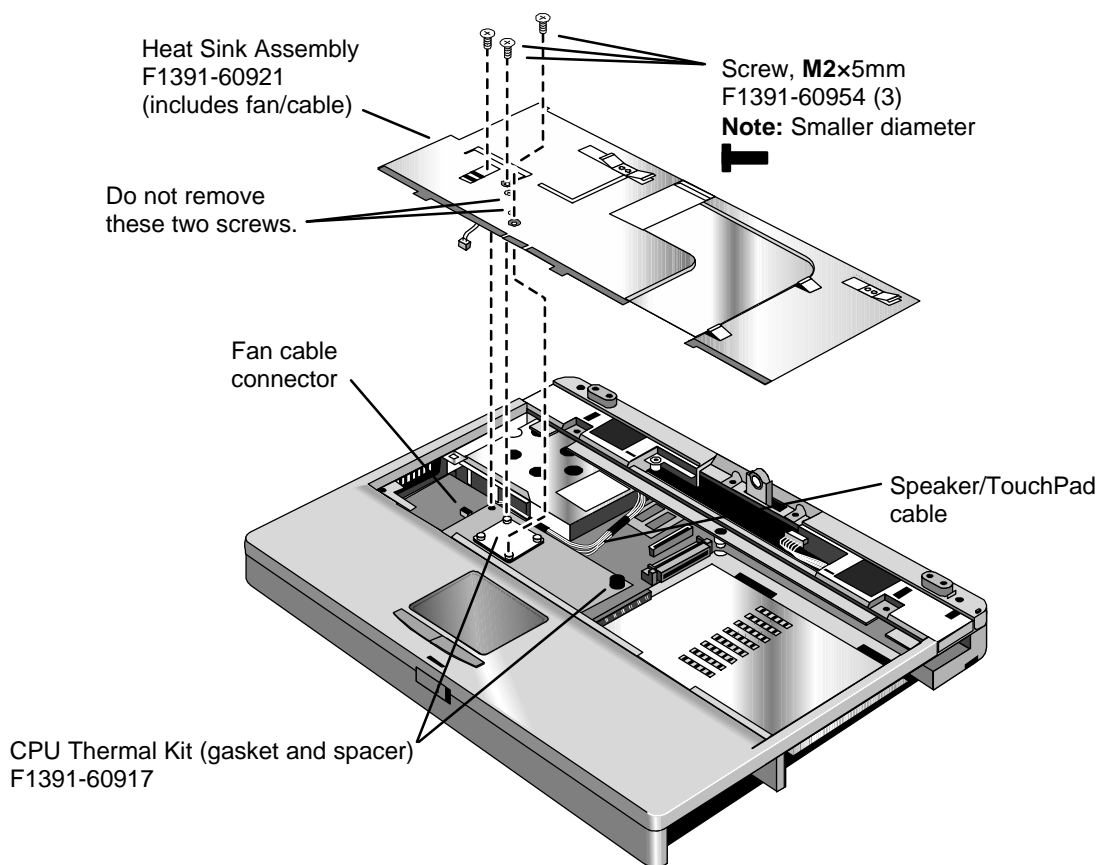


Figure 2-15. Removing the Heat Sink Assembly

4. Unplug the speaker/TouchPad cable from the motherboard. (See the picture below.)
5. Turn the unit bottom side up and remove the five bottom case screws. Two of the five screws are hidden at the front corners inside the battery and hard drive slots.
6. Turn the unit face up and remove the six top case screws.

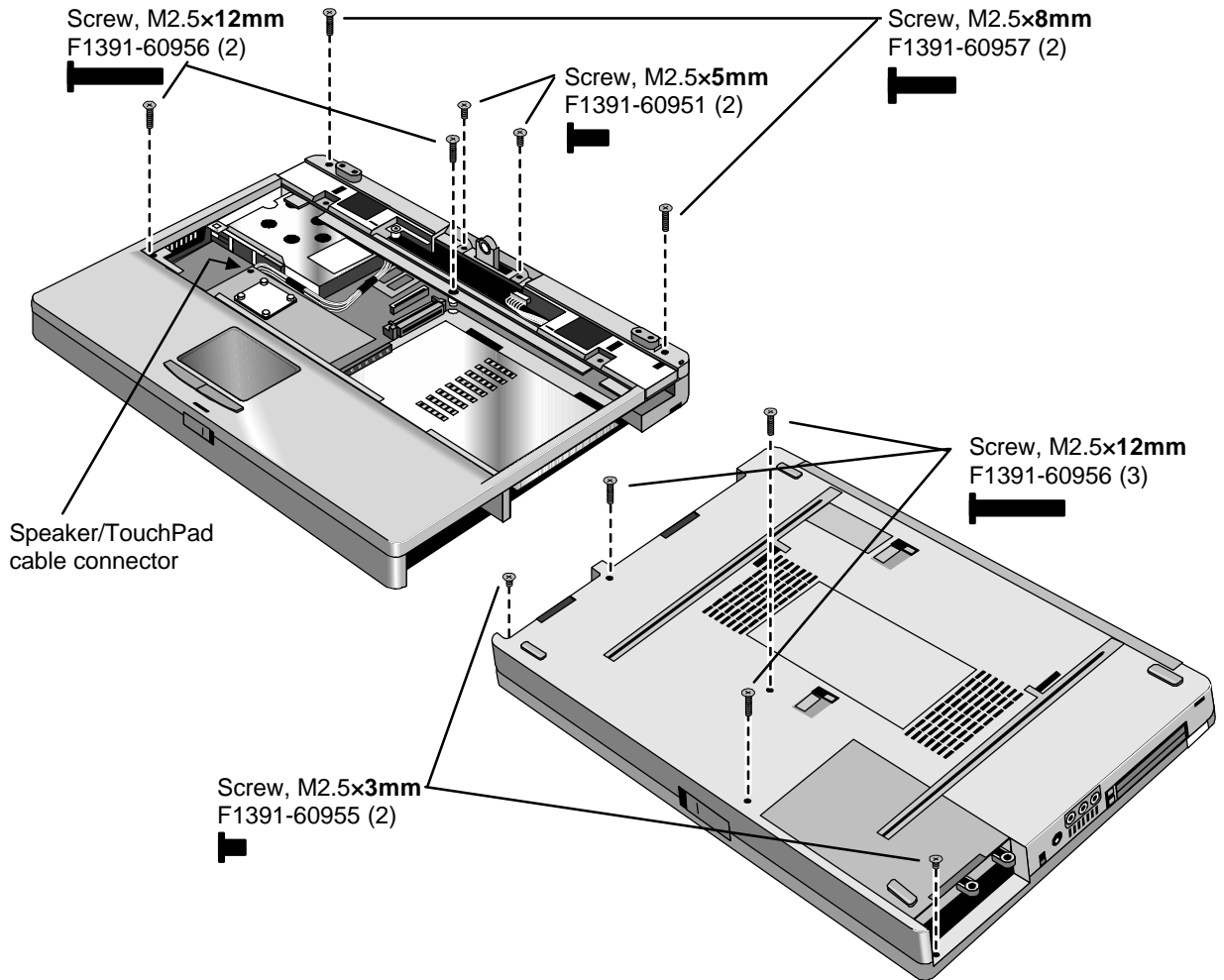


Figure 2-16. Removing the Case Screws

7. Lift up along the back edge of the top case until that edge is free.

- Place your thumbs on the front of the bottom case and your fingertips wrapped around the back of the palmrest. Lift the back of the top case about 4 cm, then gently but firmly pinch the case forward—until the four snaps release along the front edge.

