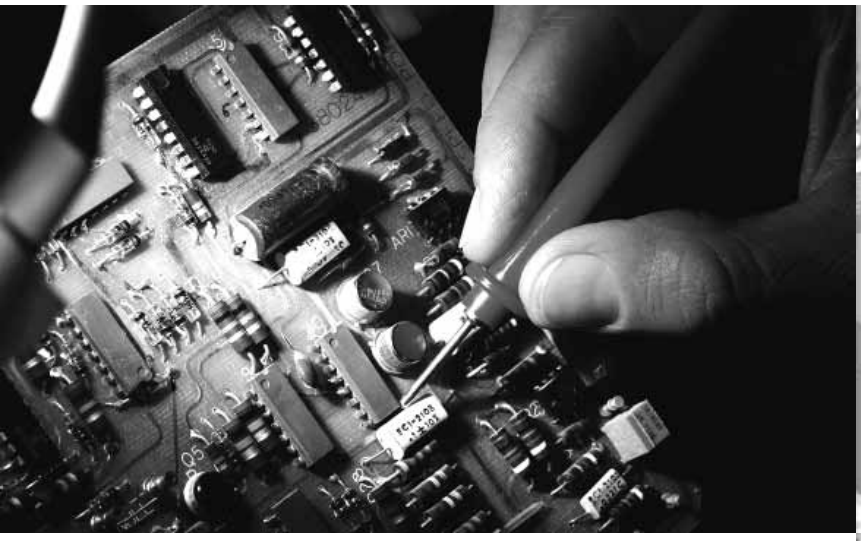
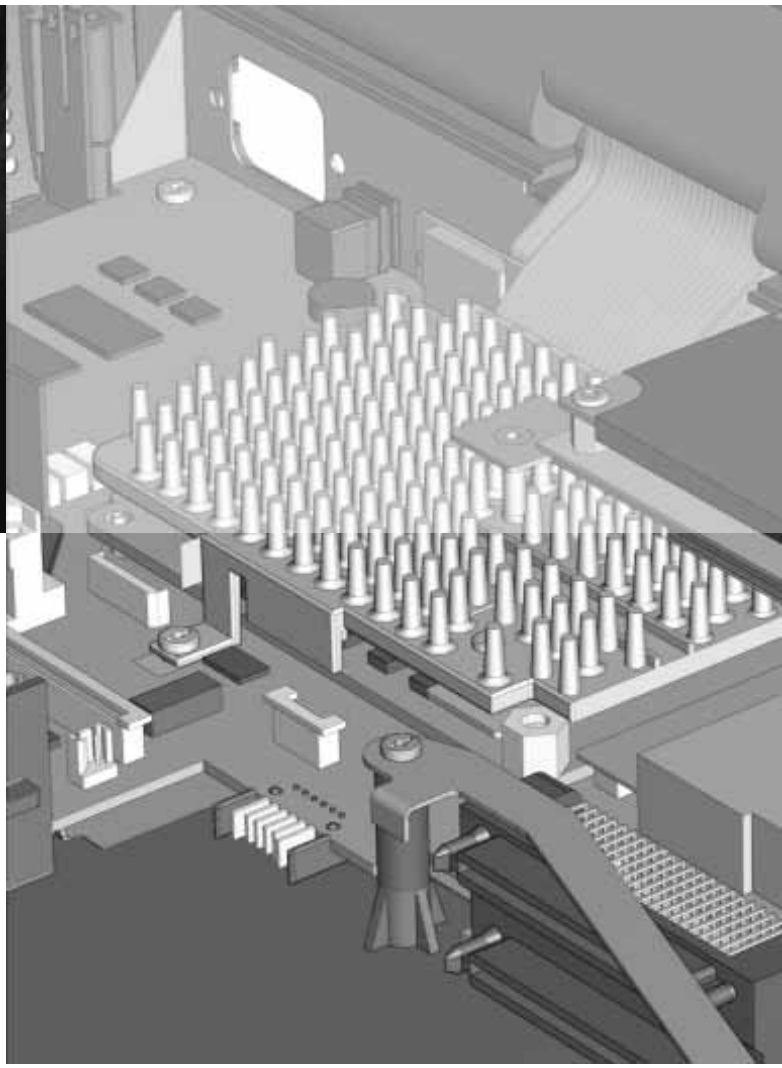
Compaq Armada E700 Series of Personal Computers

Maintenance and Service Guide





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MAINTENANCE AND SERVICE GUIDE

Compaq Armada E700 Series of Personal Computers

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preface

USING THIS GUIDE

This *Maintenance and Service Guide* is a troubleshooting reference that can be used when servicing the Compaq Armada E700 Series of Personal Computers.

Compaq Computer Corporation reserves the right to make changes to the Compaq Armada E700 Series of Personal Computers without notice.

Symbols

The following words and symbols mark special messages throughout this guide:

	WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.
	CAUTION: Text set off in this manner indicates that failure to follow directions in the caution could result in damage to equipment or loss of information.

IMPORTANT: Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Technician Notes

	WARNING: Only authorized technicians trained by Compaq should repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly/module level repair. Because of the complexity of the individual boards and subassemblies, no one should attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create a safety hazard. Any indication of component replacement or printed wiring board modifications may void any warranty or exchange allowances.
	WARNING: The computer is designed to be electrically grounded. To ensure proper operation, plug the AC power cord into a properly grounded electrical outlet only.
	CAUTION: To properly ventilate the system, you must provide at least 3 inches (7.62 cm) of clearance on the left and right sides of the computer.

Serial Number

When requesting information or ordering spare parts, provide the computer serial number. The serial number is on the bottom of the computer.

Locating Additional Information

The following documentation provides information for the computer:

- Compaq Armada E700 Series of Personal Computers documentation set
- Compaq Armada E700 Series of Personal Computers *Technical Reference Guide*
- Microsoft Operating System Manual
- Compaq Service Training Guides
- Compaq Service Advisories and Bulletins
- *Compaq QuickFind*
- *Compaq Service Quick Reference Guide*
- Compaq Internet site at http://www.Compaq.com

chapter 1

PRODUCT DESCRIPTION

1.1 Computer Features and Models

The Compaq Armada E700 Series of Personal Computers offers advanced modularity, an Intel Pentium II processor with 64-bit architecture, an industry-leading Accelerated Graphics Port (AGP) implementation, and extensive multimedia support. The computer provides desktop functionality and connectivity through the optional Compaq expansion base and compaq convenience base.

Figure 1-1. *Compaq Armada E700 Personal Computer*

Models

The Armada E700 models are shown in Table 1-1. The computer model designation is composed of a group of characters that define each model's features.

Table 1-1
Models and Model Naming Convention
Compaq Armada E700 Series of Personal Computers

Key										
E	**7**	**0**	**0**	**6**	**400**	**T14**	**14.0**	**V**	**M**	**1**
A		B		C	D	E	F	G	H	I

Key	Description	Options		
A	Line designator	E = Expandability	M = Mobility	V = Value
B	Series designator	700 = Armada 700		
C	Processor type	6 = Intel Mobile Pentium II processor with MMX technology		
D	Processor speed	400 = 400 MHz		
E	Panel type	T14 = 14.1" XGA TFT 1024 × 768		
F	Hard drive capacity	14.1 = 14.1 GB	10.0 = 10.0 GB	
G	Drive type	V = DVD-ROM	D = CD-ROM	0 = none
H	Modem	M = internal or PC Card modem	C = combination modem/NIC	0 = audio only
I	Operating system & software version	0 = No operating system 1 = Windows 95 2 = Windows 98	3 = Windows NT 4.0 4 = Windows 2000	

Model							Memory	Pointing Device	SKU#
Armada E700	6400	T14	14.0	V	C	3	128 MB	EasyPoint IV	113363-XXX
Armada E700	6400	T14	14.0	V	M	3	128 MB	EasyPoint IV	113364-XXX
Armada E700	6400	T14	14.0	V	0	3	128 MB	EasyPoint IV	113365-XXX
Armada E700	6400	T14	14.0	V	C	1	128 MB	EasyPoint IV	113366-XXX
Armada E700	6400	T14	14.0	V	M	1	128 MB	EasyPoint IV	113367-XXX
Armada E700	6400	T14	14.0	V	0	1	128 MB	EasyPoint IV	113368-XXX

Features

The computer has the following standard features:

- Intel Mobile 400-MHz Pentium II processor with 64-bit architecture, MMX technology, and 512-Kbyte, level-2 cache memory
- Industry-leading portable computer AGP implementation, featuring:
  - 66-MHz dedicated graphics bus
  - frame made AGP
- 4-MB SGRAM (synchronous graphics)
- 128-MB of SDRAM (synchronous) on system board; expandable to 384 MB
- Upgradable flash ROM BIOS
- 14.1-inch XGA (1024 × 768) TFT color display, true color (24-bit) support
- Keyboard with built-in EasyPoint IV pointing device and mouse buttons or touchpad and touchpad mouse buttons
- Lithium ion (Li-ion) battery pack
- Removable 14.0- and 10.0-GB hard drive
- MultiBay that supports a second hard drive, a second battery pack, a diskette drive, a CD-ROM drive, or a DVD-ROM drive
- Two PC Card slots that accept 32- and 16-bit Type I, II, and III PC Cards, with zoomed video interface in the bottom slot
- IrDa-compliant infrared port[1] (4-Mbps standard) for wireless file transfer, printing, and file synchronization
- Built-in stereo speakers featuring Compaq PremierSound, microphone, and jacks for stereo audio sound with electronic equalization and wave table synthesis
- Energy Star-compliant power saving features
- Ports and connectors for external equipment, including universal serial bus (USB), serial, parallel, external monitor, and PS/2-compatible pointing device or keyboard
- Security features
- Desktop functionality available with the optional Compaq expansion base and Compaq convenience base
- Domestic and international modem and Ethernet connectivity
- Integrated AC Adapter
- Integrated V.90 56-Kbps data/fax modem

[1] IrDa 4MB compliant. Infrared performance may vary depending on performance of infrared peripherals, distance between infrared devices, and applications used.

Intelligent Manageability

Intelligent Manageability consists of preinstalled software tools for the computer and Compaq servers that assist in tracking, troubleshooting, protecting, and maintaining the computer. It provides the following functions:

- **Asset Management**—provides detailed configuration and diagnostic information.
- **Fault Management—**prevents, predicts, and alerts of impending hardware problems.
- **Security Management—**protects unauthorized access to data and components.
- **Configuration Management—**optimizes the computer by providing the latest drivers, utilities, and software, which are available on CD-ROM and the Compaq Web site at www.compaq.com/support/portables.

NOTE: For further help with Intelligent Manageability, select Start → Compaq Information Center → Intelligent Manageability

Accessing the Web Agent

The computer may have a preinstalled Web Agent that allows computer configuration information to be viewed using Web technology. To access this feature, select Start → Compaq Information Center → Insight Web Management.

If the computer does not have a preinstalled Web Agent, it can be downloaded from the Compaq Web site at www.compaq.com.

Asset Management

AssetControl enables component information to be retrieved when on the road or connected to the network.

AssetControl also enables the network administrator to remotely retrieve information from any Compaq computer connected to the network. The information can be used to assist in tracking and maintaining the computer and its components. It provides the following information:

- **Inventory information**—The network administrator can retrieve information about the computer over the network by using Compaq Insight Manager or any PC management tool provided by Compaq Solution Partners. Asset control information retrieved from the computer includes:
  - Manufacturer, model, and serial number of Compaq computers, monitors, hard drives, battery packs, memory boards, processor speeds, and operating systems
  - Asset tag
  - System board and ROM revision levels
  - BIOS settings
- **Diagnostic information**—Diagnostics for Windows includes information on hard drives, ports, and video, sound, and other components. This application also allows the user to run multithreaded tests on hardware components. If problems are found, recommendations are provided.

All of the above information can be viewed, printed, or saved.

Fault Management

Fault Management features minimize downtime and data loss by monitoring system performance and generating the following alerts:

- **Hard drive alert**—provides 72-hour advance warning of impending hard drive problems and can automatically start optional backup software.
- **System temperature alert**—reports overheating. As the system temperature rises, this feature first adjusts fan speed and other cooling components, then displays an alert, then shuts down the system.
- **Battery pack alert**—reports charging problems and battery pack failure.
- **Monitor alert**—diagnoses and displays external monitor operational problems.
- **Memory alert**—reports memory board configuration changes when a memory board is removed, added, or reconfigured. It also provides the previous and current configurations for comparison.

The alerts work with or without network connection. If the computer is not connected to the network, the network administrator cannot receive alerts from the computer.

Fault Management Alerts

Alerts can be enabled, disabled, and tested, and software can be set to back up information whenever a hard drive alert occurs.

- While the computer is connected to a network, alerts pop up on the computer display and are simultaneously reported to the network console.
- **System temperature alert**—reports overheating. As the system temperature rises, this feature first adjusts fan speed and other cooling components, then displays an alert, then shuts down the system.
- When the computer is not connected to a network, the user will receive a local alert.

To set alerts, select the Intelligent Manageability icon in the system tray.

Security Management

Security Management features customize system security.

- **Power-On and Setup Passwords**—prevent unauthorized access to information and computer configuration.
- **DriveLock**—prevents unauthorized access to hard drives.
- **Device disabling**—prevents unauthorized data transfer through modems, serial ports, parallel ports, and infrared ports on the computer and an optional docking station.
- **QuickLock/QuickBlank**—locks the keyboard and clears the screen.
- **Ownership Tag**—displays ownership information during system restart.

Configuration Management

Configuration Management optimizes software upgrade and customer support procedures. Compaq provides support software to optimize the performance of the computer. This support software is accessible through a monthly CD-ROM subscription. Support software can also be downloaded from the Compaq Web site at www.compaq.com/support/ portables.

Managing Power

The computer comes with a collection of power management features that allow battery operating time to be extended and power to be conserved. Use power management to monitor most computer components such as the hard drive, processor, and display.

Accessing Power Management

In Windows 95, select Start→Settings→Control Panel→Power to view or adjust settings in Power Properties.

NOTE: If Windows NT 4.0 is running, select Compaq Power instead of Power. If Windows 98 is running, select Power Management.

Power Management Levels

To extend the life of batteries, use the Battery Conservation tab in Power Properties. If Windows 95 is running, select Start → Settings → Control Panel → Power to access Power Properties.

NOTE: If Windows NT 4.0 is running, select Compaq Power instead of Power. If Windows 98 is running, select Power Management.

The level of battery conservation or selection of preset power management levels can be customized.

1.2 Computer Components

System Memory Options

The main memory subsystem supports a minimum standard 128 MB of Synchronous SDRAM, expandable to 384 MB. The minimum standard Synchronous SDRAM is integrated on the system board. The upgrade SDRAM is accomplished with memory expansion boards that are available in 32-, 64-, and 128-MB.

The memory expansion slot cover is secured to the computer by a slotted Torx T-8 screw. A tamper-resistant security screw, included with the computer, can be used to provide added security. The security wrench, also included with the computer, must be used to remove the tamper-resistant security screw.

System memory can be upgraded as shown in Table 1-2.

Table 1-2
Memory Upgrade

Base Memory on System Board	Memory Expansion Board	Total Memory
128 MB	256 (2 × 128 MB)	384 MB
128 MB	192 (1 × 128 MB + 1 × 64 MB)	320 MB
128 MB	160 (1 × 128 MB + 1 × 32 MB)	288 MB
128 MB	128 (1 × 128 MB or 2 × 64 MB)	256 MB
128 MB	96 (1 × 64 MB + 1 × 32 MB)	224 MB
128 MB	64 (1 × 64 MB or 2 × 32 MB)	192 MB
128 MB	32 (1 × 32 MB)	160 MB

Power Equipment

The following battery options are available:

- Lithium ion battery pack
- Battery Charger
- Automobile Power Adapter/Charger and Aircraft Power Adapter

Lithium Ion Battery Pack

The battery pack can be used in the computer dedicated battery bay, computer MultiBay, Compaq expansion base MultiBays, and Compaq convenience base MultiBay and battery charging bay.

Battery Charger

The external Battery Charger has the following features:

- Two battery charging bays
- Charging of one battery in 1.5 hours
- Charging of two batteries in 3 hours

Automobile Power Adapter/Charger and Aircraft Power Adapter

The Automobile Power Adapter/Charger and Aircraft Power Adapter allows the computer to operate from a 12-volt aircraft DC socket and from an automobile cigarette lighter receptacle.

Mass Storage Devices

The following mass storage devices are available for the computer.

Table 1-3
Mass Storage Devices

Device	Capacity
Diskette drive	3.5-inch, 1.44 MB, 720 Kbyte, and 1.2 MB (Japanese format)
Hard drive	14.0 and 10.0 GB (also available as an option)
CD-ROM drive	24-Speed Max (available as an option)
DVD-ROM	4.7 GB
SuperDIsk LS-120 drive	120 MB (available as an option)
External diskette drive	3.5-inch, 1.44 MB

Diskette Drive

The computer uses a 3.5-inch diskette drive that fits into the computer, Compaq expansion base, or Compaq convenience base MultiBays. The diskette drive is a three-mode type that is compatible with 1.44-MB, 1.2-MB, and 720-Kbyte (formatted) AT drive types. The system supports a maximum of two diskette drives: one in the computer MultiBay and one in the Compaq expansion base or Compaq convenience base MultiBay.

Hard Drive

The dedicated hard drive bay supports a removable 14.0- or 10.0-GB hard drive. The MultiBay supports a second hard drive. Before a hard drive can be used in the MultiBay, it first must be inserted in the Hard Drive MultiBay Adapter.

CD-ROM Drive

A 24-speed Max CD-ROM drive is available as an option. The drive supports 3.5-inch and 5.25-inch media in the following formats:

- ISO-9660, the most common CD-ROM format
- CD-ROM XA eXtended Architecture, a standard for storing multimedia information
- Photo CD (single and multisession), Kodak's format for storing photographic images on CD-ROM
- CD-i and CD-i Bridge
- CD-DA (digital audio)
- CD-ROM Mode 1 and Mode 2
- CD-I Mode 2 (Form 1 and Form 2)
- Video CD

1.3 Computer External Components

The external components on the display and left side of the computer are shown in Figure 1-2 and described in Table 1-4.

Figure 1-2. *Display and Left Side Components*

Table 1-4
Display and Left Side Components

Item	Component	Function
1	Fan	Provides airflow exhaust.
2	Video out jack	Connects a television, VCR, camcorder,overhead projector, or video capture card. **NOTE:** These connections require the use of optional videl cables and the video out adapter included with the computer.
3	Hard drive bay	Accepts removable hard drive. Holds primary hard drive.
4	Audio bass port	Enhances sound.
5	Security slot	Attaches an optional security cable to the computer.
6	Mono microphone	Allows for audio input; located on the inside and outside of the display, can be used whether the computer is open or closed.
7	Display release latch	Opens the computer.

The external components on the front panel of the computer are shown in Figure 1-3 and are described in Table 1-5.

Figure 1-3. *Front Panel Components*

Table 1-5
Front Panel Components

Item	Component	Function
1	Mono microphone jack	Connects mono microphone, disabling the built-in microphone.
2	Stereo speaker/headphone jack	Connects external stereo speakers, headphones, or headset. This jack is driven by an amplifier and has volume control. The internal computer speakers are turned off when external speakers or headphones are plugged into this jack.
3	Stero line-in jack	Connects external device such as a CD player, tuner, or tape deck.
4	Battery bay	Accepts Lithium ion battery pack.
5	Top MultiBay	Supports a 12.7-mm Armada drive or a MultiBay battery pack.
6	Bottom MultiBay	Supports a 12.7-mm Armada drive or a MultiBay battery pack. Also supports a 17-mm Armada hard drive or a Dual-MultiBay battery pack, which fills both the top and bottom MultiBays.

