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MAINTENANCE AND SERVICE GUIDE  
COMPAQ LTE ELITE FAMILY OF PERSONAL COMPUTERS  
COMPAQ SMARTSTATION

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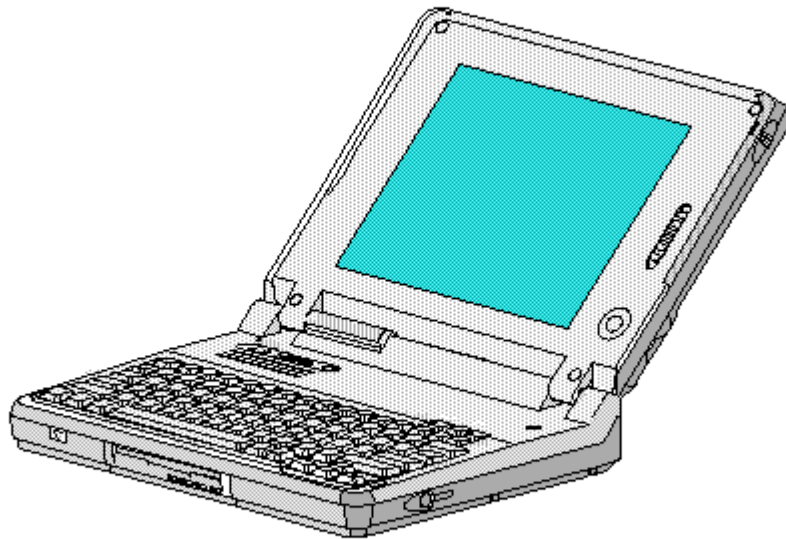


# Chapter 1 - Compaq LTE Elite Product Overview

## Introduction

This chapter is an overview of the Compaq LTE Elite Family of Personal Computers and covers the following topics:

- o Serial number
- o System overview
- o Models and features
- o Controls and LEDs
- o Connectors
- o Functional descriptions
- o Docking options
- o Running Computer Setup
- o Reprogrammable flash ROM
- o Power Management
- o Security



Compaq LTE Elite - Family of Personal Computers

## 1.1 Serial Number

The computer serial number should be provided to Compaq whenever requesting information or ordering spare parts. The serial number is located above the connectors behind the input/output (I/O) connector cover.

## 1.2 System Overview

The Compaq LTE Elite has the following upgradeable assemblies:

- o Hard drive
- o Display assembly
- o Processor board
- o RAM memory expansion board

The Compaq LTE Elite is designed to dock in one of the following options:

- o Compaq SmartStation (Figure 1-1)
- o Compaq LTE Lite Desktop Expansion base (with a Compaq LTE Lite Upgrade Adapter)
- o Compaq MiniStation/EN or Compaq MiniStation/TR

When docked in one of these options, the computer has the following additional features:

- o A single connection that provides multiple pass-through connections to options such as a printer, monitor, and other external equipment
- o Built-in network and SCSI-2 capability (on the Compaq SmartStation and Compaq MiniStations only)
- o Two internal drive bays (on the expansion bases only)
- o Two full size 8-/16-bit Industry Standard Architecture (ISA) expansion slots (on the expansion bases only)

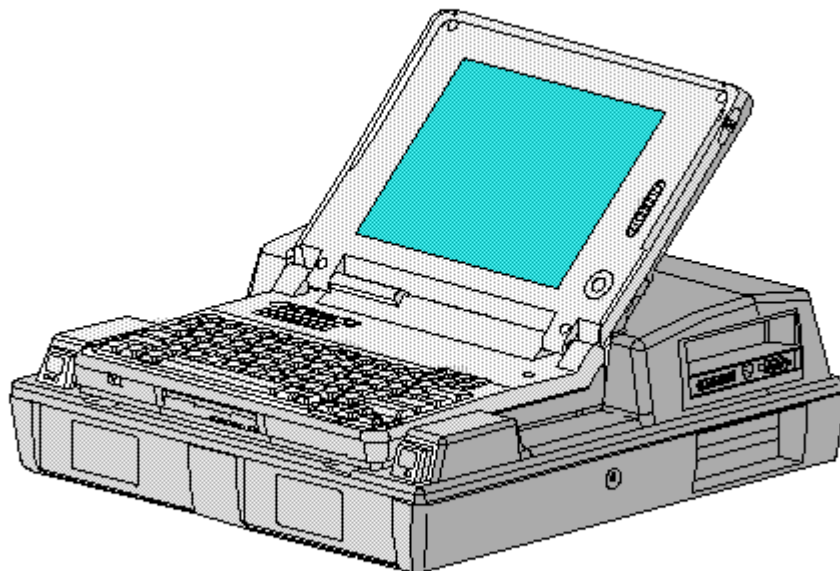


Figure 1-1. Computer Docked in the Expansion Base

Computer power is supplied through one of the following sources:

- o An internal battery pack
- o The computer's internal AC adapter when connected to the power cord (Figure 1-2)
- o The computer's internal AC adapter when docked in a convenience base
- o The 198-pin external options connector when docked in an expansion base (provides DC power)
- o Automobile Adapter (provides DC power)

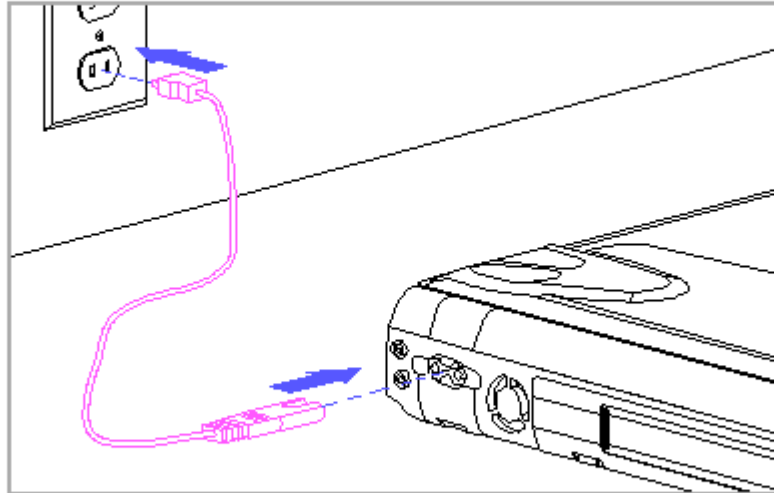


Figure 1-2. Connecting AC Power to the Computer

### 1.3 Models And Features

#### Models

Table 1-1 lists the Compaq LTE Elite models and model-specific features.

Table 1-1. Compaq LTE Elite Computer Models

Model	Display	Processor	Internal Cache	RAM	Hard Drive
4/75CX	9.5" Color TFT	486 DX4/75 MHz	16 KB	8 MB	340 or 510 MB
4/50CX	9.5" Color TFT	486 DX2/50 MHz	8 KB	8 MB	340 MB
4/40CX	8.4" Color TFT	486 DX2/40 MHz	8 KB	4 MB	170 or 340 MB
4/50E	9.5" Mono TFT	486 DX2/50 MHz	8 KB	4 MB	250 MB
4/40C	9.5" Color STN	486 DX2/40 MHz	8 KB	4 MB	170 MB

#### Features

All models of the computer have the following features:



- o Internal AC adapter
- o Upgradeable SL Enhanced Intel486 microprocessors
- o User upgradeable display with integrated trackball
- o Local bus graphics and graphics accelerator with 1024 x 768 external video support
- o Simultaneous display capability
- o Removable 2.5-inch hard drive
- o Reprogrammable flash ROM (Section 1.9)
- o 4 MB system RAM expandable to 20 MBs or 8 MB system RAM expandable to 24 MBs. The following memory expansion boards are available (Section 1.6):
  - 4 MB
  - 8 MB
  - 16 MB
- o 1.44 MB/720 kilobyte (and 1.2 MB Japanese standard), 3.5-inch diskette drive
- o Internal dynamic speaker
- o Internal 101-/102-key compatible keyboard (Enhanced III type with 12 function keys)
- o External keyboard/mouse support
- o External numeric keypad support
- o Enhanced parallel port (EPP 1.9)
- o PCMCIA slot, capable of handling one of the following card combinations:
  - Two PCMCIA Type I or Type II cards
  - One PCMCIA Type III card
- o Nickel metal hydride (NiMH) battery pack
- o Battery power management features, including the following:
  - Four levels of power management
  - Advanced Power Management (APM)
  - Standby
  - Hibernation
  - Screen save
  - Hard drive idle
  - PCMCIA slot power management
  - Battery gauge
  - Auxiliary battery (to protect data during battery pack replacement)
- o AC power management features including the following:
  - Standby
  - Hard drive idle
  - Screen save
- o Saving of changes to hotkey settings when computer is turned off
- o Electronic security features

o The following preinstalled software:

- MS-DOS and Microsoft Windows
- TabWorks utility (alternative to Program Manager)
  
- Computer Setup, Computer Checkup, Power Management, and Security Management utilities
  
- Automatic PCMCIA configuration utilities for MS-DOS and Windows
- Windows-based online documentation
- Plug and Play BIOS
  
- MS-DOS- and Windows-based shutdown capability (for closing out applications and turning off computer)
  
- Microsoft Video for Windows Runtime Version
- Adaptec 6360 SCSI drivers
- Universal Netware Client for simplified setup of a Netware network
  
- Intel Ethernet drivers and TI Token Ring drivers for networks other than Netware
  
- Western Digital WIN graphics drivers
- Logitech Trackball drivers

## **1.4 Controls And Leds**

This section covers the computer controls and LEDs (Figure 1-3).

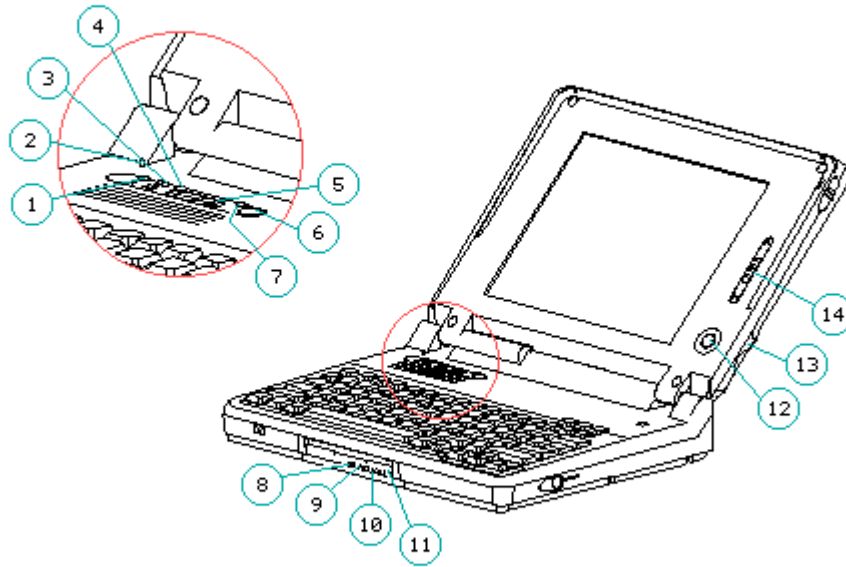


Figure 1-3. Controls and LEDs

1. Caps lock LED
2. Display switch
3. Scroll lock LED
4. Num lock LED
5. Power switch
6. Standby button
7. Power/standby LED
8. Hard drive LED
9. Diskette drive LED
10. Power/standby LED
11. Battery LED
12. Trackball
13. Trackball buttons
14. Display control slide(s)

#### LEDs

Table 1-2 lists the function of the LEDs.

Table 1-2. LEDs

LED Name	Status	Indication	Location	Color
----------	--------	------------	----------	-------

Power/ standby	On Flashing	Power on Standby	LED on top of unit (active when display is open). Identical LED on front of unit (active when display is closed).	Green
-----				
Battery State	On  Flashing at one per second  Flashing at two per second	Battery charging  LowBatt 1  LowBatt 2	Front of unit	Orange
-----				
Hard Drive Activity	On	Hard drive being accessed	Front of unit	Green
-----				
Diskette Drive Activity	On	Diskette drive being accessed	Front of unit	Green
-----				
Scroll Lock	On	Scroll lock selected	Top of unit	Green
-----				
Caps Lock	On	Caps lock selected	Top of unit	Green
-----				
Num Lock	On	Num lock selected	Top of unit	Green
=====				

#### Display Switch

The computer has a display switch mounted on the power interface board (PIB) located near the display hinge. When the display is closed, this switch activates the front-mounted power/standby LED and simultaneously deactivates the display and the top-mounted LEDs.

#### Trackball

The computer has an integrated PS/2 style trackball located on the display bezel. The trackball is disabled whenever an external mouse is connected to the keyboard/mouse connector. The trackball buttons are located on the back side of the display.

## 1.5 Connectors

This section covers the I/O pass-through connectors on the computer (Figure 1-4). Refer to Appendix A for connector pin assignments.

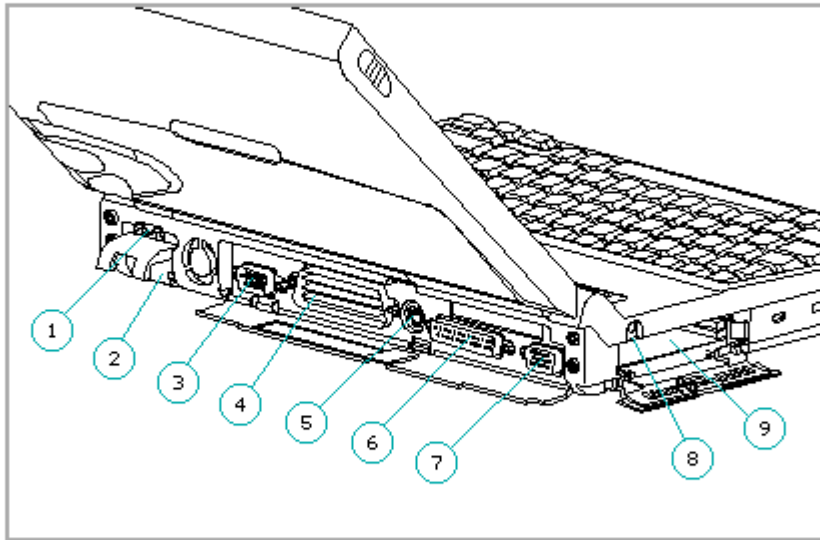


Figure 1-4. I/O Connectors

1. AC power
2. Automobile Adapter
3. Serial
4. 198-pin external options
5. Keyboard/mouse
6. Parallel
7. External monitor
8. Numeric keypad
9. PCMCIA

#### AC Power Connector

When the computer is docked in the convenience base and the convenience base is turned on, AC power is applied to the computer's AC power connector. (The 198-pin connector carries all other signals between the two units.)

#### Automobile Adapter Connector

The computer has an automobile adapter connector that accepts an 18.5 volt, 1.73 amp DC input from the Automobile Adapter. This connector is covered by an access door (Figure 1-5).



### Keyboard/Mouse Connector

The keyboard/mouse connector can be connected to a PS/2 mouse or an external enhanced keyboard. Connecting the mouse/keyboard connector to a mouse disables the integrated trackball, while connecting the mouse/keyboard connector to an external keyboard disables the internal keyboard.

### Parallel Connector

The parallel connector supports the parallel interface which meets EPP 1.9 specifications.

### External Monitor Connector

The external monitor connector provides an output for an external monitor with a maximum resolution of 1024 x 768 lines.

NOTE: The computer can simultaneously display on an external monitor and the integrated display panel.

### Numeric Keypad

Connecting the numeric keypad connector to an external numeric keypad disables the embedded numeric keypad feature.

### PCMCIA Connector

The computer has a PCMCIA connector accessible through a PCMCIA slot on the left side of the computer (refer to "PCMCIA Slot" in Section 1.6). The PCMCIA connector supports the PCMCIA interface which meets PCMCIA 2.1 specifications.

## **1.6 Functional Descriptions**

This section covers functional descriptions of key parts and features of the computer. For assembly/disassembly instructions for the parts described in this section, refer to Chapter 4.

### System Board

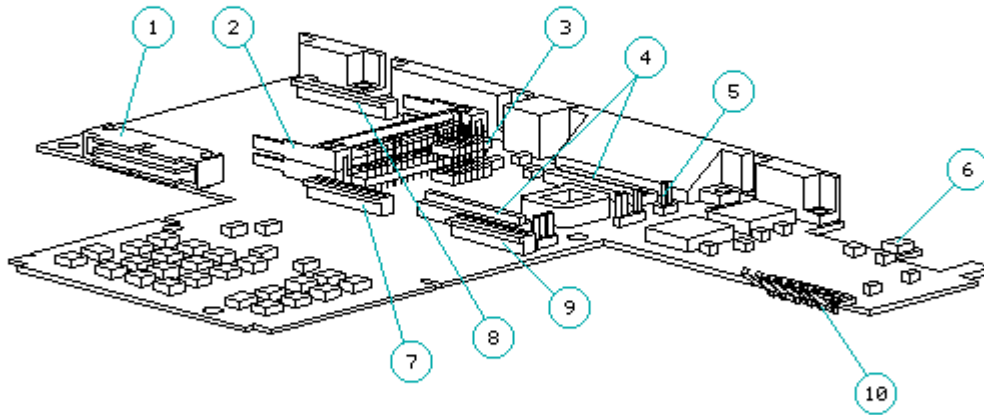


Figure 1-6. System Board

The system board (Figure 1-6) provides the following:

- o Connector for removable hard drive [1]
- o PCMCIA connector [2] (refer to "PCMCIA Slot")
- o Board-to-board connection to the following devices:
  - Power interface board (PIB) [3]
  - Processor board [4]
  - Memory expansion board (on underside of system board)
- o Cable connection to the following devices:
  - Internal AC power supply board [5]
  
  - Fan [6]
  - Internal keyboard [7]
  - Display [8]
  - Diskette drive [9]
  
  - LED cable assembly for front-mounted LEDs (on underside of system board)



- o Battery charging circuitry and battery contacts [10] for battery pack
- o External input/output (I/O) connectors (Figure 1-4)
- o DC-to-DC power supply (refer to "DC-to-DC Power Supply" in this section)
- o 256 Kbyte flashable shared system ROM and keyboard ROM
- o 4 or 8 MB base RAM (depending on the model)
- o System controller, which provides the following:
  - Interface to the processor board for memory management (including memory refresh)
  - Two DMA controllers
  - Two interrupt controllers
  - Clock generator
  - Programmable interval timer
  - System management interrupt (SMI) support logic
  - Power management features
- o Peripheral controller, which provides the following:
  - Integrated keyboard controller
  - Industry Standard Architecture (ISA) support logic
  - Circuit for interfacing to the hard drive
  - Control of parallel and serial interfaces, including serial interfaces for a numeric keypad, mouse/keyboard, and internal trackball
- o PCMCIA controller
- o Local bus video controller
- o Diskette drive controller
- o Docking sense logic
- o Secondary temperature sensor for controlling the fan (refer to "Temperature Sensors")

#### DC-to-DC Power Supply

The DC-to-DC power supply is integrated into the system board. It converts DC voltage input to regulated 3.3 volts, 5 volts, and 12 volts DC. The DC

voltage input comes from one of the following sources:

- o Internal AC power supply
- o Battery pack
- o Automobile adapter
- o 198-pin external options connector (from expansion base)
- o Auxiliary battery

To replace the DC-to-DC power supply, the system board must be replaced.

#### Processor Board

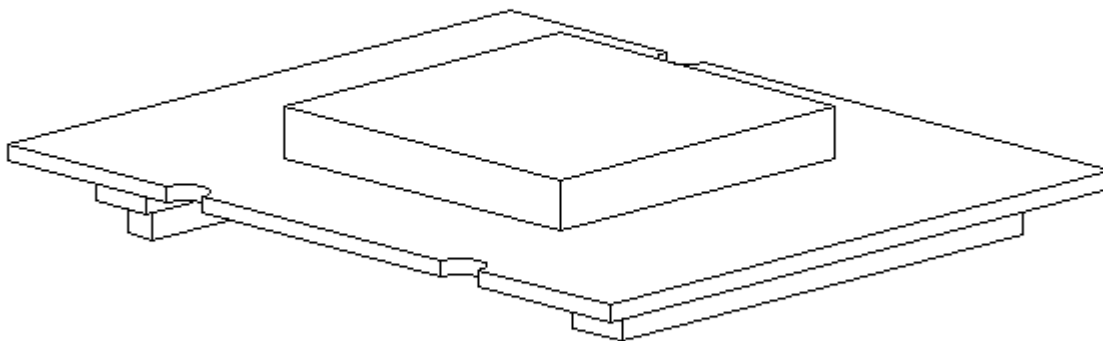


Figure 1-7. Processor Board

The SL Enhanced Intel486 processor has an integrated coprocessor and is upgradeable by replacing the processor board (Figure 1-7). The system automatically adjusts to the new configuration. In addition, the processor board contains the primary temperature sensor (refer to "Temperature Sensors").

Some models have a heat sink attached. The computer comes with one of the following processors:

- o 486 DX4/75 MHz
- o 486 DX2/50 MHz
- o 486 DX2/40 MHz

NOTE: The 75 MHz processor is also available as an upgrade option.

#### Temperature Sensors

The primary temperature sensor is located on the processor board and the secondary temperature sensor is located on the system board. These sensors turn the fan on when the system approaches maximum reliable operating temperatures.

If the temperature continues to rise, a system management interrupt (SMI) is generated that creates a pop-up window (depicting a thermometer) to warn the user of the temperature overload and the unit goes into Standby within several seconds. If the temperature continues to rise, the computer turns itself off.

NOTE: The temperature sensors are integrated into the processor board and the system board. To replace a temperature sensor, the appropriate board must be replaced.

#### Power Interface Board (PIB)

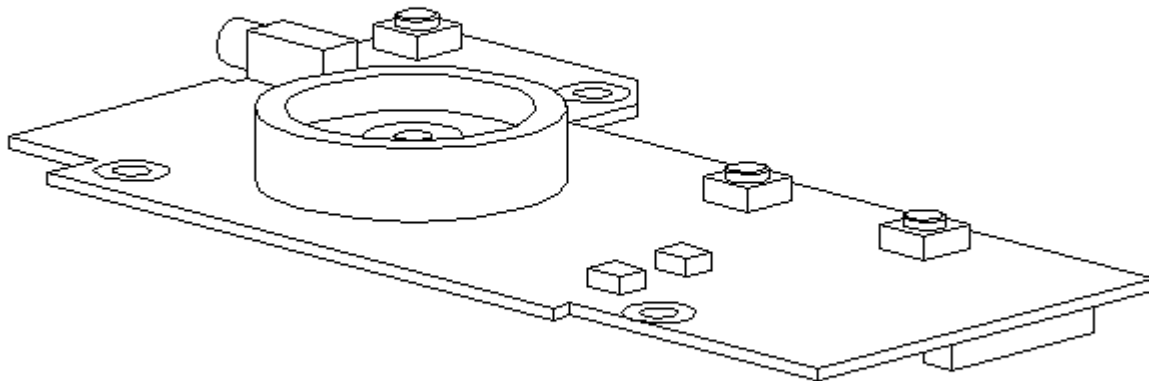


Figure 1-8. Power Interface Board

The power interface board (PIB) (Figure 1-8) is mounted to the system board by a 16-pin connector. The PIB provides the following features:

- o Numeric keypad connector
- o Speaker and speaker amplifier
- o Power switch
- o Standby button
- o Display switch
- o The following LEDs:
  - Power/standby
  - Scroll lock
  - Caps lock
  - Num lock

Refer to Section 1.4 for more information on the controls and LEDs listed above.

#### Memory Expansion Board

The 4 or 8 MB base RAM memory (depending on the model) may be increased by adding an optional memory expansion board (Figure 1-9). The memory expansion board plugs directly into the back side of the system board (Section 4.6).

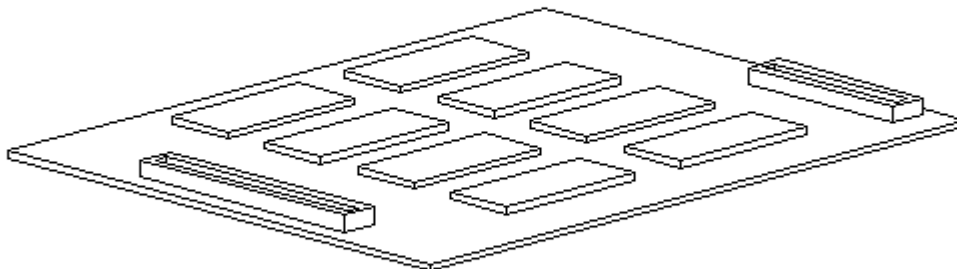


Figure 1-9. Memory Expansion Board

The system supports the following 3.3 volt memory expansion boards (which operate at 70ns):

- 4 MB
- 8 MB
- 16 MB

NOTE: Some early memory expansion boards for the Concerto Family of Personal Computers (option kit numbers 144790-001 and 144790-002) operate at 80 ns and do not function properly when installed in the Compaq LTE Elite Family of Personal Computers, which operate at 70 ns. Use only Compaq LTE Elite memory expansion boards (Table 3-2).

Refer to the table in Section 5.3 for a list of total RAM memory based on available system memory and memory obtained from the expansion board.

Internal AC Power Supply (AC-to-DC)

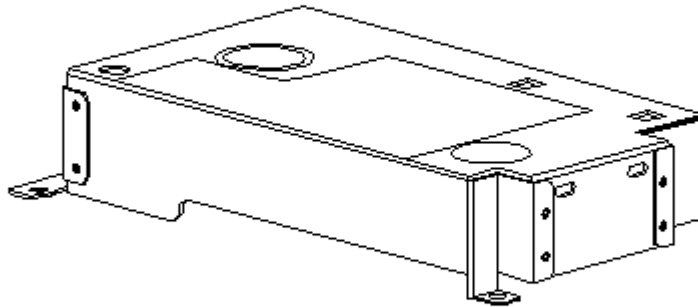


Figure 1-10. Internal AC Power Supply

The computer is powered by a high-efficiency, board-mounted, internal AC-to-DC power supply (Figure 1-10). The power supply provides the computer with an 18.5 volt DC output for running all computer functions, including charging the internal battery pack.

Fan









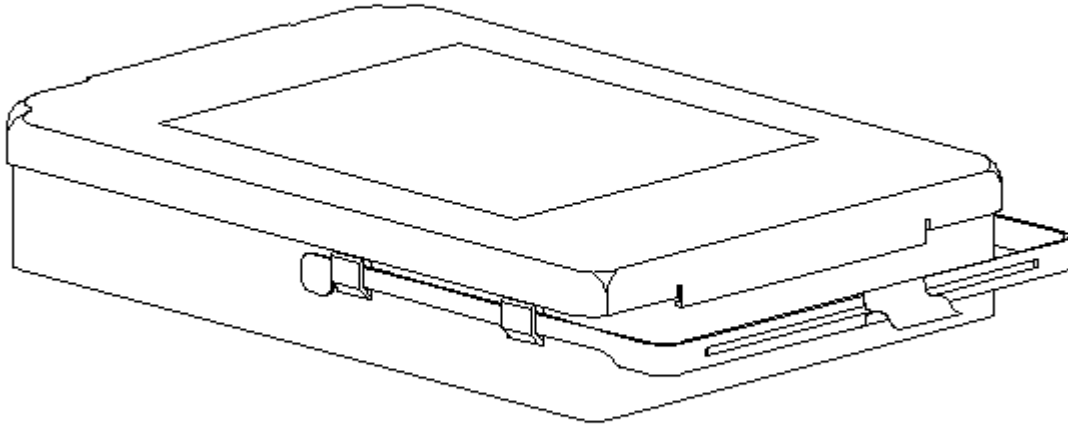


Figure 1-13. Removable Hard Drive

The 2.5-inch hard drive (Figure 1-13) is user-removable from the front of the computer (Section 4.12). The hard drive release button allows the drive to be removed without disassembling the computer. A connector on the hard drive enclosure mates to a connector on the system board.

NOTE: The hard drive may have either a metal handle (Figure 1-13) or a plastic pull tab that is attached directly to the hard drive enclosure.

Hard drive security clips can be installed to prevent the hard drive from being removed (refer to Section 4.12). When the security clips are installed, a lock label should be attached to the front of the hard drive to indicate that the drive is locked in place. The computer must be partially disassembled to remove the security clips before the hard drive can be removed.

NOTE: The Compaq Diagnostics utilities (which include Computer Setup) reside in a hidden partition on the Compaq LTE Elite hard drive (not in the ROM). There is no preinstalled software on a new spare hard drive. When installing a new spare hard drive, the hidden partition must be created, the diagnostics utilities must be installed, and the C: partition must be formatted before restoring any data (Section 4.12). On the option kit hard drives, the hidden partition

is already created and the diagnostics utilities are already installed.

**IMPORTANT:** The hard drive must be handled with care. Refer to the cautions listed in Section 4.12.

## Display Assembly

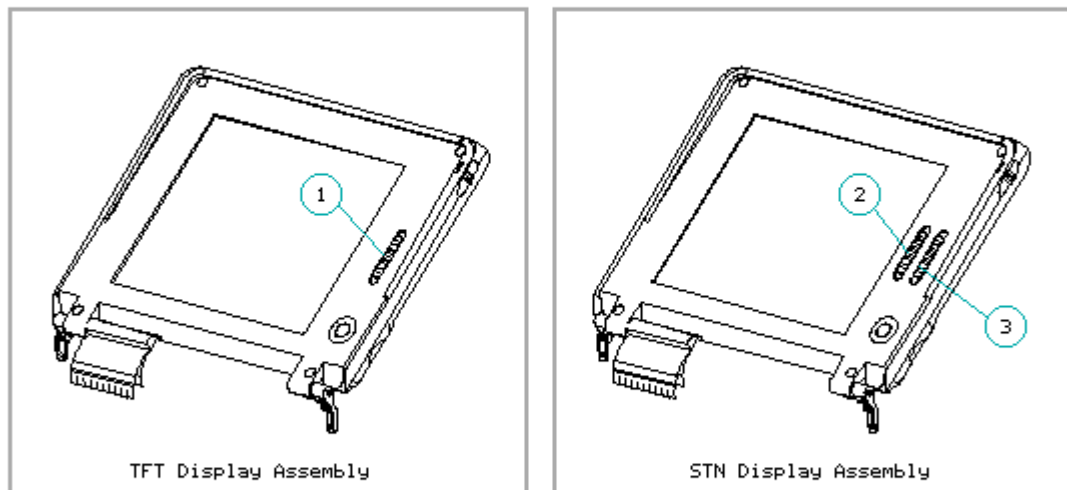


Figure 1-14. Display Assembly

The display assembly (Figure 1-14) is connected to the system unit by clutches, a display cable and a ground cable. The display assembly includes an integrated trackball board and an inverter board. The color and black-and-white TFT display assemblies have an externally adjustable brightness control slide [1]. The color STN display assembly has two externally adjustable control slides: one for contrast [2] and one for brightness [3]. The display assembly comes with one of the following panels, depending on the model:

- o 9.5-inch color STN
- o 9.5-inch mono TFT
- o 8.4-inch color TFT
- o 9.5-inch color TFT

**IMPORTANT:** In order to optimize display quality and ensure regulatory compliance, many of the parts in the 9.5-inch color TFT display can be replaced only by replacing the entire display assembly (Section 4.9).

Refer to Section 5.4 for display specifications.

NOTE: A certain number of pixels in the display panel are allowed to be nonfunctional due to limitations in LCD technology.

#### PCMCIA Slot

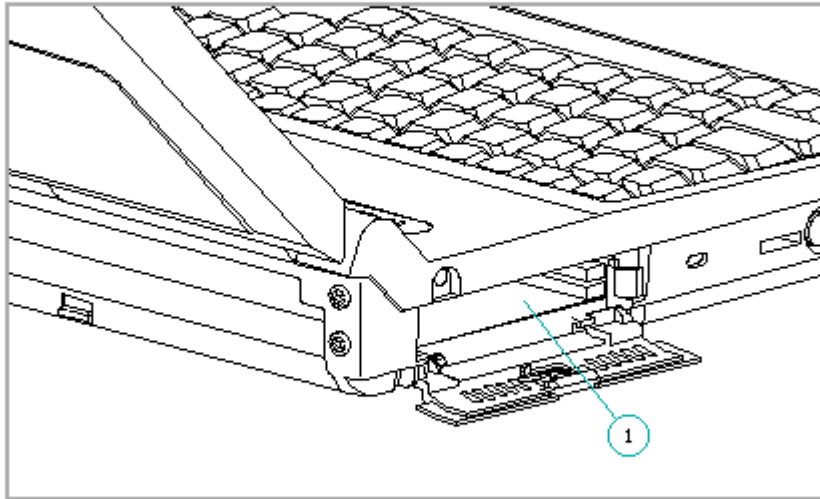


Figure 1-15. PCMCIA Slot

The PCMCIA connector is mounted to the system board. The connector is accessible through the PCMCIA slot [1], (Figure 1-15), which is covered by a PCMCIA compartment door. The slot accommodates one of the following card combinations:

- o Two PCMCIA Type I or Type II cards
- o One PCMCIA Type III card

The PCMCIA slot supports both 5 volt and 3.3 volt PCMCIA cards in accordance with PC Card Standard Release 2.1 or later and the Exchangeable Card Architecture (ExCA) Specification 1.10.

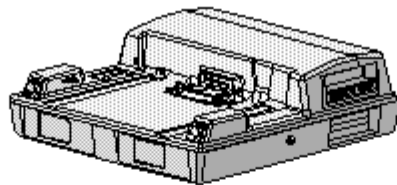
NOTE: PCMCIA stands for Personal Computer Memory Card International Association. PCMCIA standards continue to change. Many cards on the market do not comply with the PCMCIA specifications and, therefore, do not function properly in the computer. To assist users in selecting compatible PCMCIA devices, Compaq provides a list of third-party cards that have been tested in Compaq products. To ensure compatibility, select a Compaq PCMCIA modem or other vendor cards on the tested list. Call Compaq Reseller Support to have a copy of the list faxed to you.

## 1.7 Docking Options

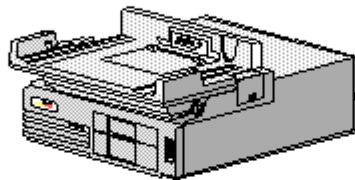
The Compaq LTE Elite docks with the following options (Figure 1-16):

- o Compaq SmartStation expansion base
- o Compaq LTE Lite Desktop Expansion Base (with an Upgrade Adapter)
- o Compaq MiniStation/EN and MiniStation/TR convenience bases

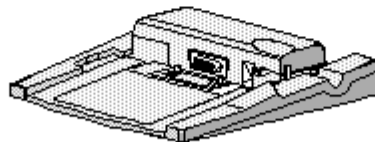
Refer to Appendix D for more information on docking and undocking.



Compaq SmartStation Expansion Base



Compaq LTE Lite Desktop Expansion Base  
(with Upgrade Adapter)



Compaq MiniStation

Figure 1-16. Options Capable of Docking with the Compaq LTE Elite

## 1.8 Running Computer Setup

The Computer Setup utility resides in a hidden partition on the hard drive.

Run Computer Setup for the following situations:

- o To configure options
- o To update alarm, time, date, or password information

NOTE: Alarm, time, and date information can be lost if the computer is unused for approximately 60 days without charging the internal battery pack or without AC power being connected (refer to "Auxiliary Battery" in Section 1.6). If this information is lost, run Computer Setup to restore it.

IMPORTANT: Use AC power during Computer Setup procedures. A low battery condition could initiate Standby and interrupt the program.

To run Computer Setup, complete the following steps:

1. Turn on or restart the computer.
2. Press the F10 key as soon as the cursor moves to the upper-right corner of the screen.
3. When prompted, select the desired language.
4. Select Computer Setup from the Configuration and Diagnostics menu.
5. Follow the instructions on the screen.

## **1.9 Reprogrammable Flash ROM**

The flash ROM can be reprogrammed to update system firmware and provide the most recent level of system functionality. In some cases, problems may be solved by upgrading the ROM.

Erase and reprogram the nonvolatile read only memory (ROM) by using the ROMPaq utility. The ROMPaq utility is available on the Portables ROMPaq Upgrade Diskette, which includes on-screen instructions for implementing the flash ROM upgrade (Table 3-16).

## **1.10 Power Management**

The following power management features are available for conserving AC power and extending battery operating time:

- o Advanced Power Management (APM)
- o Power management settings
- o Standby
- o Hibernation

Advanced Power Management (APM)

APM is installed on the computer and requires no action from the user to reduce power consumption. APM turns off the processor between keystrokes

and when the system is idle. This function is transparent to the user. APM also provides occasional screen messages about the battery while in the Windows environment (for example, low power condition).

### Power Management Settings

You can select power conservation settings through Computer Setup, Power Management, or by pressing the Fn + F7 hotkeys to maximize power for specific requirements. These settings control the power conservation rate and the timeout values for various system components. A timeout is specified period of system or component inactivity. After this period, the system or component (for example, the hard drive) is shut down to conserve power until it is accessed again.

If the power conservation rate and timeouts are not selected, the computer uses the default settings listed in Table 1-3.

Table 1-3. Power Conservation Default Settings

Feature	Battery Power Default Setting	AC Power Default Setting
Standby timeout	5 minutes	15 minutes
Hard drive timeout	2 minutes	15 minutes
Screen save timeout	3 minutes	15 minutes
Display brightness	75% of rated brightness	100% of rated brightness
Processor speed (MHZ)	100% of rated speed	100% of rated speed

Standby

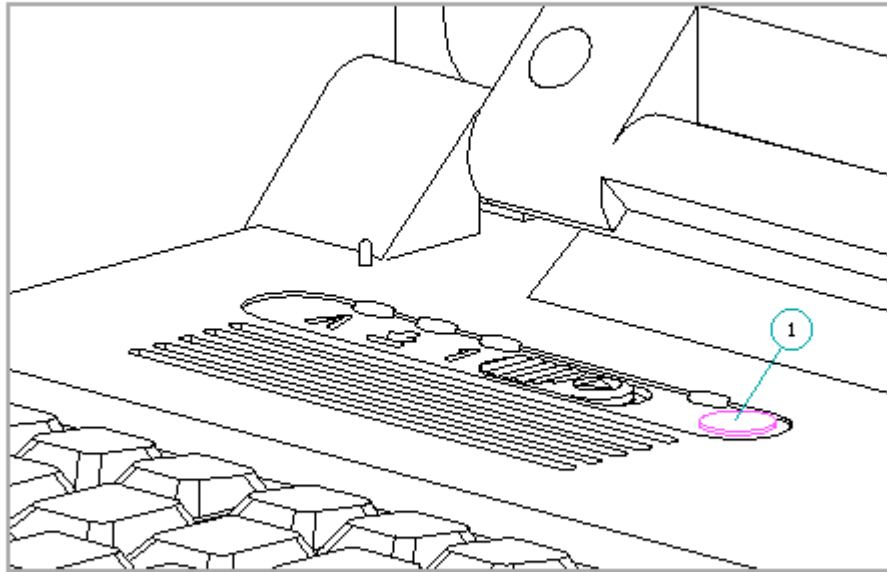


Figure 1-17. Standby Button

Standby is a power conservation mode for battery or AC power operation during which most of the components (e.g, hard drive, processor, display) shut down.

The computer initiates Standby under the following conditions:

- o When the user presses the standby button [1] (Figure 1-17).
- o After a timeout occurs.
- o When the battery pack voltage reaches a low level (if this option is preselected).

When the user exits Standby (by pressing the standby button again), information returns to the screen at the point where Standby was initiated. Under battery power, the computer can maintain Standby for up to 120 hours.

NOTE: The computer cannot initiate Standby under the conditions listed above when docked in an expansion base or a convenience base. In addition, the computer cannot initiate Standby if there is activity from the hard drive, diskette drive, mouse, keyboard, PCMCIA slot, parallel connector, or serial connector.

## Hibernation

Hibernation is a power conservation mode that performs the following functions:

- o Locks the keyboard and clears the screen.
- o Saves all current information in memory and the place in the application to the hard drive.
- o Turns the computer off.

Hibernation is preenabled on the computer and the Hibernation file is preinstalled on the hard drive. The Hibernation file is slightly larger than the total RAM memory of the computer (system memory and memory expansion board).

Hibernation is initiated by one of the following means:

- o Automatically according to the preselected system timeout.
- o Automatically when the battery reaches a low battery level if preselected.
- o Manually by simultaneously pressing the Fn key and standby button.

When the computer is turned on again, the system exits Hibernation and the user is returned to the previous place in the application from the hard drive.

NOTE: Hibernation cannot be initiated when the computer is in an expansion base or a convenience base.

## Battery Operating Time

Battery operating time is affected by variables such as the following:

- o Power conservation settings
- o Hardware configuration
- o Software applications
- o Installed options
- o Display brightness
- o Hard drive usage
- o Changes in operating temperature
- o Type and number of installed PCMCIA cards

Refer to Appendix B for information on increasing battery pack operating time, ensuring battery gauge accuracy, conditioning the battery pack, and disposal of a used battery pack.



## 1.11 Security

The computer has the following security features:

- o Power-on password and setup password.
- o The ability to disable certain components, such as the keyboard, diskette drive, display, PCMCIA slot, parallel connector, and serial connector, to prevent unauthorized access.
- o Provision for an optional cable lock (Figure 1-18) to lock the computer to an immovable object.

NOTE: For procedures to clear the power-on password, refer to "Clearing the Power-On Password" in Section 2.1.

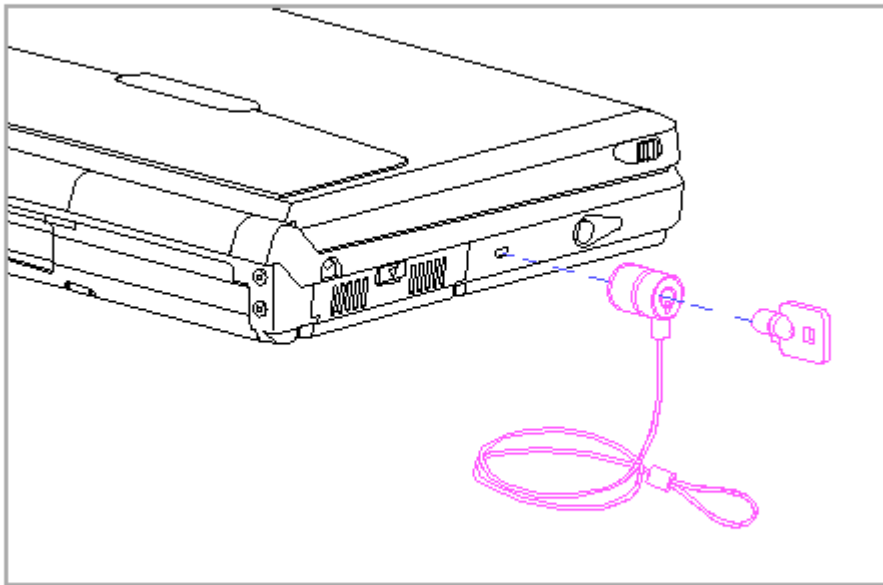


Figure 1-18. Kensington Cable Lock

NOTE: The cable lock, Kensington MicroSaver Security System Model 64068 (Figure 1-19), is available from Kensington Microwave Limited or major computer resellers worldwide at 1-(415)-572-2700. The cable lock is not available through Compaq.

# Chapter 2 - Compaq LTE Elite Troubleshooting

## Introduction

This chapter covers troubleshooting information for the computer. The basic steps in troubleshooting include:

1. Following the preliminary steps listed in Section 2.1.
2. Running the Power-On Self-Test (POST) as described in Section 2.2.
3. Running Computer Checkup (TEST) as described in Section 2.3.
4. Following the recommended actions described in the diagnostic tables in Section 2.4 if you are unable to run POST or Computer Checkup or if the problem persists after they are run.

When following the recommended actions in Section 2.2, 2.3, and 2.4, carry them out in the order given. Rerun POST and Computer Checkup after each recommended action until the problem is solved and no error message occurs. (Once the problem is solved, do not complete the remaining recommended actions.)