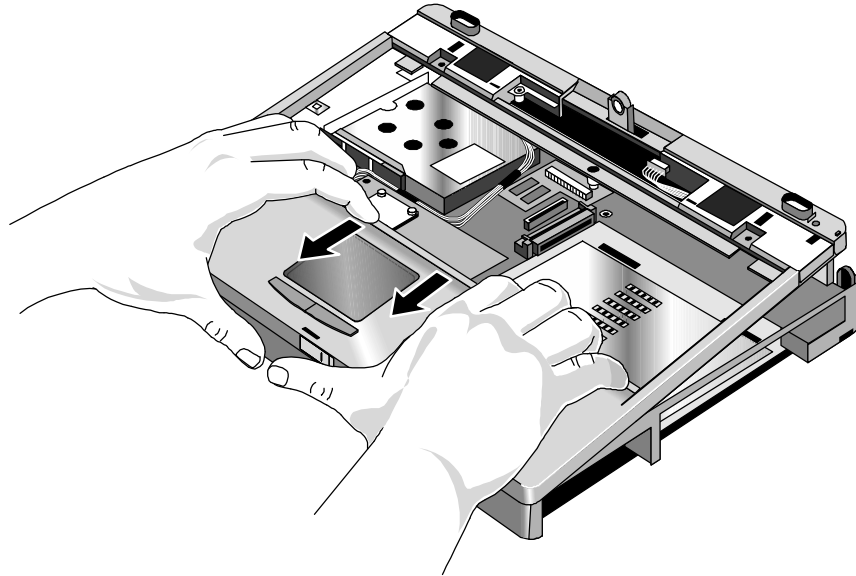


Figure 2-17. Removing the Top Case Assembly

Reassembly Notes

- Before you install the top case and heat sink assembly, do *not* install any screws in the CPU module. (You install them after you install the heat sink.)
- Make sure the IR/icon cable and speaker cables are properly routed and restrained.
- Place the top case over the front latch but tilted up at the back, then pull forward and down along the front edge until the snaps lock. Finally, seat the back edge over the hinge brackets.
- Route the speaker/TouchPad cable so it does not overlap the CPU module or PCMCIA housing. (See Figure 2-15.)
- Before installing the heat sink assembly, make sure a rubber spacer is stuck to the back-right corner of the CPU module. If the thermal gasket on top of the CPU is damaged, replace it. (Both parts are included in the CPU thermal kit, F1391-60917). (See Figure 2-15.)
- When installing the heat sink assembly, remember to plug in the fan cable, and make sure it does not overlap the CPU module. Slide the back edge of the assembly into the top case, then press toward the back until the front tabs engage. Slide the assembly forward to align the screw holes. (See Figure 2-15.)

Caution

The three heat sink screws have M2 threads, slightly smaller than other screws. Make sure you use the correct screws. Otherwise, you could damage the threads.

- If you are installing a new top case assembly, you must attach new Windows and Intel labels at the right edge of the palmrest, as shown below.

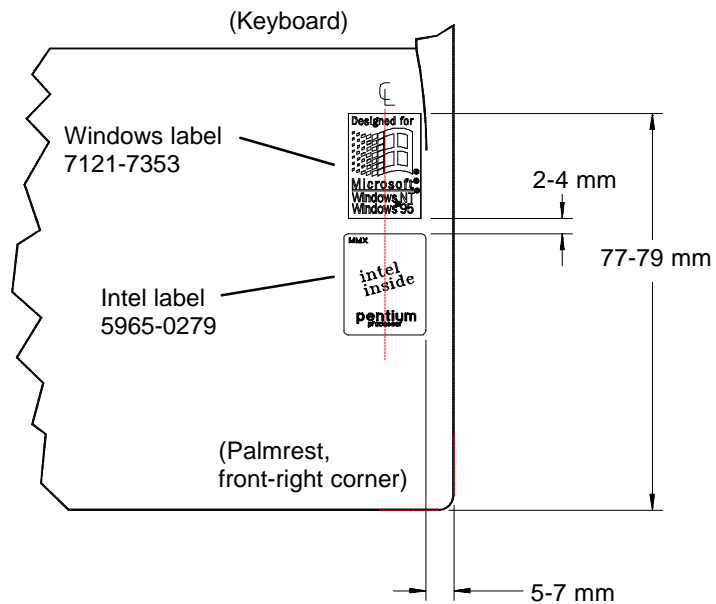


Figure 2-18. Placing the Top Case Labels (Right Edge of Palmrest)

Removing the Motherboard or Bottom Case

(HP Authorized Service Providers Only)

Required Equipment

- Small Phillips screwdriver, preferably magnetized.
- 5 mm hex driver.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove these additional assemblies:
 - Floppy drive or other plug-in module (see page 2-3).
 - Hard drive (see page 2-4).
 - Display assembly (see page 2-8).
 - Keyboard (see page 2-11).
 - Heat sink assembly and top case (see page 2-17).
3. Remove the two screws from the front edge of the CPU module.

Caution

Remove and install the CPU module by holding it at the connector end (the right end). Otherwise, you could damage the connectors or damage pressure-sensitive components on the module.

4. Unplug the CPU module from the motherboard. It is held by two connectors under the right end of the module.

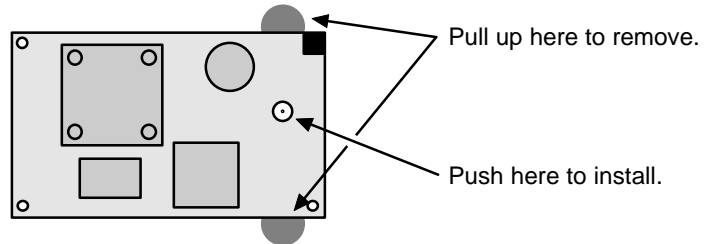


Figure 2-19. Removing and Installing the CPU Module

Caution

Use care when removing or installing the USB PCA. Otherwise, you could damage the mating pins on the motherboard.

5. Remove the screw from the USB PCA, then unplug the PCA from the motherboard by lifting the front edge.
6. Remove the three screws (one inside the hard drive opening) and three hex standoffs from the motherboard. Each hex standoff has a grounding clip that slips over the top of the standoff.
7. Lift the hard drive housing only until the PCMCIA pushbuttons clear the bottom case. Then gently work the motherboard forward until the I/O bracket slips free.

The audio jack holder is released when you remove the motherboard.

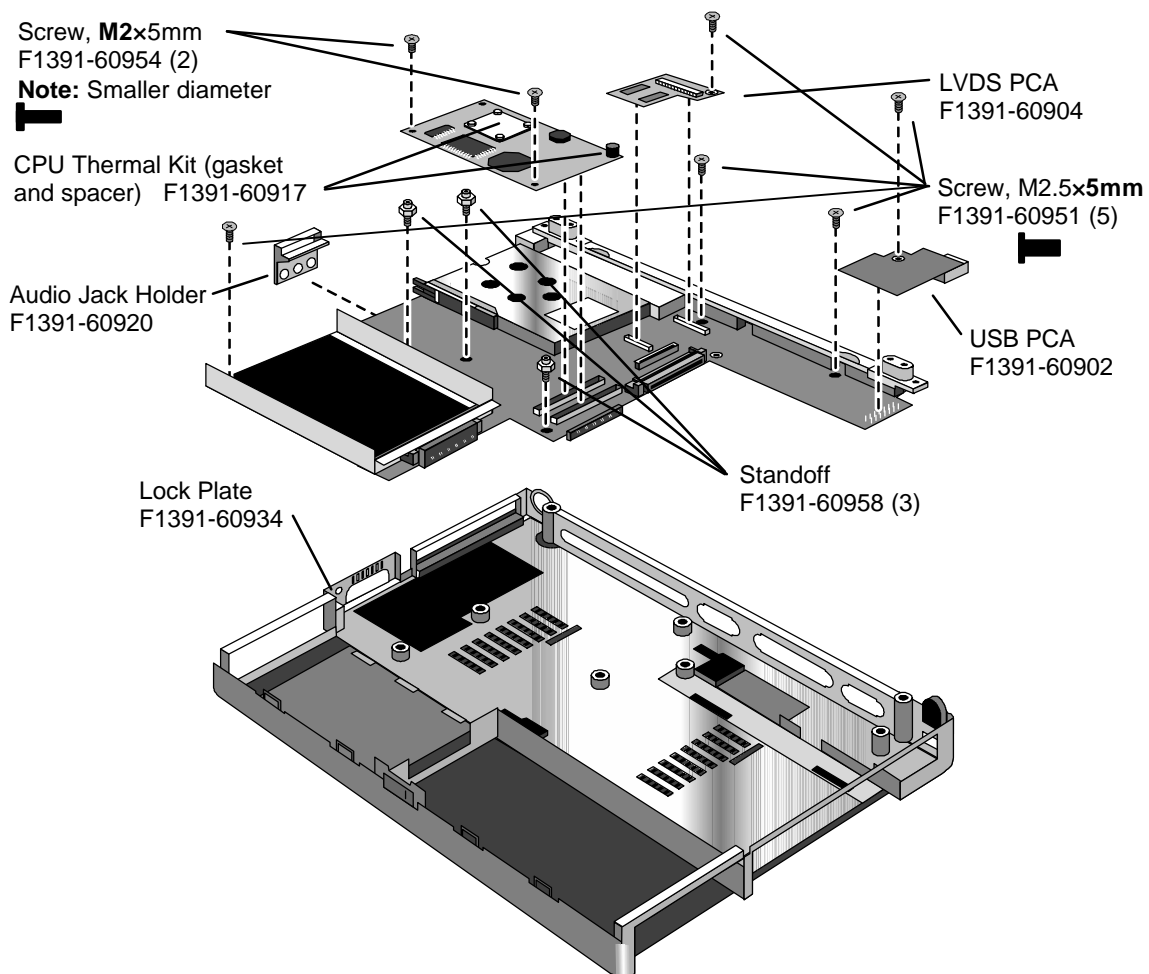


Figure 2-20. Removing the Motherboard

Reassembly Notes

Note: Installing a New Motherboard

- Transfer these PCAs from the old motherboard to the new one:
 - LVDS PCA (secure it with one **5 mm** screw on the right side).
Caution: Do not use a longer screw—it will damage the motherboard.
 - Audio PCA (on the underside).
 - RAM board, if present (on the underside).
- 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:
 - Lock plate (see Figure 2-20).
 - Plastic parts (I/O door, RAM cover).
- Install a new regulatory label on the bottom case—see the steps below.
- Check that the audio PCA has two rubber bumpers attached to the board directly behind the two connectors.
- Check that the audio PCA is securely attached to the underside of the motherboard before installing the motherboard. The audio PCA can work loose if you flex the motherboard excessively.
- Place the audio jack holder onto the audio jacks before you lower the motherboard into the case.
- Raise the front edge of the motherboard only high enough for the PCMCIA pushbuttons to clear the bottom case. Work the I/O bracket into the back of the bottom case, then lower the front edge into the case.
- Do *not* install screws into the motherboard next to the ac adapter socket or next to the plug-in module socket. (See Figure 2-20.)