The external components on the right side of the computer are shown in Figure 1-4 and are described in Table 1-6.

Figure 1-4. *Right Side Components*

Table 1-6
Right Side Components

Item	Component	Function
1	Audio bass port	Enhances sound.
2	RJ-45 jack (network models only)	Connects the network cable. **NOTE:** A network cable is included with network models.
3	RJ-11 jack (internal modem models only)	Connects the modem cable to an internal modem. **NOTE:** A modem cable is included with internal modem models. Connects a standard telephone cable for a modem in North America, Latin America, Japan, China, and Hong Kong only.
4	PC Card slots	Accepts 16- and 32-bit CardBus PC Cards.
5	PC Card eject levers (2)	Eject PC Cards from the slots.

The external components on the rear panel of the computer are shown in Figure 1-5 and described in Table 1-7.

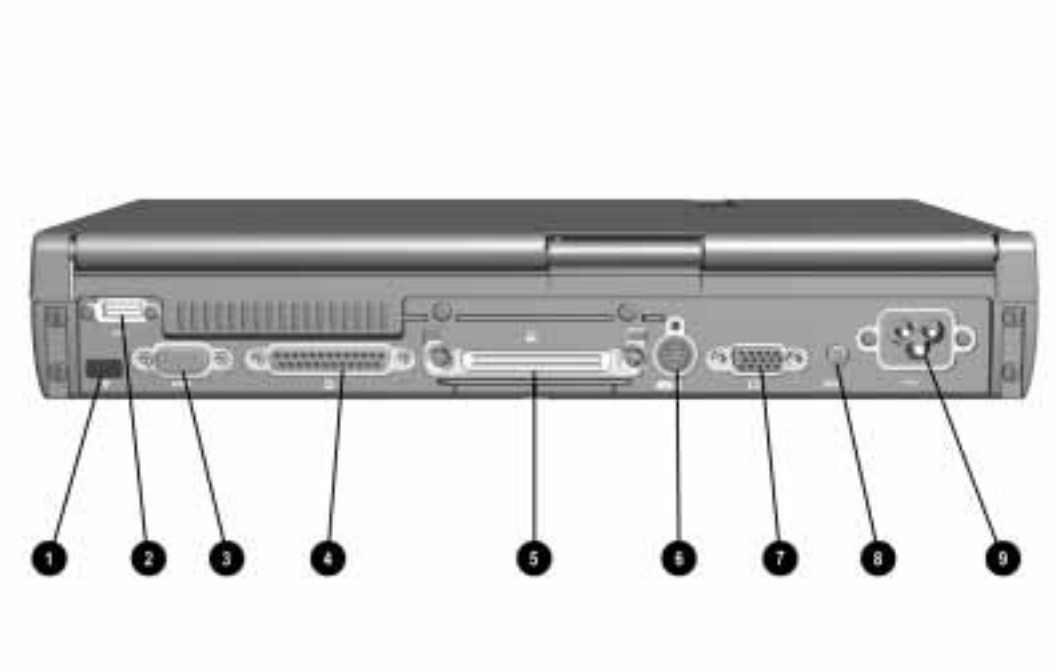


Figure 1-5. *Rear Panel Components*

Table 1-7
Rear Panel Components

Item	Component	Function
1	Infrared port	Provides wireless communication between the computer and another infrared-equipped device using an infrared beam.
2	Universal serial bus (USB) connector	Connects USB devices, such as cameras for video conferencing, or hubs which connect multiple USB devices. This connector is a powered hub. When running Windows 95 or higher or Windows NT or higher, any combination of up to five powered or unpowered hubs can be connected in any sequence, as long as two unpowered hubs are not connected next to each other. When running a lower version of Windows or Windows NT, or a different operating system, up to two hubs can be connected.
3	Serial connector	Connects optional serial devices such as a mouse.
4	Parallel connector	Connects optional parallel devices such as a printer.
5	Docking connector	Connects optional Compaq expansion base or Compaq convenience base.
6	Keyboard/mouse connector	Connects an optional full-sized keyboard or a mouse. Both external mouse and computer pointing device are active. An optional splitter/adapter allows both an external keyboard and mouse to be used at the same time.
7	External monitor connector	Connects an optional external monitor or a television adapter.
8	DC power connector	Connects an AC Adapter (external adapter models only), an optional Automobile Power/Adapter Charger, or an optional Aircraft Power Adapter.
9	Power cord connector	Connects external (AC) power.

Computer keyboard components are shown in Figure 1-6 and described in Table 1-8.

Figure 1-6. *Computer Components: Keyboard*

Table 1-8
Keyboard Components

Item	Component	Function
1	Numeric lock light	Turns on when the Numeric Lock function is on.
2	Scroll lock light	Turns on when the Scroll function is on.
3	Caps lock light	Turns on when the Caps Lock function is on.
4	Display switch	Turns off the display if it is closed while the computer is turned on. The computer beeps unless audio has been disabled.
5	Vents	Allow airflow to cool the computer.
6	EasyPoint IV pointing stick (pointing stick models only)	Moves the mouse cursor.
7	Windows application key	Displays shortcut menu for item beneath mouse cursor.
8	Stereo speakers	Produce stereo sound.
9	Left and right mouse buttons (pointing stick models only)	Function like left and right mouse bottons on an external mouse.
10	Scroll pointing stick button (pointing stick models only)	Can be set to scroll, magnify, or function like the third button on an external mouse.
11	Fn key	Used with hotkeys to perform perset hotkey functions.
12	Caps lock key	Turns on the caps lock function.
13	Power switch	Turns the computer on or off of exits Suspend[1].
14	Volume control	Adjusts volume of stereo speakers.
15	Suspend button[2]	Initiates or exits Suspend[1]. When pressed with the **Fn** key, initiates Hibernate.

Additional computer keyboard components are shown in Figure 1-7 and described in Table 1-9.

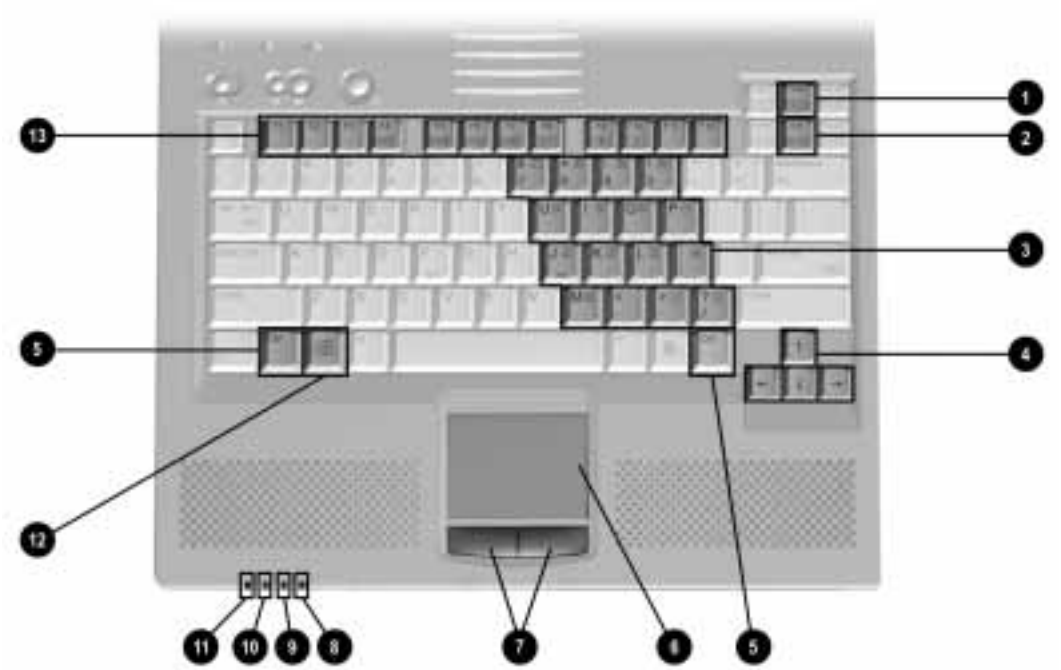


Figure 1-7. *Keyboard Components (continued)*

Table 1-9
Keyboard Components (continued)

Item	Component	Function
1	Page up key	Moves image to previous screen.
2	Page down key	Moves image to following screen.
3	Embedded numeric keypad	Converts keys to numeric keypad.
4	Cursor-control keys	Move the cursor around the screen.
5	Control key	Used with selected alphabetic keys to access File and Edit menu options.
6	Touchpad (touchpad models only)	Moves the mouse cursor, selects, and activates.
7	Left and right touchpad buttons (touchpad models only)	Function like the left and right mouse buttons on an external mouse.
8	MultiBay drive light (green)	Turns on when a MultiBay device is being accessed or a battery pack in the MultiBay is charging or waiting to be charged.
9	Hard drive light (green)	Turns on when the hard drive is being accessed.
10	Power/suspend light (green)	Turns on when computer is turned on; blinks in Suspend; turns off when computer is in Hibernation or turned off.
11	Battery power light (orange)	Turns on when a battery pack in the battery bay is charging or waiting to charge. Turns off when battery pack is fully charged. Blinks six times if low-battery condition is reached. Blinks continuously if critical low-battery condition is reached. If AC power is not connected within 20 seconds, Hibernation is initiated (unless Hibernation has been disabled).
12	Microsoft logo key	Displays the Windows Start menu.
13	F1 through F12 function keys	Perform preset functions.

The external components on the bottom of the computer are shown in Figure 1-8 and are described in Table 1-10.

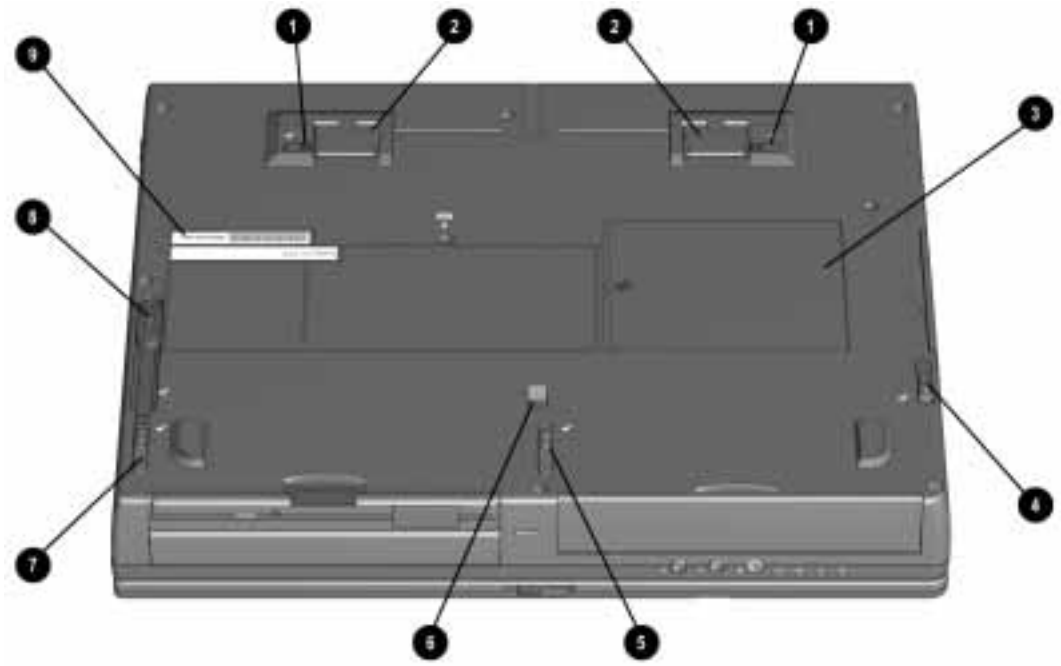


Figure 1-8. *Bottom Components*

Table 1-10
Bottom Components

Item	Component	Function
1	Tilt feet latches	Release the tilt filt. **NOTE:** To close the tilt feet, press the feet against the bottom of the computer.
2	Tilt feet	Tilt the computer for ease of use.
3	Memory expansion compartment cover	Covers the memory expansion compartment.
4	Hard drive release latch	Releases the hard drive from the hard drive bay.
5	Battery release latch	Releases the battery from the battery bay.
6	Docking restraint latch recess	Secures the computer to the expansion base.
7	Front MultiBay release latch	Releases a MultiBay device from the bottom MultiBay or a device which occupies both the top and bottom MultiBays.
8	Rear MultiBay release latch	Releases a MultiBay device from the top MultiBay.
9	Serial number	Identifies the computer; needed when caling Compaq customer support.

1.4 Design Overview

This section presents a design overview of key parts and features of the computer. For assembly/disassembly instructions for the parts described in this section, refer to Chapter 5.

System Board

The system board provides the following device connections:

- Memory expansion board
- MultiBay device
- Hard drive
- Display
- Keyboard/EasyPoint IV pointing device or touchpad
- Audio
- Pentium II processor
- Fan
- PC Cards
- Modem

The computer is equipped with a 3.1-volt, Intel Mobile Pentium II 400-MHz processor. For ventilation, an electrical fan is installed. The fan operates on from 5 to 12 volts and is controlled by a temperature sensor. The fan is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software applications. Exhaust air is displaced through the ventilation grill located on the left side of the computer.

CAUTION: To properly ventilate the computer, allow at least a 3-inch (7.6-cm) clearance on the left and right sides of the computer.

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. If you are unable to run POST or if the problem persists after running POST, perform the recommended actions described in the diagnostic tables in Section 2.5.

Follow these guidelines when troubleshooting:

- Complete the recommended actions in the order in which they are given.
- Repeat POST 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 recommended removal and replacement procedures.
- 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
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 or Computer Setup. A low battery condition could initiate Hibernation and interrupt the test.

Before running POST, complete the following steps:

1. Obtain established passwords. If you must clear the passwords, go to Section 2.2.
2. Ensure that the hard drive is installed in the computer.
3. 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.
4. Turn on the computer.
5. If a power-on password has been established, type the password and press **Enter.**
6. Run Computer Setup (Section 2.5). If a Setup password has been established, type the password and press **Enter.**
7. Turn off the computer and all external devices.
8. 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 Prompted Diagnostics.
   d. After “Identifying System Hardware” completes, select Interactive Testing and follow the instructions on the screen.

2.2 Clearing Passwords

1. Turn off the computer.
2. Disconnect the AC Adapter (refer to Section 5.3).
3. Remove the battery pack (Section 5.6).
4. Disconnect and remove the Real Time Clock (RTC) battery (Section 5.11).
5. Wait five minutes.
6. Reconnect the RTC battery.
7. Install the keyboard deck and keyboard assembly.
8. Reconnect the AC Adapter. Do **not** reinstall the battery pack yet.
9. Turn on the computer.

NOTE: Remember to set the date and time the next time the computer is turned on.

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, then stops.
- The system emits a series of beeps, then 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.

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.

Continued

Table 2-1 *Continued*

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 auxiliary 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 ScanDisk. 2. Check disk in DOS and Windows 95.

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

*****Beep codes are defined in Table 2-3.

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.

NOTE: 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
- Compaq Diagnostics

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.

Selecting Computer Setup or Compaq Diagnostics for Windows

The computer features two system management utilities:

- **Computer Setup** is a system information and configuration utility that can be used even when your operating system is not working or will not load. It includes custom settings that are not available in Windows.

  To configure a device in Windows NT 4.0, you must use Computer Setup.

- **Compaq Diagnostics for Windows** is a system information and diagnostic utility that is used within the Windows operating system. Use Compaq Diagnostics for Windows to test system components and to display system information whenever possible.

  To configure a device in Windows 95 or 98 use the operating system itself. Windows 95 and 98 can be used to add and remove programs, and provide Wizards to ensure proper device drivers are installed. Diagnostics for Windows is NOT a configuration tool and might only test devices that are properly configured by the operating system.

  NOTE: It is not necessary to configure a device connected to a USB connector on the computer or an optional docking base.

Using Computer Setup

All information and settings in Computer Setup are accessed from the File, Security, or Advanced menus.

NOTE: Your settings in Computer Setup are not affected by updating the system ROM.

To view information or change a setting in Computer Setup:

1. Turn on or restart the computer. When the blinking cursor appears in the upper-right corner of the screen, press **F10**.
   - To change the language, press **F2**.
   - To view navigation information, press **F1**.
   - To return to the Computer Setup menu from anywhere in Computer Setup, press **Esc**.
2. Select the File, Security, or Advanced menu.
3. To close Computer Setup and restart the computer
   - Select File→Ignore Changes and Exit, then press **Enter**.

     or

   - Select File→Save Changes and Exit, then press **Enter**.
4. To confirm your choice, press **F10**.

File Menu

Begin here	To do this
System information	■ View identification information about the computer, docking base, and battery packs. ■ View specification information about the processor, memory and cache size, and ROM date and family.
Save to floppy	Save system configuration to a diskette.
Restore from floppy	Restore system configuration from a diskette. (The diskette contains your personal configuration, so you should restore from the diskette before using the System Recovery CD-ROM.)
Restore defaults	Replace configuration settings in Computer Setup with factory default settings. (Identification information is retained.)
Ignore changes and exit	Cancel changes entered during the current Computer Setup session, then exit and restart the computer.
Save changes and exit	Save changes, then exit and restart the computer.

Security Menu

Begin here	To do this
Setup password	Enter, change, or delete a setup password.
Power-On password	Enter, change, or delete a power-on password.
Password options	Enable/disable: ■ QuickLock/QuickBlank. ■ Lock keyboard and pointing stick or touchpad at startup. (These features can be enabled only when a power-on password is set.)
DriveLock passwords	Enter, change, or delete a DriveLock password.
Device security	Enable/disable ■ Ports or diskette drives. ■ Diskette write. ■ CD-ROM or diskette startup. **NOTE:** Settings for a DVD-ROM can be entered in the CD-ROM field.
System IDs	Enter identification numbers for the computer, a docking base, and battery packs.

Advanced Menu

Begin here	To do this
Language (or press **F2**)	Change the Computer Setup language.
Boot Options	Enable/disable ■ QuickBoot, which starts the computer more quickly by eliminating some startup tests. (If you suspect a memory failure and want to test memory automatically during startup, you may want to disable QuickBoot.) ■ MultiBoot, which enables you to set a startup sequence that can include any drives in the system.
Device Options	■ Enable/disable the embedded numeric keypad at startup. ■ Enable/disable multiple standard pointing devices at startup. When this feature is disabled, only one pointing device is activated at startup. ■ Enable/disable USB legacy support for one USB mouse and one USB keyboard. (When USB legacy support is enabled, the keyboard and mouse work without a loaded USB driver.) ■

Removing a Hard Drive from the MultiBay

Before removing a hard drive, back up all information on the hard drive.

1. Save all work, exit all applications, and shut down the computer.
2. Tilt the computer at an angle ❶ so the bottom of the computer is accessible (Figure 5-17).
3. If a 12.7-mm Armada MultiBay hard drive adapter is being removed from the top MultiBay, slide the rear MultiBay release latch ❷ toward the front of the computer.
4. Grasp the hard drive assembly using the recess ❹ beneath the MultiBay and remove the hard drive assembly from the computer.
5. If a 17-mm Dual-MultiBay Hard Drive Adapter is being removed, or if a 12.7-mm Armada MultiBay hard drive adapter is being removed from the bottom MultiBay, slide the front MultiBay release latch ❸ toward the back of the computer.
6. Grasp the hard drive assembly using the recess ❹ beneath the MultiBay and remove the hard drive assembly from the computer.