NOTE: If the problem was intermittent, check the unit several times to verify that the problem is solved.

Refer to Chapter 4 for any removal and replacement procedures that are recommended.

## 2.1 Preliminary Steps

IMPORANT: Use AC power when running POST, Computer Setup, and Computer Checkup. A low battery condition could initiate Standby and interrupt the program.

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

1. If a power-on password has been established, type the password and press the Enter key.

NOTE: The key symbol (o--m) appears on the screen when the computer is turned on to indicate that a power-on password is established. If the password is unknown, it must be cleared (refer to "Clearing the Power-On Password").

2. Run Computer Setup (Section 1.8).
3. Position the brightness and contrast control slides approximately in the center of their range and leave the display open.
4. Turn off the computer and external devices.

5. Disconnect any external devices that you do not want to test. (Do not disconnect the printer if you want to test it or use it to log error messages.)

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

6. Install loopback plugs in the serial and parallel connectors if you would like to test these ports (Table 3-13).
7. Ensure that the removable hard drive is installed in the computer.
8. Ensure that the battery pack is inserted in the computer and the computer is connected to an external AC power source.

When the preliminary steps are complete, you are ready to run POST (Section 2.2) and Computer Checkup (Section 2.3).

#### Clearing the Power-on Password

Clearing the power-on password clears CMOS, the EEPROM that contains configuration information for all external devices, the setup password, and all other security features including:

- o QuickLock
- o QuickBlank
- o Diskette drive disable
- o Diskette boot ability disable
- o Serial port disable
- o Parallel port disable
- o PCMCIA slot disable

NOTE: Disconnecting the auxiliary battery does not clear the power-on password.

If the password is unknown, clear it by completing the following steps:

1. Turn off the computer.
2. Disconnect the power cord.
3. Remove the battery pack (Section 4.5).
4. Remove the keyboard cover (Section 4.7).
5. Remove the keyboard, but don't disconnect the cable (Section 4.10). Place the keyboard toward the front of the system unit to access the jumper located near the lower-right corner of the processor board.

NOTE: The pins used by the jumper are labeled on the system board as "1," "2," and "3." (Pin "1" is toward the rear of the computer.) The jumper can be placed simultaneously on pins 1 and 2 (the "1-2" or "normal" position [1]) or on pins 2 and 3 (the "2-3" or

password-clearing position [2]). Refer to Figure 2-1.

6. Move the jumper from the normal "1-2" position [1] to the "2-3" position [2] (Figure 2-1).

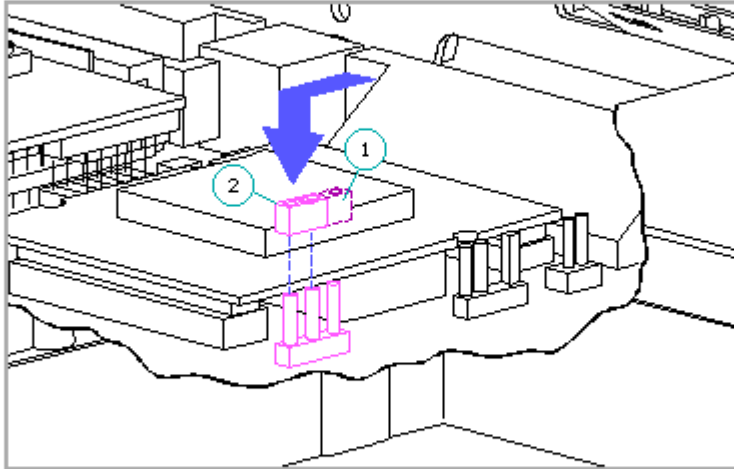


Figure 2-1. Clearing the Power-On Password

7. Insert the battery pack.

**IMPORTANT:** Ensure that the battery pack is charged since a low battery condition could initiate Standby and interrupt the procedure.

8. Turn on the computer.

The ROM clears the power-on password during POST.

9. After POST finishes, turn off the computer.

10. Remove the battery pack.

11. Move the jumper back to the normal "1-2" position.

12. Insert the battery pack.
13. Turn on the computer to verify that the power-on password has been cleared. If it has not been cleared, remove the battery pack and then repeat steps 6 through 13. If the password is still not cleared, replace the system board (Section 4.17).
14. Replace the keyboard.
15. Replace the keyboard cover.
16. Reconnect the power cord to the external outlet.
17. Run Computer Setup (Section 1.8) to reconfigure the system and reset the power-on and setup passwords.

## **2.2 Power-On Self-Test (POST)**

The Power-On Self-Test (POST) is a series of diagnostic tests that run automatically when the system is turned on. POST detects which types of mass storage devices are installed in the computer and checks that the following assemblies are functioning properly:

- o Diskette drive
- o Display
- o External keyboard
- o Hard drive
- o Internal keyboard controller
- o Memory expansion board
- o Processor board
- o Speaker on the power interface board (PIB)
- o System board
- o System memory
- o Trackball assembly (POST identifies the trackball but does not actually test it.)
- o Video controller circuitry

Running POST

To run POST, complete the following steps:

1. Turn off the computer.
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 and starts (boots) from the hard drive (or from a bootable diskette if one is installed in the diskette drive).

If POST detects errors, the errors are indicated by screen and/or audible messages. Refer to "Power-On Self-Test (POST) Error Messages" in this section for a list of POST error messages, probable causes, and recommended actions.

Run Computer Checkup after POST runs successfully (Section 2.3).

NOTE: 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 2.4.

### Power-On Self-Test (POST) Error Messages

Table 2-1 lists visual error messages for POST, audible (beep) error messages, probable causes, and recommended actions.

Table 2-1. Power-On Self-Test Messages

Message	Beeps	Probable Cause	Recommended Action
101 - ROM Error	1 Long, 1 Short	System ROM checksum invalid.	1. Inspect the ROM placement. 2. Replace the ROM. 3. Flash the ROM. 4. Replace the system board.
101 - I/O ROM Error	None	Option ROM checksum invalid.	1. Inspect the ROM placement. 2. Verify the correct ROM. 3. Replace the ROM.
102 - System Board Failure	None	Defective DMA, timers, etc.	1. Replace the system board. 2. Replace the processor board.
162 - System Options Error	2 Short	No diskette drive or mismatch in drive type.	1. Run Computer Setup. 2. Check diskette cable. 3. Check diskette drive.
162 - System Options Not Set	2 Short	Configuration incorrect.	Run Computer Setup.
163 - Time & Date Not Set	2 Short	Invalid time or date in configuration memory.	Run Computer Setup.
164 - Memory	2 Short	Configuration	The following steps

Increase Detected		memory incorrect.	apply to both 164 error codes:  <ol style="list-style-type: none"> <li>1. Autsetup will correct.</li> <li>2. Verify that memory board is installed correctly.</li> <li>3. Replace memory board.</li> <li>4. Replace system board.</li> </ol>
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164 - Memory Decrease Detected	2 Short	Configuration memory incorrect.	
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168 - CMOS Checksum Invalid	None	Auxiliary battery charge is low.	<ol style="list-style-type: none"> <li>1. Recharge auxiliary battery. (Refer to "Auxiliary Battery" in Section 1.6). Run Computer Setup if configuration settings are other than default. **</li> </ol>
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\*\* Autsetup configures to the default settings if you do not run Computer Setup.

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Message	Beeps	Probable Cause	Recommended Action
201 - Memory Error	None	RAM failure.	<ol style="list-style-type: none"> <li>1. Make sure the memory module is installed correctly.</li> <li>2. Clean the contacts of the memory module and system board.</li> <li>3. Make sure PCMCIA memory card is installed correctly by running PCMCIA card service software and Computer Setup.</li> <li>4. If using ISA expansion memory module, make sure module is installed correctly.</li> <li>5. Replace the memory module(s) (if applicable).</li> <li>6. Replace PCMCIA memory card.</li> <li>7. Replace ISA memory board.</li> <li>8. Replace system board.</li> </ol>

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203 - Memory Address Error	None	RAM failure.	Refer to recommended actions for Error Code 201.
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205 - Memory Error	None	Cache memory error.	1. Run Computer Checkup. 2. Replace the processor board.
207 - Invalid Memory Configuration Module	None	Memory module installed incorrectly.	Verify placement of memory.
209 - NCA RAM Error	None	RAM Failure.	Run Computer Checkup.
211 - Memory Failure	None	RAM Failure.	Run Computer Checkup.
301 - Keyboard Error	None	Keyboard failure.	The following steps apply to both 301 error codes:
301 - Keyboard Error or Text Fixture Installed	None	Keyboard failure.	1. Reseat external keyboard cable and free any stuck keys. 2. Replace keyboard. 3. Replace system board.
Message	Beeps	Probable Cause	Recommended Action
303 - Keyboard Controller Error	None	System board keyboard controller failure.	Replace the system board.
304 - Keyboard or System Unit Error	None	Defective keyboard.	Check external keyboard.
		Defective system board.	Replace system board.
40X - Parallel Port X Address Assignment Conflict	2 Short	Both external and internal ports are assigned to parallel port X.	Run Computer Setup.
401 - Printer Error	None	Defective printer controller.	Replace the system board, if applicable.
501 - Display Adapter Failure	1 Long, 2 Short	Video display controller.	1. Replace the video board if external one used. 2. Replace the system board.
601 - Diskette Controller Error	None	Diskette controller circuitry.	1. Make sure diskette drive cable is seated. 2. Replace the diskette drive cable. 3. Replace the diskette drive.



			4. Replace the system board.
602 - Diskette Boot	None	Diskette in drive A not bootable.	1. Replace the diskette. 2. Replace the diskette drive. 3. Replace the system board.
605 - Diskette Drive Error	2 Short	Mismatch in drive type.	Run Computer Setup.
610 - External storage device failure.	None	Switch 3 on the vertical circuit board is set for an external drive but no tape or diskette drive is installed in the expansion base.	Verify switch 3 setting and change if necessary.
		External storage device not powered up.	1. Turn on external storage device and reboot computer. 2. Check and/or replace power and signal cables for external storage device.
Message	Beeps	Probable Cause	Recommended Action
611 - Primary Floppy Port Address Assignment Conflict	2 Short	Configuration error.	Run Computer Setup.
612 - Secondary Floppy Port Address Assignment Conflict	2 Short	Configuration error.	Run Computer Setup.
702 - Coprocessor Detection Error	None	Coprocessor error.	Replace the processor board.
702A - Coprocessor Detection Error	2 Short	Coprocessor error.	Replace the processor board.
703 - CMOS Reports A Coprocessor That Has Not Been Detected by POST	2 Short	Coprocessor or configuration error.	1. Run the Configuration utility. 2. Replace the processor board.
1125 - Internal Serial Port	2 Short	Defective internal serial port.	1. Run Computer Setup and check it.

Failure			2. Replace the system board.
-----			
1150 - COM Port Configuration Error		Two ports are configured in the same address.	Run Computer Setup.
-----			
1151 - COM Port 1 Address Assignment Conflict	2 Short	Both external and internal serial ports are assigned to COM1.	Run Computer Setup.
-----			
1152 - COM Port 2 Address Assignment Conflict	2 Short	Both external and internal serial ports are assigned to COM2.	Run Computer Setup.
-----			
1771 - Primary Disk Port Address Assignment Conflict	2 Short	Internal and external hard drive controllers are both assigned to the primary address.	1. Run Computer Setup. 2. Check expansion base switch settings. 3. Check unit out of expansion base.
=====			
Message	Beeps	Probable Cause	Recommended Action
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1772 - Secondary Disk Port Address Assignment Conflict	2 Short	Internal and external hard drive controllers are both assigned to the secondary address.	Run Computer Setup.
-----			
1780 - Disk 0 Failure	None	Hard drive/format error.	1. Run Computer Checkup. 2. Replace the drive.
-----			
1781 - Disk 1 Failure	None	Hard drive/format error.	1. Run Computer Checkup. 2. Replace the drive.
-----			
1782 - Disk Controller	None	Hard drive circuitry error.	1. Run Computer Checkup. 2. Replace the drive.
-----			
1790 - Disk 0 Failure	None	Hard drive error or wrong drive type.	1. Run Computer Setup and Computer Checkup. 2. Replace the drive.
-----			
1791 - Disk 1 Failure	None	Hard drive error or wrong drive type.	1. Run Computer Setup and Computer Checkup. 2. Replace the drive.
-----			
1792 - Secondary Disk Controller Failure	None	Incorrect C/D switch settings.	Verify position of C/D and configuration switches in expansion base and run Computer Setup.
-----			
		Defective hard drive or hard drive cable.	1. Reseat hard drive cable and replace if required. 2. Install a different drive.

		Defective system board in expansion base.	If the drive in the expansion base is designated as secondary, replace the system board in the expansion base.
		Defective system board in computer.	If the drive in the computer is designated as secondary, replace the system board in the computer.
1793 - Secondary Disk Controller or Disk Failure	None	Refer to probable causes for Error Code 1792.	Refer to recommended actions for Error Code 1792.
Audible	1 Short	Power-on successful.	None.
Audible	2 Short	Power-on successful.	None.
(RESUME = F1 KEY)	None	As indicated to continue.	Press the F1 key.

## 2.3 Computer Checkup (Test)

After POST runs successfully, run the latest version of Computer Checkup (TEST). Computer Checkup determines if the computer assemblies and options are recognized by the system and functioning properly. Run Computer Checkup after installing or connecting a new assembly or option.

Computer Checkup is installed on the hard drive. If the hard drive is not functioning, you can run it from the Compaq Diagnostics diskette by inserting the diskette in Drive A before turning on the computer.

NOTE: It is recommended that you make a diskette copy of Compaq Diagnostics and keep it available for future need. If necessary, a copy can be obtained from the Compaq Customer Support Center.

### Running Computer Checkup

To run Computer Checkup from the hard drive, complete the following steps:

1. Turn off the computer.
2. Turn on the computer.
3. Press F10 immediately after the computer beeps and the cursor moves to the upper-right corner of the screen.

The Configuration and Diagnostics menu is displayed.

4. Select Computer Checkup (TEST) from the Configuration and Diagnostics menu.

The Computer Checkup options menu is displayed.

5. Select View Device List.

A list of the installed hardware devices is displayed.

NOTE: Computer Checkup may not detect non-Compaq devices.

6. Verify that Computer Checkup correctly detected the installed devices.

If the list is correct, select OK. The Computer Checkup option menu is displayed again.

If the list is incorrect, verify that the new devices are installed properly.

7. Select one of the following from the Computer Checkup options menu:

- o Quick Check Diagnostics - This option runs a quick, general test on each device with a minimal number of prompts. If errors occur, they are displayed when the testing is complete.
- o Automatic Diagnostics - This option runs an unattended, maximum test of each device with minimal prompts. You can choose how many times to run the tests, to stop on errors, or to print or file a log of errors.
- o Prompted Diagnostics - This option allows maximum control over the device testing process. You can choose attended or unattended testing, decide to stop on errors, or choose to print or file a log of errors.

8. Follow the instructions on the screen as the diagnostic tests are run on the devices.

When the testing is complete, the Computer Checkup options menu is displayed again.

9. Exit the test option menu.

10. Exit the Configuration and Diagnostics menu.

NOTE: Exiting the Configuration and Diagnostics menu restarts the computer and saves your changes.

11. Look up in the "Computer Checkup Error Codes" tables any error codes that were displayed, and take the recommended action.

12. Rerun POST and Computer Checkup, completing the recommended actions in the order given until the problem is solved and no error messages occur.

#### 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. Tables 2-2 through 2-13 list Computer Checkup error codes, a description of the error condition, and the recommended action for resolving the condition.

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

A or AA = Number that represents the faulty assembly.

YY = Test or action that failed.

XX = Specific problem.

Table 2-2. Processor Computer Checkup Error Codes

Error Code	Description	Recommended Action
101 - xx	CPU test failed.	Replace the processor board.
102 - xx	Coprocessor error.	Replace the processor board.
103 - xx	DMA page registers test failed.	Replace the system board.
104 - xx	Interrupt controller master test failed.	Replace the system board.
105 - xx	Port 61 error.	Replace the system board.
106 - xx	Keyboard controller self-test failed.	1. If using an external keyboard, try another keyboard. If second keyboard passes, replace first one. 2. Replace the system board.
107 - xx	CMOS RAM test failed.	Replace the system board.
108 - xx	CMOS interrupt test failed.	Replace the system board.
109 - xx	CMOS clock load data test failed.	Replace the system board.
110 - xx	Programmable timer load data test failed.	Replace the system board.
111 - xx	Refresh detect test	Replace the system board.

failed.

112 - xx	Speed test slow mode out of range.	Replace the system board.
113 - 01	Protected mode test failed.	Replace the system board.
114 - 01	Speaker test failed.	1. Check system configuration to verify that speaker is enabled. 2. Check speaker volume level on popup window. 3. Verify cable connections. 4. Replace power interface board. 5. Replace system board.
116 - xx	Cache test failed.	Replace the processor board.

Table 2-3. Memory Computer Checkup Error Codes

Error Code	Description	Recommended Action
200 - xx	Invalid memory configuration.	Reinsert memory modules in correct location
201 - xx	Memory machine ID test failed.	The following steps apply to 201 - xx through 202 - xx error codes:
202 - xx	Memory system ROM checksum failed.	1. Replace the system ROM. 2. Replace the memory expansion board. 3. Replace the system board.
203 - xx	Memory write/read test failed.	The following steps apply to 203 - xx through 210 - xx error codes:
204 - xx	Memory address test failed.	If you don't have a memory expansion board, replace the processor board.
206 - xx	Increment pattern test failed.	If you have a memory expansion board:
210 - xx	Random pattern test failed.	1. Remove the memory modules one at a time until the error goes away. 2. Replace the good modules one at a time while making sure the error does not return. 3. Replace the memory board.

Table 2-4. Keyboard Computer Checkup Error Codes

Error Code	Description	Recommended Action
301 - xx	Keyboard short test,	1. Check the keyboard connection.

	8042 self-test failed.	If disconnected, turn off the computer and connect the keyboard. 2. Replace the keyboard. 3. Replace the system board.
302 - xx	Keyboard long test failed.	1. Check the keyboard connection. If disconnected, turn off the computer and connect the keyboard. 2. Replace the keyboard. 3. Replace the system board.
303 - xx	Keyboard LED test, 8042 self-test failed.	1. Replace the power interface board. 2. Replace the system board. 3. If external keyboard is being used, replace external keyboard.
304 - xx	Keyboard typematic test failed.	1. Check the keyboard connection. If disconnected, turn off the computer and connect the keyboard. 2. Replace the keyboard. 3. Replace the system board.

Table 2-5. Parallel Printer Computer Checkup Error Codes

Error Code	Description	Recommended Action
401 - xx	Printer failed or not connected.	The following steps apply to 401 - xx through 498 - xx error codes:
402 - xx	Printer data register failed.	1. Connect the printer.
403 - xx	Printer pattern test failed.	2. Check power to the printer. 3. Install the loopback connector.
498 - xx	Printer failed or not connected.	4. Replace the system board.

Table 2-6. Diskette Drive Computer Checkup Error Codes

Error Code	Description	Recommended Action
600 - xx	Diskette ID drive types test failed.	The following steps apply to 600 - xx through 698 - xx error codes:
601 - xx	Diskette format failed.	1. Replace the diskette.
602 - xx	Diskette read test failed.	2. Check and/or replace the diskette cable. 3. Replace the diskette drive.
603 - xx	Diskette write, read, compare test failed.	4. Replace the system board.

604 - xx        Diskette random seek  
test failed.

605 - xx        Diskette ID media  
failed.

606 - xx        Diskette speed test  
failed.

607 - xx        Diskette wrap test  
failed.

608 - xx        Diskette write protect  
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.

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699 - xx        Diskette drive/media        1. Replace media.  
ID error.                    2. Run Computer Setup.  
=====

Table 2-7. Serial Computer Checkup Error Codes

Error Code	Description	Recommended Action
1101 - xx	Serial port test.	Replace the system board.

Table 2-8. Modem Communications Computer Checkup Error Codes

Error Code	Description	Recommended Action
1201 - xx	Modem internal loopback test.	The following steps apply to 1201 - xx through 1210 - xx error codes:
1202 - xx	Modem timeout test.	1. Refer to modem documentation for correct setup procedures.
1203 - xx	Modem external termination test.	2. Check the modem line.
1204 - xx	Modem auto originate test.	3. Replace the modem.
1206 - xx	Dial multifrequency tone test.	
1210 - xx	Modem direct connect test.	



Table 2-9. Hard Drive Computer Checkup Error Codes

Error Code	Description	Recommended Action
1700 - xx	Hard ID drive types test failed.	The following steps apply to 1700 - xx through 1799 - xx error codes:
1701 - xx	Hard drive format test failed.	1. Run Computer Setup and verify drive type.
1702 - xx	Hard drive read test failed.	2. Reseat the hard drive.
1703 - xx	Hard drive write/read/compare test failed.	3. Try another hard drive. If first drive was defective, try to recover data.
		4. Replace the system board.
1704 - xx	Hard drive random seek test failed.	
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.	
1714 - xx	Hard drive file write 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 - x	Hard drive power mode test failed.	
1799 - xx	Invalid hard drive type failed.	

\* Error Correction Code

Table 2-10. Tape Drive Computer Checkup Error Codes

Error Code	Description	Recommended Action
1900 - xx	Tape ID failed.	The following steps apply to 1900 - xx through 1906 - xx error codes:  1. Replace the tape cartridge. 2. Check the switch settings on the adapter board. 3. Check and/or replace the signal cable. 4. Replace the tape adapter board (if applicable). 5. Replace the tape drive. 6. Replace the system board.
1901 - xx	Tape servo write failed.	
1902 - xx	Tape format failed.	
1903 - xx	Tape drive sensor test failed.	
1904 - xx	Tape BOT/EOT test failed.	
1905 - xx	Tape read test failed.	
1906 - xx	Tape write/read/compare test failed.	

Table 2-11. Video Computer Checkup Error Codes

Error Code	Description	Recommended Action
2402 - xx	Video memory test failed.	The following step applies to 2402 - xx through 2480 - xx error codes:  Replace the system board.
2403 - xx	Video attribute test failed.	
2404 - xx	Video character set test failed.	
2405 - xx	Video 80 x 25 mode 9 x 14 character cell test failed.	
2406 - xx	Video 80 x 25 mode 8 x 8 character cell test failed.	
2408 - xx	Video 320 x 200 mode color set 0 test failed.	
2409 - xx	Video 320 x 200 mode color set 1 test failed.	
2410 - xx	Video 640 x 200 mode test failed.	
2412 - xx	Video gray scale test failed.	
2414 - xx	Video white screen	

test failed.

2416 - xx Video noise pattern  
test failed.

2417 - xx Light pen text mode  
test failed, no  
response.

2418 - xx ECG/VGC memory test  
failed.

2419 - xx ECG/VGC ROM checksum  
test failed.

2421 - xx ECG/VGC 640 x 200  
graphics mode test  
failed.

Error Code	Description	Recommended Action
2422 - xx	ECG/VGC 640 x 350 16 color set test failed.	The following step applies to 2402 - xx through 2480 - xx error codes:
2423 - xx	ECG/VGC 640 x 350 64 color set test failed.	Replace the system board.
2424 - xx	ECG/VGC monochrome text mode test failed.	
2425 - xx	ECG/VGC monochrome graphics mode test failed.	
2431 - xx	640 x 480 graphics test failure.	The following step applies to 2402 - xx through 2480 - xx error codes:
2432 - xx	320 x 200 graphics (256 color mode) test failure.	Replace the system board.
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 BitBLT test.	
2468 - xx	Advanced VGA DAC test.	
2477 - xx	Advanced VGA data path test.	

2478 - xx      Advanced VGA BitBLT  
test.

2480 - xx      Advanced VGA Linedraw  
test.

=====  
Table 2-12. Audio Computer Checkup Error Codes  
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Error Code	Description	Recommended Action
3206 - xx	Audio system internal error.	Replace the system board.

=====  
Table 2-13. Network Controller Computer Checkup Error Codes  
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Error Code	Description	Recommended Action
6000 - xx	Error occurred while attempting to identify a particular network interface controller.	<ol style="list-style-type: none"> <li>1. Run the ISA setup utility, reconfigure the failing network controller, and retest.</li> <li>2. Ensure that the network controller is seated properly, if applicable.</li> <li>3. Remove any cables attached to the network controller(s) and retest.</li> <li>4. Ensure that any jumpers or DIP switches on the controller board are set to the correct positions. (Refer to the hardware documentation for more information.)</li> <li>5. If the network controller is a stand-alone board, replace the board.</li> <li>6. If the network controller is integrated into the expansion base system board, replace the expansion base system board.</li> <li>7. If using multiple network controller boards, attempt to locate the defective board by completing the following steps: <ol style="list-style-type: none"> <li>a. Remove all network controller boards.</li> <li>b. Install one network controller board.</li> <li>c. Retest with Computer Checkup.</li> <li>d. Keep adding the boards one at a time and retesting until the defective board is located.</li> </ol> </li> </ol>

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6001 - xx      Network card setup failed.  
The following steps apply to 6001 - xx and 6002 - xx error codes:

6002 - xx Network card transmit failed.

1. Check interrupt type and number setting.
2. Check media connection at controller and MAU \*.
3. Check media speed (4/16) and type (UTP/STP \*\*) settings.
4. Check MAU, cabling, or other network components.
5. Replace controller.

Error Code	Description	Recommended Action
6014 - xx	Ethernet configuration test failed.	The following steps apply to 6014 - xx and 6016 - xx error codes:
6016 - xx	Ethernet reset test failed.	<ol style="list-style-type: none"><li>1. Run the ISA setup utility, reconfigure the failing network controller, and retest.</li><li>2. Ensure that the network controller is seated properly, if applicable.</li><li>3. Replace the network controller.</li></ol>
6028 - xx	Ethernet internal loopback test failed.	The following steps apply to 6028 - xx and 6029 - xx error codes:
6029 - xx	Ethernet external loopback test failed.	<ol style="list-style-type: none"><li>1. If using external loopback plug(s), check that the correct type of loopback plug is being used.</li><li>2. If using external loopback plugs, check that loopback plug is connected to the correct media connector at the rear of the computer.</li><li>3. If using a live network for this test, ensure that the network, concentrators, and cables are functional.</li><li>4. Run the ISA setup utility, reconfigure the failing network controller, and retest.</li><li>5. Ensure that any jumpers or DIP switches on the controller board are set to the correct positions. (Refer to the hardware documentation for more information.)</li><li>6. If the network controller is a stand-alone board, replace the board.</li><li>7. If the network controller is integrated into the expansion base system board, replace the expansion base system board.</li><li>8. If using multiple network controller boards, attempt to</li></ol>

locate the defective board by completing the following steps:

- a. Remove all network controller boards.
- b. Install one network controller board.
- c. Retest with Computer Checkup.
- d. Keep adding boards and retesting (repeating steps b and c) until the defective board is located.

Error Code	Description	Recommended Action
6054 - xx	Token Ring configuration test failed.	The following steps apply to 6054 - xx and 6056 - xx error codes:
6056 - xx	Token Ring reset test failed.	<ol style="list-style-type: none"> <li>1. Run the ISA setup utility, reconfigure the failing network controller, and retest.</li> <li>2. Ensure that the network controller is seated properly, if applicable.</li> <li>3. Replace the network controller.</li> </ol>
6068 - xx	Token Ring internal loopback test failed.	Refer to recommended actions for Error Code 6028 - xx.
6069 - xx	Token Ring external loopback test failed.	Refer to recommended actions for Error Code 6029 - xx.
6089 - xx	Token Ring open.	Refer to recommended actions for Error Code 6029 - xx.
<p>* MAU = Multi-station Access Unit  ** UTP/STP = Unshielded Twisted Pair/Shielded Twisted Pair</p>		

#### SCSI Computer Checkup Error Codes

The SCSI Computer Checkup error codes and messages in Table 2-14 are divided into three parts:

- o Table 2-14A (SCSI Device Names)
- o Table 2-14B (SCSI Test Names)
- o Table 2-14C (SCSI Test Error Codes)

SCSI error messages contain six digits and begin with the two-digit number 65, 66, or 67, which indicates the drive type being tested (Table 2-14A). The second two-digit number indicates the type of operation being tested on the drive (Table 2-14B). The last two-digit number indicates the specific error (Table 2-14C).

For example, with error code 6523-05, the first two-digit number of the error code (65) indicates a disk problem (Table 2-14A). The second two-digit number (23) indicates a random read (Table 2-14B). The last two-digit number (05) indicates a seek failure (Table 2-14C). Thus, in this example, the diagnostics program tested the random read functioning of the hard drive and received a seek failure. The drive is faulty and must be replaced.

NOTE: Refer to Chapter 7 for SCSI troubleshooting information.

Table 2-14A. SCSI Computer Checkup Error Codes - SCSI Device Names

Error Code	Description
65xx - xx	Disk
66xx - xx	CD
67xx - xx	Tape

Table 2-14B. SCSI Computer Checkup Error Codes - SCSI Test Names

Error Code	Description
xx00 - xx	ID
xx05 - xx	Read
xx06 - xx	SA/Media
xx23 - xx	Random Read

Table 2-14C. SCSI Computer Checkup Error Codes - SCSI Test Error Codes

Error Code	Description	Recommended Action
xxxx - 02	Drive not installed.	Check cable connections.
xxxx - 03	Media not in drive.	Check for and install DATA CD or write-enabled tape in drive.
xxxx - 05	Seek failure.	Replace the indicated device.
xxxx - 06	Drive timed out.	Replace the indicated device.
xxxx - 07	Drive busy.	Replace the indicated device.
xxxx - 08	Drive already reserved.	Replace the indicated device.
xxxx - 11	Media soft error.	Replace the indicated device.
xxxx - 12	Drive not ready.	Replace the indicated device.
xxxx - 13	Media error.	Replace the indicated device.
xxxx - 14	Drive hardware error.	Replace the indicated device.
xxxx - 15	Illegal drive command.	Replace the indicated device.
xxxx - 16	Media was changed.	Replace the indicated device.
xxxx - 17	Tape write protected.	1. Disable write protect on

tape cartridge.  
2. Replace tape drive.

xxxx - 18	No data detected.	Replace the indicated device.
xxxx - 21	Drive command aborted.	Replace the indicated device.
65xx - 24	Media hard error.	1. Back up data and perform Surface Analysis to reallocate defect. 2. Replace drive.
66xx - 24	Media hard error.	1. Replace current DATA CD with different DATA CD. 2. Replace drive.
67xx - 24	Media hard error.	1. Ensure correct media type for this tape drive. 2. Replace current tape with new tape. 3. Replace tape drive.

Error Code	Description	Recommended Action
xxxx - 30	Controller timed out.	Replace the indicated device.
xxxx - 31	Unrecoverable error.	Replace the indicated device.
xxxx - 32	Controller/drive disconnected.	Replace the indicated device.
xxxx - 33	Illegal controller command.	Replace the indicated device.
xxxx - 34	Invalid SCSI bus phase.	Replace the indicated device.
xxxx - 35	Invalid SCSI bus phase.	Replace the indicated device.
xxxx - 36	Invalid SCSI bus phase.	Replace the indicated device.
xxxx - 39	Error status from drive.	Replace the indicated device.
xxxx - 40	Target timed out.	Replace the indicated device.
xxxx - 41	SCSI bus stayed busy.	Replace the indicated device.
xxxx - 42	ACK/REQ lines bad.	Replace the indicated device.
xxxx - 43	ACK did not deassert.	Replace the indicated device.
xxxx - 44	Parity error.	Replace the indicated device.
xxxx - 50	Data pins bad.	Replace the indicated device.
xxxx - 51	Data line 7 bad.	Replace the indicated device.
xxxx - 52	MSG, C/D and/or I/O lines bad.	Replace the indicated device.
xxxx - 53	BSY never went busy.	Replace the indicated device.



xxxx - 54	BSY stayed busy.	Replace the indicated device.
xxxx - 60	Controller CONFIG-1 register bad.	Replace the indicated device.
xxxx - 61	Controller CONFIG-2 register bad.	Replace the indicated device.

Table 2-15. Pointing Device Interface Computer Checkup Error Codes

Error Code	Description	Recommended Action
8601 - xx	Pointing Device Interface test failed	<ol style="list-style-type: none"> <li>1. Run Computer Setup, check trackball settings.</li> <li>2. Clean trackball.</li> <li>3. Reseat display cable in trackball board.</li> <li>4. Reseat display cable in system board.</li> <li>5. Verify that bottom of trackball board is not shorting to display shield. Place capton tape on bottom of board.</li> <li>6. Replace trackball.</li> <li>7. Replace display cable.</li> <li>8. Replace system board.</li> </ol>

## 2.4 Troubleshooting Without Error Messages

This section contains troubleshooting tables that provide a quick reference for diagnosing problems that cannot be identified by running POST or Computer Checkup (such as a non-functional display that does not allow viewing error messages). These tables address problems with:

- o Battery
- o Battery gauge
- o Diskette/diskette drive
- o Display
- o External device installation
- o Hard drive
- o Keyboard/numeric keypad
- o Memory
- o PCMCIA
- o Power
- o Printer
- o Software applications
- o Sound
- o Standby
- o System start
- o Trackball/mouse

Since symptoms can appear to be similar, carefully match the symptoms of



battery gauge.

-----  
Battery pack was exposed to temperature extremes. Allow time for the battery pack to return to room temperature.  
-----

Battery pack is at end of its life. Install another battery pack. If this fixes the problem, original battery is no longer functional.  
-----

Battery contacts not making good contact with battery pack. Remove the keyboard cover and examine the battery contacts. Ensure that the battery pack is making good contact with all five sets of contacts. If not, gently bend the contacts on the system board so that the battery pack makes good contact.  
-----

Defective system board. Replace system board.  
-----

Problem	Probable Cause	Solution(s)
Computer shut down and data was lost when replacing the battery pack.	Battery pack was not replaced within one minute when the computer was in Standby.	Next time, initiate Standby, wait until the power/standby light is flashing, and remove the battery pack. Insert a charged battery pack within one minute.
	Auxiliary battery charge is low, or the auxiliary battery is at end of its life.	Recharge the auxiliary battery. **  Replace the auxiliary battery.
Every time the computer is turned on, date and time must be set.	Auxiliary battery charge is low or the auxiliary battery is at end of its life.	Recharge the auxiliary battery. **  Replace the auxiliary battery.
Battery charge does not last as long as expected.	Battery is being exposed to high temperatures. ***	Keep computer at a cooler temperature and recharge the battery.
	Battery is being exposed to low temperatures. ***	Put computer in a warmer place and recharge the battery.
	Battery has partially self-discharged.	Recharge the battery.

Battery charge does not last as long as expected.	Power conservation is disabled or set to "None."	Set a power conservation level. (Section 1.10).
	An external device or PCMCIA card is draining the battery.	Turn off or remove the external device when not using it.
Battery pack is warm to the touch after charging.	Normal warming has occurred due to charging.	No action is required.

\* For information on solving power problems, refer to Table 2-26.

\*\* Refer to "Auxiliary Battery" in Section 1.6.

\*\*\* The recommended storage temperature range for the battery pack is -4oF to 86oF (-20oC to 30oC ). The recommended operating temperature range is 50oF to 104oF (10oC to 40oC) .

Table 2-17. Battery Gauge Problems

Problem	Probable Cause	Solution(s)
Battery gauge displays a question mark.	If battery pack is new, question mark is displayed until battery pack is fully charged.	Fully charge the battery pack until the battery LED turns off. If problem still exists, complete the following steps:  <ol style="list-style-type: none"> <li>1. Allow the battery pack to cool off.</li> <li>2. Partially discharge the battery pack.</li> <li>3. Fully recharge the battery pack.</li> </ol>
	The battery pack has been unused for five or more days.	Fully charge the battery pack until the battery LED turns off.
	Battery pack has been partially recharged too many times without being fully recharged.	Condition the battery pack * (Appendix B).
Battery gauge appears inaccurate.	Battery pack has been partially recharged too many times or computer has been in Standby for an extended period of time.	Condition the battery pack * (Appendix B).

\* The battery pack needs to be conditioned every 60 days to maintain battery gauge accuracy.

Table 2-18. Diskette/Diskette Drive Problems

Problem	Probable Cause	Solution(s)
Diskette drive LED stays on.	Diskette is damaged.	Run CHKDSK on the diskette. At the system prompt, type:  CHKDSK A:
	Software program is damaged.	Check the program diskettes.
Diskette drive cannot write to a diskette.	Diskette is write-protected.	Disable the diskette's write-protect feature or use a diskette that is not write-protected.
	Computer is writing to the wrong drive.	Check the drive letter in the path statement.
	Drive error has occurred.	Run Computer Checkup.
	Diskette is not formatted.	Format the diskette.
Diskette drive cannot read a diskette.	The wrong type of diskette is being used.	Use the type of diskette required by the drive.
	Diskette has a bad sector.	Copy files to the hard drive or another diskette. Reformat or replace the bad diskette.
	Drive error has occurred.	Run Computer Checkup.
	Diskette is not formatted.	Format the diskette.

Table 2-19. Display Problems

Problem	Probable Cause	Solution(s)
Characters are dim.	Control slide for brightness or contrast (if applicable) is not set properly.	Adjust the slide control(s) on the right side of the display. *
	Computer screen is in direct light.	Tilt display or move computer.
	Power Management setting is set on high or custom.	Use the Fn + F7 hotkeys or run Power Management to change setting to medium.
	Power Management brightness setting is	Adjust brightness setting in Power Management.

incorrect.

---

Screen is blank.	QuickBlank is initiated.	Enter password to exit QuickBlank.
	Another screen blanking utility may be installed.	Press any key and/or enter password.
	Screen save was initiated by Power Management due to lack of user activity.	Press any key or click the mouse.
	If a color STN is used, brightness/contrast control slide needs adjusting.	Adjust the slide controls on the right side of the display for brightness/contrast. *
	Display (lid) switch is stuck.	Tap the switch.
	Display has overheated.	If computer is in direct sunlight, move it and allow it to cool off.

---

Display is blank and the power/standby LED is flashing.	System is in Standby.	Press the standby button to exit Standby.
---	-----------------------	---

---

Problem	Probable Cause	Solution(s)
Screen is blank, the power/standby LED is flashing, and the battery LED is flashing.	System has entered a low battery Standby condition. The computer will next activate Hibernation, if this feature is not disabled.	If available, immediately connect the computer to an external power source or insert a charged battery pack. Then press the standby button to exit Standby.  If another power source is not immediately available and Hibernation is disabled, attempt to exit Standby and save any open files. However, the computer may not have enough power to do this.  If you have not disabled Hibernation, the computer automatically hibernates. Do not interfere with the computer while it is entering Hibernation. Once the computer has turned off, insert a charged battery pack, or connect the computer to another power source. Then turn the

computer back on.

-----  
Internal display is blank and the screen on an external monitor displays information.

Display function was switched to the external monitor.

Press the Fn + F4 keys to activate the internal display. Press the keys again to display information simultaneously. \*\*

-----  
Distorted or garbled characters on the display are mixed with text.

The ANSI.SYS driver is not in the CONFIG.SYS file or the path is incorrect.

Add the ANSI.SYS driver to the CONFIG.SYS file. Add the following line:

DEVICE=C:\ANSI.SYS

-----  
An Energy Star monitor is selected when one is not connected.

Deselect Energy Star monitor in Power Management.

-----  
Internal display flashes or has garbled characters when computer is connected to external monitor.

Using 800 X 600 or higher resolution on external monitor and have toggled back to internal display, which only supports 640 X 480 resolution.

Restart the computer. If simultaneous display is desired, use 640 x 480 resolution. \*\*

=====  
Problem

Probable Cause

Solution(s)

-----  
Internal display and external monitor do not display information simultaneously.  
\*\*

External monitor was connected after the computer was turned on.

Turn the computer off and connect the external monitor. Turn the external monitor on, then turn on the computer.

Press the Fn + F4 keys to "toggle" through the three display possibilities.

-----  
The light tubes on the edge of the display panel do not light up at all and Power-On-Self-Test (POST) completes when the unit is powered up.  
\*\*\*

Improper backlight or display cable connections.

1. Reseat the display cable to the system board.
2. Reseat the display cable to the inverter board.
3. Reseat the backlight cable to the inverter board.

-----  
Defective inverter board.

Replace the inverter board.  
\*\*\*\*

-----  
Defective display cable.

Replace the display cable.  
\*\*\*\*

-----  
Defective display panel.

Replace the display panel.  
\*\*\*\*

-----  
Defective system board.

Replace the system board.

-----

The light tubes on the edge of the display panel light up momentarily when unit is powered up, but turn off during or after POST. Power LED lights up on front of unit but not on top. ***	Display switch is stuck in the off position.	Remove keyboard cover and inspect the display switch. Replace the following one at a time until switch has proper movement: 1. Display switch spring. 2. Keyboard cover.
--	--	--

-----

The light tubes on the edge of the display panel do not light up at all and Power-On Self-Test (POST) does not complete when the unit is powered up. ***	Defective system board.	Replace the system board.
--	-------------------------	---------------------------

-----

=====  
 Problem                      Probable Cause                      Solution(s)  
 =====

Backlight (brightness) cannot be adjusted with the brightness control slide. *****	Power Management settings are set high, causing a dim display.	Verify that you have not selected a Power Management setting that limits the output of the backlight.
---	--	---

Control slide is seated improperly.	Remove the control slide from the display bezel and reseal it.
-------------------------------------	--

-----

Improper display cable connections.	1. Reseat the display cable to the inverter board. 2. Reseat the display cable to the system board.
-------------------------------------	--

-----

Defective inverter board.	Replace the inverter board. *****
---------------------------	--------------------------------------

-----

Defective display cable.	Replace the display cable. *****
--------------------------	-------------------------------------

-----

Defective system board.	Replace the system board. *****
-------------------------	------------------------------------

-----

Contrast cannot be adjusted with the contrast control slide (color STN models only). *	Control slide improperly seated.	Remove the plastic control slide from the display bezel and reseal it.
--	----------------------------------	--

-----



Improper display cable connections.	Reseat the display cable to the following one at a time until the problem is solved:  1. Inverter board. 2. System board. 3. Display panel.
-------------------------------------	---

----- Defective inverter board.	Replace the inverter board. ****
------------------------------------	-------------------------------------

----- Defective display cable.	Replace the display cable. ****
-----------------------------------	------------------------------------

----- Defective display panel.	Replace the display panel. ****
-----------------------------------	------------------------------------

=====		
Problem	Probable Cause	Solution(s)
-----		

The display panel has a continuous pattern across it (e.g., a "jailbars" pattern), has a single color on it, or has garbled graphics across the entire panel. This failure is for patterns across the entire panel (not just on one section).	Improper display cable connections.	Reseat the display cable to the following until the problem is solved:  1. System board 2. Display board 3. Inverter board
---	-------------------------------------	--

----- Defective display cable.	Replace the display cable. ****
-----------------------------------	------------------------------------

----- Defective inverter board.	Replace the inverter board (on color STN models only).
------------------------------------	--

----- Defective system board.	Replace the system board.
----------------------------------	---------------------------

A single line, small group of lines, or block appears on the display panel. This failure occurs in only a section of the display panel. *****	Defective display panel.	Replace the display panel. ****
--	--------------------------	------------------------------------

----- The display switch does not function. (Section 1.4)	Defective display switch spring or keyboard cover.	Remove keyboard cover. Push the display switch on the power interface board. If display switch functions, install the following new
---	--	---

parts one at a time until the problem is solved:

1. Display switch spring.
2. Keyboard cover.

-----  
Defective power interface board.      Replace power interface board.  
-----

Defective system board.      Replace system board.  
-----

\* On the color STN models, brightness is adjusted with the control slide on the right, and contrast is adjusted with the control slide on the left.

\*\* When using an external monitor and simultaneously displaying an image on the internal display, the image on the external monitor may not fill the screen.

\*\*\* This problem indicates that the backlight or its power circuitry has failed. Since you cannot observe the POST results on the display panel when the backlight is not functioning, connect the unit to an external monitor before powering the unit up. If an external monitor is not available, verify that POST completes by opening and closing the display, listening for the single or double beep, and watching for the LEDs to turn on at the front of the computer.

