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CONTENTS

chapter 1

PRODUCT DESCRIPTION

1.1 Computer Features and Models

The Armada 3500 Family of Personal Computers is a line of thin and lightweight notebook computers with superior flexibility and the latest performance features. It is designed for highly mobile professionals who spend a majority of their time traveling.

Figure 1-1. *Armada 3500 Personal Computer with Mobile 3500 Expansion Unit*

This full-function, Mobile Pentium II-based family of notebook computers allows full desktop functionality. It also provides connectivity through the use of an optional Mobile 3500 Expansion Unit (M35EU) and a Convenience Base.

1.1.1 Features

The computer models have the following standard features:

- 266- or 300-MHz Mobile Pentium II processors
- 32- or 64-MB of synchronous dynamic random access memory (SDRAM) on the system board, expandable to a maximum of 160 MB[1]
- 4.0- or 6.0-GB, 2.5-inch internal hard drive mounted in carrier
- LCD displays:
  - 12.1 inch SVGA CTFT display
  - 13.3-inch XGA CTFT display
- Supports Lithium Ion (Li-Ion) battery pack
  - Li-Ion Battery Pack (6 cell)
  - Extended Life Li-Ion Battery Pack (9 cell)
- Internal speaker
- Internal microphone
- External 1.44-MB diskette drive
- Full-size 101 key compatible keyboard including 12 function keys, 8 cursor control keys, inverted-T cursor control keys, and embedded numeric keypad
- Four user-programmable keys
- Multifunctional EasyPoint IV pointing device
- Operates from a battery pack in the battery bay, an external AC power supply that is compatible with domestic or international power sources, or from an AC power supply integrated in the Mobile 3500 Expansion Unit
- Power management and security features
- Infrared interface for wireless communication with other IrDA-compliant devices at data rates up to 4 mb/sec[2])
- Universal Serial Bus (USB)
- Two standard device slots that will accommodate two Type II or one Type III PC Card, PCMCIA card or CardBus card. Zoomed-Video in the bottom slot
- When connected to the Mobile 3500 Expansion Unit, a 176-pin expansion connector provides the interface to the convenience base options. Mobile 3500 Expansion Unit is required for use with convenience base.
- Rear-panel ports provide connections for parallel, serial, external monitor, microphone/Line-In jack, speaker/headphone (Line-Out jack), and keyboard/mouse

[1] Will support up to a maximum of 192-MB with 64-MB on the system board.
[2] Windows 95 supports up to 115-kb/sec. Driver for 4 mb/sec available from www.microsoft.com.

1.1.2 Models

Compaq Armada 3500 computers are configurable, and may contain any or all of the features listed. All models have 32- or 64-MB of standard memory, and may be upgraded to a maximum of 192-MB with 64-MB on the system board.

1.1.3 Software Fulfillment

Replacement software may be ordered directly from Compaq Computer Corporation. Both the model and the serial number of the computer are needed to identify the specific software available.

1.2 Computer Options

The computer supports the following options:

- Memory expansion boards
- Li-ion battery pack
- External battery charger with AC adapter
- Hard drive upgrade
- Mobile 3500 Expansion Unit (M35EU)
  - CD-ROM or DVD-ROM drive for optical disc bay
  - 6-GB hard drive for MultiBay (requires carrier)
  - 120-MB LS-120 super drive for MultiBay
  - 100-MB Zip drive for MultiBay

1.2.1 Convenience Base II

Armada 3500 models support the following convenience base models when attached to the M35EU:

- Convenience Base II pass through
- Convenience Base II with Ethernet

In addition, the computer is compatible with the convenience bases from the Armada 1500 Family of Personal Computers.

1.2.2 System Memory Options

The computer supports optional 16-, 32-, 64-, and 128-MB memory boards. The memory boards are 66-MHz SDRAM without parity. System memory can be expanded to up to 192-MB, depending on the model.

1.2.3 External Battery Charger

The external battery charger has the following features:

- Accepts Armada 3500 battery pack
- Charges two sizes of battery packs
  - 6-cell battery pack in 1.5 hours
  - 9-cell battery pack in 2.0 hours

1.2.4 External Keyboards and Pointing Devices

Supports Compaq or Compaq compatible PS/2 keyboards and pointing devices. Supports industry standard "Y" connector.

1.2.5 External Monitors

- Supports all VGA Monitors at resolutions up to 1280 × 1024
- Supports DDC1 and DDC2b compliant Energy Star monitors

1.3 External Computer Components

The external computer components are illustrated and described in this section.

1.3.1 Left Side Components

The left side external components are shown in Figure 1-2 and are described in Table 1-1.

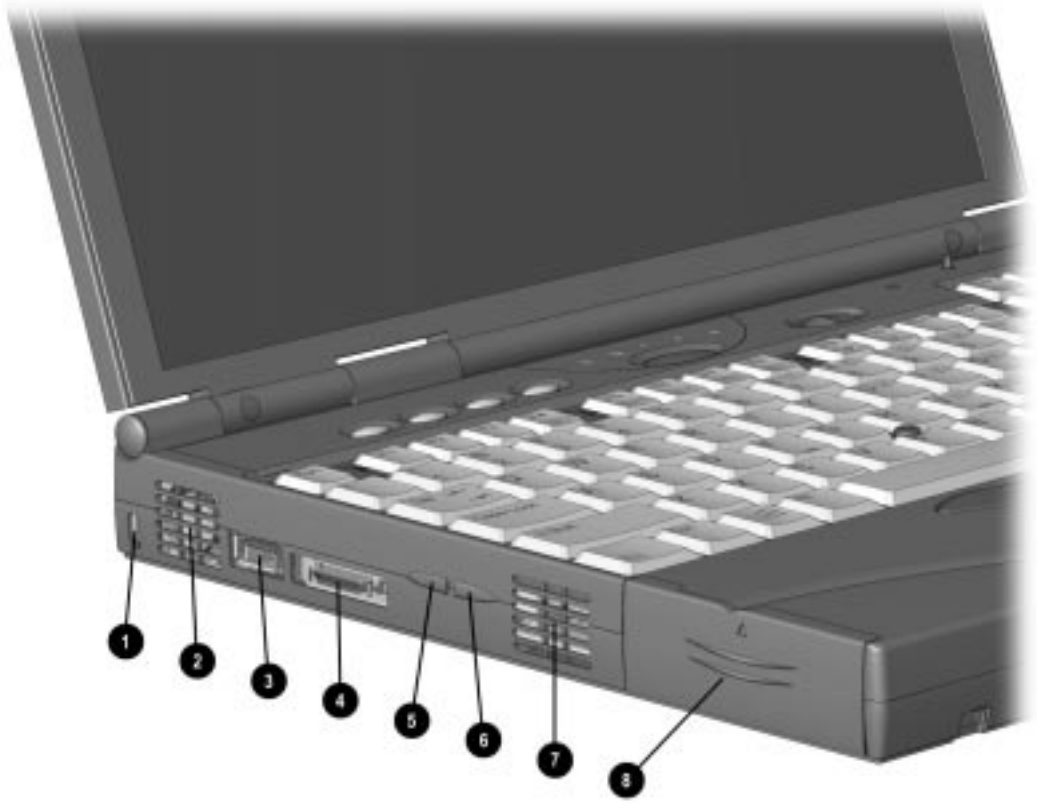


Figure 1-2. *Left Side Components*

Table 1-1
Left Side Components

Item	Component	Function
❶	Cable Lock	Secures computer to fixed object
❷	Air exhaust vent	Provides warm air exit
❸	USB port	Connects USB devices
❹	External diskette port	Connects diskette drive
❺	Volume up	Increases volume
❻	Volume down	Decreases volume
❼	Air inlet vent	Provides cool air inlet
❽	Battery	Powers computer

1.3.2 Front Components

The front external components are shown in Figure 1-3 and are described in Table 1-2.

Figure 1-3. *Front Components*

Table 1-2
Front Components

Item	Component	Function
❶	Display	LCD graphic display
❷	Lid latches	Secures lid for transport
❸	Lid switch	Turns display off when lid is closed
❹	M35EU slots	Secures computer to Mobile 3500 Expansion Unit
❺	Hard disk activity LED	Indicates hard disk activity - blinks while in standby
❻	Power/Standby LED	Indicates that the computer is on
❼	Battery	Powers the computer

1.3.3 Top Components

The top external components are shown in Figure 1-4 and are described in Table 1-3.

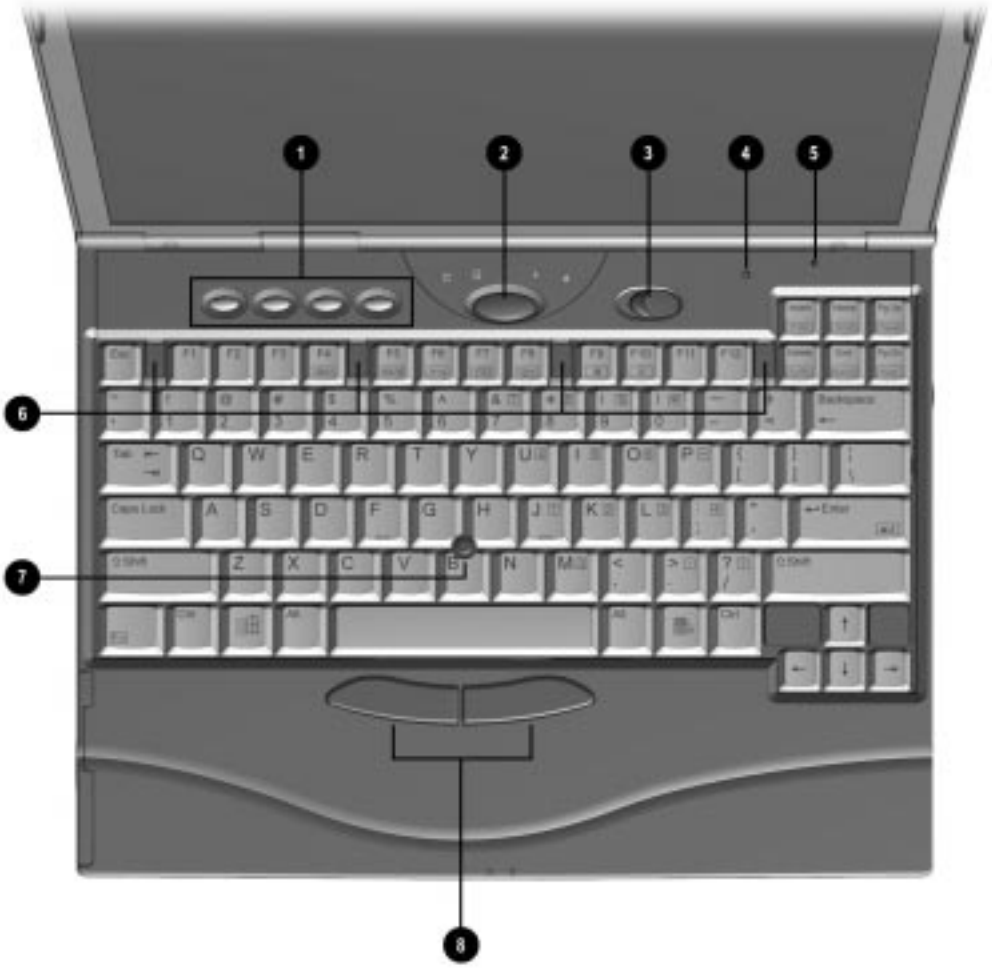


Figure 1-4. *Top Components*

Table 1-3
Top Components

Item	Component	Function
❶	Programmable function buttons	User-programmable keys
❷	Suspend button	Initiates suspend
❸	Power switch	Turns power on and off
❹	Microphone	Input for audio recording
❺	Lid switch	Turns display off when lid is closed
❻	Keyboard release latches	Releases keyboard from system unit
❼	EasyPoint IV	Pointing device
❽	Click buttons	Pointing device click buttons

1.3.4 Right Side Components

The right side external components are shown in Figure 1-5 and are described in Table 1-4.

Figure 1-5. *Right Side Components*

Table 1-4
Right Side Components

Item	Component	Function
❶	Speaker	Produces monaural audio when not docked to M35EU
❷	PC Card slots	Accepts 16- and 32-bit PC Cards
❸	DC Connector	DC input from external AC adapter

1.3.5 Rear Components

The rear components are shown Figure 1-6 and are described in Table 1-5.

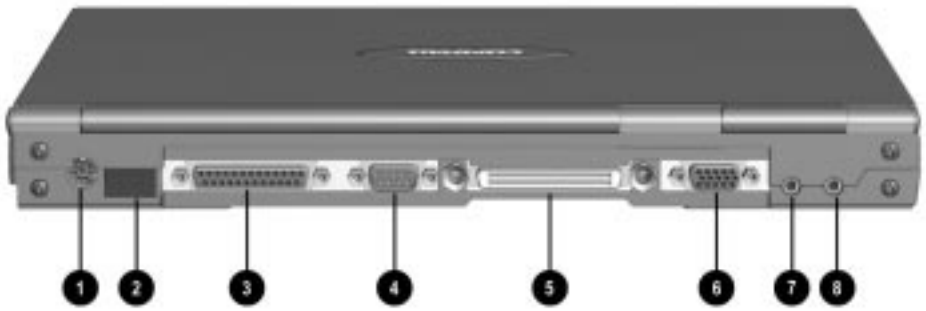


Figure 1-6. *Rear Components*

Table 1-5
Rear Components

Item	Component	Function
❶	External keyboard port	Connects external keyboard or PS2 mouse (Supports standard "Y" connector)
❷	Infrared port	Provides wireless communications
❸	Parallel connector	Connects parallel devices such as a printer
❹	Serial connector	Connects serial devices such as a mouse
❺	Docking connector	Provides connection to optional convenience base
❻	External monitor connector	Connects external monitor
❼	Mic in connector	Connects external microphone
❽	Headphone connector	Connects stereo speakers or headphones

1.3.6 Computer Bottom Components

The bottom external components are shown in Figure 1-7 and are described in Table 1-6.

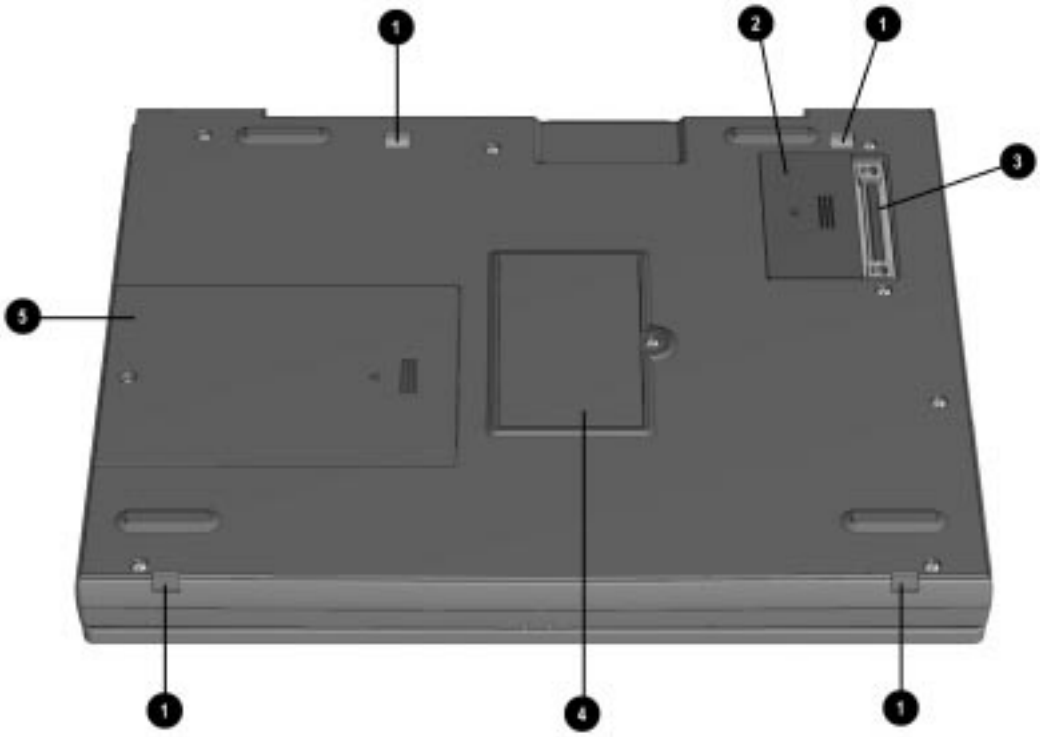


Figure 1-7. *Bottom Components*

Table 1-6
Bottom Components

Item	Component	Function
❶	M35EU slots	Aligns system with M35EU
❷	M35EU connector cover	Covers M35EU connector
❸	M35EU connector	Connects system to M35EU
❹	Memory cover	Covers memory expansion slot
❺	Hard drive cover	Covers hard drive

1.3.7 M35EU Bottom Components

The bottom external components are shown in Figure 1-7 and are described in Table 1-6.

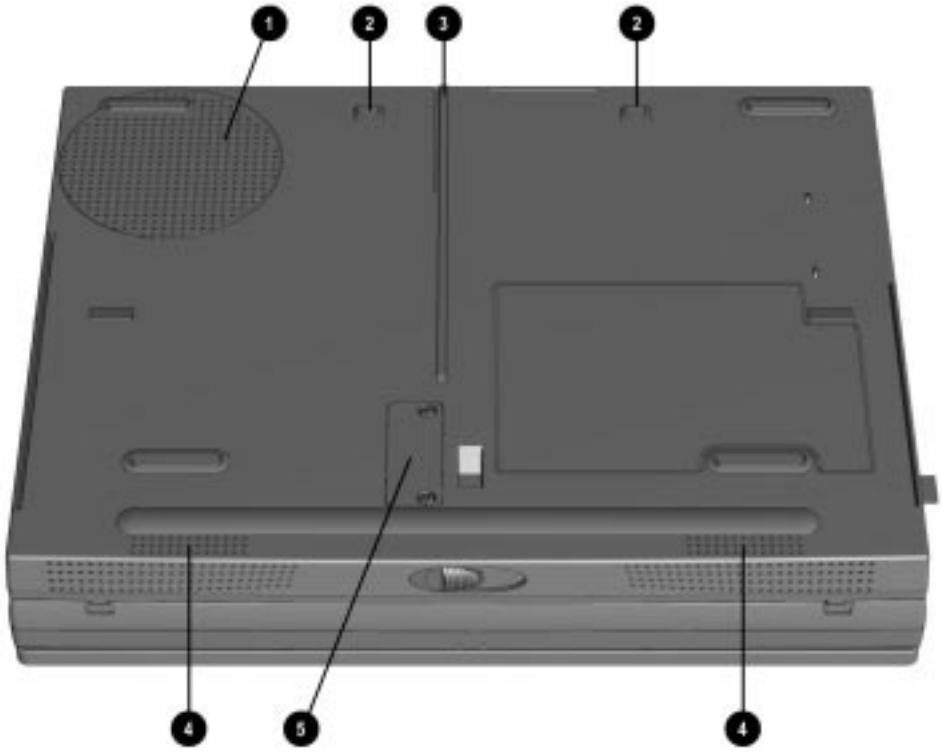


Figure 1-8. *Bottom Components With M35EU*

Table 1-7
Bottom Components With M35EU

Item	Component	Function
❶	Subwoofer	Enhances sound reproduction
❷	Locking tabs	Secures computer /M35EU to Convenience Base II
❸	Docking guide	Aligns computer /M35EU to Convenience Base II when docking
❹	Speakers	Produces high-quality sound
❺	Optical bay retainer cover	Provides access to Optical Disc Bay connector and retainer

1.3.8 Status Panel Lights

The status panel lights are shown in Figure 1-9 and described in Table 1-8.

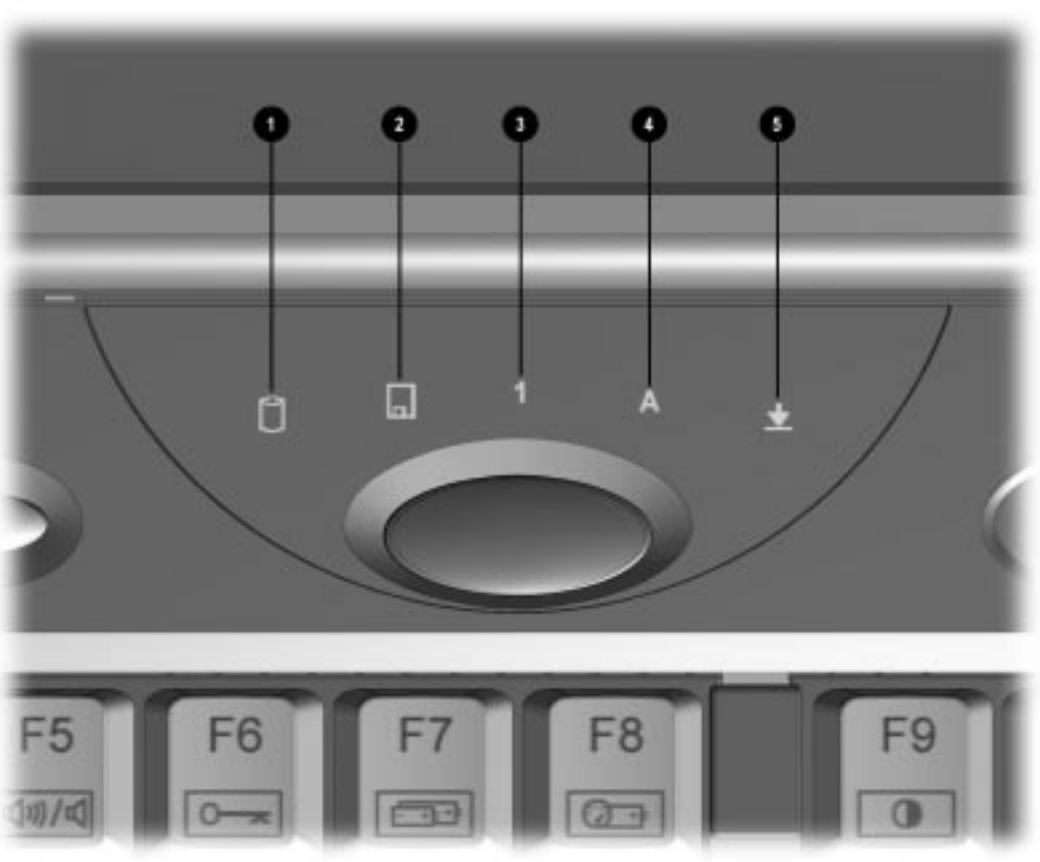


Figure 1-9. *Status Panel Lights*

Table 1-8
Status Panel

Item	Component	Function
❶	Hard drive activity light	Indicates hard drive or CD-ROM access
❷	Diskette drive activity light	Indicates diskette drive activity
❸	Number lock indicator	Indicates that numbers lock is on
❹	Caps lock indicator	Indicates that caps lock is on
❺	Scroll lock indicator	Indicates that scroll lock is on

1.4 Design Overview

This section presents a design overview of the computer. The overview is limited to field replaceable parts. All replacement parts are listed in Chapter 3.

1.4.1 System Unit

The computer is a traditional clamshell design with a display assembly attached to a system unit. The computer opens to reveal a backlit LCD display and a full-function keyboard. The display is designed for a continuously adjustable tilt angle. Multimedia capability and connectivity are enhanced through an optional Mobile 3500 Expansion Unit.

1.4.2 System Boards

The system electronics are integrated on three printed circuit assemblies: the system board, the DC-DC converter board, and LED/switch board.

- The system board integrates the processor, on-board memory, level 2 cache, local bus video adapter, audio functions, and PCMCIA/CardBus adapter.
- The DC-DC converter board creates the system voltages (3.3v and 5v) from the battery or AC/DC input.
- The LED/switch board integrates the status LEDs and the power and standby switches.

1.4.2.1 Processor

An Intel 266- or 300-MHz Mobile Pentium II processor is located on the system board.

1.4.2.2 Memory

Base memory is 32- or 64-MB with 16-, 32-, 64-, or 128-MB of optional expansion memory. Base memory is onboard memory built into the system board. Expansion memory consists of one memory expansion board available as a user installable option.

1.4.2.3 Cache

Level 2 cache is integrated in the CPU module. It is not user upgradable.

1.4.2.4 PCMCIA/CardBus Controller

The PCMCIA/CardBus adapter is based on the Texas Instrument PCI1220 PC to CardBus controller unit. Both 16-bit cards and 32-bit CardBus cards are supported.

1.4.2.5 Video Adapter Controller

The local bus video adapter is the Chips and Technologies 69000 controller. This controller offers improved video performance due to the on-board 2-MB video memory.

1.4.3 Video system

The standard video subsystem consists of:

- One of the following LCD displays:
  - 12.1-in SVGA CTFT display
  - 13.3-in XGA CTFT display
- A 2-Megabyte frame buffer integral with the video controller integrated circuit
- An inverter to supply AC power to the LCD back-light system
- A standard external VGA connector for use with CRTs and other VGA compatible displays
- A 40-KB Video ROM

chapter 2

TROUBLESHOOTING

Follow these basic steps when beginning the troubleshooting process:

1. Complete the preliminary steps listed in Section 2.1.
2. Run the Power-On Self-Test (POST) as described in Section 2.3.
3. Run Computer Setup as described in Section 2.5.
4. Run the Computer Checkup (TEST) as described in Section 2.6.
5. If you are unable to run POST or Computer Checkup or if the problem persists after running POST and Computer Checkup, perform the recommended actions described in the diagnostic tables in Section 2.5.
6. Remove non-Compaq devices and components prior to troubleshooting.

Follow these guidelines when troubleshooting:

- Complete the recommended actions in the order in which they are given.
- Repeat POST and Computer Checkup after each recommended action until the problem is resolved and the error message does not return.
- When the problem is resolved, stop performing the troubleshooting steps and do not complete the remaining recommended actions.
- Refer to Chapter 5 for removal and replacement procedures that are recommended.
- If the problem is intermittent, check the computer several times to verify that the problem is solved.

The following table describes the troubleshooting actions:

If You Want To:	**Then Run:**
Check for POST error messages	POST
Check that computer components are recognized and running properly	Computer Checkup (TEST) under Compaq Utilities
View information about the computer and installed or connected devices	View System Information (INSPECT) under Compaq Utilities
Perform any of the following: ■ Check the system configuration ■ Set the system power management parameters ■ Return the system to its original configuration ■ Check system configuration of installed devices	Computer Setup

2.1 Preliminary Steps

IMPORTANT: Use AC power when running POST, Computer Setup, or Computer Checkup. A low battery condition could initiate Hibernation and interrupt the test.