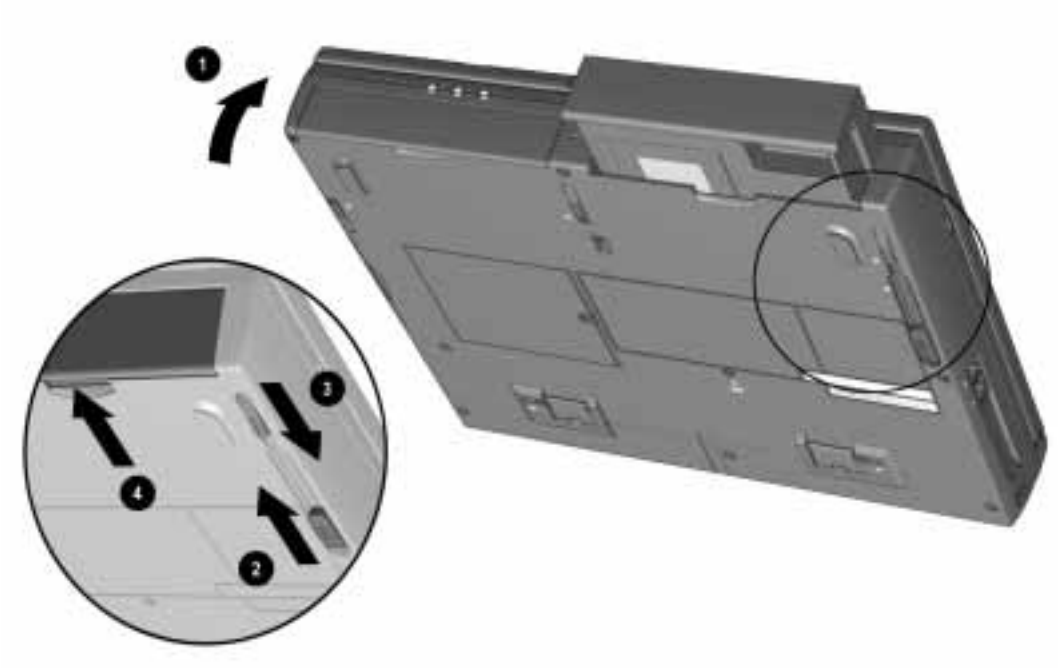


Figure 5-17. *Removing a Hard Drive Assembly from the MultiBay*

If you are not inserting another drive or a battery pack into the MultiBay, insert the MultiBay weight saver included with the computer.

Inserting a Hard Drive into the MultiBay

If you are moving a hard drive from the hard drive bay to the MultiBay, remove the hard drive from the hard drive tray. Refer to the "Removing a Hard Drive from the Hard Drive Bay" section in this chapter for more information.

A 17-mm hard drive must be inserted into a Dual-MultiBay Hard Drive Adapter before being inserted into the computer MultiBay. A 12.7-mm hard drive can be inserted into either a Dual-MultiBay Hard Drive Adapter or an Armada MultiBay hard drive adapter before being inserted into the computer MultiBay(s).

1. Save all work, exit all applications, and shut down the computer.
2. Push back and hold the slide tab ❶ on the hard drive MultiBay adapter (Figures 5-18 and 5-19).
3. Lower the hard drive ❷ into the adapter.
4. Slide the hard drive toward the connector ❸ in the adapter until the connectors are seated.

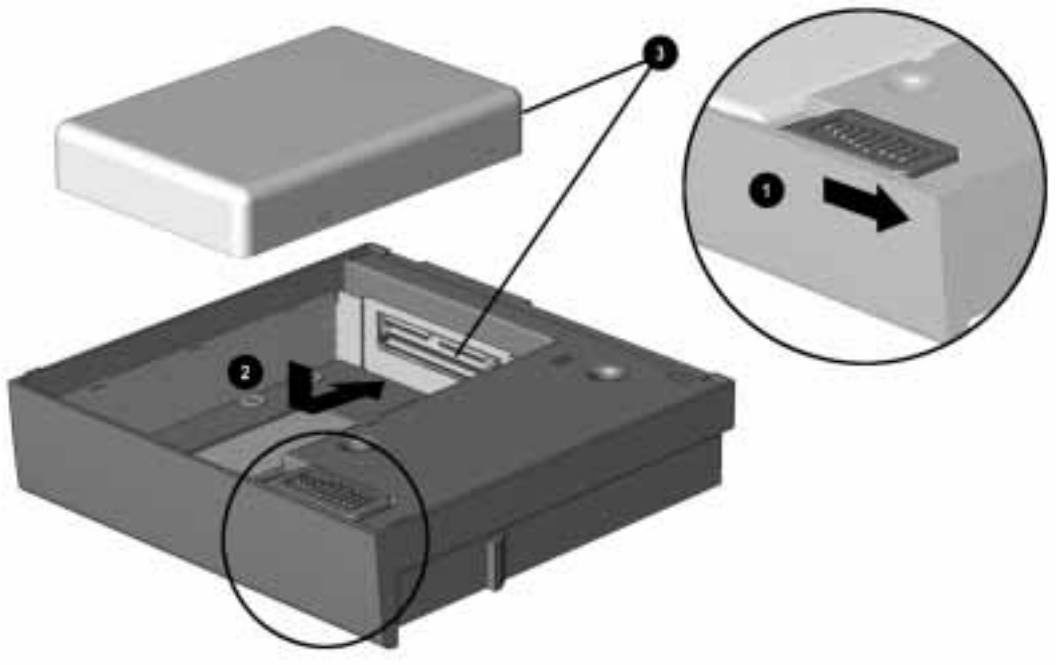


Figure 5-18. *Inserting a 17-mm Hard Drive into a Dual- MultiBay Hard Drive Adapter*

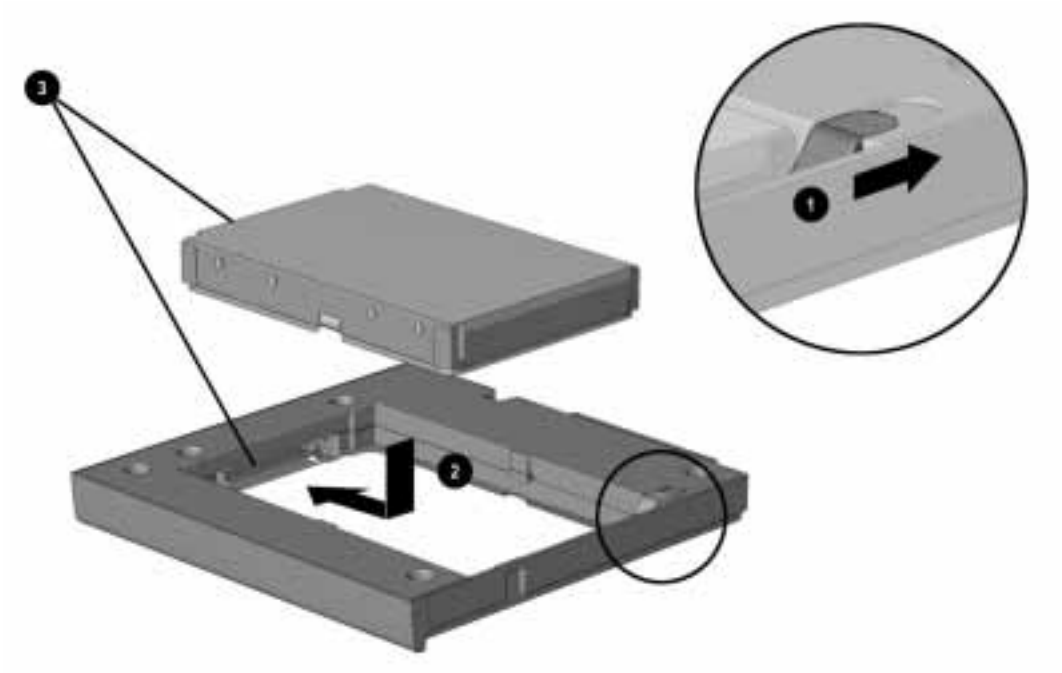


Figure 5-19. *Inserting a 12.7-mm Hard Drive into a 12.7-mm Armada MultiBay Hard Drive Adapter*

5. Release the slide tab.
6. Slide the hard drive assembly into the MultiBay with the bezel facing out.

5.7 MultiBay Devices

Removing MultiBay Devices

1. Save all work, exit all applications, and shut down the computer.
2. Remove the media (diskettes, CD-ROMs, etc.) from the drive. Ensure that the CD tray is closed.
3. Tilt the computer at an angle ❶ so the bottom of the computer is accessible (Figure 5-20).
4. To remove a device from the top MultiBay, slide the rear MultiBay release latch toward the front of the computer ❷.
5. To remove a device from the bottom MultiBay or to remove a device that occupies both MultiBays, slide the front MultiBay release latch ❸ toward the back of the computer.
6. Grasp the device using the recess ❹ beneath the MultiBay and remove the device.

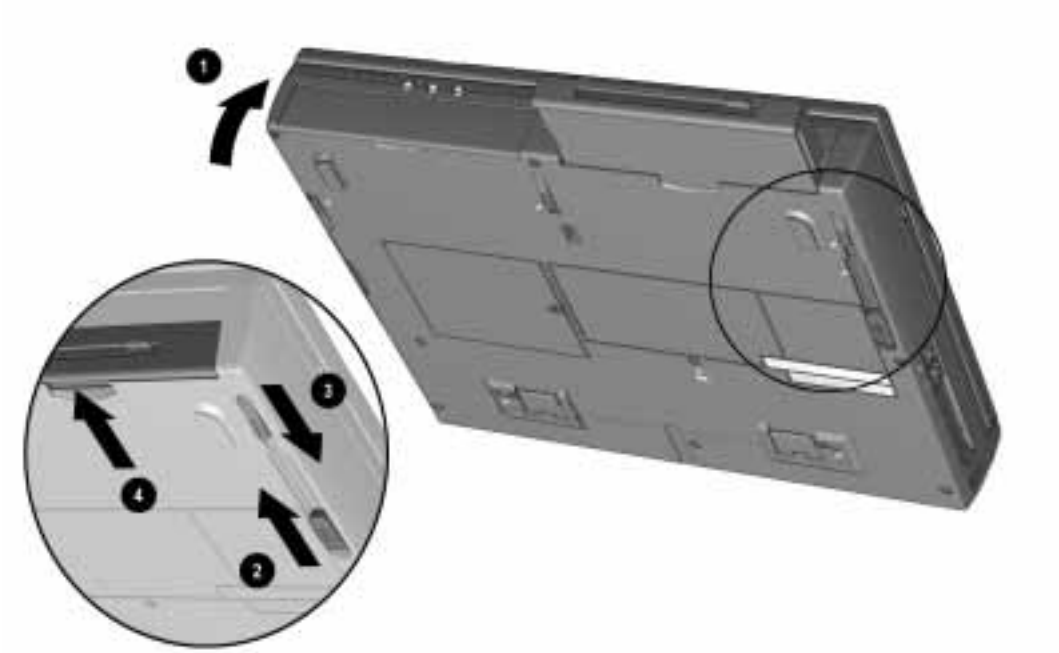


Figure 5-20. *Removing a Device from the MultiBays*

If you are not inserting another device or a battery pack into the MultiBay, insert the MultiBay weight saver included with the computer.

Inserting MultiBay Devices

1. Save all work, exit all applications, and turn off the computer.
2. Remove the media (diskettes, CD-ROM's, etc.) from the drive to be inserted in the MultiBay. Ensure that the CD tray is closed.
3. With the bezel facing out, slide the drive into the MultiBay until it clicks into place (Figure 5-21).

Figure 5-21. *Inserting a Device into a MultiBay*

5.8 PC Cards

The procedure for removing PC Cards varies with the operating system being used and with the kind of PC Card being removed.

If Windows 95/98 is running:

- A PC Card can be removed while the computer is on or off.
- The PC Card icon appears in the system tray on the Windows taskbar only while a PC Card is inserted.

If Windows NT is running:

- Some PC Cards, such as modem, ATA, flash, and SRAM cards, can be removed while the computer is on. However, the computer must be shut down before removing other PC Cards, such as LAN and SCSI cards. For removal information about a particular PC Card, refer to the documentation that came with the card and the Help program with CardWare.

  CardWare displays the PC Card icon on the system tray on the Windows taskbar whether or not a PC Card is inserted. The CardWare program is available on your Windows NT Workstation 4.0 system if you need Plug and Play functionality for PC Cards.

  To install Cardware, select > Programs > CardWare Setup > Install CardWare. Follow the instructions on the screen.

  If you are using third party PC Cards that have enablers or if you do not require Plug and Play functionality, then you do not need to install CardWare.

Removing a PC Card

1. Prepare the computer for PC Card removal.
   If Windows 95 or 98 is running and the computer is turned on, you must stop the PC Card before removing it.
   - Select the PC Card icon on the taskbar,
   - Select the PC Card to be stopped. A message displays when the PC Card can be safely removed.

   If Windows NT 4.0 with CardWare from Compaq is running and the computer is turned on, you must turn off the computer before removing some PC Cards. Refer to the PC Card documentation for removal requirements.
2. Push the PC Card eject button ❶ that corresponds to the slot containing the PC Card to be ejected. The eject button extends (Figure 5-22).
3. Push the eject button a second time. The PC Card partially ejects from the PC Card slot.
4. Remove the PC Card from the PC Card slot ❷.

Figure 5-22. *Removing a PC Card*

Inserting a PC Card

CAUTION: To prevent damage to the PC Card connectors, use minimal pressure when inserting a PC Card into a PC Card slot.

1. With the PC Card connector facing the computer and the label facing up ❶, align the edges of the card with the rails ❷ in the PC Card slot (Figure 5-23).
2. Push the PC Card into the PC Card slot until the connector is seated.

Figure 5-23. *Inserting a PC Card*

3. If Windows NT 4.0 with CardWare from Compaq is running and the computer is turned on, restart the computer if you are instructed to do so by the PC Card documentation or an on-screen prompt.
   - If you are inserting a LAN, SCSI, or multifunction PC Card, you must restart the computer.
   - If you are inserting a modem, ATA, flash, or SRAM PC Card, it is usually not necessary to restart the computer.

5.9 Memory Expansion

Removing the Memory Expansion Compartment Cover

The memory expansion compartment is located on the bottom of the computer. Either one or two memory expansion boards can be installed at a time.

WARNING: Failure to unplug the power cord and remove the battery pack before installing a memory expansion board can damage the equipment and expose you to the risk of electrical shock.

CAUTION: Electrostatic discharge (ESD) can damage electronic components. Before beginning this procedure, ensure that you are properly grounded. For more information, refer to Appendix C, "Electrostatic Discharge."

1. Prepare the computer for disassembly (Section 5.3).
2. Remove any battery packs (Section 5.5).
3. Turn the computer bottom side up with the front of the computer facing forward.

4. Remove the screw that secures the memory expansion compartment cover to the computer ❶ (Figure 5-24).

   NOTE: If the computer was shipped with a preinstalled memory expansion board, the cover is attached with a tamper-resistant Torx T-10 memory security screw. Use the Torx T-10 screwdriver included with the computer to remove and reinsert this screw. If the computer was not shipped with preinstalled memory expansion boards, the cover is attached with a standard Torx T-8 screw. Use a Torx T-8 screwdriver to remove and reinstall the screw.

5. Slide the cover to the left ❷ and lift the left edge up to remove it.

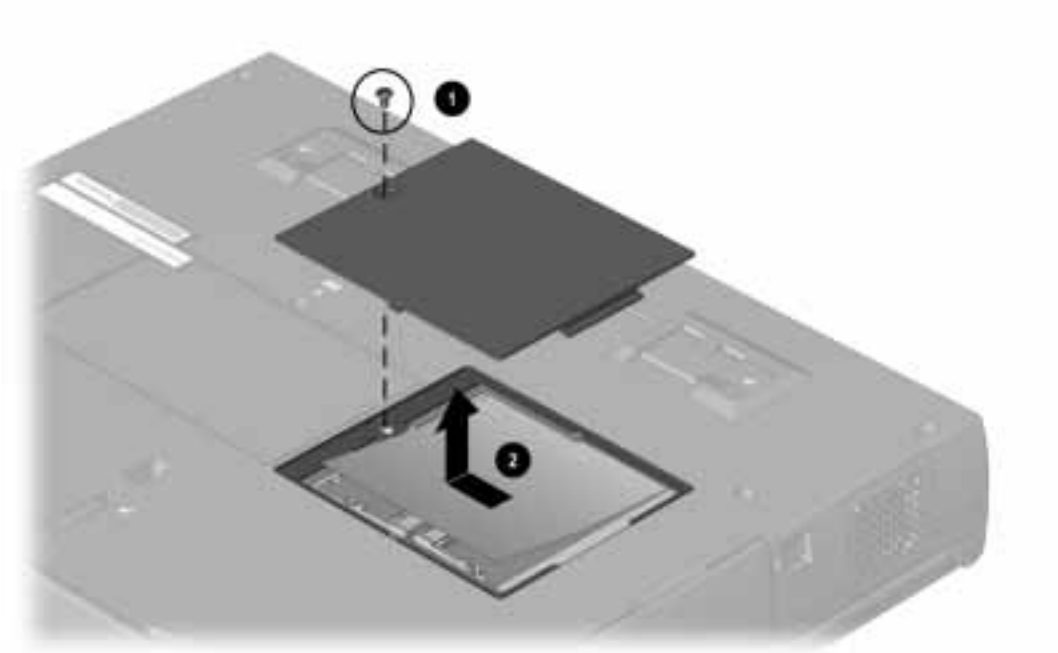


Figure 5-24. *Removing the Memory Expansion Compartment Cover*

Removing a Memory Expansion Board

1. Lift and hold back the memory insulator ❶. The insulator is not removable (Figure 5-25).
2. Spread the retaining tabs apart ❷. The memory expansion board tilts upward.
3. Lift the edge of the memory expansion board and slide it gently out of the memory expansion slot at a 45-degree angle ❸.

