HEWLETT® PACKARD

HP OmniBook 2100/3000/3100

Service Manual

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Edition History

Edition 1.....April 1998

Edition 2..... July 1998

Contents

Figures

Tables

Introduction

This service manual provides reference information for the HP OmniBook 2100/3000/3100. It is intended to be used by HP-authorized service personnel in the installation, servicing, and repair of these products.

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

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

Sources of OmniBook Information

Source	Address or Number	Comments
HP External Web	http://www.hp.com/omnibook (http://www2.hp.com/omnibook, European mirror)	No usage restriction.
HP US Reseller Web	http://partner.americas.hp.com	Restricted to Authorized Resellers only.
HP Asia Pacific Channel Support Centre for DPSP Partners	http://www.hp.com.au	Restricted to DPSP Partners only.
America Online	Keyword: HP	Call (800) 827-6364 for membership within the US.
CompuServe*	GO HP	Call (800) 524-3388 for membership within the US.
HP Bulletin Board Service		Refer to the latest Product Support Plan for non-US BBS numbers.
HP First (automated fax)	(800) 333-1917	US and Canada.
	(801) 344-4809	Outside US and Canada.
	(800) 544-9976	Reseller support number (enter outlet id number).
HP Support Assist CD-ROM	(800) 457-1762	US and Canada.
	(801) 431-1587	Outside US and Canada.

* Baud rates = 300-28,800; Parity = E; Data bits = 7; Stop bits = 1.

About This Edition

This edition of this service manual contains the following major changes from the previous edition:

- New OmniBook 2100 products.
- New OmniBook 2100 Pentium II CPU module and related parts.
- New OmniBook 2100/3100 RAM board configurations.
- Updated part numbers.
- Insert current service notes.

1

Product Information

The HP OmniBook 2100/3000/3100 represents a category of HP notebook computers featuring the latest mobile technologies. They use high-speed Intel Pentium processors with MMX technology and Pentium II processors, large 12.1-inch and 13.3-inch displays, and high-capacity hard drives.

Table 1-1. OmniBook 2100/3000/3100 Models

OmniBook Product *	CPU **	Display	Hard Drive	Floppy Drive	CD-ROM Drive	Standard RAM
OmniBook 2100						
F1580*x* ***	Pentium 233 MHz	12.1-inch SVGA DSTN	3.2 GB (F1588A)	1.44 MB (F1384A)	CD-ROM (F1587A)	32 MB
F1581*x* ***		12.1-inch SVGA TFT				
F1584*x* ***	Pentium 200 MHz	12.1-inch SVGA DSTN	2.1 GB (F1385A)			
F1597*x*	Pentium II 233 MHz		3.2 GB (F1588A)			
F1598*x*		12.1-inch SVGA TFT	4.0 GB (F1386A)			
F1599*x*	Pentium II 266 MHz					
OmniBook 3100						
F1582*x*	Pentium 266 MHz	13.3-inch XGA TFT	4.0 GB (F1386A)	1.44 MB (F1384A)	CD-ROM (F1587A)	32 MB
OmniBook 3000						
F1391A	Pentium 200 MHz	13.3-inch XGA TFT	2.1 GB (F1385A)	1.44 MB (F1384A)	None	16 MB
F1392A	Pentium 233 MHz		4.0 GB (F1386A)			
F1393A	Pentium 266 MHz					32 MB
F1394A						16 MB

* For the products listed:
"A" suffix means Windows 95 installed, Windows NT not available.
"*x*" suffix means
"N" or "NT" for Windows NT 4.0 installed (sales channel distinction only), or
"W" or "WT" for Windows 95 installed (sales channel distinction only).

** Intel Mobile Pentium or Pentium II processor.

*** Nickel-metal-hydride main battery is standard. All others have lithium-ion main battery.

Unpublished OmniBook 2100/3100 models with no CD-ROM drive (and equivalent model): F1583*x* (F1584*x*), F1592*x* (F1580*x*), F1593*x* (F1581*x*), F1594*x* (F1582*x*).

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.