Before running POST and Computer Checkup, complete the following steps:

1. Obtain established passwords. If you must clear the passwords, go to Section 2.2.
2. Ensure that the battery pack is installed in the computer and the power cord is connected to the computer and plugged into an AC power source.
3. Turn on the computer.
4. If a power-on password has been established, type the password and press **Enter.**
5. Run Computer Setup (Section 2.5). If a Setup password has been established, type the password and press **Enter.**
6. Turn off the computer and all external devices.
7. Disconnect external devices that you do not want to test. If you want to use the printer to log error messages, leave it connected to the computer.

NOTE: If a problem only occurs when an external device is connected to the computer, the problem could be with the external device or its cable. Isolate the problem by running POST with and without the external device connected.

9. Use Compaq Utilities and loopback plugs in the serial and parallel connectors if you plan to test these ports.

Follow these steps to run Compaq Utilities:

a. If you are running Compaq Utilities from the hard drive, turn on or restart the computer. Press **F10** when the cursor appears in the upper right corner of the screen. If you do not press **F10** in time, restart the computer and try again.

   If you are running Compaq Utilities from diskette, insert the Compaq Utilities diskette in drive A. Turn on or restart the computer.

b. Press **Enter** to accept **OK.**

c. Select Computer Checkup (TEST).

d. Select Prompted Diagnostics.

e. After “Identifying System Hardware” completes, select Interactive Testing and follow the instructions on the screen.

2.2 Clearing Passwords

The power-on password prevents use of the computer until the password is entered. The setup password prevents unauthorized changes to Computer Setup. To clear unknown passwords, you must remove all power from the system board. If you do not know the passwords, use the following procedure to clear the password:

1. Remove the battery pack from the battery bay.
2. Disconnect the AC power.
3. Remove the real-time clock battery (Refer to Chapter 5, "Removing the Lithium Real Time Clock Battery.")
4. Remove the auxiliary battery (Refer to Chapter 5, "Removing the Nickel Cadmium Standby Battery.")
5. Wait five minutes.
6. Reconnect the AC power.
7. Restart the computer. During Power-On Self Test (POST), a "162 System Options not set" message appears.
8. Turn off the computer, then disconnect AC power again.
9. Replace the real-time clock battery.
10. Replace the auxiliary battery.
11. Install the battery pack.
12. Proceed with the troubleshooting procedures.

Note: Fn + F11 clears the ESCD configuration information. If the **Fn + F11** sequence is pressed very early after powering the machine on (after you see the keyboard LEDs blink, but before the video is initialized), CMOS memory will be invalidated. The ESCD is cleared, the machine is reset and boots with the "162 - System Options Not Set" message. This is a way to clear out configuration information, such as Windows 95's knowledge about a docking station. It may help clear up problems if the configuration information had been corrupted. Timing of this keystroke sequence is critical, as there is a **very** narrow window during which the keys will be recognized. These keys are not documented to users.

2.3 Power-On Self-Test (POST)

The Power-On Self-Test (POST) is a series of tests that run every time the computer is turned on. POST verifies that the system is configured and functioning properly.

To run POST, complete the following steps:

1. Complete the preliminary steps (Section 2.1).
2. Turn on the computer.

If POST does not detect any errors, the computer beeps once or twice to indicate that POST has run successfully. The computer boots from the hard drive or from a bootable diskette if one is installed in the diskette drive.

2.4 POST Error Messages

If the system is not functioning well enough to run POST, or if the display is not functioning well enough to show POST error messages, refer to the Troubleshooting tables in Section 2.6.

If POST detects an error, one of the following events occurs:

- A message with the prefix "WARNING" appears informing you where the error occurred. The system pauses until you press **F1** to continue.
- A message with the prefix "FATAL" appears informing you where the error occurred. After the message, the system emits a series of beeps and stops.
- The system emits a series of beeps and stops.

Warning messages indicate that a potential problem, such as a system configuration error, exists. When **F1** is pressed, the system should resume. You should be able to correct problems that produce WARNING messages.

IMPORTANT: When a WARNING message includes the prompt to "RUN SCU," press **F10** to run Computer Setup. (Computer Setup replaces the SCU utility.)

If you receive one of the error messages listed below, follow the recommended action.

Table 2-1
Warning Messages

Message	Description	Recommended Action
CMOS checksum invalid, run SCU	CMOS RAM information has been corrupted.	Run Computer Setup to reinitialize CMOS-RAM.
CMOS failure, run SCU	CMOS RAM has lost power.	Run Computer Setup to reinitialize CMOS-RAM.
Diskette controller error	The diskette drive controller failed to respond to the recalibrate command.	If there is no diskette drive in the system, run Computer Setup to properly configure the CMOS-RAM to show no diskette drive present. If the problem persists, or if a diskette drive is present, complete these steps until the problems is solved: 1. Check diskette drive connections. 2. Replace diskette drive. 3. Replace system board.
Diskette track 0 failed	The diskette drive cannot read track 0 of the diskette in the drive.	Try another diskette. If the problem persists, you may need to replace the diskette drive.
Hard disk controller error	The hard drive controller failed to respond to the reset command.	Check the drive parameters. Turn off the system and check all related connections.
Keyboard controller failure	The keyboard failed the self-test command.	Replace the system board.
Keyboard failure	The keyboard failed to respond to the RESET ID command.	Replace the keyboard. If the problem persists, replace the system board.
No interrupts from Timer 0	The periodic timer interrupt is not occurring.	Replace the system board.
ROM at xxxx (LENGTH yyyy) with nonzero checksum (zz)	An illegal adapter ROM was located at the specified address.	Check the external adapter (such as a video card) to determine if it is causing the conflict.
Time/Date corrupt - run SCU	The time and date stored in the real time clock have been corrupted, possibly by a power loss.	1. Run Computer Setup. 2. If problem persists, replace RTC battery. 3. If problems persists, replace system board.
Hard disk xx failure (or error)	A failure or an error occurred when trying to access the hard drive.	1. Run Scan disk. 2. Check disk in DOS and Windows 95. If problem persists, refer to Table 2-10.
Unsupported memory module	An EDO memory module was installed in the memory expansion slot.	Remove the EDO memory module and replace with SDRAM memory module.

Fatal errors emit a beep and may display a FATAL message. Fatal errors indicate severe problems, such as a hardware failure. Fatal errors do not allow the system to resume. Some of the Fatal error beep codes are listed at the end of this section.

Table 2-2
Fatal Error Messages

Message	Description	Beep Code

CMOS RAM test failed	A walking bit test of CMOS RAM location 0E (Hex) - 3F (Hex) failed.	3
DMA controller faulty	A sequential read/write of the transfer count and transfer address registers within the primary and secondary DMA controllers failed.	4
Faulty DMA page registers	A walking bit read/write of the 16 DMA controller page registers starting at location 80 Hex failed.	0
Faulty refresh circuits	A continuous read/write test of port 61h found that bit 4 (Refresh Detect) failed to toggle within an allotted amount of time.	1
Interrupt controller failed	A sequential read/write of various Interrupt Controller registers failed.	5
ROM checksum incorrect	A checksum of the ROM BIOS does not match the byte value at F000:FFFF.	2
RAM error at location xxxx	RAM error occurred during memory test.	None

Table 2-3
Fatal Error Beep Codes

Beep Code	Beep Sequence	Description	Recommended Action
0	S-S-S-P-S-S-L-P	The DMA page registers are faulty.	Replace system board.
1	S-S-S-P-S-L-S-P	The refresh circuitry is faulty.	
2	S-S-S-P-S-L-L-P	The ROM checksum is incorrect.	
3	S-S-S-P-L-S-S-P	The CMOS RAM test failed.	
4	S-S-S-P-L-S-L-P	The DMA controller is faulty.	
5	S-S-S-P-L-L-S-P	The interrupt controller failed.	
6	S-S-S-P-L-L-L-P	The keyboard controller failed.	
7	S-S-L-P-S-S-S-P	Graphics adapter is faulty.	
8	S-S-L-P-S-S-L-P	Internal RAM is faulty.	Replace memory board or system board if memory on system board is faulty.

S = Short, L = Long, P = Pause

2.5 Compaq Utilities

Compaq Utilities contain several functions that

- Determine if various computer devices are recognized by the system and are operating properly.
- Provide information about the system once it is configured.

Compaq Utilities include the following programs:

- Computer Setup
- Computer Checkup (TEST)
- View System Information (INSPECT)

To access Compaq Utilities:

1. Turn on or restart the computer by clicking Start ⇒ Shut Down ⇒ Restart the computer.
2. Press **F10** when the blinking cursor appears in the upper-right corner of the display.
3. Select a menu option.

2.5.1 Computer Setup

Computer Setup contains utilities that give you an overall picture of the computer hardware configuration and aid in troubleshooting. These utilities also allow you to set custom features such as security options, power conservation levels, and startup preferences.

If you are running Windows 95, the computer automatically recognizes and configures the system for new devices. If you have a configuration problem or want to view or reset configuration settings, you can use Computer Setup.

NOTE: In Windows 95, you should use Computer Setup only to adjust system features such as the power-on password or battery conservation level. Windows 95 may override other configuration changes.

In Windows NT, the computer does not automatically recognize new devices added to the system. All devices ordered with your system have been configured for you. Use Computer Setup to view settings for a new device you have added or to reset configuration settings for preinstalled devices.

Computer Setup provides two methods of viewing the computer configuration: by type (factory setting) or connection.

Categories by type:

- System Features—security, power, boot management
- Communication—port, modem, and other communication devices
- Storage—storage-related devices such as hard drive, CD-ROM drive, diskette drive
- Input Devices—keyboard, mouse, and other input devices
- Network—network adapter or other network-related devices
- Audio—sound properties and audio device settings
- Video—display timeouts and video device resources
- Other—miscellaneous devices

Categories by connection:

- System Features—security, power, boot management
- System Devices—keyboard, mouse, parallel and serial ports
- ISA—ISA bus and connected devices
- PCI—PCI bus and connected devices
- PC Card—PC Card devices

2.5.1.1 Running Computer Setup

1. Turn on or restart the computer by clicking Start ⇒ Shut Down ⇒ Restart the computer.
2. Press **F10** when the blinking cursor appears in the upper-right corner of the screen.
   NOTE: If you a setup password is enabled, it must be used to access Computer Setup.
3. Click a language and press **Enter.**
4. Click Computer Setup and press **Enter**.
5. When you are finished, click **Exit.**

2.5.1.2 Exiting Computer Setup

1. Click **Exit.**
2. Select one of the following Exit options:
   - Save—Saves the new settings and exits Computer Setup.

     NOTE: Some settings may not take effect until the computer is restarted.
   - Ignore—Exits Computer Setup and restores previous settings.
   - Cancel—Returns to Computer Setup.

2.5.2 Computer Checkup (TEST)

Computer Checkup (TEST) determines whether the various computer components and devices are recognized by the computer and are functioning properly. You can display, print, or save the information that Computer Checkup generates.

NOTE: Compaq Utilities are intended for testing only Compaq-supplied components. Testing of non-Compaq components may be inconclusive.

2.5.2.1 Running Computer Checkup (TEST)

1. Plug the computer into an external power source. A low battery condition can interrupt the program.
2. Connect a printer if you want to print a log of error messages.
3. Turn on the external devices that you want to test.
4. Turn on or restart the computer.
5. Access Compaq Utilities by pressing **F10** when the blinking cursor appears in the upper-right corner of the display.
6. Click Computer Checkup ⇒ View the Device List.
   - If the list of installed devices is correct, click **OK.**
   - If the list is incorrect, ensure that any new devices are installed properly.
7. Select one of the following from the Test Option menu:
   - Quick Check Diagnostics
   - Automatic Diagnostics
   - Prompted Diagnostics
8. Follow the instructions on the screen as the devices are tested.
9. Click Exit Diagnostics ⇒ Exit from this utility.

2.5.2.2 Computer Checkup (TEST) Error Codes

Computer Checkup (TEST) error codes occur if the system recognizes a problem while running Computer Checkup. These error codes help identify possible defective assemblies. Table 2-4 through Table 2-14 list Computer Checkup error codes, a description of the error condition, and the recommended action for resolving the condition. For removal and replacement procedures, refer to Chapter 5.

IMPORTANT: Run Computer Checkup each time you complete a recommended action step. If the problem is resolved when POST and Computer Checkup are rerun (i.e., with no error codes), do not perform the remaining recommended action steps.

NOTE: The error codes in the following tables are listed in an "AYE-XX" format, where:

A or AA = Number that represents the faulty assembly

YY = Test or action that failed

XX = Specific problem

Table 2-4
Processor Test Error Codes

Error Code	Description	Recommended Action
101-xx	CPU test failed.	Replace the processor board and retest.
103-xx	DMA page registers test failed.	Replace the system board and retest.
104-xx	Interrupt controller master test failed.	
105-xx	Port 61 error.	
106-xx	Keyboard controller self-test failed.	
107-xx	CMOS RAM test failed.	
108-xx	CMOS interrupt test failed.	
109-xx	CMOS clock test failed.	
110-xx	Programmable timer load data test failed.	
113-xx	Protected mode test failed.	

Table 2-5
Memory Test Error Codes

Error Code	Description	Recommended Action
200-xx	Memory machine ID test failed.	The following steps apply to error codes 200-xx and 202-xx:
202-xx	Memory system CMOS checksum failed.	1. Flush the system CMOS and retest. See note. 2. Replace the system board and retest.
203-xx	Write/Read test failed.	The following applies to error codes 203-xx through 215-xx:
204-xx	Address test failed.	Remove and replace the SODIMM memory board or system board (if the memory on the system board is faulty) and retest.
211-xx	Random pattern test failed.	
214-xx	Noise test failed.	
215-xx	Random address test failed.	

Table 2-6
Keyboard Test Error Codes

Error Code	Description	Recommended Action
300-xx	Failed ID Test.	1. Reseat the keyboard connector.
301-xx	Failed Self test/Interface Test.	2. Replace the keyboard and retest.
302-xx	Failed Individual Key Test.	3. Replace the system board and retest.
304-xx	Failed Keyboard Repeat Test.	

Table 2-7
Parallel Printer Test Error Codes

Error Code	Description	Recommended Action
401-xx	Printer failed or not connected.	1. Connect the printer.
402-xx	Failed Port Test.	2. Check power to the printer.
403-xx	Printer pattern test failed.	3. Install bi-directional printer cable and retest. 4. Install the loopback connector and retest. 5. Check port and IRQ configuration. 6. Replace the system board and retest.

Table 2-8
Diskette Drive Error Codes

Error Code	Description	Recommended Action
600-xx	Diskette ID drive types test failed.	The following steps apply to error codes 600-xx through 698-xx:
601-xx	Diskette format failed.	1. Replace the diskette.
602-xx	Diskette read test failed.	2. Replace the diskette drive and retest.
603-xx	Diskette write, read, compare test failed.	3. Replace the system board and retest.
604-xx	Diskette random read test failed.	
605-xx	Diskette ID media test failed.	
606-xx	Diskette speed test failed.	
609-xx	Diskette reset controller test failed.	
610-xx	Diskette change line test failed.	
697-xx	Diskette type error.	
698-xx	Diskette drive speed not within limits.	
699-xx	Diskette drive/media ID error.	1. Replace media. 2. Run Compaq Utilities.

Table 2-9
Serial Test Error Codes

Error Code	Description	Recommended Action
1101-xx	Serial port test failed.	1. Check port configuration. 2. Replace the system board and retest.

Table 2-10
Hard Drive Test Error Codes

Error Code	Description	Recommended Action
1701-xx	Hard drive format test failed.	1. Run Compaq Utilities and verify drive type.
1702-xx	Hard drive read test failed.	2. Verify that all secondary drives have secondary drive capability.
1703-xx	Hard drive write/read/compare test failed.	3. Replace the hard drive and retest.
1704-xx	Hard drive random seek test failed.	4. Replace the system board and retest.
1705-xx	Hard drive controller test failed.	
1706-xx	Hard drive ready test failed.	
1707-xx	Hard drive recalibration test failed.	
1708-xx	Hard drive format bad track test failed.	
1709-xx	Hard drive reset controller test failed.	
1710-xx	Hard drive park head test failed.	
1715-xx	Hard drive head select test failed.	
1716-xx	Hard drive conditional format test failed.	
1717-xx	Hard drive ECC* test failed.	
1719-xx	Hard drive power mode test failed.	
1724-xx	Network preparation test failed.	
1736-xx	Drive monitoring test failed.	

* ECC = Error Correction Code

Table 2-11
Video Test Error Codes

Error Code	Description	Recommended Action
501-xx	Video controller test failed.	The following actions apply to error codes 501-xx through 516-xx:
502-xx	Video memory test failed.	1. Disconnect external monitor and test with internal LCD display.
503-xx	Video attribute test failed.	2. Replace the display assembly and retest.
504-xx	Video character set test failed.	3. Replace the system board and retest.
505-xx	Video 80 × 25 mode 9 × 14 character cell test failed.	
506-xx	Video 80 × 25 mode 8 × 8 character cell test failed.	
507-xx	Video 40 × 25 mode test failed.	
511-xx	Video screen memory page test failed.	
512-xx	Video gray scale test failed.	
514-xx	Video white screen test failed.	
516-xx	Video noise pattern test failed.	
2402-xx	Video memory test failed.	The following actions apply to error codes 2402-xx through 2456-xx:
2403-xx	Video attribute test failed.	1. Run Compaq Utilities.
2404-xx	Video character set test failed.	2. Disconnect external monitor and test with internal LCD display.
2405-xx	Video 80 × 25 mode 9 × 14 character cell test failed.	3. Replace the display assembly and retest.
		4. Replace the system board and retest.
2406-xx	Video 80 × 25 mode 8 × 8 character cell test failed.	
2411-xx	Video screen memory page test failed.	
2412-xx	Video gray scale test failed.	
2414-xx	Video white screen test failed.	
2416-xx	Video noise pattern test failed.	
2418-xx	ECG/VGC memory test failed.	
2419-xx	ECG/VGC ROM checksum test failed.	
2421-xx	ECG/VGC 640 × 200 graphics mode test failed.	
2422-xx	ECG/VGC 640 × 350 16 color set test failed.	
2423-xx	ECG/VGC 640 × 350 64 color set test failed.	
2424-xx	ECG/VGC monochrome text mode test failed.	
2425-xx	ECG/VGC monochrome graphics mode test failed.	

Continued

Table 2-11 Video Test Error Codes *Continued*

Error Code	Description	Recommended Action
2431-xx	640 × 480 graphics test failed.	
2448-xx	Advanced VGA Controller test failed.	
2451-xx	132-column Advanced VGA test failed.	
2456-xx	Advanced VGA 256 Color test failed.	
2458-xx	Advanced VGA Bit BLT test failed.	The following action applies to error codes 2458-xx to 2480-xx:
2468-xx	Advanced VGA DAC test failed.	Replace the system board and retest.
2477-xx	Advanced VGA data path test failed.	
2478-xx	Advanced VGA BitBLT test failed.	
2480-xx	Advanced VGA Linedraw test failed.	

Refer to Table 2-25 for information about other video errors.

Table 2-12
Audio Test Error Codes

Error Code	Description	Recommended Action
114-01	Speaker test failed.	1. Check system configuration. 2. Check speaker cable connection to system board 3. Replace speaker.
3206-xx	Audio System Internal Error.	Replace the system board and retest.

Table 2-13
Pointing Device Interface Test Error Codes

Error Code	Description	Recommended Action
8601-xx	Pointing device test failed.	Replace the keyboard.
8602-xx	Interface test failed.	

Table 2-14
CD-ROM Test Error Codes

Error Code	Description	Recommended Action
3301-xx	CD-ROM drive read test failed.	1. Replace the CD and retest. 2. Verify that drivers are loaded and properly installed.
3305-xx	CD-ROM drive seek test failed.	3. Replace the CD-ROM drive and retest. 4. Replace the system board and retest.
6600-xx	ID test failed.	
6605-xx	Read test failed.	
6608-xx	Controller test failed.	
6623-xx	Random read test failed.	

2.5.3 Running View System Information (INSPECT)

The View System Information (INSPECT) utility provides information about the computer and installed or connected devices. You can display, print, or save the information.

In order to access the INSPECT utility, follow the instructions below:

1. Connect a printer if you want to print the INSPECT information.
2. Turn on or restart the computer.
3. Access Compaq Utilities by pressing **F10** when the cursor blinks in the upper-right corner of the display.
4. If prompted, select a language.
5. Click View System Information (INSPECT).
6. Click the item you want to view. The list includes the following:

- System
- ROM
- Keyboard
- System ports
- System storage
- Graphics
- Memory
- Audio
- Operating system
- System files
- Windows files
- Miscellaneous
- Network (applicable only if computer is docked in the Convenience Base II)

7. Follow the instructions on the screen to cycle through the screens, to return to the list and choose another item, or to print the information.
8. Select Exit Inspect.

2.5.4 Running Compaq Diagnostics

Compaq Diagnostics provides computer component information when the operating system is working.

If you are running Windows 95, access Compaq Diagnostics for Windows by double-clicking My Computer ⇒ Control Panel ⇒ Compaq Diagnostics.

2.5.5 Boot Sequencing

1. Run Computer Setup.
2. Click the System Features icon ⇒ Boot Management box ⇒ MultiBoot tab.
3. Designate the hard drive boot (startup) sequence you want.
4. Click **OK** to accept the changes.

2.5.6 Factory Default Settings

Initialization	
Enable POST Memory Test	Checked (enabled)
Keyboard numbers Lock	Unchecked (Off)
1	Hard drive in the computer
2	Hard drive in the computer MultiBay
Boot display	Auto
Language	Language of country
Ports	
Serial/infrared ports	
Serial port	3F8, IRQ4
Infrared port	2F8, IRQ3
Parallel port	378, IRQ7
Ethernet port	300, IRQ9
Power	
Low Battery Warning Beep	Checked (enabled)
External Energy Saving Monitor Connected	Unchecked (not connected)
Power Management	
Enabled	While operating power on battery
Conservation Level	Medium
Level Definition	
High	Suspend Time: 5 minutes Hibernation Timeout: Immediate Drive Timeout: 2 minutes Screen Timeout: 2 minutes
Medium	Suspend Time: 10 minutes Hibernation Timeout: 1 hour Drive Timeout: 6 minutes Screen Timeout: 4 minutes
Custom	Suspend Time: disabled Hibernation Timeout: low battery Drive Timeout: always on Screen Timeout: always on
Security	
Enable QuickLock/QuickBlank	Unchecked (Disabled)
Enable Power-On Password	Unchecked (Disabled)
Disable Serial/Infrared Ports	Unchecked (Enabled)
Disable Parallel Port	Unchecked (Enabled)
Disable PC Card Slots	Unchecked (Enabled)
Setup Password	Password blank
Power-On Password	Password blank
Diskette Drives	
Disable Diskette Drives	Unchecked (Enabled)
Disable Diskette Boot	Unchecked (Enabled)

2.6 Troubleshooting without Diagnostics

This section provides information about how to identify and correct some common hardware, memory, and software problems. It also explains several types of messages that may be displayed on the screen.

Since symptoms can appear to be similar, carefully match the symptoms of the computer malfunction against the problem description in the Troubleshooting tables to avoid a misdiagnosis.

2.6.1 Before Replacing Parts

When troubleshooting a problem, check the following items for possible solutions before replacing parts:

- Verify that cables are connected properly to the suspected defective parts.
- Verify that all required device drivers are installed.
- Verify that all printer drivers have been installed.

2.6.1.1 Solving Audio Problems

Table 2-15
Solving Audio Problems

Problem	Probable Cause	Recommended Action(s)
Computer does not beep after the Power-On Self-Test (POST).	Speaker volume has been turned down.	Adjust the volume with the volume control buttons located at the top left corner of the computer.
Computer does not beep to indicate a low-battery condition.	Low-battery warning beeps have been turned off.	Enable low-battery warning beeps in Windows 95 Power Properties or in Computer Setup power management.
	System beeps have been turned down too low.	Press **Fn+F5**, then press the right arrow key to increase the volume of the system beeps.
Audio playback is too low or too loud.	The computer volume control and/or the software volume control needs to be adjusted.	In Windows 95, adjust the computer volume control buttons and adjust the volume control in Multimedia Properties. **NOTE**: The volume control in Multimedia Properties only affects the "Wave" audio sources such as system sounds and *.wav file playback. To change other sources such as MIDI, video sound, and game effects, use the Volume Control application in accessories/Multimedia. In Windows NT, adjust the multimedia volume control under the Accessories folder.
Internal speakers produce no sound.	Volume has been muted.	Press the increase volume control button to increase the volume. Press **Fn+F5**, then press the right arrow key to increase the volume of the system beeps

Continued

Table 2-15 Solving Audio Problems ***Continued***

Problem	Probable Cause	Recommended Action(s)
Internal speakers produce no sound (continued).	External speakers or headphones are connected to the computer.	Use the external speakers or headphones or use the Convenience Base II speakers.
		To use the internal speakers, disconnect the external speakers or headphones or undock the computer.
	Speaker wires are not connected.	Make sure the speaker wires are connected properly.
	Speakers are bad.	Replace the speakers.
Internal speaker does not produce sound when an external audio source is connected to the stereo line-in jack.	Volume may be turned off or set too low.	■ Adjust the volume control located at the top right corner of the computer. ■ Use the volume control and mixing features available in Control Panel ⇒ Multimedia. ■ Adjust the volume using the speaker icon on the taskbar.
	Line input may not be connected properly.	Check line input connection.
	Headphones or speakers are connected to the stereo speaker/headphone jack, which disables the internal speakers.	Disconnect the headphones or speakers to enable the internal speakers.
External microphone does not work.	The wrong type of microphone or microphone plug is being used.	Check to see if a monophonic electret condenser microphone with a 3.5-mm plug is being used.
	The microphone may not be connected properly.	Ensure that the microphone plug is properly connected to the mono microphone jack.
	Sound source is not selected.	Ensure that microphone is selected as the recording source in Control Panel ⇒ Multimedia and that the recording level is adjusted.
No sound from game program.	Audio settings are not set correctly.	Check the game program audio settings.
	Computer volume control is turned down.	Adjust the volume with the volume control buttons located at the top right corner of the computer.
	Headphones are connected.	Use or disconnect the headphones.
No sound from headphones.	Volume or mixing controls set incorrectly.	■ Adjust the volume with the volume control buttons located at the top right corner of the computer. ■ Use the volume control and mixing features available in Control Panel ⇒ Multimedia.
	Sound source not selected.	Verify that the sound source is selected in Control Panel ⇒ Multimedia.
	Volume or mixing controls set incorrectly.	■ Adjust the volume with the volume control buttons located on the right side of the computer. ■ Check the volume and mixer controls in Control Panel ⇒ Multimedia.