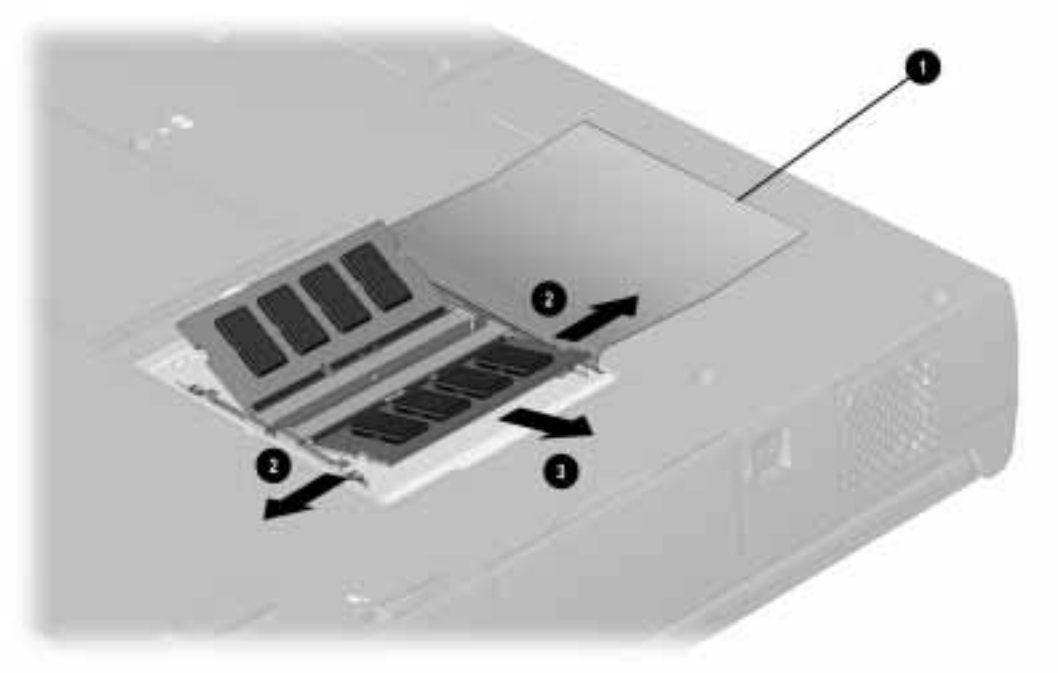


Figure 5-25. *Removing a Memory Expansion Board*

4. Place the memory expansion board in an electrostatic-safe container.
5. If no memory expansion board is to be installed, reset the memory insulator.
6. Replace the memory expansion compartment cover and install the screw.

Installing a Memory Expansion Board

All memory expansion boards are asymmetrically keyed (notched) to ensure correct positioning. Memory expansion boards can be used in either memory expansion slot.

1. Insert the memory expansion board into an empty memory expansion slot at a 45-degree angle ❶ (Figure 5-26).
2. Push the board into place until it is seated.
3. Push the memory expansion board down ❷ until the board is seated in the plastic retention clips.

Figure 5-26. *Inserting a Memory Expansion Board*

4. Run Computer Setup (Section 2.5).

Installing the Memory Expansion Compartment Cover

1. Reset the memory insulator ❶ over the installed memory expansion board(s), ensuring that all edges of the memory insulator are tucked inside the memory expansion compartment (Figure 5-27).
2. Replace the memory expansion compartment cover ❷ by placing it flush over the memory expansion compartment, then sliding it to the right ❸ until it is seated.
3. Secure the memory expansion compartment cover to the computer with a memory expansion compartment cover security screw or a standard Torx T-10 screw.

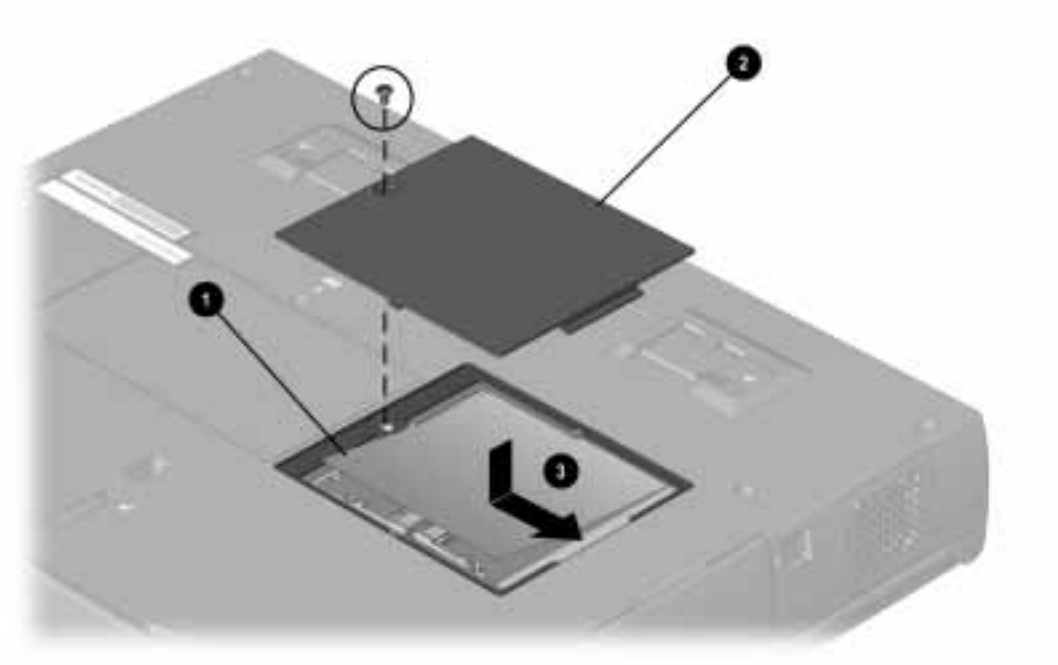


Figure 5-27. *Replacing the Memory Expansion Compartment Cover*

5.10 Keyboard Assembly

The Armada E700 Series of Personal Computers can be equipped with a keyboard with either a EasyPoint IV pointing device or a touchpad. The removal procedures are the same for both keyboards.

The keyboard assembly consists of the keyboard and the pointing device or touchpad, and is spared as a unit. This assembly must be removed to gain access to the interior components of the computer.

1. Prepare the computer for disassembly (Section 5.3).
2. Remove all battery packs (Section 5.5).
3. Remove all hard drives (Section 5.6).
4. Turn the computer bottom side up with the front facing forward.
5. Remove the screw from the bottom of the computer (Figure 5-28).

Figure 5-28. *Removing the Keyboard Assembly Screw*

6. Turn the computer top side up with the front facing forward.
7. Open the computer.

8. Slide the four keyboard latches toward the front of the computer ❶ (Figure 5-29).
9. Lift the back edge of the keyboard up and swing it forward ❷.

Figure 5-29. *Releasing the Keyboard Assembly*

8. Release the Zero Insertion Force (ZIF) connector to which the keyboard cable is connected ❶. Disconnect the keyboard cable ❷ (Figure 5-30).
9. Release the ZIF connector to which the pointing device cable is connected ❸ (EasyPoint IV pointing device keyboards only).
10. Disconnect the pointing device cable ❹.

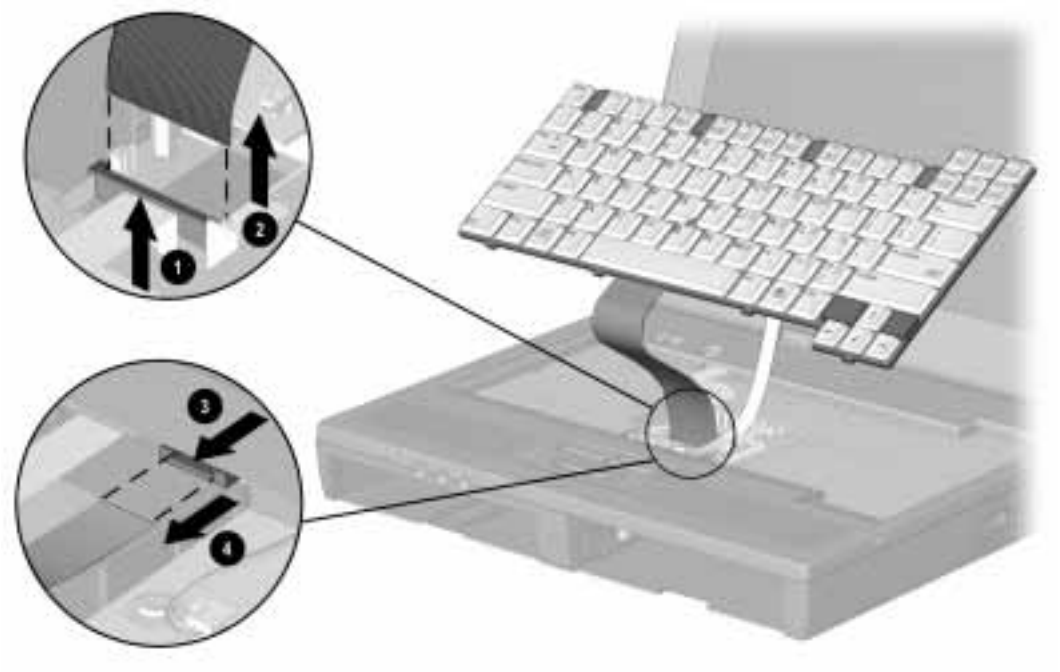


Figure 5-30. *Disconnecting the Keyboard Cables*

11. Remove the keyboard assembly (Figure 5-31).

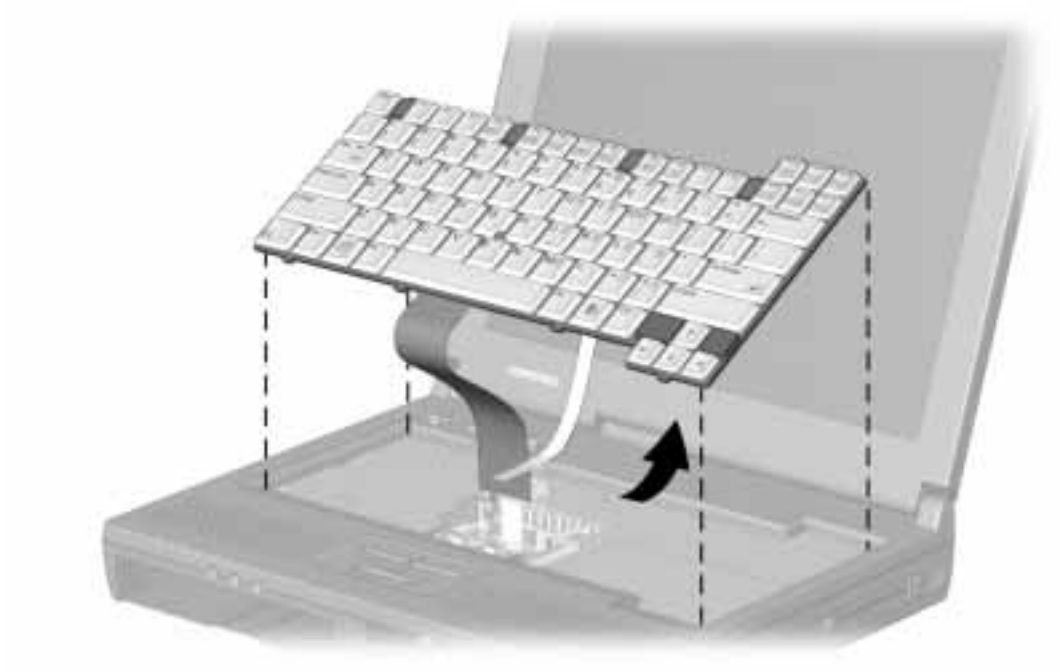


Figure 5-31. *Removing the Keyboard Assembly*

Reverse the above procedure to install the keyboard assembly.

5.11 CPU Cover

There are two CPU covers used with the Armada E700 Series of Personal Computers: one cover accommodates the EasyPoint IV-equipped keyboard; the other cover accommodates the keyboard with the touchpad.

The disassembly procedures for both CPU covers are identical. The cover must be removed to gain access to the interior components of the computer.

1. Prepare the computer for disassembly (Section 5.3).
2. Remove all battery packs (Section 5.5).
3. Remove all hard drives (Section 5.6).
4. Remove the keyboard assembly (Section 5.10).
5. Close the computer.
6. Turn the computer bottom side up with the front facing forward.

7. Remove the eight screws from the bottom of the computer (Figure 5-32).

CAUTION: The screw removed from the circled screwhole is shorter than the other seven screws. Make sure this screw is installed in the proper location when replacing the keyboard assembly. Failure to follow this caution can result in damage to the computer.

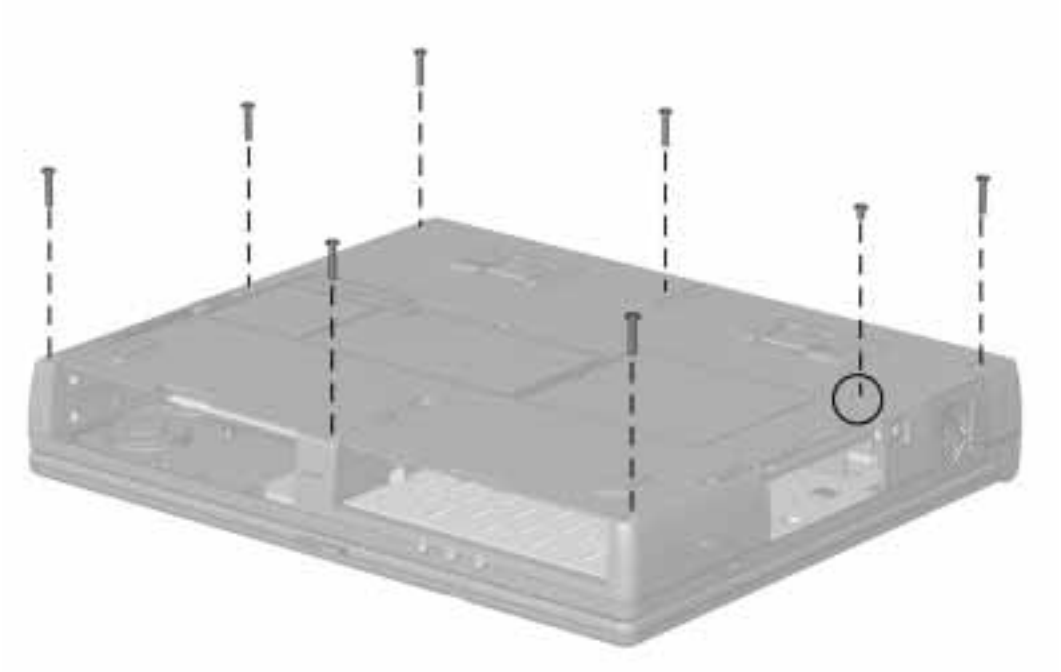


Figure 5-32. *Removing the CPU Cover Screws*

8. Turn the computer top side up with the front of the computer facing forward.
9. Open the computer as far as it will open.

   NOTE: With the display open and the battery pack and hard drive removed, the weight of the display makes the computer susceptible to being easily tipped over. MultiBay devices can be inserted in the MultiBay(s) to improve balance.

10. Release the ZIF connector to which the pick button cable is connected ❶ (Figure 5-33).
11. Disconnect the pick button cable ❷.
12. Disconnect the TouchPad cable ❸ from the system board (TouchPad models only).
13. Disconnect the left and right speaker cables ❹ from the audio board.

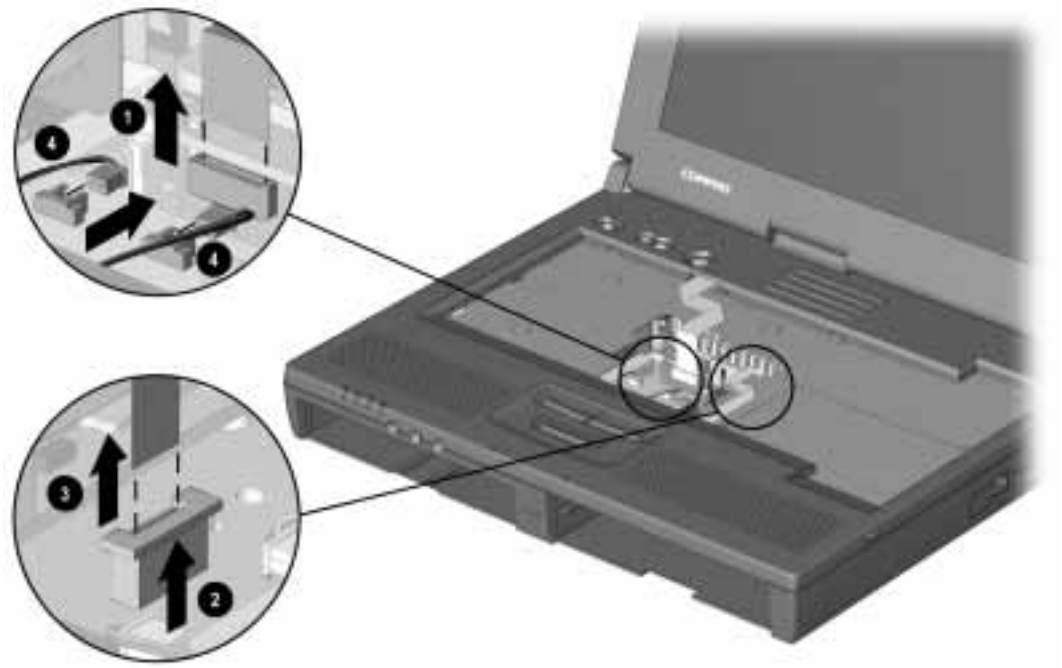


Figure 5-33. *Disconnecting the TouchPad, Pick Button, and Speaker Cables*

14. Lift the back edge of the CPU cover and swing it forward to remove it (Figure 5-34).

Figure 5-34. *Removing the CPU Cover*

Reverse the above procedure to install the CPU cover.

5.12 Power Supply

1. Prepare the computer for disassembly (Section 5.3).
2. Remove all battery packs (Section 5.5).
3. Remove all hard drives (Section 5.6).
4. Remove the keyboard assembly (Section 5.10).
5. Remove the CPU cover (Section 5.11).
6. Position the computer so the rear panel faces forward.

7. Remove the two screws that secure the power supply to the I/O bracket (Figure 5-35).

Figure 5-35. *Removing the Power Supply Screws.*

8. Position the computer so the front faces forward.

9. Open the computer.

10. Disconnect the power supply cable ❶ from the system board (Figure 5-36).
11. Remove the screw that secures the power supply to the system board ❷.