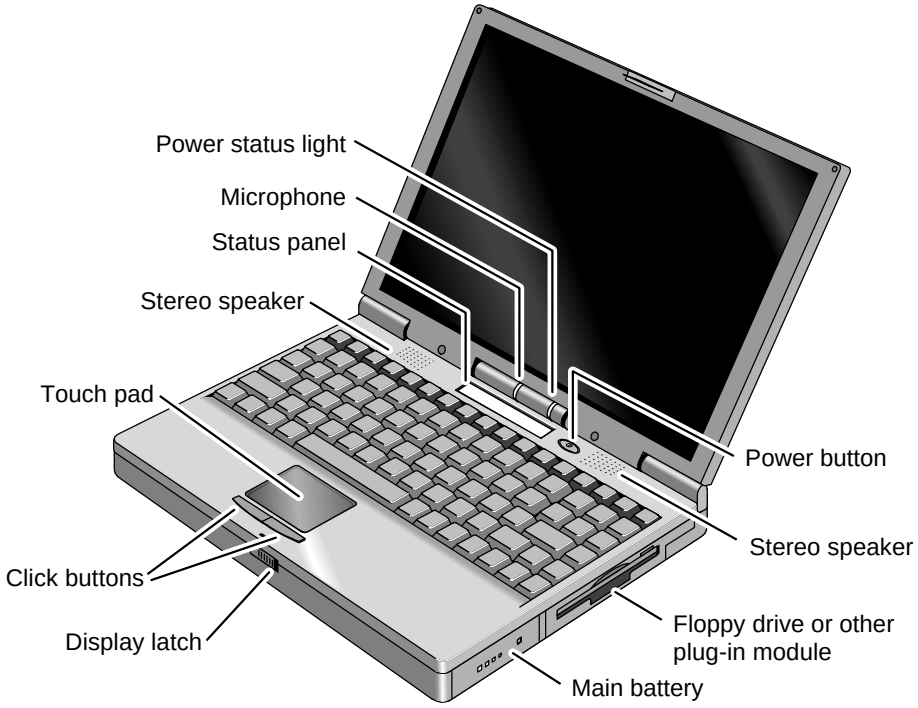


Figure 1-1. OmniBook - Front View

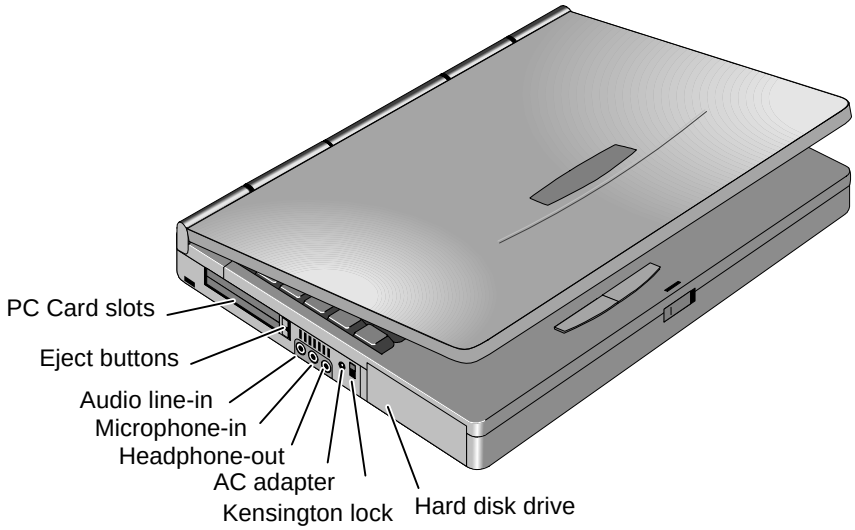


Figure 1-2. OmniBook - Side View

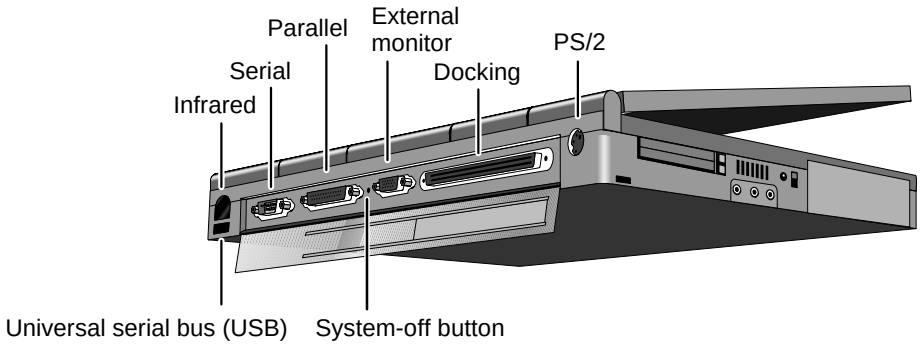


Figure 1-3. OmniBook - Back View

Table 1-2. Product Comparisons

	OmniBook 2100/3100	OmniBook 3000	OmniBook 4100	OmniBook 7100
Processor *	Pentium II (266 or 233 MHz), or Pentium (266, 233, or 200 MHz) with MMX technology. 512-KB burst-synchronous L2 cache.	Pentium (266, 233, or 200 MHz) with MMX technology. 512-KB burst-synchronous L2 cache.	Pentium II (266 or 233 MHz), or Pentium (266 MHz) with MMX technology. 512-KB burst-synchronous L2 cache (high-speed bus for Pentium II).	Pentium II (266 MHz). 512-KB burst-synchronous L2 cache (high-speed bus).
Memory	32 MB RAM on motherboard. Expandable to 160, 192, or 288 MB.	16 MB RAM on motherboard. Expandable to 144 MB.	32 MB RAM on motherboard. Expandable to 160 MB.	32 MB RAM on motherboard. Expandable to 288 MB.
Display	13.3-inch TFT XGA display, or 12.1-inch TFT or DSTN SVGA display.	13.3-inch TFT XGA display.	14.1- or 13.3-inch TFT XGA display.	14.1-inch TFT XGA display.
Video	PCI local bus video. 128-bit graphics controller with 2 MB internal video RAM. Up to 64K colors (XGA), 16M colors (SVGA). Zoomed Video enabled.	PCI local bus video. 128-bit graphics controller with 2 MB internal video RAM. Up to 64K colors (XGA). Zoomed Video enabled.	PCI local bus video. 128-bit graphics controller with 2 MB internal video RAM. Up to 64K colors (XGA). Zoomed Video enabled.	PCI local bus video. 64-bit graphics controller with 4 MB external video RAM. Up to 16M colors (XGA). Zoomed Video enabled.
Operating System	Windows 95 or Windows NT 4.0 preinstalled.	Windows 95 preinstalled. (Windows NT 4.0 certified.)	Windows 95 or Windows NT 4.0 preinstalled.	Windows 95 or Windows NT 4.0 preinstalled.
Desktop Management Interface	DMI 2.0. HP TopTools 2.6 or 3.0.	DMI 1.1. HP TopTools 2.0.	DMI 2.0. HP TopTools 2.6.	DMI 2.0. HP TopTools 2.6.
Power Management	APM 1.2. ACPI compliant.	APM 1.2.	APM 1.2. ACPI compliant.	APM 1.2. ACPI compliant.
Power States	On, Standby, Suspend, Hibernate, Off.	On, Standby, Suspend, Hibernate, Off.	On, Standby, Suspend, Hibernate, Off.	On, Standby, Suspend, Hibernate, Off.

* Intel Mobile Pentium or Mobile Pentium II processor.

Turning the OmniBook On and Off

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

  Closing the lid (for more than 2 seconds) also suspends the computer.
- **Hibernate.** Press Fn+F12. This is like Off, except that your current work session is first saved to disk. When you turn on the computer, it reboots and restores your previous session.
- **Off**. Click Start, Shut Down. If the OmniBook does not respond, press and hold the blue power button until the display shuts down. When you turn on the computer, it reboots. Unsaved data is lost.

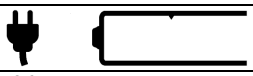
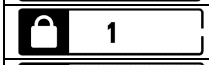
Table 1-3. Activating Power Modes

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

Checking the Status of the OmniBook

The OmniBook status panel, located above the keyboard (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. OmniBook 3000: *Blinks* when the battery is being charged.
	**Battery status.** Shows the approximate charge level of the battery relative to a full charge. Each bar represents approximately 10% charge. The upper and lower triangles indicate the presence of the main battery (upper) and a second battery (lower). A triangle blinks when that battery is charging. The main battery charges first, discharges last. OmniBook 2100/3100: If two batteries are installed, the indicator shows the combined charge of both batteries. OmniBook 3000: 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, the indicator shows the combined charge of both batteries. Press Fn+F6 to show separate battery levels.