2.6.1.2 Solving Battery Problems

The following table lists some common battery problems and recommended actions to take when they occur. The "Solving Power Problems" section in this chapter also may be applicable.

Table 2-16
Solving Battery and Battery Gauge Problems

Problem	Probable Cause	Recommended Action(s)
The computer turns on the first time it is used, but the battery does not charge.	The battery pack is in ship mode.	Remove and reinsert the battery pack.
Computer does not turn on when battery pack is inserted and power cord is unplugged.	Battery is discharged.	Ensure that the battery pack is properly installed.
		Connect the computer to an external power source and charge the battery pack.
		Replace the battery pack with a fully charged battery pack.
		Check battery status by pressing **Fn+F8**.
Computer beeped five times and battery light is blinking.	Computer has entered a low-battery condition.	Immediately save any open file(s). Then do one of the following: 1. Connect the computer to an external power source. 2. Turn the computer off and replace the battery pack.
Computer battery light blinks to indicate low battery condition, but computer does not beep.	Low battery beeps were turned off.	Run Computer Setup and turn on the low battery warning beeps.
	Volume is turned off or turned down too low.	Press **Fn+F5** to adjust the volume of the system warning beeps.
Battery light does not turn on to indicate battery pack Is charging.	Battery pack is already charged.	No action is necessary.
	Battery pack was exposed to temperature extremes.	Allow time for the battery pack to return to room temperature.
	Battery pack is at the end of its life.	Replace the battery pack.
Battery pack is warm to the touch after charging.	Warming occurs during charging.	No action is required.

Continued

Table 2-16 Solving Battery and Battery Gauge Problems *Continued*

Problem	Probable Cause	Recommended Action(s)
Computer turned off and information in memory was lost when the battery pack was replaced.	Hibernation was disabled, Suspend was not initiated, or AC power was not connected before the discharged battery pack was removed.	To prevent loss of information next time, initiate Suspend, enable Hibernation, or connect AC power before changing batteries..
You have to set the date and time every time you turn on the computer.	Real time clock (RTC) battery is at the end of its life.	Replace the RTC battery.
Battery pack charge does not last as long as expected.	Battery pack is being exposed to high temperatures or extremely cold temperatures.	Keep the battery pack within the recommended operating temperature range 50°F to 104°F (10°C to 40°C) or recommended storage range -4°F to 86°F (-20°C to 30°C). Recharge the battery pack.
	Battery pack has partially self-discharged.	If the computer is disconnected from the external power for more than two weeks, remove the battery pack to reduce the self-discharge rate.
	Power management is disabled.	Press **Fn+F7** and set the power conservation level.
	An external device or PC Card is draining the battery.	Turn off or disconnect external devices when not using them.
Computer is beeping and battery power light is blinking.	Battery pack charge is low.	Do one of the following: ■ Charge the battery pack. ■ Replace the battery pack. ■ Connect the computer to an external power source. ■ Initiate Hibernation.

2.6.1.3 Solving CD-ROM Drive Problems

Table 2-17
Solving CD-ROM Drive Problems

Problem	Probable Cause	Recommended Action(s)
CD-ROM drive cannot read a compact disc.	Compact disc is not properly seated in the CD-ROM drive.	Open the CD loading tray, lay the compact disc on it, then close the tray.
	Compact disc is loaded in the CD loading tray upside down.	Open the CD loading tray, turn over the compact disc (label facing up), then close the tray.
	Compact disc has a scratch on its surface.	Insert a different compact disc.
CD-ROM drive is not recognized by the computer.	CD-ROM drive is not connected properly.	Turn off the computer, remove the CD-ROM drive and reinsert it.

2.6.1.4 Solving Diskette and Diskette Drive Problems

Table 2-18
Solving Diskette and Diskette Drive Problems

Problem	Probable Cause	Recommended Action(s)
Diskette drive cannot read a diskette.	Diskette media has a bad sector.	Copy remaining files to the hard drive or another formatted diskette. Reformat the diskette.
	Using the wrong diskette type for the diskette drive type.	Use the required diskette type.
	Diskette is not formatted.	Format the diskette. If you are using Windows 95: 1. From the Windows 95 desktop, double-click My Computer. 2. Click 3 ½ Floppy (A:) ⇒ File ⇒ Format. 3. Fill in the appropriate information, then click Start. If you are using Windows NT, format the diskette by entering **format a:** at the system prompt.
Diskette drive cannot write to a diskette.	Diskette is not formatted.	Format the diskette. If you are using Windows 95: 1. From the Windows 95 desktop, double-click My Computer. 2. Click 3 ½ Floppy (A:) ⇒ File ⇒ Format. 3. Fill in the required information, then click Start. If you are using Windows NT, format the diskette by entering **format a:** at the system prompt.
	Diskette is write-protected.	Use another diskette that is not write-protected or disable the write-protect feature.
	Writing to the wrong drive.	Check the drive letter in your path statement.
	Not enough space is left on the diskette.	Save the information to another diskette.
	Disable diskette write ability is turned on.	Run Computer Setup. Click on the Storage icon. Make sure Disable diskette write ability is not checked.

2.6.1.5 Solving Hard Drive Problems

CAUTION: To prevent loss of information, always maintain an up-to-date backup of the hard drive.

Table 2-19
Solving Hard Drive Problems

Problem	Probable Cause	Recommended Action(s)
Cannot access hard drive.	Hard drive is not seated.	Shut down the computer, remove and reinsert the hard drive, then turn on the computer.
	Hard drive was inserted while computer was on, in Suspend, or in Hibernation.	Shut down the computer, then turn it on again to initialize it during power on.
	Hard drive may be damaged.	Try inserting another hard drive.
Reading hard drive takes an unusually long time after restarting the computer.	Hibernation was initiated and system is now exiting from it.	Give the system time to restore the previously saved data.
Hard drive error occurs.	Hard drive has bad sectors or has failed.	Do one of the following: ■ If you are running Windows 95, access ScanDisk by clicking Start ⇒ Programs ⇒ Accessories ⇒ System Tools ⇒ ScanDisk, then check the Automatically fix errors box. Click Start to begin scanning. If you are running Windows NT, go to the system prompt and type **chkdsk** to scan for errors. ■ Reformat the hard drive.
Hard drive error occurs.	Hard drive may be damaged.	Try inserting another removable drive, if the hard drive is in the MultiBay.
Errors occur after starting from an additional hard drive.	Additional hard drive does not have the software and drivers necessary to boot and operate correctly.	Boot from the hard drive supplied with the computer or another hard drive that has the necessary software and drivers.
Hard drive does not work.	Hard drive is not seated.	Turn off and unplug the computer, remove the hard drive, then reinsert it.

2.6.1.6 Solving Hardware Installation Problems

Table 2-20
Solving Hardware Installation Problems

Problem	Probable Cause	Recommended Action(s)
New device is not recognized as part of the computer system.	The system did not automatically configure the new device.	In Windows 95, double-click the Add New Hardware icon in Control Panel.
		Refer to the documentation that came with the new device for installation instructions.
	Cable(s) of new external device are loose or power cables are unplugged.	Ensure that all cables are properly and securely connected and the power cord is plugged into an electrical outlet.
	Power switch of new external device is not turned on.	1. Turn off the computer. 2. Turn on the external device. 3. Turn on the computer to integrate the device with the computer system.
	New device is not configured for Windows NT.	Use Computer Setup to view settings for the new device or to reset the configuration settings for preinstalled devices.

2.6.1.7 Solving Infrared Connection Problems

NOTE: The computer is shipped with the infrared port disabled. The port must be enabled each time the computer is started or restarted. Follow these steps to enable the infrared port.

1. Click Start ⇒ Settings ⇒ Control Panel.
2. Double click the Infrared icon.
3. Select the Options tab.
4. Check the box labeled Enable Infrared Communications to select the Com3 port.
5. Click **OK.** The infrared icon appears on the task bar.

NOTE: Windows NT does not support infrared communication.

Table 2-21
Solving Infrared Connection Problems

Problem	Cause	Recommended Action(s)
Cannot link with another computer.	Interrupt request (IRQ) conflict	Check IRQ assignments for conflicts and reassign as necessary.
	Baud rate conflict	Select the same baud rate for both computers.
	# bits conflict	Select the same "#bits" setting for both computers.
	Stop bit conflict	Select the same stop byte for both computers.
	Parity conflict	Select the same parity setting for both computers.
Data transmission problem	Direct sunlight, fluorescent light, or flashing incandescent light is close to the infrared connections.	Remove the interfering light sources.
	Interference from other infrared devices	Keep remote control units and other infrared devices away from the infrared connections.
	Physical obstruction	Do not place objects between the two units that will interfere with a line-of-sight data transmission.
	Movement	Do not move either unit during data transmission.
	Orientation	Adjust devices so that they point within 30 degrees of each other.
	Distance	Verify that devices are not more than 3 feet (1 meter) apart.
Cannot connect at 4 MB/sec	Fast IR driver not installed	Fast-IR is not preinstalled. Download FAST-IR driver from Compaq web site and install.

2.6.1.8 Solving Modem Problems

Table 2-22
Solving PC Card Modem Problems

Problem	Probable Cause	Recommended Action(s)
Modem loses connection.	The connection from the phone line to the modem is loose.	Check to make sure the telephone cable is properly connected.
	Call Waiting has not been disabled.	Disable Call Waiting. 1. Click Start ⇒ Control Panel ⇒ double-click Modems. 2. From the General tab of the Modems Properties page, click Dialing Properties. 3. From the My Locations tab of the Dialing Properties page, check the box labeled **This location has call waiting.** Select *70, 70#, or 1170 from the drop-down list to disable call waiting for your dialing area.
Noisy telephone line	Phone line noise causing garbled or missing characters, or slow data transfer speeds.	Check your telephone and modem cable connections. If they are a little loose, they can cause noise on the line.
		Check with your local telephone company for a phone line filter.
Phone line noise causing a disconnection.	Hang-up Delay S Register (S10) set too low.	Change S10 default to 150. 1. Click Start ⇒ Programs ⇒ Accessories ⇒ HyperTerminal. 2. Go to Command Mode. 3. Type **ATS10=150** and press **Enter.** This command causes the modem to take longer to disconnect even if there is noise on the line.

Continued

Table 2-22 Solving PC Card Modem Problems *Continued*

Problem	Probable Cause	Recommended Action(s)
No dial tone	Phone service is not connected to the telephone wall jack.	Verify service from the local phone company: 1. Unplug the telephone cable from the telephone wall jack. 2. Connect a telephone to the jack, pick up the handset, and listen for a dial tone. If there is a dial tone, reconnect the modem to the telephone wall jack with the telephone cable and make sure all connections are secure. 3. If there is still no dial tone, contact your local phone company or building manager.
	The modem is not responding to commands from the computer keyboard.	Verify the modem and computer are connected: 1. Click Start ⇒ Programs ⇒ Accessories ⇒ HyperTerminal. 2. Go to Terminal Mode, then type AT and press the Enter key. If the modem displays OK, the modem and computer are working together. If the modem displays ERROR, or does not respond, restart the computer and repeat step 1. 3. Type **ATDT** and listen for a dial tone. 4. Type **ATH0** (zero) to hang up.
	Speaker Control AT Command (ATM) is set to 0.	Set the Speaker Control to 1: 1. Click Start ⇒ Programs ⇒ Accessories ⇒ HyperTerminal. 2. Go to Command Mode, type **ATM1** and press **Enter.** 3. Type **ATH1** and listen for a dial tone. 4. Type **ATH0** (zero) to hang up.
	The modem is plugged into a digital PBX line rather than an analog line.	Plug the modem into an analog line. If you are in an office, the analog line is often the one connected to a fax machine or modem. To get an analog line in a hotel, request a room with a "data" line.
Characters are garbled and transfer rates are slow.	There is noise in the telephone line.	■ Check your telephone and modem cable connections. If they are loose, they can cause noise on the line. ■ Check with your local telephone company for a phone line filter.

Continued

Table 2-22 Solving PC Card Modem Problems *Continued*

Problem	Probable Cause	Recommended Action(s)
Phone line noise causes a disconnection.	Hang-Up Delay S Register (S10) set too low.	Change S10 default to 150. 1. Click Start ⇒ Programs ⇒ Accessories ⇒ HyperTerminal. 2. Go to Command Mode. 3. Type **ATS10=150** and press **Enter.** This command causes the modem to take longer to disconnect even if there is noise on the line.
Ten-digit dialing does not work correctly under Windows 95.	Ten-digit dialing doesn't work correctly under Windows 95, making it difficult to dial numbers in a different area code that are not long distance calls.	Since Windows 95 does not limit the number of digits you can enter in the Phone Number field, set the Area Code field to match your local area code. Then type the ten-digit telephone number in the Phone Number field.
Modem cable disables/interferes with other telephony devices (Germany, Austria, and Switzerland only).	The modem cable does not provide the additional 4-wire connection required in Germany, Austria, and Switzerland to form the serial pass-through necessary so that other devices can work on the same phone line.	To use another telephony device on the same line in these countries, unplug the modem cable from the wall jack first.
Modem does not dial correctly under Windows 95 (Switzerland and Germany only).	The "Wait for dial tone before dialing" check box is checked. This causes Windows 95 to issue an ATDT; command. A typical dial string would look like this: ATDT; ATDTnnn-nnnn In Germany and Switzerland, the ';' dial modifier is not permitted to be used in this fashion by regulatory agencies since ATDT; takes the modem off-hook without dialing. Therefore, the modem returns an error message when attempting to dial. The error message reads: "The computer is not receiving a response from the modem. Check that the modem is plugged in, and if necessary, turn the modem off, then turn it back on."	1. Click Start ⇒ Settings ⇒ Control Panel. 2. Double-click the Modems icon. 3. Click the Properties button. 4. Select the Connection tab. 5. Click the "Wait for dial tone before dialing" check box to clear it. 6. Click **OK** ⇒ Close.

2.6.1.9 Solving PC Card Problems

Table 2-23
Solving PC Card Problems

Problem	Probable Cause	Recommended Action(s)
Computer does not beep when PC Card is inserted but PC Card works correctly.	System beeps are turned down.	Press **Fn+F5,** then press the right arrow key to increase the system beeps volume.
	PC Card sound effects have been disabled.	In Windows 95, double-click PC Card icon ⇒ Global Settings tab. Deselect Disable PC Card Sound Effects.
Computer does not beep when PC Card is inserted and PC Card does not work.	PC Card is not inserted properly.	Remove and reinsert the card gently to avoid damaging the pins.
	The PC Card slots have been disabled.	Run Computer Setup to enable the PC Card slots. When the system starts, press **F10** then select Computer Setup ⇒ Other Devices ⇒ PC Card Controller ⇒ Resources. Deselect the "Disabled" check box.
		In Windows 95, click Start ⇒ Settings ⇒ Control Panel ⇒ System ⇒ Device Manager ⇒ PCMCIA Socket. Double-click the Texas Instruments TI-1131 CardBus controller to view device properties. Deselect the "Disable in this hardware profile" check box.
	Card or card driver is not compatible with the computer or with the operating system.	Contact service provider for a list of compatible PC Cards.
Computer beeps twice, but modem and/or fax does not work.	Telephone cord is not plugged in all the way.	Verify that the telephone connection is secure.
	The wrong COM port is being used to access the card.	Verify the COM port assigned to the card and within the application is correct.
		In Windows 95, click Start ⇒ Help ⇒ Contents ⇒ Troubleshooting ⇒ Problem. Follow the instructions on the screen.
Computer beeps twice but network card does not work.	Network server is unavailable.	Contact system administrator.
Computer beeps twice when a storage card is inserted, but the card does not work.	The wrong drive letter is being used to access the storage card.	Open Windows Explorer and verify the drive letter.
PC Card does not work	Windows NT was running when the PC Card was inserted.	Turn off the computer and reinsert the PC Card.

2.6.1.10 Solving Power Problems

Table 2-24
Solving Power Problems

Problem	Probable Cause	Recommended Action(s)
Computer will not turn on.	Computer is not connected to a power source.	Insert battery pack or connect an external power source.
	Power cord to the external power source is unplugged.	Ensure that power cord connecting the computer and the external power source is plugged in properly.
	Battery pack is discharged.	Insert a fully charged battery pack or connect an external power source.
	CMOS data is corrupt	Refer to "Remove Battery and Wait"
Computer will not turn on when connected to external power if battery pack is in the computer.	Battery pack may be defective.	Remove battery pack, insert another battery pack, and try again.
Computer turned off while it was left unattended and the power/suspend light is off.	System initiated Hibernation after a preset timeout.	Turn on the computer to restore information at the point where Hibernation was initiated. **NOTE**: To change the Hibernation timeout setting in Windows 95, click the Hibernation tab in Power Properties. In Windows NT, run Computer Setup and select Power Management.
Computer turned off while it was left unattended and will not turn on.	System initiated Hibernation and/or shut down because of a critical low-battery condition.	Replace the battery pack with a fully charged battery pack or connect an external power source, then turn on the computer.
Computer initiated Suspend or turned off when it was docked.	The maximum operating temperature was exceeded.	Computer is in a high temperature environment and the fan is not able to cool it. Let the computer cool down and turn it on again.
		Make sure the ventilation intake and exhaust are not obstructed.
Hibernation does not work properly.	Hibernation was not reset after a memory upgrade.	Reset Hibernation in the Power Management utility.
Computer does not turn on when connected to external power and no batteries are installed.	Internal power supply is bad.	Replace the internal power supply.

2.6.1.11 Solving Screen Problems

IMPORTANT: Conduct all tests on a working monitor. If the recommended actions do not solve the problem, replace the display. If the problem persists with a new display, replace the system board.

Table 2-25
Solving Screen Problems

Problem	Probable Cause	Recommended Action(s)
Characters are dim.	The brightness or contrast control (if applicable) is not set properly.	Adjust the control(s) with the hotkeys: **Fn+F9** and **Fn+F10**.
	Computer screen is in direct light.	Tilt the display or move computer.
	Display is damaged.	Replace the display.
Screen is blank.	QuickLock/QuickBlank was initiated.	Enter the password to exit QuickLock/QuickBlank.
	Screen save was initiated after the Power Management timeout period.	Press any key or click the mouse.
	Brightness or contrast needs adjusting.	Adjust the control(s) with the hotkeys: **Fn+F9** and **Fn+F10**.
	Screen has overheated.	If computer is in direct sunlight, move it and allow it to cool.
Computer screen is blank and the screen on an external monitor displays information.	Display was switched to the external monitor.	Press the **Fn**+**F4** hotkeys to display information on the computer screen.
Screen is blank and the power/suspend light is blinking.	System initiated Suspend.	Press the suspend button to exit Suspend. Enter the power-on password if prompted.
Screen is blank and the power/suspend light and the battery light are blinking.	System has entered a critical low-battery condition.	Immediately connect the computer to an external power source or replace the battery pack.
External monitor does not display information.	External monitor was connected after the computer was turned on.	Press the **Fn+F4** hotkeys to switch to the external monitor.
	The external monitor signal cable or power cord is not properly connected.	Ensure that the cables are properly connected.
Small red, green, or blue spots appear on the computer CTFT display.	Small spots, called on-pixels, often appear on CTFT screens. Compaq limits the number of these on-pixels to 0.003 percent.	No action is required.

Continued

Table 2-25 Solving Screen Problems *Continued*

Problem	Probable Cause	Recommended Action(s)
Display on an external monitor is distorted.	Incorrect display device drivers are installed or incorrect resolution is set.	Double-click the Display icon in Control Panel, click the Settings tab, and set the correct display type and resolution for the external monitor.
	The external monitor is not Energy Star compliant, but monitor energy saving feature is enabled.	Complete these steps: 1. Press any key or move the pointing device to restore the display. 2. If display remains distorted, turn off the monitor, then turn it on again. 3. Disable the monitor energy saving feature in Display Properties or in Computer Setup Power Management.
The image has a black border and does not fill the screen.	The Desktop Area setting is smaller than the Resolution setting.	Adjust the settings for the Desktop Area and Resolution. Double-click Control Panel Display ⇒ Settings ⇒ Compaq.
		Press the **Fn+T** keys to expand or shrink the image.

2.6.1.12 Solving USB Problems

Table 2-26
Solving USB Problems

Problem	Probable Cause	Recommended Action(s)
External device connected to a USB connector does not work.	The operating system limits external devices connected by USB to two tiers that can include no more than two hubs on the first tier and no more than one keyboard and one pointing device on the first or second tier.	Reduce the number of connected external USB devices to no more than two hubs on the first tier, and no more than one keyboard and one pointing device on the first or second tier.
External device connected to a USB connector does not work during startup (before Windows 95 loads).	During startup, only two tiers are supported by the USB connector. These tiers can include no more than two hubs on the first tier and no more than one keyboard and one pointing device on the first or second tier.	■ Use the external device only after Windows 95 has loaded. ■ Reduce the number of connected external USB devices to no more than two hubs on the first tier, and no more than one keyboard and one pointing device on the first or second tier.
External devices in lower tiers do not work.	An unpowered hub is connected to another unpowered hub.	■ Use only powered hubs. ■ Make sure that all unpowered hubs are immediately preceded by powered hubs in the USB chain.

chapter 3

ILLUSTRATED PARTS CATALOG

This chapter provides illustrated parts and references for spare parts. To review an illustrated parts breakdown of the computer, refer to the *Illustrated Parts Map* that comes with this guide.

Refer to Appendix C for illustrated parts and spare parts on the convenience bases for this computer.

3.1 System Unit

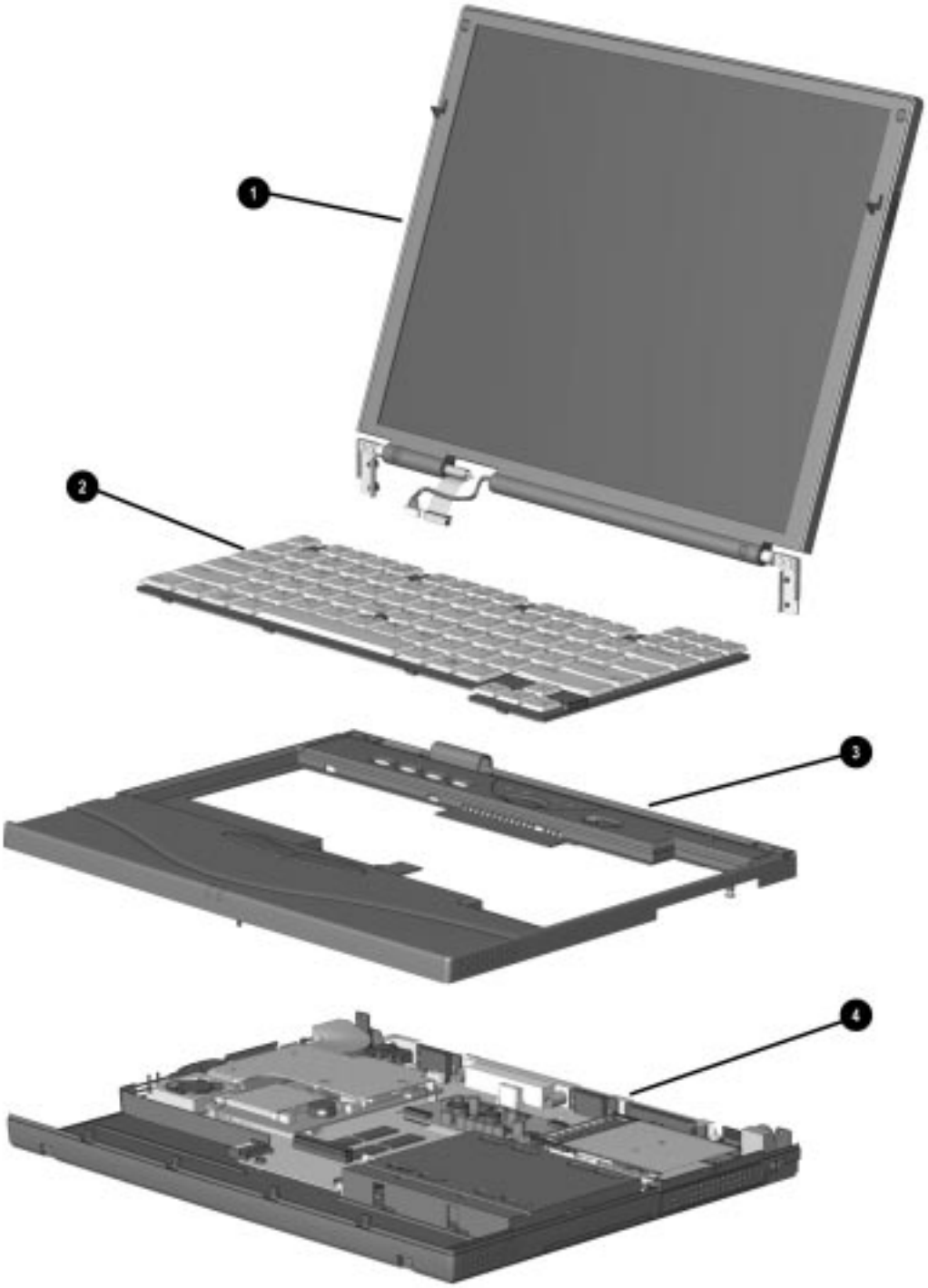


Figure 3-1. *System Unit*

Table 3-1
System Unit

Item	Description	Spares Part Number
❶	12.1-inch CTFT display assembly	310367-001
*	13.3-inch CTFT display assembly	310368-001
❷	Keyboard	310347-001
*	Keyboard (Belgian)	310347-181
*	Keyboard (Brazilian Portuguese)	310347-201
*	Keyboard (Danish)	310347-081
*	Keyboard (French)	310347-051
*	Keyboard (French Canadian)	310347-121
*	Keyboard (German)	310347-041
*	Keyboard (Italian)	310347-061
*	Keyboard (Japanese)	310347-292
*	Keyboard (Korean Hanguel)	310347-AD1
*	Keyboard (Latin American Spanish)	310347-161
*	Keyboard (Norwegian)	310347-091
*	Keyboard (Portuguese)	310347-131
*	Keyboard (Spanish)	310347-071
*	Keyboard (Swedish)	310347-101
*	Keyboard (Swiss English)	310347-111
*	Keyboard (Taiwanese)	310347-AB1
*	Keyboard (UK English)	310347-031
❸	Top cover assembly	310370-001
❹	Base enclosure assembly	310371-001