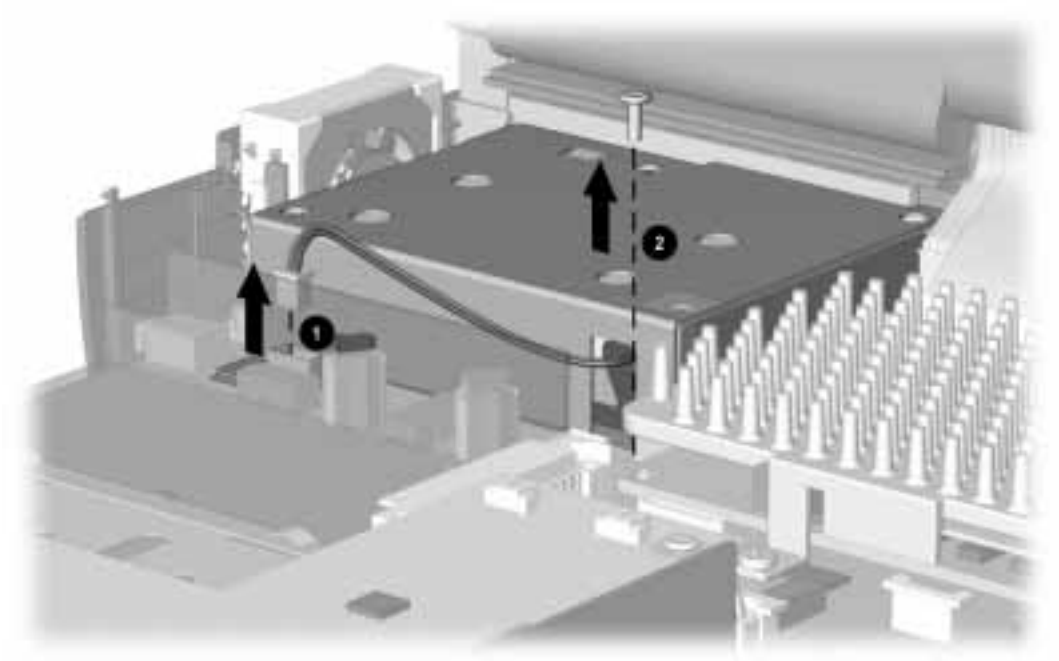


Figure 5-36. *Removing the Power Supply Screw and Disconnecting the Power Supply Cable*

12. Lift up on the front of the power supply and swing it up and away until it clears the computer (Figure 5-37).

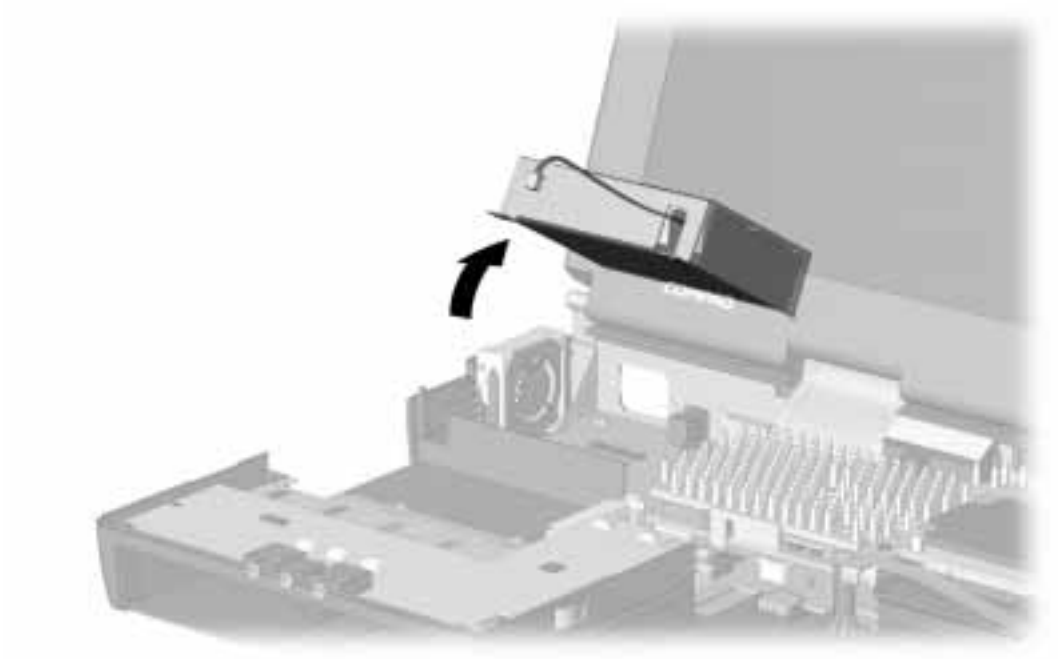


Figure 5-37. *Removing the Power Supply*

Reverse the above procedure to install the power supply.

CAUTION: Make sure the fan cable is not pinched when installing the power supply. Failure to follow this caution can result in damage to the fan and power supply.

5.13 Fan Assembly

1. Prepare the computer for disassembly (Section 5.3).
2. Remove all battery packs (Section 5.5).
3. Remove all hard drives (Section 5.6).
4. Remove the keyboard assembly (Section 5.10).
5. Remove the CPU cover (Section 5.11).
6. Disconnect the cable ❶ connecting the fan assembly to the system board (Figure 5-38).
7. Release the fan assembly from the brackets ❷ that secure either side of the assembly by pulling the brackets apart.
8. Lift the fan assembly out of the computer ❸.

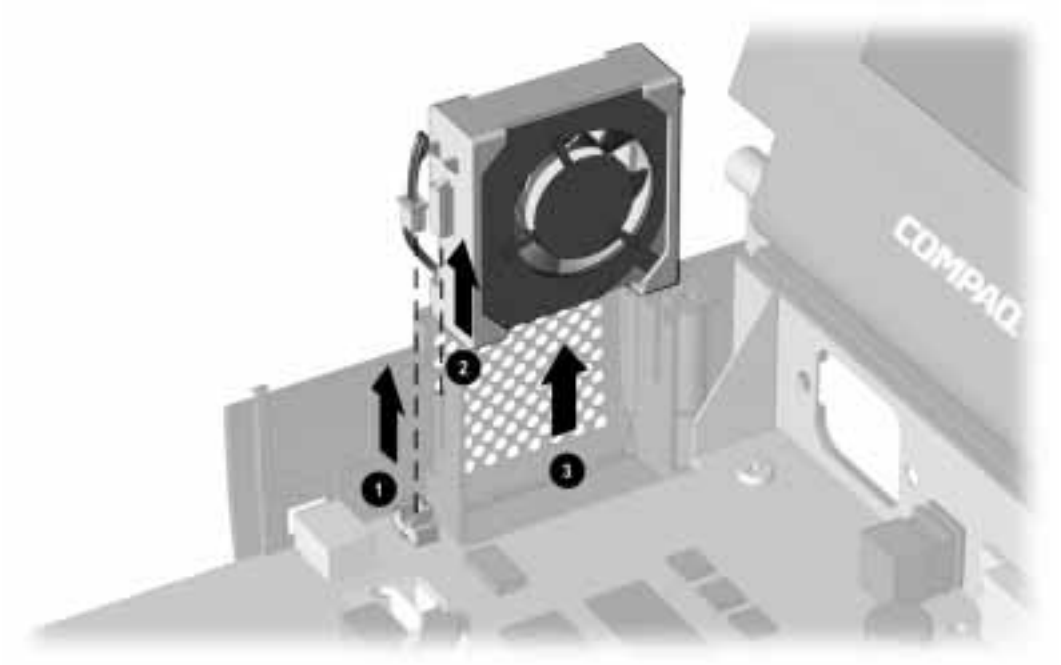


Figure 5-38. *Removing the Fan Assembly*

Reverse the above procedure to install the fan assembly. When installing it, make sure the alignment tabs on the sides of the rubber mounting sleeve slide into the slots on the fan mounting rails on the computer base assembly.

IMPORTANT: When installing the fan, make sure it is oriented with the airflow arrow (located on the side of the fan) pointing to the outside of the computer.

5.14 Audio Board

1. Prepare the computer for disassembly (Section 5.3).
2. Remove all battery packs (Section 5.5).
3. Remove all hard drives (Section 5.6).
4. Remove the keyboard assembly (Section 5.10).
5. Remove the CPU cover (Section 5.11).
6. Remove the screw ❶ that secures the audio board to the standoff mounted on the system board. (Figure 5-39).
7. Partially lift up on the rear/right edge of the audio board ❷ to disconnect it from the system board. Hold the board slightly above the base assembly.
8. Disconnect the microphone cable ❸ from the audio board.

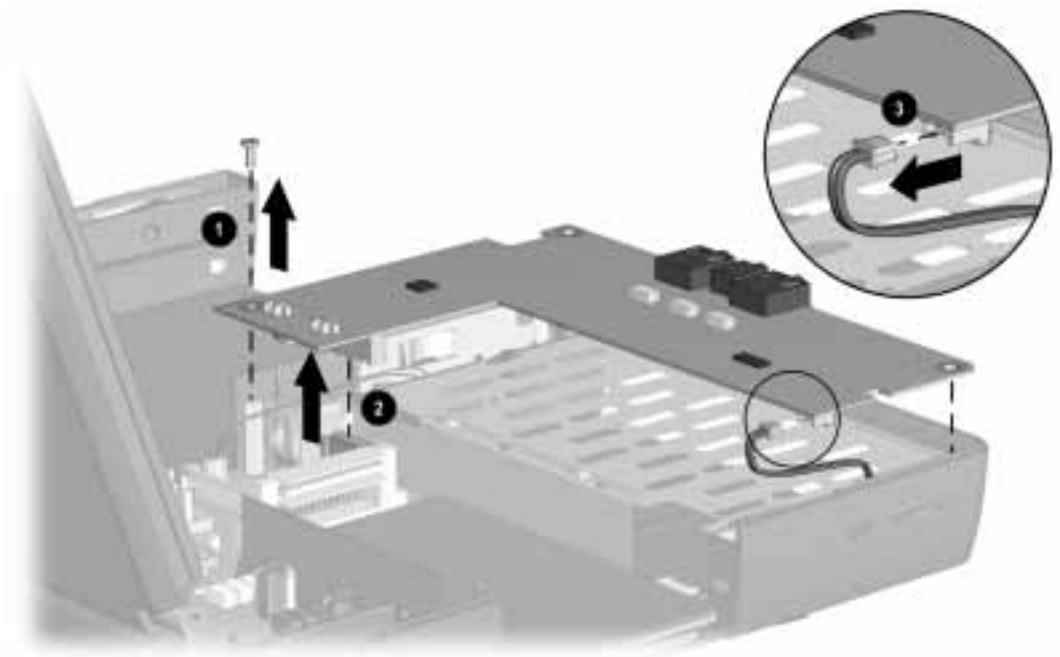


Figure 5-39. *Removing the Audio Board Screw and Disconnecting the Audio Board*

9. Remove the audio board.

Reverse the above procedure to install the audio board.

5.15 Lithium Disk Cell Battery

1. Prepare the computer for disassembly (Section 5.3).
2. Remove all battery packs (Section 5.5).
3. Remove all hard drives (Section 5.6).
4. Remove the keyboard assembly (Section 5.10).
5. Remove the CPU cover (Section 5.11).
6. Remove the audio board (Section 5.14).
7. Remove the lithium disk cell battery from the bottom of the audio board (Figure 5-40).

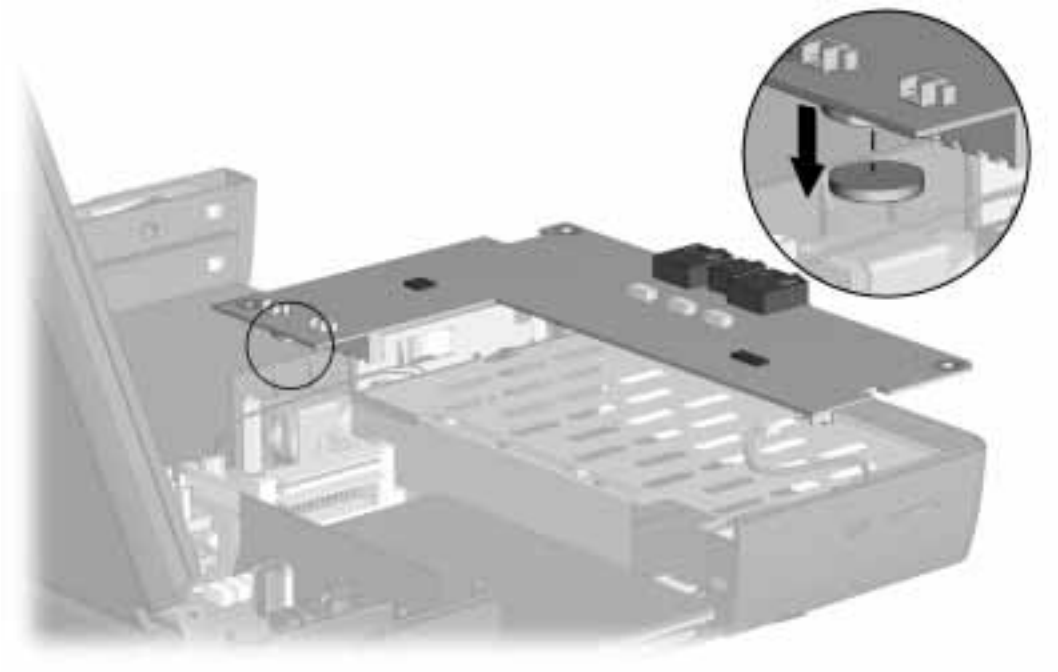


Figure 5-40. *Removing the Lithium Disk Cell Battery*

Reverse the above procedure to install the lithium disk cell battery.

5.16 Auxiliary Battery

NOTE: Before removing the auxiliary battery, make note of the routing of the auxiliary battery cable.

1. Prepare the computer for disassembly (Section 5.3).
2. Remove all battery packs (Section 5.5).
3. Remove all hard drives (Section 5.6).
4. Remove the keyboard assembly (Section 5.10).
5. Remove the CPU cover (Section 5.11).
6. Remove the audio board.
7. Disconnect the auxiliary battery cable ❶ from the system board (Figure 5-41).
8. Lift the front edge of the battery and swing it out of the base assembly ❷.

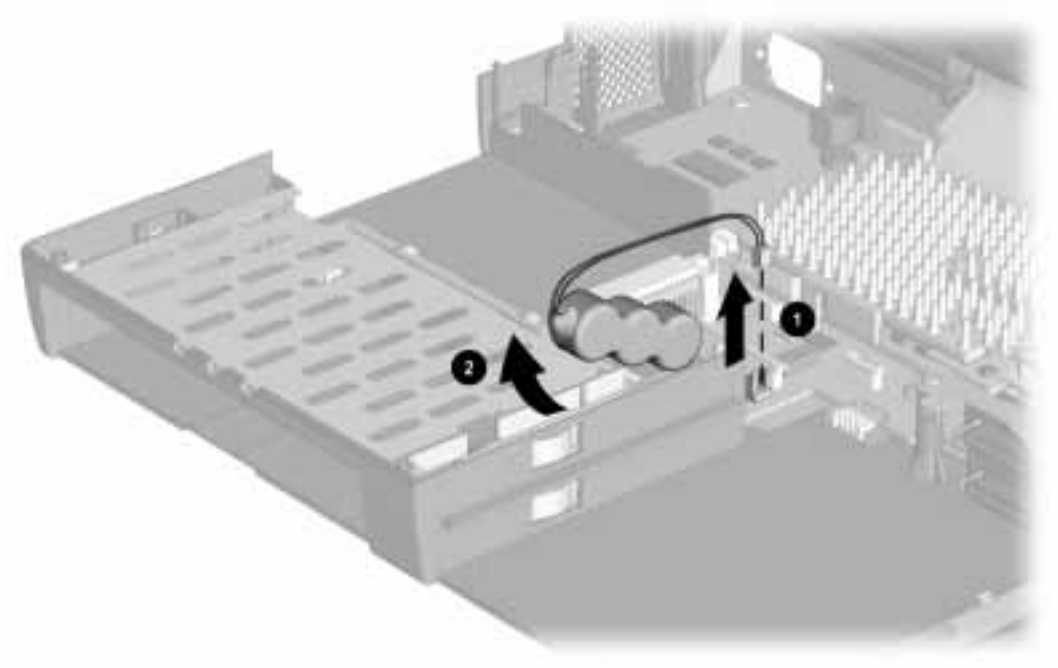


Figure 5-41. *Removing the Auxiliary Battery*

Reverse the above procedure to install the auxiliary battery.

5.17 Mini PCI Riser Board

The mini PCI riser board is used to connect a modem, network interface card (NIC), or combo card to the computer.

1. Prepare the computer for disassembly (Section 5.3).
2. Remove all battery packs (Section 5.5).
3. Remove all hard drives (Section 5.6).
4. Remove the keyboard assembly (Section 5.10).
5. Remove the CPU cover (Section 5.11).
6. Remove the screw that secures the mini PCI riser board to the base assembly ❶ (Figure 5-42).
7. Lift up on the front of the mini PCI riser board to disconnect it from the system board.
8. Remove the mini PCI riser board ❷.

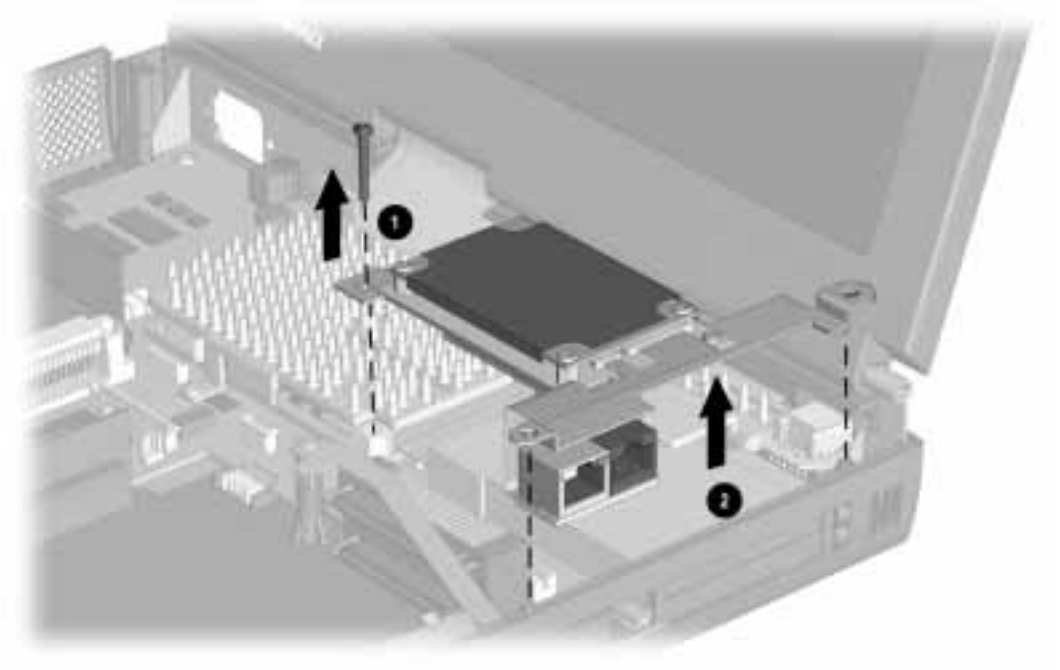


Figure 5-42. *Removing the Mini PCI Riser Board*

Reverse the above procedure to install the mini PCI riser board.

Installing a Modem, LAN, or Combo Card

1. Prepare the computer for disassembly (Section 5.3).
2. Remove all battery packs (Section 5.5).
3. Remove all hard drives (Section 5.6).
4. Remove the keyboard assembly (Section 5.10).
5. Remove the CPU cover (Section 5.11).
6. Remove the three screws from the mini PCI riser board (Figure 5-43).

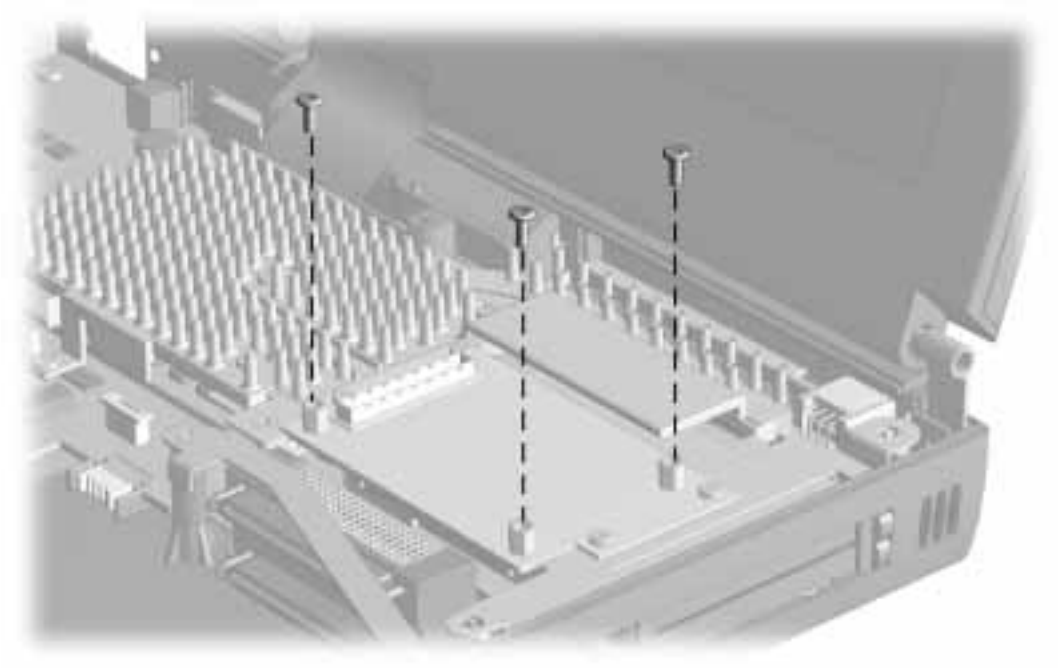


Figure 5-43. *Removing the Mini PCI Riser Board Screws*

7. Connect the appropriate cable(s) from the RJ11 modem/RJ45 NIC connector assembly ❶ to the connectors on the modem/combo card (Figure 5-44).
8. Connect the modem/combo card to the mini PCI riser board ❷.
9. Install the three screws to secure the modem/combo board to the mini PCI riser board ❸.