\*\*\*\* The spare display panel, inverter board, display cable, and display enclosure for the 9.5" color TFT models come preinstalled in a display assembly. To replace these parts on the 9.5-inch color TFT models, replace the entire display assembly.

\*\*\*\*\* The brightness adjustment function on TFT panels must be tested with the display bezel on, since these panels contain a light feedback circuit. Outside light affects the operation of the circuit and does not allow the brightness to adjust.

\*\*\*\*\* Blocks usually appear in an even fraction of the display (1/2, 1/4, 1/6, 1/8, etc.).

=====

NOTE: To perform a "self-test" on an external VGA color or monochrome monitor, complete the following steps:

1. Turn off the monitor.
2. Turn off the computer.
3. Disconnect the monitor signal cable from the computer.
4. Turn on the monitor and allow it to warm up for one minute.

The screen should be white. A narrow black border may also appear on the left and right sides of the display. Either of these displays indicates that the monitor is working properly.

Table 2-20. External Device Installation Problems  
=====

Problem	Probable Cause	Solution(s)
A new device is not recognized as part of the computer system.	Computer Setup has not been run to configure the new device.	Run Computer Setup.
	Cable(s) of new external device are loose or power cables are unplugged.	Ensure that all cables are properly and securely connected.
	Power switch of new external device was not turned on when the computer was powered up.	Turn off the computer, turn on the external device, then turn on the computer to integrate the device with the computer system.
	Device is not seated properly.	Turn off the computer and reinsert the device.

Table 2-21. Hard Drive Problems

Problem	Probable Cause	Solution(s)
Reading hard drive takes an unusually long time after restarting the computer.	System entered Hibernation due to low battery condition and is now exiting from it.	Give the system time to restore the previously saved data to its exact state before Hibernation.
Hard drive error occurs.	Hard drive has bad sectors or has failed.	Run Computer Checkup.
Hard drive does not work.	Hard drive is not seated properly.	Turn off and unplug the computer, remove the battery pack, and remove and then reinsert the hard drive.
	Hard drive was removed and replaced while computer was on, in Standby, or in Hibernation.	Turn off computer then turn it on again. Before removing the hard drive, make sure computer is off, unplugged, and the battery pack is removed.
Hard drive cannot be removed.	Hard drive security clips are installed.	Remove hard drive security clips (Section 4.12)

Table 2-22. Keyboard/Numeric Keypad Problems

Problem	Probable Cause	Solution(s)
Keyboard is locked.	QuickLock is initiated.	Enter password to exit QuickLock.
Embedded numeric	Num Lock function is not	Press the Fn + End keys to

keypad on computer keyboard is disabled.	turned on.	enable the Num Lock function and embedded numeric keypad.
Embedded numeric keypad is disabled and Num Lock function is on.	External numeric keypad is connected to the computer.	Disconnect the external numeric keypad from the computer.
External keyboard does not work.	External keyboard is not securely connected or is connected to an incorrect external connector.	Ensure that the external keyboard is securely connected to the appropriate external connector.

Table 2-23. Memory Problems

Problem	Probable Cause	Solution(s)
Memory count during Power-On Self-Test (POST) is incorrect.	Optional memory card is installed incorrectly, is incompatible with the computer, or is configured incorrectly.	<ol style="list-style-type: none"> <li>1. Ensure that the appropriate memory card has been installed correctly.</li> <li>2. Run Computer Setup.</li> </ol>
"Out of Memory" message is displayed on the screen, or insufficient memory error occurs during operation.	Too many TSRs * are installed.	Delete any TSR applications that are not needed.
	Memory configuration is not set up correctly.	Reconfigure the memory using MS-DOS MEMMAKER.
	System ran out of memory for the application.	<ol style="list-style-type: none"> <li>1. Check the application documentation for memory requirements.</li> <li>2. Install additional memory.</li> </ol>

\* TSRs (Terminate Stay Resident) are software routines that stay in RAM memory even when not actively in use.

### Solving Network Problems

This section contains guidelines for troubleshooting common Ethernet network problems. These guidelines are intended for use when you have determined that the computer in the Compaq SmartStation is not communicating with the network. These guidelines do not discuss the process of troubleshooting the network cable.

The following are common problems to check first:

- o Ensure that the network cable is securely attached to the expansion base. A loose cable is the most common cause of network problems. If the cable is loose, secure it and see if the computer communicates with the network.
- o Ensure that the I/O address and interrupt level do not conflict with another option.
- o Determine whether another computer other than the computer currently in use has communicated with the network from the expansion base. If so, determine whether anything was added or changed that could have stopped the network interface from working.
- o Run Computer Checkup (TEST) to test the network interface and determine if a problem is being caused by a controller or by a cable. Computer Checkup can be run before installing the network drivers to verify that the network interface is working correctly.

IMPORTANT: For the Compaq LTE Lite Family of Personal Computers, use the diagnostics diskette included with the SmartStation Adapter to run Computer Checkup.

#### Network Adapter Patch

A file from the Network Install diskette must be installed when using the Compaq LTE Elite with certain network adapters while in certain operating environments. The Network Install diskette is included with the Compaq SmartStation and the Compaq LTE Lite Desktop Expansion Base Upgrade Kit.

The README.DOC file on the diskette details how to use each file and specifies the network interface cards and network operating systems that require it.

NOTE: Files on the diskette are not needed to use the Compaq LTE Lite with a network adapter or the Compaq LTE Elite with the built-in Ethernet controller in the Compaq SmartStation.

Refer to the correct version of Service Advisory 737 for a comprehensive list of network adapters that require a patch, which include the following:

- o Eagle Etherxpert EP2000 Plus
- o Madge AT Ringnode
- o Madge ISA Ringnode
- o Madge Smart AT Ringnode
- o Madge Smart 16/4 AT Ringnode
- o Novell NE-2000
- o Standard Microsystems Corp. Arcnet PC 130
- o Standard Microsystems Corp. Arcnet PC 130E
- o Tiara Lancard/A
- o Silicom Modular Pocket Ethernet Adapter
- o Xircom Pocket Arcnet Adapter

NOTE: Contact Xircom to request a software driver for the Xircom Pocket Ethernet Adapter III.

Table 2-24. Network Problems

Problem	Probable Cause	Solution(s)
Computer Setup does not detect the network interface.	The computer is not docked in the expansion base.	Dock the computer in the expansion base to use the network interface.
	There is a conflict between the network interface and an optional device installed on the computer or the expansion base.	Run Computer Setup and reconfigure the network interface or the conflicting device.
Computer Checkup (TEST) detects a failure.	There is a conflict between the network interface and an optional device installed on the computer or the expansion base.	Run Computer Setup and reconfigure the network interface or the conflicting device.
	The cable is not securely connected to the proper network connector on the expansion base.	Ensure that the cable is securely connected to the proper network connector on the expansion base.
	There is a problem with the cable or a device at the other end of the cable.	Ensure that the cable and device at the other end of the network connection are operating properly.
	There is a hardware failure in the expansion base.	Replace the expansion base system board.
Computer Checkup (TEST) reports no errors, but the computer does not communicate with the network.	The network drivers are not loaded.	Ensure that the network drivers are on the hard drive, the path is correct in AUTOEXEC.BAT, and the driver is loaded in CONFIG.SYS.
	There is a conflict between the network interface and an optional device installed on the computer or the expansion base.	Run Computer Setup and reconfigure the network interface or the conflicting device.
The computer stopped communicating with the network without apparent cause.	The cable is not securely connected to the proper network connector on the expansion base.	Ensure that the cable is securely connected to the proper network connector.

There is a problem with the cable or a device at the other end of the cable.	Ensure that the cable and device at the other end of the network connection are operating properly.
-----	
There is a general network failure.	Ensure that the network you are connected to is running and has not experienced any errors or problems that would prevent connection.
-----	
The files for the network drivers have been corrupted.	Reinstall the network drivers.

When using the Compaq LTE Elite, the network adapter drivers cannot be loaded, the network application has slow performance, or the network application loses the network connection.	A software patch is required.	Install the software patch. (Refer to "Network Adapter Patch" in this section.)
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Table 2-25. PCMCIA Problems

Problem	Probable Cause	Solution(s)
When turned on, the computer does not beep when a PCMCIA card is inserted.	Card is not inserted properly.	Remove and reinsert the card in the correct orientation.
PCMCIA beeps are disabled.		<p>From MS-DOS: Run the PCCARD utility to reenale PCMCIA beeps.</p> <p>From Windows: Select Computer Setup from the Compaq Control Center and select the PCMCIA option to reenale PCMCIA beeps.</p>
Speaker volume is turned down.		Press the Fn + F5 keys, and press the right arrow key to increase the volume. Use the down arrow key to test the volume.
PCMCIA drivers are not loaded.		Select Computer Setup from the Compaq Control Center and select the PCMCIA option to enable the PCMCIA drivers.

-----  
The PCMCIA slot is disabled.

From non-Windows environment: Select Security Management from the Configuration and Diagnostics menu to enable the PCMCIA slot.

From Windows environment: Select Security Management from the Compaq Control Center to enable the PCMCIA slot.

-----  
Card or card driver is not PCMCIA compliant.

Contact Compaq Reseller Support for a list of PCMCIA cards tested successfully in Compaq PCMCIA platforms.

=====

Problem

Probable Cause

Solution(s)

-----  
The PCMCIA drivers (Socket Services, Card Services, Card ID) fail with error messages when the computer is turned on.

The PCMCIA slot is disabled.

From non-Windows environment: Select Security Management from the Configuration and Diagnostics menu to enable the PCMCIA slot.

From Windows environment: Select Security Management from the Compaq Control Center to enable the PCMCIA slot.

-----  
PCMCIA modem or fax card does not work.

Wrong COM port being used to access the card.

From MS-DOS: Run CARDINFO to determine which COM port is assigned to the card.

From Windows: Select Computer Setup from the Compaq Control Center to determine which COM port is assigned to the card.

-----  
The card conflicts with the system board serial device.

From MS-DOS: Run PCCARD to select a different COM port for the PCMCIA card.

From Windows: Select Computer Setup from the Compaq Control Center, then select the PCMCIA option and choose a different COM port for the PCMCIA card.

-----  
The card is not PCMCIA compliant.

Contact Compaq Reseller Support for a list of PCMCIA cards tested successfully in Compaq PCMCIA platforms.

-----



PCMCIA network card does not work.

Network driver is not set up properly.

Select Computer Setup from the Compaq Control Center and select the PCMCIA option; then view the online help for detailed instructions on setting up PCMCIA network cards.

Problem	Probable Cause	Solution(s)
Storage card does not work.	SRAM and flash memory cards require the memory card driver to be loaded.	Select Computer Setup from the Compaq Control Center; then select the PCMCIA option to enable the memory card driver.
	Flash memory cards require the Microsoft FlashFile System to be loaded.	Select Computer Setup from the Compaq Control Center; then select the PCMCIA option to enable the flash file system.
	Hard disks on flash mass storage cards require the PCMCIA ATA driver to be loaded.	Select Computer Setup from the Compaq Control Center; then select the PCMCIA option to enable the PCMCIA ATA driver.
	You are trying to access the card using the wrong drive letter.	From MS-DOS: Run CARDINFO to determine which drive letter is assigned to the card.  From Windows: Select Computer Setup from the Compaq Control Center to see which drive letter is assigned to the card.
	The card is not formatted.	From MS-DOS: For memory cards, run MEMCARD to format the card. For hard drive cards and flash mass storage cards, run ATACARD, then run FORMAT.  From Windows: Select Computer Setup from the Compaq Control Center, then select MEMCARD or ATACARD from the PCMCIA option.
	The card is not supported.	Contact Compaq Reseller Support for a list of PCMCIA cards tested successfully in Compaq PCMCIA platforms.

Table 2-26. Power Problems \*

Problem	Probable Cause	Solution(s)
---------	----------------	-------------

Computer is beeping and battery LED is flashing.	Computer has entered a low battery condition.	<p>Immediately save any open file(s). Then do any one of the following:</p> <ul style="list-style-type: none"> <li>o Connect the computer to an external power source, then charge the battery pack.</li> <li>o Replace the battery pack with a fully charged battery pack.</li> <li>o Initiate Hibernation (press the Fn key and standby button simultaneously) to completely halt the power consumption on the battery pack, or initiate Standby to reduce power consumption until the battery pack can be recharged or another power source can be connected.</li> </ul>
--	---	---

Computer turned off.	The unit temperature was exceeded. **	Computer is in an exceedingly hot environment. Let the computer cool down.
	Fan may be blocked, causing temperature to exceed limits. **	Make sure airflow at rear and sides of computer is not obstructed.

Computer turned off while left unattended. Power LED is off.	System initiated Hibernation according to Power Management settings.	Turn on the computer.
	System initiated Hibernation due to a low battery condition.	Install a fully charged battery pack or connect the computer to an external power source, then turn on the computer.

Problem	Probable Cause	Solution(s)
Unit powers up from AC power but not from the battery.	Battery not charged.	Charge the battery fully.
	Defective battery.	Install another battery.
	Battery contacts not making good contact with battery.	Remove the keyboard cover and examine the battery contacts. Ensure that the battery is making good contact with all five sets

of contacts.

	Defective system board.	Replace system board.
Unit powers up from the battery pack, but not from AC power.	Faulty AC power cord.	Try another power cord.
	Faulty cable connection from internal power supply.	Check the cable connection from the internal AC power supply to the system board.
	Defective internal AC power supply.	Replace the internal AC power supply.
The computer has no power at all when the power switch is activated. The display is not on. The hard drive does not spin up. All LEDs (except the battery LED) are off.  If the other LEDs come for any period of time (even for a momentary flash), this is not a "no power" problem.	Power switch not functioning.	Determine if the power switch is functioning by removing the battery and disconnecting the AC power cord from the unit. Next, plug in the AC power cord. If the unit powers up, the power switch is not functioning. Check the following:  1. Remove keyboard cover and verify that the power switch (small button on power interface board) moves freely. If it binds or is damaged, replace the keyboard cover.  2. Try to operate the power switch with the keyboard cover removed. If the unit will not power up or down, replace the power interface board. If the unit functions correctly, install a new keyboard cover.

Defective system board. Replace system board.

Problem	Probable Cause	Solution(s)
The computer has a crowbar condition: it powers up for a short period, then shuts off. LEDs flash on, then off. (This takes place in less than three	Short circuit on one of the power supply outputs.	1. Remove the following parts one at a time until the short circuit is located:  NOTE: After verifying that a part is not the cause of the short circuit, reinstall it before removing the next

seconds.)

part.

In addition, note that the first three parts can be checked by the user.

- a. PCMCIA card
- b. Battery pack
- c. Hard drive
- d. Diskette drive
- e. Internal AC power supply

2. Disconnect the display cable from the system board and power the unit up. If the unit powers up, the display cable or display assembly has failed. Plug the display cable back into the system board and attempt to find the defective part in the display assembly by completing the following steps one at a time until the short circuit is located:

- a. Disconnect the display cable from the inverter board and attempt to power the unit up. If the unit powers up, replace the inverter board.
- b. Disconnect the display cable from the trackball board and power the unit up. If the unit powers up, replace the trackball board.
- c. Disconnect the display cable from the display panel and power the unit up. If the unit powers up, replace the display panel.
- d. Replace the display cable.

3. Replace the system board.

-----  
\* For information on solving battery problems, refer to Table 2-16.

\*\* The fan turns on and off automatically when the computer reaches certain temperatures. This is normal.

Problem	Probable Cause	Solution(s)
Printer does not print.	The device drivers for the application are not installed.	Install the correct printer drivers for the application in the CONFIG.SYS file.
	Printer that is set up for a network is not connected to the network.	Connect the printer to the network.
	Printer cable is too long, unshielded, or defective.	Replace the cable.
Printer is offline.	Paper tray is empty.	Fill the paper tray and select online.
Printer prints garbled information.	Correct printer drivers are not installed.	Install the correct printer driver.
	Cable is not connected properly to computer.	Connect printer cable to the computer properly.
	Printer cable is too long, unshielded, or defective.	Replace the cable.
<p>* If you experience problems printing, run a printer self-test to determine if it is a printer-specific problem. Refer to the documentation provided with the printer and the application software.</p>		

Table 2-28. Software Application Problems

Problem	Probable Cause	Solution(s)
Cannot use an application.	The application has not been added to the PATH statement.	<ol style="list-style-type: none"> <li>1. Add or edit the application entry in the AUTOEXEC.BAT file.</li> <li>2. Run the program with the full path name.</li> </ol>
Application fails or does not work properly.	A conflict exists between applications.	Close all applications being used.
Insufficient memory to run application.	Too many TSRs * are installed.	Delete any TSR applications that are not needed.
	Application requires Windows to be run in enhanced mode.	Exit Windows and enter again using the following command to run in enhanced mode:  WIN/3

Memory configuration is not set up correctly.	Reconfigure the memory using MS-DOS MEMMAKER.
---	---

System ran out of memory for the application.	<ol style="list-style-type: none"> <li>1. Check the application documentation for memory requirements.</li> <li>2. Install additional memory.</li> </ol>
---	--

\* TSRs (Terminate Stay Resident) are software routines that stay in RAM memory even when not actively in use.

Table 2-29. Sound Problems

Problem	Probable Cause	Solution(s)
Computer does not beep after the Power-On Self-Test (POST).	Speaker volume has been turned down.	Press the Fn + F5 keys, and and press the right arrow key to increase the volume. Use the down arrow key to test the volume.
	Beeps have been turned off.	Turn on beeps in Power Management utility (Section 1.10).

Table 2-30. Standby Problems

Problem	Probable Cause	Solution(s)
The standby button is pressed, but the unit does not go into standby.	Defective keyboard cover.	Remove the keyboard cover. Press the Standby button located on the power interface board. If problem is solved, install a new keyboard cover.
	Defective power interface board.	Replace the power interface board.
	Defective system board.	Replace the system board.

Table 2-31. System Booting Problems

Problem	Probable Cause	Solution(s)
Computer powers up, power/standby LED is on, but computer does not begin POST.	Bad contacts between processor board and system board.	Remove processor board and clean connectors on processor board and system board with isopropyl alcohol.
	Defective processor board.	Replace processor board.
	Defective system board.	Replace system board.

Table 2-32. Trackball/Mouse Problems

Problem	Cause	Solution(s)
Trackball or mouse does not work.	Incorrect or no device driver is installed.	Install the device driver and add to the AUTOEXEC.BAT file or CONFIG.SYS file.
	The device driver is not installed in Windows.	Install the Compaq mouse driver in Windows.
Internal trackball does not work.	An external pointing device is connected to the computer and the system has disabled the internal trackball.	Disconnect the external pointing device and restart the computer.
Mouse does not work.	Mouse is not securely connected or is connected to an incorrect external connector.	Ensure that the mouse is securely connected to the appropriate external connector.
Trackball or mouse does not work even though the device driver is in the PATH command of the AUTOEXEC.BAT file.	Mouse device driver is not activated (loaded into memory) in MS-DOS.	Enter MOUSE at the system prompt to activate the mouse device driver.
		Add a line in the AUTOEXEC.BAT file to automatically activate the mouse device driver each time the computer is turned on or restarted.
	Display cable not properly seated in trackball board.	Reseat cable.
	Defective trackball board.	Replace trackball board.
	Defective display cable.	Replace display cable.
	Defective system board.	Replace system board.
	Mouse device driver is not correctly installed in Windows.	From Windows, run Computer Setup and select the select the proper mouse driver.
Cursor skips or moves abnormally when using a trackball or mouse.	The ball, rollers, or tracking post in the trackball or mouse need cleaning.	Clean the ball in the trackball or mouse (Appendix G).

-----  
Bottom of trackball board is shorting to display shield.      Place capton tape on bottom of trackball board.  
-----

Display cable not properly seated in trackball board.      Reseat cable.  
-----

Display cable is torn, causing intermittent open circuit.      Replace display cable.  
-----

Defective trackball board.      Replace trackball board.  
-----

## 2.5 Contacting Compaq Reseller Support

Obtain the following information before contacting Compaq Reseller Support:

- o Product name
- o Product serial number (Section 1.1)
- o Purchase date
- o Conditions under which the problem occurred
- o Any error messages that have occurred
- o Hardware configuration
- o Type of printer connected
- o Hardware/software being used
- o Printed results of Computer Checkup (TEST) and View System Information (INSPECT), if possible
- o Printed copies of CONFIG.SYS and AUTOEXEC.BAT files, if possible

### Shipping Preparation

To ship the computer, complete the following steps:

1. Back up the critical hard drive files. Ensure that backup tapes/diskettes are not exposed to electrical or magnetic fields while stored or in transit.
2. Turn off the computer and external devices.
3. Disconnect the external devices from their power sources, then from the computer.



IMPORTANT: Ensure that there is no diskette in the diskette drive and that there are no PCMCIA cards in the PCMCIA slot.

4. Close the display and all exterior doors (external options, PCMCIA compartment, memory, and hard drive).
5. Pack the computer with sufficient packing material to protect it. Use the original packing box or similar packaging.

# Chapter 3 - Compaq LTE Elite Illustrated Parts Catalog

## Introduction

This chapter provides illustrated parts breakdowns and identifies the spare parts for the Compaq LTE Elite Family of Personal Computers, including the Compaq MiniStation/EN and the Compaq MiniStation/TR.

Refer to Chapter 8 for spare part information for the Compaq SmartStation.

## 3.1 System Unit Enclosures

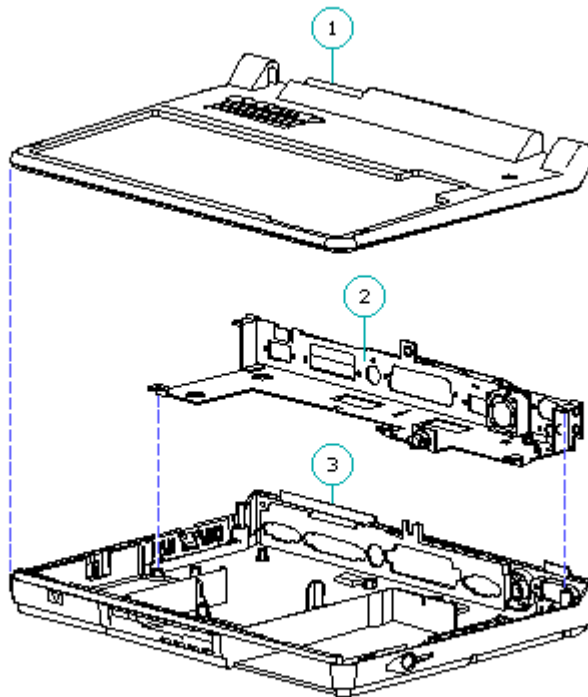


Figure 3-1. System Unit Enclosures

Table 3-1. System Unit Enclosures

Description	Spare Part Number
1. Keyboard Cover	149594-001
2. Input/output (I/O) Bracket Includes: - I/O bracket - Fan	149706-001

-----  
 3. Base Enclosure

149595-001

Includes the following installed parts:

- Battery pack release latch assembly (button, latch, and spring)
  - Hard drive release latch assembly (button, latch, and spring)
  - PCMCIA compartment door and spring
  - Automobile adapter door
  - Hard drive compartment door
- =====

**3.2 Boards**

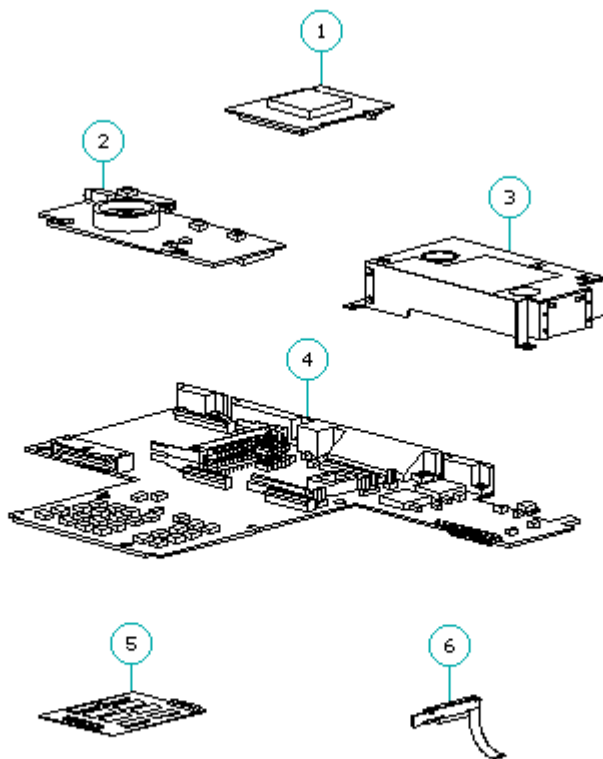


Figure 3-2. Boards

Table 3-2. Boards

Description	Spare Part Number
1. Processor Board	
- 486 DX4/75 MHz	194147-001
- 486 DX2/50 MHz	194146-001
- 486 DX2/40 MHz	194149-001
2. Power Interface (PIB) Board (includes display switch spring)	194058-001

3. Internal AC Power Supply (includes right hinge cover)	149527-001
4. System Board:	
- 4 MB	194007-001
- 8 MB	149508-001
5. Memory Expansion Board (70 ns):	
- 4 MB	194188-001
- 8 MB	194189-001
- 16 MB	196799-001
6. LED Cable Assembly	149707-001
7. Trackball Board (includes trackball)	149597-001 *
8. Inverter Board	(Refer to Table 3-3.) *
-----	
* Not shown	
=====	

### 3.3 Model Specific Display Parts

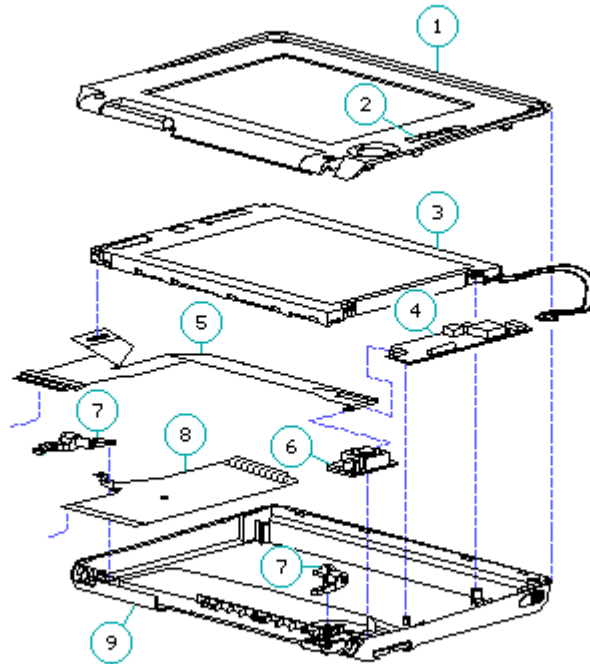


Figure 3-3. Display

Table 3-3. Display - Model-Specific Display Parts

	Spare Part Number
=====	
1. Display Bezel	
9.5 Inch Color TFT	197855-001
8.4 Inch TFT	194040-001
9.5 Inch Black and White TFT	149603-001
9.5 Inch Color STN	149779-001 *
10.4 Inch Color TFT	197940-001
3. Display Panel	
9.5 Inch Color TFT	149589-001 **
8.4 Inch Color TFT	194039-001
9.5 Inch Black and White TFT	138041-001
9.5 Inch Color STN	149736-001
10.4 Inch Color TFT	197920-001
4. Inverter Board	
9.5 Inch Color TFT	149589-001 **
8.4 Inch Color TFT	149587-001
9.5 Inch Black and White TFT	194141-001
9.5 Inch Color STN	149735-001
10.4 Inch Color TFT	196877-001

5. Display Cable	
9.5 Inch Color TFT	149589-001 **
8.4 Inch Color TFT	149604-001
9.5 Inch Black and White TFT	197632-001
9.5 Inch Color STN	149737-001
10.4 Inch Color TFT	197909-001
8. Display Ground Cable	
9.5 Inch Color TFT	149589-001 **
8.4 Inch Color TFT	197857-001
9.5 Inch Black and White TFT	194637-001 ***
9.5 Inch Color STN	194637-001 ***
10.4 Inch Color TFT	197937-001
9. Display Enclosure	
9.5 Inch Color TFT	149589-001 **
8.4 Inch Color TFT	149596-001
9.5 Inch Black and White TFT	197664-001
9.5 Inch Color STN	149596-001
10.4 Inch Color TFT	197937-001

-----  
 \* Two display bezels are provided for the 9.5" color STN display. Use the bezel that lines up property with the existing panel.

\*\* The spare display panel, inverter board, display cable, display ground cable, and display enclosure for the 9.5" color TFT display come preinstalled in a display assembly to ensure compatibility and optimize the display quality.

\*\*\* The ground cable used on the 9.5" black-and-white TFT and the 9.5" color STN displays may be 2 inches shorter than the one used in the other models. In addition, the shorter ground cable may not have a ground clip inside the display enclosure.

=====  
 Common Display Parts

Description	Spare Part Number
2. Control Slide(s)	(Refer to Table 3-10.)
6. Trackball Board	149597-001
7. Clutches (left and right)	149592-001
10. Display Latches	(Refer to Table 3-8.) *****
11. Compaq Display Logos ****	149605-001 *****

-----  
 \*\*\*\* The Compaq display logos are also included with the display enclosure.  
 \*\*\*\*\* Not Shown.  
 =====

IMPORTANT: Each display type must use the exact panel, cable, inverter board, and bezel that are listed above to ensure proper performance.

### 3.4 Mass Storage Devices

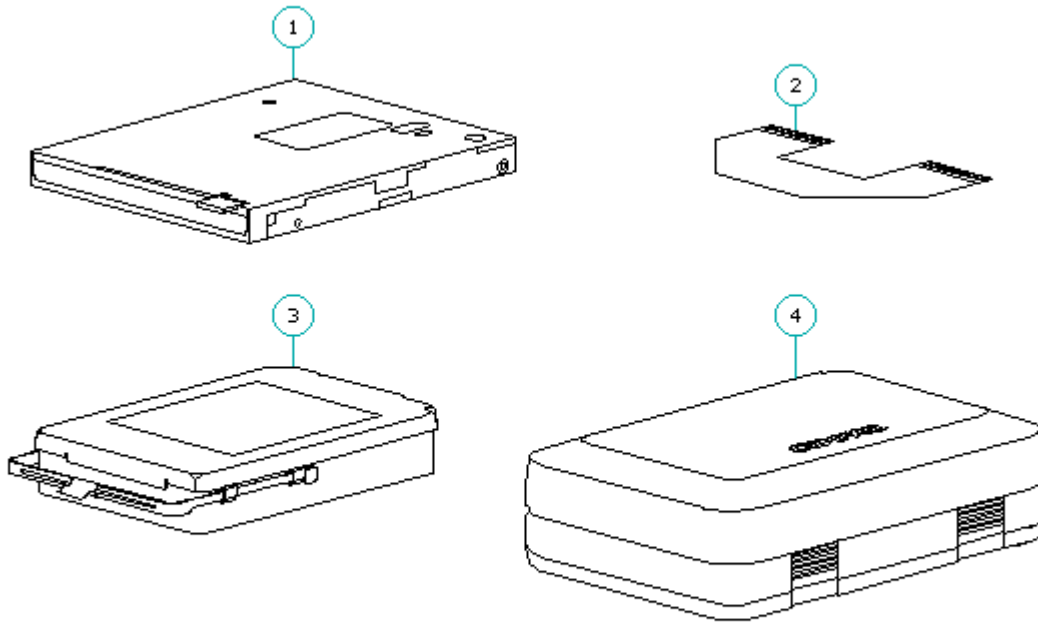


Figure 3-4. Mass Storage Devices

Table 3-4. Mass Storage Devices

Description	Spare Part Number
1. 3.5-inch, 1.44 MB Diskette Drive	149749-001
2. Diskette Drive Cable	149588-001
3. Removable Hard Drive	
- 810 MB	177819-001
- 510 MB	194086-001
- 340 MB	149591-001
- 250 MB	149750-001
- 170 MB	194079-001
4. Hard Drive Carrying Case	149783-001

### 3.5 Batteries

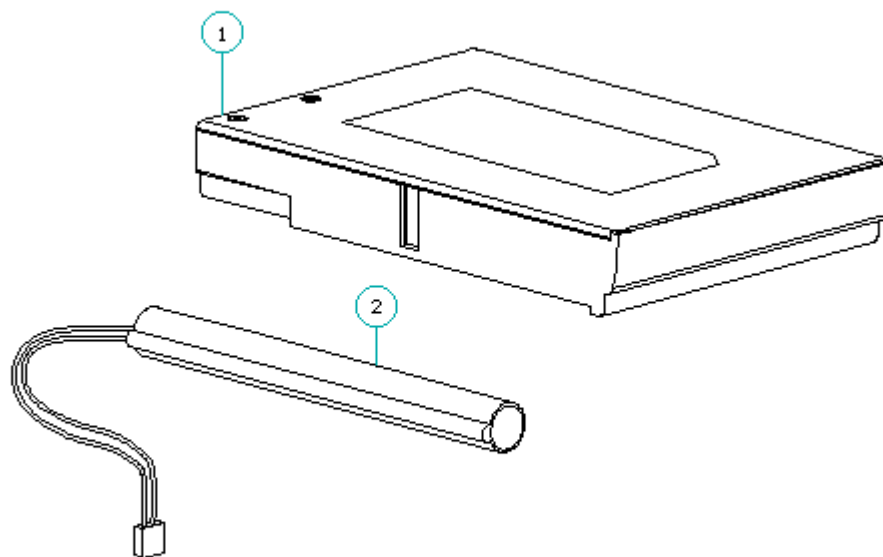


Figure 3-5. Batteries

Table 3-5. Batteries

Description	Spare Part Number
1. NiMH Battery Pack	149599-001
2. Auxiliary Battery	149598-001

### 3.6 Cables And Connectors



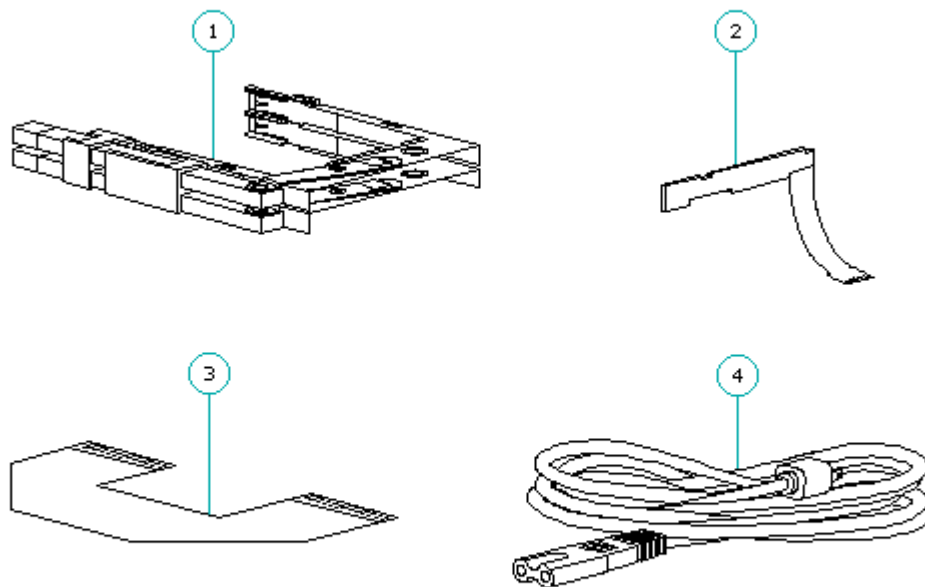


Figure 3-6. Cables and Connectors

Table 3-6. Cables and Connectors

Description	Spare Part Number
1. PCMCIA Ejector Rails (includes PCMCIA spacer tool)	196454-001
2. LED Cable Assembly	149707-001
3. Diskette Drive Cable	149588-001
4. Power Cord	
- U.S./Canadian	149710-001
- European	149710-002 *
- U.K.	149710-003 *
- Japanese	149710-007 *
- Australian	149710-008 *
5. ZIF Connector Slides	140069-001 *
6. Display Cable	(Refer to Table 3-3.) *
7. Display Ground Cable	(Refer to Table 3-3.) *

\* Not shown.

### 3.7 Keyboards

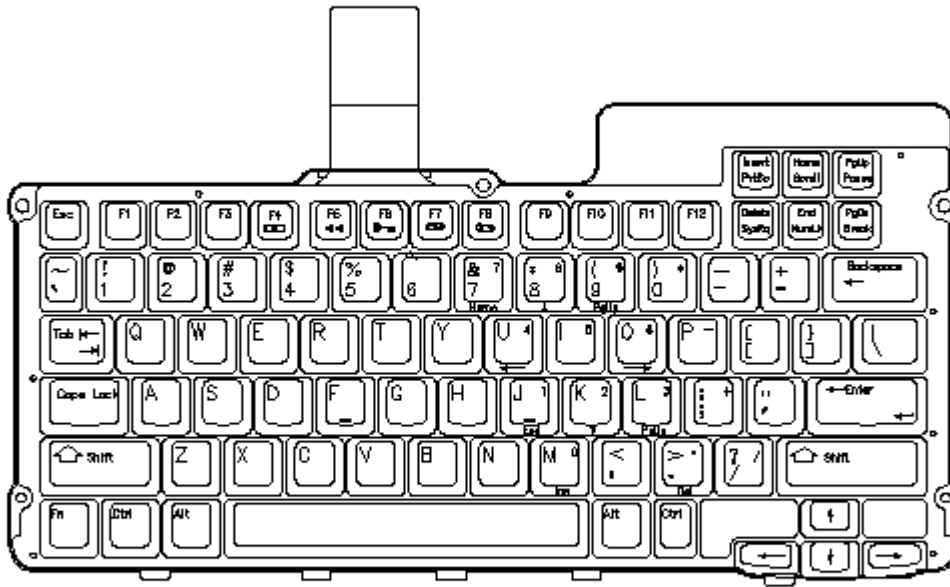


Figure 3-7. U.S. English Keyboard

Table 3-7. Keyboards

Description	Spare Part Number
U.S. English	149608-001
U.K. English	149608-003 *
German	149608-004 *
French	149608-005 *
Italian	149608-006 *
Spanish	149608-007 *
Danish	149608-008 *
Norwegian	149608-009 *
Swedish/Finnish	149608-010 *
Swiss	149608-011 *
French Canadian	149608-012 *
Portuguese	149608-013 *
Latin American	149608-016 *
Belgian	149608-018 *
Japanese	149608-019 *

-----  
\* Not shown.  
=====

### 3.8 Latches Kit

Table3-8. Latches Kit

Description	Spare Part Number
Kit includes:	149600-001
Battery release latch assembly (button, latch, and spring)	
Hard drive release latch assembly (button, latch, and spring)	
Right display latch, latch spring, and button	
Left display latch, latch spring, and button	

=====

### 3.9 Doors Kit

Table3-9. Doors Kit

Description	Spare Part Number
Kit includes:	194158-001
Input/output (I/O) connector cover	
Automobile adapter door	
Hard drive compartment door	
PCMCIA compartment door	
PCMCIA compartment door spring	
Memory access cover	

=====

### 3.10 Miscellaneous Plastics Kit

Table3-10. Miscellaneous Plastics Kit

Description	Spare Part Number
Kit includes:	194157-001
Control slides for TFT display (Quantity = 3)	
Control slides for STN display (Quantity = 6)	
Rubber feet (Quantity = 4)	
Right hinge cover	
Left hinge cover	
Display screw covers	

=====

### 3.11 Miscellaneous Small Mechanical Parts Kit

Table3-11. Miscellaneous Small Mechanical Parts Kit

Description	Spare Part Number
Kit includes:	149781-001
Auxiliary battery bracket	
Diskette drive shield	
Battery pack eject spring	
Power interface board (PIB) mounting bracket	
Power interface board (PIB) mounting bracket insulator	
Hard drive security clips (Quantity = 2)	
Display switch spring	
Trackball shield	
Hard drive lock labels (Quantity = 5)	

### 3.12 Compaq LTE Elite Screws And Fasteners Kit

Table3-12a. Compaq LTE Elite Screws and Fasteners Kit

Description	Spare Part Number
Compaq LTE Elite Screws and Fasteners Kit (Quantity = 25)	149763-001

Table 3-12b. Compaq LTE Elite Screw and Fastener Locations

Where Used	Description	Type	Drive	Maximum Torque (in.-lbs.)	Qty	Ref. Part Number
DISPLAY ENCLOSURE AND BOARDS:						
Bezel to display enclosure (2 through clutches)	Screw, M2.5 x 6.0	Truss, MA, CS	T8/SL	3.0	4	144864-004
Clutches to display enclosure	Screw, M2.5 x 6.0	Truss, MA, CS	T8/SL	3.0	2	144864-004
Panel to display enclosure	Screw, M3.0 x 6.0	Truss, MA, CS	T8	3.0	4	121187-006
Inverter board to display enclosure	Screw, M2.0 x 6.0	Truss, MA, CS	T8/SL	2.0	2	144863-005
Trackball board to display enclosure	Screw, M2.0 x 6.0	Truss, MA, CS	T8	2.0	2	144863-005

SYSTEM UNIT BOARDS/CONNECTORS:

Internal AC Screw, Truss, T8/SL 3.0 2 144864-004  
 power supply M2.5 x 6.0 MA, T  
 to system CS  
 board  
 (on top)

Internal AC Screw, Truss, T8/SL 3.0 2 144864-004  
 power supply M2.5 x 6.0 MA,  
 to system CS  
 unit  
 enclosure  
 (at rear)

Where Used	Description	Type	Drive	Maximum Torque (in.-lbs.)	Qty	Ref. Part Number
Serial, parallel, external monitor, external options connectors (at rear)	Screwlock, 4-40 sems, ext. tooth, F	Hex, MA, CS	3/16"	4.0	8	106902-005
PIB/PCMCIA rails to system unit enclosure (long screws)	Screw, M 2.0 x 20.5	Truss, MA, CS	T8/SL	2.0	2	144863-007
Keyboard to system unit enclosure	Screw, M2.5 x 6.0	Truss, MA, CS	T8/SL	3.0	2	144864-004
System board to system unit enclosure	Screw, M 2.5 x 6.0	Truss, MA, CS	T8/SL	3.0	6	144864-004
PIB to PCMCIA connector (short screw)	Screw, M2.0 x 6.0	Truss, MA, CS	T8/SL	2.0	3	144863-005
Keyboard/mouse connector	Screw, M2.5 x 6.0	Truss, MA, CS	T8/SL	3.0	1	144864-004
Automobile adapter connector to system unit enclosure	Screw, M2.0 x 6.0	Truss, MA, CS	T8/SL	2.0	2	144863-005

SYSTEM UNIT ENCLOSURE:

Keyboard cover to system unit enclosure (on bottom)	Screw, M2.5 x 21.0	Truss, MA, CS	T8/SL	3.0	5	144864-006
Keyboard cover to system unit enclosure (at rear)	Screw, M2.5 x 6.0	Truss, MA, CS	T8/SL	3.0	1	144864-004
Clutches to system unit enclosure	Screw, M2.5 x 10.0	Truss, MA, CS	T8/SL	3.0	4	144864-003

3.13 Tools

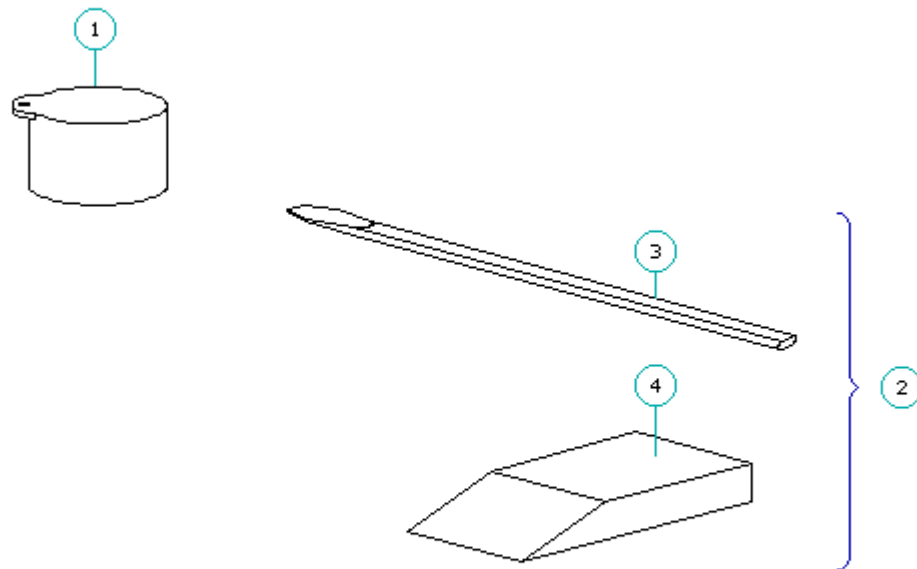


Figure 3-8. Tools

Table 3-13. Tools

=====

Description	Spare Part Number
1. Trackball Removal Tool	194041-001
2. Special Service Aids Kit	100767-001
Includes:	
3. Connector Removal Tool	
4. Display Bezel Removal Tool	
5. Loopback Plugs *	
* Not shown.	