* Not illustrated

3.2 Mass Storage Devices

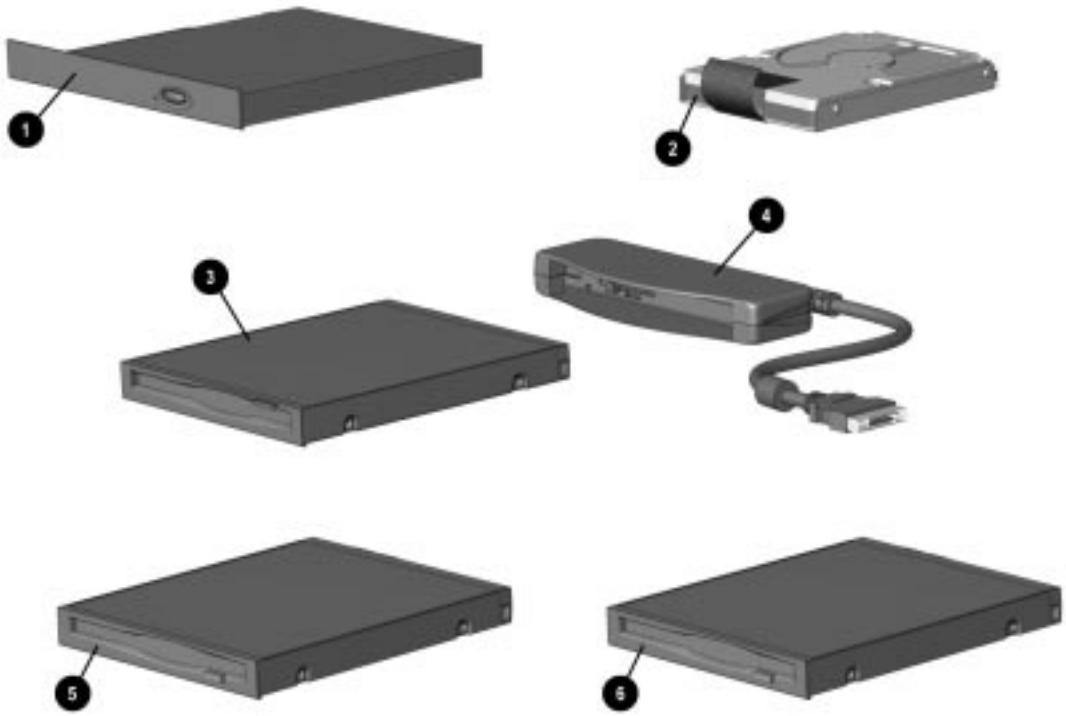


Figure 3-2. *Mass Storage Devices*

Table 3-2
Mass Storage Devices

Item	Description	Spares Part Number
❶	24x CD-ROM drive	310379-001
*	DVD-ROM drive module	310336-001
❷	4-GB hard drive	310344-001
*	6-GB hard drive	310365-001
❸	1.44-MB, diskette drive	310378-001
❹	Cable assembly, diskette drive	310376-001
❺	LS-120 drive module	310331-001
❻	100-MB ZIP drive module	310341-001
*	6-GB hard drive (M35EU)	316269-001
*	Hard drive adapter	310343-001

* Not illustrated

3.3 Cables and Power Cords

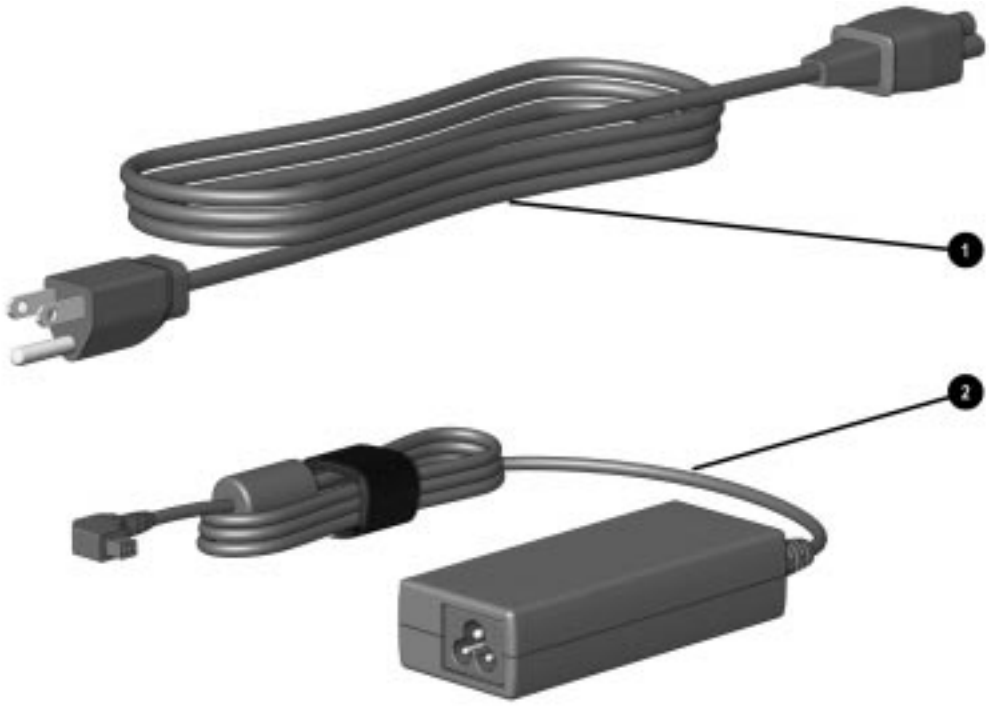


Figure 3-3. *Cables and Power Cords*

Table 3-3
Cables and Power Cords (System)

Item	Description	Spares Part Number
❶	AC power cord, 6', black (US)	246959-001
*	AC power cord, 6', black (Australia)	246959-011
*	AC power cord, 6', black (Denmark)	246959-081
*	AC power cord, 6', black (Europe)	246959-021
*	AC power cord, 6', black (Italy)	246959-061
*	AC power cord, 6', black (Japan)	246959-291
*	AC power cord, 6', black (Korea)	246959-AD1
*	AC power cord, 6', black (Singapore)	246959-AG1
*	AC power cord, 6', black (UK)	246959-031
❷	External AC adapter	310362-001

* Not illustrated

3.4 Standard and Optional Boards

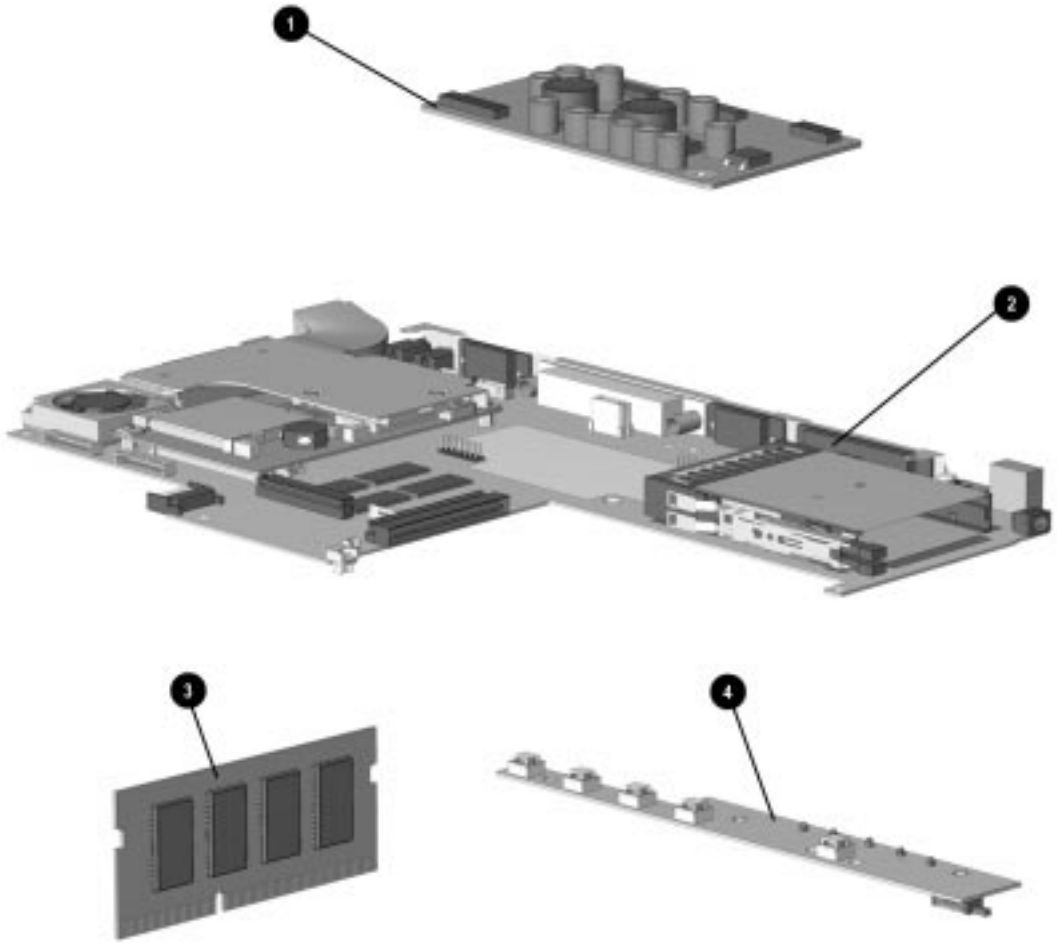


Figure 3-4. *Standard and Optional Boards*

Table 3-4
Standard and Optional Boards

Item	Description	Spares Part Number
❶	DC-DC voltage converter	310361-001
❷	System board with 266-MHz Intel Pentium II / 32-MB	310358-001
*	System board with 300-MHz Intel Pentium II / 32-MB	310359-001
*	System board with 266-MHz Intel Pentium II / 64-MB	310387-001
*	System board with 300-MHz Intel Pentium II / 64-MB	310388-001
❸	Memory board (SODIMM), 16-MB, 60 ns, non parity	313917-001
*	Memory board (SODIMM), 32-MB, 60 ns, non parity	313911-001
*	Memory board (SODIMM), 64-MB, 60 ns, non parity	313918-001
*	Memory board (SODIMM), 128-MB, 60 ns, non parity	310345-001
❹	LED/Switch board	310398-001

* Not illustrated

3.5 Options

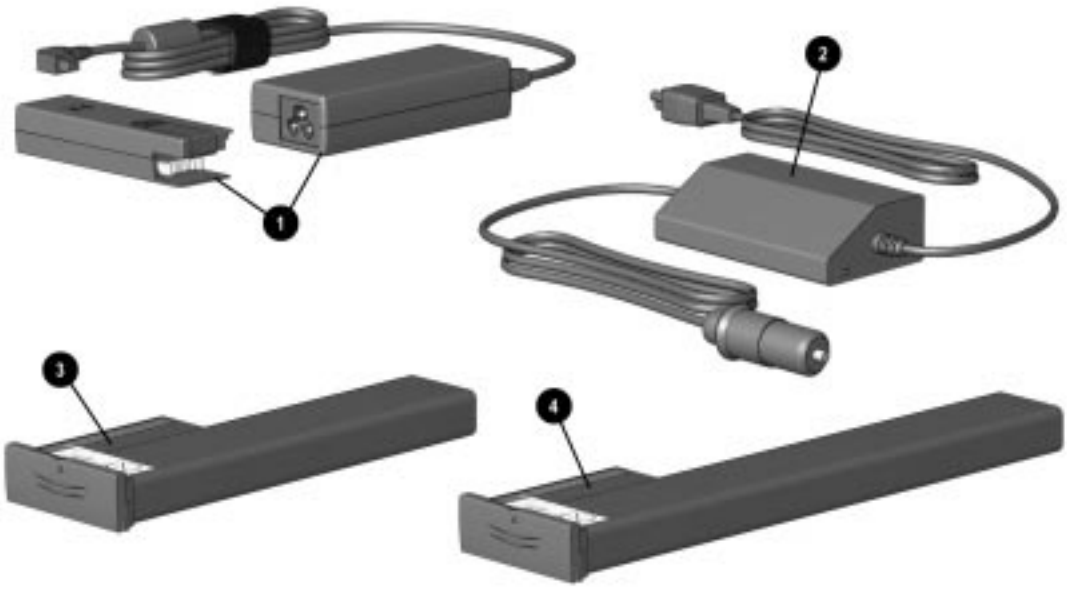


Figure 3-5. *Options*

Table 3-5
Options

Item	Description	Spares Part Number
❶	External battery charger with AC Adapter	310346-001
❷	Automobile/aircraft adapter	313919-001
❸	Li-Ion battery pack (6 cell)	310356-001
❹	Extended Life Li-Ion battery pack (9 cell)	310357-001
*	Mobile 3500 expansion unit	310342-001

* Not illustrated

3.6 Miscellaneous Parts

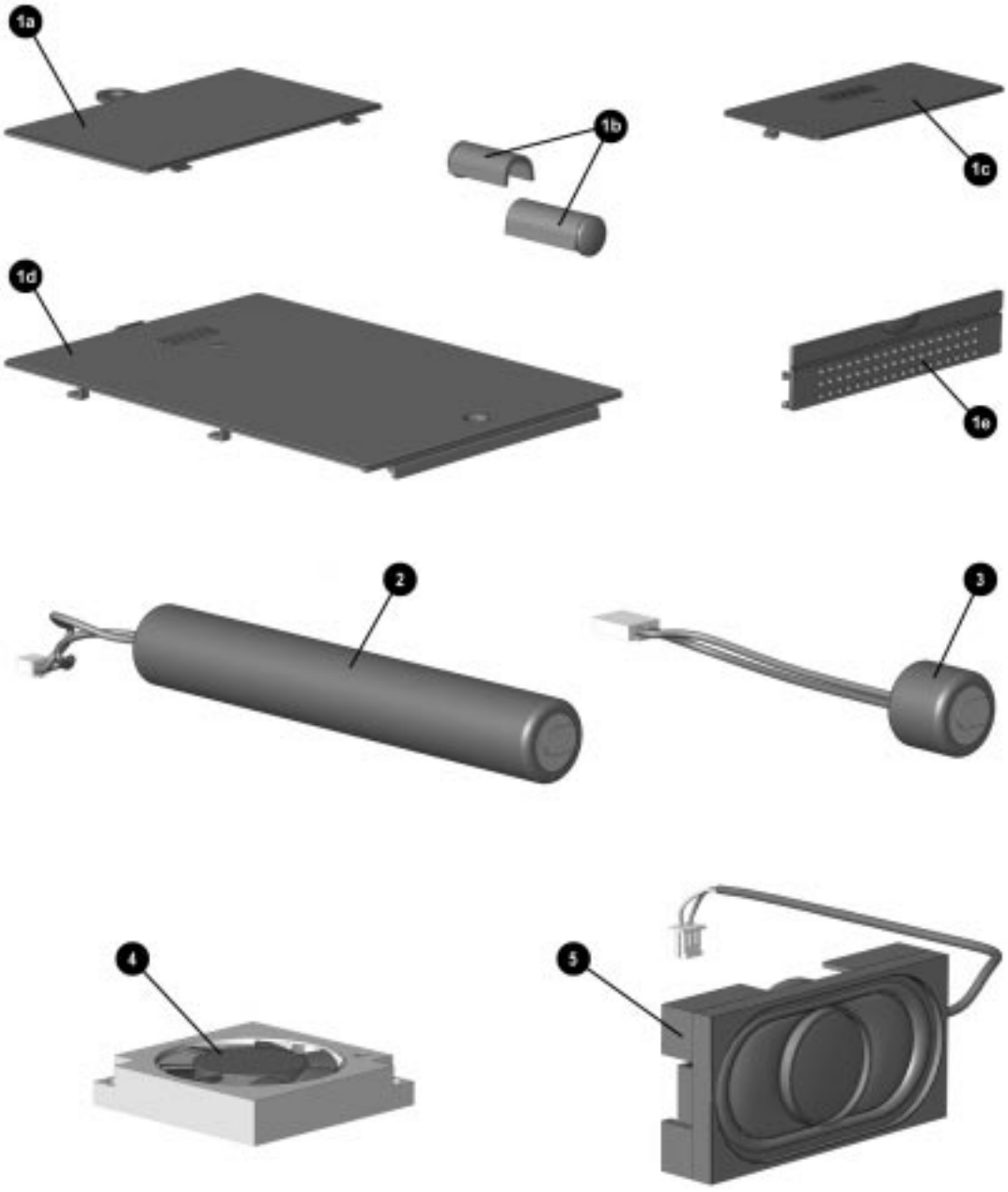


Figure 3-6. *Miscellaneous Parts*

Table 3-6
Miscellaneous Parts

Item	Description	Spares Part Number
❶	Miscellaneous plastics kit : a Memory compartment cover b Display hinge covers c M35EU connector cover d Hard drive cover e PC Card bay cover * Status/Switch cover	310372-001
❷	Auxiliary NiCd battery	310382-001
❸	CMOS/RTC Li-Ion battery	310366-001
❹	Fan	310363-001
❺	Speaker	310377-001
*	Screw kit	310373-001
*	Logo kit	310375-001
*	Country kit (North America)	310374-001
*	Hard drive adapter	310343-001

* Not illustrated

3.7 Documentation

Table 3-7
Documentation

Description	Spare Part Number
Illustrated Parts Map	310407-001
Maintenance and Service Guide	310406-001

chapter 4

REMOVAL AND REPLACEMENT PRELIMINARIES

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

4.1 Tools Required

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

- Magnetic Torx T-8 screwdriver (for all screws unless otherwise specified)
- 7-mm hex socket (for bushing guides)
- Small flat-blade screwdriver (optional)
- Scribe
- Tweezers

4.2 Service Considerations

Listed below are some of the considerations that you should keep in mind during disassembly and assembly procedures.

4.2.1 Plastic Parts

Using excessive force during disassembly and reassembly can damage plastic parts. Use care when handling the plastic parts. Apply pressure only at the points designated in the maintenance instructions.

IMPORTANT: As you remove each subassembly from the computer, place it (and all accompanying screws) away from the work area to prevent damage.

4.2.2 Cables and Connectors

Handle cables with extreme care to avoid damage. Apply only the tension required to unseat or seat the cables during removal and insertion. Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing cables. Route cables in such a way that they cannot be caught or snagged by parts being removed or replaced. Handle flex cables with extreme care; they tear easily.

CAUTION: Place cables in their proper location during the reassembly process. Improper cable placement can damage the computer.

4.3 Preventing Damage to Removable Drives

Removable drives are fragile components that must be handled with care. To prevent damage to the computer, damage to a removable drive, or loss of information, observe these precautions:

- Before removing or inserting a hard drive, shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, then shut it down.
- Before removing a diskette drive or CD-ROM drive, ensure that a diskette or disc is *not* in the drive. Ensure that the CD-ROM tray is closed.
- Before handling a drive, ensure that you are discharged of static electricity. While handling a drive, avoid touching the connector.
- Handle drives on surfaces that have at least one inch of shock-proof foam.
- Avoid dropping drives from any height onto any surface.
- Do not use excessive force when inserting a drive into the MultiBay.
- Avoid exposing a hard drive to products that have magnetic fields such as monitors or speakers.
- Avoid exposing a drive to temperature extremes or to liquids.
- If a drive must be mailed, do the following:
  - ❑ Place the hard drive into a bubble pack mailer and then into a box or other suitable form of protective packaging.
  - ❑ Label the package “Fragile: Handle With Care.”

4.4 Preventing Electrostatic Damage

Many electronic components are sensitive to electrostatic discharge (ESD). Circuitry design and structure determine the degree of sensitivity. Networks built into many integrated circuits provide some protection, but in many cases the discharge contains enough power to alter device parameters or melt silicon junctions.

A sudden discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt nor heard, but damage occurs anyway. An electronic device exposed to electrostatic discharge may function normally for a while, then degrade in performance or fail early.

4.4.1 Packaging and Transporting Precautions

Use the following grounding precautions when packaging and transporting equipment:

- To avoid hand contact, transport products in static-safe containers such as tubes, bags, or boxes.
- Protect all electrostatic-sensitive parts and assemblies with conductive or approved containers or packaging.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place items on a grounded surface before removing them from their container.
- Always be properly grounded when touching a sensitive component or assembly.
- Place reusable electrostatic-sensitive parts from assemblies in protective packaging or non-conductive foam.
- Use transporters and conveyers made of antistatic belts and roller bushings. Ensure that mechanized equipment used for moving materials is wired to ground, and that proper materials were selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

4.4.2 Workstation Precautions

Use the following grounding precautions at workstations:

- Cover the workstation with approved static-dissipative material (refer to Table 4-2 later in this chapter).
- Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.
- Use field service tools, such as cutters, screwdrivers, and vacuums that are conductive.
- When using fixtures that must directly contact dissipative surfaces, use fixtures made of static-safe materials only.
- Keep work area free of non-conductive materials such as ordinary plastic assembly aids and styrofoam.
- Handle electrostatic-sensitive components, parts, and assemblies by the case or PCM laminate. Handle them only at static-free workstations.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

4.4.3 Grounding Equipment and Methods

Grounding equipment must include either a wrist strap or a foot strap at a grounded workstation.

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm ±10% resistance in the ground cords. To provide proper ground, a strap must be worn snug against the skin. On grounded mats with banana-plug connectors, connect a wrist strap with alligator clips.
- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use them on both feet with a minimum of one-megohm resistance between the operator and ground. To be effective, the conductive strips must be worn in contact with the skin.

Other grounding equipment recommended for use in preventing electrostatic damage include:

- Antistatic tape
- Antistatic smocks, aprons, or sleeve protectors
- Conductive bins and other assembly or soldering aids
- Non-conductive foam
- Conductive tabletop workstations with ground cord of one-megohm resistance
- Static-dissipative table or floor mats with hard tie to ground
- Field service kits
- Static awareness labels
- Material-handling packages
- Non-conductive plastic bags, tubes, or boxes
- Metal tote boxes

4.4.4 Electrostatic Voltage Levels and Protective Materials

Table 4-1 shows how humidity affects the electrostatic voltage levels generated by different activities.

Table 4-1
Typical Electrostatic Voltage Levels

	Relative Humidity		
Event	**10%**	**40%**	**55%**
Walking across carpet	35,000 V	15,000 V	7,500 V
Walking across vinyl floor	12,000 V	5,000 V	3,000 V
Motions of bench worker	6,000 V	800 V	400 V
Removing DIPS from plastic tube	2,000 V	700 V	400 V
Removing DIPS from vinyl tray	11,500 V	4,000 V	2,000 V
Removing DIPS from Styrofoam	14,500 V	5,000 V	3,500 V
Removing bubble pack from PCB	26,500 V	20,000 V	7,000 V
Packing PCBs in foam-lined box	21,000 V	11,000 V	5,000 V

NOTE: 700 volts can degrade a product.

Table 4-2 lists the shielding protection provided by antistatic bags and floor mats.

Table 4-2
Static-Shielding Materials

Material	Use	Voltage Protection Level
Antistatic plastic	Bags	1,500 V
Carbon-loaded plastic	Floor mats	7,500 V
Metallized laminate	Floor mats	15,000 V

chapter 5

REMOVAL AND REPLACEMENT PROCEDURES

This chapter provides the removal and replacement procedures for the computer subassemblies.

5.1 Serial Number

The computer serial number should be provided to Compaq support when requesting information or ordering spare parts. The serial number ❶ is located on the bottom of the computer (Figure 5-1).

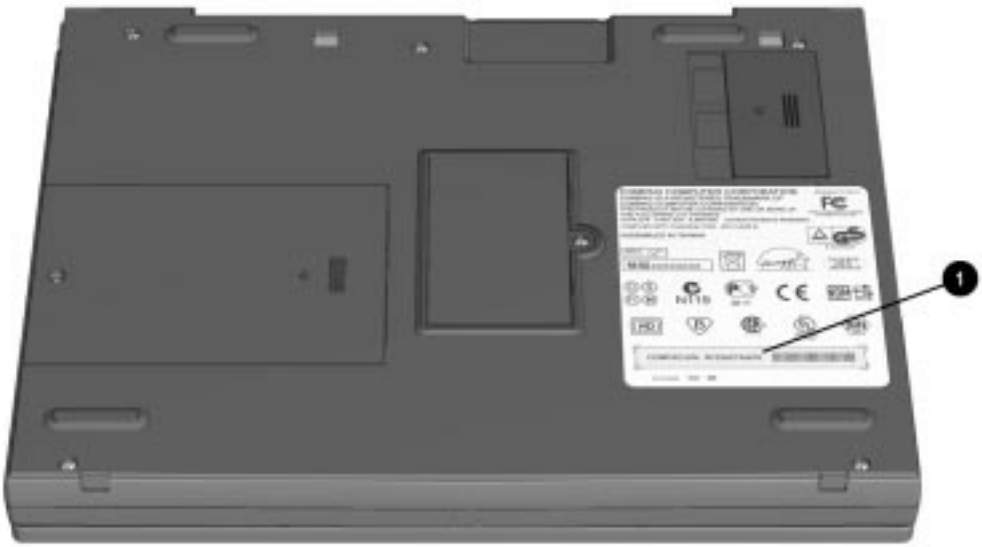


Figure 5-1. *Serial Number Location*

5.2 Disassembly Sequence

Refer to the disassembly steps before disassembling the computer. Disassemble only the components necessary to gain access to the sub-assembly you are servicing.

- **5.3 Preparing the Computer for Disassembly**
  - 5.3.1 Disconnecting the AC Power
    - 5.3.1.1 Convenience Base
    - 5.3.1.2 Mobile 3500 Expansion Unit
  - 5.3.2 PC Card
  - 5.3.3 Battery Pack
- **5.4 Memory Board**
- **5.5 Hard Drive**
  - 5.5.1 Hard Drive Cover
    - 5.5.2 Nickel Cadmium Auxiliary Battery
    - 5.5.3 Lithium Real Time Clock Battery
    - 5.5.4 Hard Drive
- **5.6 Keyboard**
- **5.7 Display Assembly**
  - 5.7.1 Display Hinge Covers
  - 5.7.2 Switch Cover/Status Panel
  - 5.7.3 Display Assembly
- **5.8 Top Cover Assembly**
  - 5.8.1 DC-DC Converter
  - 5.8.2 System Board
  - 5.8.3 Fan
- **5.9 Removing An Optical Disc Bay Device**

5.3 Preparing the Computer for Disassembly

Before beginning the removal and replacement procedures, complete the following:

1. Disconnect the modem line cord.
2. Disconnect the AC power and any external devices.

WARNING: To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching.