Caution

When installing the CPU module onto the motherboard, press on the white target (Figure 2-19). Otherwise, you could damage pressure-sensitive components.

- The two screws at the front-underside of the bottom case are the *shortest* screws—only 3 mm long.

Caution

Insert the back end of the USB PCA into the case first, then carefully align the connector before pressing it onto the motherboard. Take care not to damage the connector pins.

- Before you install the top case and heat sink assembly, make sure you have installed only *two* screws in the CPU module—the two at the front corners. (You install the remaining screw after you install the heat sink.)

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, change to the \OMNIBOOK directory and type **esn** at the prompt.
 - Otherwise, copy \Omnibook\Drivers\Hputils\Esn.exe from the OmniBook 3000 Recovery CD, then run it on the OmniBook.
3. When prompted, 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 Bottom-Case Label

1. Attach a regulatory label in the recess in the bottom case. The bottom of the label goes toward the front of the case.
2. Looking at the serial number on the unit's original bottom case, create a replacement serial number label. A separate Service Note gives details about equipment, software, and label material.
3. Attach the serial number label to the bottom area of the regulatory label.

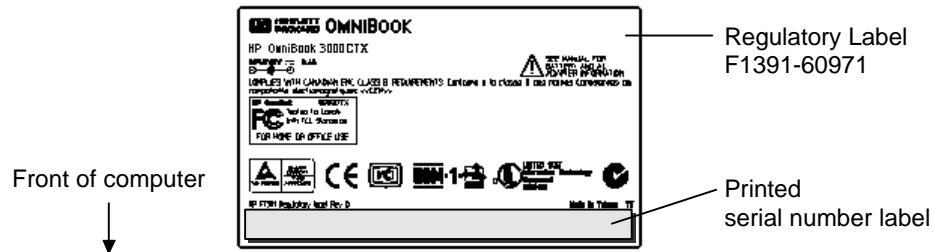


Figure 2-21. Installing a Bottom Case Label

Removing the System BIOS IC or Keyboard BIOS IC (HP Authorized Service Providers Only)

Note

A replacement IC contains enough basic programming to boot the OmniBook. However, after replacing an IC, you must reprogram the ICs. Hewlett-Packard prefers that you program the ICs with the latest BIOS. You can download it from the OmniBook website (see page vi).

Required Equipment

- Small flat-blade screwdriver.
- IC insertion/removal tool (F1371-60904).

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 system BIOS IC or keyboard BIOS IC from its socket.

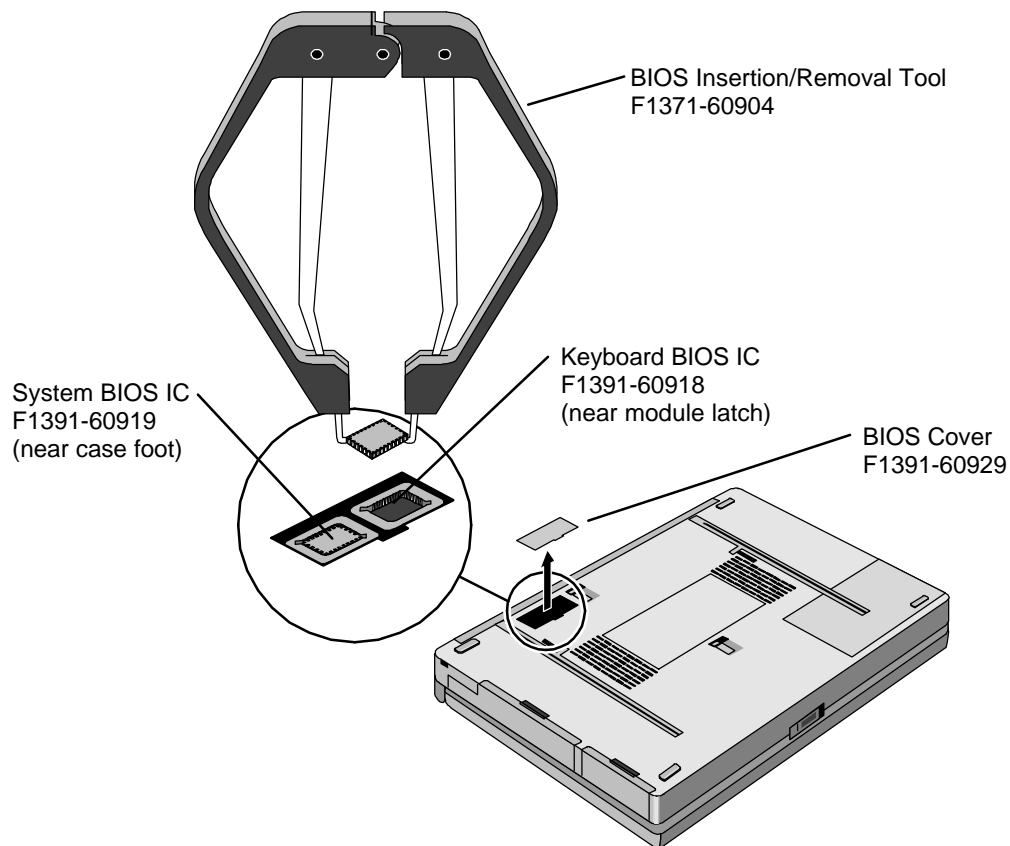


Figure 2-22. Removing a BIOS IC

Reassembly Notes

- Align the IC with the slot in the socket. The IC is keyed to fit correctly.
- Press down firmly on the IC with your thumb to ensure a proper connection.
- Reprogram the ICs by programming the BIOS—see the note above.

Removing Other Components

(HP Authorized Service Providers Only)

The following table lists additional replaceable components and the removal procedures required to access them.

Table 2-6. Other Replaceable Components (Authorized Providers)

Component	Equipment	Removal Procedures	Special Notes
AC Adapter			No repairable components. Replacement is required.
Audio Jack Holder	Phillips screwdriver, 5 mm hex driver	Plug-in module (page 2-3). Hard drive (page 2-4). Display (page 2-8). Keyboard (page 2-11). Top case (page 2-17). Motherboard (page 2-20).	Remove the motherboard only far enough to slip the holder off the audio jacks.
Audio PCA	Phillips screwdriver, 5 mm hex driver	Plug-in module (page 2-3). Hard drive (page 2-4). Display (page 2-8). Keyboard (page 2-11). Top case (page 2-17). Motherboard (page 2-20).	Unplug audio PCA from underside of motherboard. Check that two rubber bumpers are present on the new audio PCA directly behind the two connectors.
CPU Module	Phillips screwdriver	Plug-in module (page 2-3). Hard drive (page 2-4). Display (page 2-8). Keyboard (page 2-11). Top case (page 2-17).	Remove two screws from CPU module. Unplug CPU module from motherboard. Caution: Install both parts of a CPU thermal kit (F1391-60917) to the new module. Stick the gasket to the top of the CPU. Stick the rubber spacer to the top back-right corner of the board.
Display Latch or Spring	Phillips screwdriver	Plug-in module (page 2-3). Hard drive (page 2-4). Display (page 2-8). Keyboard (page 2-11). Top case (page 2-17).	To remove, lift the left corner. To install, put the spring on the latch shaft, then insert the shaft through the opening at the bottom of the right-hand slot.
Hinge	Phillips screwdriver	Plug-in module (page 2-3). LCD module, but only until the display bezel is removed (page 2-11).	Caution: If the display is attached to the bottom case, install one new hinge before you remove the other to avoid stressing the cables. Install the hinge so the slit in the housing faces into the display case.
Icon/MB Cable	Phillips screwdriver	Plug-in module (page 2-3). Display, but only until the icon PCA is removed (page 2-8).	The display does not have to be removed.