	**Battery low.** (Triangle, but no bars.) The OmniBook also beeps.
	**Defective battery.** (No triangle, no bars.) No charging, even though ac adapter is present.
	**OmniBook 3000:** **Overheated battery.** (No triangle, top bar.) The battery is too hot to charge. Not necessarily a defective battery.
	**Internal drive.** The OmniBook is accessing one of the internal drives: the hard disk drive, CD-ROM drive, or other plug-in module drive.
	**Floppy disk drive.** The OmniBook is accessing the floppy disk drive.
	**PC Card.** There is activity between the PC Card and the computer.
	**Caps Lock.** Caps Lock is active.
	**Num Lock.** Num Lock is active.
	**Keypad Lock.** The embedded keypad is active (Fn+F8). Num Lock must also be on for the numeric keys—otherwise, cursor control is active.
	**Scroll Lock.** Scroll Lock is active.
 (scrolling)	**OmniBook 3000:** **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.

The green power light in the hinge area (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 (Icon PCA and Battery)

Light	Meaning
OmniBook 2100/3100: Power Light	
Steady green light	OmniBook is running (On mode).
Blinking green light	OmniBook is suspended (Suspend or Standby mode).
No light	OmniBook is off (Off or Hibernate mode).
OmniBook 3000: Power Light	
Steady green light	Battery is charging (ac power connected).
Blinking green light	Battery is not charging (ac power connected), or computer is Suspended (no ac power).
No light	Battery is not charging (no ac power).
Battery Lights	Show battery charge level only while the button is pressed on the battery. The number of lights that turn on indicates the charge.

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. For an external keyboard, CTRL+ALT is normally equivalent to the Fn key.

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 (DSTN displays only, if available).
Fn + F4	Increases the display's contrast (DSTN 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.
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. Use a pen or a straightened paper clip to push the system-off button in the hole on the back panel. (The switch is on the motherboard.)

   –or–

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

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

Note

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

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

System Resources

Below are default values for system resources. To see other, non-default possibilities, use the BIOS Setup utility (see page 3-23), 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
OmniBook 2100/3100	
9	Free
10	USB and CardBus - assigned by Windows driver
11	Free
OmniBook 3000	
9	Free (or MIDI, if enabled)
10	USB - assigned by Windows driver
11	CardBus - assigned by Windows driver
12	Pointing device
13	Numeric data processor
14	Internal hard disk (primary IDE controller)
15	Internal CD-ROM drive (secondary IDE controller)

Table 1-8. System Memory

00000 - 9FFFF	System memory
A0000 - BFFFF	Video
C0000 - CBFFF	Video BIOS
OmniBook 2100/3100	
CC000 - DBFFF*	Free**
DC000*- FFFFF	System BIOS
OmniBook 3000	
CC000 - DFFFF*	Free**
E0000*- FFFFF	System BIOS
* Approximate boundary.	
** Valid uses for memory addresses CC000-DBFFF or CC000-DFFFF:	
Upper memory blocks (UMBs).	
PC card memory windows.	