5.3.1 Disconnecting the AC Power

Before beginning service procedures on the computer, remove all power from the system to prevent damage to the equipment or personal injury. Select the appropriate steps, depending on whether the computer is docked or not.

5.3.1.1 Removing the Computer From the Convenience Base

If the computer is docked in the convenience base, it must be undocked before performing additional work. Complete the following steps to undock the computer.

1. Close all applications and exit the operating system.
2. Turn off the computer and the convenience base.
3. Disconnect the AC power and any external cables.
4. Close the computer.
5. Pull the docking lever ❶ forward to undock the computer.
6. Release the retaining latch.
7. Lift the computer from the convenience base.

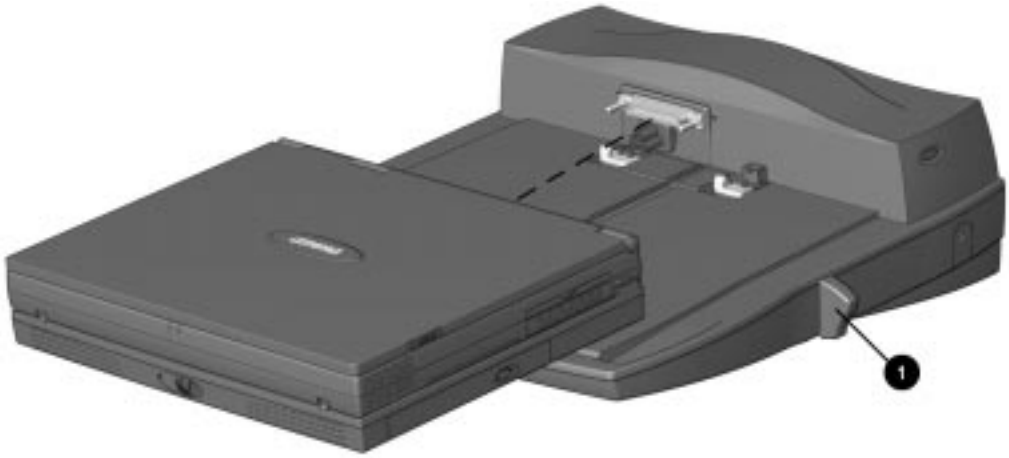


Figure 5-2. *Undocking the Computer and M35EU*

5.3.1.2 Disconnecting the Computer from the Mobile 3500 Expansion Unit

After undocking the computer, begin with step 6. If the computer is not docked, perform the following steps:

1. Close all applications and exit the operating system.
2. Turn off the computer ❶ by depressing the power switch.
3. Turn off and disconnect any external devices.
4. Disconnect the AC power cord from the power source.
5. Disconnect the AC power cord from the computer.
6. Pull the release lever ❷ on the Mobile 3500 Expansion Unit (M35EU) to release the computer.
7. Disconnect the connectors ❸ by lifting the computer from the back corners.

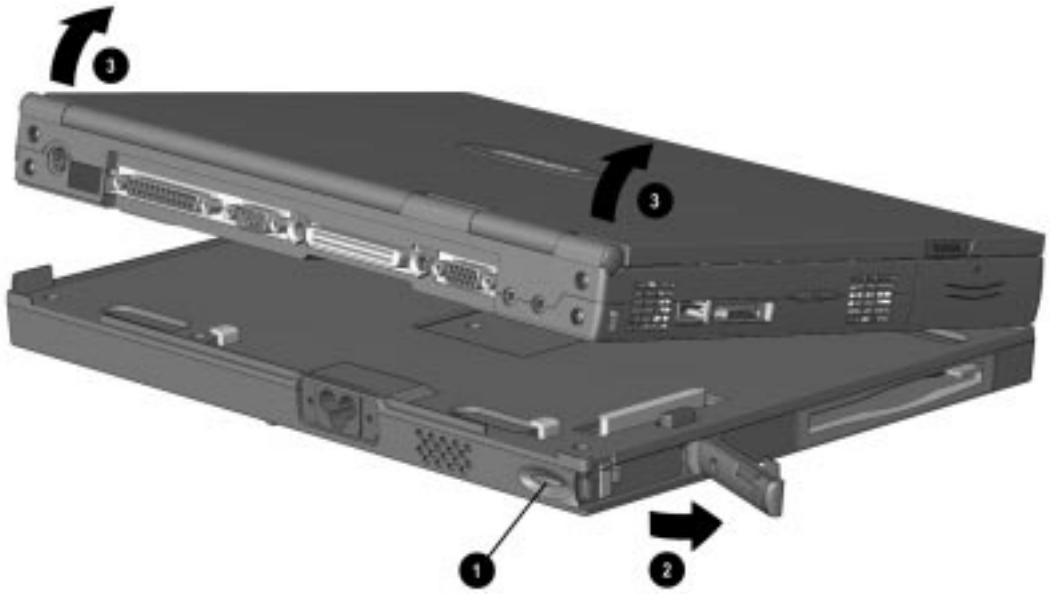


Figure 5-3. *Disconnecting the Computer From the M35EU*

8. Slide the expansion slot cover to the closed position.

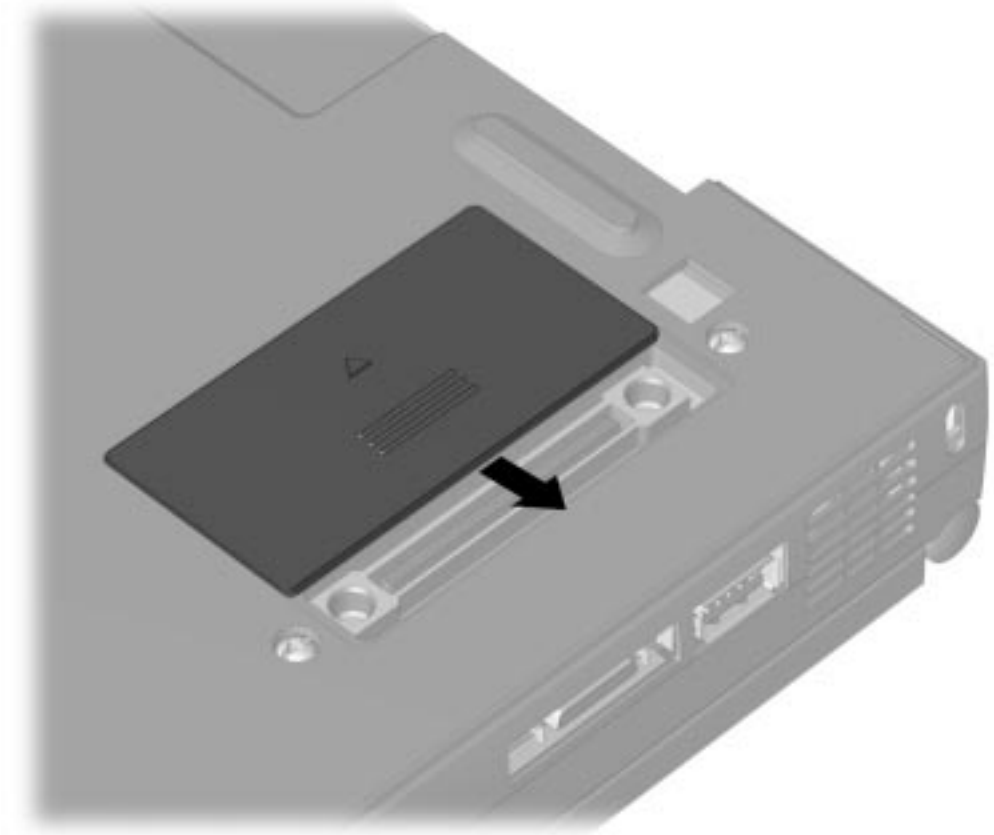


Figure 5-4. *Closing the Expansion Slot Cover*

Reverse the procedure to connect the computer to the M35EU.

5.3.2 Removing the PC Card

Remove any installed PC (PCMCIA) Cards before performing any service on the computer. To remove a PC Card, complete the following steps:

1. Open PC Card door.
2. To eject the PC Card, firmly depress the PC Card eject button ❶.
3. Remove the card ❷.

Figure 5-5. *Removing the PC Card*

5.3.3 Removing the Battery Pack

Remove the battery pack before beginning any internal maintenance on the computer.

WARNING: Metal objects can damage the battery pack as well as the battery contacts in the battery compartment. To prevent damage, do not allow metal objects to touch the battery contacts. Place only the battery pack for the Compaq Armada Personal Computer into the battery compartment. Do not force the battery pack into the bay.

WARNING: Do not crush, puncture, or incinerate the battery pack. Do not dispose of in water. Do not expose to temperatures higher than 60°C. Do not open a battery pack, as this damages the pack, makes it unserviceable, and exposes potentially harmful battery components. There are no field-serviceable parts located inside the battery pack.

To remove the battery pack from the computer, complete the following steps:

1. Open the display to release the battery.

CAUTION: Failure to open the display before removing or inserting the battery pack can result in damage to the battery pack retention features.

2. Slide the battery pack retainer up to release the battery pack ❶.
3. Pull the battery pack ❷ out of the computer.

Figure 5-6. *Removing the Battery Pack*

5.4 Memory Board

If a memory expansion board option has been previously installed in the computer, it must be removed before another is installed. To remove the memory board, complete the following steps:

1. Prepare the computer for disassembly (Section 5.3).
2. Place the computer bottom side up on the table with the front of the unit facing you.
3. Remove the security screw ❶.
4. Lift the right edge of the memory compartment cover ❷ and remove it from the computer.

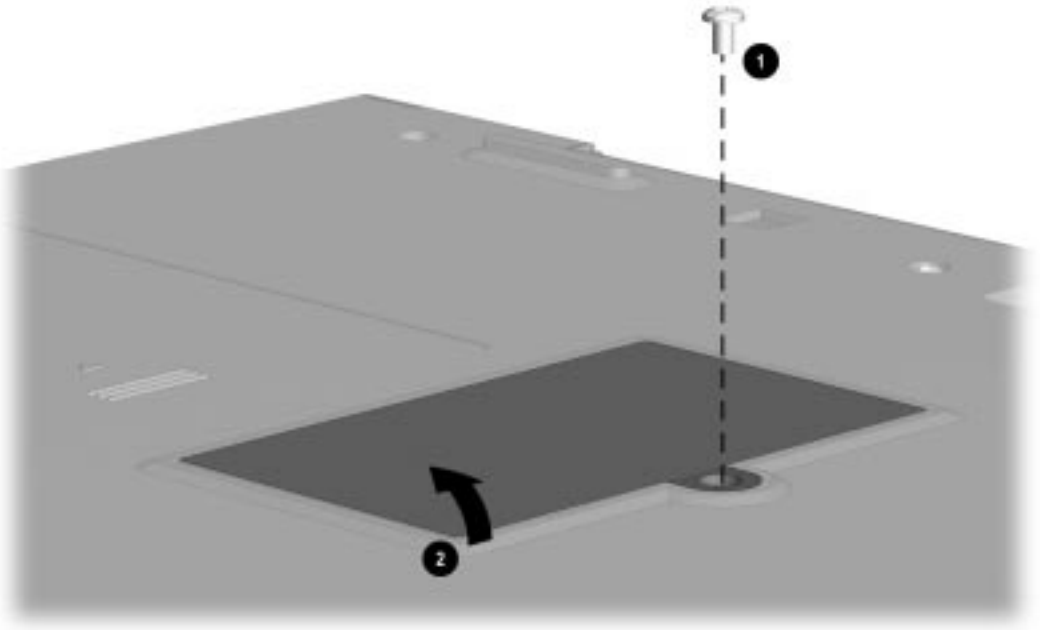


Figure 5-7. *Lifting the Memory Compartment Cover*

5.4.1 Removing the Memory Board

1. Pull out the right and left locking tabs ❶ on each end of the memory expansion board. This releases the memory board and allows it to rotate upward to ease removal.

CAUTION: If you need to remove the memory expansion board, be sure to release the locking tabs that secure the memory board in the slot. The connectors may break and cause irreparable damage to the system board if the tabs are not released.

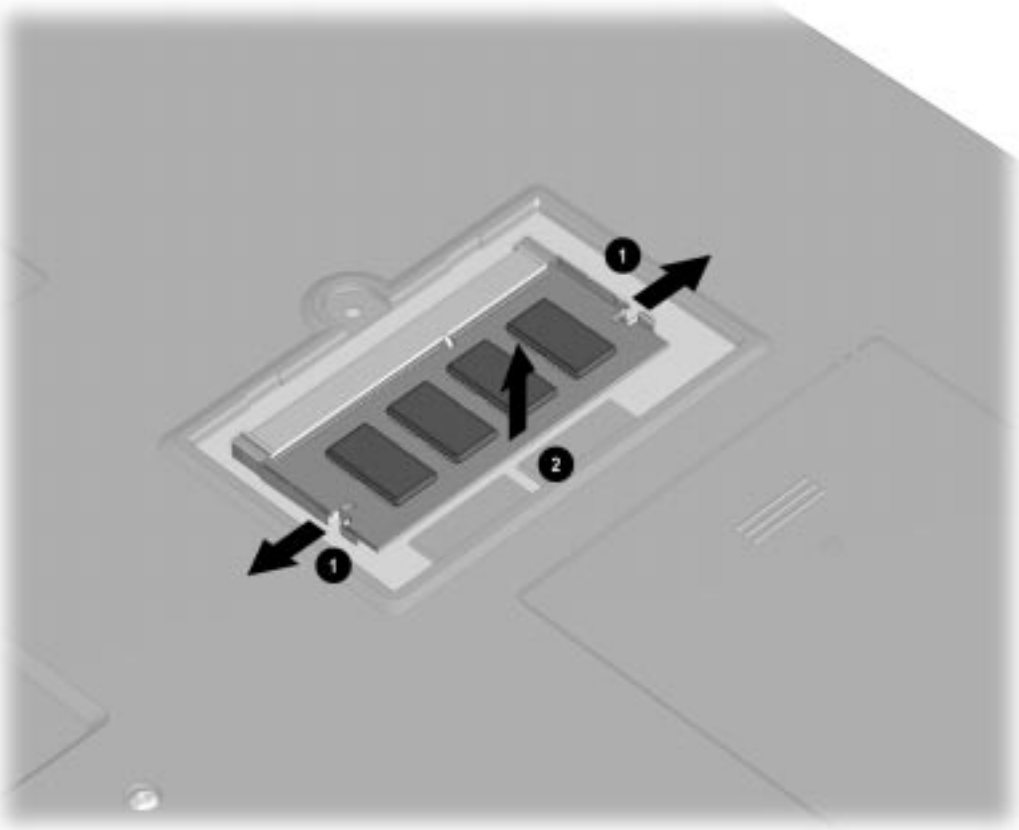


Figure 5-8. *Releasing the Memory Expansion Board*

2. Rotate the free edge ❷ of the memory module upward.
3. Pull the memory module from the slot at a 45 degree angle to the system board.

5.4.2 Installing the Memory Board

To install a memory board, complete the following steps:

1. Insert the memory board ❶ into the memory slot.
2. Rotate the free edge of the memory board toward the computer ❷ so that it lays flat in the memory compartment.
3. Press the memory board firmly into place to seat the connections and to engage the locking tabs.

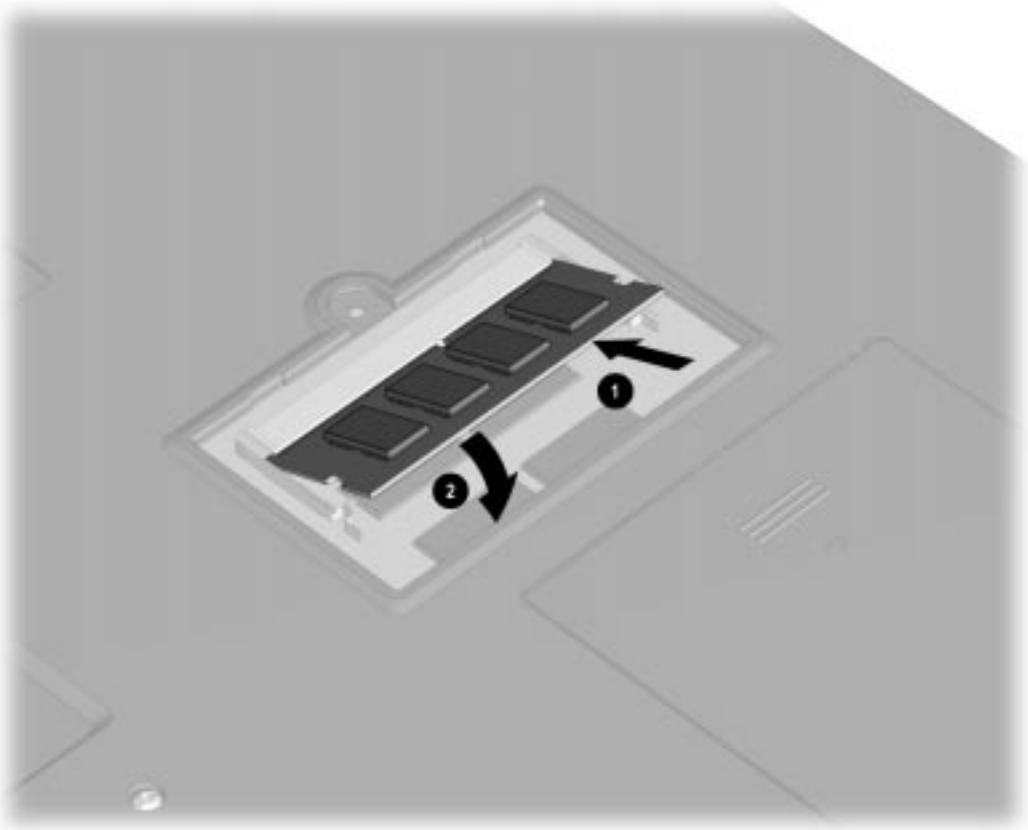


Figure 5-9. *Installing the Memory Board*

Reinstall the memory compartment cover by placing the left edge in the compartment and pressing the right edge toward the system unit. Press it firmly into position until the locking tabs secure the cover into position. Replace the security screw, if one was removed during disassembly.

5.5 Hard Drive

The hard drive cover secures the hard drive, the auxiliary battery, and the RTC battery in place.

5.5.1 Removing the Hard Drive Cover

A security screw holds the hard drive cover in place. To remove the hard drive cover, complete the following steps:

1. Prepare the computer for disassembly (Section 5.3).
2. Turn the computer bottom side up and position it so that the right side of the unit is toward you.
3. Remove the screw from the drive cover.
4. Slide the cover towards you and lift the cover from the computer.

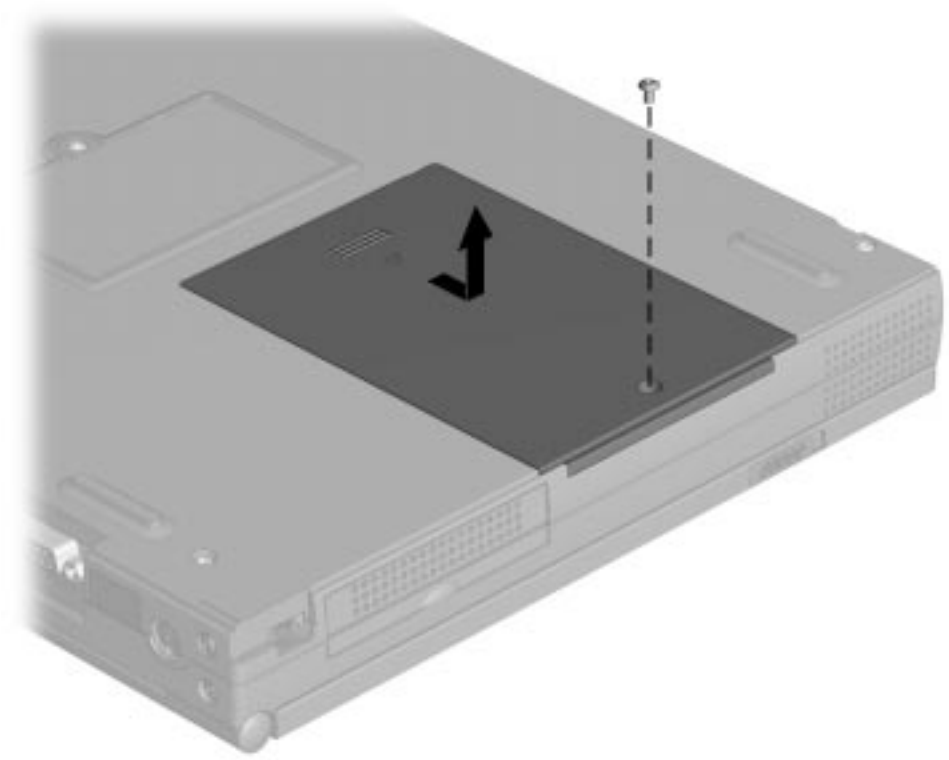


Figure 5-10. *Removing the Hard Drive Cover Security Screw*

5.5.2 Removing the Nickel Cadmium Auxiliary Battery

WARNING: There is a risk of explosion and injury if the battery is incorrectly replaced or handled improperly. Do not attempt to recharge, disassemble, immerse in water, or dispose of it in fire. Replacement should be done using the Compaq spare part for this computer.

To remove or replace the auxiliary battery, complete the following procedures.

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the hard drive cover.

CAUTION: To prevent damage to the battery assembly, do not pull on the battery cable.

3. Using tweezers, disconnect the auxiliary battery from the system unit.
4. Lift the auxiliary battery from the hard drive bay.

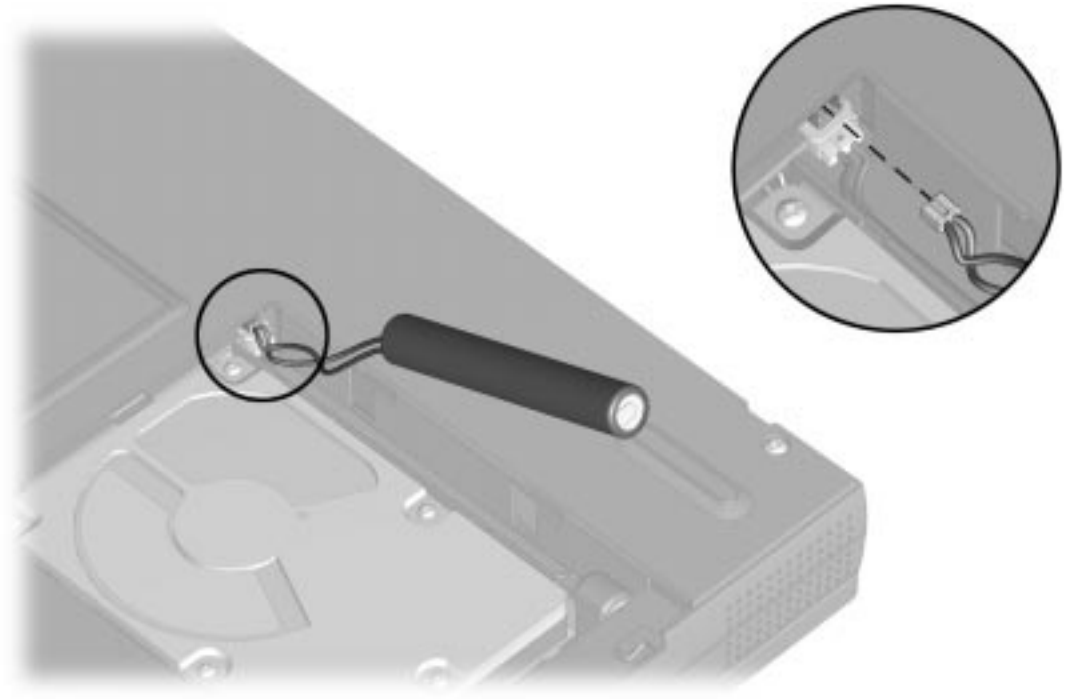


Figure 5-11. *Removing the Auxiliary Battery*

Reverse the procedure to install a replacement auxiliary battery.

5.5.3 Removing the Lithium Real Time Clock Battery

WARNING: There is a risk of explosion and injury if the battery is incorrectly replaced or handled improperly. Do not attempt to recharge, disassemble, immerse in water, or dispose of it in fire. Replacement should be done using the Compaq spare part for this computer.

To remove or replace the RTC battery, complete the following procedures.

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the hard drive cover.

CAUTION: To prevent damaging the battery, do not pull on the battery cable.

3. Using tweezers, disconnect the RTC battery from the system unit.
4. Lift the RTC battery from the hard drive bay.

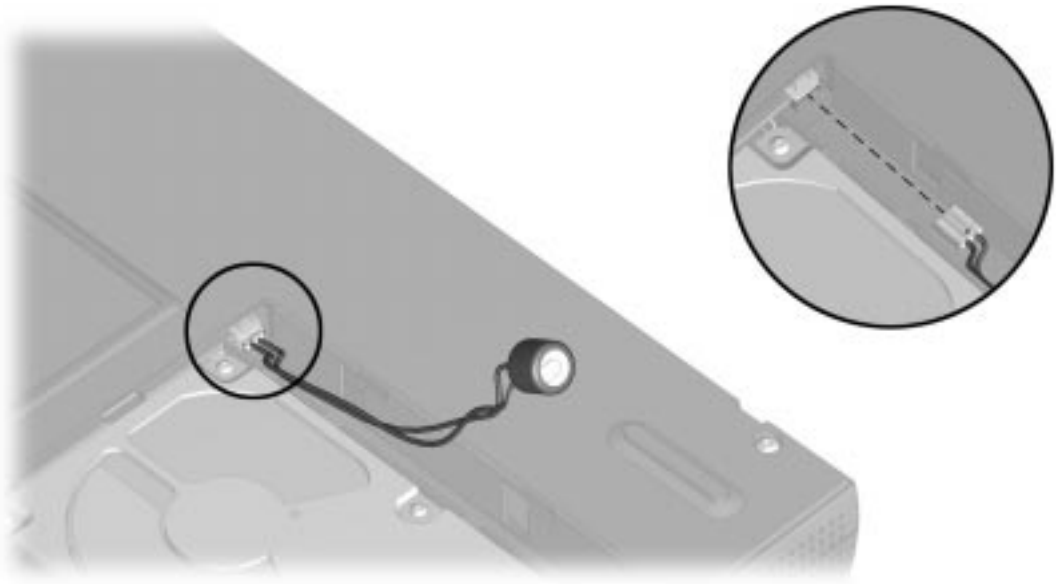


Figure 5-12. *Removing the RTC Battery*

Reverse the procedure to install a replacement RTC battery.