Component	Equipment	Removal Procedures	Special Notes
Icon PCA	Phillips screwdriver	Plug-in module (page 2-3). Display, but only until the icon PCA is removed (page 2-8).	The display does not have to be removed.
Inverter/MB Cable	Phillips screwdriver, Knife or probe, 3 flat screwdrivers	Plug-in module (page 2-3). Display (page 2-8). LCD module (page 2-11). Display case (page 2-13).	The cable should protrude about 6 cm from the hinge. Secure the inverter/MB cable to the case near the hinge area with a piece of Kapton tape.
Inverter PCA	Phillips screwdriver, Knife or probe	Plug-in module (page 2-3). LCD module (page 2-11).	Unsnap the inverter PCA from the display case, then unplug the cable. Install an inverter bumper (F1391-60960) on the PCA.
IR/Icon Cable	Phillips screwdriver	Plug-in module (page 2-3). Hard drive (page 2-4). Display (page 2-8). Keyboard (page 2-11). Top case (page 2-17).	Remove the screws from the IR PCA and the speaker bracket. Make sure the cable is clamped by the bracket, and it routes through the bottom corner of the window opening.
IR Lens	Phillips screwdriver	Plug-in module (page 2-3). Hard drive (page 2-4). Display (page 2-8). Keyboard (page 2-11). Top case (page 2-17).	The lens should be flush with the outside of the case.
IR PCA	Phillips screwdriver	Plug-in module (page 2-3). Hard drive (page 2-4). Display (page 2-8). Keyboard (page 2-11). Top case (page 2-17).	The IR PCA fits onto the pin on the top case
LCD/LVDS Cable	Phillips screwdriver, Knife or probe	Plug-in module (page 2-3). Display (page 2-8). LCD module (page 2-11).	The cable should protrude about 6 cm from the hinge. Secure the LCD/LVDS cable to the LCD bracket with a piece of Kapton tape near the hinge. Secure the LCD/LVDS cable to the LCD module with a piece of Kapton tape next to the LCD connector.
Lock Plate	Phillips screwdriver	Plug-in module (page 2-3). Hard drive (page 2-4). Display (page 2-8). Keyboard (page 2-11). Top case (page 2-17). Motherboard, but only until you can lift the front edge (page 2-20).	Pull up on the lock plate until it comes out of the bottom case. It wedges into place.

Component	Equipment	Removal Procedures	Special Notes
LVDS PCA	Phillips screwdriver	Plug-in module (page 2-3). Hard drive (page 2-4). Display (page 2-8). Keyboard (page 2-11). Top case (page 2-17).	Unplug the LVDS PCA from the motherboard. Do not install the left screw until you install the display assembly. Caution: Do not overtighten the LVDS screws. They fasten to a sheet-metal bracket and the threads could strip.
Port Replicator			No repairable components. Exchange is required.
USB PCA	Phillips screwdriver	Plug-in module (page 2-3). Hard drive (page 2-4). Display (page 2-8). Keyboard (page 2-11). Top case (page 2-17). Motherboard, but only until the USB PCA is removed (page 2-20).	The motherboard does not have to be removed.

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 3-9).
- Diagnostic tools
 - OmniBook hardware diagnostic program (page 3-10).
 - Power-on self-test (page 3-15).
 - Sycard PCCtest 450 PC Card (page 3-17).
 - Desktop Management Interface (page 3-18).
 - BIOS Setup utility (page 3-20).

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.

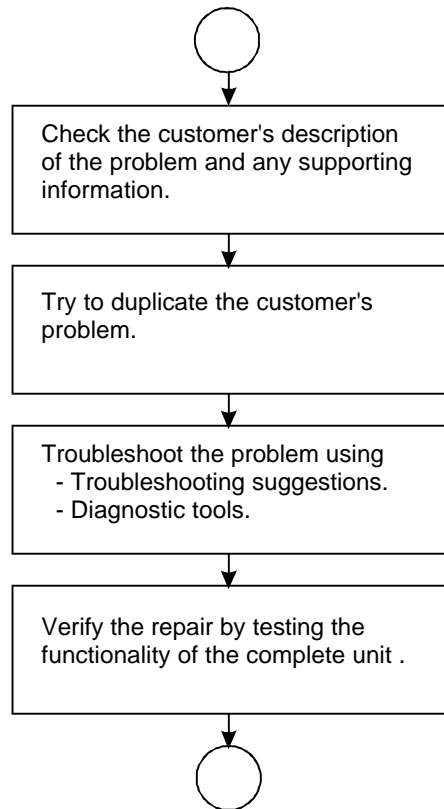


Figure 3-1. Basic Troubleshooting Steps

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, such as the ones listed in the tables below. Use the diagnostic tools to help find possible causes and repair the problem.

The first table below lists general guidelines for repairing units with certain failure symptoms. The suggested order of investigation is not mandatory. The second table (page 3-8) shows how you can use the different diagnostic tools to isolate the cause.

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.

Table 3-1. 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 1-10.			
Startup			
Does not boot on ac or battery, no display	Check the power source. Push system-off button. Remove any RAM boards and try again. Reinsert and try again.	AC adapter (F1377-60901). RAM board (varies). Hard drive (varies). CPU module (varies). Motherboard (F1391-60901).	Check ac adapter. Remove any RAM boards and retry. If unit boots from floppy drive, reprogram BIOS, reload hard drive, replace hard drive. Otherwise, replace CPU module, then motherboard.
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 (F1382-60901). Motherboard (F1391-60901).	
Does not boot from floppy drive	Check floppy drive contacts. Try using alternate connection (with or without floppy cable). Check boot order in BIOS Setup.	Floppy drive or contacts (F1384-60901). Floppy cable (F1380-60901). Motherboard (F1391-60901).	
Error message such as "Invalid system disk" or "Auto IDE error."	Remove and reinsert hard drive.	Hard drive contacts. Hard drive (varies).	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.
Password has been forgotten	The unit may have to be shipped to an HP service center.	The unit may have to be shipped to an HP service center.	Password removal is restricted to certain sites. See page 5-1.

Symptom	Call Center: Suggestions	Repair Center: Likely Causes	Repair Center: Comments
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 (F1382-60901). Motherboard (F1391-60901).	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 (F1382-60901). Motherboard (F1391-60901).	
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 (F1382-60901). AC adapter (F1377-60901). Motherboard (F1391-60901). Heat sink (fan) (F1391-60921).	Check ac adapter. Check fan.
Secondary battery does not work, main battery works	Check secondary-battery contacts. Secondary battery does not charge until main battery is fully charged.	Secondary battery or contacts (F1383-60901). Motherboard (F1391-60901).	
Display			
Dark display, no light	Adjust display brightness. Press Fn+F5 several times.	LCD module (backlight) (F1391-60907). LCD cables or connections.	If an external monitor displays no image, replace the motherboard instead.
White display		LCD module (F1391-60907).	
Erratic display		LCD cables or connections.	
Bright or missing pixels or lines	See quality statement on page 5-2.	LCD module (F1391-60907). LCD cables or connections.	See quality statement on page 5-2.
Hard disk			
Hard disk never spins	Check the power source. Remove and reinsert the hard drive. Check the contacts.	Hard drive or contacts (varies). Motherboard (F1391-60901). Hard drive case (flex cable) (F1391-60937).	If the drive case is damaged, it can prevent proper operation. Check the flex cable for wear.

Symptom	Call Center: Suggestions	Repair Center: Likely Causes	Repair Center: Comments
Hard disk makes clunking or scratching noise	Back up the drive immediately. Was the computer or drive dropped?	Hard drive (varies).	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. Boot to DOS and run CHKDSK to look for problems, run CHKDSK /f to fix. Run Scandisk surface scan to check the platter. Use Recovery CD to recover files that are corrupted.		Use same suggestions shown at left.
Floppy drive			
General problems	Check floppy drive contacts. Try using alternate connection (with or without floppy cable). Check settings in BIOS Setup.	Floppy drive or contacts (F1384-60901). Floppy cable (F1380-60901). Motherboard (F1391-60901).	
Keyboard			
Some or all keys do not work properly		Keyboard (varies). Motherboard (F1391-60901). Keyboard BIOS IC (F1391-60918).	
PS/2 keyboard and mouse with Y-adaptor do not work	This configuration is not supported. (Maybe use a port replicator or a serial mouse.)		
TouchPad			
General problems	Check settings in Control Panel.	Top case assembly (F1391-60909). Motherboard (F1391-60901).	
Audio			
Sound does not play	Check settings in BIOS Setup. Increase sound volume. Check whether mute is active. Check for sound resource conflicts.	Audio PCA (F1391-60903). Top case (speakers) (F1391-60909). Motherboard (F1391-60901).	Check operation using headphones or external speakers.