### 3.14 Options

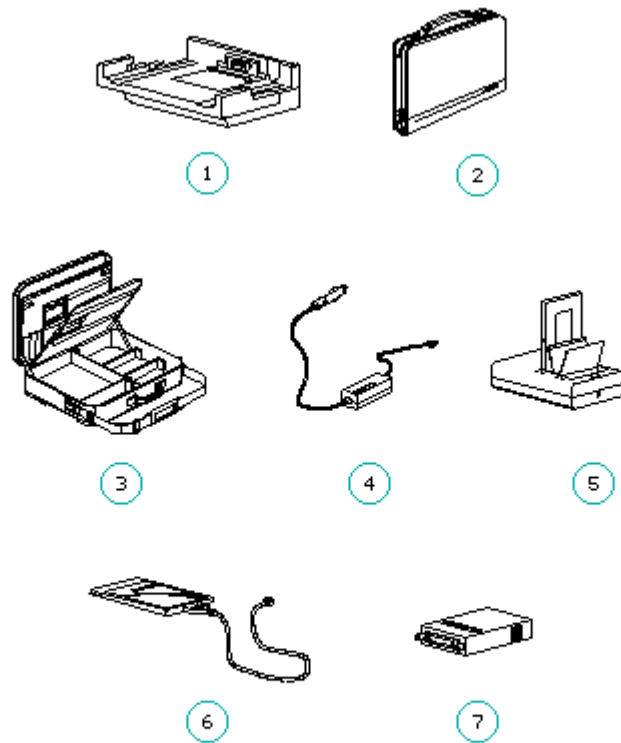


Figure 3-9. Options and Accessories

Table 3-14. Compaq LTE Elite Options and Accessories

Description	Spare Part Number
1. Compaq LTE Lite Desktop Expansion Base Upgrade Kit ** (includes Network Install Diskette) (192307-001)	199027-001

2. Carrying Case (138058-001)	121423-001
3. Briefcase (137608-001)	129930-001
4. Automobile Adapter (197636-001)	194626-001
5. External Battery Fastcharger/Conditioner (196825-001)	198866-001
6. PCMCIA Modem (data/fax):	
Compaq SpeedPaq 144/P Modem 198109-001	194131-001
Compaq PCMCIA 2400/9600 Data and Fax Modem (198116-001)	194098-001 ***
7. CD ROM Adapter (16 Bit with 25" cable) (142519-001)	121467-002
8. Slipcase (147709-001)	197635-001 ***
9. Battery Pack (149729-001)	149599-001 *** (Refer to Table 3-5.)
10. Display Upgrade Kit (9.5" Color TFT) (194037-001)	149589-001 *** (Refer to Table 3-3.)
11. Hard Drive	
340 MB (198968-001)	149591-001 ***
510 MB (197628-001)	194086-001 ***
810 MB (149685-005)	163420-001 *** (Refer to Table 3-4.)
12. Memory Expansion Board (70 ns):	
4 MB (199013-001)	194188-001 ***
8 MB (199014-001)	194189-001 ***
16 MB (196806-001)	196799-001 *** (Refer to Table 3-2.)
13. Processor Board	
486 DX4/75 MHz (194048-001)	194147-001 *** (Refer to Table 3-2.)

\* The Compaq option part number is provided in the description column for reference only. When ordering a spare part, use the number listed in the Spare Part Number column.

\*\* Compaq LTE Lite Desktop Expansion Base Upgrade Kit modifies a desktop expansion base to allow a Compaq LTE Elite to dock with it. The upgrade kit is a user-installed option.

\*\*\* Not shown.

### 3.15 Compaq Ministation Convenience Bases





```

-----
8. SCSI/NIC Board **:
   - SCSI/Ethernet Board           195566-001
   - SCSI/Token Ring Board        196782-001
-----
9. Power Supply Board Kit, including:      195567-001
   10. Standoff
   11. I/O bracket overlays
       (Quantity = 2) ***
   12. Power Supply Board with I/O
       bracket
-----
13. Tilt Base                            198861-001
-----
14. Compaq MiniStation Screws and Fasteners Kit  195565-001 *
-----
* Not shown.

** The Compaq MiniStation/EN uses a SCSI/Ethernet board and the Compaq
MiniStation/TR uses a SCSI/Token Ring board.

*** The I/O bracket overlay is installed over the connectors on the back of
the I/O bracket of the power supply board. The Compaq MiniStation/EN
and the Compaq MiniStation/TR each use a different overlay. Both
overlays are provided with the power supply board.
=====

```

**3.16 Software Diskettes**

Table3-16. Software Diskettes

```

=====
Description                                     Spare Part Number
=====
Compaq Diagnostics Diskette                    109728-001
EZ-SCSI Configuration Software Diskette        146994-001
EZ Tape                                         122098-001
PCMCIA Software Kit                            198821-001
ROMPaq Upgrade Diskette Kit                    129899-001
Portables ROMPaq Upgrade Diskette             181088-001
Supplemental Programs Diskette
(includes EXTDISK) [English]                   199976-001
Video Software Kit                             181031-001
=====

```

**3.17 Documentation**

Table3-17. Documentation

```

=====
Description                                     Spare Part Number
=====
Compaq LTE Elite/Compaq SmartStation Maintenance
and Service Guide                             149601-001
-----
Online User's Guide:
  English                                     194641-001
  German                                      194641-041

```

French	194641-051
Italian	194641-061
Spanish	194641-071
Swedish	194641-101
Dutch	194641-331

-----

Quick Setup card and Beyond Setup guide:

English	149709-001
German	149709-041
French	149709-051
Italian	149709-061
Spanish	149709-071
Danish	149709-081
Norwegian	149709-091
Swedish	149709-101
Latin American Spanish	149709-161
Japanese	149709-191
Brazilian Portuguese	149709-201
Dutch	149709-331
Finnish	149709-351

-----

Compaq MiniStation Installation Guide

English	196786-001
German	196786-041
French	196786-051
Italian	196786-061
Spanish	196786-071
Swedish	196786-101
Dutch	196786-331

-----

Compaq Service Quick Reference Guide (Quantity = 5) 106954-001

-----

Compaq QuickFind:

U.S./Canadian	137906-00X
International (other than U.S./Canadian):	
Authorized Compaq Reseller Version	137907-00X
End User Version	137908-00X

-----

Compaq EZ-SCSI Software Reference

English	196785-002
German	196785-042
French	196785-052

=====

### 3.18 Shipping Box

Table3-18. Shipping Box

Description	Spare Part Number
Compaq LTE Elite Shipping Box	149593-001

=====



















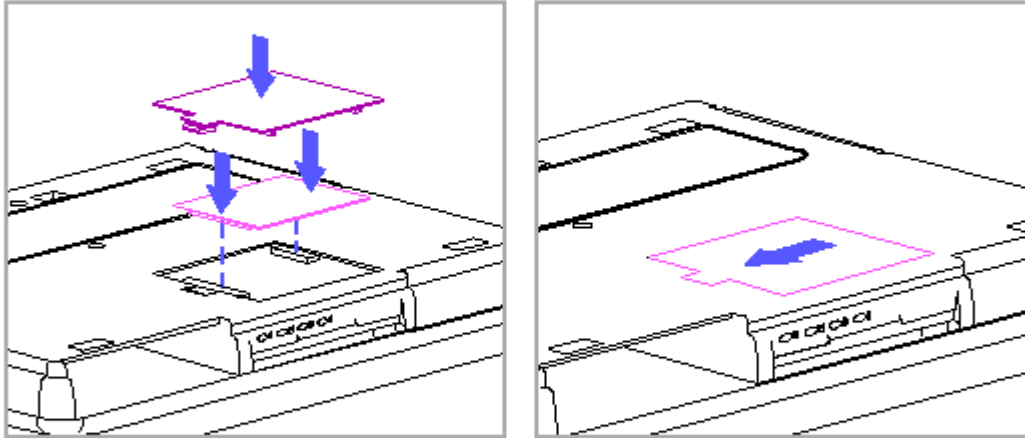


Figure 4-4. Installing a Memory Expansion Board

## 4.7 Keyboard Cover

Before removing the keyboard cover, refer to Section 4.4, "Preparation Procedures for Removal and Replacement."

To remove the keyboard cover, complete the following steps:

1. Turn the unit display-side down.
2. Remove the five screws located on the bottom and the one screw (shorter than the other five) located near the external options connector on the rear panel (Figure 4-5).

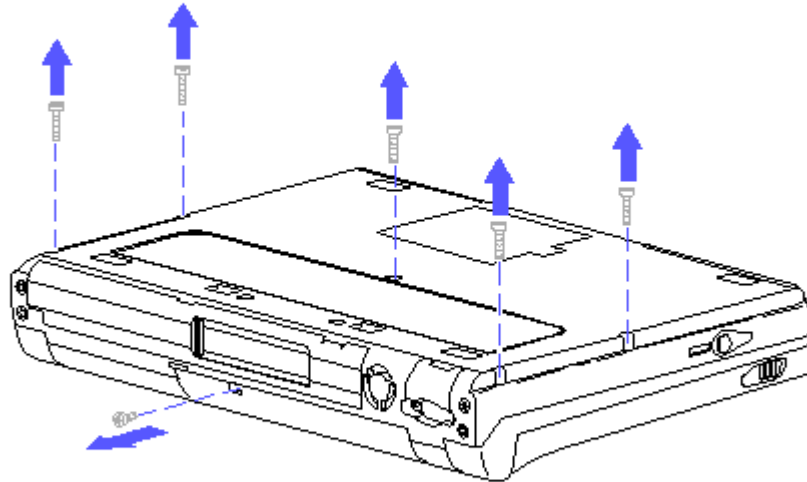


Figure 4-5. Removing the Keyboard Cover Screws

3. Carefully holding the unit together, turn it right-side up.
4. Open the display to its fully open position.
5. Tilt up the back edge of the keyboard cover [1] and lift while rotating the cover toward you to release the front edge [2] (Figure 4-6).









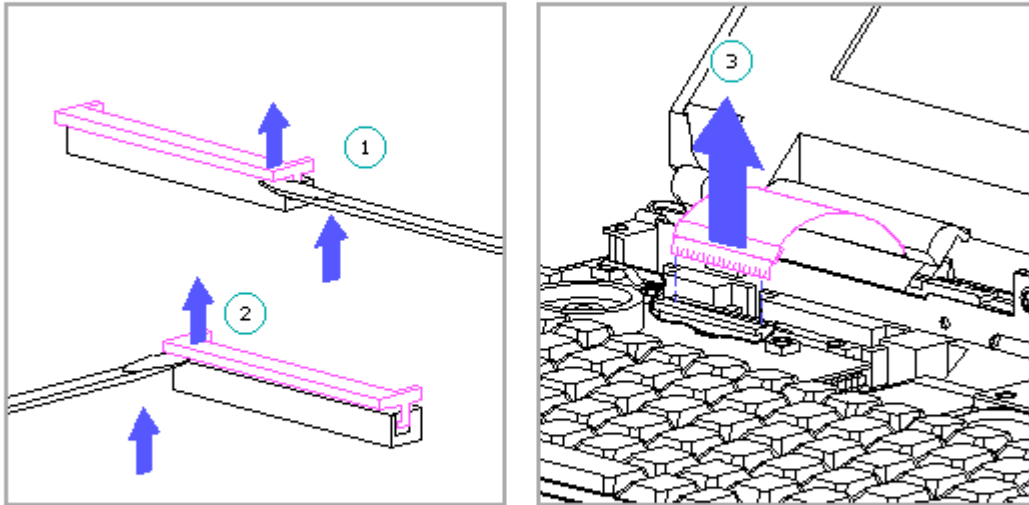


Figure 4-8. Removing the Display Cable from the System Board ZIF Connector

**IMPORTANT:** When replacing the cable into the ZIF connector, fully seat the cable before closing the ZIF connector slide. Close the connector slide by simultaneously pressing on both corners. When closed, the insertion line on the cable should be even with the top edge of the connector slide. If it is not, release the connector and fully seat the cable.

4. Remove the display ground cable [1] from the ground clip [2] on the input/output (I/O) bracket (Figure 4-9).

**IMPORTANT:** When replacing the display ground cable, loosen the screwlocks on the parallel connector at the rear of the computer. Place the tip of the connector removal tool into one of the holes [3] at the bottom corners of the ground cable (Figure 4-9). Pull the cable down into the ground clip by alternately pulling on one hole then on the other hole until it is fully seated. Ensure that you retighten the screwlocks on the parallel connector.







(Figure 4-12) and continue unsnapping towards the bottom edge until the bezel and enclosure are completely separated.

NOTE: A display bezel removal tool (Table 3-13) may be used to assist in removing the display bezel.

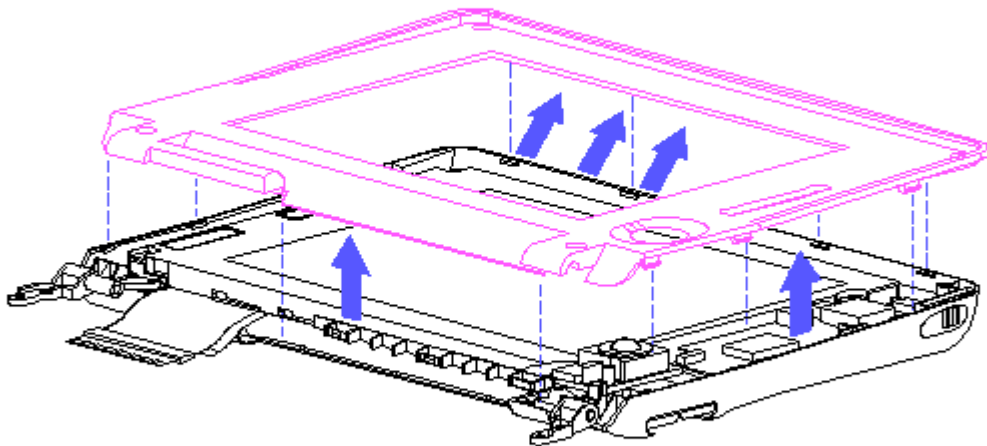


Figure 4-12. Removing the Display Bezel

#### Display Panel

NOTE: To replace the display panel on the 9.5-inch color TFT model, replace the entire display assembly (refer to "Removing the Display Assembly" in this section).

It is not necessary to remove the display assembly from the system unit to remove the display panel. To remove the display panel, complete the following steps:

1. Remove the display bezel (refer to "Display Bezel" in this section).
2. Disconnect the backlight cable from the inverter board (Figure 4-13).











NOTE: To replace the inverter board on the 9.5-inch color TFT model, replace the entire display assembly (refer to "Removing the Display Assembly" in this section).

It is not necessary to remove the display assembly from the system unit to remove the display inverter board. To remove the display inverter board, complete the following steps:

1. Remove the display bezel (refer to "Display Bezel" in this section).
2. Remove the backlight cable from the inverter board (Figure 4-13).
3. Remove the display cable [1] from the inverter board (Figure 4-17).
4. Remove the two screws [2] that attach the display inverter board to the display enclosure (Figure 4-17).
5. Remove the inverter board (Figure 4-17).

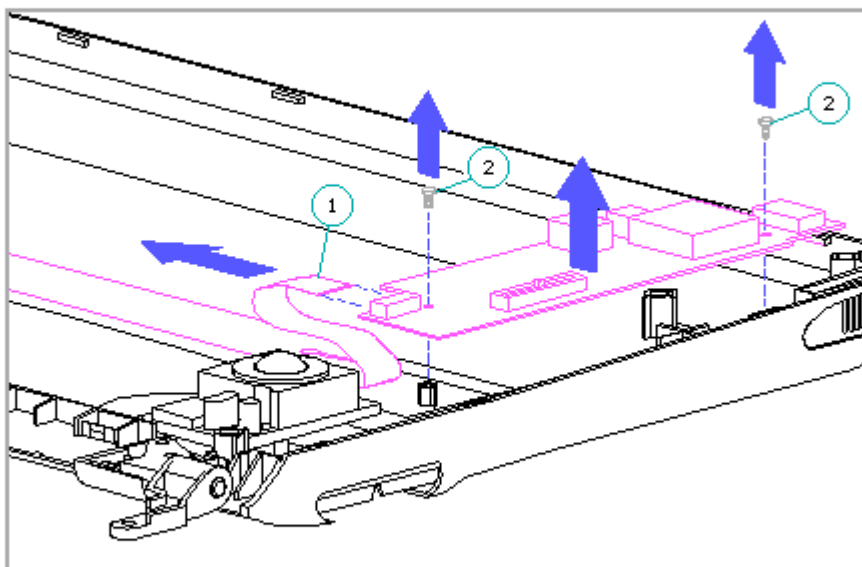


Figure 4-17. Removing the Inverter Board

IMPORTANT: In order to line up the screws properly when replacing the inverter board, be sure that the alignment hole in the inverter board is properly seated over the alignment post in the display enclosure.



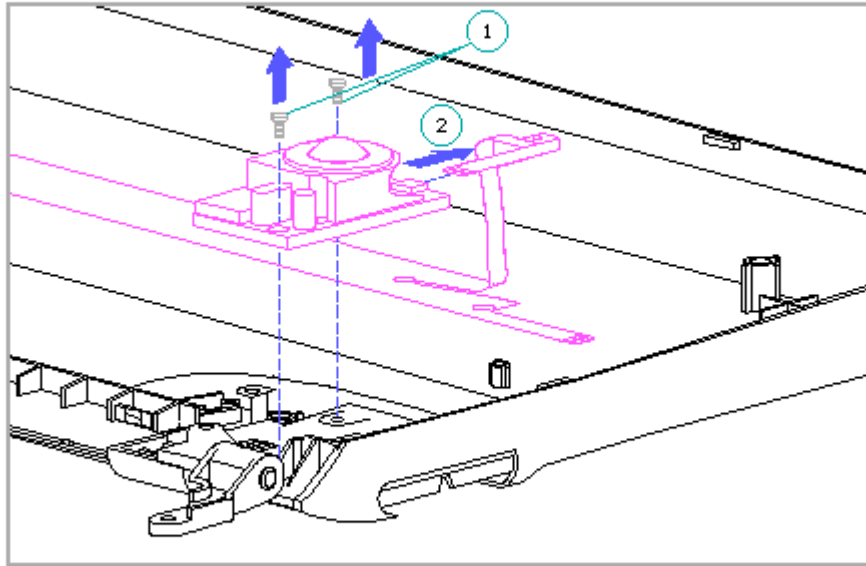


Figure 4-18. Removing the Trackball Board

## Display Cable

NOTE: To replace the display cable on the 9.5-inch color TFT model, replace the entire display assembly (refer to "Removing the Display Assembly" in this section).

It is not necessary to remove the display assembly to remove the display cable. To remove the display cable, complete the following steps:

1. Remove the keyboard cover (Section 4.7).
2. Remove the display cable and the display ground cable from the system unit by completing steps 2 and 3 as listed in "Removing the Display Assembly" in this section.
3. Remove the display bezel (refer to "Display Bezel" in this section).
4. Remove the display panel (refer to "Display Panel" in this section).
5. Disconnect the display cable from the inverter board.
6. Disconnect the display cable from the trackball board.

7. Remove the display cable.

NOTE: Figure 4-19 shows an exploded view of the display cable connections.

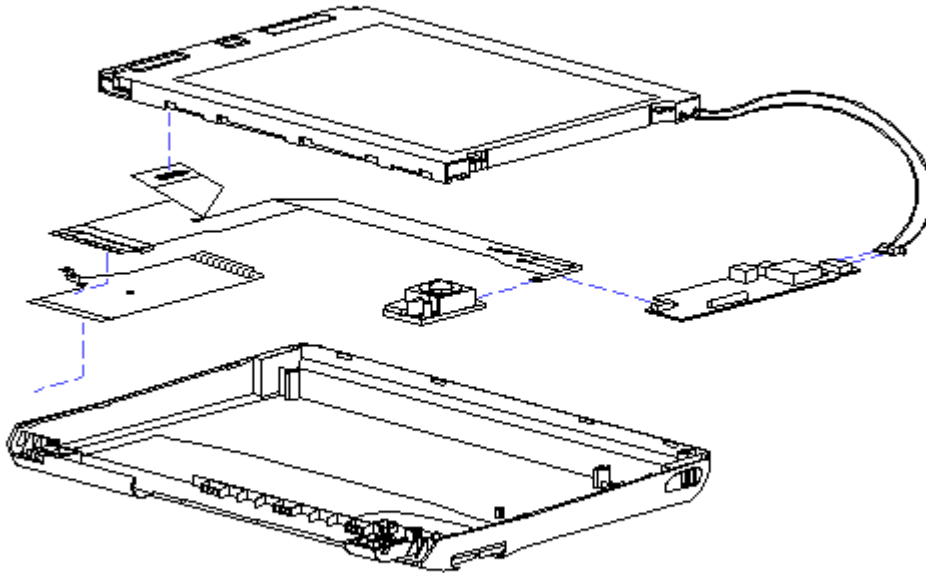


Figure 4-19. Display Cable Connections

#### Display Latches

**IMPORTANT:** The display latches and latch buttons used on the display enclosure are labeled L (left) and R (right) and are not interchangeable. Check to make sure that you are installing the display latches and latch buttons on the correct sides. When removing the display latches and buttons, keep the left and right parts separated to ease replacement.

It is not necessary to remove the display assembly to remove the display latches. To remove the display latches, complete the following steps:

1. Remove the display bezel (refer to "Display Bezel" in this section).
2. Press on the retaining tabs [1] inside the display enclosure while removing the latch buttons [2] (Figure 4-20).

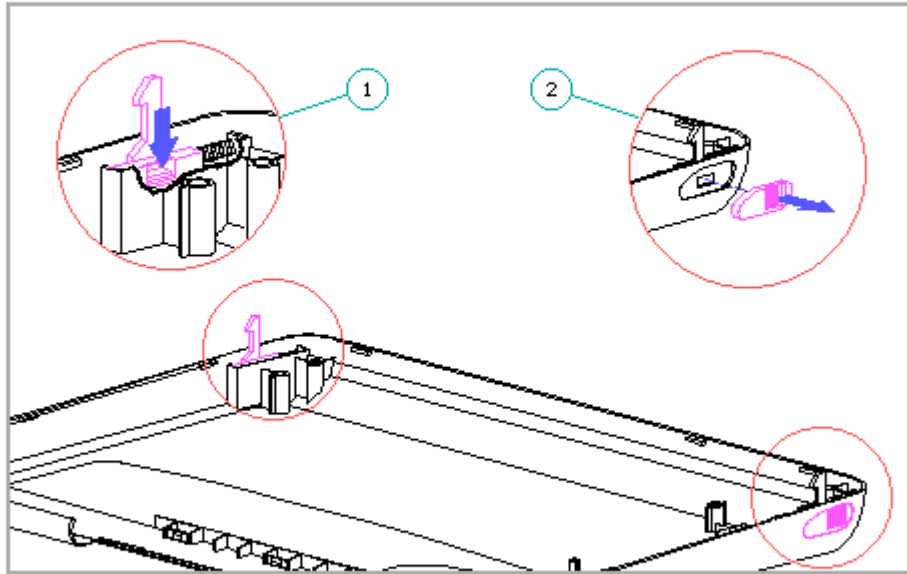


Figure 4-20. Removing the Display Latches

3. Remove the display latches and springs from the latch compartments.

#### Display Clutches

To remove the display clutches, complete the following steps:

1. Remove the keyboard cover (Section 4.7).
2. Remove the display assembly (refer to "Removing the Display Assembly" in this section).
3. Remove the display bezel (refer to "Display Bezel" in this section).

NOTE: Two screws that attach the bezel to the display enclosure also attach the clutches to the display enclosure.

IMPORTANT: Before removing the two remaining clutch screws (step 4), note that these screws also attach the mounting tab of the trackball shield [2] and one of the mounting tabs of the display ground cable [3] (Figure 4-21). The tab for the display ground cable goes beneath the clutch. The tab for the trackball shield goes either above or beneath the clutch, depending on which type of shield was originally installed in

the factory. To prevent interference with the trackball when the original trackball shield is reused, the tab for the trackball shield must go back in its original position (above or beneath the clutch). When replacing the trackball shield with a new spare trackball shield (Table 3-11), the mounting tab always goes beneath the clutch.

4. Remove the two remaining clutch screws (Figure 4-21).
5. Remove the display clutches [1] from the display assembly. (Figure 4-21)

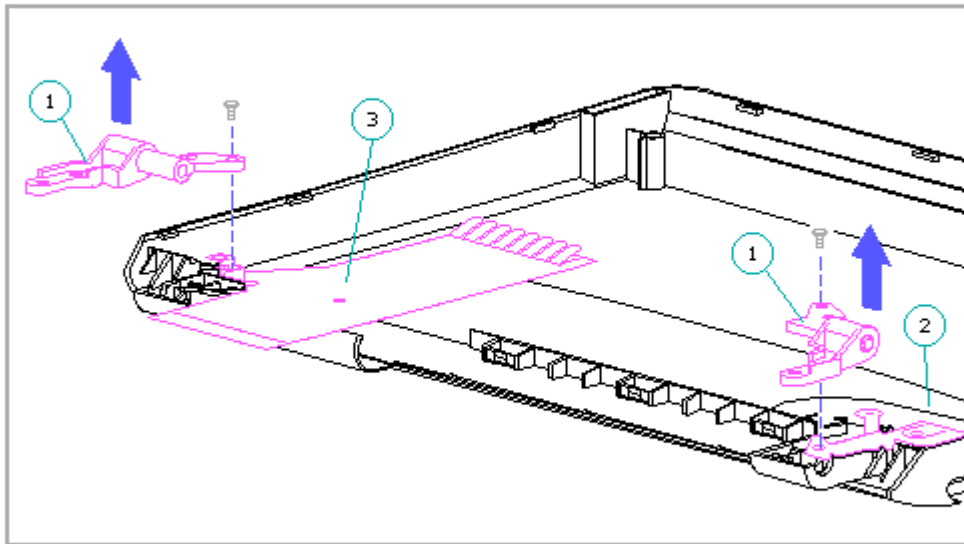


Figure 4-21. Removing the Display Clutches

## Display Enclosure

NOTE: To replace the display enclosure on the 9.5-inch color TFT model, replace the entire display assembly (refer to "Removing the Display Assembly" in this section).

To remove the display enclosure, complete the following steps:

1. Remove the keyboard cover (Section 4.7).
2. Remove the display assembly (refer to "Removing the Display Assembly" in this section).









front edge of the computer (Figure 4-24).

**IMPORTANT:** To ensure that the keyboard is reinstalled correctly, be sure that the metal tabs on the keyboard's front edge are properly aligned (Figure 4-24). The two tabs on the outside [1] go in the notches on top of the plastic edge at the front of the computer. The three tabs in the middle [2] tuck underneath the plastic edge.

4. Replace the two keyboard screws (Figure 4-24).

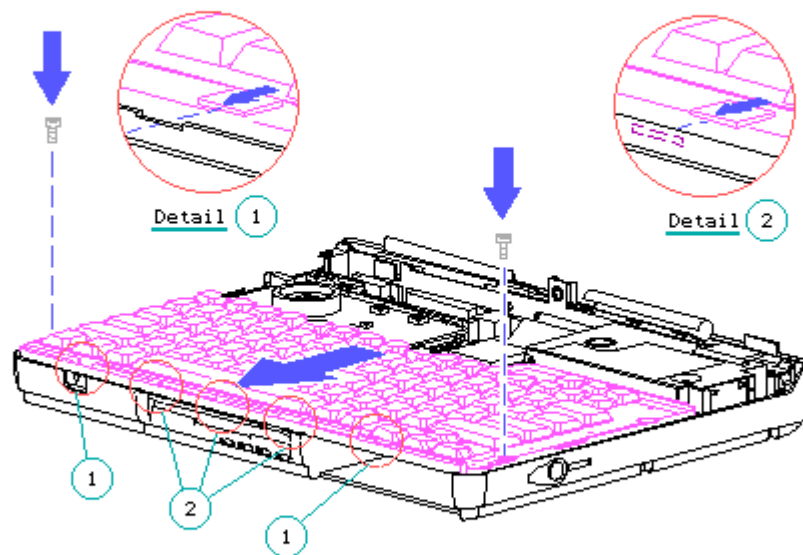


Figure 4-24. Replacing the Keyboard

#### 4.11 Diskette Drive And Cable

The diskette drive cable connects to a LIF connector on the diskette drive and to a ZIF connector on the system board. To remove the diskette drive and cable, complete the following steps:

1. Remove the keyboard cover (Section 4.7).
2. Remove the keyboard (Section 4.10).
3. Remove the diskette drive shield.

**IMPORTANT:** When replacing the diskette drive shield, ensure that it is













## Installing the Compaq Diagnostics Utilities on a New Hard Drive

To create the hidden partition, install the diagnostics utilities, and format the drive, complete the following steps:

1. Place the Compaq Diagnostics diskette into drive A.
2. Turn on the computer.
3. When the first display screen appears, select Manage Diagnostic Partition.
4. When the Manage Diagnostic Partition screen appears, select Create Diagnostic Partition.

The computer creates the partition, reboots the computer, and installs the diagnostics software.

5. Format the C: partition and install other software as necessary.

## Hard Drive Security Clips

If the hard drive security clips are installed, they must be removed before the hard drive can be removed [1]. If the hard drive will not come out easily, or if a hard drive lock label is attached to the hard drive (Figure 4-28), ensure that the hard drive security clips have been removed before attempting to remove the hard drive.





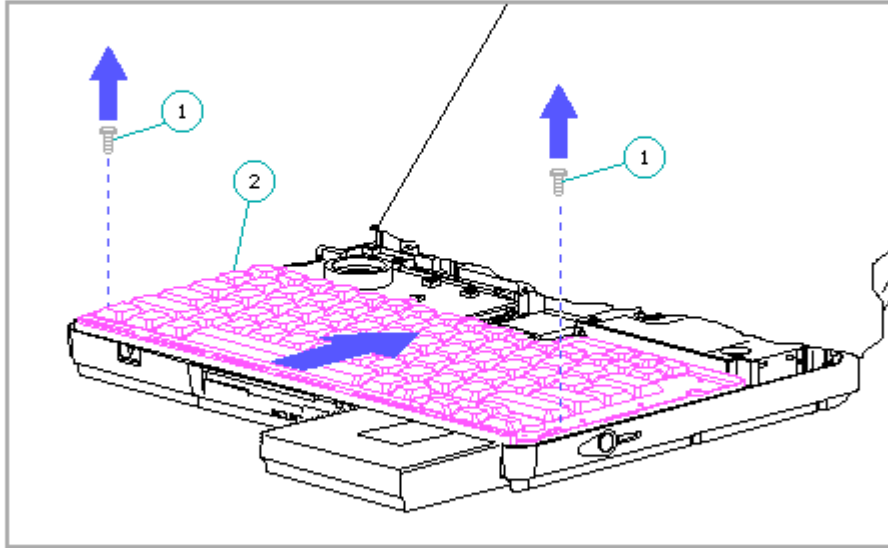


Figure 4-30. Releasing the Keyboard

6. Rotate the front edge of the keyboard up and lay it face-down on the cloth-covered display panel (Figure 4-31).

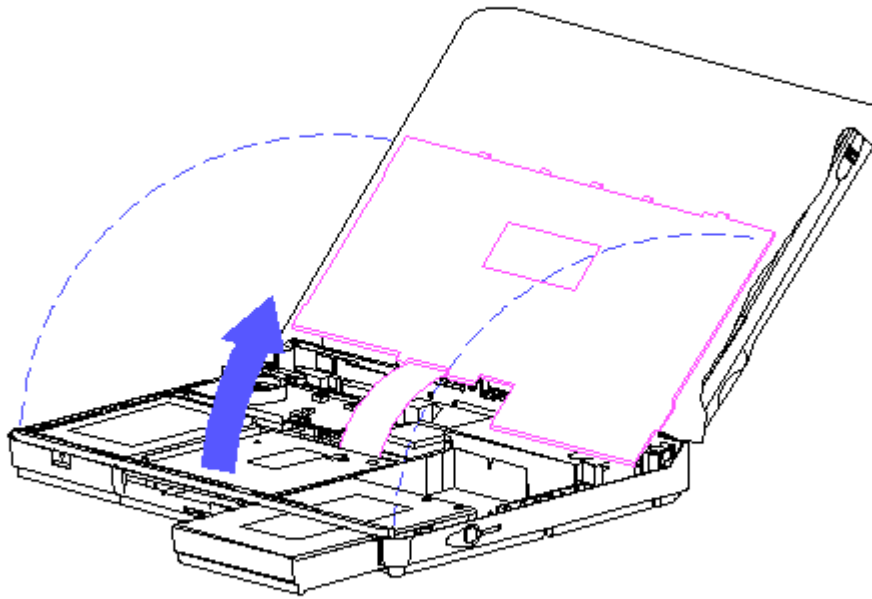


Figure 4-31. Laying the Keyboard on the Display

7. Remove the hard drive security clips by gently lifting up on them (Figure 4-32).

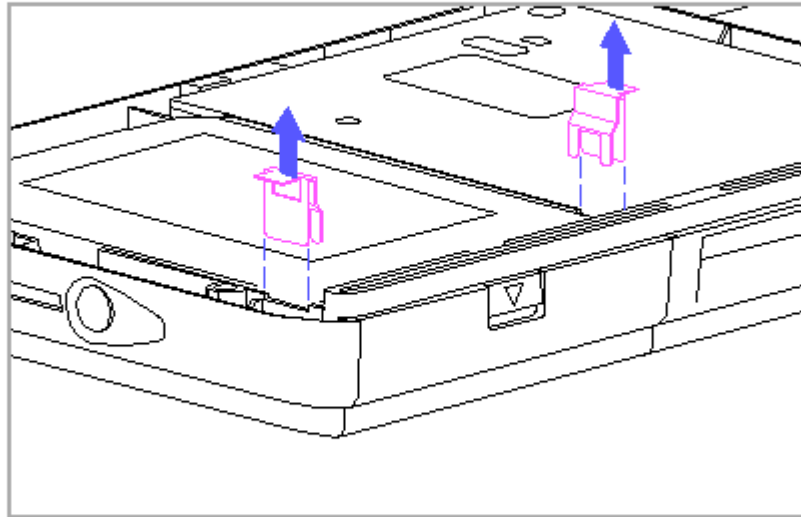


Figure 4-32. Removing the Hard Drive Security Clips

**IMPORTANT:** When replacing the hard drive security clips, position each clip over the notches in the plastic rib near the front of the hard drive enclosure. Insert each clip until the top surface of the clip is flush with the top surface of the plastic rib. If the clips are not flush, the keyboard will not fit properly. Note the orientation of the clips in Figure 4-32.

8. If a hard drive lock label is attached to the front of the hard drive, remove it.

**NOTE:** If you wish to install the hard drive security clips and lock label on the replacement hard drive, do so before completing steps 9 and 10, while the computer is still disassembled.

9. Replace the keyboard (Section 4.10).
10. Replace the keyboard cover (Section 4.7).

### 4.13 Processor Board











removing or replacing the ejector rails.

#### Removing the PCMCIA Ejector Rails

To remove the PCMCIA ejector rails, complete the following steps:

1. Remove the keyboard cover (Section 4.7).
2. Remove the PIB, PIB insulator, and PIB shield (Section 4.14).
3. Remove the top ejector rail by sliding it gently but firmly out of the system unit (Figure 4-37).

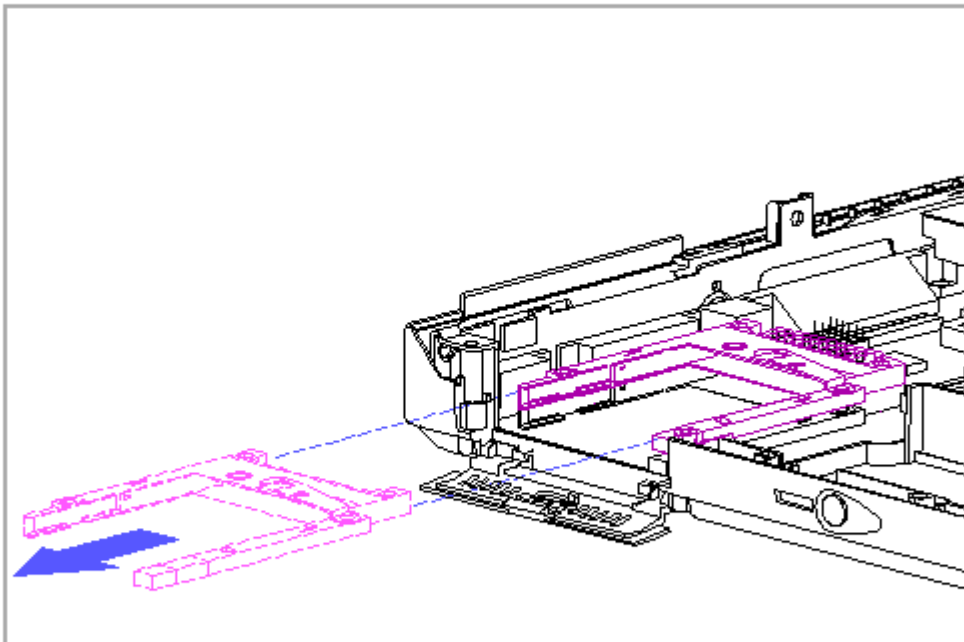


Figure 4-37. Removing the PCMCIA Ejector Rails

4. Repeat step 3 for the bottom ejector rail.

#### Replacing the PCMCIA Ejector Rails

**IMPORTANT:** When replacing the ejector rails, be sure that the metal eject lever on the rails seats fully into the narrow slot in the PCMCIA connector. If the rails are not fully seated in the slot in the connector, they will not line up with the holes for the

mounting screws.

To replace the PCMCIA ejector rails, complete the following steps:

1. Slide the bottom ejector rail into position until it locks into place (Figure 4-38).
2. Slide the top ejector rail into position until it locks into place (Figure 4-38).

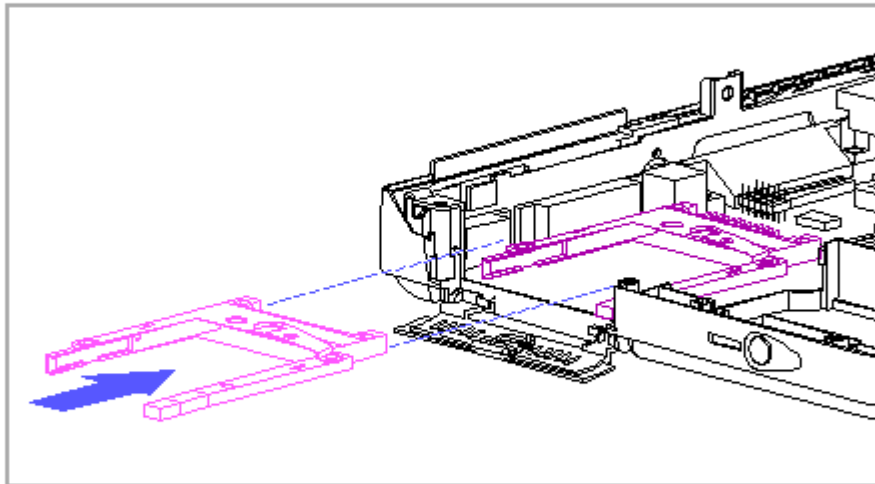


Figure 4-38. Replacing the PCMCIA Ejector Rails

3. Insert the PCMCIA spacer into the rails to assist with rail alignment (Figure 4-39).





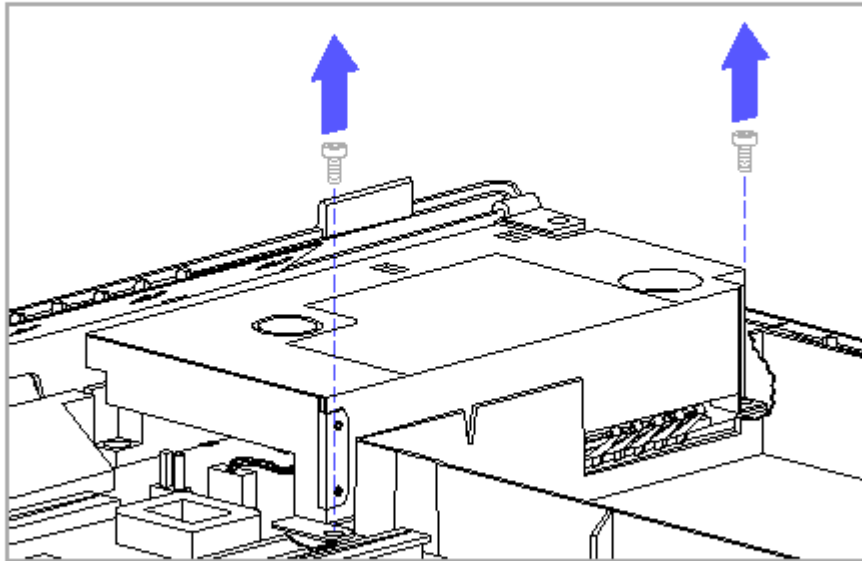


Figure 4-41. Removing the Top Internal AC Power Supply Screws

4. Remove the two screws that attach the power supply to the rear of the system unit (Figure 4-42).

NOTE: To allow the screws to align easier when replacing the power supply, replace the two rear screws before replacing the two top screws.





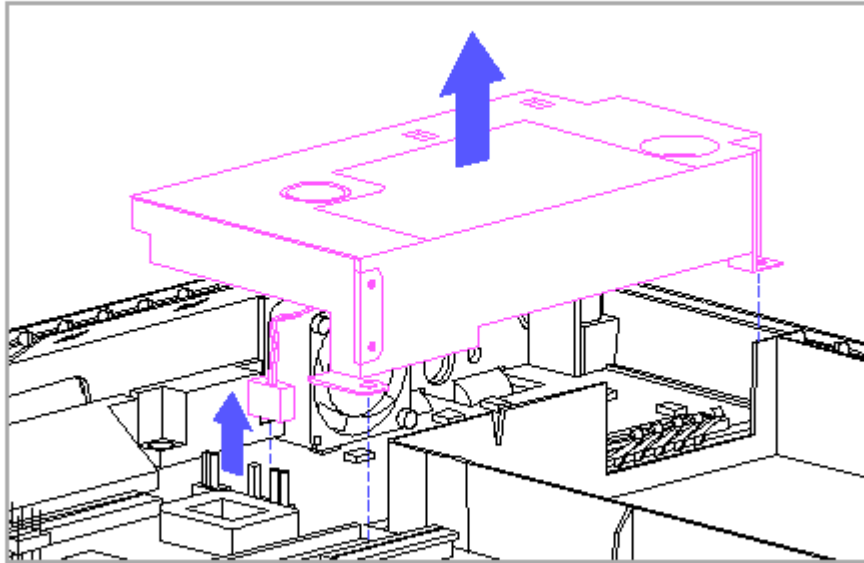


Figure 4-43. Removing the Internal AC Power Supply

#### 4.17 System Board And Input/Output (I/O) Bracket

To remove the system board and input/output bracket, complete the following steps:

1. If a new system board is to be installed, remove the memory expansion board (Section 4.6).
2. Remove the hard drive (Section 4.12).
3. Remove the keyboard cover (Section 4.7).
4. If a new system board is to be installed, remove the processor board (Section 4.13).
5. Disconnect the auxiliary battery (Section 4.8).
6. Remove the display assembly (Section 4.9).
7. Remove the keyboard (Section 4.10).