5.5.4 Removing the Hard Drive

To remove the hard drive, complete the following procedures.

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the hard drive cover.
3. Lift the tab on the hard drive from the hard drive bay.
4. Slide the hard drive away from the connector, and using the tab, lift the hard drive from the computer with the tab.

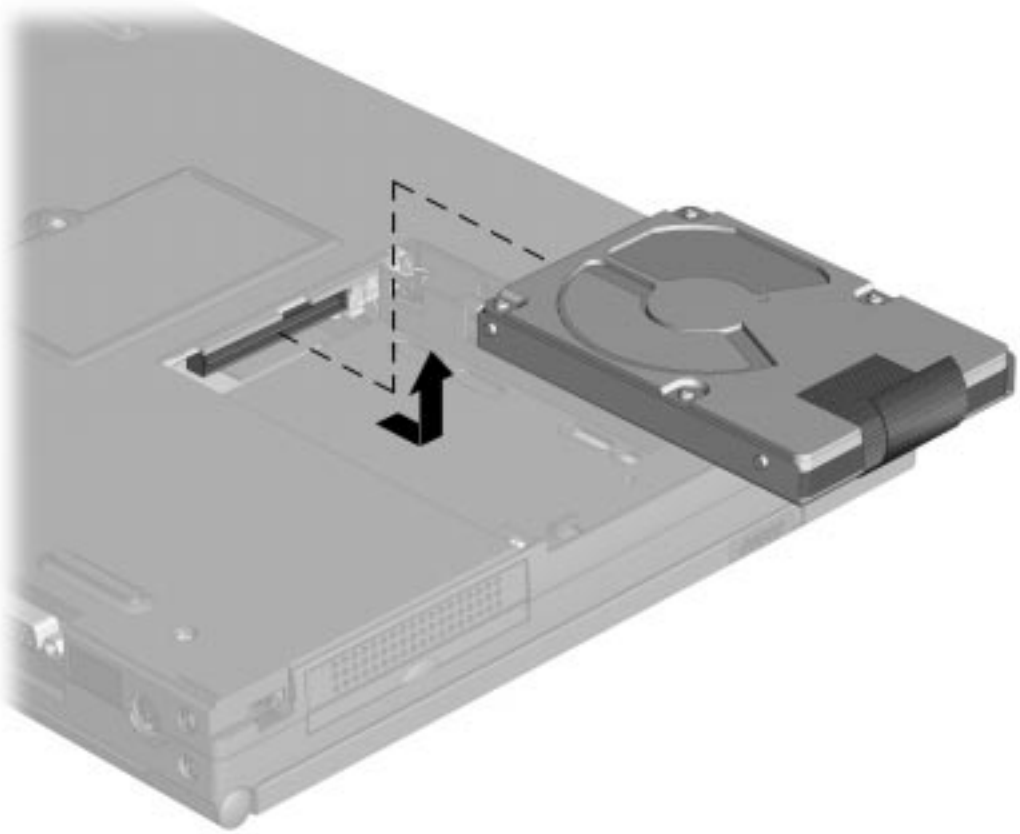


Figure 5-13. *Removing the Hard Drive*

Reverse the procedure to re-install the hard drive.

5.6 Keyboard

To remove the keyboard, complete the following procedures.

1. Prepare the computer for disassembly (Section 5.3).
2. Place the computer on a level workspace with the front of the unit facing you.
3. Open the display to the vertical (perpendicular to workspace to prevent tipping of the unit) position.
4. To release the keyboard, insert the tip of a small screwdriver into the groove above each of the four keyboard latches and slide the latch towards you.

CAUTION: To prevent damage to the keyboard and/or keys, do not use the key caps to lift the keyboard.

5. Lift the back edge of the keyboard. Be careful not to stress the cables.

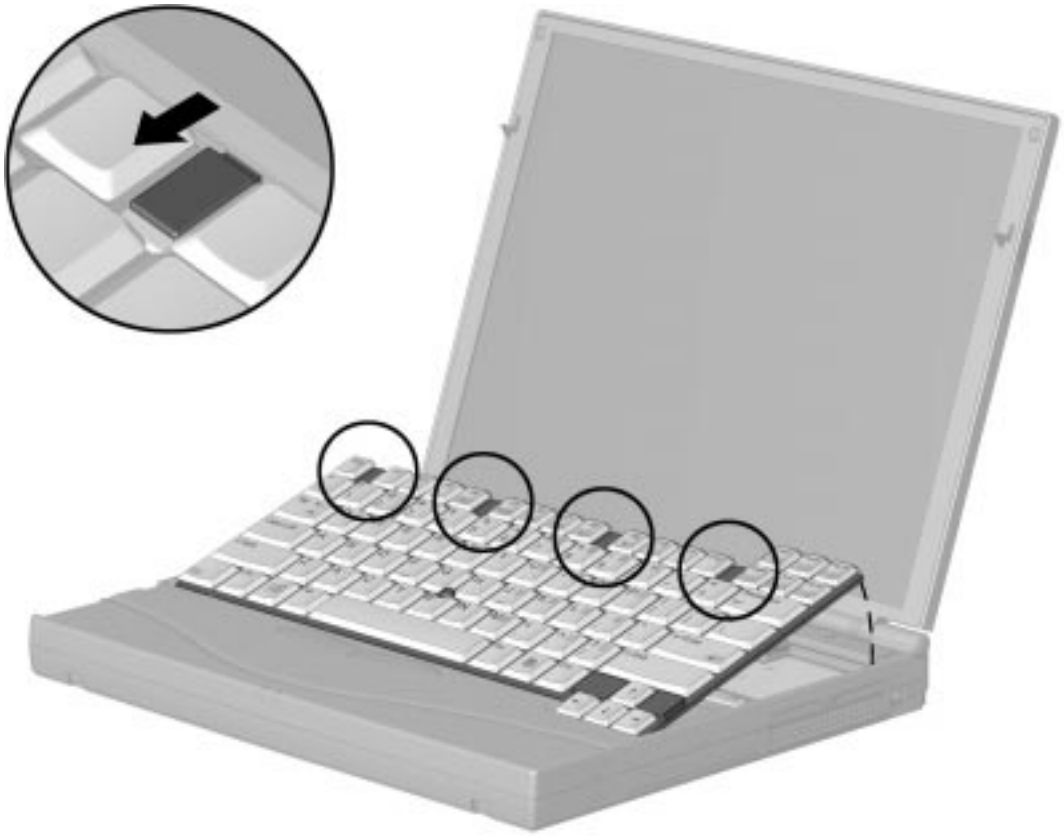


Figure 5-14. *Releasing the Keyboard Latches*

6. Slide the keyboard toward you to gain access to the keyboard and pointing device cable.
7. Release the strain relief.
8. Using tweezers or the tip of a scribe, release the latch on the keyboard and pointing device ZIF connectors.
9. Disconnect the keyboard and pointing device cables.
10. Lift the keyboard from the system unit.

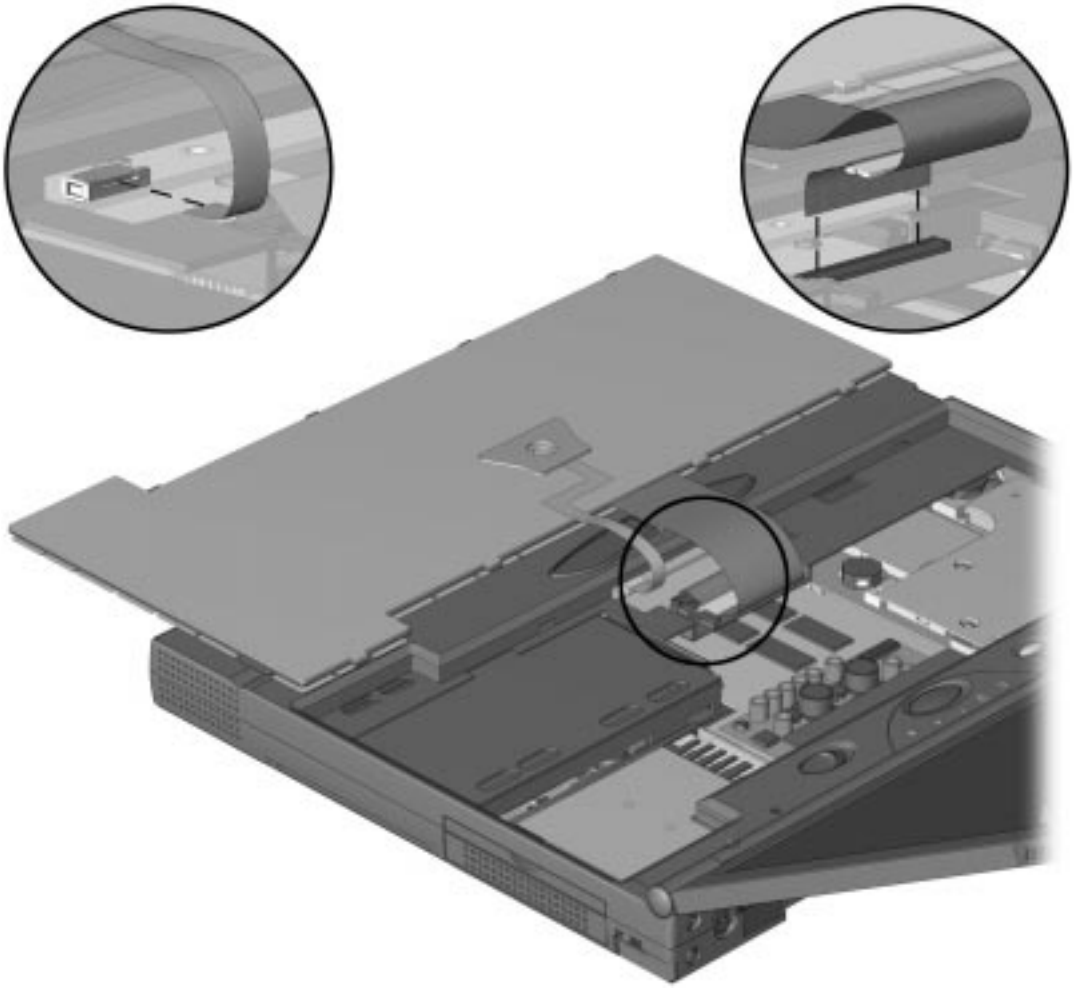


Figure 5-15. *Disconnecting the Keyboard and Pointing Device Cable*

To replace the keyboard, reverse the procedure above.

5.7 Display Assembly

To remove the display assembly, complete the following steps:

5.7.1 Removing the Display Hinge Covers

1. Prepare the computer for disassembly (Section 5.3).
2. Place the computer on the table right side up and with the rear facing you.
3. Slide the hinge covers away from the system unit.

Figure 5-16. *Removing the Hinge Covers*

5.7.2 Removing the Switch Cover/Status Panel

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.6).
3. Close the display.
4. Remove the hinge covers (Section 5.7).
5. Place the computer bottom side up and with the front of the unit toward you.
6. Remove the screw from the left rear corner of the base enclosure.

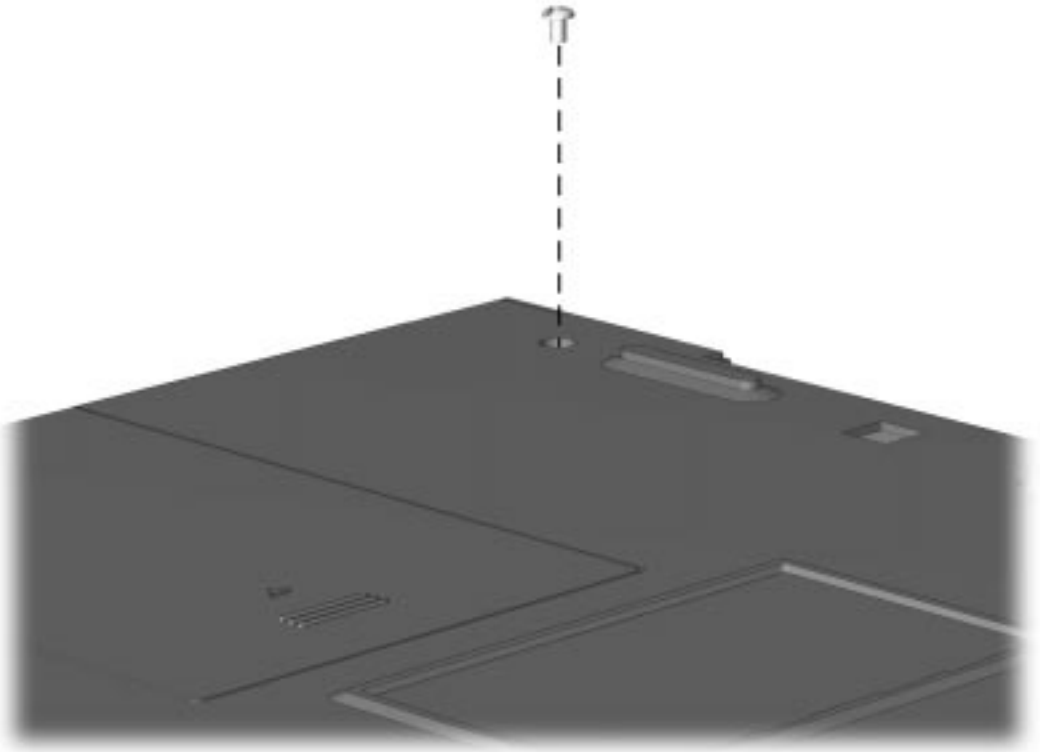


Figure 5-17. *Removing the switch cover screw*

7. Turn the computer top side up with the front of the unit toward you.
8. Open the display.
9. Lift the switch cover / status panel from the computer.

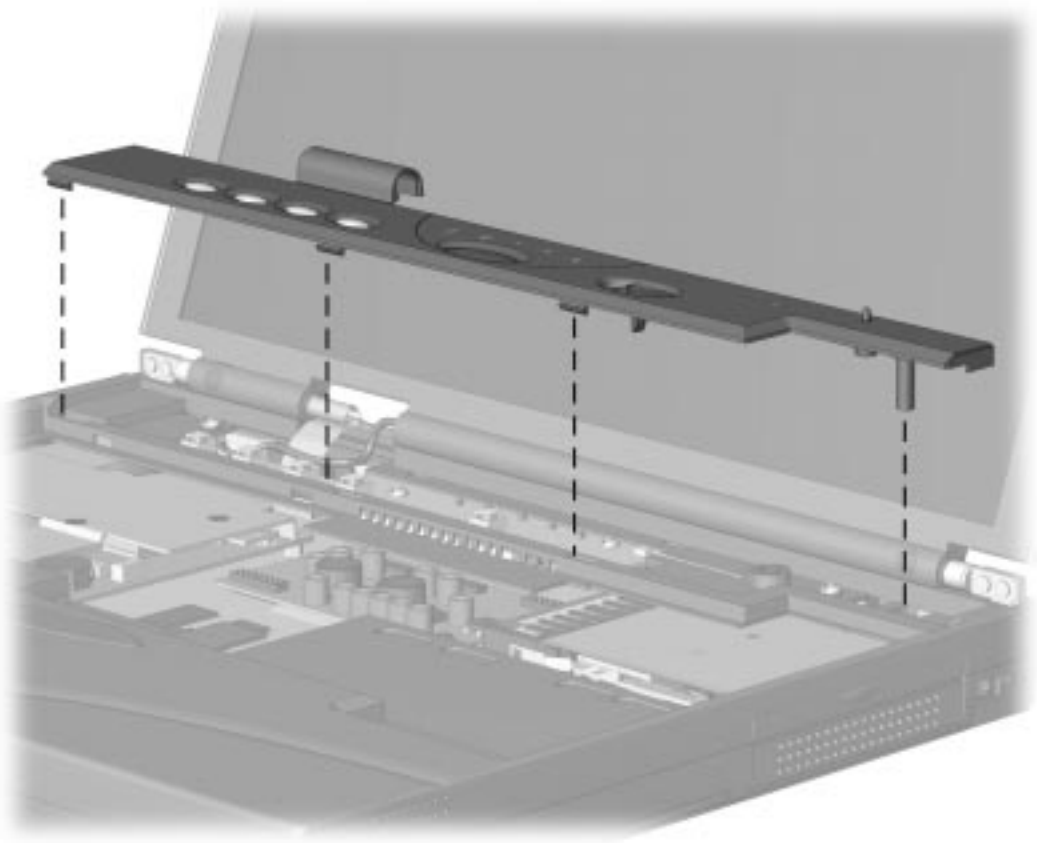


Figure 5-18. *Removing the switch cover/status panel*

To replace the switch cover, reverse the procedure above.

5.7.3 Removing the Display Assembly

CAUTION: Do not reuse the hinge screws removed from the previously installed display. These screws may back out of the display hinges and cause the display assembly to loosen from the base enclosure.

To remove the display assembly, complete the following procedure:

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.5).
3. Remove the hinge covers (Section 5.7).
4. Remove the switch cover assembly (Section 5.7).
5. Using tweezers, separate the backlight power cable and the display cable from the system board.

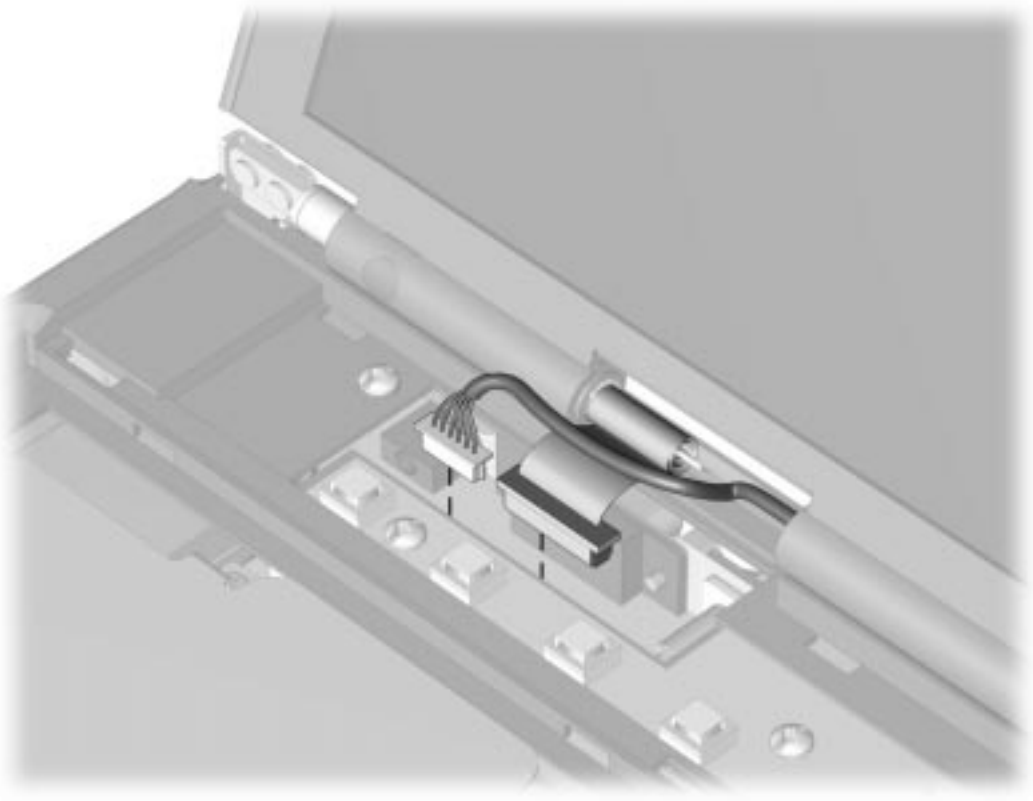


Figure 5-19. *Disconnecting the Display Cables*

CAUTION: Do not pull the connector from the socket by the wires. Pulling on the wires may damage them, rendering the display inoperative.

6. Close the display.
7. Remove the two screws from the left display clutch and the two screws from the right display clutch.
8. Lift the display assembly from the base enclosure.

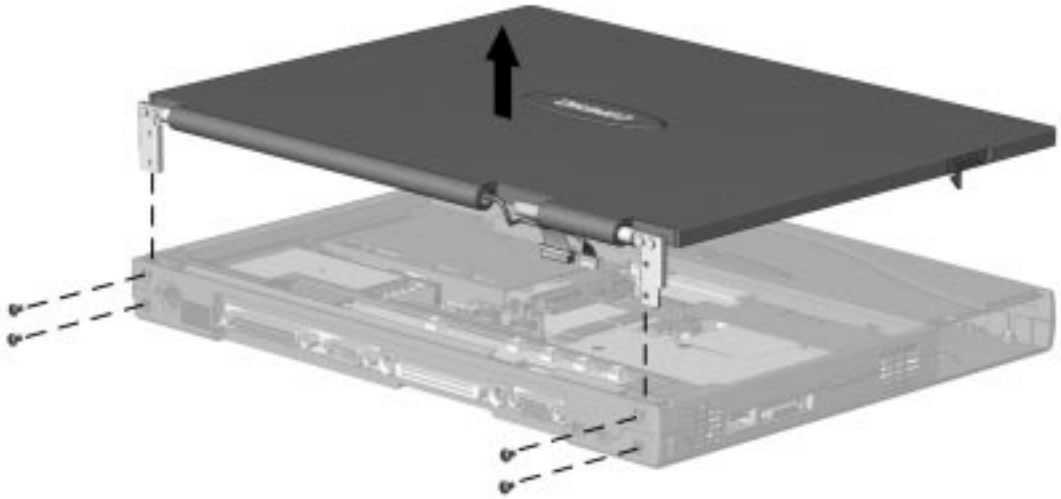


Figure 5-20. *Removing the Display Assembly*

Reverse the procedure to replace the display assembly.

Note: Always replace the four loctite screws with the replacement screws supplied in the service kit.

5.8 Top Cover Assembly

To remove the top cover assembly, complete the following procedures:

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.6).
3. Remove the hinge covers (Section 5.7).
4. Remove the switch cover assembly (Section 5.7).
5. Remove the display assembly (Section 5.7).
6. Turn the computer bottom side up.
7. Remove the seven (7) screws from the bottom of the system unit.

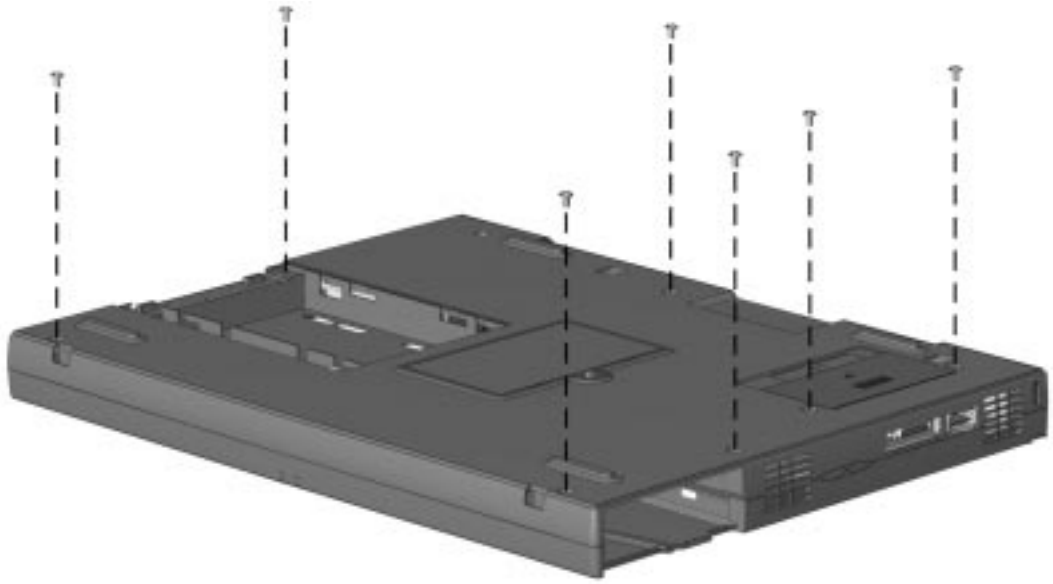


Figure 5-21. *Removing the screws from the bottom of the system unit*

8. Remove the screw from the rear of the unit.
9. Remove the two screws from the top cover.
10. Lift the top cover from the base enclosure assembly.