Symptom	Call Center: Suggestions	Repair Center: Likely Causes	Repair Center: Comments
Sound does not record	Check settings in BIOS Setup. Check software controls for recording sound.	Top case (microphone) (F1391-60909). Audio PCA (F1391-60903). Motherboard (F1391-60901).	Check operation using external microphone.
Serial/Parallel			
General problems	Check settings in BIOS Setup.	Motherboard (F1391-60901).	
Infrared			
General problems	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.	IR PCA (F1391-60912). Motherboard (F1391-60901). Icon PCA (F1391-60911).	
USB			
General problems	Check whether USB works on a port replicator.	USB PCA (F1391-60902). Motherboard (F1391-60901).	Check for bent pins and misaligned connectors for the USB PCA. If USB works on a port replicator, replace the USB PCA.
PCMCIA			
General problems	If the card requires an IRQ, check that there is one available. Try the card in another computer. Check the OmniBook website for installation instructions (page vi). Download current drivers from the card manufacturer's website.	Motherboard (F1391-60901).	
AC adapter			
Does not power the OmniBook.	Try another ac adapter, if available.	AC adapter (F1377-60901). Motherboard (F1391-60901).	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 (F1391-60901).	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.	Heat sink (fan) (F1391-60921). Thermal connections. Heat sink damage (F1391-60921).	Test the fan. Check for proper contact between CPU and heat sink, and between fan and heat sink.
Computer pauses or runs sluggishly	May be normal Windows 95 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 (varies). Motherboard (F1391-60901).	
Accessories			
Port replicator I/O problems	Check that ac power is connected. Check settings in BIOS Setup. Try using the corresponding OmniBook port.	Port replicator (F1381-60901). Motherboard (F1391-60901).	Test the corresponding OmniBook ports while undocked. The port replicator is not repairable—it must be exchanged.
Can not boot from CD in CD-ROM drive	Check that the CD is bootable. Check boot order in BIOS Setup.	CD-ROM drive (F1387-60901).	The CD-ROM drive is not repairable—it must be exchanged.
General CD-ROM drive problems	Check CD-ROM drive contacts. Push system-off button.	CD-ROM drive or contacts (F1387-60901). Motherboard (F1391-60901).	The CD-ROM drive is not repairable—it must be exchanged.
General Zip drive problems	Check Zip drive contacts. Push system-off button.	Zip drive or contacts (F1388-60901). Motherboard (F1391-60901).	The Zip drive is not repairable—it must be exchanged.

The following table shows how the different diagnostic tools can help isolate the cause of a problem.

Table 3-2. 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
Battery (main & secondary)					
Display	Tests (Memory, Video menus)			Describes (AssetTools)	
Hard disk	Tests (IDE menu)	Tests		Describes (AssetTools)	Configures
Floppy drive	Tests (Floppy menu)	Tests		Describes (AssetTools)	Describes
Keyboard	Tests (Keyboard menu)	Tests		Describes (AssetTools)	
TouchPad	Tests (Misc menu)			Describes (AssetTools)	Configures
Speaker	Tests (Misc menu)				Configures
Audio	Tests (Misc menu)				Configures
Serial	Tests* (Misc menu)			Describes (AssetTools)	Configures
Parallel	Tests* (Misc menu)			Describes (AssetTools)	Configures
Infrared					Configures
PS/2 port	Tests† (Keybd, Misc menus)				
USB	Tests† (System, User menus)				
Docking port	Tests (using port replicator)				
PCMCIA			Tests (not CardBus)	Describes (AssetTools)	
AC adapter					
Port replicator	Tests ports				Configures
CD-ROM drive module	Tests (IDE menu)	Tests (with boot CD)			Configures
Zip drive module					
* The diagnostic test is more thorough if you use a loopback connector.					
† Connect an appropriate external device to exercise the port. See the help text for the tests in the menu.					

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.
–and–
- **Function Tests.** Run tests that check the repaired function, such as in the OmniBook diagnostic program.
–and–
- **Failed Tests.** Run any other tests that failed during troubleshooting.

Diagnostic Tools

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

- OmniBook hardware diagnostic program (page 3-10).
- Power-on self-test (page 3-15).
- Sycard PCCtest 450 PC Card (page 3-17).
- Desktop Management Interface (page 3-18).
- BIOS Setup utility (page 3-20).

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 Disk

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

- On a factory software installation, run **diaginst** from the \Dmi\Hpdiags directory on the hard disk.
- On any computer, run **diaginst** from the \Omnibook\Dmi\Hpdiags directory on the OmniBook 3000 Recovery CD.
- On any computer, download the diagnostic software package from the OmniBook website (see page vi), run this file to unpack the files, then run **diaginst a:** 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	Cache memory	Floppy drives
Serial number	Main memory	IDE drives
BIOS version	Graphics adapter	SoundBlaster audio device
Processor type	Display name	

Note

If any such device is present but not detected, or if its test fails, it may be configured incorrectly in the BIOS Setup utility (page 3-20). You can confirm the problem by running BIOS Setup and restoring the default settings.

5. Optional: When the hardware detection finishes, press F4 to save system information in the Support Ticket log file, HPSUPPT.TXT.
6. **Run the basic test.** When prompted, press F2 to start the basic hardware test.
7. Optional: When the test finishes, press F4 to save system and test information in the Support Ticket log file, HPSUPPT.TXT.
8. **Run the advanced tests.** When prompted, press F2 to open the advanced test screen.
9. Select and run the appropriate tests. Tests are dimmed 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.
Batch menu, Run Batch Test, ENTER 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 3-12 for repair suggestions. Consider these suggestions in combination with other troubleshooting information.

10. **Exit.** When you are finished running tests, remove the diagnostic disk, then press ESC to exit and reboot.
11. **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 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.

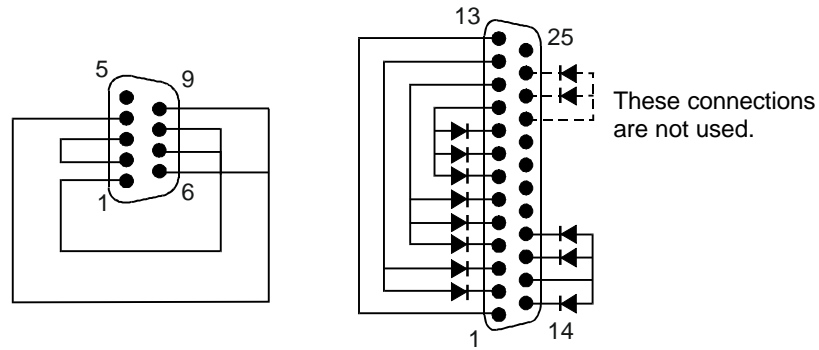


Figure 3-3. Serial and Parallel Loopback Connectors

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	Code	Suggestions
System Test			
0001h - 0008h	Reseat or replace the CPU module.	0088h - 0090h	Replace the system BIOS IC.
0009h	Replace the motherboard.	0091h - 009Eh	Replace the system BIOS IC. Replace the motherboard.
0010h - 002Fh	Reseat or replace the CPU module.	009Fh	Insufficient DOS memory. Load fewer device drivers.
0030h - 0040h	Replace the motherboard.	00A0h - 00A3h	Replace the system BIOS IC. Replace the motherboard.
0041h	Unrecognized interrupts. Run BIOS Setup and check IRQ assignments for all devices.	00A4h - 00A6h	Replace the system BIOS IC.
0050h - 0070h	Replace the motherboard.	00A7h	Replace the system BIOS IC. Replace the motherboard.
0071h	Bad CMOS checksum. Reset the system, then run BIOS Setup and check settings. Replace motherboard.	00C3h - 00CCh	Replace the CPU module.
0072h	Configuration mismatch in CMOS. Reset the system, then run BIOS Setup and check settings. Replace motherboard.	00FFh	Rerun the test. (Possible diagnostic programming error.)
0073h	Bad CMOS RAM size. Reset the system, then run BIOS Setup and check settings. Replace motherboard.	1000h - 100Dh	No repair. (Single processor.)
0074h	Bad CMOS time. Reset the system, then run BIOS Setup and check settings. Replace motherboard.	1030h - 1031h	Remove RAM boards, then rerun the test. Replace the CPU module. Replace the motherboard.
0075h - 0076h	Reset the system. Replace the motherboard.	1081h	Replace the CPU module.
0077h	Replace the motherboard.	1082h	Change the configuration setting for HIMMEM.SYS to leave a portion of extended memory for the timer test.
0078h	Bad CMOS checksum. Reset the system, then run BIOS Setup and check settings. Replace motherboard.	1083h	Have at least 1 MB of memory free, then rerun this test.
0079h	Replace the motherboard.	1301h	Run BIOS Setup and enable USB. Replace the system BIOS IC. Replace the motherboard.
0080h - 0082h	No repair. (EISA not supported.)	1302h - 1316h	Replace the motherboard.
0083h - 0086h	Replace the system BIOS IC. Replace the motherboard.	1401h	Reprogram or replace the system BIOS IC. Replace the motherboard.
0087h	Replace the motherboard.	1402h	Replace the motherboard.