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

170-177	Internal CD-ROM drive (secondary IDE controller)
1F0-1F7	Internal hard disk (primary IDE controller)
200-207	OmniBook 3000: Joystick
220-22F	Crystal sound
376	Internal CD-ROM drive (secondary IDE controller)
378-37F	LPT1 (printer port)
388-38B	Sound
3B0-3BB	VGA adapter
3C0-3DF	VGA adapter
3E0-3E1	PCMCIA controller
3F0-3F5	Floppy controller
3F6	Internal hard disk (primary IDE controller)
3F7	Floppy controller
3F8-3FF	COM1 (serial port)

Table 1-10. DMA Channels

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

Specifications

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

Table 1-11. HP OmniBook 2100/3000/3100 Specifications

Physical Attributes	**OmniBook 2100/3100:** 12-Inch Display Size: 29.9 × 23.7 × 4.6 cm (11.7 × 9.2 × 1.8 in) closed. Weight: 2.9 kg (6.4 lb). 13-Inch Display Size: 30.3 × 23.7 × 4.9 cm (11.9 × 9.2 × 1.9 in) closed. Weight: 3.0 kg (6.7 lb). **OmniBook 3000:** Size: 30.3 × 23.7 × 5.2 cm (11.9 × 9.3 × 2.1 in) closed. Weight: 3.0 kg (6.7 lb).
Processor and Bus Architecture	200-, 233-, or 266-MHz Intel Mobile Pentium processor with MMX technology or 233- or 266-MHz Intel Mobile Pentium II processor. Intel sub-2V low-power processor. 512-KB burst-synchronous L2 cache. 32-bit PCI bus.
Graphics	**OmniBook 2100/3100:** 12.1-inch SVGA active matrix (TFT) display (800 × 600 × 16M colors), 12.1-inch SVGA dual-scan (DSTN) display (800 × 600 × 16M colors), or 13.3-inch XGA active-matrix (TFT) display (1024 × 768 × 64K colors). **OmniBook 3000:** 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 in one PC Card slot.
Power	**OmniBook 2100/3100:** Rechargeable lithium-ion or nickel-metal-hydride battery with built-in four-level gauge. AC adapter 100–240 Vac (50–60 Hz) input; 19 Vdc, 3.16 A output. **OmniBook 3000:** Rechargeable lithium-ion battery with built-in four-level gauge. AC adapter: 100–240 Vac (50–60 Hz) input; 19 Vdc, 2.4 A output. Low-battery warning. Suspend/resume capability. Power states: On, Standby, Suspend, Hibernate, Off. Battery life: up to 3 hours (varies with type of usage) for one battery. Optional secondary lithium-ion battery doubles operating time. Advanced Power Management (APM 1.2). ACPI 1.0 ready (OmniBook 2100/3100 only).
Mass Storage	4.0-GB, 3.2-GB, or 2.1-GB removable hard drive. 1.44-MB internal/external floppy drive (swap with optional modules or secondary battery). Removable CD-ROM drive. Optional removable Zip drive.
RAM	**OmniBook 2100/3100:** 32-MB RAM on motherboard. One or two slots for RAM expansion up to maximum of 160 MB (Pentium, one slot), 192 MB (Pentium, two slots), or 288 MB (Pentium II) using HP memory modules, depending on the processor type and number of slots. **OmniBook 3000:** 16-MB RAM on motherboard. Two slots for RAM expansion up to 144 MB using HP memory modules.

Audio System	16-bit, Sound Blaster Pro-compatible. Stereo sound via two built-in speakers. Built-in microphone. Line-in, line-out, and microphone-in. 3D enhanced audio. MIDI support with optional port replicator (OmniBook 3000 only).
Keyboard and Pointing Device	87/88-key touch-type full-size QWERTY keyboard with 101/102-key emulation. Embedded numeric keypad. 12 function Fn keys. Touch pad.
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 × 768 × 64K colors) at up to 85-Hz refresh rate. PS/2 keyboard/mouse. 4-Mbps IrDA-compliant infrared. Docking connector.
Expandability	One Type III or two Type II 16-/32-bit PC Card slots. CardBus enabled. Plug-in module bay for accessory modules. **OmniBook 2100/3100:** Full line of optional docking products: port replicator, mini dock, and docking system. **OmniBook 3000:** Optional port replicator.
Preinstalled Software	**OmniBook 2100/3100:** Microsoft Windows 95 or Windows NT 4.0. Windows 95-compatible Plug and Play. Windows NT 4.0 PC Card Plug-and-Play. DMI 2.0 with HP TopTools 2.6 or 3.0. **OmniBook 3000:** Microsoft Windows 95. Windows 95-compatible Plug and Play. DMI 1.1 under Windows 95 with HP TopTools 2.0. Windows NT 4.0 certified, with APM 1.2 and PC Card Plug-and-Play support. Advanced Power Management (APM 1.2). MacAfee VirusScan. Online documentation. OmniBook Recovery CD-ROM included. Centralized worldwide BIOS and driver update service.
Security Features	**OmniBook 2100/3100:** Two-level password protection. Drive lock. Password for docking eject. **OmniBook 3000:** One level 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).