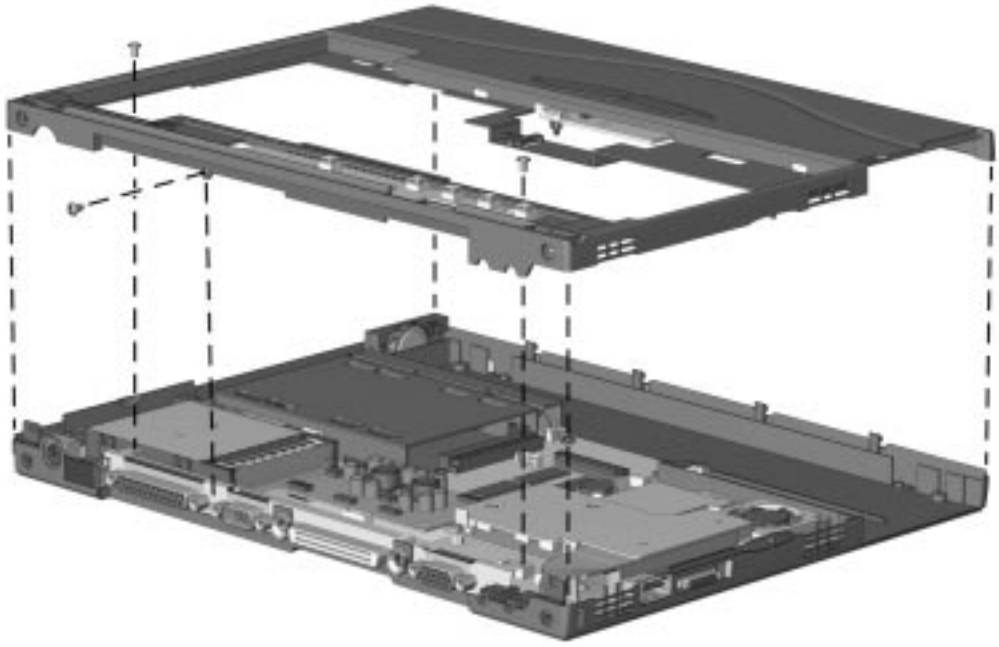


Figure 5-22. *Removing the Top Cover Assembly*

5.8.1 Removing the DC-DC Converter

To remove the DC-DC converter, complete the following procedures:

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the keyboard (Section 5.6).
3. Remove the display assembly (Section 5.7).
4. Remove the top cover assembly (Section 5.8).
5. Remove the screw from the converter board.
6. Remove the DC-DC converter

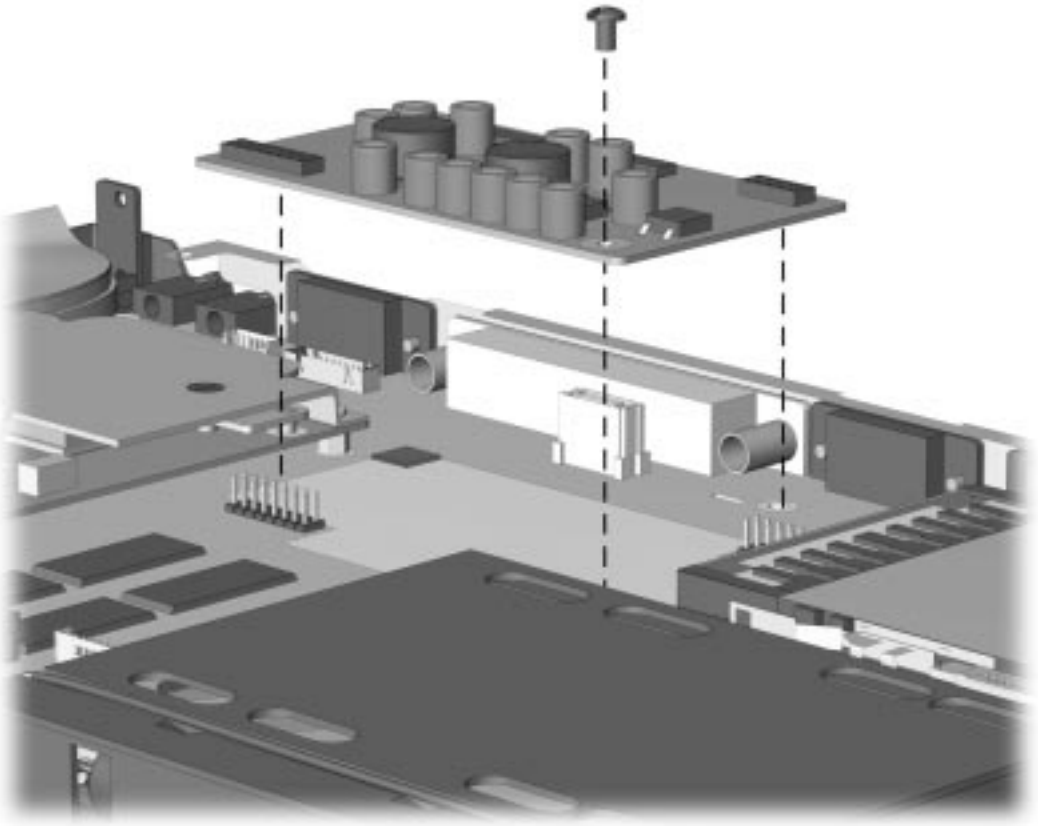


Figure 5-23. *Removing the DC-DC Converter*

CAUTION: Failure to use the nickel colored screw to secure the DC-DC Converter to the system board may result in damage to the system board.

To replace the DC-DC converter, reverse the steps.

5.8.2 Removing the System Board

To remove the system board, complete the following procedures:

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the lithium real-time clock battery (Section 5.5).
3. Remove the auxiliary battery. (Section 5.5).
4. Remove the hard drive (Section 5.5).
5. Remove the memory board (Section 5.4).
6. Remove the keyboard (Section 5.6).
7. Remove the display assembly (Section 5.7).
8. Remove the top cover assembly (Section 5.9).
9. Remove the DC-DC Converter (Section 5.9).
10. Remove the three screws from the system unit.
11. Remove the docking guides from the rear panel.
12. Disconnect the speaker cable from the system board. The speaker is located in the front right corner of the system board.
13. Lift the right edge of the system board to a 45-degree angle and lift from the base enclosure.

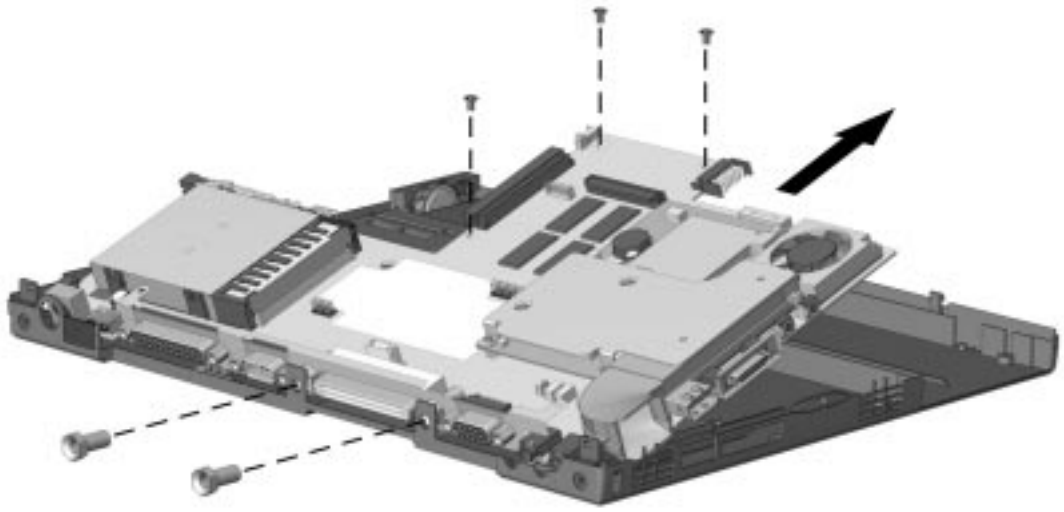


Figure 5-24. *Removing the System Board*

To replace the system board, reverse the steps.

5.8.3 Removing the Fan

To remove the fan, complete the following procedures:

1. Prepare the computer for disassembly (Section 5.3).
2. Remove the lithium real-time clock battery (Section 5.5).
3. Remove the auxiliary battery. (Section 5.5).
4. Remove the hard drive (Section 5.5).
5. Remove the keyboard (Section 5.6).
6. Remove the display assembly (Section 5.7).
7. Remove the top cover assembly (Section 5.9).
8. Remove the system board (Section 5.8)
9. Disconnect the fan connector.
10. Remove the fan screws.
11. Remove the fan.

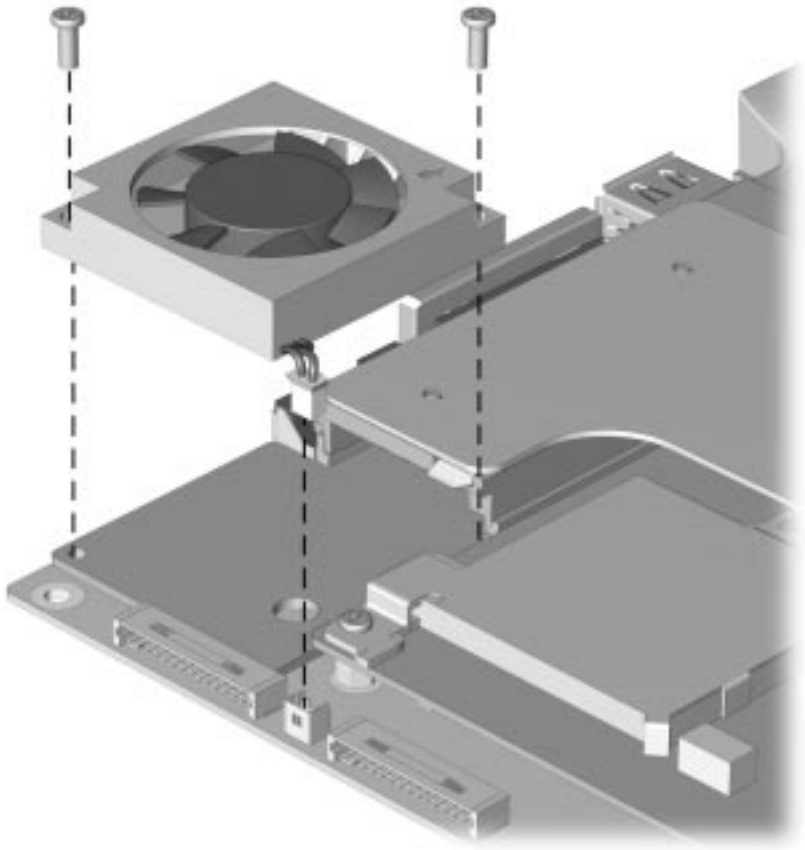


Figure 5-25. *Removing the Fan*

To replace the fan, reverse the steps.

5.9 Removing An Optical Disc Bay Device

To remove an Optical Bay device from the Mobile 3500 Expansion Unit, complete the following procedures:

1. Disconnect the computer from the M35EU.
2. Place the M35EU bottom side up, on the table with the front of the unit facing you.
3. Remove the two screws ❶ from the Optical Disc Bay retainer cover plate.
4. Remove the cover plate.
5. Slide the Optical Disc Bay device from the connector ❷.
6. Remove the Optical Disc Bay device from the expansion unit ❸.

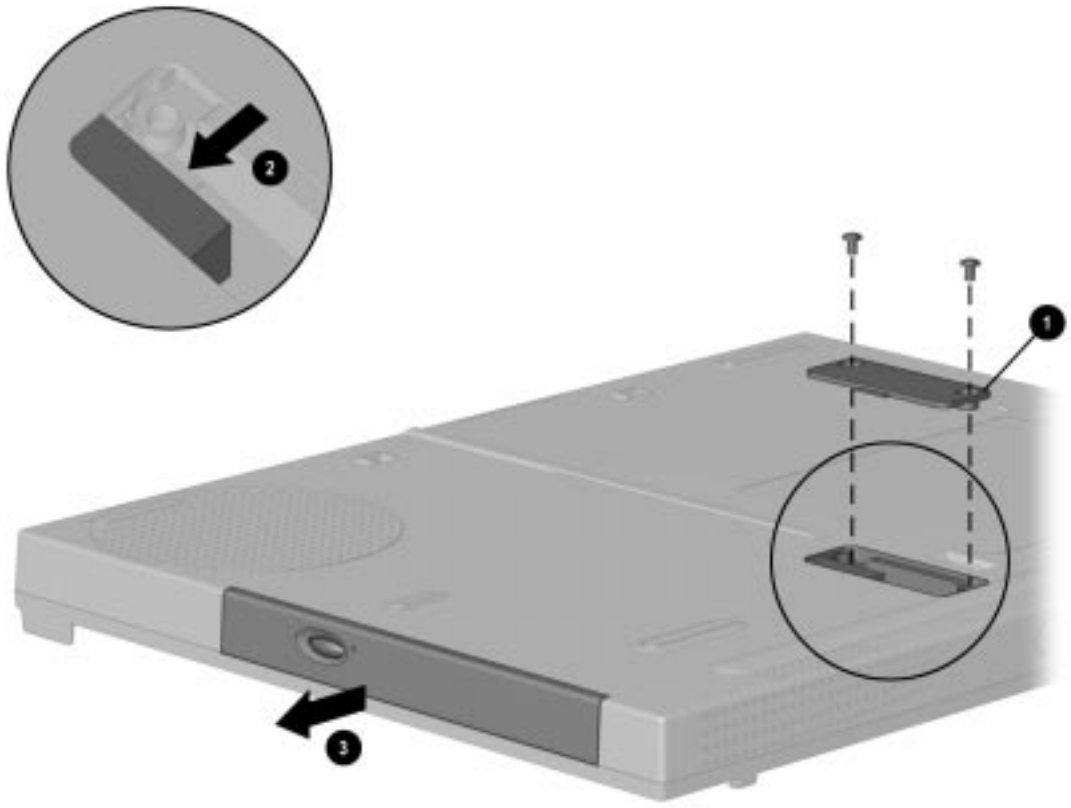


Figure 5-26. *Removing the Optical Disc Bay Device*

chapter 6

SPECIFICATIONS

This chapter provides physical and performance specifications for the following standard components:

- Computer
- Displays
- Hard drives
- Diskette drive
- CD-ROM drive
- Battery packs
- External power

The chapter also includes:

- System interrupts
- System DMA
- System I/O address
- System memory map

6.1 Computer

Table 6-1
Computer Specifications

	U.S.	Metric
Dimensions (CPU only)		
Height	1.1 in	3.1 cm
Depth	9.3 in	23.5 cm
Width	11.8 in	30.0 cm
Dimensions (CPU M35EU)		
Height	2.1 in	5.4 cm
Depth	9.3 in	23.6 cm
Width	11.8 in	30.0 cm
Dimensions (M35EU only including tabs)		
Height	0.9 in	2.3 cm
Depth	9.3 in	23.6 cm
Width	11.8 in	30.0 cm
Weight (without M35EU)*		
With 6 cell battery	4.4 lbs.	2.0 kg
Standalone (Battery) Power Requirements		
Nominal Operating Voltage (Li-Ion)	10.8 V	
Maximum Operating Power (CPU only)	35.0 W	
Maximum Operating Power (CPU+M35EU)	45.0 W	
Integrated AC Power Requirements		
Operating Voltage	100 to 240 VAC RMS	
Operating Current	1.1 A RMS	
Operating Frequency Range	47 to 63 Hz AC	
Maximum Transient	4/50 kV	
Temperature **		
Operating	5 to95°F	10 to 35°C
Non-operating	-4 to 140°F	-20 to 60°C
Relative Humidity (non-condensing)		
Operating	10 to 90%	
Non-operating (t_W = 38.7°C max)	5 to 90%	
Altitude		
Operating	0 to 10,000 ft	0 to 3.15 km
Non-operating	0 to 30,000 ft	0 to 10.14 km
Shock		
Operating	10 G, 11 ms, half sine	
Non operating	240 G, 2 ms, half sine	
Vibration		
Operating	0.55 G, 0.25 Oct/Min sweep rate	
Non-operating	1.5 G, 0.5 Oct/Min sweep rate	

* Weight is for the computer with 6 cell battery pack and 12.1 inch display panel.
** Applicable product safety standards specify thermal limits for plastic surfaces. This computer operates well within the temperature ranges specified.

6.2 Displays

Table 6-2
12.1-Inch CTFT, SVGA Display

	U.S.	Metric
Dimensions		
Height	7.24 in	18.4 cm
Width	9.7 in	24.6 cm
Number of Colors	64K	
Contrast Ratio	100:1 minimum	
Pixel Resolution		
Pitch	0.30 × 0.30 mm	
Format	800 × 600	
Configuration	RGB Stripe	
Backlight	Edge Lit	
Character Display	80 × 25	

Table 6-3
13.3-Inch CTFT, XGA Display

	U.S.	Metric
Dimensions		
Height	7.9 in	20.1 cm
Width	10.6 in	26.9 cm
Number of Colors	64K	
Contrast Ratio	100: 1 minimum	
Pixel Resolution		
Pitch	0.29 x 0.29 mm	
Format	1024 x 768	
Configuration	RGB Stripe	
Backlight	Edge Lit	
Character Display	80 × 25	

6.3 Hard Drives

Table 6-4
Hard Drive Specifications

Standard Model Configurations	4-GB	6-GB
Formatted Capacity per Drive		
Logical	4,099,866,624	6,495,068,160
Drive Type	65	65
Drive Height		
Without frame (mm)	12.5	12.5
With frame (mm)	12.7	12.7
Drive Size		
Inches	2.75 x 3.94	2.75 x 3.94
Millimeters	100.2 x 69.85	100.1 x 69.9
Transfer Rate		
Media (Mb/s)	51.7 to 83.4	67.5 to 111.9
Interface (Mb/s)	16.6	16.6
Sector Interleave	1:1	1:1
Typical Seek Time (Including setting)		
Single Track (ms)	4	3
Average (ms)	13 (READ)	13 (READ)
Full Stroke (ms)	23 (READ)	25 (READ)
Disk Rotational Speed (RPM)	4009	4200
Physical Configuration		
Cylinders	6975	8960
Data Heads	6	6
Sectors/Track	114 to 240	178 to 294
Bytes/Sector	512	512
Logical Configuration		
Cylinders	7944	13,424
Heads	16	15
Sectors per Track	63	63
Bytes per Sector	512	512
Buffer Size (kB)	512	512

6.4 Diskette Drive

Table 6-5
Diskette Drive Specifications

Diskette size	3.5-inch
High density	1.44-MB/1.2-MB
Low density	720 KB
Light	None
Height	0.43-in (11 mm)
Bytes per sector	512
Sectors per Track	
High density	18 (1.44-MB)/15 (1.2-MB)
Low density	9
Tracks per Side	
High density	80 (1.44-MB)/80 (1.2-MB)
Low density	80
Read/Write heads	2
Average Seek Times	
Track-to-Track (high/low)	3 ms/6 ms
Average (high/low)	94 ms/174 ms
Settling Time	15 ms
Latency Average	100 ms

6.5 Optical Disc Drive

Table 6-6
24X CD-ROM Specifications

Applicable Disc	CD-ROM mode 1, mode 2 CD-Digital Audio CD-XA mode 2 (Form 1, Form 2) CD-I mode 2 (Form1, Form 2) CD-I Ready CD-Bridge CD-WO (fixed/variable packets) Photo CD (single/multisession)
Drive Size (cm)	1.27 x 12.8 x 12.9
Center Hole Diameter	15 mm
Disc Diameter	12 cm, 8 cm
Disc Thickness	1.2 mm
Track Pitch	1.6 µm
Laser	
Beam Divergence	53.5 ± 1.5 degrees
Output Power	0.24 ± 0.1 mw
Type	Semiconductor Laser GaA1As
Wave Length	780 nm ± 25 nm at Ph-4.3 mW
Access time	
Random	<350 ms (150 ms typical)
Full Stroke	<750 ms
Audio output level	
Line Out	0.8 Vrms
Headphone	None
Cache buffer	128 KB
Data transfer rate	
Sustained, 24x	3600 KB/sec (outer diameter)
Sustained, single	150 KB/sec
Burst	8.3 MB/sec
Startup Time	<8 seconds typical
Capacity	
Mode 1, 12 cm	550 MB
Mode 2, 12 cm	640 MB
8 cm	180 MB

6.6 External Power

The external battery charger charges the Li-Ion battery outside the computer. It may also be used to charge spare batteries.

Table 6-7
External Battery Charger with AC Adapter

	6-Cell
Power Supply (Input)	
Nominal Voltage	90 to 264 VAC
Line frequency	47-63 Hz
Power Supply (Output)	
Nominal Voltage	+15.0 +/- 0.5 VDC
Power	35 to 40 W
Temperature	
Operating	32° to 104°F
Nonoperating	-4° to 185°F
Relative Humidity	
Operating	10% to 90%
Nonoperating	10% to 95%

Table 6-8
Lithium-Ion (Li-Ion) Battery Pack

Parameter	6 Cell	9 Cell
Open circuit voltage (Nominal):	10.8 V	10.8 V
Capacity:	38.4 Wh	48.6 Wh
Temperature:		
Charge	10°C to 40°C (50°F to 104°F)	
Storage	0°C to 50°C (32°F to 122°F)	

6.7 System Interrupts

Table 6-9
Hardware Interrupts

Hardware IRQ	System Function
IRQ0	Timer interrupt
IRQ1	Keyboard
IRQ2	Interrupt controller cascade
IRQ3	COM 2
IRQ4	COM 1
IRQ5	Audio
IRQ6	Diskette Drive controller
IRQ7	EPP Parallel
IRQ8	Real-Time Clock (MSIO)
IRQ9	PCI devices
IRQ10	Unused
IRQ11	Used by PCMCIA
IRQ12	Mouse
IRQ13	Floating point error input
IRQ14	Primary IDE interface
IRQ15	Secondary IDE interface

6.8 System DMA

Table 6-10
DMA Channels

Hardware DMA	System Function
DMA 0	Fast infrared or Audio controller
DMA 1	Audio controller
DMA 2	Diskette drive controller
DMA 3	EPP Parallel Port
DMA 4	Not assigned
DMA 5	Audio Controller
DMA 6	Not assigned
DMA 7	Not assigned

6.9 System I/O Address

Table 6-11
System I/O (Port) Addresses

I/O Address (Hex)	System Function (Shipping Configuration)
000 - 00F	Master DMA Controller # 1
010 - 011	Force Software SMI
012 - 01F	Unused
020 - 021	Peripheral Interrupt Controller # 1
022 - 024	Chipset Configuration Registers
025 - 03F	Unused
040 - 043	Counter/Timer Registers
044 - 05F	Unused
060	Keyboard Data
061	Port B
062 - 063	Unused
064	Keyboard Command/Status
065 - 06F	Unused
070	CMOS Index Address
071	CMOS Data
072 - 073	Unused
074	Reserved
075	Unused
076	Reserved
077 - 077F	Unused
080 - 08F	DMA Page Registers
084 - 085	POST Code Output Port
090 - 091	Unused
092	Fast Reset Register
093 - 09F	Unused
0A0 - 0A1	Interrupt Controller # 2
0A2 - 0BF	Unused
0C0 - 0DF	DMA Controller # 2
0E0 - 0E1	ESS Audio Configuration
0E2 - 0E5	Configuration Registers
0E6 - 0EF	Unused
0F0 - 0F1	NCP Numerics Register
0F9	ESS Configuration Lock
0FA	Unused
0FB	ESS Configuration Unlock
0FC - 0FF	Unused
100 - 101	Unused
103 - 16F	Unused

Continued

Table 6-9 *Continued*

I/O Address (Hex)	System Function (Shipping Configuration)
170 - 177	Hard Drive Secondary Registers
178 - 1EF	Unused
1F0 - 1F7	Hard Drive Primary Registers
1F8 - 1FF	Unused
200 - 21F	Unused
220 - 22F	ESS Audio Registers (1st Possible) (Default)
230 - 23F	ESS Audio Registers (2nd Possible)
240 - 24F	ESS Audio Registers (3rd Possible)
250 - 25F	ESS Audio Registers (4th Possible)
260 - 277	Unused
278 - 27A	LPT2 and High Speed Parallel Port Registers
27B - 27F	LPT2 High Speed Printer Port Registers
280 - 2F7	Unused
2F8 - 2FF	Serial Control Register COM2
300 - 36F	Unused
370 - 371	Reserved
372	Diskette Digital Output Register
373	Unused
374	Reserved
375	Diskette Main Status/Data Registers
376	Reserved
377	Diskette Input/Control Registers
378 - 37A	LPT1 and High Speed Parallel Port Registers
37B - 37F	Unused
380 - 387	Unused
388 - 38B	ESS FM Synthesizer
38C - 3AF	Unused
3B0 - 3BB	Unused
3BC - 3BE	LPT3 and High Speed Parallel Port Registers
3BF	LPT1 High Speed Parallel Port Registers
3C0 - 3CD	Unused
3D0 - 3DF	Unused
3F0 - 3F7	Diskette Drive Controller Primary Registers
3F8 - 3FF	COM1 Serial Controller Registers
400 - 4CF	Unused
480 - 48F	Extended DMS Registers
4D0 - CF6	Unused
CF7	Configuration/NVM Data Register
CF8 - CFB	PCI Configuration Index Register
CFC - CFF	PCI Configuration Index Register
D00 - FFF	Unused

6.10 System Memory Map

Table 6-12
Memory Map

Size	Memory Address	System Function
640 K	00000000 - 0009FFFF	Base Memory
128 K	000A0000 - 000BFFFF	Video Memory
48 K	000C0000 - 000CBFFF	Video BIOS
160 K	000C8000 - 000E7FFF	Unused
64 K	000E8000 - 000FFFFF	System BIOS
15 M	00100000 - 00FFFFFF	Extended Memory
58 M	01000000 - 047FFFFF	Super Extended Memory
58 M	04800000 - 07FFFFFF	Unused
2 M	08000000 - 080FFFFF	Video Memory (Direct Access)
4 G	08200000 - FFFEFFFF	Unused
64 K	FFFF0000 - FFFFFFFF	System BIOS ("SHADOW")

appendix **A**

CONNECTORS

This appendix contains the pin assignments for all external connectors.