Code	Suggestions
Memory Test	
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 system BIOS IC.
0120h - 0150h	For 00FFFFFFh and below, replace the motherboard. For 01000000h and above, replace the corresponding RAM board (each 01000000h represents 16MB).
0160h	Address bus short. Check the CPU module for shorts. Replace the motherboard.
0170h - 0172h	Replace the motherboard.
0180h	For 00FFFFFFh and below, replace the motherboard. For 01000000h 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 00FFFFFFh and below, replace the motherboard. For 01000000h and above, replace the corresponding RAM board (each 01000000h represents 16MB).
HDD Test	
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	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.

Code	Suggestions
02F1h - 02F5h	Format the hard disk (to fix the boot sector) and recreate the Hibernate partition. Replace the hard disk.
02FFh	Check internal and external hard disk connectors and motherboard connector. Replace the hard disk. Replace the motherboard.
CD Tray Test	
0A00h	Insert a CD in the drive.
0A01h	Rerun the test. Replace the CD-ROM drive.
0A02h	No repair. (Automatic close not supported.)
CD Data Test	
0A00h	Insert a computer CD in the drive.
0A03h	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.
CD Audio Test	
0A00h	Insert an audio CD in the drive.
0A04h	Insert a different CD in the drive. Check the connectors on the CD-ROM drive and motherboard. Replace the CD-ROM drive.
0A06h	Insert an audio CD in the drive.
Floppy Disk Drive Test	
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	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.

Code	Suggestions
Keyboard Test	
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 - 0417h	Replace the keyboard. Replace the motherboard.
Video Test	
0900h - 0901h	Replace the motherboard.
0903h - 0906h	Replace the LVDS PCA. Replace the motherboard.
0907h - 0908h	Replace the motherboard.
0909h - 090Ah	Replace the LVDS PCA. Replace the motherboard.
090Ch - 090Eh	Replace the motherboard.
Serial Port Test	
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. (If Windows is running, first disable FIFO for the COM port, then rerun the test.)
Parallel Port Test	
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 - 0705h	Run BIOS Setup and disable ECP for the parallel port, then rerun the test. Replace the motherboard.
Modem Diagnostics	
1500h	Connect and turn on the modem, then rerun the test. Replace the modem.

Code	Suggestions
1501h	Run BIOS Setup and check the IRQ setting. Check the IRQ setting on the modem. Replace the modem. Replace the motherboard.
1502h	Replace the modem.
1503h	Make sure the modem is connected to a live phone line. Replace the modem.
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 top case assembly.
0810h	If this error also occurs for an external headphone, replace the motherboard. Otherwise, check the top case cable connection. Replace the top case assembly.
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 top case assembly.
APM Functionality Test and Device APM Test	
1100h - 1110h	Reprogram the system BIOS IC. Replace the system BIOS IC.
Network Diagnostics	
1300h - 1304h	Check the network card and cable.
User – Fan Test	
8000h	If the fan is already running, you will not hear a change. Check the fan connection. Replace the heat sink assembly. Replace the motherboard.
User – FDD Test	
8000h	Make sure the floppy disk is formatted. Replace the floppy drive.
User – LCD Test	
8000h	If the test fails with an external monitor, 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 motherboard. - If only a solid-color test fails, replace the LCD module.
User – Microphone Test	
8000h	Check the top case cable connection. Replace the top case assembly.
User – Suspend Test	
8000h	Run BIOS Setup and restore default settings. Reprogram the system BIOS IC. Replace the system BIOS IC. Replace the motherboard.

Code	Suggestions
User – USB Port Test	
8000h	Make sure a high-speed USB device is connected. Replace the USB PCA. Replace the motherboard.

Code	Suggestions
User – USB Dock Bottom Port Test	
8000h	Make sure a high-speed USB device is connected to the bottom USP port on the port replicator. Replace the port replicator. Replace the motherboard.

Power-On Self-Test

The POST (Power-On Self-Test) is a series of initialization routines and diagnostic tests that the system BIOS runs when the 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. No beep codes are sounded.

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.*

The following tables list error codes and error messages. Not all POST messages indicate a hardware, software, or firmware failure—some messages are informational messages.

Table 3-4. Power-On Self-Test Error Codes

Error Code	POST or Power Management Test Point
0D0h - 0DFh	POST system error condition test points
0E2h - 0F0h	POST boot block test points
01 - 0F	PM Initialization
10 - 1F	PM Dispatcher
20 - 23	PM Software SMI
24 - 2F	PM System State Machine
30 - 39	PM Chipset
3A - 3F	PM System State Machine
40 - 47	PM Hibernate
48 - 4F	PM Miscellaneous
50 - 5F	PM Device Supervisor
60 - 67	PM Power PAL
68 - 7F	PM APM
80 - BF	PM Device Pmsrs
C0 - CF	PM Reserved
D0 - DF	PM OmniBook Specific
E0 - E4	PM Error
E0 - F6	PM General Debugging
F7 - FF	PM Debugger Commands

Table 3-5. Power-On Self-Test Error Messages

Message Code	Description
0200	Failure Fixed Disk
0210	Stuck Key
0211	Keyboard error
0212	Keyboard Controller Failed
0213	Keyboard locked - Unlock key switch
0220	Monitor type does not match CMOS - Run SETUP
0250	System battery is dead - Replace and run SETUP
0251	System CMOS checksum bad - Default configuration used
0260	System timer error
0270	Real time clock error
0271	Check date and time settings
0280	Previous boot incomplete - Default configuration used
0281	Memory Size found by POST differed from EISA CMOS
02B0	Diskette drive A error
02B1	Diskette drive B error
02B2	Incorrect Drive A type - run SETUP
02B3	Incorrect Drive B type - run SETUP
02D0	System cache error - Cache disabled
02F0	CPU ID:
02F4	EISA CMOS not writeable
02F5	DMA Test Failed
02F6	Software NMI Failed
02F7	Fail-Safe Timer NMI Failed
0230	System RAM Failed at offset:
0231	Shadow RAM Failed at offset:
0232	Extended RAM Failed at offset:

Sycard PCCtest 450 CardBus Card (Optional)

The PCCtest 450 CardBus Card 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. The PCCtest 450 product contains these components:

- PCCtest 450 CardBus Card.
- 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 PCI1131 socket controller (command line switch **-b63**).
- CardBus (32-bit) test, TESTCB.
This test currently does not work on the OmniBook 3000.
Requires the CardBus configuration header. Run the test for the Texas Instrument PCI1131 socket controller (command line switch **-b61**).
- Zoomed Video test, ZVTEST.
Requires setting up the configuration file for NeoMagic NM2160 video controller and Sound Blaster compatible audio controller.

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, how well they are working, and 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 from Windows 95

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

To install the DMI from floppy disks or from the OmniBook 3000 Recovery CD:

1. For floppy disks, copy the DMI software from the `\omnibook\drivers\win95\dmi` directory of either the hard disk or Recovery CD to two floppy disks (copy the contents of the `\disk1` subdirectory to disk #1 and the contents of the `\disk2` subdirectory to disk #2).
2. Start Windows 95, 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\win95\dmi\disk1` directory on the CD.

Uninstalling the DMI Package from Windows 95

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.