8. Remove the diskette drive and cable (Section 4.11).
9. Remove the PIB (Section 4.14).
10. Remove the internal AC power supply (Section 4.16).
11. Remove the eight screwlocks that attach the rear I/O connectors to the I/O bracket (Figure 4-44).
12. Remove the screw that attaches the keyboard/mouse connector to the I/O bracket (Figure 4-44).
13. Remove the two screws that attach the Automobile Adapter connector to the I/O bracket (Figure 4-44).

NOTE: The screws for the Automobile Adapter connector are located under the Automobile Adapter door at the left rear of the computer (Figure 4-44).

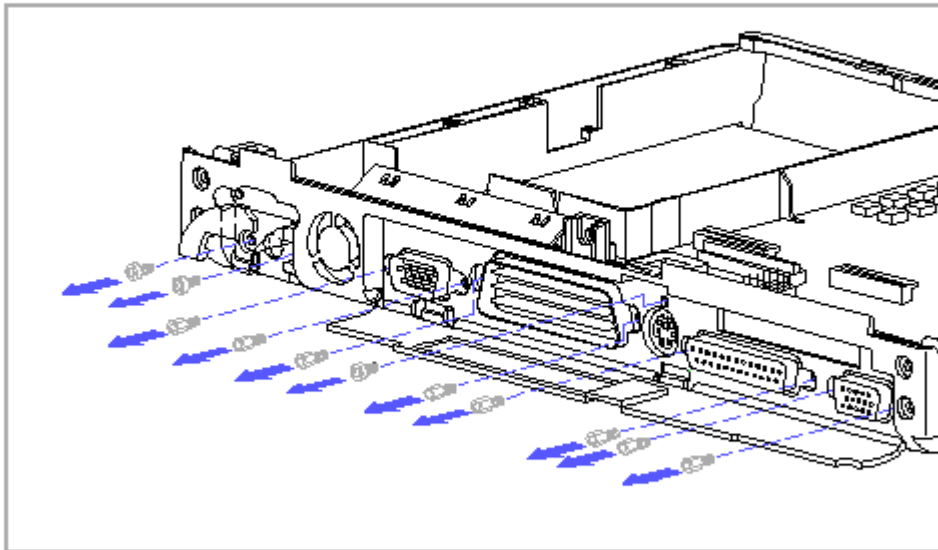


Figure 4-44. Removing the I/O Connector Screws and Screwlocks

IMPORTANT: When replacing the Automobile Adapter connector (Figure 4-45), ensure that the long end of the connector [1] is next to the fan [2] and that the ferrite on the connector cable [3] is tucked between the short end of the connector and the right wall of the I/O bracket. If the connector is installed improperly, it



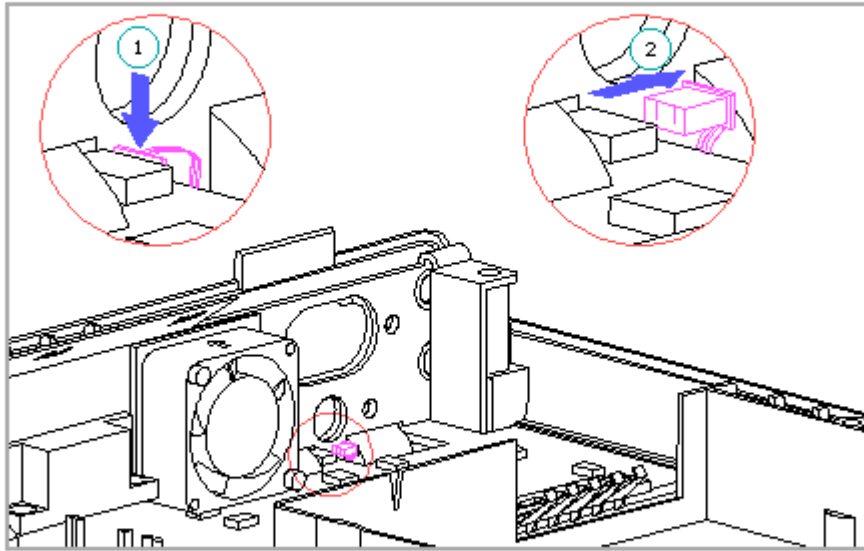


Figure 4-46. Removing the Fan Connector

16. Remove the six screws that attach the system board to the computer base enclosure (Figure 4-47).

**IMPORTANT:** To ensure proper alignment when replacing the system board, replace the screw noted as [1], then replace the screw noted as [2], then replace the other four screws (Figure 4-47).

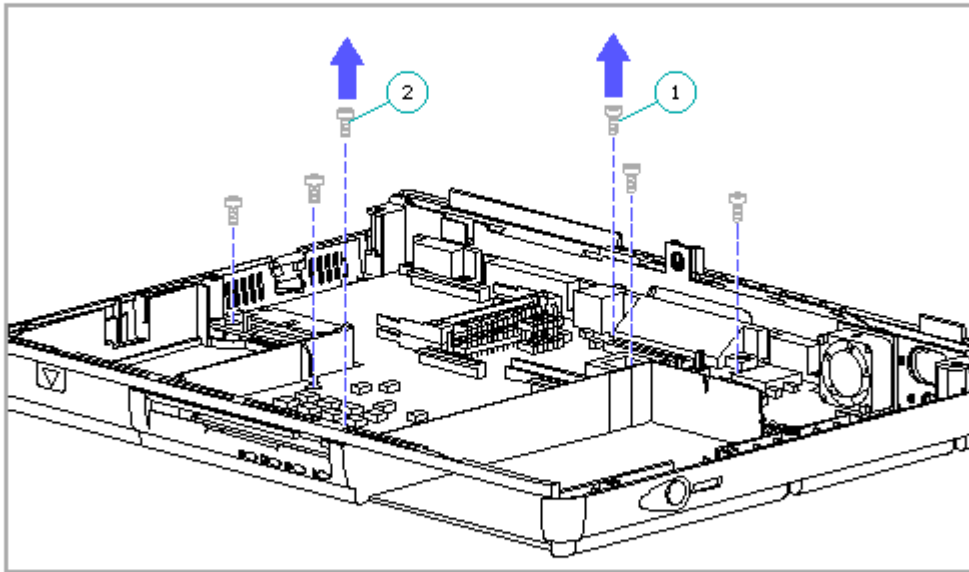


Figure 4-47. Removing the System Board Screws

17. Carefully tilt the system board up [1] and unplug the LED cable assembly from the connector on the bottom side of the system board [2] (Figure 4-48).

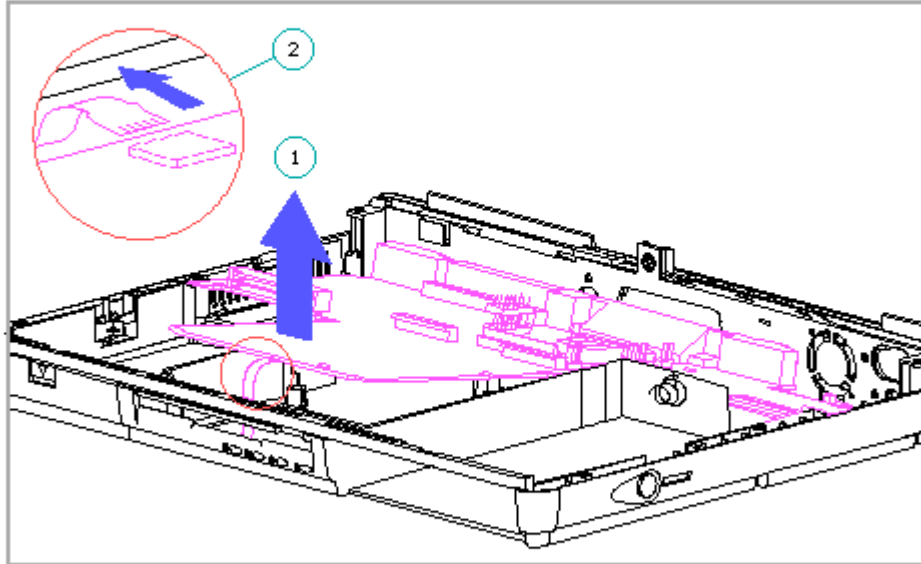


Figure 4-48. Disconnecting the LED Cable Assembly from the System Board

**IMPORTANT:** When replacing the LED cable assembly into the connector, be sure that the soldered leads on the cable face away from the system board.

18. With the system board still tilted up, slide the system board toward the front of the unit to release it from the I/O bracket, and remove the system board.
19. Slightly flex the left side of the computer base enclosure toward the back of the unit [1] and remove the I/O bracket [2] (Figure 4-49).

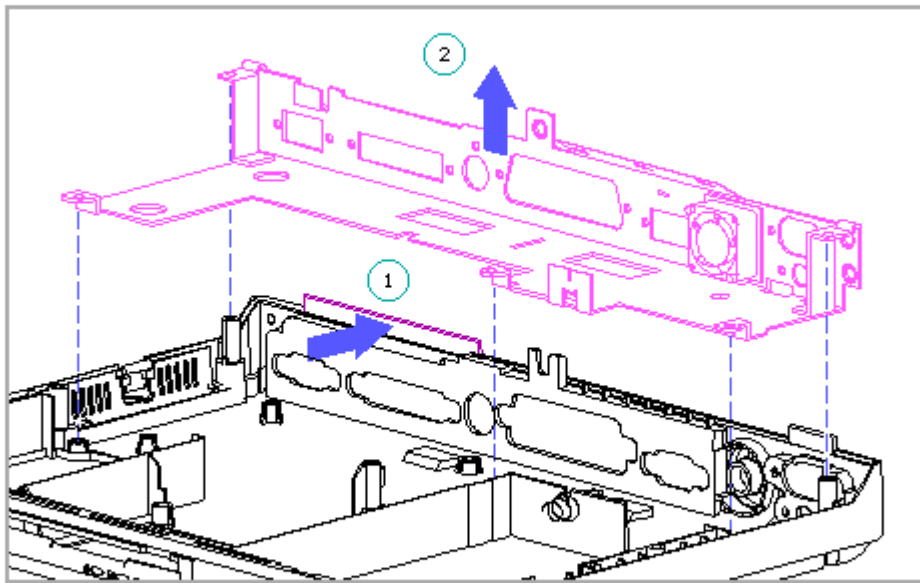


Figure 4-49. Removing the I/O Bracket

NOTE: The fan is integrated into the I/O bracket. To replace the fan, the I/O bracket must be replaced.

## 4.18 LED Cable Assembly

### Removing the LED Cable Assembly

To remove the LED cable assembly from the computer base enclosure, complete the following steps:

1. Remove the system board by completing steps 1 through 17 in Section 4.17.
2. Slightly flex the retaining snaps of the LED cable assembly bracket [1] up one at a time, while removing the LED cable assembly [2] (Figure 4-50).

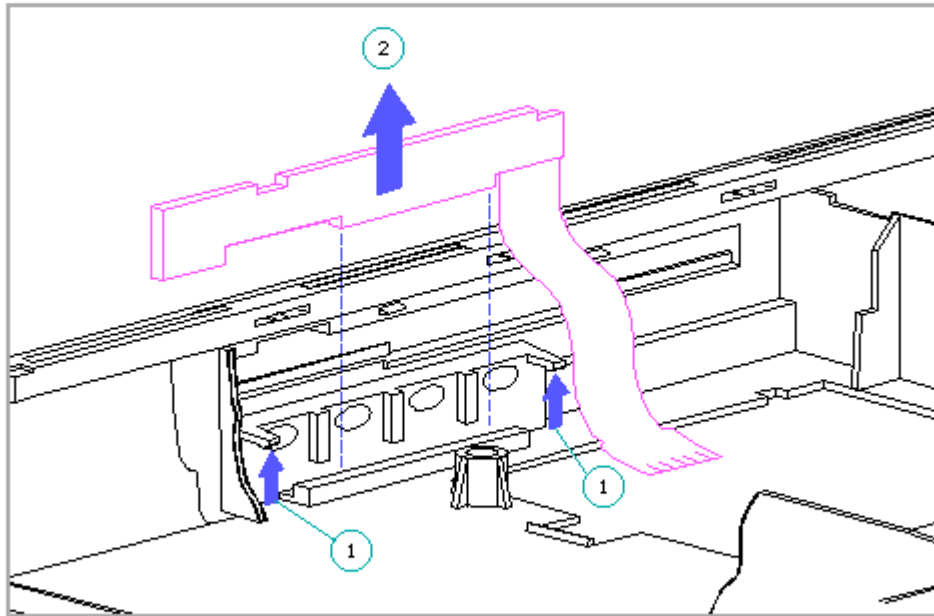


Figure 4-50. Removing the LED Cable Assembly

#### Replacing the LED Cable Assembly

To replace the LED cable assembly, complete the following steps:

1. Connect the LED cable assembly [1] to its connector on the system board [2] (Figure 4-51).

**IMPORTANT:** Be sure that the soldered leads on the LED cable face away from the system board.



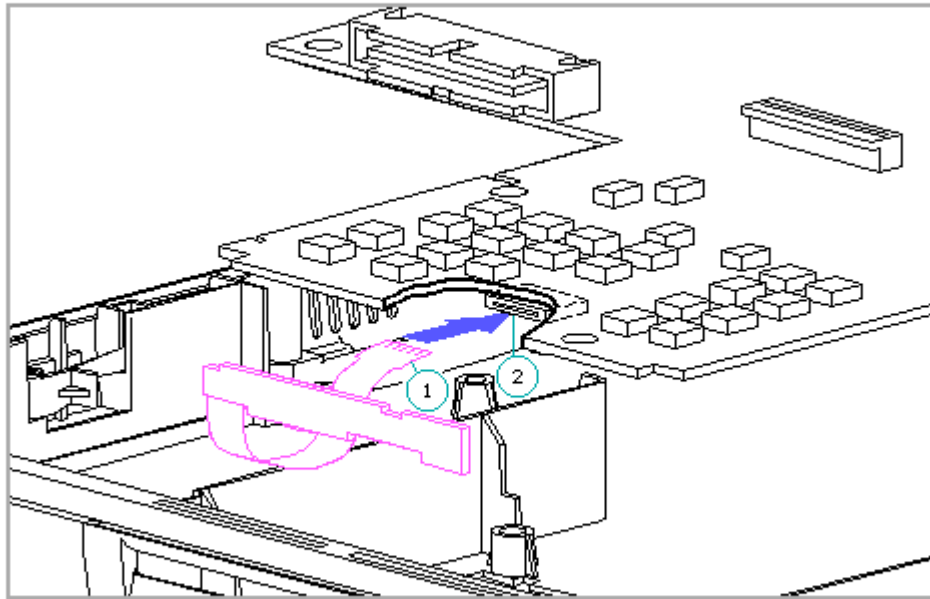


Figure 4-51. Reconnecting the LED Cable Assembly to the System Board

2. Partially install the system board so that the connectors on the back of the board fit into the I/O bracket. Keep the front edge of the system board raised to allow access to the LED cable assembly bracket (Figure 4-52).

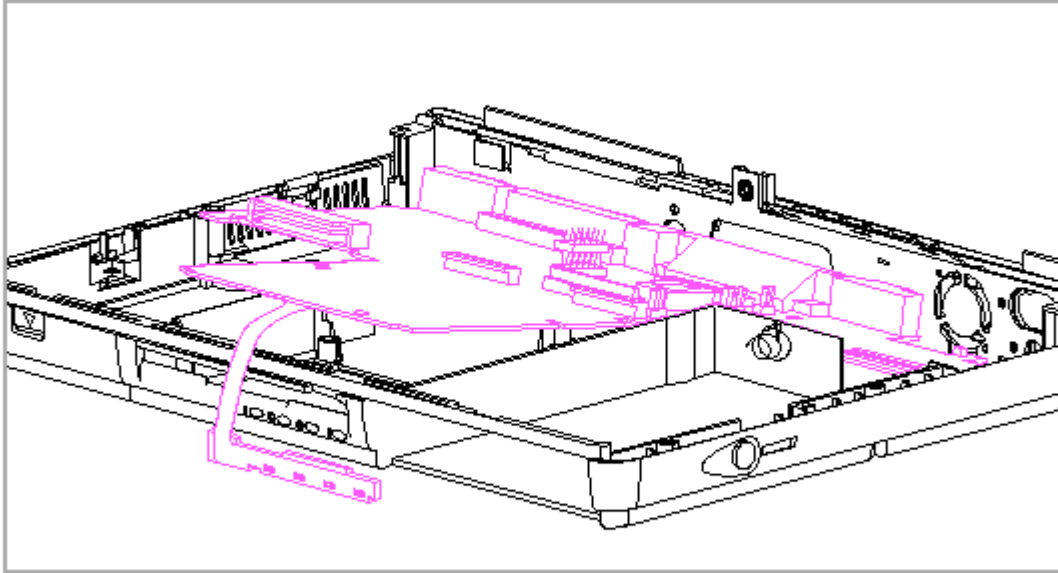


Figure 4-52. Partially Installing the System Board

3. Insert the lower edge of the LED cable assembly [1] into the lower slot of the LED cable assembly bracket (Figure 4-53).
4. Rotate the top edge of the LED cable assembly up and press gently at the top corners [2] (Figure 4-53) to snap it into the bracket.

**IMPORTANT:** Both sides of the LED cable assembly must be pressed simultaneously to allow the assembly to snap into the bracket.

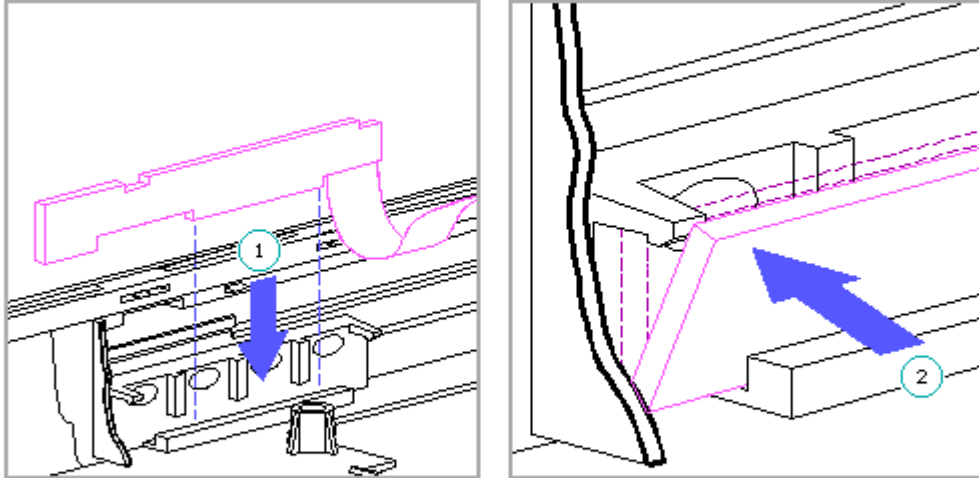


Figure 4-53. Replacing the LED Cable Assembly into the Bracket

5. Reassemble the rest of the computer by reversing steps 1 through 16 of Section 4.17.

## 4.19 Computer Base Enclosure

To remove the computer base enclosure, complete the following steps:

1. Remove the system board and I/O bracket (Section 4.17).
2. Remove the LED cable assembly (Section 4.18).
3. Remove the I/O connector cover.

The computer base enclosure remains and includes the following items:

- o Battery pack release latch assembly (Section 4.21).
- o Hard drive release latch assembly (Section 4.21).
- o PCMCIA compartment door (Section 4.20).
- o Automobile Adapter door.
- o Hard drive compartment door.



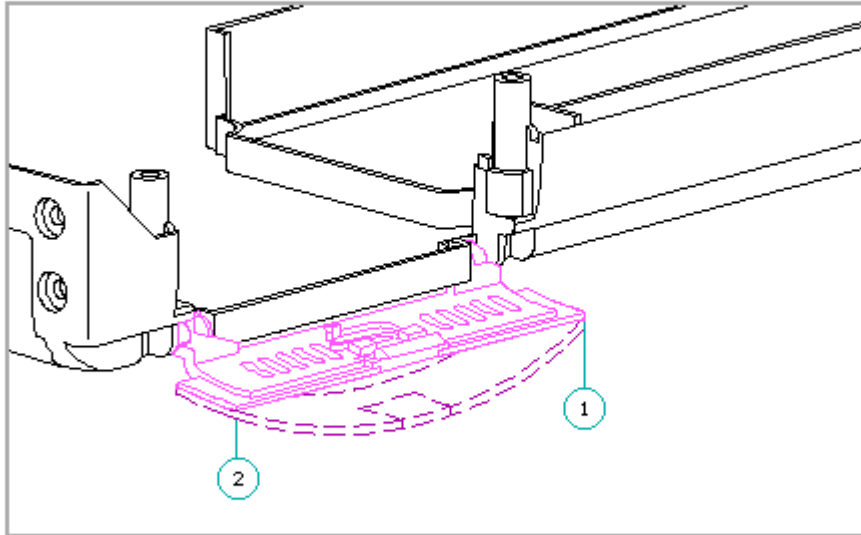


Figure 4-54. Removing the PCMCIA Compartment Door

#### Replacing the PCMCIA Compartment Door

To replace the PCMCIA compartment door, complete the following steps:

1. Position the door spring [1] over its retaining post [2] on the computer base enclosure (Figure 4-55).
2. Position the long end of the spring [3] into its slot on top of the computer base enclosure (Figure 4-55) so that it stays in place.

NOTE: The spring automatically goes into place when the door is installed and closed.

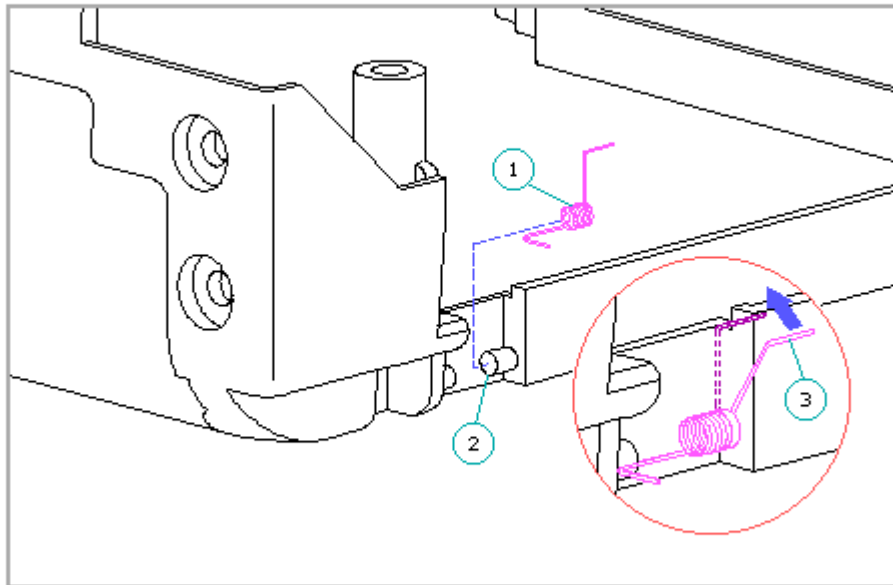


Figure 4-55. Positioning the PCMCIA Compartment Door Spring

3. With the door held in the fully open position, install the back hinge of the door [1] onto its post on the computer base enclosure (Figure 4-56).
4. Slightly flexing the door, replace the front hinge of the door [2] onto its post on the computer base enclosure (Figure 4-56).

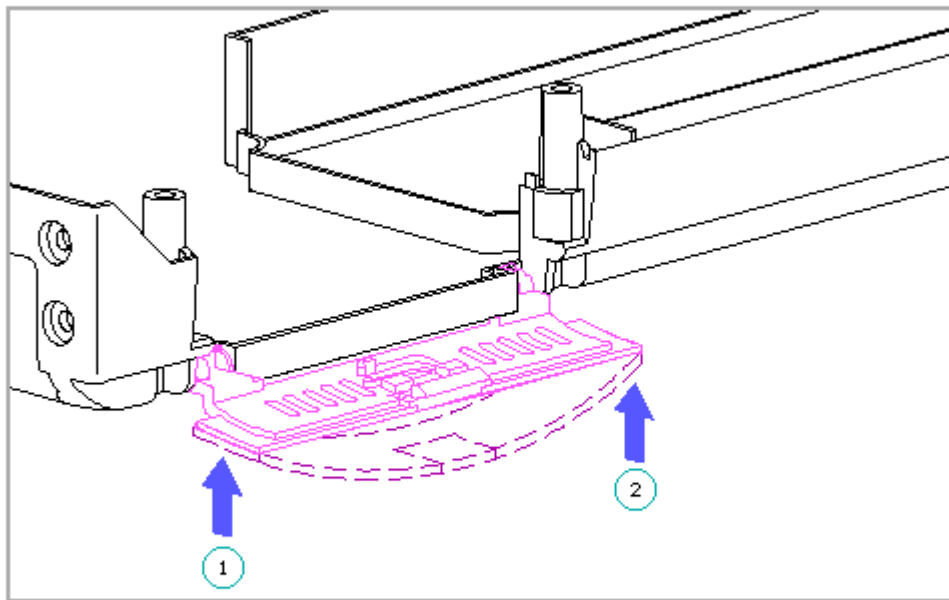


Figure 4-56. Replacing the PCMCIA Compartment Door

#### 4.21 Battery Pack/Hard Drive Release Latch Assemblies

This section covers removal and replacement procedures for the battery pack release latch assembly and the hard drive release latch assembly. Each assembly includes the following:

- o Release button
- o Latch
- o E-clip
- o Latch spring

The release buttons, latches, and latch springs work together as assemblies to release the battery pack and hard drive. The parts for the battery pack release latch assembly (located in the right side of the computer) are basically the reverse (a "mirror image") of the parts for the hard drive release latch assembly (located in the left side of the computer). Both assemblies work in a similar manner.

NOTE: Both release latch assemblies come preinstalled on the computer base enclosure when the computer base enclosure is spared. In addition, they are available in the Latches Kit (Table 3-8).









# Chapter 5 - Compaq LTE Elite Specifications

## Introduction

This chapter covers the following specifications of the Compaq LTE Elite Personal Computer:

- o Computer models
- o Physical and environmental
- o Memory expansion
- o Display
- o Diskette drive
- o Hard drive
- o Internal AC-to-DC power supply
- o DC-to-DC power supply
- o Battery pack

## 5.1 Computer Models

### Computer Model Specifications

Model	Display	Processor	Internal Cache	RAM	Hard Drive
4/75CX	9.5" Color TFT	486 DX4/75 MHz	16 KBYTE	8 MB	340 or 510 MB
4/50CX	9.5" Color TFT	486 DX2/50 MHz	8 KBYTE	8 MB	340 MB
4/40CX	8.4" Color TFT	486 DX2/40 MHz	8 KBYTE	4 MB	170 or 340 MB
4/50E	9.5" Mono TFT	486 DX2/50 MHz	8 KBYTE	4 MB	250 MB
4/40C	9.5" Color STN	486 DX2/40 MHz	8 KBYTE	4 MB	170 MB

## 5.2 Physical And Environmental

### Physical and Environmental Specifications

#### Dimensions:

Height	2.06 in	5.23 cm
Width	11.8 in	29.97 cm
Depth	8.9 in	22.60 cm

#### Weight:

With 9.5" Color STN Display	6.60 lb	3.0 kg
With 9.5" Mono TFT Display	6.74 lb	3.1 kg
With 8.4" Color TFT Display	6.64 lb	3.0 kg
With 9.5" Color TFT Display	6.73 lb	3.1 kg

Maximum Heat Output (calculated)      130 BTU/hr      38W

Stand-Alone (Battery Pack) Power Requirements: \*

Nominal Operating	11W @ 12 VDC
Maximum Average	16W @ 12 VDC
Peak Operating	24W @ 12 VDC

-----

AC Power Requirements:

Operating Voltage	100 - 120/220 - 240V RMS	
Operating Current	.8A/.4A RMS	
Operating Frequency	47 - 63 Hz	
Maximum Transient	Meets IEC 801-4 and IEC 801-5	

-----

Automobile Adapter Connector Input Requirements:

Operating Voltage	18.5 VDC +/-3%
Operating Power	29 - 35W

-----

Temperature Requirements:

Operating	50oF to 104oF	10oC to 40oC
Nonoperating **	-4oF to 140oF	-20oC to 60oC

-----

Maximum Rate of Temperature Change:

Operating	18oF/hr	10oC/hr
Nonoperating	36oF/hr	20oC/hr

-----

Relative Humidity Requirements:

Operating (non condensing)	10% to 90%
Nonoperating	5% to 95% ***

-----

Shock:

Operating	10G, 11 ms, half-sine
Nonoperating	60G, 11 ms, half-sine

-----

Vibration \*\*\*\*:

Operating	0.25G
Nonoperating	1.00G

-----

Maximum Unpressurized Altitude:

Operating	10,000 ft	3,048 m
Nonoperating	30,000 ft	9,144 m

-----

\* With DX2/40 processor

\*\* Battery pack performance lessens if battery pack is stored in temperatures above 86oF (30oC) for an extended period of time.

\*\*\* 102oF (38.7oC) maximum wet bulb

\*\*\*\* 0 to peak, 5 to 500 Hz sine, .5 octave/minute sweep rate

=====

## 5.3 Memory Expansion

### Memor Expansion Specifications

System Memory	Expansion Board Memory	Total Memory
4 MB	4 MB	8 MB
4 MB	8 MB	12 MB
4 MB	16 MB	20 MB
8 MB	4 MB	12 MB
8 MB	8 MB	16 MB
8 MB	16 MB	24 MB

## 5.4 Display

### Display Specifications

=====

Screen Size (width x height):

9.5" (Diagonal) Color TFT Typical Value	7.6 x 5.7 in	(192 x 144 mm)
8.4" (Diagonal) Color TFT Typical Value	6.7 x 5.1 in	(171 x 129 mm)
9.5" (Diagonal) Mono TFT Typical Value	7.6 x 5.7 in	(192 x 144 mm)
9.5" (Diagonal) Color STN Typical Value	7.6 x 5.7 in	(192 x 144 mm)

-----

Outline Dimensions:	Width	Height	Thickness
9.5" (Diagonal) Color TFT Typical Value	242.5 mm	179.9 mm	9 mm
8.4" (Diagonal) Color TFT Typical Value	242.5 mm	179.4 mm	9 mm
9.5" (Diagonal) Mono TFT Typical Value	242.5 mm	179.4 mm	12 mm
9.5" (Diagonal) Color STN Typical Value	243.5 mm	179.4 mm	10 mm

-----

Weight:

9.5" (Diagonal) Color TFT Typical Value	550g
8.4" (Diagonal) Color TFT Typical Value	500g
9.5" (Diagonal) Mono TFT Typical Value	575g
9.5" (Diagonal) Color STN Typical Value	550g

-----

Pixel (R + G + B): *	Pitch	Format	Configuration
9.5" (Diagonal) Color TFT Typical Value	.3 x .3 mm	640 x 480	RGB Stripe
8.4" (Diagonal) Color TFT Typical Value	.27 x .27 mm	640 x 480	RGB Stripe
9.5" (Diagonal) Mono TFT Typical Value	.3 x .3 mm	640 x 480	N/A

9.5" (Diagonal) Color STN Typical Value	.3 x .3 mm	640 x 480	RGB Stripe
--	------------	-----------	------------

---

Character Display:

9.5" (Diagonal) Color TFT Typical Value	80 x 25
--	---------

8.4" (Diagonal) Color TFT Typical Value	80 x 25
--	---------

9.5" (Diagonal) Mono TFT Typical Value	80 x 25
---	---------

9.5" (Diagonal) Color STN Typical Value	80 x 25
--	---------

---

Display Mode:

9.5" (Diagonal) Color TFT Typical Value	Normally White
--	----------------

8.4" (Diagonal) Color TFT Typical Value	Normally White
--	----------------

9.5" (Diagonal) Mono TFT Typical Value	Normally White
---	----------------

9.5" (Diagonal) Color STN Typical Value	Normally Black
--	----------------

---

Viewable Colors:

9.5" (Diagonal) Color TFT Typical Value	27K of 256K
--	-------------

8.4" (Diagonal) Color TFT Typical Value	27K of 256K
--	-------------

9.5" (Diagonal) Mono TFT Typical Value	N/A
---	-----

9.5" (Diagonal) Color STN Typical Value	4K of 256K
--	------------

---

Colors/Gray Scales:

9.5" (Diagonal) Color TFT Typical Value	256 colors at 640 x 480
--	-------------------------

8.4" (Diagonal) Color TFT Typical Value	256 colors at 640 x 480
--	-------------------------

9.5" (Diagonal) Mono TFT Typical Value	16 gray scales at 640 x 480, 640 gray scales at 320 x 200
---	--

9.5" (Diagonal) Color STN Typical Value	256 colors at 640 x 480
--	-------------------------

---

Contrast Ratio:

9.5" (Diagonal) Color TFT Typical Value	60:1
8.4" (Diagonal) Color TFT Typical Value	100:1
9.5" (Diagonal) Mono TFT Typical Value	20:1
9.5" (Diagonal) Color STN Typical Value	12:1

---

Brightness:

9.5" (Diagonal) Color TFT Typical Value	67 CD/M <sup>2</sup>
8.4" (Diagonal) Color TFT Typical Value	67 CD/M <sup>2</sup>
9.5" (Diagonal) Mono TFT Typical Value	67 CD/M <sup>2</sup>
9.5" (Diagonal) Color STN Typical Value	67 CD/M <sup>2</sup>

---

User Controls:

9.5" (Diagonal) Color TFT Typical Value	Brightness
8.4" (Diagonal) Color TFT Typical Value	Brightness
9.5" (Diagonal) Mono TFT Typical Value	Brightness
9.5" (Diagonal) Color STN Typical Value	Brightness and contrast

---

Backlight:

9.5" (Diagonal) Color TFT Typical Value	CCFT Edge-Lit at the Top
8.4" (Diagonal) Color TFT Typical Value	CCFT Edge-Lit at the Top
9.5" (Diagonal) Mono TFT Typical Value	CCFT Edge-Lit at the Top
9.5" (Diagonal) Color STN Typical Value	CCFT Edge-Lit at the Top

---

Connector Location for Display Cable:

9.5" (Diagonal) Color

TFT Typical Value	Left side on bottom of panel
8.4" (Diagonal) Color TFT Typical Value	Left side on bottom of panel
9.5" (Diagonal) Mono TFT Typical Value	Bottom of panel (right angle ZIF connector facing left)
9.5" (Diagonal) Color STN Typical Value	Left side on bottom of panel

-----  
Display Inverter Board: (@ maximum brightness setting)

	Operating Voltage	Lamp Current	Input Power
9.5" (Diagonal) Color TFT Typical Value	500 VRMS Typical	5 ma	3.2W @ 12V
8.4" (Diagonal) Color TFT Typical Value	500 VRMS Typical	5 ma	3.2W @ 12V
9.5" (Diagonal) Mono TFT Typical Value	500 VRMS Typical	3 ma	2.0W @ 12V
9.5" (Diagonal) Color STN Typical Value	500 VRMS Typical	5 ma	3.2W @ 12V

-----  
Total Power Consumption:

9.5" (Diagonal) Color TFT Typical Value	4W
8.4" (Diagonal) Color TFT Typical Value	4W
9.5" (Diagonal) Mono TFT Typical Value	3.0W
9.5" (Diagonal) Color STN Typical Value	4W

-----  
\* a certain number of pixels are allowed to be out, due to limitations in LCD technology.  
=====

## 5.5 Diskette Drive

### Diskete Drive Specifications

=====

Capacity per Diskette (High/Low)	1.44 MB/720 KBYTE *
-----	-----
Diskette Size	3.5 in
-----	-----
Number of LED Indicators (Read/Write)	1 (Green)
-----	-----
Number of Drives Supported	1



Drive Rotation (rpm)	300
Transfer Rate (bps) (High/Low)	500K/250K
Bytes per Sector	512
Sectors per Track (High/Low)	18/9
Tracks per Side (High/Low)	80/80
Access Times:	
Track-to-Track (ms)	3/6
Average (ms)	80/160
Settling Time (ms)	15
Latency Average (ms)	100
Cylinders (High/Low)	80/80
Number of Read/Write Heads	2

\* 1.2 MB Japanese standard also supported.

## 5.6 Hard Drive

### Hard rive Specifications

	170 MB	250 MB	340 MB	510 MB
Capacity Per Drive	172 MB	250.3 MB	344 MB	514 MB
Drives Supported	1	1	1	1
Form Factor	2.5 x .5 in	2.5 x .5 in	2.5 x .5 in	2.5 x .5 in
Drive Type	65	20	65	65
Sector Interleave	1:1	1:1	1:1	1:1
Controller	Integrated	Integrated	Integrated	Integrated
Logical Configuration:				
Cylinders	989	485	915	996
Heads	10	16	15	16
Sectors per track	34	63	49	63
Bytes per sector	512	512	512	512
Seek Times (Typical, Including settling in ms):				
Single track	9	3	9	5
Average	17	12	17	17
Full stroke	26	30	26	24
Transfer Rate:				

At interface	6.0 MB/sec.	8.0 MB/sec.	6.0 MB/sec.	4.0 MB/sec.
At head	20-32 Mb/sec.	19.56-28.28 Mb/sec.	20-32 Mb/sec.	21.07-35.90 Mb/sec.

## 5.7 Internal AC-TO-DC Power Supply

### Internal AC-TO-DC Power Supply Dimensions

#### Dimensions:

Height	.88 in	2.22 cm
Width (not including mounting bracket)	4.29 in	10.89 cm
Depth (not including AC receptacle)	2.34 in	5.93 cm

Weight	0.256 lb	0.116 kg
--------	----------	----------

#### AC Inputs:

Operating Voltage	100 - 120/220 - 240 V RMS
Maximum Steady State Input Current (Operating Current)	.8/.4A RMS
Operating Frequency	47 - 63 Hz

#### DC Outputs:

Maximum Output Voltage	18.5V
Maximum Output Current	3A
Maximum Output Power	30W

## 5.8 DC-TO-DC Power Supply

NOTE: The DC-to-DC power supply is integrated into the system board. To replace the DC-to-DC power supply, the system board must be replaced.

### DC-TO-DC Power Supply Specifications

#### DC Input Requirements:

Input Voltage	10.0 - 20.0 V
Standby	6.5 - 17.0 V
Input Fuse	5.0A

#### Power Output:

Nominal	11W
Peak	24W

Cooling Method                      Natural convection (forced air when fan is operating)

#### DC OUTPUT:

Nominal Voltage	Current Minimum	Maximum Continuous Current	Maximum Peak Current	Regulation Tolerance	Average Power
3.3V	0.0A	3.1A	3.1A	+ - 4%	5.2W
5.075V	0.0A	3.0A	3.4A	+ - 4%	5.8W
12.0V	0.0A	0.06A	0.06A	+ - 5%	0.012W

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## 5.9 Battery Pack

### Battery Pack Specifications

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Type Nickel Metal Hydride (NiMH)

---

#### Dimensions:

Height	.8 in	2.1 cm
Length	5.9 in	15.1 cm
Width	3.8 in	9.7 cm

---

Weight 1.2 lb .6 kg

---

Battery Operating Time: *	Hours
4/75CX	2.5 - 4.0 hr
4/50CX	2.5 - 4.5 hr
4/40CX	2.5 - 5.0 hr
4/50E	3.0 - 5.5 hr
4/40C	3.0 - 5.5 hr

---

#### Energy:

Nominal Open Circuit Voltage	12V (14V fully charged)
Capacity	2.2 Ah
Power	26.4W

---

#### Environmental Requirements:

Operating Temperature	50oF to 104oF	10oC to 40oC
Nonoperating (Storage) Temperature **		
No time limit	-4oF to 86oF	-20oC to 30oC
Maximum of 3 months	-4oF to 104oF	-20oC to 40oC
Maximum of 1 month	-4oF to 122oF	-20oC to 50oC
Charging Temperature ***	59oF to 95oF	15oC to 35oC

---

\* Based on worst to best case, depending on variables such as Power Management settings, hardware configuration, software applications, and installed options.

\*\* Battery pack performance lessens if battery pack is stored in temperatures above 86oF (30oC) for an extended period of time.

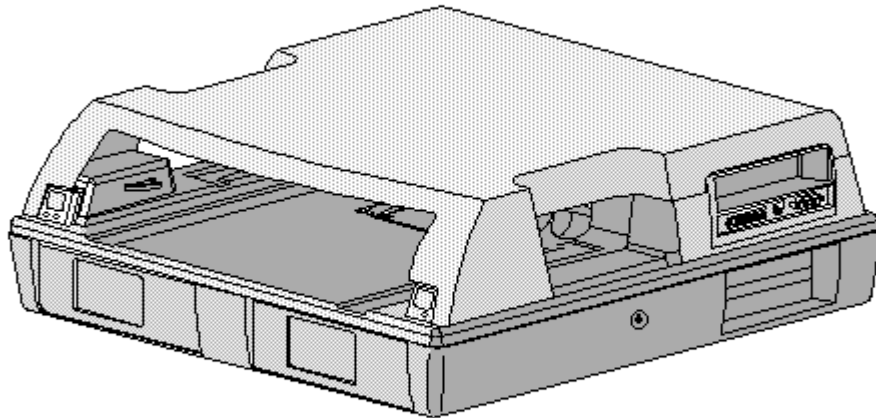
\*\*\* The computer can operate in temperatures from 50oF to 104oF (10oC to 40oC), but the battery charger can only fully charge in temperatures from 59oF to 95oF (15oC to 35oC).

---

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# Chapter 6 - Compaq SmartStation Product Overview

## Introduction



Compaq SmartStation

This chapter is an overview of the Compaq SmartStation and covers the following topics:

- o Serial number
- o System overview
- o Features
- o External switches, sensors, and LEDs
- o Connectors
- o Functional descriptions
- o Running Computer Setup
- o Power management
- o Security

### 6.1 Serial Number

The serial number for the Compaq SmartStation should be provided to Compaq whenever requesting information or ordering spare parts. The serial number

for the Compaq SmartStation appears on a label near the connectors on the rear or side of the unit.

## 6.2 System Overview

An automatic docking mechanism in the Compaq SmartStation docks the Compaq LTE Elite Family of Personal Computers (Figure 6-1) or the Compaq LTE Lite Family of Personal Computers (Figure 6-2). A Compaq LTE Lite must have a SmartStation Adapter connected to it before it can dock. Refer to Appendix D, "Docking and Undocking", for more information on using the SmartStation Adapter.

NOTE: Early model Compaq LTE Personal Computers (not Compaq LTE Lite models) such as the Compaq LTE 386s/20 cannot dock in the Compaq SmartStation.

When the computer is docked, the 198-pin external options connector handles the entire electrical interface (both power and signal connections) between the computer and the expansion base.

The expansion base provides the computer with two drive bays, two expansion board slots, built-in network capability, pass-through connections for external equipment, a battery charger for a Compaq LTE Elite spare battery pack, and other features. Refer to Section 6.3 for a list of the expansion base features.