Major ICs	**OmniBook 2100/3100:** CPU: Intel Mobile Pentium or Pentium II. South Bridge: PIIX4. Video: NeoMagic NM2160 (NMG4). Audio: Crystal CS4237B. CardBus: TI PCI1220. Keyboard controller: National PC87570. Super I/O: SMC 669FR. **OmniBook 3000:** CPU: Intel Mobile Pentium. South Bridge: PIIX4. Video: NeoMagic NM2160 (NMG4). Audio: Crystal CS4237B. CardBus: TI PCI1131. Keyboard controller: Intel 87C51SL. Super I/O: SMC 669FR.

Table 1-12. HP OmniBook 2100/3000/3100 Accessories

Accessory	Description	OmniBook		Compat.
		2100/3100	3000	4100/7100
Memory				
F1363A	16-MB EDORAM expansion module (see page 2-7)		•	
F1364A	32-MB EDORAM expansion module (see page 2-7)		•	
F1365A	64-MB EDORAM expansion module (see page 2-7)		•	
F1456A	32-MB SDRAM expansion module	•		•
F1457A	64-MB SDRAM expansion module (see page 2-7)	•		•
F1622A	128-MB SDRAM expansion module (see page 2-7)	•		•
Hard Drives				
F1385A	2.1-GB internal hard disk drive	•	•	
F1386A	4.0-GB internal hard disk drive	•	•	
F1588A	3.2-GB internal hard disk drive	•	•	
Modules				
F1380A	Replacement floppy disk drive cable for external use	•	•	
F1384A	Internal/external floppy disk drive module and cable	•	•	
F1387A	20X CD-ROM drive module		•	
F1388A	100-MB Zip drive module	•	•	
F1587A	24X CD-ROM drive module	•	•	

Accessory	Description	OmniBook		Compat.
		2100/3100	3000	4100/7100
Power Options				
F1377A	45-watt ac adapter		•	
F1379A	Automobile adapter		•	
F1382A	Standard lithium-ion battery pack (primary)	•	•	
F1383A	Secondary lithium-ion battery pack (plug-in module)	•	•	
F1454A	60-watt ac adapter	•		•
F1455A	75-watt auto/airline power adapter	•	•	•
F1589A	Nickel-metal-hydride battery (primary)	•		
8120-6312 8120-6313 8120-6314 8120-6316 8120-6317 8120-8373 8120-8699	Replacement power cord (Australia) Replacement power cord (U.S., Canada, Taiwan) Replacement power cord (Europe) Replacement power cord (Japan) Replacement power cord (India, South Africa) Replacement power cord (People's Republic of China) Replacement power cord (Hong Kong,Singapore,U.K.)	•	•	•
Adapters				
F1469A	PS/2 Y adapter	•		•
PC Cards				
F1623A	10/100-Mbps Ethernet + 56-Kbps modem PC Card by Xircom	•	•	•
F1626A	10/100-Mbps Ethernet PC Card by 3Com	•	•	•
F1627A	56-Kbps modem PC Card by Xircom	•	•	•
TCM3C589	10-Mbps Ethernet PC Card by 3Com	•	•	•
Docks				
F1369A	Monitor stand		•	
F1381A	Port replicator		•	
F1451A	Port replicator	•		•
F1452A	Mini dock	•		•
F1453A	Monitor stand (short) for F1451A and F1452A	•		•
F1477A	Docking system and monitor stand (tall)	•		•
F1585A	Docking bay module adapter	•		

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 1-15—it lists the roles that the replaceable modules play in each of the functional subsystems.