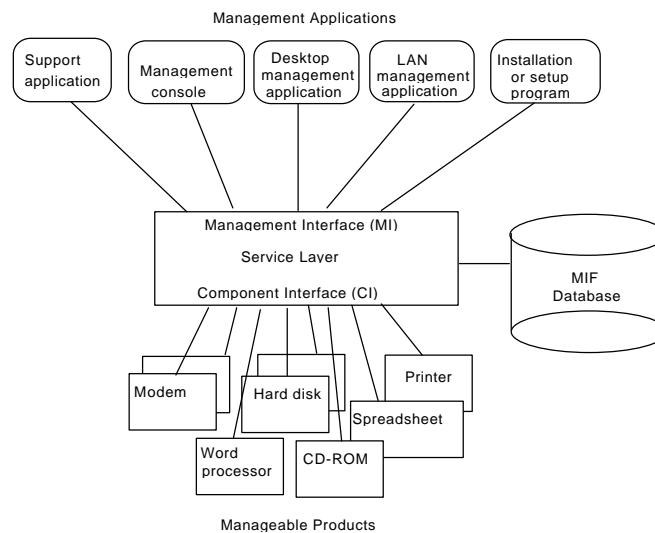


Figure 3-4. DMI Components

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, when you see “Press <F2> to enter Setup” at the bottom of the screen, press F2 to start the BIOS Setup utility.
3. The TouchPad 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 tables 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
System Time	Sets the time using 24-hour format.	
System Date	Sets the date using mm/dd/yy format.	
Floppy Drive	Shows the floppy drive type.	
Hard Disk	Sets the hard disk drive type and various parameters.	
Quiet Boot	When disabled, runs power-on self-test and shows summary during boot.	Disabled
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 between options.	Auto
System Memory	Shows the system memory size.	
Extended Memory	Shows the extended memory size.	
System Devices Menu		Default
Parameters marked with * below appear only if the main parameter is Enabled (the values are specified by the settings below). The list of parameters scrolls if it is longer than the screen.		
PS/2 Mouse	Enables the PS/2 TouchPad and external PS/2 mouse, if present.	Enabled
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 settings or automatic) or by a PnP operating system.	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 settings or automatic) or by a PnP operating system.	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
Parallel Port	Sets how the parallel port is configured: by the BIOS (specified settings or automatic) or by a PnP operating system.	Enabled
Mode	Sets the port to normal, bidirectional, 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 settings or automatic) or by a PnP operating system.	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 is configured: by the BIOS (specified settings or automatic) or by a PnP operating system. The port replicator provides a MIDI port, but the OmniBook does not.	Disabled
MPU I/O address*	Sets the MIDI I/O address.	330h
Interrupt*	Sets the interrupt.	IRQ9
Security Menu		Default
System Password is	Shows whether a password is set.	Clear
Set System Password	Press ENTER to set, change, or clear the password and save all Setup changes. (Up to 8 alphanumeric keys, prefix keys ignored.)	
Password on Boot	Sets whether the password is required to boot.	Disabled
Password on Resume	Sets whether the password is required to continue after Suspend and Hibernate.	Disabled
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 certain other 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.	2min
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.)	4min
Hibernate after 4 hours	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.)	Enabled
Hard Disk Time-out	Sets the period of hard disk inactivity after which the hard disk stops spinning.	30sec
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.	
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.	
Get Default Values	Restores all default settings, and stays in Setup.	
Load Previous Values	Discards Setup changes since last save, and stays in Setup.	
Save Changes	Saves Setup changes, and stays in Setup.	

Replaceable Parts

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

- OmniBook replaceable parts (page 4-3).
- Accessory replacement parts (page 4-4).
- Assembly-component breakout (page 4-6)
- Part number reference (page 4-6).

Table 4-1. OmniBook Replaceable Parts

	Description	Part Number	Exchange Part Number	User-Replaceable
1	Audio Jack Holder	F1391-60920		
2	Battery, Main	F1382-60901		Yes
3	BIOS Cover	F1391-60929		Yes
	Cable, External FDD	F1380-60901		Yes
4	Cable, Icon/MB	F1391-60914		
5	Cable, Inverter/MB	F1391-60959		
6	Cable, IR/Icon	F1391-60915		
7	Cable, LCD/LVDS	F1391-60961		
8	Case, Bottom Assy	F1391-60913		
	Display Latch	F1391-60933		
	Display Latch Spring	F1391-60932		
	IR Lens	F1391-60930		
9	Case, Top Assy	F1391-60909		
10	CPU Module (MMO), 200 MHz	F1391-60905	F1391-69005	
10	CPU Module (MMO), 233 MHz	F1391-60906	F1391-69006	
	CPU Thermal Kit (gasket, rubber spacer)	F1391-60917		
11	Display Bezel Assy, 13.3"	F1391-60927		
	Display Bumper	F1391-60924		Yes
12	Display Case, 13.3"	F1391-60910		
13	Display Screw Cover	F1391-60923		Yes
14	Floppy Disk Drive (FDD)	F1384-60901		Yes
	Foam, EPE (Display)	F1391-60926		
	Foot, Rubber	F1391-60931		Yes
15	Hard Disk Drive (HDD), 2.1 GB	0950-3193	F1360-69012	Yes
15	Hard Disk Drive (HDD), 4.0 GB	0950-2671	F1386-69100	Yes
16	HDD Carrier Kit	F1391-60937		Yes
17	Heat Sink Assy	F1391-60921		
18	Hinge	F1391-60925		
19	Hinge Cover	F1391-60935		Yes
20	I/O Door Assy	F1391-60922		Yes
21	Icon Window Cover	F1391-60928		Yes
22	Keyboard, Danish	F1391-60948		
22	Keyboard, French	F1391-60940		
22	Keyboard, French Canadian	F1391-60947		
22	Keyboard, German	F1391-60939		
22	Keyboard, International English	F1391-60949		
22	Keyboard, Italian	F1391-60942		
22	Keyboard, Norwegian	F1391-60946		
22	Keyboard, Spanish	F1391-60941		
22	Keyboard, Swedish/Finnish	F1391-60944		
22	Keyboard, Swiss	F1391-60943		
22	Keyboard, UK	F1391-60945		
22	Keyboard, US	F1391-60938		
	Label, Intel (top case)	5965-0279		Yes
	Label, Regulatory (bottom case)	F1391-60971		
	Label, Windows (top case)	7121-7353		Yes

	Description	Part Number	Exchange Part Number	User-Replaceable
23	LCD Bracket	F1391-60962		
24	LCD Module, 13.3" XGA	F1391-60907	F1391-69007	
	Lock Plate	F1391-60934		
25	PCA, Audio	F1391-60903		
	Bumper, Audio PCA			
26	PCA, Icon	F1391-60911		
27	PCA, Inverter	F1391-60908		
	Bumper, Inverter PCA	F1391-60960		
28	PCA, IR	F1391-60912		
29	PCA, LVDS	F1391-60904		
30	PCA, Motherboard	F1391-60901	F1391-69001	
	Keyboard BIOS IC	F1391-60918		
	System BIOS IC	F1391-60919		
31	PCA, USB	F1391-60902		
32	RAM Cover	F1391-60936		Yes
33	Screw, M2x0.4x5mm (CPU module, heat sink)	F1391-60954		
34	Screw, M2.5x0.45x3mm (case, display, IR PCA, keyboard)	F1391-60955		
35	Screw, M2.5x0.45x5mm (display bezel, MB, icon PCA, LVDS PCA, USB PCA, case, HDD carrier/case, LCD bracket)	F1391-60951		
36	Screw, M2.5x0.45x8mm (hinge, case)	F1391-60957		
37	Screw, M2.5x0.45x12mm (case)	F1391-60956		
38	Screw, M3.0x0.5x5mm (HDD/carrier, LCD module)	F1391-60950		
39	Standoff, TS30H R01 hex (motherboard/CPU)	F1391-60958		
	Standoff, 4-11258-2 hex (docking port)	F1391-60953		
	Standoff, 4-4OUNC-2 hex (I/O plate)	F1391-60952		
	Tape, Kapton (display)	F1391-60963		

Table 4-2. Accessory Replaceable Parts

Description	Part Number	Exchange Part Number	User-Replaceable
AC adapter	F1377-60901		Yes
Automobile adapter	F1379-60901		Yes
Battery, Main (Lithium-Ion)	F1382-60901		Yes
Battery, Secondary (Lithium-Ion)	F1383-60901		Yes
Cable, floppy disk drive	F1380-60901		Yes
CD-ROM drive, 20X internal	F1387-60901	F1387-69001	Yes
Floppy Disk Drive (FDD)	F1384-60901		Yes
Hard Disk Drive, 2.1 GB	0950-3193	F1360-69012	Yes
Hard Disk Drive, 4.0 GB	0950-2671	F1386-69100	Yes
Monitor stand	F1369-60901		Yes
Port replicator	F1381-60901		Yes
RAM Board, 16 MB	F1363-60001	F1363-69001	Yes
RAM Board, 32 MB	F1364-60001	F1364-69001	Yes
RAM Board, 64 MB	F1365-60001	F1365-69001	Yes
Zip drive, internal	F1388-60901	F1388-69001	Yes