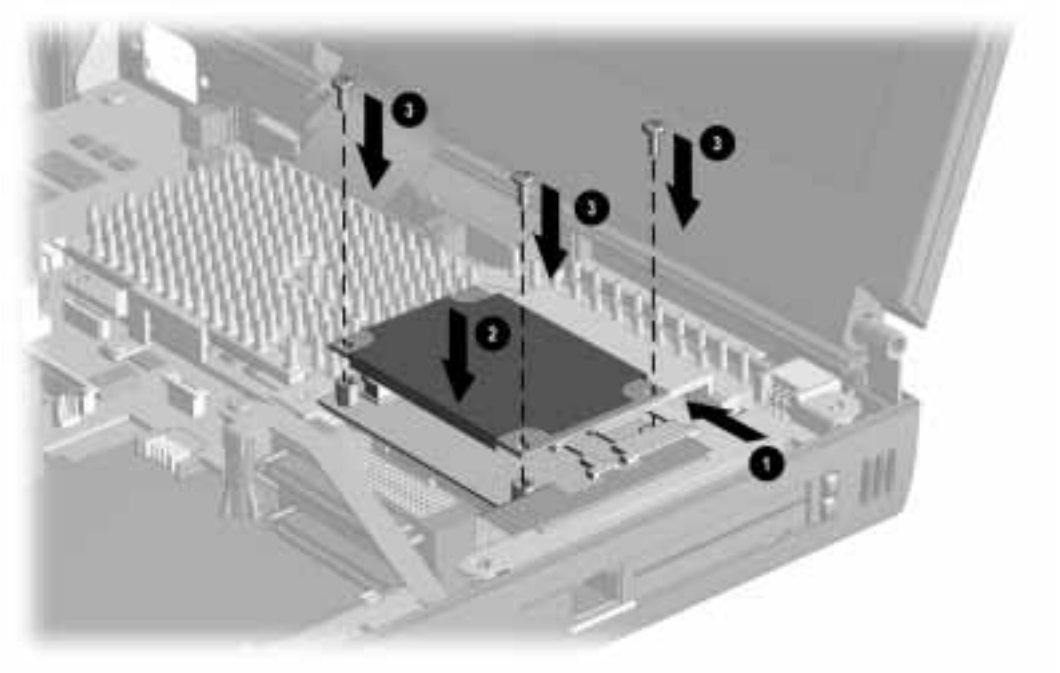


Figure 5-44. *Installing a Modem/Combo Card*

5.18 USB Board

1. Prepare the computer for disassembly (Section 5.3).
2. Remove all battery packs (Section 5.5).
3. Remove all hard drives (Section 5.6).
4. Remove the keyboard assembly (Section 5.10).
5. Remove the CPU cover (Section 5.11).
6. Position the computer so the rear panel faces forward.
7. Remove the two screws that secure the USB assembly to the I/O bracket (Figure 5-45).

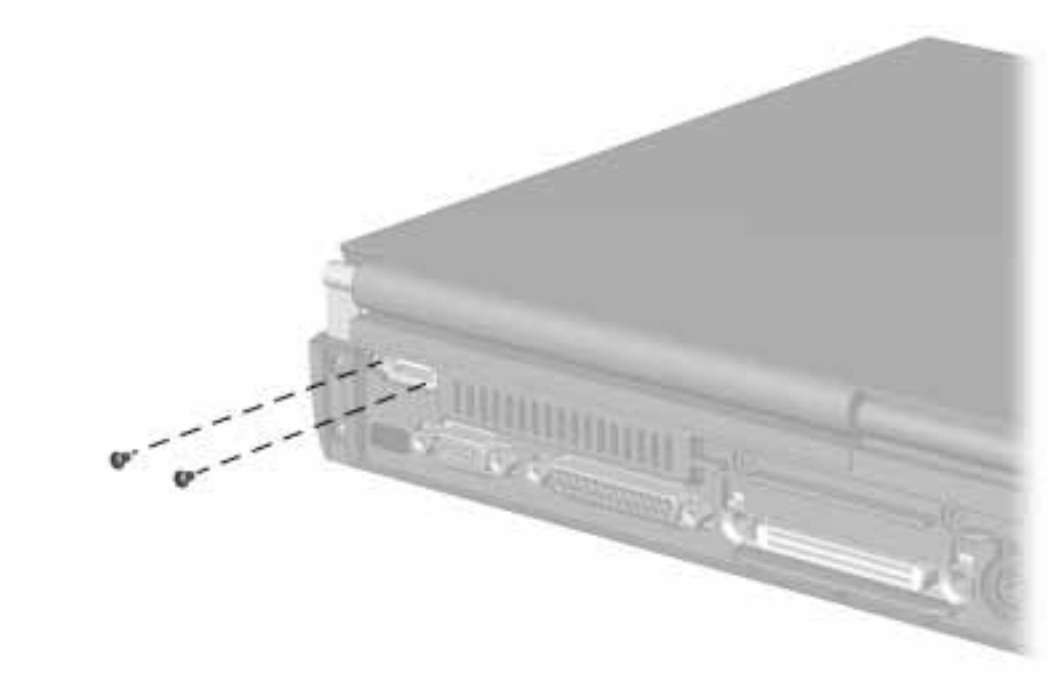


Figure 5-45. *Removing the USB Board Screws*

8. Position the computer so the front faces forward.
9. Open the computer.

10. Lift the USB assembly straight up ❶ to disconnect it from the system board (Figure 5-46).
11. Tilt the USB assembly toward the front of the computer and remove it ❷.

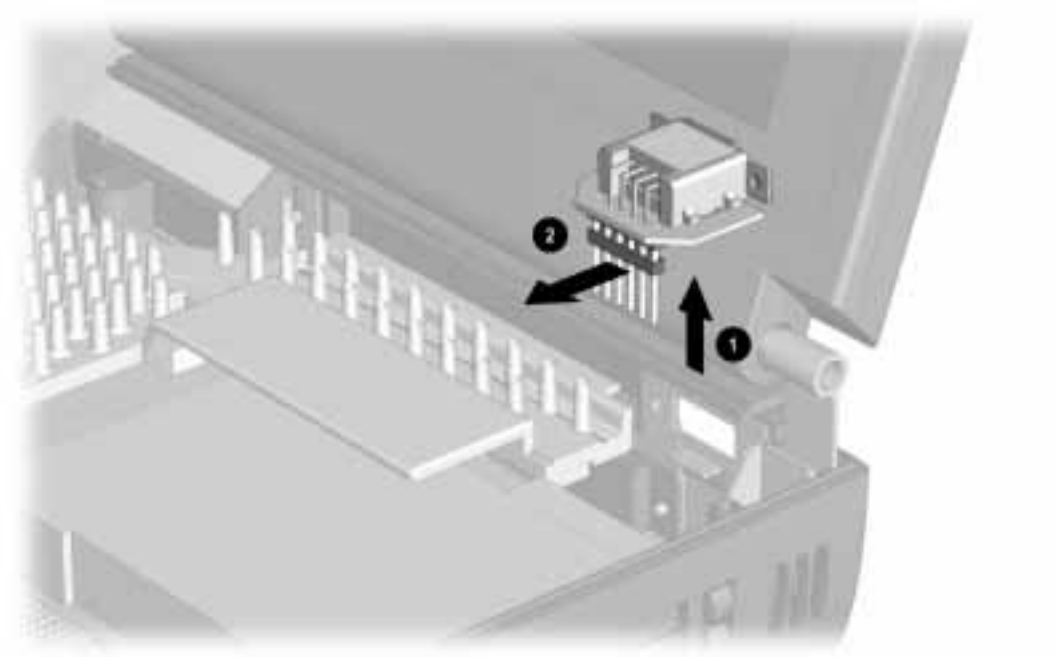


Figure 5-46. *Removing the USB Board*

Reverse the above procedure to install the USB board.

5.19 Display Assembly

1. Prepare the computer for disassembly (Section 5.3).
2. Remove all battery packs (Section 5.5).
3. Remove all hard drives (Section 5.6).
4. Remove the keyboard assembly (Section 5.10).
5. Remove the CPU cover (Section 5.11).
6. Position the computer so the rear panel faces forward.
7. Remove the four screws that secure the display assembly clutches to the base assembly (Figure 5-47).

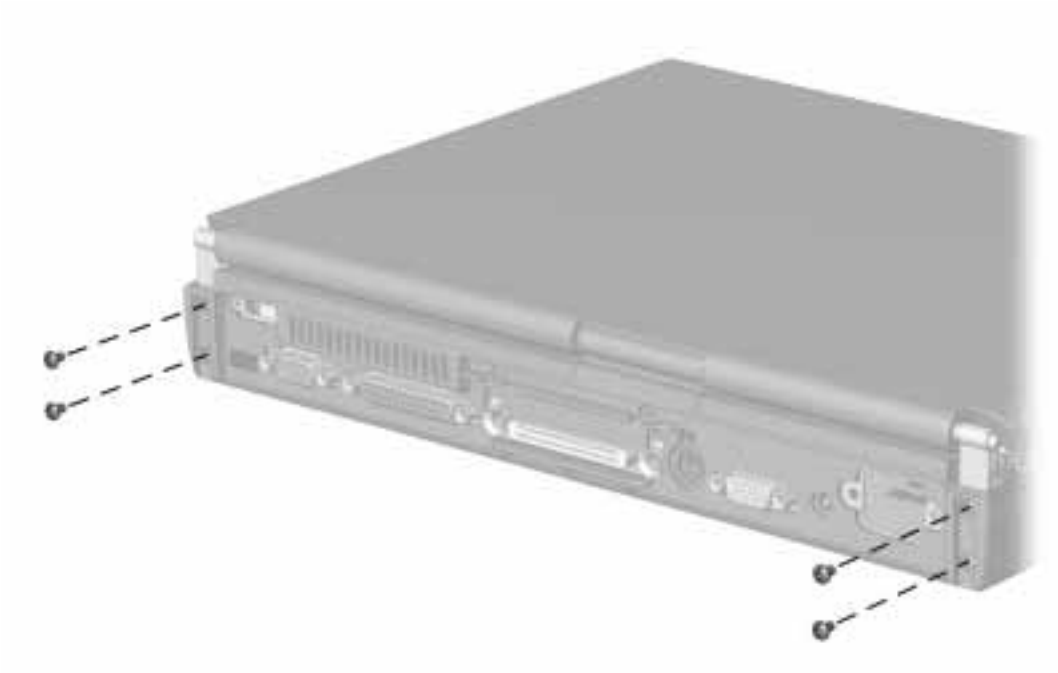


Figure 5-47. *Removing the Display Assembly Screws*

8. Position the computer so the front faces forward.
9. Open the computer.

10. Disconnect the display video cable ❶ from the system board (Figure 5-48).
11. Disconnect the display ground cable ❷ from the clip in the base assembly.

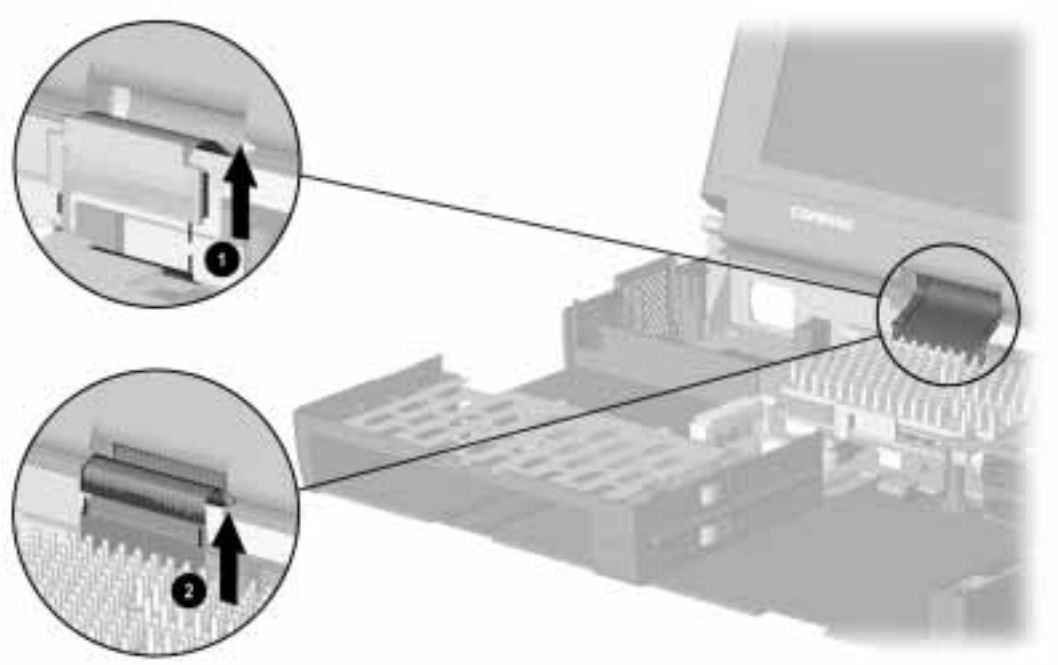


Figure 5-48. *Disconnecting the Display Video and Ground Cables*

12. Lift the display assembly straight up from the computer (Figure 5-49).

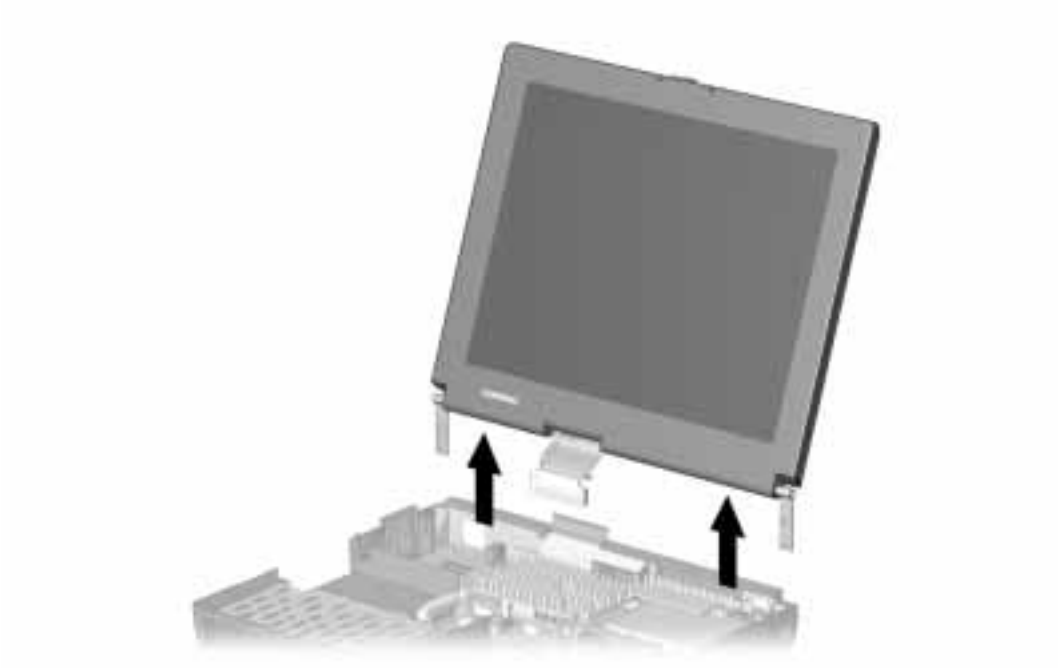


Figure 5-49. *Removing the Display Assembly*

Reverse the above procedure to install the display assembly.

5.20 System Board

NOTE: Make sure the PC Card release buttons are in the "in" position before removing or installing the system board.

1. Prepare the computer for disassembly (Section 5.3).
2. Remove all battery packs (Section 5.5).
3. Remove all hard drives (Section 5.6).
4. Remove all MultiBay devices (Section 5.7).
5. Remove all PC Cards (Section 5.8).
6. Remove the keyboard assembly (Section 5.10).
7. Remove the CPU cover (Section 5.11).
8. Remove the power supply (Section 5.12).
9. Remove the fan assembly (Section 5.13).
10. Remove the audio board (Section 5.14).
11. Remove the auxiliary battery (Section 5.16).
12. Remove the mini PCI riser board (Section 5.17).
13. Remove the USB board (Section 5.19).
14. Remove the display assembly (Section 5.20).
15. Position the computer so the rear panel faces forward.

16. Remove the two screws that secure the display ground clip assembly ❶ and the screw above the keyboard connector ❷ (Figure 5-50).