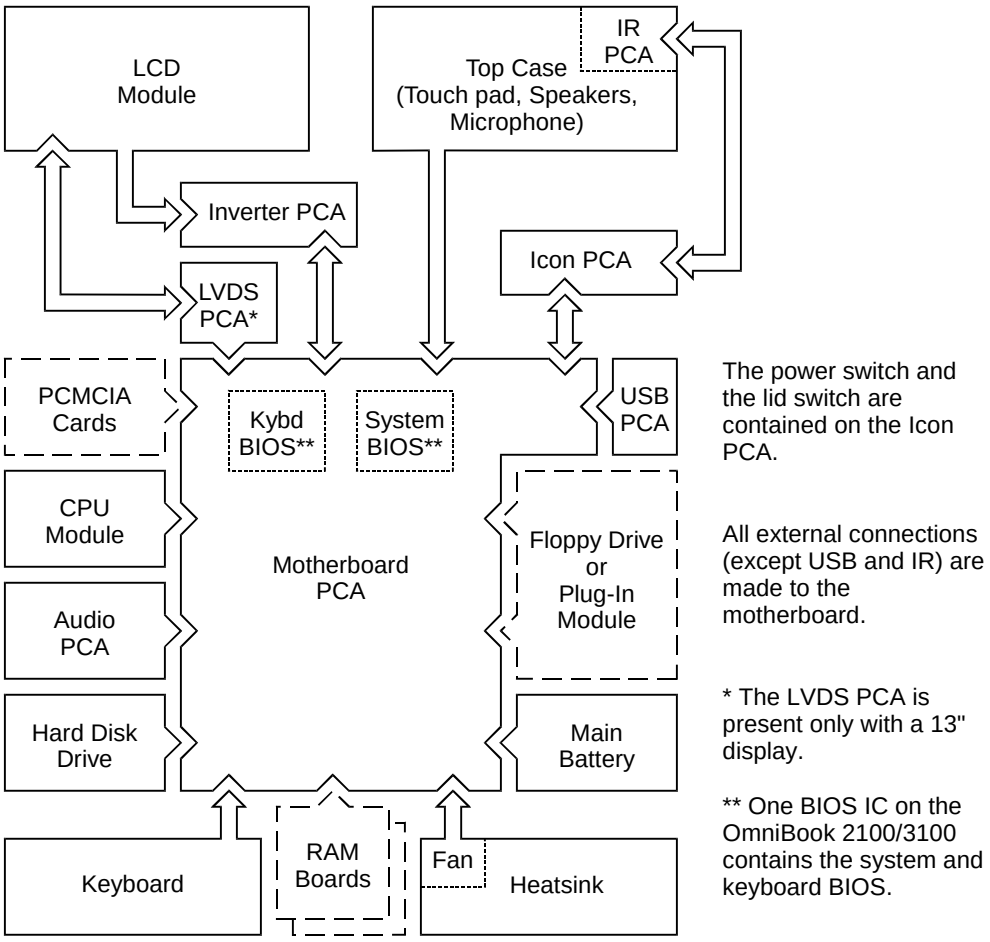


Figure 1-4. Replaceable Module Diagram

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 (OmniBook 3000) or 32 MB (OmniBook 2100/3100) of RAM, video RAM. Optional, additional RAM.
Power	Battery Motherboard AC adapter Icon PCA	Power storage. Power supply, ac adapter socket, system-off switch. AC-to-dc converter. Power switch, lid switch.
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.
Touch pad	Motherboard Top case	Keyboard and PS/2 controller. Touch pad PS/2 device.
Audio	Motherboard Audio PCA Top case	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.

* The LVDS PCA is not present in products with 12-inch displays. In these products, the LVDS functions are performed by the LCD module.

** The BIOS IC on the OmniBook 2100/3100 performs both system and keyboard BIOS functions.

2

Removal and Replacement

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

Table 2-1. Removal Cross-Reference

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 M2.5×5mm screw.)

Table 2-2. 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.

Table 2-3. Recommended Screw Torques

Screw Thread Size	Torque (kgf•cm)	Torque (lbf•in)
M2	2.0 – 2.5	1.7 – 2.2
M2.5 all except those in the next two lines	2.5 – 3.5	2.2 – 3.0
M2.5 hinges	4.5 – 5.5	3.9 – 4.8
M2.5 LCD flex cable, LVDS PCA	1.5 – 2.0	1.3 – 1.7
M3	3.0 – 4.0	2.6 – 3.5

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.

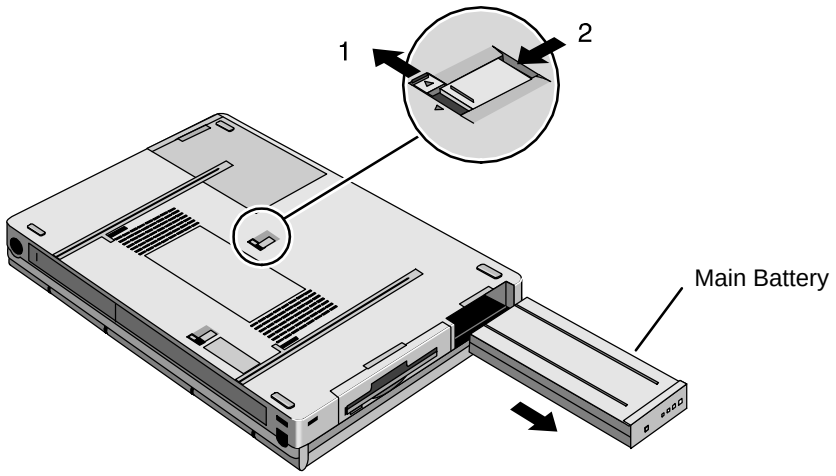


Figure 2-1. Removing the Main Battery

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)

> **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.