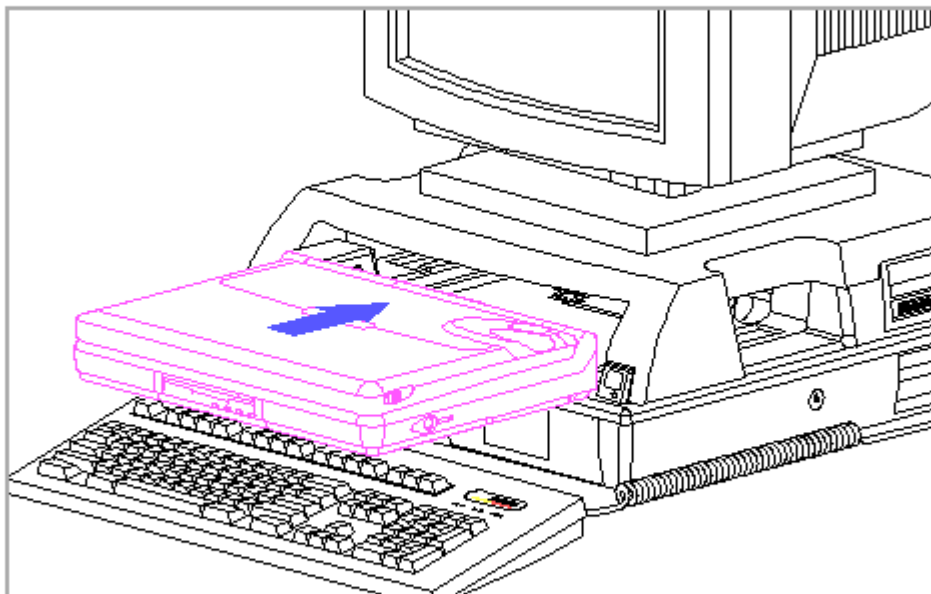


Figure 6-1. Docking the Compaq LTE Elite in the Compaq SmartStation

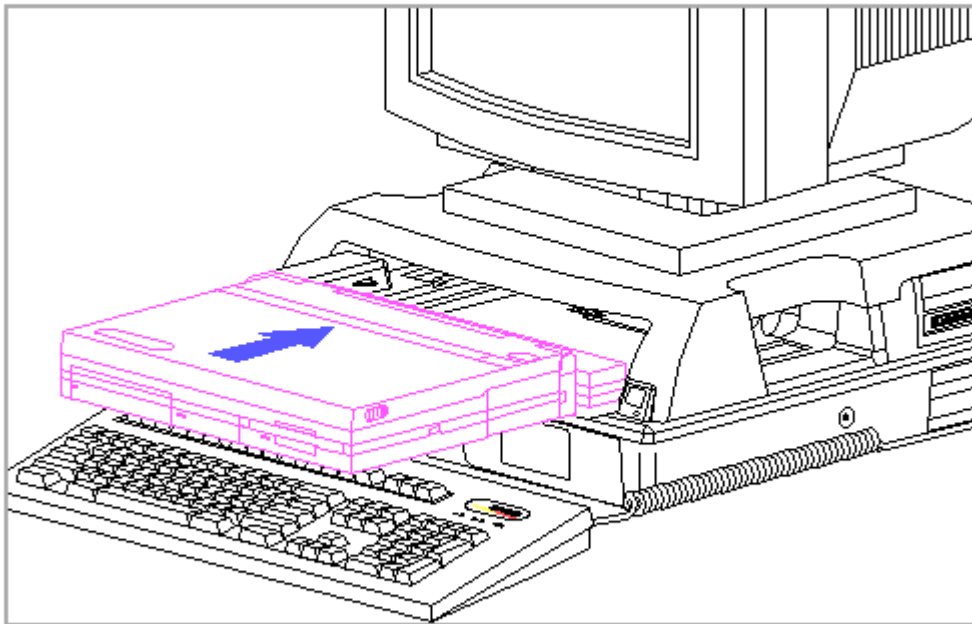


Figure 6-2. Docking the Compaq LTE Lite (with SmartStation Adapter) in the Compaq SmartStation

### 6.3 Features

The Compaq SmartStation provides the following features:

- o Motorized docking mechanism for easy docking and undocking of the computer.
- o The following sensors to help prevent improper docking or undocking:
  - Computer-present sensor (to detect when the computer is in the docking bay)
  - Computer status sensor (to determine the on, off, or Standby status of the computer)
  - Motor loaded/unloaded sensor (to verify that the computer is completely docked or undocked)
  - A PCMCIA card sensor to detect the protrusion of a PCMCIA card or cable when undocking
- o A keylock switch that electronically disables the docking mechanism (to prevent unauthorized docking and undocking of the computer)

- o DC power to the computer when it is docked
- o Ability to fast charge the battery pack in the computer whether the expansion base is on or off
- o Ability to fast charge an additional Compaq LTE Elite battery pack in the SmartStation battery charging compartment
- o Two full-sized slots for 8- or 16-bit Industry Standard Architecture (ISA) expansion boards
- o Two internal half-height drive bays
- o Ability to start a docked Compaq LTE Elite computer from the computer's hard drive or from an IDE hard drive in the expansion base
- o An integrated SCSI-2 controller that supports up to seven SCSI-2 devices, including one internal SCSI-2 drive
- o An integrated Ethernet controller (with RJ-45 and AUI connectors)
- o The following standard external device connectors:
  - PS/2 mouse
  - External keyboard (enhanced 101/102-key)
  - External monitor
  - Serial (RS-232C compliant)
  - SCSI-2
  - Ethernet AUI (IEEE 802.3 10BASE5 or 10BASE2 with optional Thinnet Coax Transceiver)
  - Ethernet RJ-45 (IEEE 802.3 10BASE-T)
  - Parallel

NOTE: The parallel port is Centronics compatible, EPP 1.9 compliant, when the Compaq LTE Elite is docked.

- o A removable monitor support cover capable of supporting an external monitor weighing up to 55 lb (25 kg)
- o Horizontal guides, keylock assembly, and override blocker for securing the computer to the expansion base
- o Provision for an optional cable lock for securing the expansion base to a stationary object
- o Ability to use power conservation mode for IDE hard drives and Energy Star compliant monitors (when used with Compaq LTE Elite computer only)

- o Manual eject override mechanism to allow the computer to be removed from the expansion base in the event of mechanical or power failure

## 6.4 External Switches, Sensors, And LEDS

This section covers the expansion base external switches, sensors, and LEDS (Figure 6-3).

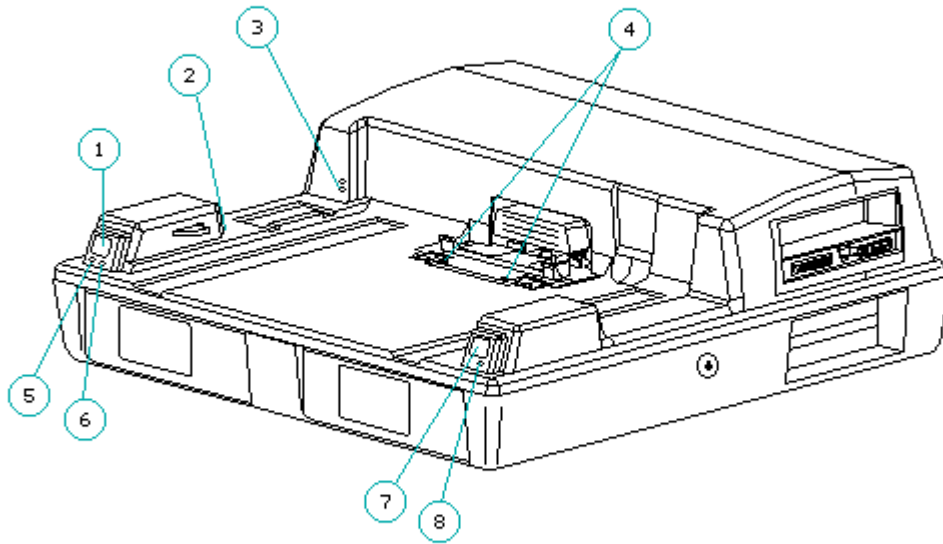


Figure 6-3. External Switches, Sensors, and LEDS

1. Power switch
2. PCMCIA card sensor receiver
3. PCMCIA card sensor emitter
4. Computer status sensor
5. Power LED
6. Hard drive LED
7. Eject switch
8. Battery charger LED

### Power Switch

The expansion base has a momentary type power switch [1] (Figure 6-3) on the front left of the unit. After the computer is docked, this switch provides power to the main expansion base circuits and to the computer. Refer to "Power Switch" in Section 6.6 for more information.



## Eject Switch

The expansion base has a momentary type eject request switch [7] (Figure 6-3) on the front right of the unit that undocks the computer from the expansion base. Refer to "Eject Switch" in Section 6.6 for more information.

## PCMCIA Card Sensor (Emitter and Receiver)

The PCMCIA card sensor is a two-part sensor consisting of a receiver [2] and an emitter [3] (Figure 6-3). The sensor prevents undocking when it detects that a PCMCIA card or cable extends beyond the safe limits of the PCMCIA slot in the Compaq LTE Elite. Refer to Section 6.6 for more information on the PCMCIA card sensor.

## Computer Status Sensor

The computer status sensor [4] (Figure 6-3) is a two-part sensor on the docking mechanism. Refer to Section 6.6 for more information on the computer status sensor.

## LEDs

The expansion base has the following LEDs on the front of the expansion base (Figure 6-3):

- [5] Power
- [6] Hard drive
- [7] Battery charger

Table 6-1 lists the LED functions.

Table 6-1. LED Functions

LED Name	Status	Indication	Color
Power	On	Expansion base and CPU power on	Green
	Off	Expansion base and CPU power off	
Drive Activity	On	Hard drive being accessed	Green
	Off	Hard drive not accessed	
Battery Charger	On	Spare battery pack fast charging	Orange
	Off	Spare battery pack trickle charging or no spare battery present	
	Flashing	Battery fault:  Spare battery pack will not hold a charge and has reached end of its usefulness.  Spare battery pack internal fuel gauge is inoperative.  Spare battery pack temperature gauge is inoperative.	

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## A/B and C/D Drive Selection Switches

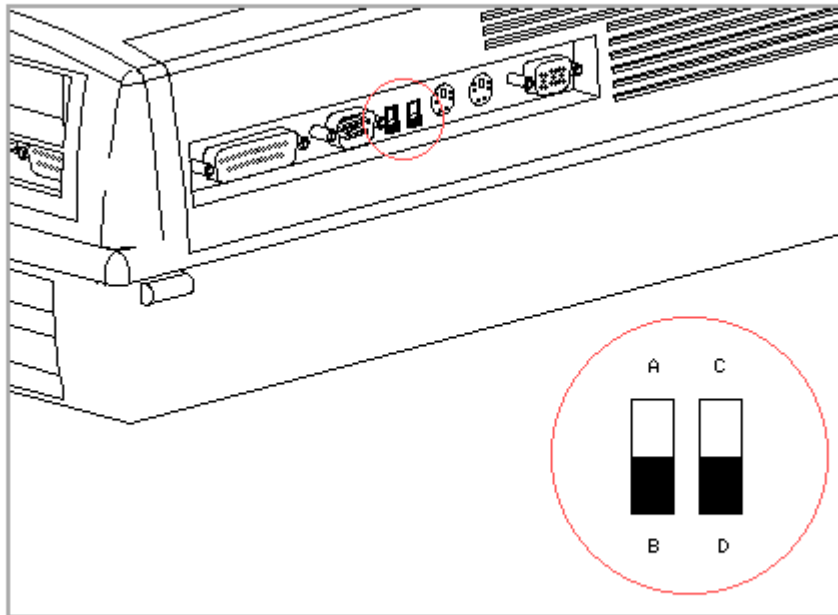


Figure 6-4. A/B and C/D Drive Selection Switches

The A/B and C/D drive selection switches are mounted on the system board and accessible from the outer rear panel (Figure 6-4).

The A/B drive selection switch sets an optional diskette drive in the expansion base to operate as logical drive A (for using bootable diskettes) or as logical drive B. The C/D drive selection switch sets an optional IDE hard drive in the expansion base to be designated as logical drive C (the boot drive) or as logical drive D.

**NOTE:** When a Compaq LTE Lite is docked in the expansion base, an IDE hard drive in the SmartStation cannot be set as logical drive C or used as the boot drive. Setting the C/D drive selection switch to C has no effect.

Refer to Appendix C, "Configuring the System for Optional Drives in the Compaq SmartStation," for information about configuring optional drives and about using the A/B and C/D switches.

## 6.5 Connectors

This section covers external input/output (I/O) connectors and the internal drive bay connectors for the Compaq SmartStation. Refer to Appendix A for connector pin assignments.

#### External I/O Connectors

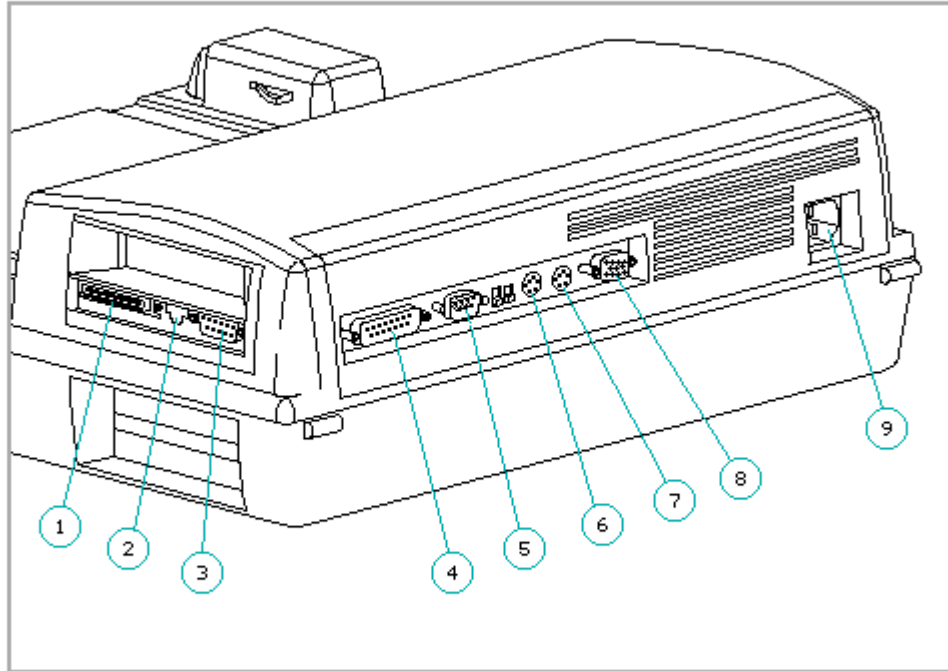


Figure 6-5. External I/O Connectors (Rear View)

1. SCSI-2
2. Ethernet TPE RJ-45
3. Ethernet AUI DB-15
4. Parallel
5. Serial
6. Mouse
7. External keyboard
8. External monitor
9. AC power

#### 198-Pin External Options Connector

The 198-pin external options connector (Figure 6-6) handles the entire electrical interface between the expansion base and the computer. The external options connector automatically mates with the connector on the computer during docking.

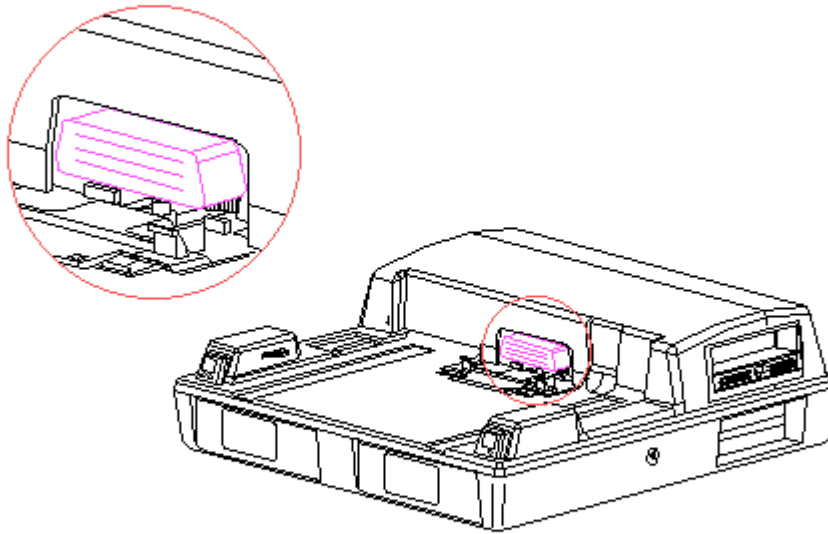


Figure 6-6. 198-Pin External Options Connector

### Internal Drive Connectors

Drive cables connect to the following connectors on the vertical circuit board or the system board:

- o 40-pin IDE hard drive signal connector (vertical circuit board)
- o 34-pin diskette/tape drive signal connector (vertical circuit board)
- o 4-pin diskette/tape drive power connector (vertical circuit board)
- o 50-pin SCSI-2 connector (system board)

For ease of identification, the vertical circuit board (also known as the "backplane board") and system board (also known as the "interconnect board") each have a printed description of where the drive cables connect.

## 6.6 Functional Descriptions

This section covers functional descriptions of key parts and features of the Compaq SmartStation. For assembly/disassembly instructions for the parts described in this section, refer to Chapter 4, "Compaq LTE Elite Removal and Replacement Procedures."

### System Board

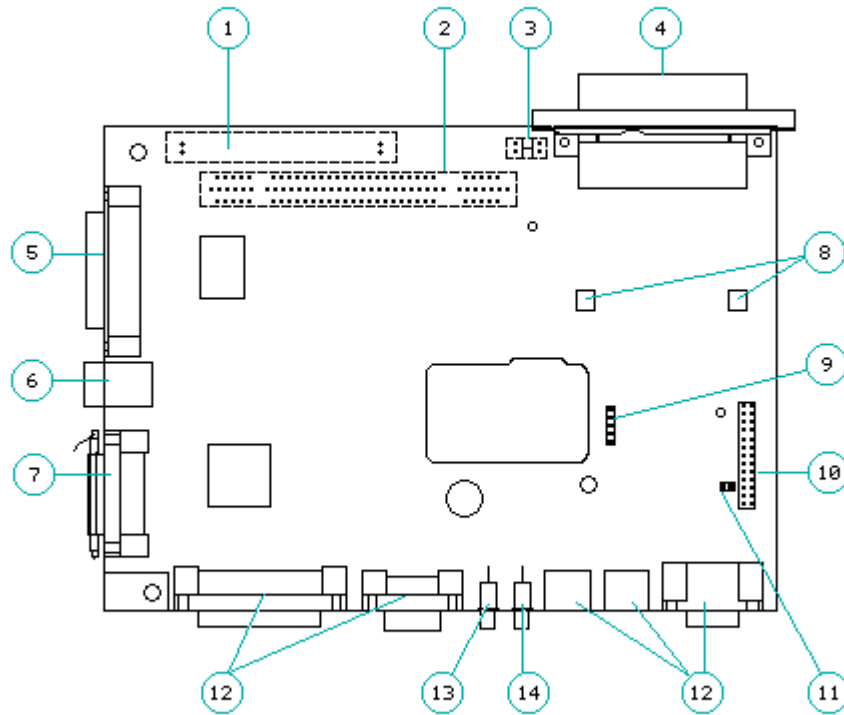


Figure 6-7. System Board

The following connectors, switches and sensors are on the system board (Figure 6-7):

1. Internal SCSI-2 connector
2. Card edge connector for the vertical circuit board
3. Computer-present sensor
4. 198-pin external options connector for handling power and signal information between the expansion base and computer
5. SCSI-2 connector
6. Ethernet RJ-45 connector
7. Ethernet AUI DB-15 connector
8. Motor position sensor
9. Connector for battery contacts board for the battery charger
10. Connector for the harness extension cable

11. Connector for docking mechanism motor
12. All pass-through I/O connectors
13. A/B switch
14. C/D switch

The following controllers are on the system board:

- o Ethernet controller
- o SCSI-2 controller
- o Microcontroller (controls the battery charger, power up/down sequencing, motor for the docking mechanism, and plug and play features for docking and undocking)

#### Computer-Present Sensor

The computer-present sensor [3] (Figure 6-7) is an optical sensor on the system board that detects when a computer is present in the docking bay of the expansion base. When a computer is placed in the docking bay, the computer pushes back a spring-loaded part that interrupts this sensor.

The computer-present sensor is integrated into the system board. To replace the computer-present sensor, the system board must be replaced.

#### Motor Position Sensor

The motor position sensor [8] (Figure 6-7) is an optical sensor on the system board that indicates when the computer is completely docked or undocked by detecting a reflective spot on the docking mechanism gear.

The motor position sensor is integrated into the system board. To replace the motor position sensor, the system board must be replaced.

#### Ethernet Controller

The expansion base has an integrated Ethernet controller that provides network support with an AUI connector and an RJ-45 connector (Section 6.5). The RJ-45 connector connects to 10BASE-T networks. The AUI connector connects to 10BASE5 networks or (with an optional Thinnet Coax Transceiver) to 10BASE2 networks. There is full +12V support on the AUI connector.

#### SCSI-2 Controller

The expansion base has an integrated SCSI-2 controller with active SCSI-2 termination on the SCSI-2 bus. The expansion base has an internal and external SCSI-2 connector (Section 6.5).

#### Battery Charger



circuits:

- o Main expansion base circuit (+/- 5 volts, +/- 12 volts)
- o VBatt1 circuits (10 to 18.5 volts)
- o VBatt2 circuits (10 to 18.5 volts)

The outputs to the above circuits are located on an edge card connector in the power supply. The vertical circuit board plugs into this edge card connector to distribute power to the unit.

Refer to Appendix A for pin assignments for the power supply output connector.

Figure 6-9 illustrates the function of the power supply output circuits.

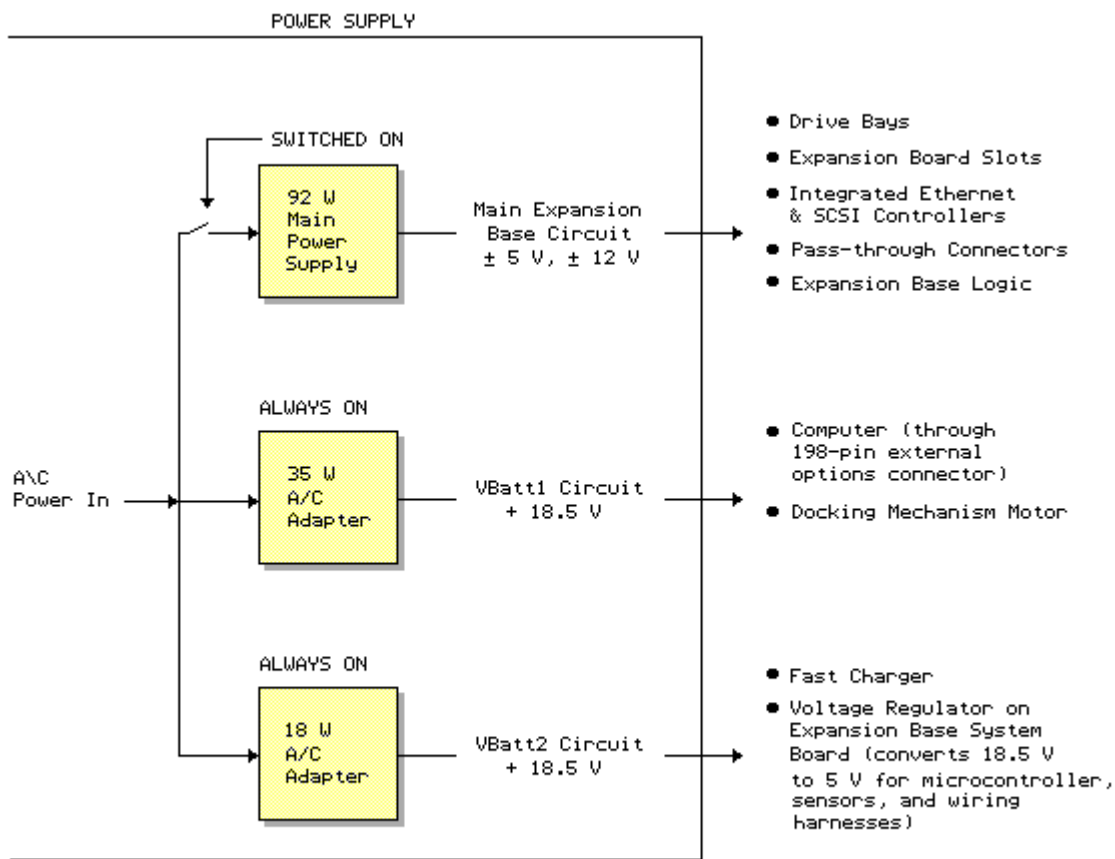


Figure 6-9. Power Supply Output Circuits

### Main Expansion Base Circuit

The main expansion base circuit provides +/- 5 volts and +/- 12 volts to the following:

- o Internal drive bays
- o Expansion board slots
- o Integrated Ethernet and SCSI-2 circuitry
- o All pass-through connectors



## VBatt1 Circuits

The VBatt1 circuits provide 10 to 18.5 volts to the following:

- o Computer (while docked)
- o Docking mechanism

## VBatt2 Circuits

The VBatt2 circuits provide 10 to 18.5 volts to the following:

- o Battery charger in expansion base
- o Voltage regulator on the expansion base system board, which converts 18.5 volts to 5 volts for the microcontroller, sensors, and wiring harness.

NOTE: The microcontroller controls the VBatt2 circuits.

## Power-Up Sequencing

The VBatt1 and VBatt2 circuits power up whenever the expansion base is connected to external power, whether the expansion base is on or off. This allows a battery pack to be charged both in the computer and the expansion base while power is off to the rest of the system.

The main expansion base circuits do not power up until the computer is fully docked and the power switch is pressed. Once this happens, the controller sends out a power-up signal to the main expansion base circuits and a power-up signal to the docked computer.

NOTE: When a Compaq LTE Lite is docked in the expansion base, power for the system can be turned on only with the expansion base power switch. When a Compaq LTE Elite is docked in the expansion base, power can be turned on with either the expansion base power switch or the computer power switch.

## Docking Mechanism

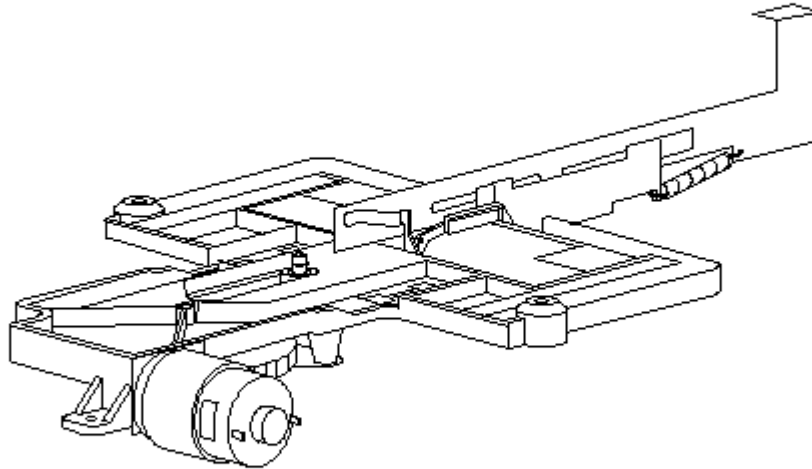


Figure 6-10. Docking Mechanism

The expansion base has a motorized docking mechanism (Figure 6-10) that docks and undocks the computer. The mechanism uses a sled apparatus; draw hooks on the sled mate with notches in the bottom of the computer. The mechanism does not operate if the unit is locked with a key or if a sensor detects an undesirable condition such as an open PCMCIA door when a request to undock is made.

If a computer cannot automatically undock from the expansion base due to a malfunction or power failure, it can be manually undocked to override the automatic docking mechanism.

Refer to Appendix D for procedures on automatic docking/undocking and manual override undocking.

Computer Status Sensor

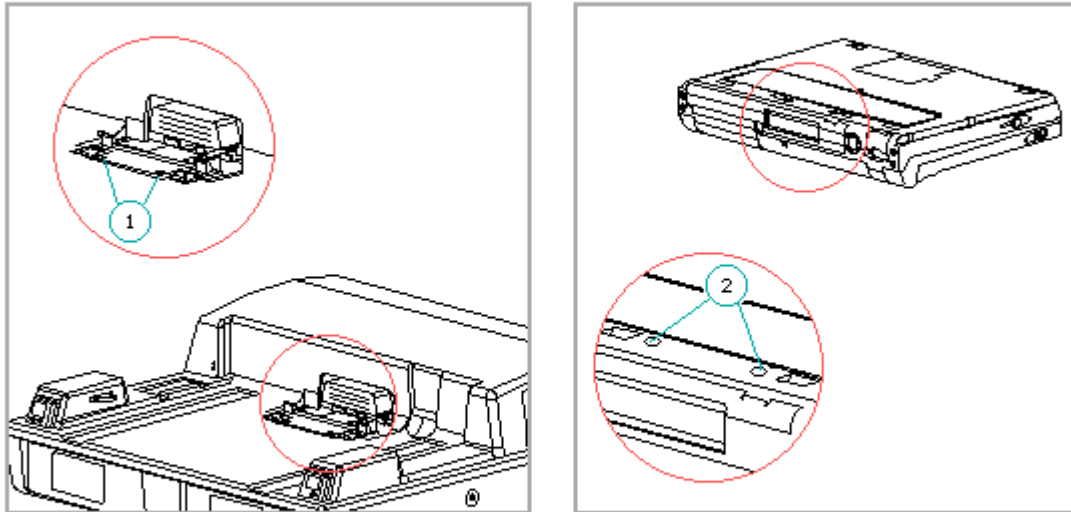


Figure 6-11. Computer Status Sensor

The expansion base has a two-part computer status sensor [1] (Figure 6-11) on the docking mechanism sled. This sensor corresponds to two sense pads on the bottom of the Compaq LTE Elite [2] or the bottom of a SmartStation Adapter when connected to a Compaq LTE Lite. The computer status sensor/sense pad combination indicates whether the computer is on, off, or in Standby. The expansion base uses this information to determine if the computer should be allowed to dock/undock. Refer to Appendix D for more information on docking and undocking.

The computer status sensor is integrated into the docking mechanism. To replace the computer status sensor, the docking mechanism must be replaced.

#### Vertical Circuit Board

The following connectors and switches are on the vertical circuit board (Figure 6-12):

1. Drive power cable connector
2. IDE hard drive signal cable connector
3. Tape/diskette drive signal cable connector
- 4, 5. Two full-sized ISA expansion board slots

6. Edge card connection to the power supply
7. Edge card connector to the system board
8. Configuration switches for optional drives

In addition, the circuitry for the expansion base registers and hard drive decode are on the vertical circuit board.

#### Configuration Switches

The configuration switches [8] (Figure 6-12) are accessible when the bottom cover is removed. The configuration switch settings are listed on a label on the bottom of the drive cage in drive position 1 (Figure 6-14). Refer to Appendix C, "Configuring the System for Optional Drives in the Compaq SmartStation", for more information on setting the configuration switches.

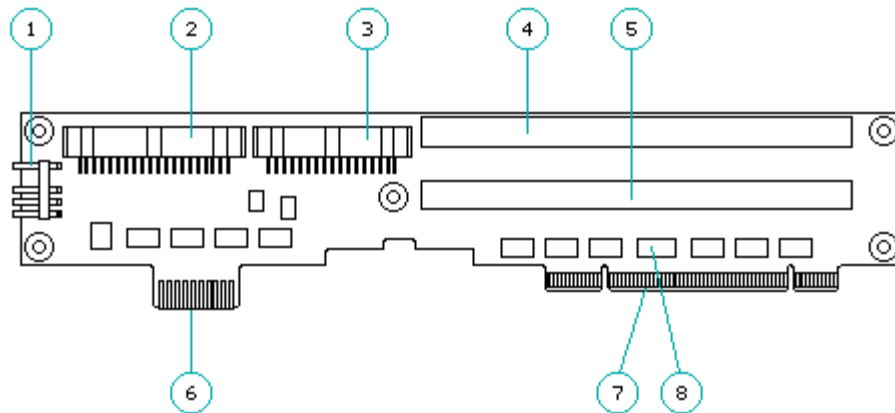


Figure 6-12. Vertical Circuit Board

#### ISA Expansion Board Cage

The expansion board cage [1] attaches to the vertical circuit board [2] (Figure 6-13). The expansion board cage accepts two full-size Industry Standard Architecture (ISA) 8-/16-bit expansion slots [3], [4]. The slots line up with two vertical through hole card edge connectors [5], [6] on the vertical circuit board.

IMPORTANT: Skirted expansion boards cannot be installed in the expansion board connector that is next to the drive cable connectors [5] (Figure 6-13).

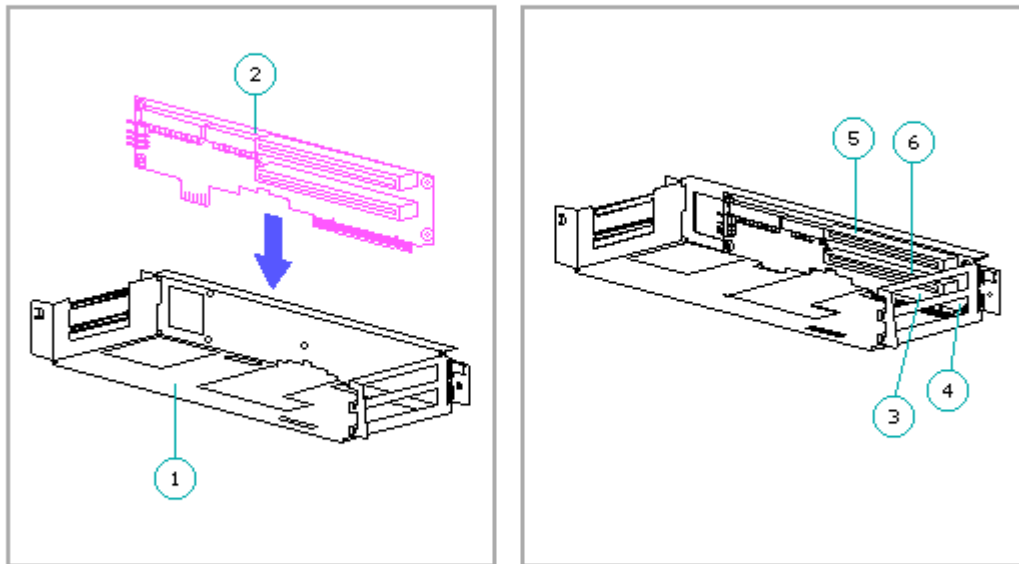


Figure 6-13. Expansion Board Cage with Vertical Circuit Board

Drive Cages/Drive Bays

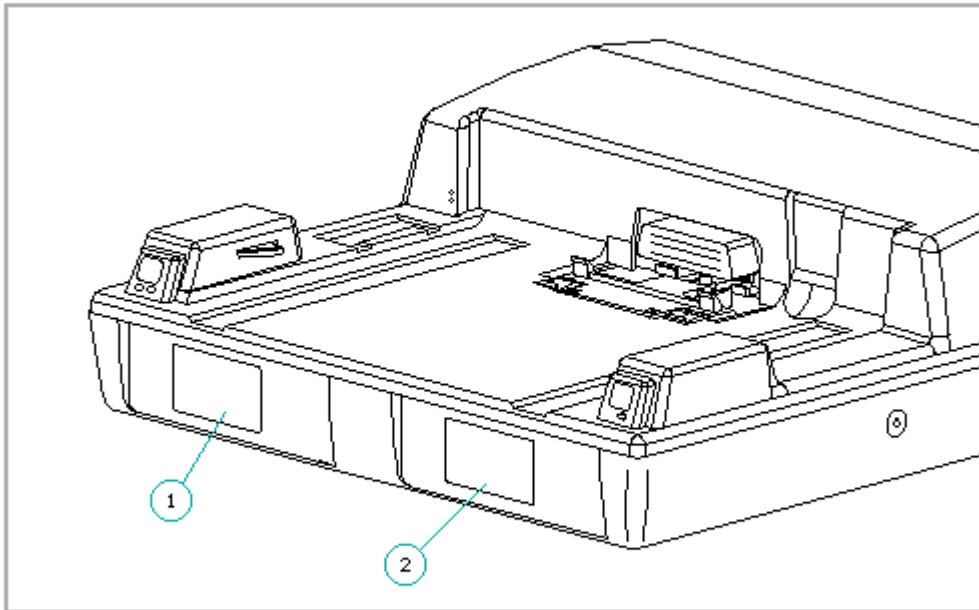


Figure 6-14. Drive Bays

The expansion base has two half-height drive cages for installing internal drive options in the drive bays. The expansion base comes from the factory with blank panels that cover the drive bay openings. The drive bays are designated as drive positions 1 and 2 [1], [2] (Figure 6-14).

To be supported in the expansion base, drives must meet the power requirements in Section 10.2, and the dimension requirements in Section 10.1.

Refer to Appendix C to configure the system for drives other than SCSI-2. Refer to Appendix F to configure the system for SCSI-2 drives.

#### Drive Cables

The expansion base is shipped with one each of the following drive cables:

- o Drive power
- o IDE hard drive signal
- o Tape/diskette drive signal
- o Internal SCSI-2

For ease of identification, the vertical circuit board (also known as the

"backplane board") and the system board (also known as the "interconnect board") each have a printed description of where the drive cables connect. Each drive cable also has a printed description, a Compaq spare part number, and a Compaq assembly part number. Refer to Section 9.15 for more information on drive cable locations.

#### Power Switch Cable Harness

The power switch cable harness [7] (Figure 6-15) runs from the power switch [8] to the harness extension cable on the system board [1] and includes the following:

- o Power switch and its soldered cable
- o Cables for the computer status sensor
- o Connectors for the PCMCIA card sensor (emitter and receiver)
- o Power and hard drive LEDs (integrated into the power switch board)

#### Power Switch

The momentary type power switch [8] (Figure 6-15) provides power to the main expansion base circuits if it is pressed after a computer is docked (refer to "Power Supply" in this section).

The power switch is connected to the power switch cable harness and is composed of the power switch board and small mechanical parts. The small mechanical parts (button, spring, frame, and light pipes) can also be replaced separately using parts from the Miscellaneous Small Mechanical Parts Kit (Table 8-8).

NOTE: The power switch board is integrated into the power switch cable harness. To replace the power switch board, the power switch cable harness must be replaced (refer to Section 9.17).

#### Eject Switch Cable Harness

The eject switch cable harness [3] runs from the eject switch [4] to the harness extension cable on the system board [1] (Figure 6-15) and includes the following:

- o Eject switch and its soldered cable
- o Keylock switch and its soldered cable
- o Battery charger LED (integrated into the eject switch board)

#### Eject Switch

The momentary type eject switch [4] (Figure 6-15) undocks the computer from the expansion base after certain conditions are met (Appendix D).

The eject switch is connected to the eject switch cable harness and is composed of the eject switch board and small mechanical parts. The small mechanical parts (button, spring, frame, and light pipes) can also be

replaced separately using parts from the Miscellaneous Small Mechanical Parts Kit (Table 8-8).

NOTE: The eject switch board is integrated into the eject switch cable harness. To replace the eject switch board, the eject switch cable harness must be replaced (Section 9.17).

#### Keylock Switch

The keylock switch [2] (Figure 6-15) is connected to the eject switch cable harness. The keylock switch is actuated by the keylock assembly and is closed when the keylock is in the locked position (refer to "Keylock Assembly and Override Blocker" in this section). When the microcontroller detects a closed keylock switch, it prevents power from being connected to the docking mechanism, thus preventing the computer from docking or undocking.

The keylock switch is integrated into the eject switch cable harness. To replace the keylock switch, the eject switch cable harness must be replaced.

#### PCMCIA Card Sensor (Emitter and Receiver)

The PCMCIA card sensor is a light curtain type, with two parts: an emitter board [5] and a receiver board [6] (Figure 6-15). The card sensor detects the presence of a PCMCIA card or card cable that extends beyond the safe limits of the PCMCIA slot. When the sensor detects that the spring-loaded PCMCIA door is open, it does not allow the computer to undock, thereby preventing damage to the PCMCIA card and connector.

Refer to Appendix D for more information on undocking.



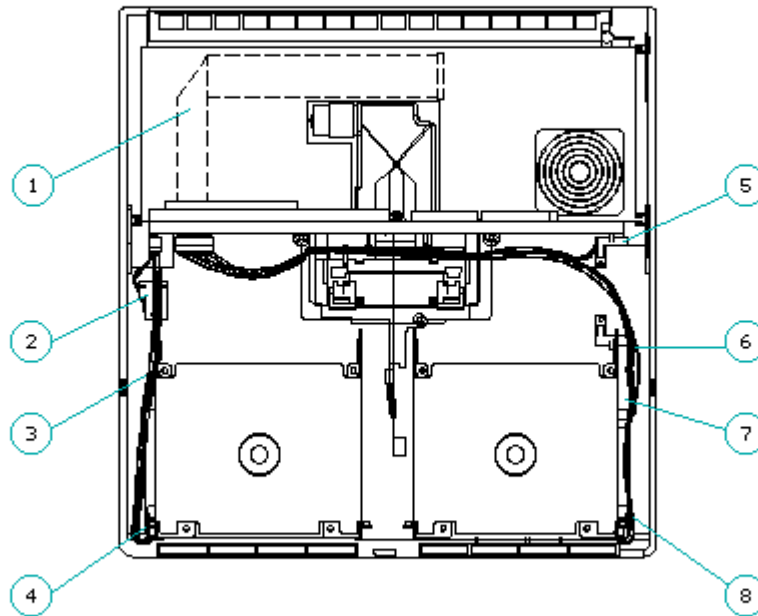


Figure 6-15. Cable Harnesses, Switches, and Sensors

#### Keylock Assembly and Override Blocker

The keylock assembly [1] and override blocker [2], located in the bottom cover, work together to provide system security (Figure 6-16).

The keylock assembly mechanically locks the bottom and top cover of the expansion base together and closes the keylock switch. When closed, the keylock switch electronically disables the docking mechanism (to prevent unauthorized docking and undocking of the computer).

When locking the expansion base, the keylock assembly moves the override blocker to cover the manual eject override slot [3] to prevent unauthorized manual ejecting of the computer (Figure 6-16).

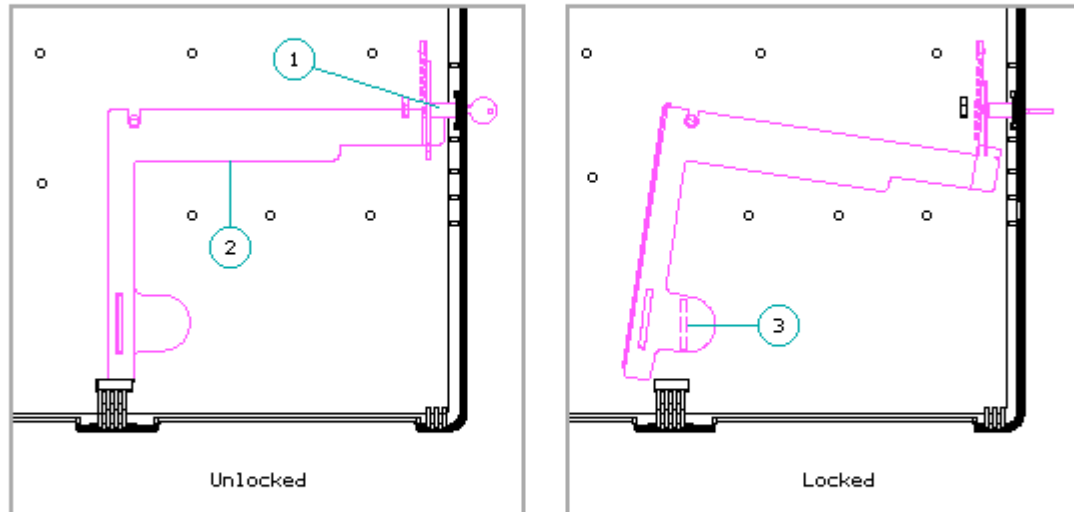


Figure 6-16. Keylock Assembly and Override Blocker

The keylock assembly is replaceable. The blocker is integrated into the bottom cover. To replace the blocker, the bottom cover must be replaced.

NOTE: In addition to the keylock assembly, the expansion base is designed with a provision for an optional cable lock to secure the expansion base to an immovable object (Section 6.9).