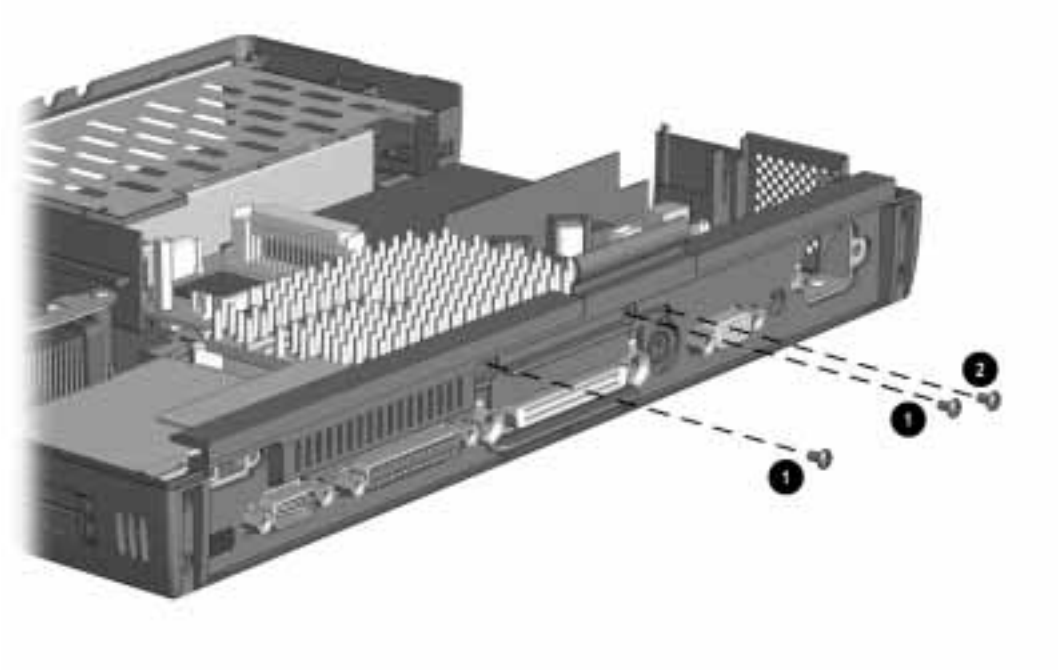


Figure 5-50. *Removing the System Board Screws*

17. Remove the six screwlocks ❶ and the two bushing guides ❷ (Figure 5-51).

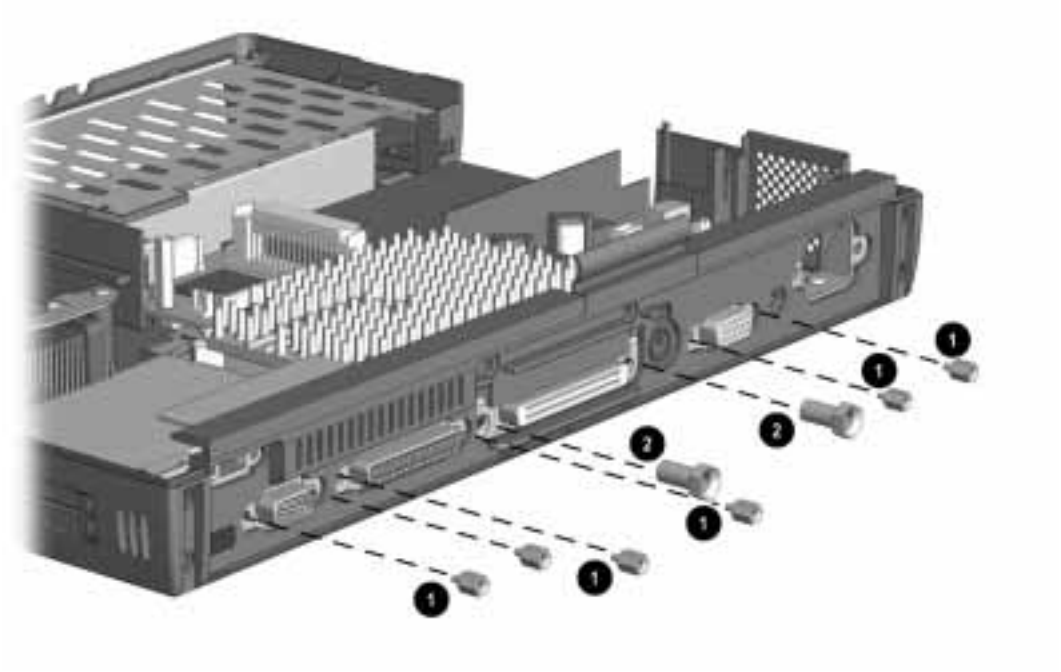


Figure 5-51. *Removing the System Board Screwlocks and Bushing Guides*

18. Position the computer so the front faces forward.
19. Remove the display ground clip assembly (Figure 5-52).

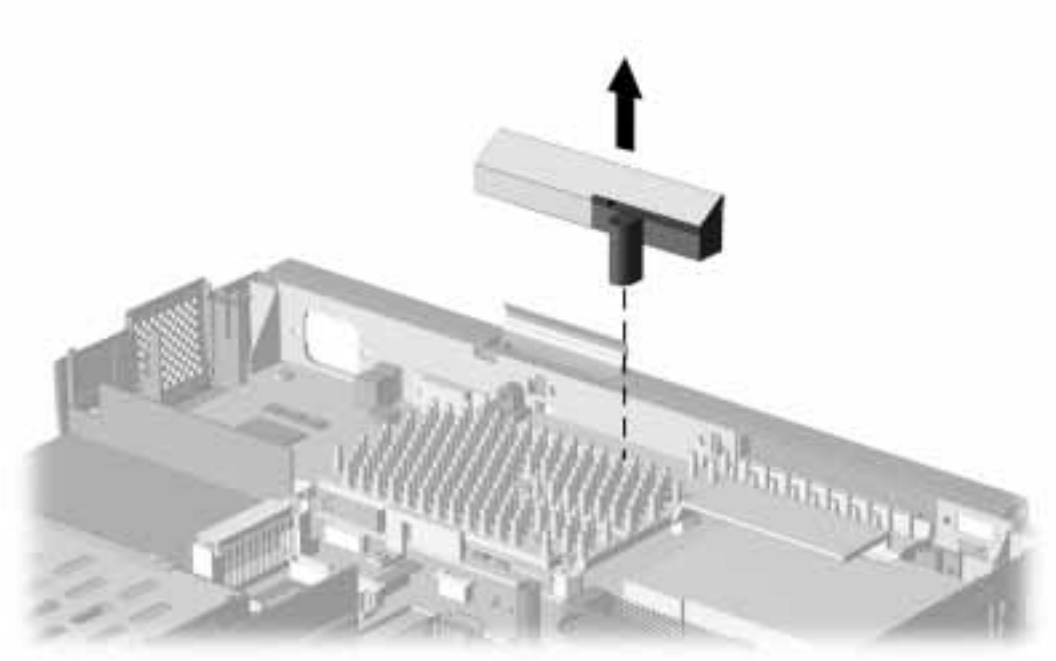


Figure 5-52. *Removing the Display Ground Clip*

20. Remove the six screws that secure the heat sink to the system board ❶ (Figure 5-53).

21. Remove the heat sink ❷.

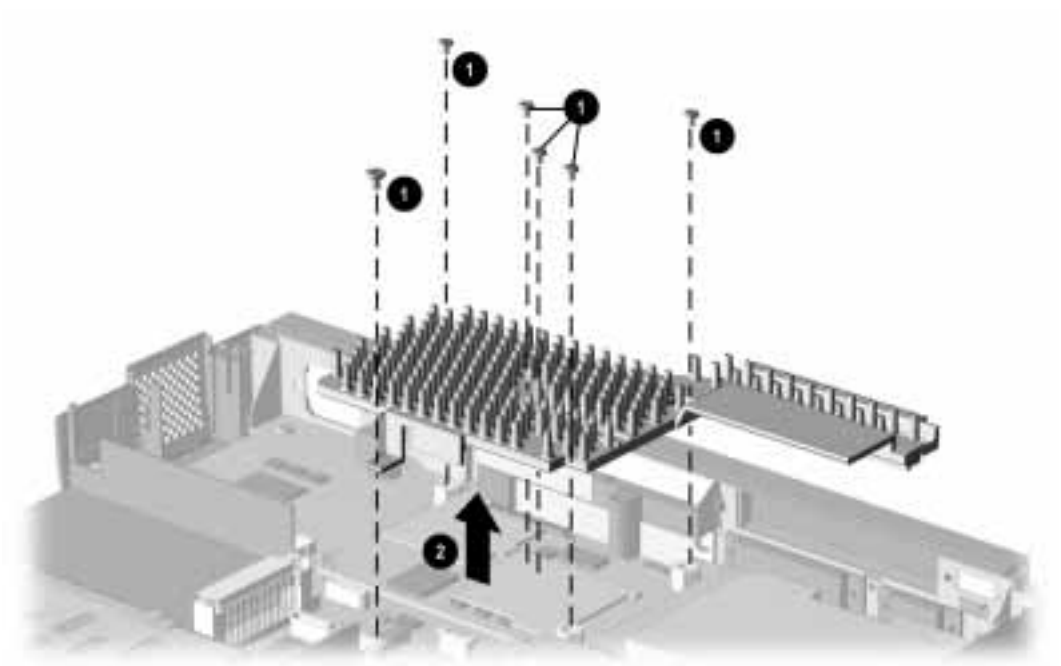


Figure 5-53. *Removing the Heat Sink Screws*

22. Install the two short screws removed in Step 20 into the upper/left and lower/right holes on the processor board (Figure 5-54). These screws are temporarily used to secure the processor board and processor spacers to the system board.

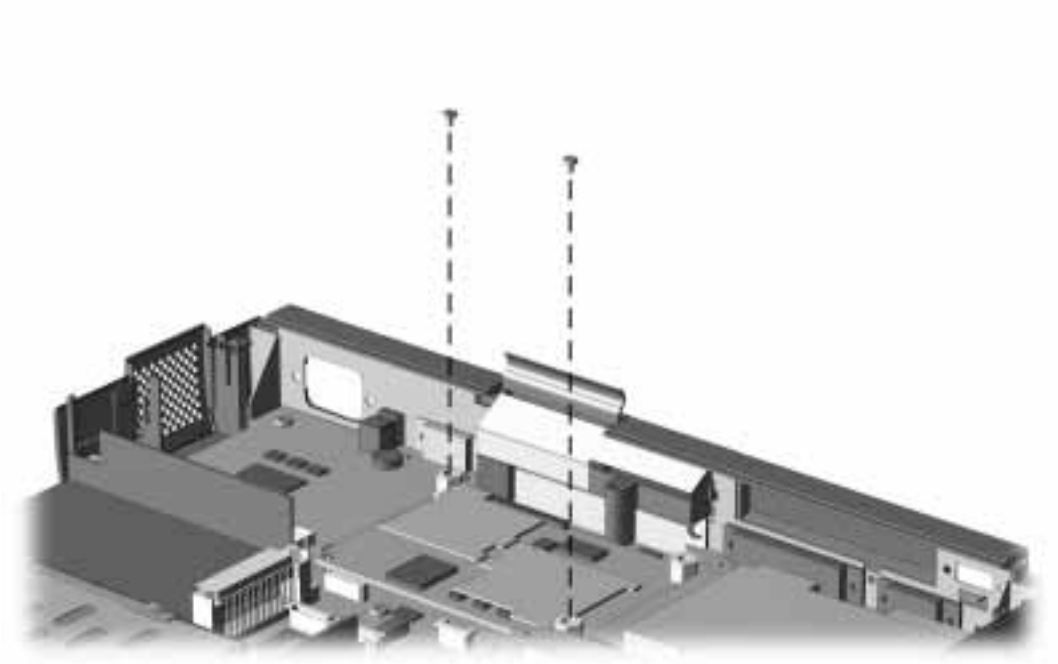


Figure 5-54. *Inserting the Short Screws in the Processor Board*

23. Lift the MultiBay release lever ❶ off the standby on which it rests and swing it forward and to the right ❷ (Figure 5-55).

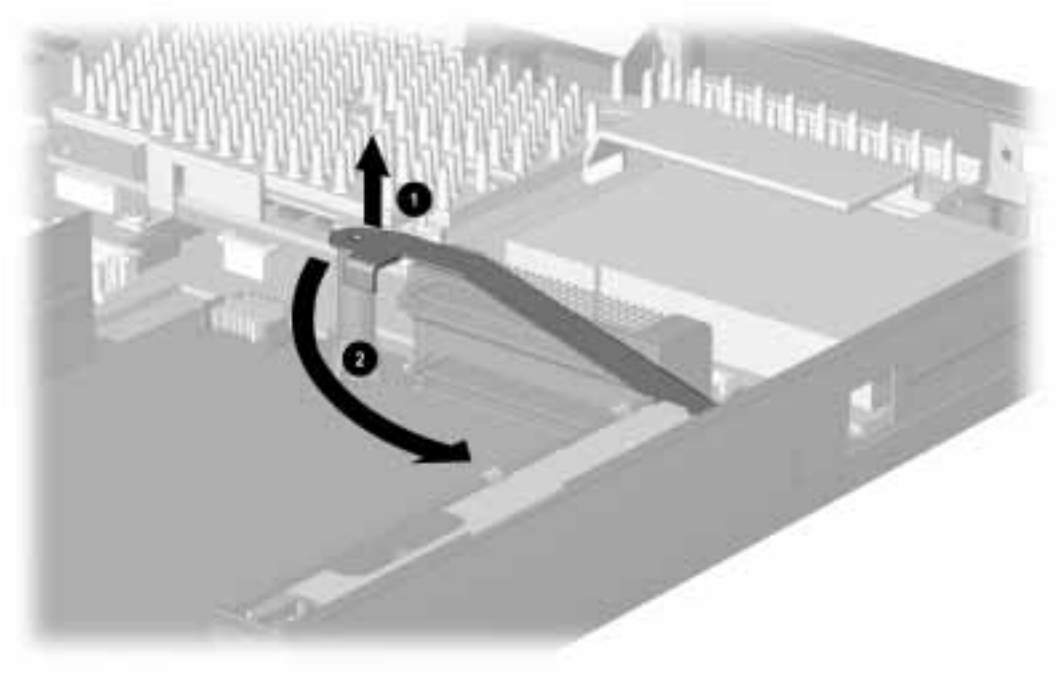


Figure 5-55. *Removing the MultiBay Release Lever*

24. Remove the five screws ❶ and the standoff ❷ that secure the system board to the base assembly (Figure 5-56).

25. Slide and hold the battery pack release lever toward the front of the computer.

26. Lift the front edge of the system board ❸. When the front edge of the system board clears the base assembly, lift the board straight up and out of the base assembly ❹.

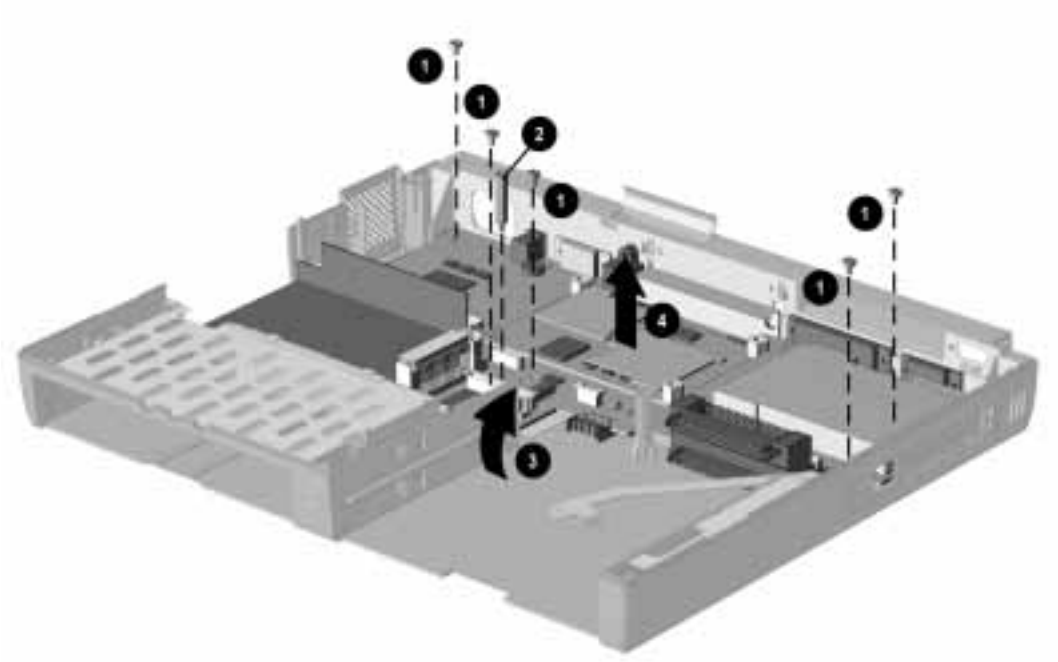


Figure 5-56. *Removing the System Board*

Reverse the above procedure to install the system board. After the system board has been replaced in the base enclosure, remove the short screws installed in Step 22 and reverse the disassembly steps to install the system board.

NOTE: When removing the system board, make sure the expansion connector shield ❶ and processor mount bracket ❷ are not dislodged (Figure 5-57).

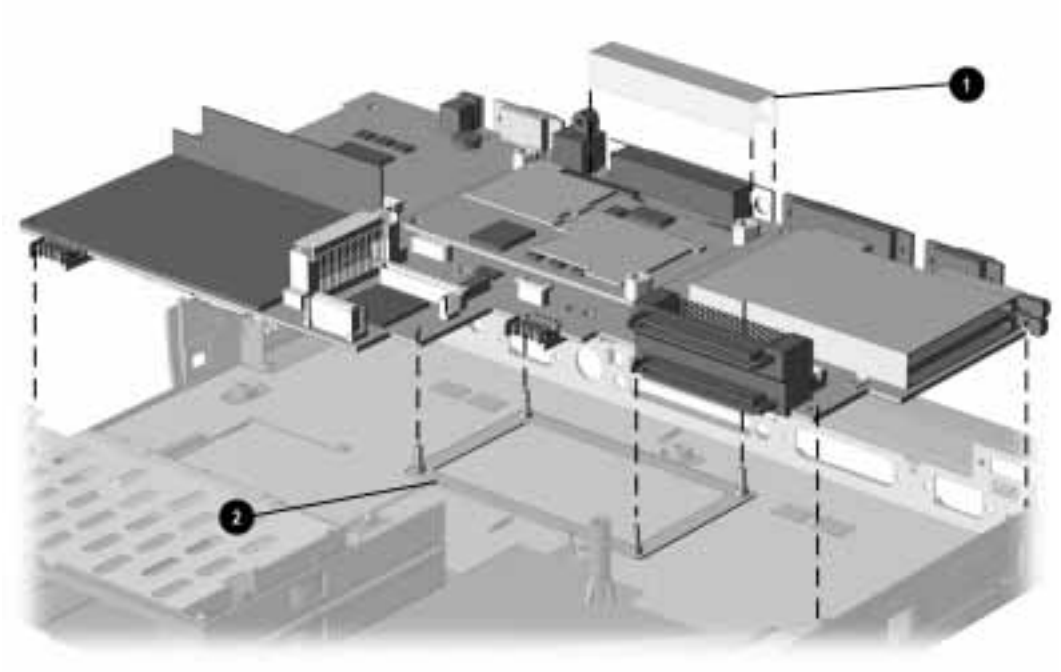


Figure 5-57. *Expansion Connector Shield and Processor Mount Bracket Locations*

chapter 6

SPECIFICATIONS

This chapter provides physical and performance specifications for the Armada E700 Personal Computer.

6.1 Physical and Environmental

Table 6-1
Computer

	U.S.	Metric
Dimensions		
Height	2.0 in	5.09 cm
Depth	10.2 in	26.96 cm
Width	12.6 in	32.05 cm
Weight	7 to 9 pounds depending on configuration	
Standalone (Battery) Power Requirements		
Nominal Operating Voltage	12 VDC	
Maximum Operating Power	15 W	
Peak Operating Power	25 W	
AC Adapter Power Requirements		
Operating Voltage	90 - 240 VAC RMS	
Operating Current	0.4 - 0.8 A RMS	
Operating Frequency Range	47 to 63 Hz AC	
Maximum Transient	1kV for 50 ns	
Temperature		
Operating	50 to 104°F	10 to 40°C
Nonoperating	-4 to 140°F	-20 to 60°C
Relative Humidity (noncondensing)		
Operating	10 to 90%	
Nonoperating (t_W = 38.7°C max)	5 to 95% -- 38.7°C Maximum Wet Bulb	
Altitude		
Operating	0 to 10,000 ft	0 to 3.05 km
Nonoperating	0 to 30,000 ft	0 to 9.14 km
Shock		
Operating	10 G, 11 ms, half sine	
Nonoperating	60 G, 11 ms, half sine	
Vibration	.25G, 5-50Hz, .5 Octave/min sweep	

NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures.