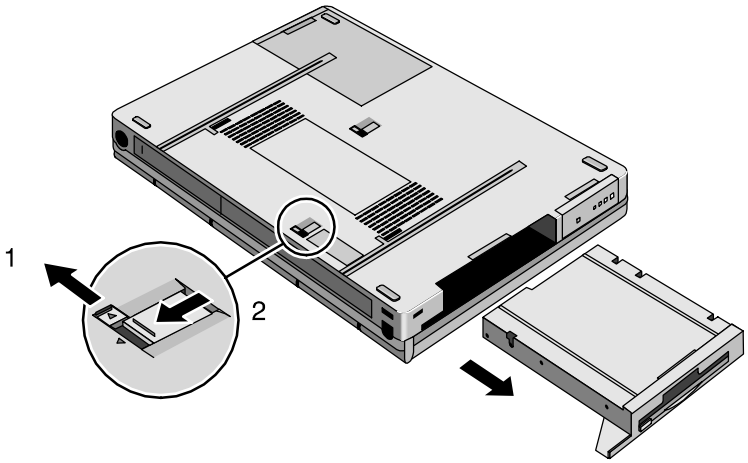


Figure 2-2. Removing a Plug-In Module

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 2-4. Hard Disk Drive Replacement Part Numbers

Description	Part Number	Exchange Part Number	OmniBook 2100	OmniBook 3100	OmniBook 3000
Drive, hard disk (2.1GB, 9.5mm, IBM) *	0950-2801	F1385-69100	•		•
Drive, hard disk (2.1GB, 12.7mm, Toshiba)	0950-2836	F1350-69100			•
Drive, hard disk (3.2GB, 9.5mm, IBM) *	0950-2802	F1348-69103	•		•
Drive, hard disk (3.2GB, 12.7mm, Toshiba)	0950-2854	F1348-69102	•		
Drive, hard disk (4.0GB, 12.7mm, IBM) *	0950-2671	F1386-69100	•	•	•
Drive, hard disk (4.0GB, 12.7mm, Toshiba)	0950-2865	F1386-69101	•	•	

* Recommended replacement parts. HP recommends stocking drives from IBM, the primary hard drive source for these OmniBook products. IBM drives can be used with the older HDD case that has no top shield (the shield should be installed if it is present). Toshiba hard drives require a top shield as part of the HDD case.

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.

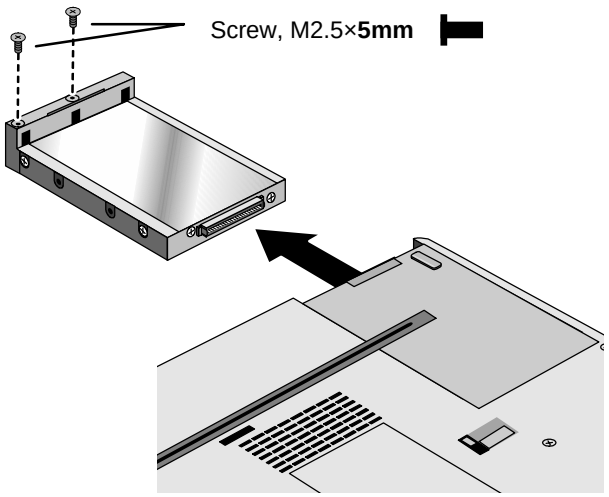


Figure 2-3. Removing the Hard Drive

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 case, you can remove the case from the old hard drive:

   - Remove the four screws from the sides of the case.
   - Remove the top shield from the drive and swing out the free end of the hard drive about 90°, then gently pry off the connector from the hard drive. The OmniBook 3000 may not have a top shield.

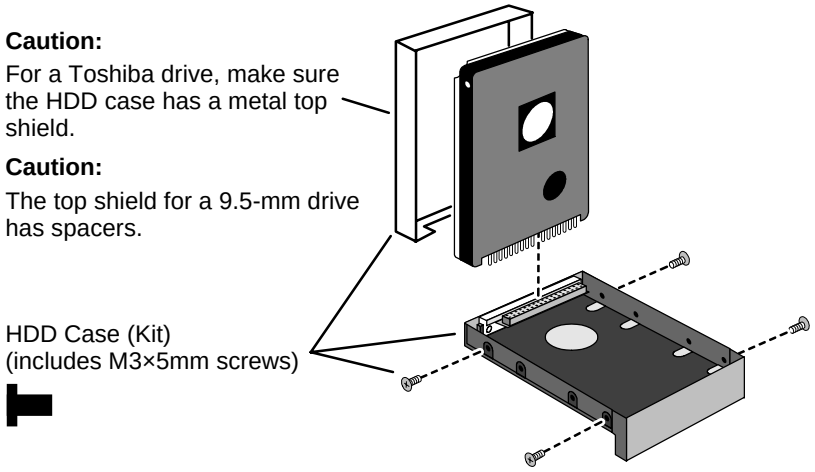


Figure 2-4. Installing a Hard Drive in the Case

Reassembly Notes

Caution

- Use a HDD case kit that is compatible with the thickness of the drive, 9.5 mm or 12.7 mm. The 9.5-mm drive requires spacers inside the top shield.
- Install the metal top shield that is included with the HDD case. If an older HDD case does not have a top shield, you must install a newer HDD case if the drive is a Toshiba drive—otherwise, drive performance may be reduced by magnetic interference.
- Do not cover the vent hole in the top surface of the hard drive or in the case. If you cover the hole, the hard drive could fail prematurely.