Horizontal Guides

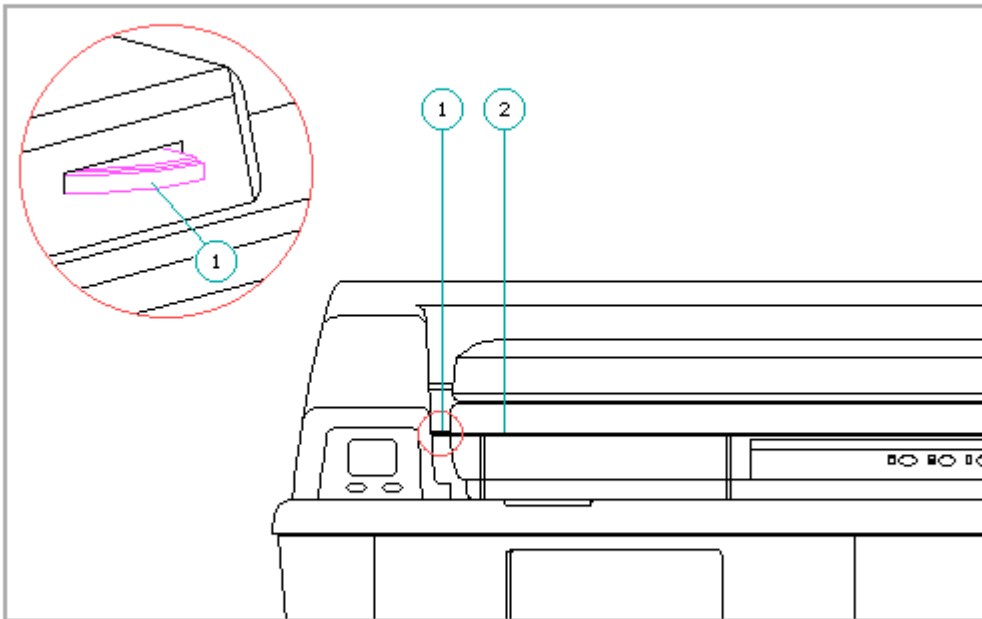


Figure 6-17. Horizontal Guides

Two horizontal guides [1] located at the front of the docking bay (Figure 6-17) help align the computer in the expansion base. The horizontal guides engage in the grooves that are located between the upper and lower halves of the computer [2]. The guides also prevent the computer from being vertically removed while it is docked in the expansion base to prevent damage to the connectors and to provide additional security.

## 6.7 Running Computer Setup

The first time you dock the computer in the expansion base or install optional devices, the computer may detect a configuration change and prompt you to run Computer Setup.

If you are using a Compaq LTE Elite in the SmartStation, run Computer Setup from the computer hard drive. (Computer Setup resides in a hidden partition.) If you are using a Compaq LTE Lite in the SmartStation, run Computer Setup from the Compaq Diagnostics diskette included with the SmartStation Adapter.

Running Computer Setup from a Compaq LTE Elite

If you are using a Compaq LTE Elite in the expansion base, run Computer Setup by completing the following steps:

1. Turn on or reboot the system.
2. Press the F10 key as soon as the cursor moves to the upper-right corner of the screen.
3. When prompted, select the desired language.
4. Select Computer Setup from the Configuration and Diagnostics menu.
5. Follow the instructions on the screen.

#### Running Computer Setup from a Compaq LTE Lite

If you are using a Compaq LTE Lite in the expansion base, run Computer Setup from the Compaq Diagnostic diskette included with the SmartStation Adapter. Do not run Computer Setup from the computer ROM or from the diagnostics diskette that was included with the computer.

To run Computer Setup, complete the following steps:

1. Turn off the system.
2. Insert the diagnostics diskette into drive A.
3. Turn on the system.
4. Follow the instructions on the screen.

NOTE: The diagnostics diskette that was included with the SmartStation Adapter is used to run Computer Setup, Computer Checkup, Power Management, and Security Management for the Compaq LTE Lite when used with the Compaq SmartStation.

## 6.8 Power Management

When a Compaq LTE Elite is docked in the expansion base, the following components are capable of operating in a power management mode:

- o An Energy Star compliant monitor connected to the expansion base.
- o An IDE hard drive installed in the expansion base.

Power conservation settings are selected through the Power Management utility to maximize power for the above devices. If the power conservation settings are not selected, the computer uses default settings. Refer to Section 1.10 for more information on power conservation settings.

## 6.9 Security

The expansion base has the following security features:

- o Keylock assembly that locks the expansion base to prevent docking and undocking of the computer

- o Override blocker to prevent unauthorized manual undocking of the computer
- o Horizontal guides to prevent vertical removal of the docked computer
- o A slot provided for an optional cable lock to lock the expansion base to an immovable object (Figure 6-18)

Refer to Section 6.6 for more information on the keylock assembly, the override blocker, and the horizontal guides.

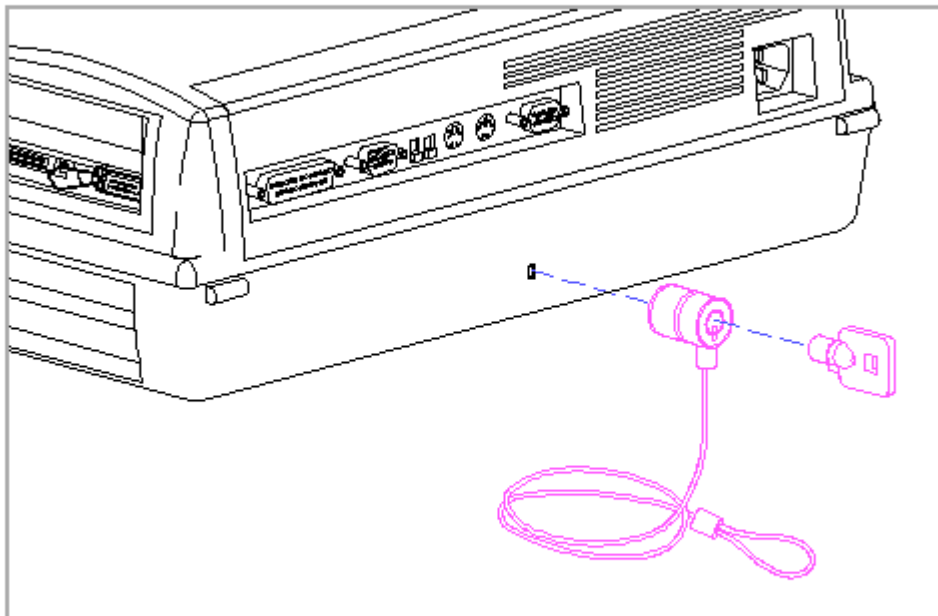


Figure 6-18. Kensington Cable Lock

NOTE: The cable lock, Kensington MicroSaver Security System Model 64068 (Figure 6-18), is available from Kensington Microware Limited or major computer resellers worldwide at 1-(415)-572-2700. The cable lock is not available through Compaq.





The spare battery pack is not making proper contact with the battery charger. Remove the spare battery pack, inspect the battery charging compartment for any obstructions, then reinsert it.

The spare battery pack does not hold a charge and has reached end of usefulness. Replace the spare battery pack.

The spare battery pack internal fuel gauge circuit is inoperative. Replace the spare battery pack.

The spare battery pack temperature sensor is inoperative. Replace the spare battery pack.

The battery charger LED on the expansion base does not turn on when the spare battery pack is inserted into the battery charging compartment.

The spare battery pack is not the correct battery pack for this charger. Remove the battery pack and insert a Compaq LTE Elite battery pack.

The spare battery pack is not making contact with the battery charger. Remove the spare battery pack, inspect the battery charging compartment for any obstructions, then reinsert it.

The spare battery pack has too low of a charge to allow a fast charge. Keep the spare battery pack in the charging compartment to allow it to trickle charge to a level that enables a fast charge.

The spare battery pack was exposed to temperature extremes. Allow time for the spare battery pack to return to room temperature.

The spare battery pack is defective or has reached the end of its useful life. Try another spare battery pack that is known to be good and determine if it charges properly. If it charges properly, replace the original battery pack.

The spare battery is fast charging but the battery charger LED is defective. Determine whether the battery charger LED is defective (Table 7-5).

The cable on the battery contacts board 1. Ensure that the cable on the battery



is not attached or is damaged.

contacts board is attached properly to the expansion base system board.

2. Ensure that none of the wires on the battery contacts board cable are damaged or disconnected from the rest of the cable. If they are damaged or disconnected, replace the battery contacts board. Route the cable properly to ensure that damage does not reoccur (Section 9.14).

-----  
The battery contacts are damaged.

1. Ensure that all battery contacts are straight.
2. Replace the battery contacts board and route the wires properly (Section 9.14).

-----  
The expansion base system board battery charging circuitry is defective.

Replace the expansion base system board.

=====  
Table 7-2a. Docking/Undocking Problems (Docking)  
=====

Problem	Probable Cause	Recommended Action(s)
The motor does not engage and no beep is emitted.	No power.	<ol style="list-style-type: none"><li>1. Ensure that the power cord is properly connected to the expansion base.</li><li>2. Verify that the fan is on and that the VBatt1 and VBatt2 outputs from the power supply are in specification (Section 10.2). If the fan is not on or the VBatt outputs are out of specification, replace the power supply.</li><li>3. Verify that the power supply connector has a tight connection to the vertical</li></ol>

circuit board by removing the card cage and pushing the power supply connector down. If the connector is loose, replace the power supply.

-----  
 The motor is not in the unloaded position.

Press the eject button to reset the motor to the unloaded position.

-----  
 There is physical interference.

Undock the computer by pressing the eject button. If the computer does not undock, remove the computer using the manual eject override method (Section D.1), and complete the following steps as required:

1. Check that the docking mechanism sled can move freely back and forth. If there is resistance, make sure that the sled is clean and free of foreign substances.
2. Ensure that the bottom of the computer and the surface of the expansion base docking bay are clean.
3. Ensure that the rubber feet are properly located on the bottom of the computer.
4. Gently shake the expansion base upside down and listen for any loose objects.

Problem	Probable Cause	Recommended Action(s)
	The computer status sense pads on the bottom of the computer are not making contact with the sense tabs on the docking mechanism sled.	Check to see if the sense tabs are bent or deformed. If so, replace the docking mechanism.

-----  
The motor does not engage and no beep is emitted.

Docking mechanism sled is not interrupting the computer-present sensor.

1. Ensure that the external options door on the rear panel of the computer is open.
2. Ensure that the computer-present sensor is vertical. Ensure that the flag on the docking mechanism sled goes past the center of the sensor when the mechanism is pushed all the way back. If required, gently bend the sensor toward the vertical position or toward the front of the expansion base to bring it closer to the sled.
3. Verify that computer-present sensor is functioning properly by inserting a thin object into the sensor from the top of the expansion base. If the docking mechanism starts, replace the docking mechanism. If nothing happens, replace the expansion base system board.

=====  
Problem

Probable Cause

Recommended Action(s)

=====  
Defective docking mechanism.

Replace the docking mechanism.

-----  
The motor does not engage but there is an immediate beep.

The expansion base is locked.

Ensure that the keylock is unlocked and that the keylock switch on the top cover is not stuck. If the keylock switch is stuck or appears to be defective, replace the eject switch cable harness. \*

-----  
The computer is on or in Standby while attempting

Turn off the computer before docking.

to dock in a non-Windows environment (Section D.1).

The motor does not engage but a beep is emitted one second after attempt to dock.

The motor cable is loose or disconnected.

1. Verify that the motor cable is tightly connected to the motor. If not, tighten the quick connects on the cable with a pair of pliers and reconnect them.
2. Verify that the motor cable is connected firmly to the expansion base system board. If the cable does not connect firmly, replace it.

The motor is bad.

Replace the docking mechanism.

The motor circuitry is defective on the expansion base system board.

Verify that the voltage outputs for the motor cable are proper. \*\* If the outputs are not proper, replace the expansion base system board.

\* The keylock switch is integrated into the eject switch cable harness.

\*\* The voltage outputs for the motor cable's red and white wires vary according to the state of the motor, as follows:

When the motor is turning forward, the red wire is + 18V and the white wire is 0V.

When the motor is turning backward, the red wire is 0V and the white wire is + 18V.

When the motor is not turning, the red wire is + 18V and the white wire is + 18.

Problem	Probable Cause	Recommended Action(s)
The motor starts to engage, but the computer does not completely dock and a beep is emitted.	There is physical interference.	Undock the computer by pressing the eject button. If the computer does not undock, remove the computer using the manual eject override method (Section D.1), and complete the following steps as required:

1. Check that the docking mechanism sled can move freely back and forth. If there is resistance, make sure that the sled is clean and free of foreign substances.
2. Ensure that the bottom of the computer and the surface of the expansion base docking bay are clean.
3. Ensure that the rubber feet are properly located on the bottom of the computer.
4. Gently shake the expansion base upside down and listen for any loose objects.

Problem	Probable Cause	Recommended Action(s)
	Connector is not aligned.	<ol style="list-style-type: none"> <li>1. If possible, determine whether the problem is with the expansion base or the computer by trying to dock another computer or by docking the computer in another expansion base.</li> <li>2. Ensure that the 198-pin external options connector is aligned straight and is seated completely in the top cover. If the connector is not straight:               <ol style="list-style-type: none"> <li>a. Ensure that the connector shield is on properly.</li> <li>b. Loosen the screws securing the docking mechanism and the expansion base system board. Ensure that the</li> </ol> </li> </ol>

expansion base system board is properly seated in the top cover, then tighten the screws in the proper sequence (Section 9.13).

3. If docking a Compaq LTE Elite, loosen the system board screws in the computer and retighten them in the proper sequence (Section 4.17).

Problem	Probable Cause	Recommended Action(s)
	The top cover is bowing up.	<p>Check for bowing in the top cover. *** If bowed, complete the following steps as required:</p> <ol style="list-style-type: none"> <li>1. Ensure that the drive cage spacer is installed properly (Section 9.16). Reinstall the spacer if improperly installed or missing.</li> <li>2. Replace the top cover.</li> </ol>
	Defective docking mechanism.	Replace the docking mechanism.
The motor engages but cycles the computer in and out.	A non-supported computer is being used.	Ensure that the computer is a Compaq LTE Lite or a Compaq LTE Elite. ****
	The reflectors on the plastic gear are blocked or missing.	<ol style="list-style-type: none"> <li>1. Ensure that the white reflectors on the plastic gear are present and are clear of debris.</li> <li>2. Replace the docking mechanism.</li> </ol>
	The motor position sensor on the expansion base system board is blocked or defective.	<ol style="list-style-type: none"> <li>1. Ensure that the two small lenses on the motor position sensor are clear of debris.</li> <li>2. Ensure that the motor position</li> </ol>

- sensor is aligned straight over its holes in the expansion base system board.
3. Replace the expansion base system board.

-----

\*\*\* When verifying whether the top cover is bowed up, note that the computer should ride on the outer edges of the docking bay of the expansion base and not in the center area. If the center area has scuff marks or if the computer can rock from side to side while in the docking bay, this indicates that the top cover is bowed up.

\*\*\*\* Compaq LTE Lite must use the SmartStation Adapter to dock in the Compaq SmartStation (Section D.1).

Problem	Probable Cause	Recommended Action(s)
The motor engages, but the docking mechanism doesn't pull the computer towards the expansion base.	A foreign object is interfering.	Ensure that there is no foreign object between the computer and the expansion base.
	The top cover is bowing up.	Check for bowing in the top cover. *** If bowed, complete the following steps as required: <ol style="list-style-type: none"> <li>1. Ensure that the drive cage spacer is installed properly (Section 9.16). Reinstall the spacer if improperly installed or missing.</li> <li>2. Replace the top cover.</li> </ol>
	The docking mechanism sled is defective.	<ol style="list-style-type: none"> <li>1. Ensure that the docking mechanism sled is functioning properly.</li> <li>2. Replace the docking mechanism.</li> </ol>

Table 7-2b. Docking/Undocking Problems (Undocking)

Problem	Probable Cause	Recommended Action(s)
The motor does not engage, and no beeps are emitted.	No power.	<ol style="list-style-type: none"> <li>1. Ensure that the power cord is properly connected to the expansion</li> </ol>

- base.
2. Verify that the fan is on and that the VBatt1 and VBatt2 outputs from the power supply are in specification (Section 10.2). If the fan is not on or the VBatt outputs are out of specification, replace the power supply.
  3. Verify that the power supply connector has a tight connection to the vertical circuit board by removing the card cage and pushing the power supply connector down. If the connector is loose, replace the power supply.

-----  
 \*\*\* When verifying whether the top cover is bowed up, note that the computer should ride on the outer edges of the docking bay of the expansion base and not in the center area. If the center area has scuff marks or if the computer can rock from side to side while in the docking bay, this indicates that the top cover is bowed up.

Problem	Probable Cause	Recommended Action(s)
	The computer is on while attempting to undock in a non-Windows environment (Section D.1).	Turn off the computer before undocking.
	The eject button on the eject switch is not being pressed completely or is defective.	Ensure that the eject button is being fully pressed on the eject switch board by completing the following steps: 1. Remove the eject switch from the top cover of the expansion base, but do not disconnect the eject switch cable harness. 2. Remove the eject switch board from the rest of the plastic eject switch components



- (Section 9.18).
3. Reassemble the expansion base, allowing the eject switch board to hang out from the side of the unit for test purposes.
  4. Ensure that the operating condition of the expansion base is such that the eject switch is functional.
  5. Press the eject button that is mounted directly on the eject switch board.
  6. If the expansion base undocks the computer properly, replace the plastic eject switch components.
  7. If the expansion base does not undock the computer properly, replace the eject switch cable harness.

Problem	Probable Cause	Recommended Action(s)
	The eject switch cable harness or harness extension cable is defective.	<ol style="list-style-type: none"> <li>1. Replace the eject switch cable harness.</li> <li>2. Replace the harness extension cable.</li> </ol>
The motor does not engage, and no beeps are emitted.	The expansion base system board is defective.	Replace the expansion base system board.
	The computer status sense pads on the bottom of the computer are not making contact with the sense tabs on the docking mechanism sled.	Check to see if the sense tabs are bent or deformed. If so, replace the docking mechanism.
The motor does not engage but there is an immediate beep.	The expansion base is locked.	Ensure that the keylock is unlocked and that the keylock switch on the top cover is not stuck. If the keylock

switch is stuck or appears to be defective, replace the eject switch cable harness. \*

-----  
 The PCMCIA sensors are blocked, disconnected, or defective.

1. Ensure that the lenses of the PCMCIA sensor emitter and receiver are clear of debris.
2. Ensure that the PCMCIA sensor emitter and receiver boards are installed properly and are connected to the power switch cable harness.
3. Replace the PCMCIA sensor emitter and receiver boards.

-----  
 \* The keylock switch is integrated into the eject switch cable harness.

Problem	Probable Cause	Recommended Action(s)
	The computer is on while attempting to undock in a non-Windows environment (Section D.1).	Turn off the computer before undocking.
The motor does not engage but a beep is emitted one second after attempt to undock.	The motor cable is loose or disconnected.	<ol style="list-style-type: none"> <li>1. Verify that the motor cable is tightly connected to the motor. If not, tighten the quick connects on the cable with a pair of pliers and reconnect them.</li> <li>2. Verify that the motor cable is connected firmly to the expansion base system board. If the cable does not connect firmly, replace it.</li> </ol>
	The motor is bad.	Replace the docking mechanism.
	The motor circuitry is defective on the expansion base system board.	Verify that the voltage outputs for the motor cable

are proper. \*\* If the outputs are not proper, replace the expansion base system board.

-----  
The motor starts to engage, but the computer does not completely undock and a beep is emitted.

There is a physical obstruction.

Undock the computer by pressing the eject button. If the computer does not undock, remove the computer using the manual eject override method (Section D.1), and complete the following steps as required:

1. Check that the docking mechanism sled can move freely back and forth. If there is resistance, make sure that the sled is clean and free of foreign substances.
2. Ensure that the bottom of the computer and the surface of the expansion base docking bay are clean.
3. Ensure that the rubber feet are properly located on the bottom of the computer.
4. Gently shake the expansion base upside down and listen for any loose objects.

-----  
\*\* The voltage outputs for the motor cable's red and white wires vary according to the state of the motor, as follows:

When the motor is turning forward, the red wire is + 18V and the white wire is 0V.

When the motor is turning backward, the red wire is 0V and the white wire is + 18V.

When the motor is not turning, the red wire is + 18V and the white wire is + 18.

Problem	Probable Cause	Recommended Action(s)
	The top cover is bowing	Check for bowing in

up.

the top cover. \*\*\*  
If bowed, complete  
the following steps  
as required:

1. Ensure that the drive cage spacer is installed properly (Section 9.16). Reinstall the spacer if improperly installed or missing.
2. Replace the top cover.

-----  
Defective docking mechanism.

Replace the docking mechanism.

-----  
The motor engages but cycles the computer out and then back in.

Docking mechanism sled does not slide freely.

1. Make sure that the docking mechanism sled can slide freely on the top cover. Clean the mechanism if necessary.
2. Replace the docking mechanism.

-----  
The top cover is bowing up.

Check for bowing in the top cover. \*\*\*  
If bowed, complete the following steps as required:

1. Ensure that the drive cage spacer is installed properly (Section 9.16). Reinstall the spacer if improperly installed or missing.
2. Replace the top cover.

-----  
\*\*\* When verifying whether the top cover is bowed up, note that the computer should ride on the outer edges of the docking bay of the expansion base and not in the center area. If the center area has scuff marks or if the computer can rock from side to side in the docking bay, this indicates that the top cover is bowed up.  
=====

Problem	Probable Cause	Recommended Action(s)
	The reflectors on the plastic gear are blocked or missing.	1. Ensure that the white reflectors on the plastic gear are present and are clear of

- debris.
- 2. Replace the docking mechanism.

-----

The motor position sensor on the expansion base system board is blocked or defective.

- 1. Ensure that the two small lenses on the motor position sensor are clear of debris.
- 2. Ensure that the motor position sensor is aligned straight over its holes in the expansion base system board.
- 3. Replace the expansion base system board.

-----

The motor engages and undocks the computer while the computer is on without first going into Standby. \*\*\*\*\*

Computer status sensor cable is disconnected.

Tighten the quick connects on the computer status sensor cables and connect them.

-----

Computer status sense tabs on the docking mechanism are broken or are not making good contact.

Determine if the computer status sense tabs are bent down, deformed, or broken off. If so, replace the docking mechanism.

-----

\*\*\*\*\* To deactivate most of the sensors for the purposes of troubleshooting a problem, turn configuration switch number 6 off (Section C.2).

=====

Table 7-2c. Manual Undocking (Manual Eject Override) Problems

Problem	Probable Cause	Recommended Action(s)
Computer cannot be removed when using the manual eject override mechanism.	There is a tight fit between the computer and the expansion base which causes the hooks on the docking mechanism sled to get stuck in the computer.	<ul style="list-style-type: none"> <li>1. Push the computer toward the expansion base until you hear the hooks spring back, then remove the computer.</li> <li>2. If the computer still does not release, remove the docking mechanism (it may fit tightly), then remove the computer.</li> </ul>

-----

The manual eject override bracket cannot be accessed. (Bracket is not visible through its slot.) \*\*\*\*\*

The override blocker cannot move freely.

Ensure that the override blocker can move freely in the bottom cover. If it cannot move freely, replace the bottom cover.

-----  
 The manual eject override bracket is bent.

1. Straighten the manual eject override bracket.
2. Replace the docking mechanism.

-----  
 The manual eject override bracket does not spring back after the computer is removed. \*\*\*\*\*

The manual eject override bracket spring is not attached.

1. Ensure that the small spring on the back of the mechanism is hooked on both the bracket and the carriage. Reattach the spring if necessary.
2. If the spring doesn't stay in place, replace the spring.
3. If the spring still doesn't stay in place, replace the docking mechanism.

-----  
 The manual eject override bracket is bent.

1. Straighten the manual eject override bracket to allow it to properly spring back.
2. Replace the docking mechanism.

-----  
 \*\*\*\*\* The manual eject override bracket is integrated into the docking mechanism.  
 =====

Table 7-3. Enclosure Alignment Problems

Problem	Probable Cause	Recommended Action(s)
Bottom cover does not latch firmly.	Metal liners are in the way.	<ol style="list-style-type: none"> <li>1. Ensure that the metal liners are straight all around the expansion base. If not, attempt to straighten them.</li> <li>2. If the liners cannot be straightened,</li> </ol>

replace the bottom  
or top cover  
(whichever  
applies).

-----  
Plastic latches are worn  
off of the bottom cover.

Ensure that the  
plastic latches are  
not worn off. If they  
are, replace the  
bottom cover.

=====  
Table 7-4. Hardware Installation Problems  
=====

Problem	Probable Cause	Recommended Action(s)
The drive or optional device does not fit in the drive bay.	The drive or optional device is not supported.	Use only supported drives or optional devices (Table 8-10) that meet the maximum drive bay length requirement listed in Section 10.1.
	Drive cage is bent.	1. Determine if there are irregularities in the drive cage or if there are obstructions. Straighten the drive cage if possible. 2. Replace the drive cage.
A new device is not recognized as part of the computer system.	The power switch of the new external device was not turned on before the system was turned on.	Turn off the system, then turn on the external device, then turn on the system to integrate the new device.
	Computer Setup has to be run to configure the new device.	Run Computer Setup.
	The signal cable or power cable of the new device is loose or disconnected.	Ensure that all cables are properly and securely connected.
	The switch settings on the vertical circuit board are incorrect.	Correct the switch settings on the vertical circuit board.
	More than one optional device has the same interrupt request (IRQ) setting.	Correct the IRQ settings for the optional devices that are conflicting.

The signal and/or power cable of the new device is defective.		Determine if the signal and/or power cable is defective by connecting another cable.
The system locks up when a backup to tape is attempted.	Switch 3 on the vertical circuit board is incorrectly set.	Change Switch 3 to the tape/diskette drive installed position (the on/closed position).
The signal or power cable is not securely connected to the tape drive.		Ensure that the cables are properly and securely connected to the tape drive.
The power and/or signal cable connected to the drive is defective.		Determine if the power and/or signal cable is defective by connecting another cable.
The tape drive is not supported by the Compaq internal controller.		Call the manufacturer of the tape drive to verify that it is supported by the Compaq controller.

Table 7-5. LED Problems

Problem	Probable Cause	Recommended Action(s)
An LED doesn't come on or is dim.	The light pipe for the LED is not installed properly.	Ensure that the light pipe is even with the outside surface of the expansion base and reinstall or replace it if necessary.
	The LED is defective.	Determine if the LED is defective by completing the following steps: 1. Remove the appropriate switch (power switch or eject switch *) from the top cover of the expansion base, but do not disconnect the cable harness. 2. Remove the switch board from the rest of the



- plastic switch components (Section 9.18).
3. Reassemble the expansion base, allowing the switch board to hang out from the side of the unit for test purposes.
  4. Ensure that the operating condition of the expansion base is such that the LED should turn on.
  5. If the LED does not turn on, replace the cable harness.

-----

The cable harness (power switch cable harness or eject switch cable harness) \* is defective or is not making a complete connection.

1. Reseat the cable harness.
2. Replace the cable harness.
3. Replace the harness extension cable.
4. Replace the expansion base system board.

-----

\* The power and hard drive LEDs are integrated into the power switch board, which is part of the power switch cable harness. The battery charger LED is integrated into the eject switch board, which is part of the eject switch cable harness.

=====

Table 7-6. Power Problems

Problem	Probable Cause	Recommended Action(s)
When a computer is docked and the expansion base power button is pressed, the expansion base and computer do not power on, no beep is emitted, and there is no LED activity on either the expansion base or the computer.	The power button is not being pressed completely or is defective.	Ensure that the power button is being fully pressed on the power switch board by completing the following steps: <ol style="list-style-type: none"> <li>1. Remove the power switch from the top cover of the expansion base, but do not disconnect the power switch cable harness.</li> <li>2. Remove the power switch board from the rest of the plastic power</li> </ol>

- switch components (Section 9.18).
3. Reassemble the expansion base, allowing the power switch board to hang out from the side of the unit for test purposes.
  4. Ensure that the operating condition of the expansion base is such that the power switch is functional.
  5. Press the power button that is mounted directly on the power switch board.
  6. If the expansion base and computer power up, replace the plastic power switch components.
  7. If the expansion base and computer do not power up, replace the power switch cable harness.

---

The power switch cable harness or harness extension cable is not making a complete connection or is defective.

1. Reseat the cable harness.
2. Replace the cable harness.
3. Reseat the harness extension cable.
4. Replace the harness extension cable.

---

The expansion base system board is defective.

Replace the expansion base system board.

---

When a Compaq LTE Elite is docked and the power switch on the computer is pressed, the expansion base and the computer do not power on, no beep is emitted, and there is no LED activity on either the expansion base or the computer.

The power button on the computer is not being activated.

1. Remove the computer from the expansion base and attempt to power on the computer by itself.
  2. If the computer does not power on by itself, the problem is with the the computer (Table 2-26).
-

The expansion base and computer do not power on when either power switch is pressed, but a beep is emitted from the expansion base and there is some LED activity.

The computer is not completely docked in the expansion base.

Ensure that there is no gap between the expansion base and the rear of the computer. (Refer to Table 7-2 for more information on solving docking problems.)

-----  
The computer is not powering on properly.

1. Remove the computer from the expansion base and attempt to power it on by itself. If the computer does not power on by itself, the problem is with the computer (Table 2-26).
2. Try another computer (if one is available) in the expansion base to ensure that the expansion base powers up properly.

-----  
The expansion base power supply is defective.

Replace the expansion base power supply.

-----  
The expansion base does not turn on after an ISA expansion board or an internal drive is installed in the expansion base.  
=====

The internal devices have exceeded the maximum allocated power.

Ensure that internal devices do not exceed 7A (35W) for the +5V output and 3A (36W) for the +12V output.

## SCSI Problems

This section lists some common SCSI problems to check if the system cannot communicate with a SCSI device. When solving a SCSI problem, verify that:

- o All SCSI devices are turned on before turning on the system.
- o SCSI drivers are properly installed (Section F.6), the correct path is in AUTOEXEC.BAT, and the drivers are loaded in CONFIG.SYS.
- o The first device and the last device in the SCSI chain are properly terminated (Sections F.1 and F.2).
- o All SCSI devices have different SCSI IDs.
- o The cables connecting the SCSI devices are properly seated.

- o The internal cable connector is not reversed.
- o All SCSI devices are SCSI-2 compliant.

For more troubleshooting information, refer to the system messages and troubleshooting sections of the Compaq EZ-SCSI Software Reference.

For information on using SCSI-2 devices, installing SCSI-2 device drivers, and installing an internal SCSI-2 drive in the Compaq SmartStation, refer to Appendix F.

## 7.2 EXTDISK.SYS Error Messages

The EXTDISK.SYS external drive device driver is required for the Compaq LTE Lite to configure an IDE hard drive in the Compaq SmartStation. This section lists EXTDISK.SYS error messages that may be displayed and describes their possible causes and recommended actions.

Install the EXTDISK.SYS external drive device driver from the Supplemental Programs diskette included with the SmartStation Adapter (Section C.4).

Table 7-7. EXTDISK.SYS Messages

Message	Probable Cause	Recommended Action(s)
Bad or Missing EXTDISK.SYS	EXTDISK.SYS is not on the hard drive or the path in CONFIG.SYS file is incorrect.	Ensure that EXTDISK.SYS is on the hard drive and that the path in the CONFIG.SYS file is correct.
EXTDISK not installed	The system is not properly configured.	Run Computer Setup.
	The setting for switch 1 on the vertical circuit board is incorrect.	Correct the switch setting or install an IDE hard drive.
	The power or signal cable is not properly connected to the drive.	Ensure that the power and signal cables are properly and securely connected.
	The power cable or signal cable connected to the drive is defective.	Determine if the power and/or signal cable is defective by connecting another cable.
	The jumpers on the drive are improperly set.	If only one IDE hard drive is in the expansion base, set the jumper switches on the drive to single. If there is

no setting for  
single, set the  
jumper switches to  
master.

---

Time-Out on Disk 1 Secondary controller EXTDISK not installed	The power or signal cable is not properly connected to the drive.	Ensure that the power and signal cables are properly and securely connected.
	Incorrect version of EXTDISK.SYS.	Install the version of EXTDISK.SYS included with the SmartStation Adapter.
	There is an interrupt request (IRQ) conflict.	Eliminate the IRQ conflict by completing the following steps as required: 1. Change the switch 2 setting on the vertical circuit board. 2. Change the interrupt setting used by the optional device so that it does not conflict with the setting used by the IDE hard drive.
	The jumpers on the drive are improperly set.	If only one IDE hard drive is in the expansion base, set the jumper switches on the drive to single. If there is no setting for single, set the jumper switches to master.
	The power cable or signal cable connected to the drive is defective.	Determine if the power and/or signal cable is defective by connecting another cable.

---

# Chapter 8 - Compaq SmartStation Illustrated Parts Catalog

## Introduction

This chapter provides illustrated parts breakdowns and identifies the spare parts for the Compaq SmartStation expansion base.

Refer to Chapter 3 for spare part information for the Compaq LTE Elite.

## 8.1 Enclosures

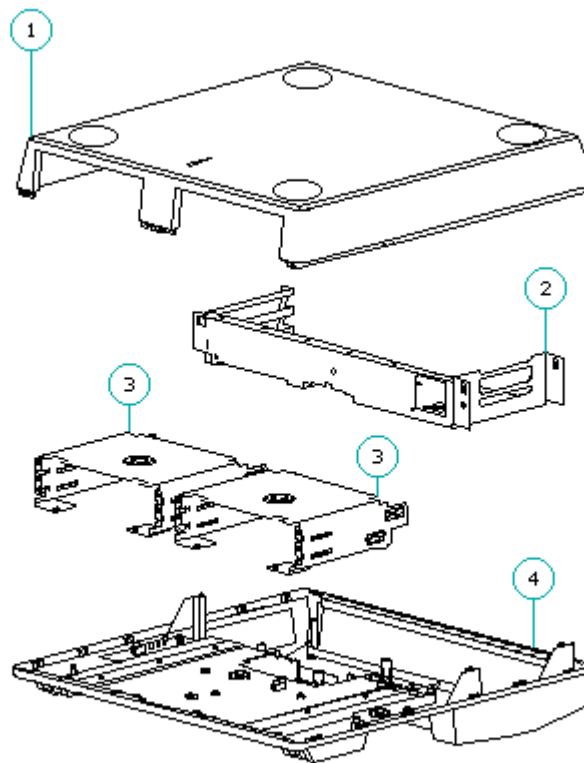


Figure 8-1. Enclosures

Table 8-1. Enclosures

Description	Spare Part Number
1. Bottom cover Includes: Rubber feet Blocker Blocker spring	199003-001
2. Expansion Board Cage	199005-001

3. Drive Cage	198992-001
Includes configuration label **	
4. Top Cover	199002-001
5. Monitor Support Cover	137948-001 *

\* Not shown  
 \*\* Drive cage is interchangeable for drive position 1 or 2.

## 8.2 Power Supply

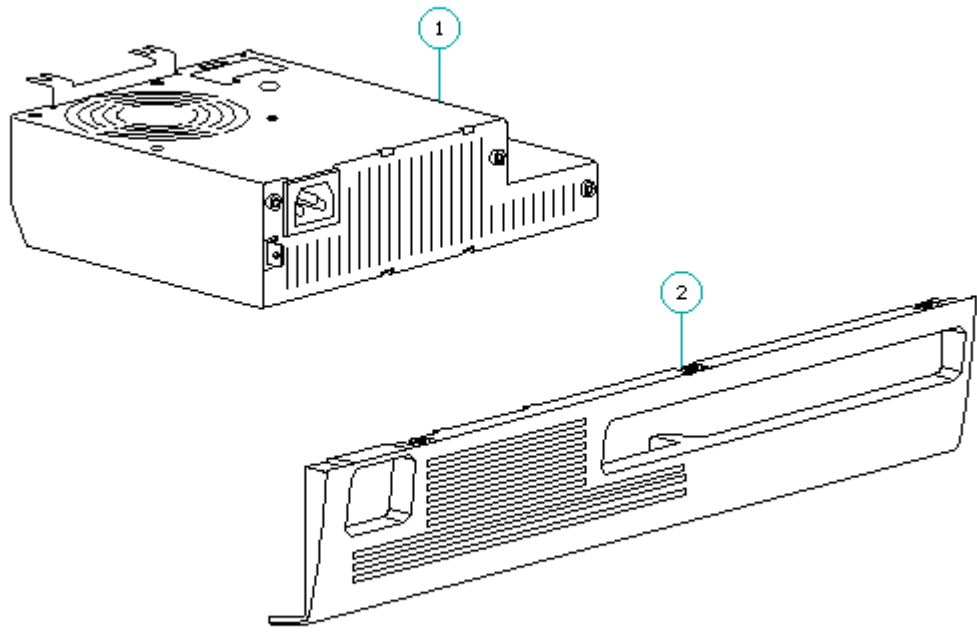


Figure 8-2. Power Supply

Table 8-2. Power Supply

Description	Spare Part Number
1. Power Supply	198997-001
2. Power Supply Bezel	198998-001

### 8.3 Battery Charger

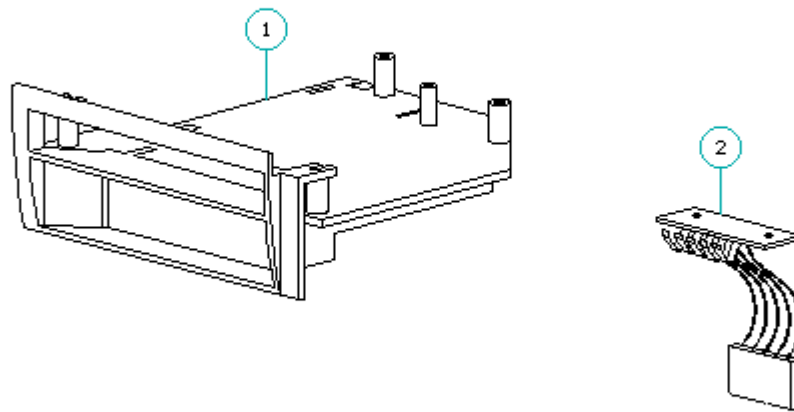


Figure 8-3. Battery Charger

Table 8-3. Battery Charger

Description	Spare Part Number
1. Battery Charging Compartment Kit Includes: Compartment Bezel Door Door spring	199001-001
2. Battery Contacts Board	198942-001

### 8.4 Boards



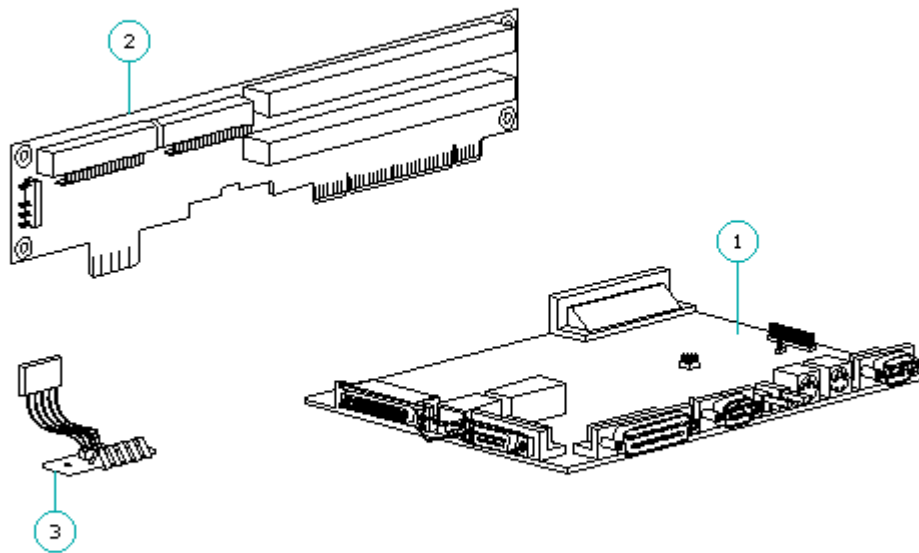


Figure 8-4. Boards

Table 8-4. Boards

Description	Spare Part Number
1. System Board	195603-001
2. Vertical Circuit Board	195602-001
3. Battery Contacts Board	198942-001

## 8.5 Switches, Sensors, And Cables

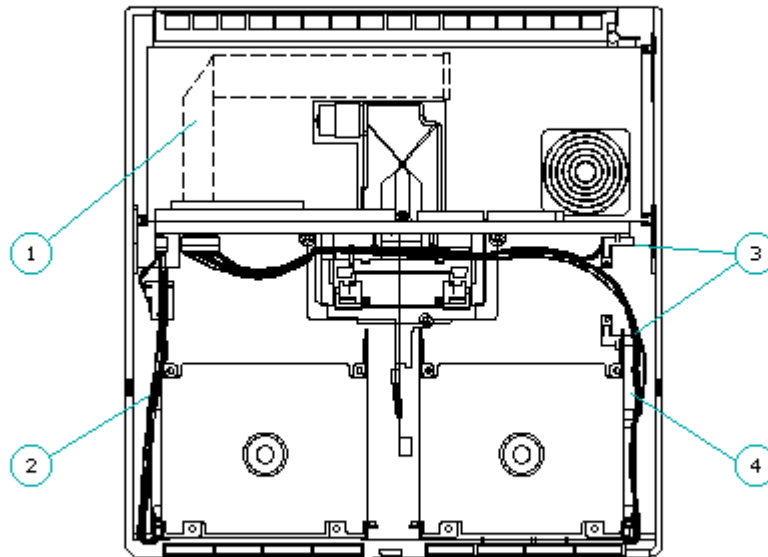


Figure 8-5. Switches, Sensors, and Cables

Table 8-5. Switches, Sensors, and Cables

Description	Spare Part Number
1. Harness Extension Cable	198994-001
2. Eject Switch Cable Harness Includes: Cables for eject switch and keylock switch Eject switch components (switch frame, button, spring, and light pipe) ** Eject switch board Keylock switch	198941-001
3. PCMCIA Card Sensor Kit Includes: Emitter board Emitter board frame Receiver board Receiver board frame	198940-001
4. Power Switch Cable Harness Includes: Cables for power switch Cables for computer status sensor	198943-001

Cables for PCMCIA card sensor  
Power switch components (switch frame, button,  
spring, and two light pipes) \*\*  
Power switch board

---

5. Drive Cables Kit 198991-001 \*  
Includes:  
Drive power  
Hard drive signal  
Tape/diskette drive signal  
Internal SCSI

---

6. Motor Cable 198999-001 \*

---

\* Not shown.

\*\* The frame, button, spring, and light pipes for the power switch and the eject switch are also available in the Miscellaneous Small Mechanical Parts Kit (refer to Table 8-8). Except for the switch button, these parts are interchangeable between the eject switch and power switch. (Both power and eject switch buttons are included in the kit.)