6.2 Display

Table 6-2
14.1-inch XGA, CTFT Display

	U.S.	Metric
Dimensions		
Height	11.25 in	28.57 cm
Width	8.44 in	21.43 cm
Diagonal	14.10 in	35.71 cm
Number of Colors	256, 32K, 64K, 16M	
Contrast Ratio	150:1	
Brightness	125 nits	125 CD/M^2
Pixel Resolution		
Pitch		0.279 × 0.279 mm
Format	1024 × 768	
Configuration	RGB Stripe	
Backlight	Edge Lit, bottom	
Character Display	80 × 25	
Total Power Consumption	4.9 W / Inverter (max) 2.7 W / LCD (max)	

6.3 Hard Drive

Table 6-3
Hard Drive

	10.0 GB	14.1 GB
User capacity per drive (refer to note below)	10.0 GB	14.1 GB
Drive type	65	65
Drive height (with drive frame, in mm)	12.7	17.0
2.5-inch form factor	Yes	Yes
Sector interleave	1:1	1:1
Interface type	ATA-4	ATA-4
Seek times (typical, including setting)		
Single track	4 ms	4 ms
Average	12 ms	12 ms
Full stroke	23 ms	23 ms
Physical configuration		
Cylinders	11968	11136
Heads	6	10
Sectors per track	190 - 330	180 - 297
Bytes per sector	512	512
Logical configuration		
Cylinders	16383	16383
Heads	16	16
Sectors per track	63	63
Total customer usable data sectors	19,640,880	27,609,120
Bytes per sector	512	512
Buffer size	512K	512K
Disk rotational speed (rpm)	4200	4900
Transfer rates		
Interface (mbytes/sec)	16.6	16.6
Media (mbits/sec)	69.0 - 118.0	76.55 - 125.49

6.4 Diskette Drive

Table 6-4
Diskette Drive

Diskette Size	3.5 inch
High Density	1.44 MB/1.2 MB
Low Density	720 KB
Light	None
Height	0.59 in (15 mm)
Bytes per Sector	512
Sectors per Track	
Hight 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
Average (high/low)	95 ms
Settling Time	15 ms
Latency Average	100 ms

6.5 CD-ROM Drive

Table 6-5
CD-ROM Drive

Applicable Disc	CD-ROM mode 1, mode 2 CD-Digital Audio CD-XA mode 2 (Form 1, Form 2) CD-I mode 2 (Form 1, Form 2) Photo CD (single/multisession) CD-I Ready CD-Bridge CD-WO (fixed packets only)
Center Hole Diameter	15 mm
Disc Diameter	12 cm, 8 cm
Disc Thickness	1.2 mm
Track Pitch	1.6 µm
Laser	
Divergence	53.5 ± 1.5 degrees
Output Power	0.13 ± 0.1 mw
Type	Semiconducter Laser GaA1As
Wave Length	780nm ± 25nm
Access Time	
Random	< 150 ms
Full Stroke	< 600 ms
Audio Output Lever	
Line Out	0.7 V rms
Headphone	none
Cache Buffer	256 KB
Data Transfer Rate	
Sustained, quad	300 MB/sec
Sustained, single	150 KB/sec
Burst	8.3 MB/sec
Startup Time	< 10 seconds typical
Capacity	
Mode 1, 12 cm	550 MB
Mode 2, 12 cm	640 MB
8 cm	180 MB

6.6 DVD-ROM Drive

Table 6-6
DVD-ROM Drive

Applicable Disc	DVD-5, DVD-9, DVD-10 CD-ROM mode 1, mode 2 CD-Digital Audio CD-XA mode 2 (Form 1, Form 2) CD-I mode 2 (Form 1 and Form 2) CD-I Ready CD-Bridge CD-R Photo CD (single/multisession)
Center Hole Diameter	.59 in/15 mm
Disc Diameter	12 cm, 8 cm
Disc Thickness	1.2 mm
Track Pitch	.74 µm
Capacity	
DVD-5	4.7 GB
DVD-9	8.5 GB
DVD-10	9.4 GB
Mode 1, 12	550 MB
Mode 2, 12 cm	640 MB
8 cm	180 MB
Laser	
Output Power	5 mw
Type	Semiconducter Laser GaA1As
Wave Length	650 nm ± 25nm (DVD-ROM mode) 795 nm ± 25 nm (CD-ROM mode)
Access Time	
Random	< 200 ms
Full Stroke	< 250 ms
Audio Output Level	
Line Out	0.7 V rms
Headphone	none
Cache Buffer	128 KB
Data Transfer Rate	
Sustained, 1x (CD-ROM mode)	150 KB/sec
Sustained, 20x (CD-ROM CAV mode)	1200-1300 KB/sec
Sustained, (DVD-ROM movd)	1352-2705 KB/sec sustained, DVD-ROM mode
Burst	16.6 MB/sec
Startup Time	<3 seconds, typical

6.7 LS-120 Drive

Table 6-7
LS-120 Drive

	1.68 MB DMF	1.44 MB	1.2 MB	1.2 MB	720 KB
Formatted capacity (bytes)	1,720,320	1,474,560	1,261,568	1,228,800	737,280
Sector size (bytes)	512	512	1,024	512	512
Sectors	3,360	2,880	1,232	2,400	1,440
Magnetic tracks surface	80	80	77	80	80
Optical servo tracks/surface	N/A	N/A	N/A	N/A	N/A
Sectors/track	21	18	8	15	9
Sector interleave	2:1	1:1	1:1	1:1	1:1
Spare sectors	0	0	0	0	0
Zones (each side)	1	1	1	1	1
Average random seek	70 ms	70 ms	70 ms	70 ms	70 ms
Track-to-track seek	25 ms	25 ms	25 ms	25 ms	25 ms
Max single seek	170 ms	170 ms	170 ms	170 ms	170 ms
Average latency	41.67 ms	41.67 ms	41.67 ms	41.67 ms	41.67 ms
Motor RPM	720±0.5%	720±0.5%	720±0.5%	720±0.5%	720±0.5%
Motor start time	800 ms	800 ms	800 ms	800 ms	800 ms
Track density	135 TPI	135 TPI	135 TPI	135 TPI	135 TPI
Track width	125 µm	125 µm	125 µm	125 µm	125 µm
Encoding method	MFM	MFM	MFM	MFM	MFM
Max flux density	17,334 FCI	17,334 FCI	17,334 FCI	17,334 FCI	17,334 FCI
Recording density	17,334 BPI	17,334 BPI	17,334 BPI	17,334 BPI	17,334 BPI
Nominal transfer rate	150 KB/sec	150 KB/sec	125 KB/sec	125 KB/sec	75 KB/sec
Nominal sustained transfer rate across interface	65 KB/sec read, 32 KB/sec write	55 KB/sec read, 28 KB/sec write	49 KB/sec read, 25 KB/sec write	46 KB/sec read, 23 KB/sec write	28 KB/sec read, 14 KB/sec write
Buffer transfer rate	4.0 MB/sec	4.0 MB/sec	4.0 MB/sec	4.0 MB/sec	4.0 MB/sec

6.8 Battery Pack

Table 6-8
Lithium Ion Battery Pack

	U.S.	Metric
Dimensions		
Battery Bay Battery Pack		
Height		
Length		
Weight		
MultiBay Battery Pack		
Height		
Length		
Weight		
Dual-MultiBay Battery Pack		
Height		
Length		
Weight		
Energy and Environmental Requirements are the same for all battery packs.		
Energy		
Voltage	14.4 V	
Capacity	2.7 Ah	
Environmental Requirements		
Operating Temperatures	50°F to 104°F	10°C to 40°C
Charging Temperatures	50°F to 104°F	10°C to 40°C
Recommended Storage Temperatures		
No longer than 1 month	32°F to 140°F	0°C to 60°C
No longer than 3 months	32°F to 113°F	0°C to 45°C
No longer than 1 year	32°F to 68°F	0°C to 20°C

6.9 System DMA

Table 6-9
System DMA

Hardware DMA	System Function
DMA0	Available for audio
DMA1	Entertainment Audio (Default; Alternate = DMA0, DMA3, None)
DMA2	Diskette Drive
DMA3	ECP Parallel Port LPT1 (Default; Alternate = DMA 0, none)
DMA4	DMA Controller Cascading (Not available)
DMA5	Available for PC Card
DMA6	Not Assigned
DMA7	Not Assigned

Note: PC Card controller can use DMA 1, 2, or 5.

6.10 System Interrupts

Table 6-10
System Interrupts

Hardware IRQ	System Function
IRQ0	System timer
IRQ1	Keyboard controller
IRQ2	Cascaded
IRQ3	COM2
IRQ4	COM1
IRQ5	Audio (default)*
IRQ6	Diskette drive
IRQ7	Parallel port
IRQ8	Real Time Clock (RTC)
IRQ9	Infrared
IRQ10	System use
IRQ11	System use
IRQ12	Internal Point Stick or External Mouse
IRQ13	Coprocessor (Not available to any peripheral)
IRQ14	IDE Interface (Hard Disk and CD-ROM Drive)
IRQ15	Fixed Disk Drives on the ArmadaStation/Armada MiniStation

Notes:
PCMCIA cards may assert IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, or IRQ15.
Either the infrared or the serial port may assert IRQ3 or IRQ4.
*Default configuration; audio possible configurations are: IRQ5, IRQ7, IRQ9, IRQ10, or none.

6.11 System I/O Addresses

Table 6-11
System I/O Addresses

I/O Address (Hex)	System Function (Shipping Configuration)
000 - 00F	DMA Controller no. 1
010 - 01F	Unused
020 - 021	Interrupt Controller no. 1
022 - 024	Opti Chipset Configuration registers
025 - 03F	Unused
02E - 02F	87334 "Super IO" configuration for CPU
040 - 043	Counter/Timer Registers
044 - 05F	Unused
060	Keyboard Controller
061	Port B
062 - 063	Unused
064	Keyboard Controller
065 - 06F	Unused
070 - 071	NMI Enable/Real Time Clock
072 - 07F	Unused
080 - 08F	DMA Page Registers
090 - 091	Unused
092	Port A
093 - 09F	Unused
0A0 - 0A1	Interrupt Controller no. 2
0A2 - 0BF	Unused
0C0 - 0DF	DMA Controller no. 2
0E0 - 0EF	Unused
0F0 - 0F1	Coprocessor Busy Clear/Reset
0F2 - 0FF	Unused
100 - 16F	Unused
170 - 177	Secondary Fixed Disk Controller
178 - 1EF	Unused
1F0 - 1F7	Primary Fixed Disk Controller
1F8 - 200	Unused
201	Joystick (Decoded in ESS1688)
202 - 21F	Unused
220 - 22F	Entertainment Audio
230 - 26D	Unused

Continued

Table 6-11 *Continued*

I/O Address (Hex)	System Function (Shipping Configuration)
26E - 26	National 87334 "Super IO" Controller in ArmadaStation/Armada MiniStation
278 - 27F	Unused
280 - 2AB	Unused
2A0 - 2A7	ArmadaStation/Armada MiniStation PC Card DMA Selection, Hard Drive Reset, IDE Select, MultiBay Device Identification
2A8 - 2E7	Unused
2E8 - 2EF	Reserved Serial Port
2F0 - 2F7	Unused
2F8 - 2FF	Infrared port
300 - 31F	Network Interface in ArmadaStation/Armada MiniStation (Default; Alternate is 320, 340, or 360h)
320 - 36F	Unused
370 - 377	Secondary Floppy Controller (In ArmadaStation/Armada MiniStation when a floppy is installed in the CPU)
378 - 37F	Parallel Port (LPT1/Default)
380 - 387	Unused
388 - 38B	FM Synthesizer - OPL3
38C - 3AF	Unused
3B0 - 3BB	VGA
3BC - 3BF	Reserved (Parallel Port/No EPP Support)
3C0 - 3DF	VGA
3E0 - 3E1	PC Card Controller in CPU
3E2 - 3E3	PC Card Controller in ArmadaStation/Armada MiniStation
3E8 - 3EF	Internal Modem
3F0 - 3F7	"A" Diskette Controller
3F8 - 3FF	Serial Port (COM1/Default)
CF8 - CFB	PCI Configuration Index Register (PCIDIV0-1)
CFC - CFF	PCI Configuration Data Register (PCIDIV0-1)

6.12 System Memory Map

Table 6-12
System 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

appendix A

CONNECTOR PIN ASSIGNMENTS

Table A-1
RJ-11

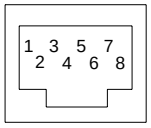
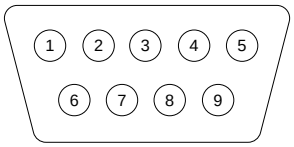
Connector	Pin	Signal
	1	NC_J3A
	2	NC_J3B
	3	TIP
	4	RING
	5	NC_J3C
	6	NC_J3D
	7	Unused
	8	Unused

Table A-2
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-3
Microphone Jack

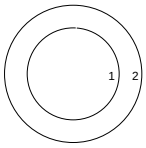
Connector	Pin	Signal
	1	Audio in
	2	Ground

Table A-4
Stereo Speaker/Headphone Jack

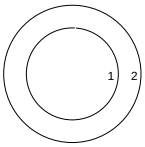
Connector	Pin	Signal
	1	Audio out
	2	Ground

Table A-5
Stereo Line-in Jack

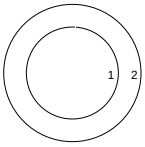
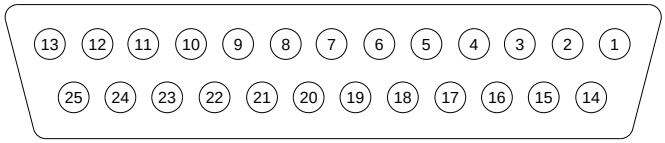
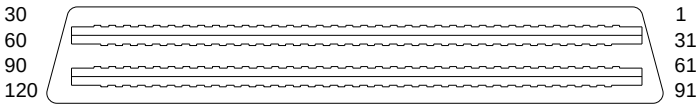
Connector	Pin	Signal
	1	Audio in
	2	Ground

Table A-6
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	Ground
9	Data Bit 7	22	Ground
10	Acknowledge	23	Ground
11	Busy	24	Ground
12	Paper End	25	Ground
13	Select		

Table A-7
Docking Connector



Pin	Signal	Pin	Signal
1	EBOXL	34	XA1/R OUT
2	AGND	35	GND
3	EBOXS1	36	GND
4	RED	37	EXPCLK2
5	AGND	38	+3.3V
6	GREEN	39	EXPCLK0
7	AGRD	40	+5V (8051VCC)
8	BLUE	41	EXPCLK
9	AGND	42	EBOXS2
10	VSYNC	43	GND
11	HSYNC	44	EBOXL
12	DDC DAT	45	EBOXL /GND
13	DDC CLK	46	SRDY
14	GND	47	EBOXS1 /GND
15	INDEX	48	RI1 EX
16	RDATA	49	GND
17	TRK0	50	SLCT LD0
18	WDATA	51	PE LD1
19	WGATE	52	ACK LD2
20	STEP	53	BUSY LD3
21	DIR	54	GND
22	POWER ON	55	STRB LD4
23	SYS RESET	56	ALF LD5
24	GND	57	INIT LD6
25	DSKCHG	58	SLCTIN LD7
26	+5 V (VDD)	59	GND
27	AUGND	60	PDATA0 LD8
28	XA2/L IN	61	PDATA1 LD9
29	XA3/R IN	62	PDATA2 LD10
30	MID0/MIC IN	63	PDATA3 LD11
31	AUGND	64	GND
32	XA0/L OUT	65	PDATA4 LD12
33	XSD/MIC SN	66	PDATA5 LD13

Continued

Table A-7 *Continued*

Pin	Signal	Pin	Signal
67	PDATA6 LD14	105	AD[16]
68	PDATA7 LD15	106	GND
69	GND	107	AD[15]
70	ERROR LCLK	108	AD[13]
71	RXD1 LVREQ	109	AD[11]
72	TXD1 LCREQ	110	AD[09]
73	RTS1 LEN	111	GND
74	GND	112	AD[06]
75	CTS1 LIIC CLK	113	AD[04]
76	DTR1 LIIC DAT	114	AD[02]
77	DSR1 EX	115	AD[00]
78	DCD1 EX	116	GND
79	12C DATA	117	FRAME
80	GND	118	TRDY
81	12C CLK	119	STOP
82	GND	120	PAR
83	HDSEL	121	CBE0
84	GND	122	CBE1
85	WPROT	123	GND
86	EBOXS2 /GND	124	KB CLK
87	ERDY	125	RSVD1/M CTRL2
88	EBOXL /GND	126	XSC/L OUT SN
89	FLUSHREQ	127	RSVD2/M OFF HOOK
90	MEMACK	128	KB DATA
91	PS2 VCC	129	MGND
92	SERIRQ	130	STANDBY
93	PS2 CLK	131	M DRZP
94	EXPREQ	132	M DRXN
95	AD[29]	133	VBATT
96	AD[31]	134	EXPGNT
97	AD[30]	135	VBATT
98	AD[28]	136	GND
99	AD[26]	137	VBATT
100	GND	138	PS2 DATA
101	AD[24]	139	VBATT
102	AD[22]	140	AD[25]
103	AD[20]	141	VBATT
104	AD[18]	142	AD[27]

Continued

Table A-7 *Continued*

Pin	Signal	Pin	Signal
143	VBATT	160	CBE3
144	AD[23]	161	CBE2
145	GND	162	IRDY
146	AD[21]	163	DEVSEL
147	AD[19]	164	LOCK
148	AD[17]	165	OERR
149	GND	166	SERR
150	AD[14]	167	GND
151	AD[12]	168	RSVD3
152	AD[10]	169	M 12C CLK
153	AD[08]	170	M 12C DATA
154	GND	171	M RING
155	AD[07]	172	MGND
156	AD[05]	173	M DXTN
157	AD[03]	174	GND
158	AD[01]	175	M DXTP
159	GND	176	MSTRBAT

Table A-8
External Keyboard/Mouse Connector

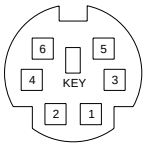
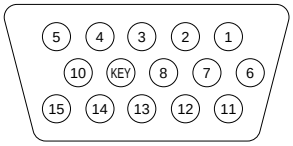
Connector	Pin	Signal
	1	Keyboard/Mouse DATA
	2	Keyboard/Mouse DATA
	3	Ground
	4	+5 VDC
	5	Keyboard/Mouse CLK
	6	Keyboard/Mouse CLK

Table A-9
External Monitor Connector



Pin	Signal	Pin	Signal
1	Red Analog	9	NC
2	Green Analog	10	Ground
3	Blue Analog	11	NC
4	NC	12	DDC Data
5	Ground	13	Horizontal Sync
6	Ground	14	Vertical Sync
7	Ground	15	DDC Clock
8	Ground		

appendix *B*

POWER CORD SET REQUIREMENTS

3-Conductor Power Cord Set

The wide range input feature of the Armada E700 Series of Personal Computers permits it to operate from any line voltage from 100 to 120 or 220 to 240 volts AC.

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

Power cord sets for use in other countries must meet the requirements of the country where the computer is used. For more information on power cord set requirements, contact a Compaq authorized reseller or service provider.

General Requirements

The requirements listed below are applicable to all countries:

1. The length of the power cord set must be at least 5.00 feet (1.5 m) and a maximum of 6.50 feet (2.0 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 C13 connector, for mating with appliance inlet on the back of the computer.

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
The Netherlands	KEMA	1
Norway	NEMKO	1
Sweden	SEMKO	1
Switzerland	SEV	1
United Kingdom	BSI	1
United States	UL	2

Notes

1. The flexible cord must be <HAR> Type HO5VV-F, 3-conductor, 1.0 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-3 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.

3. 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.

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