- Depending on the manufacturer of the replacement drive, the hole placement for the four screws may vary.

Important

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

Creating a Hibernate Partition

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

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

   - On a factory software installation, click Start, Programs, OmniBook, Create Support Utility Disk.

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

2. Insert the Recovery CD in the CD-ROM drive—or insert the Support Utility disk in the floppy drive.
3. Reboot the computer. If you are using the Recovery CD, press ESC during reboot if the OmniBook screen appears, ESC to display the boot-device menu, then select the CD-ROM drive as the boot device.
4. When prompted, select "Create Hibernate Partition."

   OmniBook 2100/3100: We recommend that you create a partition the same as the factory setup—288 MB for a Pentium II CPU, or 192 MB for a Pentium CPU (160 MB is acceptable if the motherboard has only one RAM slot).

   OmniBook 3000: We recommend that you create a 144-MB partition, the same as the factory setup.

Removing a RAM Board

(User-Replaceable)

Table 2-5. RAM Board Replacement Part Numbers and Compatibility

Description	Part Number	Exchange Part Number	OmniBook, CPU Type, RAM Slots					
			2100 Pentium II		2100/3100 Pentium		3000 Pentium	
			Inner Slot	Corner Slot	Inner Slot	Corner Slot *	Inner Slot	Corner Slot
RAM, 32-MB SDRAM	1818-7413	F1456-69001	•	•	•	•		
RAM, 64-MB SDRAM	1818-7414	F1457-69001	•	•	•			
RAM, 128-MB SDRAM	1818-7549	F1622-69001	•	•	•			
RAM, 16-MB EDORAM	F1363-60001	F1363-69001			o	o	•	•
RAM, 32-MB EDORAM	F1364-60001	F1364-69001			o	o	•	•
RAM, 64-MB EDORAM	F1365-60001	F1365-69001			o		•	•

- • Recommended compatibility.
- o Alternate compatibility. Do not mix SDRAM and EDORAM boards in two slots.

To determine the CPU type, see the Intel sticker on the top case or see the picture showing the CPU modules on page 2-25.

* The corner RAM slot is not present on an OmniBook 2100/3100 with a Pentium CPU and one-slot motherboard.

Caution

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

Required Equipment

- Small Phillips screwdriver.

Removal Procedure

1. Unplug the ac adapter, if present, and remove the battery.
2. Remove the hard disk drive (see page 2-5).
3. Slide open the RAM cover about 3 mm, then lift off the cover.

> **Note**
> For an OmniBook 3000, if the RAM cover does not have a Mylar insulator on the inside, replace the cover with a new one. (Service note 3000-07.)

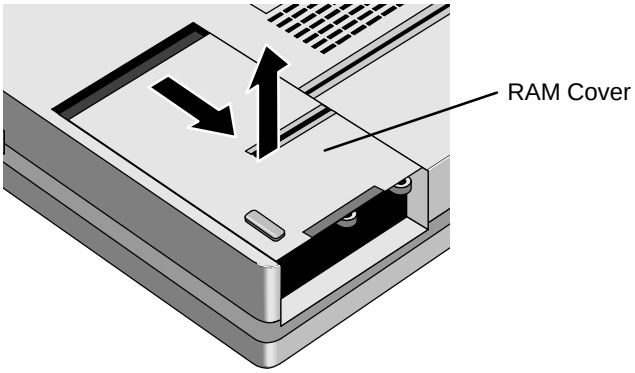


Figure 2-5. Removing the RAM Cover

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.

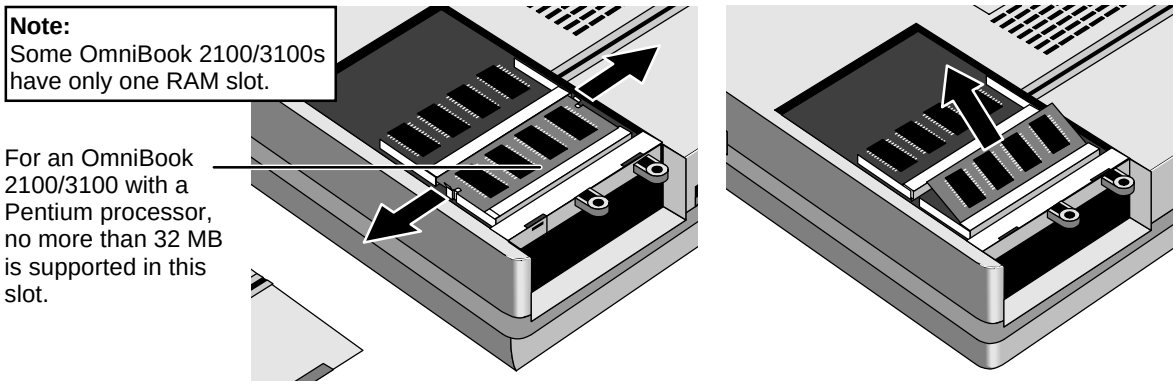


Figure 2-6. Removing a RAM Board

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.