Table A-1
External Keyboard

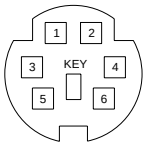
Connector	Pin	Signal
	1	Data
	2	Unused
	3	Ground
	4	+5 VDC
	5	Clock
	6	Unused

Table A-2
PS2-Compatible Mouse

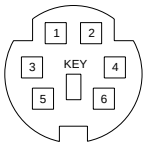
Connector	Pin	Signal
	1	Data
	2	Unused
	3	Ground
	4	+5 VDC
	5	Clock
	6	Unused

Table A-3
Ethernet RJ-45

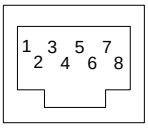
Connector	Pin	Signal
	1	(+) Transmit Data
	2	(-) Transmit Data
	3	(+) Receive Data
	4	Unused
	5	Unused
	6	(-) Receive Data
	7	Unused
	8	Unused

Table A-4
USB

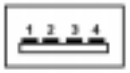
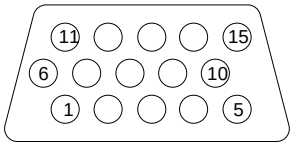
Connector	Pin	Signal
	1	Ground
	2	- Data
	3	+ Data
	4	+5 VDC

Table A-5
External Monitor



Pin	Signal	Pin	Signal
1	Red Analog	9	Blank
2	Green Analog	10	Ground
3	Blue Analog	11	Blank
4	Blank	12	Monitor ID (DD)
5	Ground	13	Horizontal Sync
6	Ground	14	Vertical Sync
7	Ground	15	Monitor ID (CC)
8	Ground		

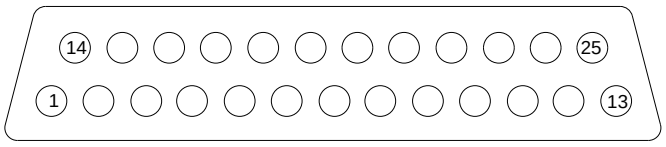
Table A-6
Diskette Drive Connector

25 23 … … … … … … … … 3 1

26 24 … … … … … … … 4 2

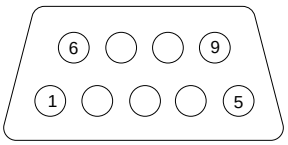
Pin	Signal	Pin	Signal
1	Vcc	14	Step_
2	Vcc	15	GND
3	Vcc	16	WRDATA_
4	DRSEO_	17	GND
5	Index_	18	WRGATE_
6	DSKCHANG_	19	GND
7	Open	20	TRACKO_
8	Ready	21	GND
9	MESIA_ID	22	WRPRO_
10	Motoron_	23	SIDESEL
11	+5V_Pullup	24	RDDATA_
12	Dir	25	GND
13	Speed_Select	26	GND

Table A-7
Parallel Connector



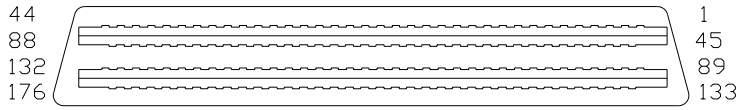
Pin	Signal	Pin	Signal
1	Strobe	14	Auto Linefeed
2	Data Bit 0	15	Error
3	Data Bit 1	16	Initialize Printer
4	Data Bit 2	17	Select In
5	Data Bit 3	18	Ground
6	Data Bit 4	19	Ground
7	Data Bit 5	20	Ground
8	Data Bit 6	21	Blank
9	Data Bit 7	22	Blank
10	Acknowledge	23	Ground
11	Busy	24	Ground
12	Paper End	25	Blank
13	Select		

Table A-8
Serial Connector



Pin	Signal	Pin	Signal
1	Carrier Detect	6	Data Set Ready
2	Receive Data	7	Ready to Send
3	Transmit Data	8	Clear to Send
4	Data Terminal Ready	9	Ring Indicator
5	Ground		

Table A-9
Convenience Base Expansion Connector



Pin	Signal	Pin	Signal
1	GND	31	GREEN
2	GND	32	CRTVSYNC
3	NC	33	RED
4	GND	34	DDCCLK
5	GND	35	PWRLED
6	NC	36	DDCDATA
7	GND	37	DOCK_PWR_EN
8	GND	38	GND
9	AD[31]	39	SPKL
10	DEVSEL	40	LINE_L
11	IRDY	41	SPK_R
12	STOP	42	LINE_R
13	TRDY	43	GND
14	GND	44	DOCK_LG
15	GND	45	GND
16	AD[12]	46	GND
17	AD[13]	47	REQ1
18	GND	48	REQ0
19	GND	49	GNTO
20	CLK1	50	RST
21	AD[0]	51	GND
22	GND	52	AD[23]
23	DOCK_S	53	AD[22]
24	CLK0	54	C/BE2
25	ACVCC	55	AD[20]
26	ACVCC	56	NC
27	ACVCC	57	AD[19]
28	ACVCC	58	FRAME
29	ACVCC	59	AD[17]
30	CRTHSYNC	60	GND

Continued

Table A-9 Convenience Base Expansion Connector *Continued*

Pin	Signal	Pin	Signal
61	GND	96	GND
62	AD[14]	97	CBE3
63	AD[15]	98	AD[21]
64	AD[1]	99	NC
65	AD[3]	100	NC
66	AD[2]	101	AD[18]
67	GND	102	C/BE1
68	MDATA	103	PAR
69	KBDATA	104	GND
70	MCLK	105	AD[16]
71	KBCLK	106	AD[6]
72	ACVCC	107	C/BE0
73	PMVCC5	108	AD[5]
74	PMVCC5	109	AD[7]
75	NC	110	AD[4]
76	BLUE	111	BATTLED
77	NC	112	SWC
78	PBUSY	113	TA
79	PDATA7	114	SWB
80	PBDATA3	115	SWD
81	PSLIN	116	SWA
82	GND	117	PMVCC5
83	GND	118	PMVCC5
84	SPK_IN	119	PMVCC5
85	+5v	120	PMVCC5
86	NC	121	PSELECT
87	ERDY	122	PDADA6
88	SYSVCC5A	123	PACK
89	STANDBy_SW	124	PDATA2
90	NC	125	PDATA0
91	NC	126	PFAULT
92	NC	127	GND
93	NC	128	GND
94	GNT1	129	DSRA
95	GND	130	DCDA

Continued

Table A-9 Convenience Base Expansion Connector *Continued*

Pin	Signal	Pin	Signal
131	RTSA	154	AD[8]
132	RIA	155	PORT_REP
133	POWER_SW	156	MSI
134	INTB	157	MSO
135	NC	158	TC
136	INTA	159	TD
137	NC	160	TB
138	GND	161	PMVCC5
139	NC	162	PMVCC5
140	AD[27]	163	PPE
141	AD[30]	164	PMVCC5
142	AD[26]	165	PDATA4
143	AD[29]	166	PDATA5
144	AD[25]	167	PDATA1
145	AD[28]	168	PINIT
146	AD[24]	169	PSTB
147	BLOCK	170	PAFD
148	GND	171	GND
149	PERR	172	GND
150	SERR	173	CTSA
151	AD[11]	174	SINA
152	AD[9]	175	DTRA
153	AD[10]	176	SOUTA

Table A-10
Mobile 3500 Expansion Unit Connector

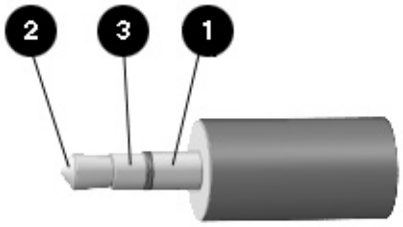
Pin	Signal	Pin	Signal
1	SDD0	45	MPBID0
2	SDD8	46	MPBID1
3	SDD1	47	PMVCC5
4	SDD9	48	PMVCC5
5	GND	49	PMVCC5
6	GND	50	PMVCC5
7	SDD2	51	HDSEL
8	SDD10	52	MPBDET_
9	SDD3	53	GND
10	SDD11	54	GND
11	GND	55	WRTPRT_
12	GND	56	RDATA_
13	SDD4	57	WGATE_
14	SDD12	58	TRK0_
15	SDD5	59	WDATA_
16	SDD13	60	STEP_
17	GND	61	GND
18	GND	62	GND
19	SDD6	63	FDIR
20	SDD14	64	1.6MODE
21	SDD7	65	DSKCHG_
22	SDD15	66	MTR01_
23	GND	67	INDEX_
24	GND	68	DRV1_
25	SDIOR_	69	ACGND
26	IRQ(15)	70	ACGND
27	SDIOW_	71	ACGND
28	HD2RST_	72	ACGND
29	SDCS1_	73	AC_VCC
30	SDDACK_	74	AC_VCC
31	SDCS3_	75	AC_VCC
32	HDD3ON	76	AC_VCC
33	GND	77	AC_VCC
34	GND	78	AC_VCC
35	FDDID1_	79	AC_VCC
36	SIORDY	80	AC_VCC
37	HDDLED2_	81	ACGND
38	SDDREQ	82	ACGND
39	SDA0	83	ACGND
40	SDA1	84	ACGND
41	SDA2	85	SLICEID
42	SLICE_ACIN	86	S_SPK_SD
43	GND	87	SPEAKER_OFF
44	GND	88	S_THERMAL
89	SYSVCC5	97	HEAD_R

Continued

Table A-10 Mobile 3500 Expansion Unit Connector *Continued*

Pin	Signal	Pin	Signal
90	SYSVCC5	98	HEAD_L
91	HDD2ON	99	GND
92	CB_SPK_IN	100	GND
93	GND	101	GND
94	GND	102	GND
95	CD_RIGHT	103	GND
96	CD_LEFT	104	GND

Table A-11
Speaker Connector



Pin	Signal
1	Shield
2	Left channel audio
3	Right channel audio

Table A-12
Pin Assignments for the PC Card and CardBus Interfaces

	16-bit				ATA Mode		
Pin	Mem.	I/O+ Mem.	32-bit CardBus	Zoomed Video	Mandatory Signal	Optional Signal	Functional Description
1	GND	GND	GND		GND		Ground
2	D3	D3	CADO		D3		Bi-directional lines for data transfer.
3	D4	D4	CAD1		D4		Bi-directional lines for data transfer.
4	D5	D5	CAD3		D5		Bi-directional lines for data transfer.
5	D6	D6	CAD5		D6		Bi-directional lines for data transfer.
6	D7	D7	CAD7		D7		Bi-directional lines for data transfer.
7	CE1_	CE1_	CCBE0_		CE1_		Card Enable. When active (low), enables bytes at even (CE1) address.
8	A10	A10	CAD9	HREF		A10	Address lines. For memory functions, allow up to 64-MB to be directly addressed. For I/O functions, determine port selection. ZV is Horiz. Sync. to ZV port.
9	OE_	OE_	CAD11		OE_		Output Enable. When active (low), enables read access of a PC Card (memory) by the host system.
10	A11	A11	CAD12	VS		A11	Address lines. For memory functions, allow up to 64-MB to be directly addressed. For I/O functions, determine port selection. ZV is Vert. Sync. to ZV port.

Continued

Table A-12 Pin Assignments for the PC Card and CardBus Interfaces *Continued*

	16-bit				ATA Mode		
Pin	Mem.	I/O+ Mem.	32-bit CardBus	Zoomed Video	Mandatory Signal	Optional Signal	Functional Description
11	A9	A9	CAD14	Y0	A9		Address lines. For memory functions, allow up to 64-MB to be directly addressed. For I/O functions, determine port selection. ZV is video data to ZV port (YUV:4:2:2).
12	A8	A8	CCBE1_	Y2	A8		ZV is video data to ZV port (YUV:4:2:2).
13	A13	A13	CPAR	Y4		A13	ZV is video data to ZV port (YUV:4:2:2).
14	A14	A14	CPERR_	Y6		A14	ZV is video data to ZV port (YUV:4:2:2).
15	WE_	WE_	CGNT_		WE_		Write Enable/Program. For normal operation, enables write access to PC Card (memory) by host. Supports programming of EEPROM on PC Card.
16	READY	IREQ_	CINT_		READY:IREQ_		Ready/Busy/Interrupt Requests. When high, indicates to host system that the PC Card is ready to service an access request. When low, indicates to the host system that the PC Card is either servicing or initiating a request.
17	Vcc	Vcc	Vcc		Vcc		DC power to the PC Card
18	Vpp1	Vpp1	Vpp1		Vpp1 or No Connect		Programming power to the PC Card
19	A16	A16	CCLK	UV2		A16	ZV is video data to ZV port (YUV:4:2:2).
20	A15	A15	CIRDY_	UV4		A15	ZV is video data to ZV port (YUV:4:2:2).
21	A12	A12	CCBE2_	UV6		A12	ZV is video data to ZV port (YUV:4:2:2).
22	A7	A7	CAD18	I²S_SCLK	A7		ZV is I²S data clock

Continued

Table A-12 Pin Assignments for the PC Card and CardBus Interfaces *Continued*

	16-bit				ATA Mode		
Pin	Mem.	I/O+ Mem.	32-bit CardBus	Zoomed Video	Mandatory Signal	Optional Signal	Functional Description
23	A6	A6	CAD20	I²S_MCLK	A6		ZV is master clock.
24	A5	A5	CAD21	RESERVED	A5	3-stated	ZV is N/C in PC Card (3 state).
25	A4	A4	CAD22	RESERVED	A4		ZV is N/C in PC Card (3 state).
26	A3	A3	CAD23	ADD3	A3		ZV is used for accessing PC Card
27	A2	A2	CAD24		A2		Retains function in ATA mode.
28	A1	A1	CAD25		A1		Retains function in ATA mode.
29	A0	A0	CAD26	ADD0	A0		Retains function in ATA mode. ZV is used for accessing PC Card.
30	D0	D0	CAD27		D0		Bi-directional lines for data transfer.
31	D1	D1	CAD29		D1		Bi-directional lines for data transfer.
32	D2	D2	RSRVD		D2		Bi-directional lines for data transfer.
33	WP	IOIS16_	CCLKRUN_	PCLK	WP:IOIS16_		Write Protect/Port is 16-bit. On some memory PC Cards, indicates (when high) status of write-protect tab. For I/O PC Cards, indicates (when low) to host system that PC Card has 16-bit functionality.
34	GND	GND	GND		GND		Ground
35	GND	GND	GND		GND		Ground
36	CD1_	CD1_	CCD1_		CD1_		Card Detect. When active (high), indicates to host system of PC Card installation.
37	D11	D11	CAD2		D11		Bi-directional lines for data transfer.
38	D12	D12	CAD4		D12		Bi-directional lines for data transfer.
39	D13	D13	CAD6		D13		Bi-directional lines for data transfer.
40	D14	D14	RSRVD		D14		Bi-directional lines for data transfer.

Continued

Table A-12 Pin Assignments for the PC Card and CardBus Interfaces *Continued*

	16-bit				ATA Mode		
Pin	Mem.	I/O+ Mem.	32-bit CardBus	Zoomed Video	Mandatory Signal	Optional Signal	Functional Description
41	D15	D15	CAD8		D15		Bi-directional lines for data transfer.
42	CE2	CE2	CAD10		CE2		Card Enable. When active (low), enables bytes at odd (CE2_) address.
43	VS1_	VS1_	CVS1		VS1_		
44	RSRVD	IORD_	CAD13		IORD_		Reserved/Port read. For I/O peripherals is active low during a host system read of an I/O port.
45	RSRVD	IOWR_	CAD15		IOWR_		Reserved/Port read. For I/O peripherals is active low during a host system write of an I/O port.
46	A17	A17	CAD16	Y1		A17	ZV is video data to ZV port (YUV:4:2:2).
47	A18	A18	RSRVD	Y3		A18	ZV is video data to ZV port (YUV:4:2:2).
48	A19	A19	CBLOCK_	Y5		A19	ZV is video data to ZV port (YUV:4:2:2).
49	A20	A20	CSTOP_	Y7		A20	ZV is video data to ZV port (YUV:4:2:2).
50	A21	A21	CDEVSEL_	UV0		A21	ZV is video data to ZV port (YUV:4:2:2).
51	Vcc	Vcc	Vcc		Vcc		DC power to the PC Card.
52	Vpp2	Vpp2	Vpp2		Vpp2 or No Connect		Programming power to the PC Card.
53	A22	A22	CTRDY_	UV1		A22	ZV is video data to ZV port (YUV:4:2:2).
54	A23	A23	CFRAME_	UV3		A23	ZV is video data to ZV port (YUV:4:2:2).
55	A24	A24	CAD17	UV5		A24	ZV is video data to ZV port (YUV:4:2:2).
56	A25	A25	CAD19	UV7		A25	ZV is video data to ZV port (YUV:4:2:2).
57	VS2_	VS2_	CVS2		VS2_		
58	RESET	RESET	CRST_		RESET		Reset

Continued

Table A-12 Pin Assignments for the PC Card and CardBus Interfaces *Continued*

	16-bit				ATA Mode		
Pin	Mem.	I/O+ Mem.	32-bit CardBus	Zoomed Video	Mandatory Signal	Optional Signal	Functional Description
59	WAIT_	WAIT_	CSERR_		WAIT_		Wait. When high, instructs host system to extend bus cycle.
60	RSRVD	INPAK_	CREQ_	I²S_LRCLK	INPAK_		Reserved/Port Acknowledge. Used by I/O peripherals to acknowledge interrupt request. ZV is audio L/R select PCM.
61	REG_	REG_	CCBE3		REG_		Register Select. When active low, address selects attribute memory location. When high, address selects normal memory location.
62	BVD2	SPKR_	CAUDIO		Logic High unless BVD: SPKR_	LED_	Battery Voltage Detect/Speaker Output. Can be used (by host system) to monitor PC Card's internal battery condition. Also used by the PC Card for audio output to host system. ZV is audio PCM data.
63	BVD1	STSCHG_	CSTSCHG_		Logic High unless BVD: STSCHG_	PDIAG	Battery Voltage Detect/Card Status Changed. Used by the host system to monitor the PC Card's internal battery condition. Used by the PC Card to indicate a change in status.
64	D8	D8	CAD28		D8		
65	D9	D9	CAD30		D9		
66	D10	D10	CAD31		D10		
67	CD2_	CD2_	CCD2_		CD2_		Card Detect. When active (high), indicates to host system of PC Card installation.
68	GND	GND	GND		GND		Ground

Table A-13
Expansion Base AC Power Connector

Pin	Signal
1	Neutral
2	Ground
3	Line

appendix B

POWER CORD SET REQUIREMENTS

B.1 3-Conductor Power Cord Set

The wide range input feature of your computer permits it to operate from any line voltage from 100 to 240 volts AC.

The power cord set received with the computer meets the requirements for use in the country where you purchased the equipment.

Power cord sets for use in other countries must meet the requirements of the country where you use the computer.

B.1.1 General Requirements

The requirements listed below are applicable to all countries:

1. The length of the power cord for the system unit must be at least 5.00 feet (1.5 m) and a maximum of 6.56 feet (2.0 m). The length of the power cord for the M35EU must be 10 feet (3.05 m)
2. All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country where the power cord set will be used.
3. The power cord set must have a minimum current capacity of 10A and a nominal voltage rating of 125 or 250 volts AC, as required by each country's power system.
4. The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C5 connector, for mating with appliance inlet on the product.

B.1.2 Country-Specific Requirements

3-Conductor Power Cord Set Requirements — By Country		
Country	**Accredited Agency**	**Applicable Note Numbers**
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	JIS	3
Norway	NEMKO	1
Sweden	SEMKO	1
Switzerland	SEV	1
United Kingdom	BSI	1
United States	UL	2

B.1.3 Notes:

1. The flexible cord must be <HAR> Type HO3VV-F, 3-conductor, 0.75 mm^2 conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.
2. The flexible cord must be Type SPT-2 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15A, 125V) or NEMA 6-15P (15A 250V) configuration.

The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 0.75mm^2 conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (15A, 125V) configuration.

appendix C

CONVENIENCE BASES

C.1 Models and Features

The convenience bases provide a permanent desktop solution for the computer (when docked to the M35EU) by eliminating the need to disconnect external devices such as a printer, keyboard, or monitor when you undock the computer. All necessary connections and disconnections are made automatically when the computer is docked and undocked. The following convenience models are available:

Table C-1
Convenience Bases

Model	Serial Configuration
Convenience Base Pass Through model	BNH3 (Armada 1500 base)
Convenience Base with Ethernet	BNH1 (Armada 1500 base)
Convenience Base II Pass Through model	CBY1
Convenience Base II with Ethernet	CBX1

Figure C-1. *Compaq Convenience Base II*

C.2 Convenience Base Features

The Convenience Base pass through models and the convenience base with Ethernet models include the following features:

	Convenience Base pass through	Convenience Base with Ethernet (BNC)	Convenience Base with Ethernet (RJ45)	Convenience Base II pass through	Convenience Base II with Ethernet
Connections					
Speaker/headphone	■	■	■	■	■
Audio Line-In	■	■	■	■	■
Serial	■	■	■	■	■
Parallel	■	■	■	■	■
External Monitor	■	■	■	■	■
Keyboard	■	■	■	■	■
Pointing Device	■	■	■	■	■
MIDI/Joystick	■	■	■	■	■
USB				■	■
Cable lock provision	■	■	■	■	■
Pass through AC Power	■	■	■	■	■
RJ-45 connector			■		■
BNC Connector		■			
10-Base-T		■	■		■
100-Base-T			(optional)		■
Monitor Stand	■	■	■	■	■
Localized Power Cords	■	■	■	■	■
Kensington lock	■	■	■	■	■

C.3 Convenience Base II Components

The convenience base components are illustrated and described in this section.

C.3.1 Front and Right Side Components

The front and right side convenience base components are shown and identified in this section.

❶ Docking latches
❷ Docking alignment pins
❸ Docking connector
❹ Power switch
❺ Security cable lock
❻ Docking lever
❼ Pass-through AC power outlet
❽ Battery charge light
❾ Suspend button
❿ Power/suspend light
⓫ Retaining latches

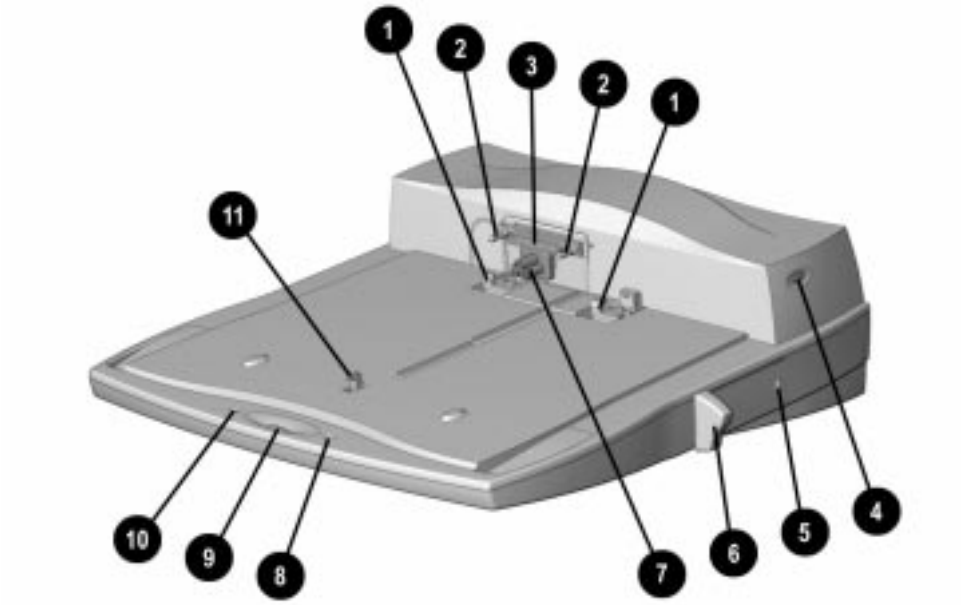


***Figure C-2**. Convenience Base II Front and Right Side Components*

C.3.2 Rear Components

The rear components are shown in the following figure and identified in this section:

❶ RJ-45 jack (Ethernet model only)
❷ Serial connector
❸ Parallel connector
❹ External monitor connector
❺ MIDI/Joystick connector
❻ Pointing device connector
❼ Keyboard connector
❽ Speaker/headphone jack
❾ USB connector
❿ Audio Line-in jack
⓫ Fan
⓬ AC power connector

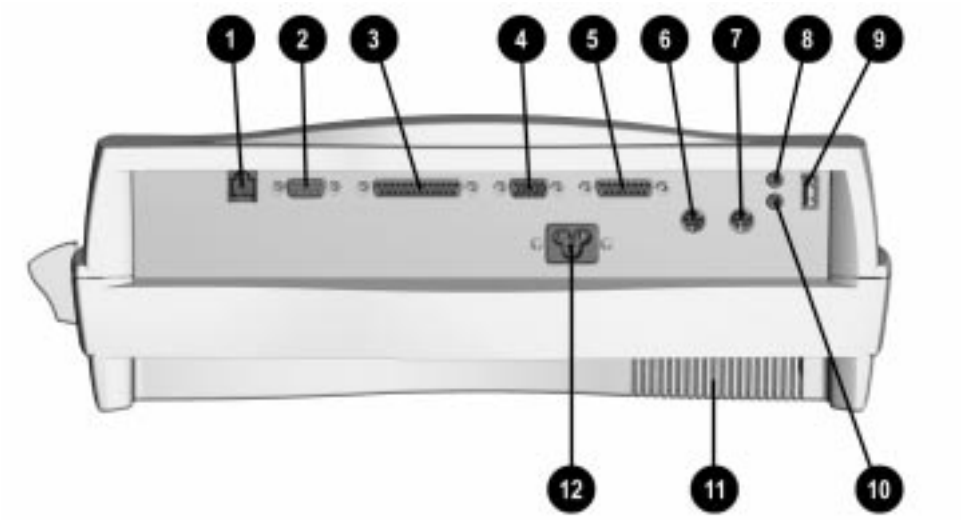


Figure C-3. *Convenience Base II with RJ45 Rear Components*

Table C-2
Convenience Base Models

Item	Description	Spares Part Number
1	Convenience Base II (Ethernet model)	316312-001
*	Convenience Base II (Pass through model)	316291-001

* Not illustrated

Table C-3
Convenience Base II Specifications

	U.S.	Metric
Dimensions		
Height	4.9 in	12.46 cm
Height w/Monitor Stand	5.2 in	13.208 cm
Length	14.7in	37.34 cm
Width	14.2 in	36.07 cm
Weight		
Expansion Base	4.25 lbs	1.93 kg
Expansion Base w/Monitor Stand	5.8 lbs	2.63 kg
Power Supply (Input)		
Operating Voltage	100 to 240 VAC	
Operating Current	1.10 Amp Maximum	
Rated Voltage	100 to 240 VAC	
Rated Current	1.0 Amp Maximum	
Line Frequency	47 to 63 Hz.	
Temperature		
Operating	50 to 95°F	10 to 35°C
Non-operating	-4 to 140°F	-20 to 60°C
Relative Humidity		
Operating	10 to 90%	
Storage	5 to 95%	
Altitude		
Operating	10,000 ft	3.15 km
Nonoperating	30,000 ft	10.14 km
Shock		
Operating	10 G, 11 ms, half sine	
Nonoperating	140 G, 2 ms, half sine	
Vibration		
Operating	0.25 G, 5 to 500 Hz, 0.5 octave/min sweep rate	
Nonoperating	1.0 G, 5 to 500 Hz, 0.5 octave/min sweep rate	

Table C-4
Convenience Base II Power Cords

Description		Spares Part Number
*	AC Power cord, 10 foot (US/Canada)	255135-001
*	AC Power cord, 10 foot (Australia/New Zealand)	255135-011
*	AC Power cord, 10 foot (UK)	255135-011
*	AC Power cord, 10 foot (Europe)	255135-021
*	AC Power cord, 10 foot (Italy)	255135-061
*	AC Power cord, 10 foot (Denmark)	255135-081
*	AC Power cord, 10 foot (Singapore)	255135-111
*	AC Power cord, 10 foot (Japan)	255135-291
*	AC Power cord, 10 foot (Korea)	255135-AD1

* Not illustrated

Table C-5
Convenience Base II Options

Description	Spares Part Number
Monitor Stand	316286-001

Table C-6
Convenience Base II Shipping Boxes

Description	Spares Part Number
Shipping Carton (5 ea)	210432-001