Table 4-3. Assembly-Component Breakdown

Assembly	Part Number	Exchange Part Number	Components	Part Number	Included in Assembly
Case, Bottom	F1391-60913		Audio Jack Holder	F1391-60920	No
			BIOS Cover	F1391-60929	Yes
			Display Latch	F1391-60933	Yes
			Display Latch Spring	F1391-60932	Yes
			Foot, Rubber (3)	F1391-60931	Yes
			I/O Door Assy	F1391-60922	No
			IR Lens	F1391-60930	Yes
			Label, Regulatory	F1391-60971	No
			Lock Plate	F1391-60934	No
			RAM Cover	F1391-60936	No
Case, Top Assy	F1391-60909		Cable, IR/Icon	F1391-60915	Yes
			Label, Intel	5965-0279	No
			Label, Windows	7121-7353	No
			PCA, IR	F1391-60912	Yes
CPU Module, 200 MHz	F1391-60905	F1391-69005	CPU Thermal Kit	F1391-60917	No
CPU Module, 233 MHz	F1391-60906	F1391-69006	CPU Thermal Kit	F1391-60917	No
Display Bezel	F1391-60927		Display Bumper (2)	F1391-60924	Yes
			Display Screw Cover (2)	F1391-60923	No
Display Case	F1391-60910		Foam, EPE	F1391-60926	No
			LCD Bracket	F1391-60962	No
Hard Disk Drive, 2.1 GB	0950-3193	F1360-69012	HDD Carrier Kit	F1391-60937	No
Hard Disk Drive, 4.0 GB	0950-2671	F1386-69100	HDD Carrier Kit	F1391-60937	No
PCA, Audio	F1391-60903		Bumper, Audio (2)		Yes
PCA, Inverter	F1391-60908		Bumper, Inverter	F1391-60960	Yes
PCA, Motherboard	F1391-60901	F1391-69001	Audio Jack Holder	F1391-60920	No
			Keyboard BIOS IC	F1391-60918	Yes
			System BIOS IC	F1391-60919	Yes
RAM Cover	F1391-60936		Foot, Rubber	F1391-60931	Yes

Table 4-4. Part Number Reference

Part Number	Exchange Part Number	Description	User-Replaceable
		Bumper, Audio PCA	
0950-2671	F1386-69100	Hard Disk Drive (HDD), 4.0 GB	Yes
0950-3193	F1360-69012	Hard Disk Drive (HDD), 2.1 GB	Yes
5965-0241		OmniBook Support and Service Booklet	Yes
5965-0279		Label, Intel (top case)	Yes
7121-7353		Label, Windows (top case)	Yes
8120-6312		Power cord, replacement (Australia).	Yes
8120-6313		Power cord, replacement (U.S., Canada, Taiwan).	Yes
8120-6314		Power cord, replacement (Europe).	Yes
8120-6315		Power cord, replacement (Hong Kong, Singapore, U.K.).	Yes
8120-6316		Power cord, replacement (Japan).	Yes
8120-6317		Power cord, replacement (India, South Africa).	Yes
8120-8373		Power cord, replacement (People's Republic of China).	Yes
F1363-60001	F1363-69001	RAM Board, 16 MB	Yes
F1364-60001	F1364-69001	RAM Board, 32 MB	Yes
F1365-60001	F1365-69001	RAM Board, 64 MB	Yes
F1369-60901		Monitor stand	Yes
F1371-60904		BIOS Insertion/Removal Tool	
F1377-60901		AC adapter	Yes
F1379-60901		Automobile adapter	Yes
F1380-60901		Cable, External FDD	Yes
F1381-60901		Port replicator	Yes
F1382-60901		Battery, Main (Lithium-Ion)	Yes
F1383-60901		Battery, Secondary (Lithium-Ion)	Yes
F1384-60901		Floppy Disk Drive (FDD)	Yes
F1387-60901	F1387-69001	CD-ROM drive, 20X internal	Yes
F1388-60901	F1388-69001	Zip drive, internal	Yes
F1391-60901	F1391-69001	PCA, Motherboard	
F1391-60902		PCA, USB	
F1391-60903		PCA, Audio	
F1391-60904		PCA, LVDS	
F1391-60905	F1391-69005	CPU Module (MMO), 200 MHz	
F1391-60906	F1391-69006	CPU Module (MMO), 233 MHz	
F1391-60907	F1391-69007	LCD Module, 13.3" XGA	
F1391-60908		PCA, Inverter	
F1391-60909		Case, Top Assy	
F1391-60910		Display Case, 13.3"	
F1391-60911		PCA, Icon	
F1391-60912		PCA, IR	
F1391-60913		Case, Bottom Assy	
F1391-60914		Cable, Icon/MB	
F1391-60915		Cable, IR/Icon	
F1391-60917		CPU Thermal Kit (gasket, rubber spacer)	
F1391-60918		Keyboard BIOS IC	
F1391-60919		System BIOS IC	

Part Number	Exchange Part Number	Description	User-Replaceable
F1391-60920		Audio Jack Holder	
F1391-60921		Heat Sink Assy	
F1391-60922		I/O Door Assy	Yes
F1391-60923		Display Screw Cover	Yes
F1391-60924		Display Bumper	Yes
F1391-60925		Hinge	
F1391-60926		Foam, EPE (Display)	
F1391-60927		Display Bezel Assy, 13.3"	
F1391-60928		Icon Window Cover	Yes
F1391-60929		BIOS Cover	Yes
F1391-60930		IR Lens	
F1391-60931		Foot, Rubber	Yes
F1391-60932		Display Latch Spring	
F1391-60933		Display Latch	
F1391-60934		Lock Plate	
F1391-60935		Hinge Cover	Yes
F1391-60936		RAM Cover	Yes
F1391-60937		HDD Carrier Kit	Yes
F1391-60938		Keyboard, US	
F1391-60939		Keyboard, German	
F1391-60940		Keyboard, French	
F1391-60941		Keyboard, Spanish	
F1391-60942		Keyboard, Italian	
F1391-60943		Keyboard, Swiss	
F1391-60944		Keyboard, Swedish/Finnish	
F1391-60945		Keyboard, UK	
F1391-60946		Keyboard, Norwegian	
F1391-60947		Keyboard, French Canadian	
F1391-60948		Keyboard, Danish	
F1391-60949		Keyboard, International English	
F1391-60950		Screw, M3.0x0.5x5mm (HDD/carrier, LCD module)	
F1391-60951		Screw, M2.5x0.45x5mm (display bezel, MB, icon PCA, LVDS PCA, USB PCA, case, HDD carrier/case, LCD bracket)	
F1391-60952		Standoff, 4-40UNC-2 hex (I/O plate)	
F1391-60953		Standoff, 4-11258-2 hex (docking port)	
F1391-60954		Screw, M2x0.4x5mm (CPU module, heat sink)	
F1391-60955		Screw, M2.5x0.45x3mm (case, display, IR PCA, keyboard)	
F1391-60956		Screw, M2.5x0.45x12mm (case)	
F1391-60957		Screw, M2.5x0.45x8mm (hinge, case)	
F1391-60958		Standoff, TS30H R01 hex (motherboard/CPU)	
F1391-60959		Cable, Inverter/MB	
F1391-60960		Bumper, Inverter PCA	
F1391-60961		Cable, LCD/LVDS	
F1391-60962		LCD Bracket	
F1391-60963		Tape, Kapton (display)	
F1391-60964		OmniBook Series 98 Group Training Kit	Yes
F1391-60965		Recovery CD, English (OB3000)	Yes

Part Number	Exchange Part Number	Description	User-Replaceable
F1391-60966		Recovery CD, French (OB3000)	Yes
F1391-60967		Recovery CD, Italian (OB3000)	Yes
F1391-60968		Recovery CD, German (OB3000)	Yes
F1391-60969		Recovery CD, Spanish (OB3000)	Yes
F1391-60970		Recovery CD, Swedish (OB3000)	Yes
F1391-60971		Label, Regulatory (bottom case)	
F1391-90002		Reference Guide, English (OB3000)	Yes
F1391-90004		Reference Guide, E,F,I,G,S (OB3000)	Yes
F1391-90005		Reference Guide, E,D,Fn,N,Sw (OB3000)	Yes
F1391-90008		Service Manual (OB3000)	Yes

Reference Information

This chapter includes the following reference information:

- Password removal policy.
- TFT display quality statement.

Password Removal Policy

If the user forgets the system password, the user calls Technical Support to determine the proper removal procedure. *This may require sending the unit to a Hewlett-Packard repair center.*

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 TFT 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 3000 TFT XGA Display Quality Guidelines

Type of Imperfection	Imperfections Not Allowed
Electrical Imperfections: Bright dots (a) Dark dots (a)	<ul style="list-style-type: none"> • 13 or more single bright dots. • 3 or more occurrences of double (two vertically adjacent) bright dots. • 3 or more occurrences of two single or double bright dots within 7 mm. • 8 or more single or double dark dots. • Any occurrence of 3 or more vertically adjacent bright dots. • Any occurrence of 3 or more vertically adjacent dark dots.
Mechanical Imperfections: Spots (b) Lines (c) Polarizer scratches (d) Polarizer dents, bubbles (e)	<ul style="list-style-type: none"> • 4 or more spots 0.3-0.5 mm avg. dia. • 5 or more lines 0.7-1 mm long. • 3 or more dents or bubbles 0-0.5 mm avg. dia. • Any spot over 0.5 mm dia. • Any line over 1 mm long or 0.1 mm wide. • Any scratch noticeable from 30 cm (12 in) under normal office lighting. • 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, is at least 0.05 mm wide, 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**