---

## 8.6 Docking Mechanism

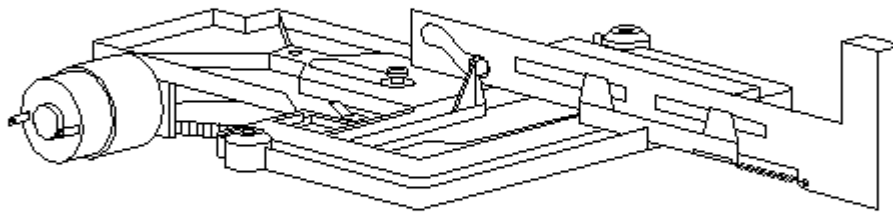


Figure 8-6. Docking Mechanism

Table 8-6. Docking Mechanism

Description	Spare Part Number
Docking Mechanism	198996-001

### 8.7 Keylock Assembly

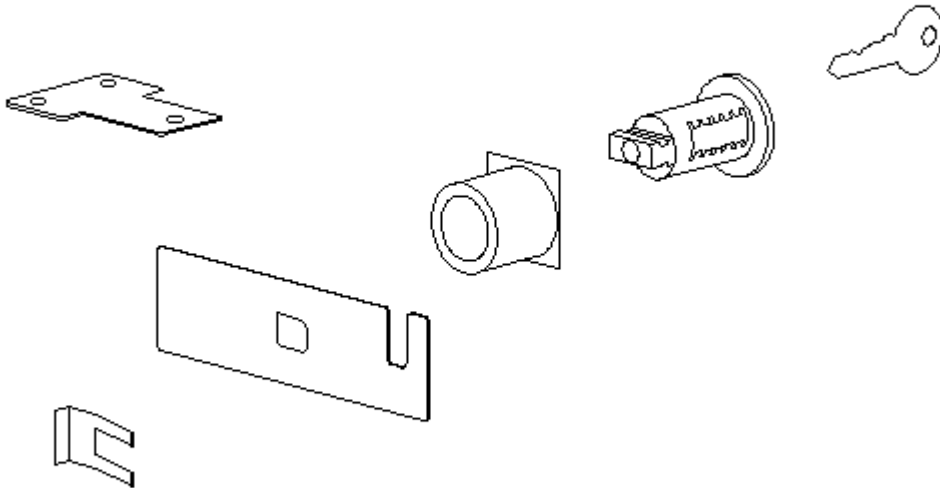


Figure 8-7. Keylock Assembly

Table 8-7. Keylock Assembly

Description	Spare Part Number
Keylock Assembly	199004-001
Includes:	
Keylock	
Key	
Pawl with retaining clip	
Plastic keylock barrel	
Metal keylock plate	

## 8.8 Miscellaneous Small Mechanical Parts

Table8-8. Miscellaneous Small Mechanical Parts

Description	Spare Part Number
1/6 Height Drive Bay Panel	116791-001
1/2 Height Drive Bay Panel	116793-001
Miscellaneous Small Mechanical Parts Kit	198993-001
Includes:	
Power/eject switch frame	
Power/eject switch spring	
Light pipes (Quantity = 2)	
Power switch button	
Eject switch button	
Horizontal guides and springs (Quantity = 2, each)	
Keylock plate	
Blocker spring	
Docking mechanism sled return spring	
Manual eject override spring	

## 8.9 Screws And Fasteners Kit

Table8-9a. Screw and Fasteners Kit

Description	Spare Part Number
Compaq SmartStation Screws and Fasteners Kit (Quantity = 25)	198990-001

Table 8-9b. Screw and Fastener Locations

Where Used:	Expansion board cage blanks
Description:	SCR, 6-32 x 3/16
Type:	TT, CS, pan
Drive:	T15/SL
Maximum Torque:	12.0 in.-lb.
Quantity:	2
Reference Part Number:	101517-066
Where Used:	Vertical circuit board to expansion board cage
Description:	SCR, M3 x 8.0 with star washer
Type:	MA, pan
Drive:	T10
Maximum Torque:	6.0 in.-lb.
Quantity:	5
Reference Part Number:	198976-002
Where Used:	External options connector shield to system board
Description:	SCR, 4-40 x 3/8
Type:	MA, CS, pan
Drive:	T10
Maximum Torque:	6.0 in.-lb.

Quantity: 2  
Reference Part Number: 114145-121

---

Where Used: External monitor, parallel, serial connectors  
(at rear)  
Description: Screwlock, 4/40 sems, ext. tooth, F  
Type: MA, CS, Hex  
Drive: 3/16  
Maximum Torque: 4.0 in.-lb.  
Quantity: 6  
Reference Part Number: 106902-003

---

Where Used: AUI connector  
Description: Slide latch, 15 pos  
Type: N/A  
Drive: N/A  
Maximum Torque: N/A  
Quantity: 1  
Reference Part Number: 142031-001

---

Where Used: AUI connector  
Description: Slide latch, pull tab  
Type: N/A  
Drive: N/A  
Maximum Torque: N/A  
Quantity: 1  
Reference Part Number: 142034-001

---

Where Used: AUI connector  
Description: SCR, 4-40, slide latch  
Type: Shoulder  
Drive: SL  
Maximum Torque: 4.0 in.-lb.  
Quantity: 2  
Reference Part Number: 142036-001

---

Where Used: SCSI-2 connector  
Description: SCR, 2-56 x 3/8  
Type: MA, SS, pan  
Drive: T8  
Maximum Torque: 4.0 in.-lb.  
Quantity: 2  
Reference Part Number: 101344-057

---

Where Used: Power and eject switches  
Description: SCR, M3 - .5 x 8.0  
Type: PT, pan  
Drive: T10/SL  
Maximum Torque: 6.0 in.-lb.  
Quantity: 2  
Reference Part Number: 198922-002

---

Where Used: PCMCIA sensor (emitter and receiver)  
Description: SCR, M3 -.5 x 6.0  
Type: PT, pan  
Drive: T10/SL  
Maximum Torque: 6.0 in.-lb.  
Quantity: 2  
Reference Part Number: 198922-001

---

Where Used: Keylock plate  
Description: SCR, M3 - .5 x 6.0  
Type: PT, pan  
Drive: T10/SL  
Maximum Torque: 6.0 in.-lb.  
Quantity: 2  
Reference Part Number: 198922-001

---

Where Used: Drive cages  
Description: SCR, M3 x 6.0  
Type: MA, pan  
Drive: T10/SL  
Maximum Torque: 6.0 in.-lb.  
Quantity: 8  
Reference Part Number: 198889-001

---

Where Used: Power supply to top cover  
Description: SCR, M3 x 6.0  
Type: MA, pan  
Drive: T10/SL  
Maximum Torque: 6.0 in.-lb.  
Quantity: 2  
Reference Part Number: 198889-001

---

Where Used: Power supply bezel to power supply  
Description: SCR, M3 x 6.0  
Type: TT  
Drive: T10/SL  
Maximum Torque: 12.0 in.-lb.  
Quantity: 2  
Reference Part Number: 198890-001

---

Where Used: Power supply bezel to top cover  
Description: SCR, M3 x 6.0  
Type: MA, pan  
Drive: T10/SL  
Maximum Torque: 6.0 in.-lb.  
Quantity: 3  
Reference Part Number: 198889-001

---

Where Used: Docking mechanism  
Description: SCR, M3 x 6.0  
Type: MA, pan  
Drive: T10/SL  
Maximum Torque: 6.0 in.-lb.  
Quantity: 3  
Reference Part Number: 198889-001

---

Where Used: System board/ battery charger housing to top cover  
Description: SCR, M3 x 30.0 with washer  
Type: MA, pan  
Drive: T10/SL  
Maximum Torque: 6.0 in.-lb.  
Quantity: 4  
Reference Part Number: 184006-001

---

Where Used: Blank drive panels  
Description: SCR, 6-32 x 3/8  
Type: TT, CS  
Drive: T15/SL

Maximum Torque: 12.0 in.-lb.  
 Quantity: 4  
 Reference Part Number: 109834-069

=====

### 8.10 Compaq Smartstation Options And Accessories

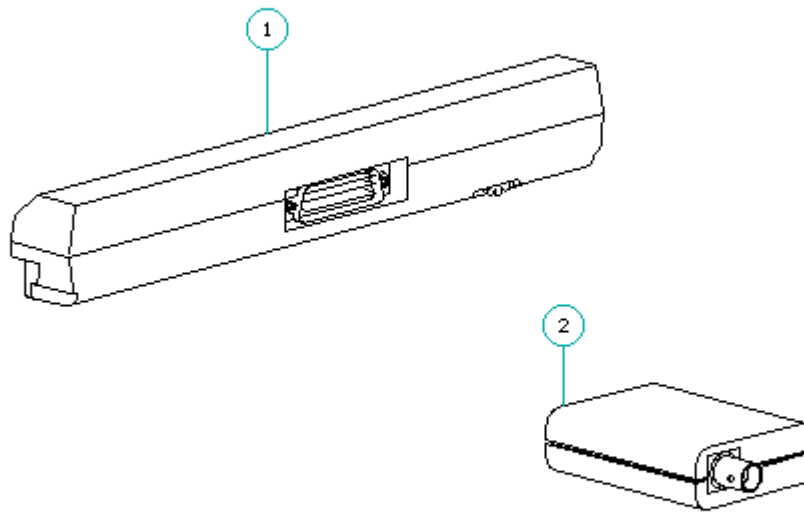


Figure 8-8. SmartStation Options

Table 8-10. Compaq SmartStation Options and Accessories

Description *	Spare Part Number
1. SmartStation Adapter ** (195601-001)	199026-001
2. Thinnet Coax Transceiver *** (142108-001)	142117-001
3. 5.25-inch 1.2 MB Diskette Drive [1/3-height] (113637-001)	112566-001 ****
4. 3.5-inch 1.44 MB Diskette Drive [1/3-height] (113638-001)	112565-001 ****
5. 1.05 GB Fast EZ-SCSI Fixed Disk Drive (196412-001 no longer available)	142039-001 ****



6.	550 MB Fast EZ-SCSI Fixed Disk Drive (196411-001)	142038-001	****
7.	525 MB Fixed Disk Drive [IDE] (196410-001)	197014-001	****
8.	340 MB Fixed Disk Drive [IDE] (196409-001)	199966-001	****
9.	330 MB Fast EZ-SCSI Fixed Disk Drive (142016-001)	142037-001	****
10.	270 MB Fixed Disk Drive [IDE] (196408-001)	197441-001	****
11.	120/250 MB Tape Drive (197412-002)	197490-001	****
12.	Internal DualSpeed CD-ROM Drive (133856-001)	133881-001	****
13.	External DualSpeed CD-ROM Drive (133865-001)	133882-001	****
14.	Internal TrayLoad CD-ROM Drive (142193-001)	142223-001	****
15.	External TrayLoad CD-ROM Drive (142251-001)	199430-001	****

\* The Compaq option part number is provided in the Description column for reference only. When ordering a spare part, use the number listed in the Spare Part Number column.

\*\* SmartStation Adapter attaches to a Compaq LTE Lite computer to allow a Compaq LTE Lite to dock in a Compaq SmartStation. The SmartStation Adapter is a user-installed option.

\*\*\* Thinnet Coax Transceiver converts the Ethernet AUI connector on the SmartStation expansion base to a BNC connector for 10Base2.

\*\*\*\* Not shown.

## 8.11 Documentation

Table8-11. Documentation

Description	Spare Part Number
Compaq LTE Elite/Compaq SmartStation Maintenance and Service Guide	149601-001
Compaq SmartStation Installation and Operations Guide	
U.S./Canadian	184126-001
German	184126-041
French	184126-051
Italian	184126-061
Spanish	184126-071
Swedish	184126-101
Japanese	184126-191
Dutch	184126-331
Compaq QuickFind:	
U.S./Canadian	137906-00X
International (other than U.S./Canadian):	
Authorized Compaq Reseller Version	137907-00X
End User Version	137908-00X













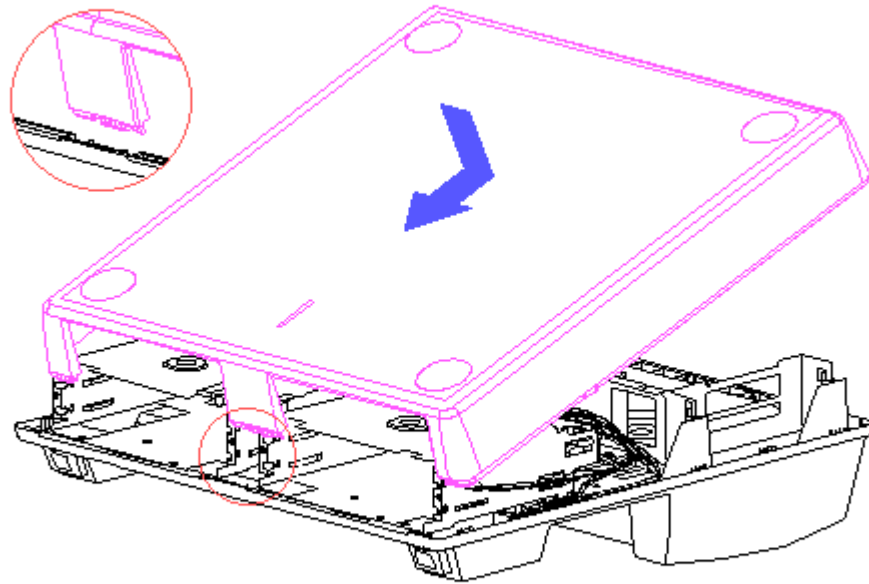


Figure 9-3. Replacing the Bottom Cover

## 9.7 Keylock Assembly

To remove the keylock assembly, complete the following steps:

1. Remove the bottom cover (Section 9.6)
2. Remove the retaining clip [1] that fastens the pawl [2] to the keylock barrel (Figure 9-4).
3. Remove the pawl (Figure 9-4).



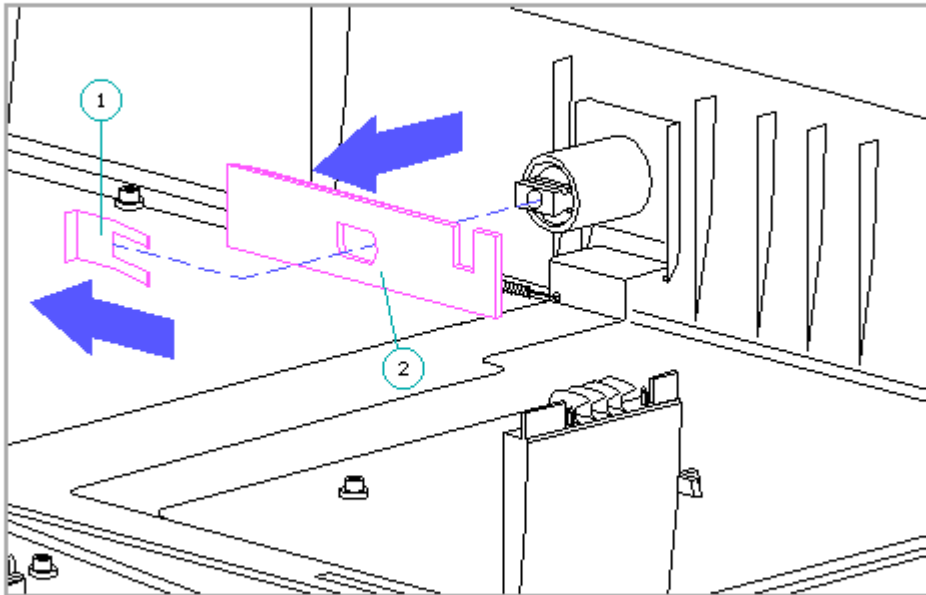


Figure 9-4. Removing the Pawl

4. Remove the keylock from the outside of the bottom cover (Figure 9-5).

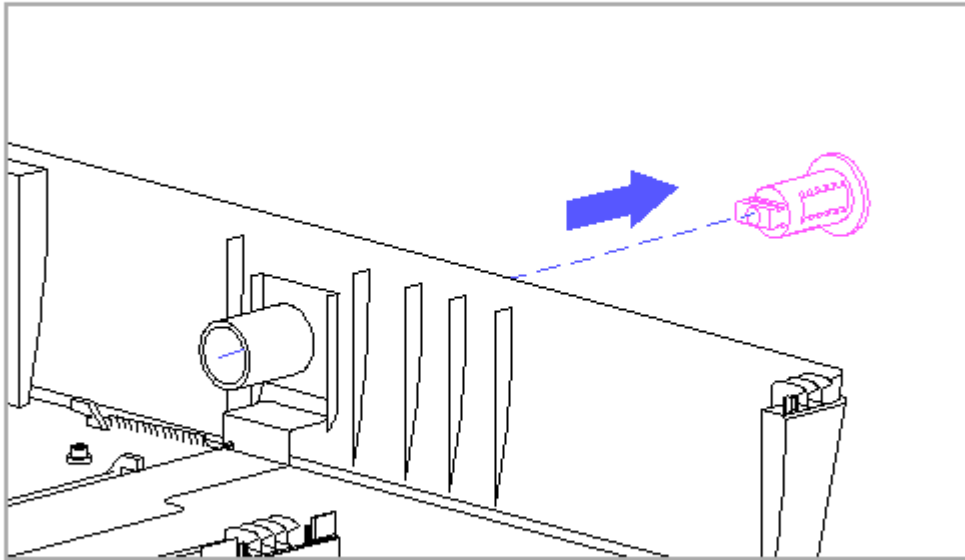


Figure 9-5. Removing the Keylock

5. Slide the plastic keylock barrel out of the bottom cover (Figure 9-6).



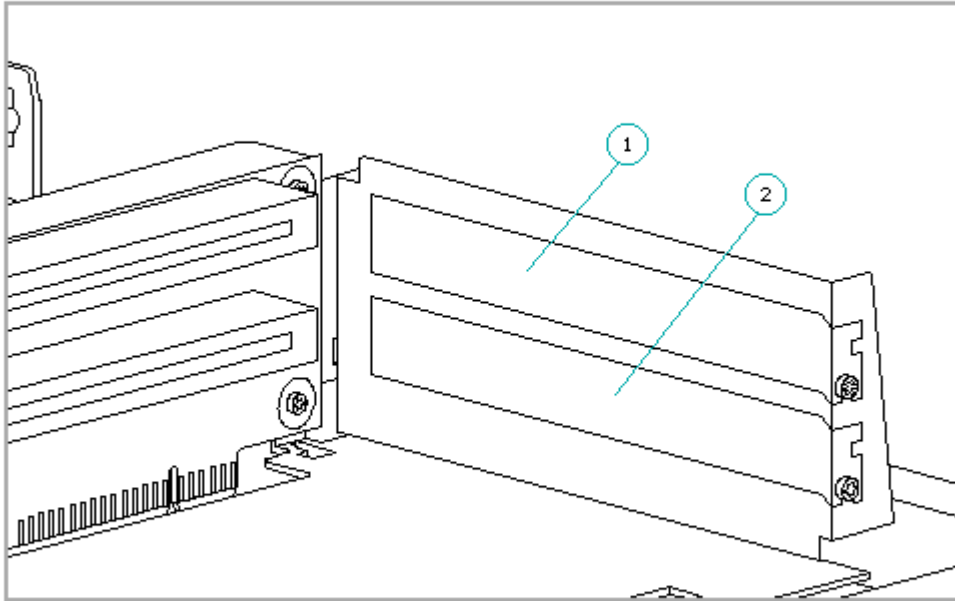


Figure 9-7. Expansion Slot Covers

#### Removing an Expansion Board

To remove an expansion board, complete the following steps:

1. Remove the bottom cover (Section 9.6).
2. Remove the expansion board screw (Figure 9-8).
3. Slide out the expansion board (Figure 9-8).

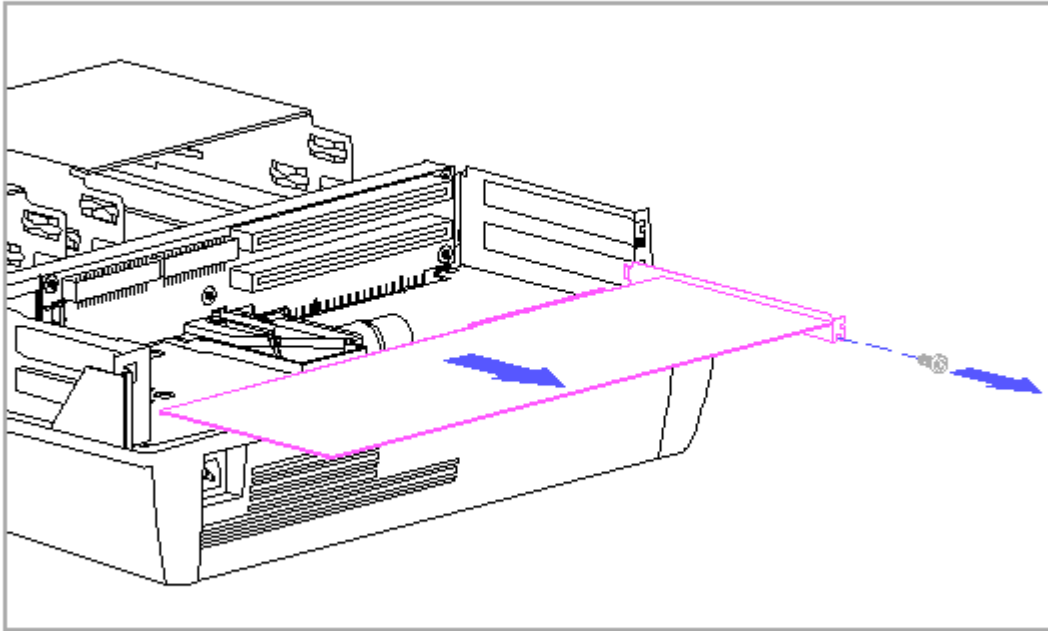


Figure 9-8. Removing the Expansion Board

#### Installing an Expansion Board

To install an expansion board, complete the following steps:

1. Remove the bottom cover (Section 9.6).
2. If an expansion slot cover is located where the board will be installed, remove it by removing the retaining screw (Figure 9-9).

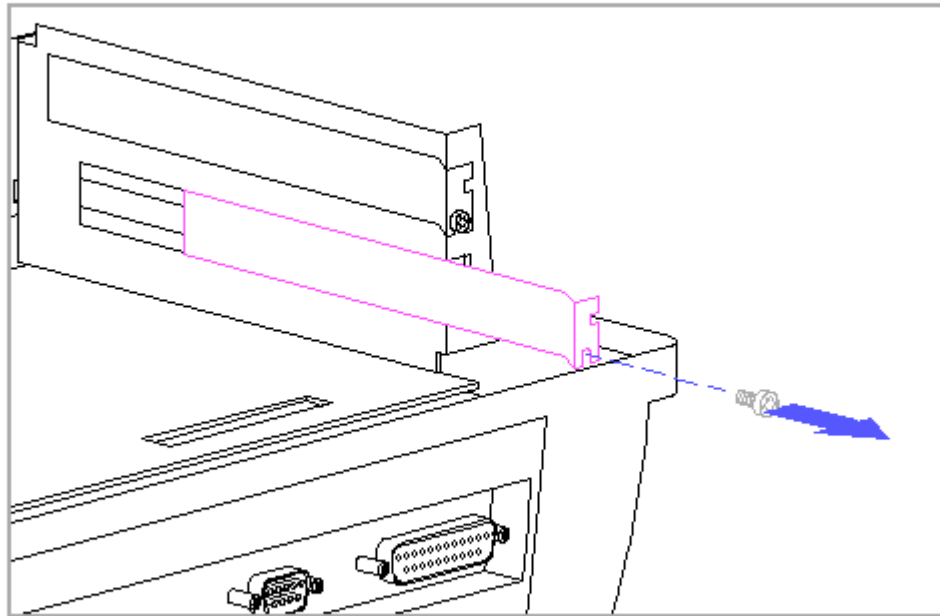


Figure 9-9. Removing the Expansion Slot Cover

3. Slide the expansion board into the slot, until the edge of the board contacts the connector on the vertical circuit board.

IMPORTANT: Ensure that the edge of the expansion board aligns with the connector before pressing on the board to seat it.

4. Press on the edge of the board until it is fully seated in the connector.
5. Replace the expansion board screw.

## 9.9 Expansion Board Cage

To remove the expansion board cage, complete the following steps:

1. Remove the bottom cover (Section 9.6).
2. Remove any expansion boards that are installed (Section 9.8).
3. Disconnect the drive cables from the vertical circuit board (Figure 9-10).

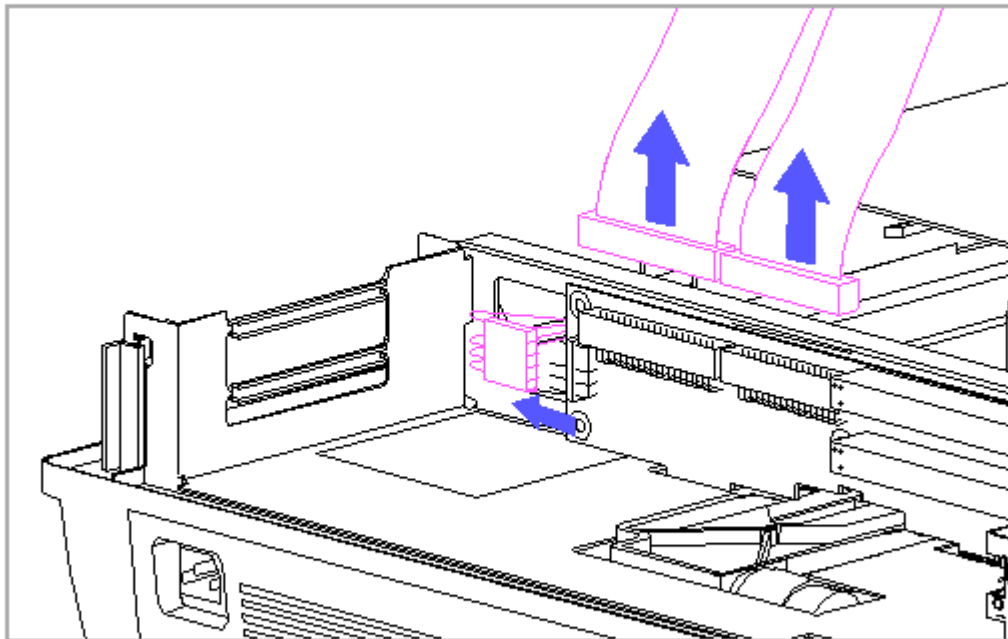


Figure 9-10. Disconnecting the Drive Cables on the Vertical Circuit Board

NOTE: The vertical circuit board and the drive signal cables are labeled to help match the correct connectors. Refer to Section 9.15 for more information on drive cables.

4. Lift the expansion board cage vertically to remove it from the expansion base (Figure 9-11).

NOTE: The expansion board cage is "keyed" to ride inside grooves that are in the three cage support posts.

When removing the expansion board cage, the edge connectors on the vertical circuit board disconnect from the system board.







1. Remove the bottom cover (Section 9.6).
2. Remove any expansion boards that are installed (Section 9.8).
3. Remove the expansion board cage (Section 9.9).
4. Remove the three screws that attach the power supply bezel to the back edge of the top cover (Figure 9-13).

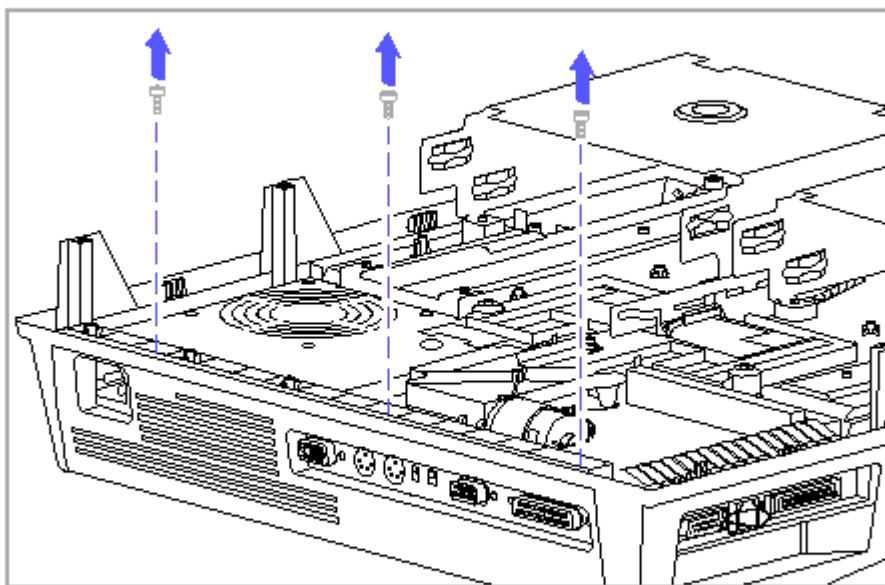


Figure 9-13. Removing the Power Supply Bezel Screws

5. Loosen, but do not remove, the two screws that attach the slotted bracket of the power supply to the top cover (Figure 9-14).

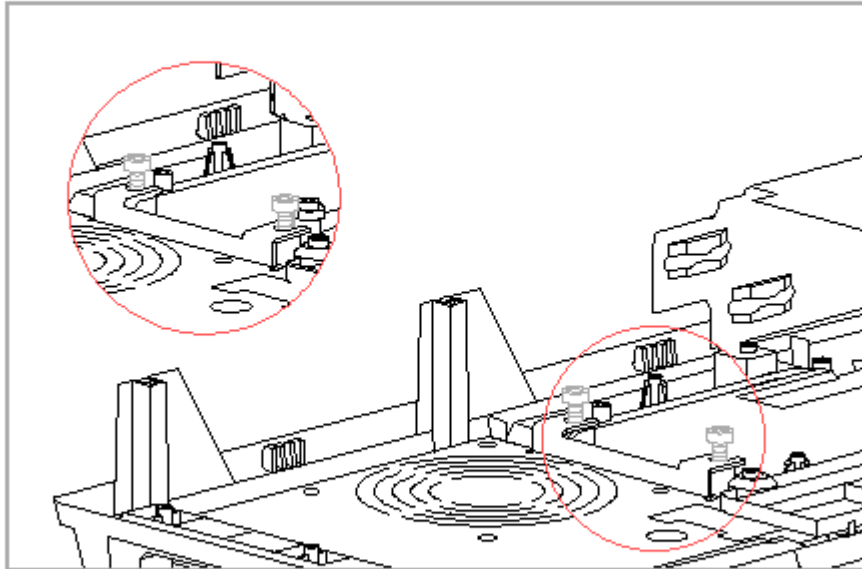


Figure 9-14. Loosening the Power Supply Bracket Screws

6. Remove the power supply and bezel as an assembly by sliding it out of the rear of the expansion base (Figure 9-15).















(Figure 9-19). If the three screws are tightened first, the docking mechanism or the 198-pin external options connector may not align properly.

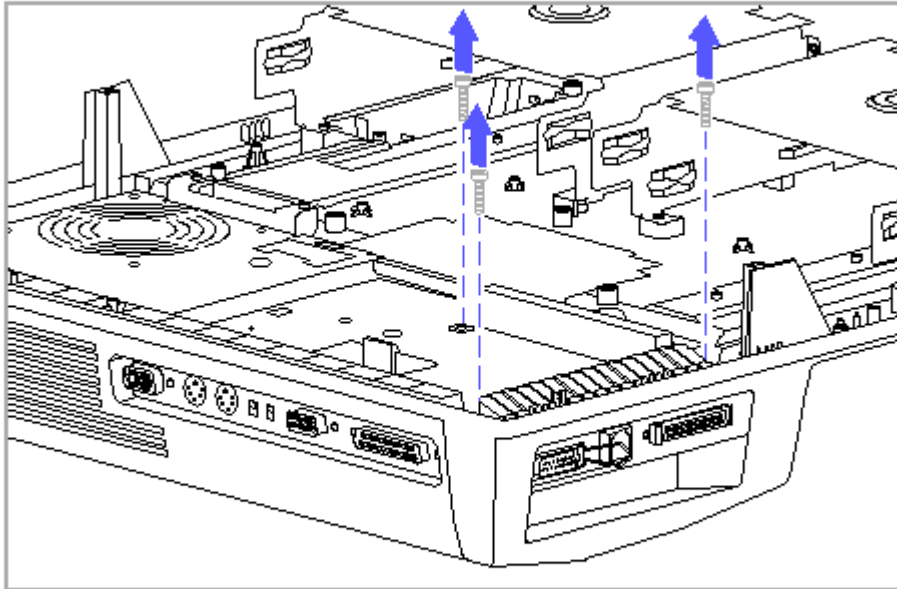


Figure 9-21. Removing the System Board/Battery Charging Compartment Screws

9. To allow the latch on the AUI connector to clear the top cover, fold the latch [1] so that it lies against the RJ-45 connector (Figure 9-22).
10. Lift the front of the system board/battery charging compartment assembly up by the external options connector [2] until the connector shield [3] is free of the top cover, then carefully tilt the assembly back to release it from the top cover (Figure 9-22).

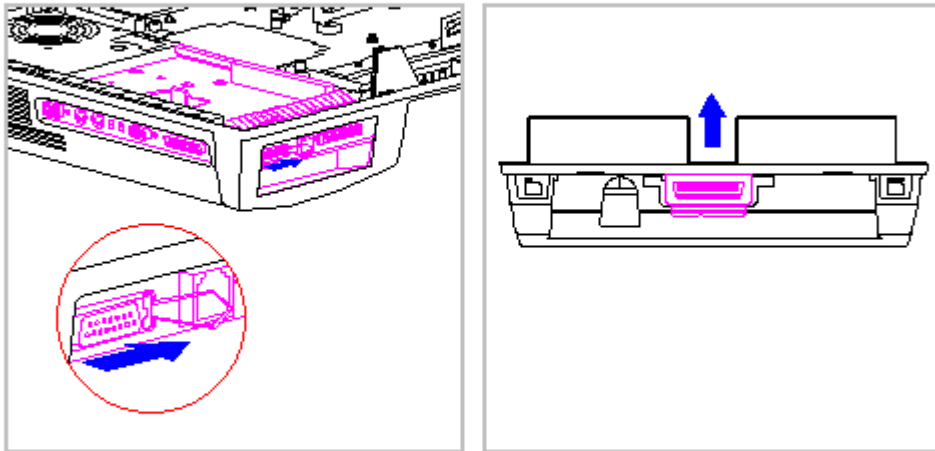


Figure 9-22. Removing the System Board/Battery Charging Compartment Assembly

**IMPORTANT:** When replacing the system board/battery charging compartment assembly, ensure that the release latch on the AUI connector lock is folded flat against the RJ-45 connector and that the harness extension cable is positioned to allow it to connect to the sensor cable harnesses. In addition, you must press in the center of the external options connector to enable the system board to seat properly.

11. Turn the assembly over and remove the battery bezel [1] from the battery charging compartment by gently releasing the two plastic retaining tabs that hold them together (Figure 9-23).

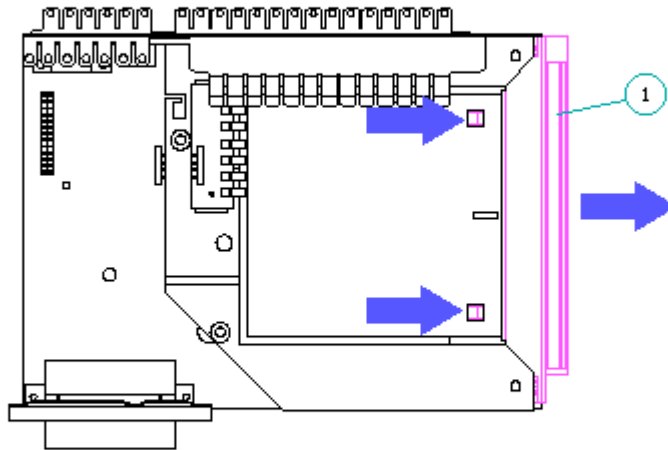


Figure 9-23. Removing the Battery Bezel

To separate the system board from the battery charging compartment and harness extension cable, complete the following steps:

1. Disconnect the battery contacts board connector from the system board (Figure 9- 24).

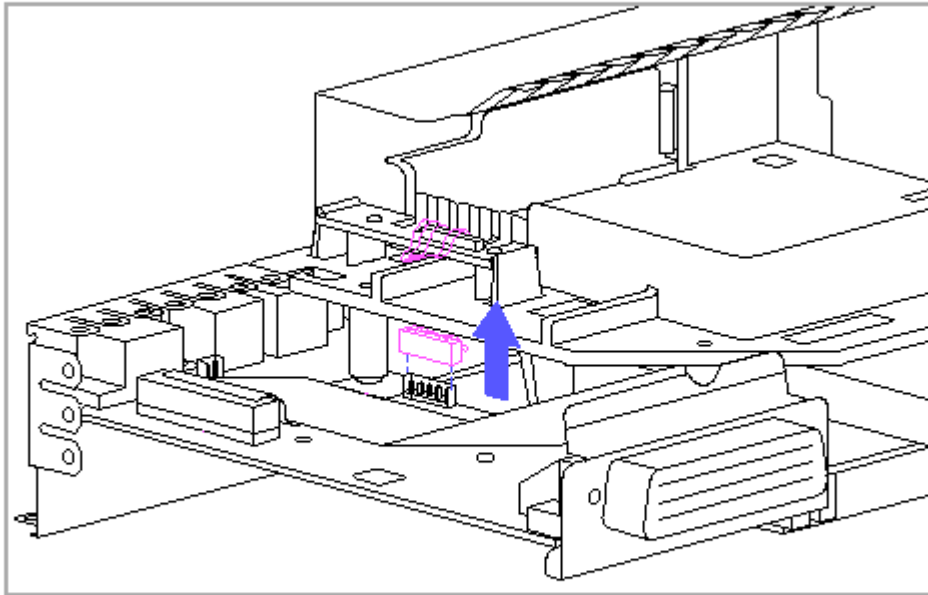


Figure 9-24. Disconnecting the Battery Contacts Board Connector

2. Turn the assembly over and release the plastic retaining tab that attaches the system board to the battery charging compartment (Figure 9-25).

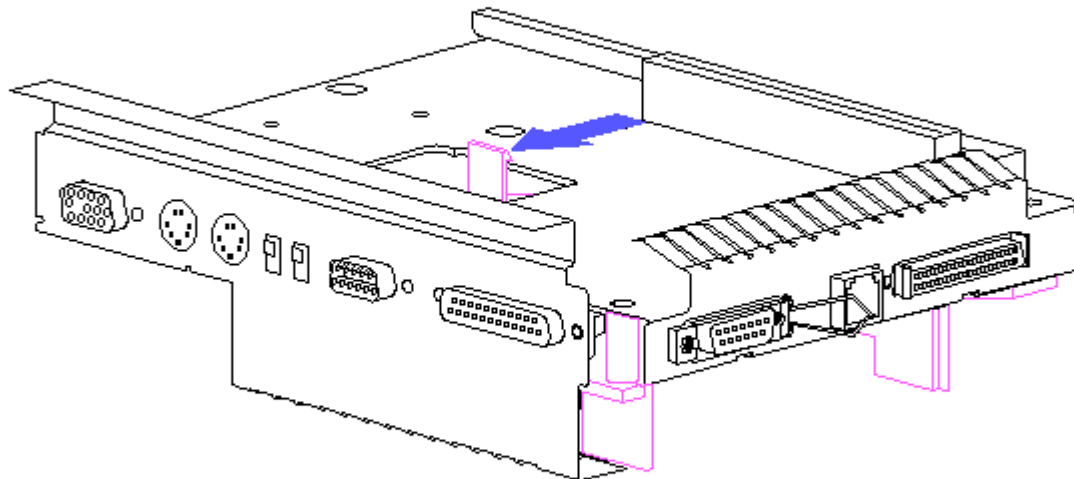


Figure 9-25. Releasing the Battery Charging Compartment Retaining Tab

3. Disconnect the harness extension cable from the system board (Figure 9-26).

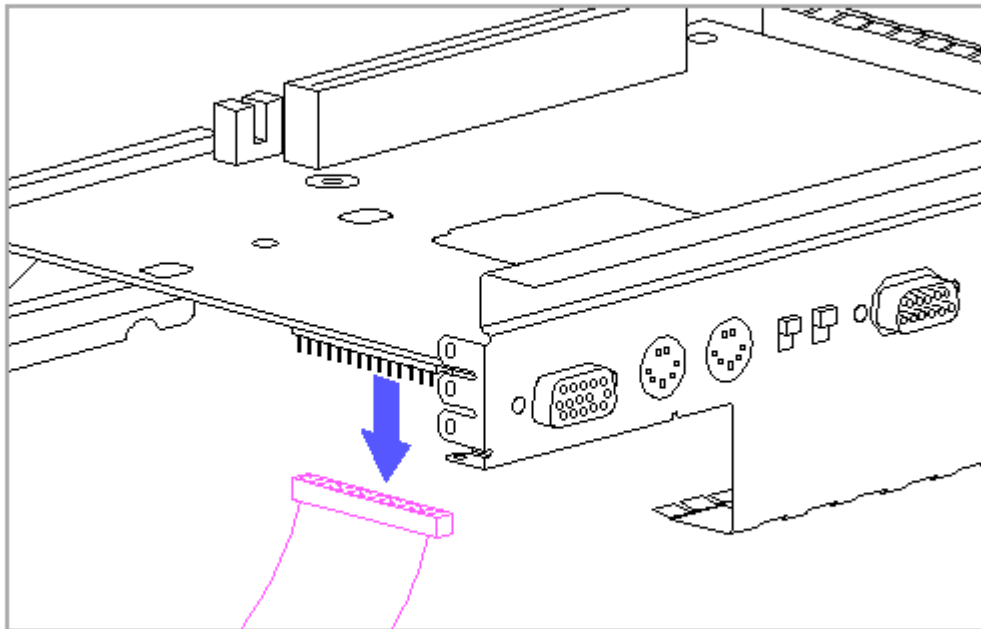


Figure 9-26. Disconnecting the Harness Extension Cable from the System Board

## 9.14 Battery Contacts Board

To remove the battery contacts board, complete the following steps:

1. Remove the bottom cover (Section 9.6).
2. Remove any expansion boards that are installed (Section 9.8).
3. Remove the expansion board cage (Section 9.9).
4. Remove the docking mechanism (Section 9.12).
5. Remove the system board and battery charging compartment (Section 9.13).
6. Disconnect the battery contacts board connector from the system board (Figure 9-24).
7. Gently release the two snaps [1] (one at a time) that attach the battery contacts board [2] to the battery charging compartment (Figure 9-27).
8. Guide the battery contacts board connector [3] through the guide hole [4] in the battery charging compartment (Figure 9-27).





the front of the drive bay (Figure 9-28).

3. Pull the drive halfway out to access the drive cables (Figure 9-28).

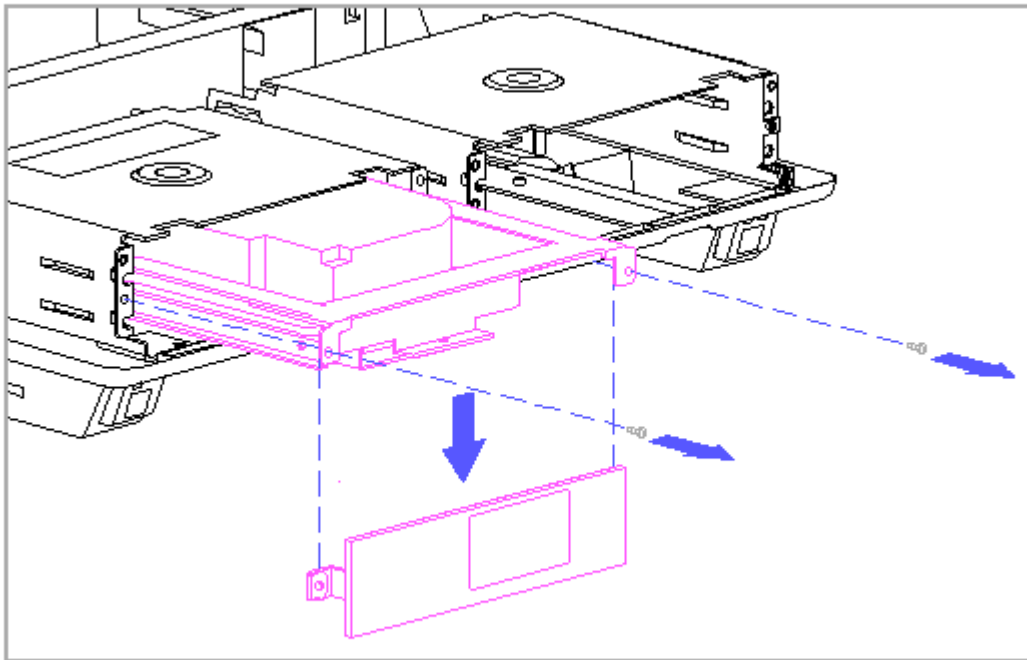


Figure 9-28. Preparing to Remove a Drive

4. Disconnect the cables from the drive.
5. Remove the drive.

NOTE: The expansion base comes from the factory with blank panels covering the openings to the drive bays. If no drive is to be reinstalled in the drive bay, cover the opening by installing the blank panel with the two drive-mounting screws.

#### Installing a Drive

IMPORTANT: Refer to Table 8-10 for a list of Compaq supported drives. To be supported in the expansion base, drives that are not listed in table 8-10 must meet the maximum drive bay length requirements listed in Section 10.1 and the power requirements listed in Section 10.2.

The steps for installing a drive are the reverse of the steps for removing a

drive. Remember to install the drive upside down, since the drive cages are upside down during this procedure. In addition, refer to the drive manufacturer's installation manual for specific instructions and precautions for replacing a drive.

The drive bays are designated as drive positions 1 [1] and 2 [2] (Figure 9-29).

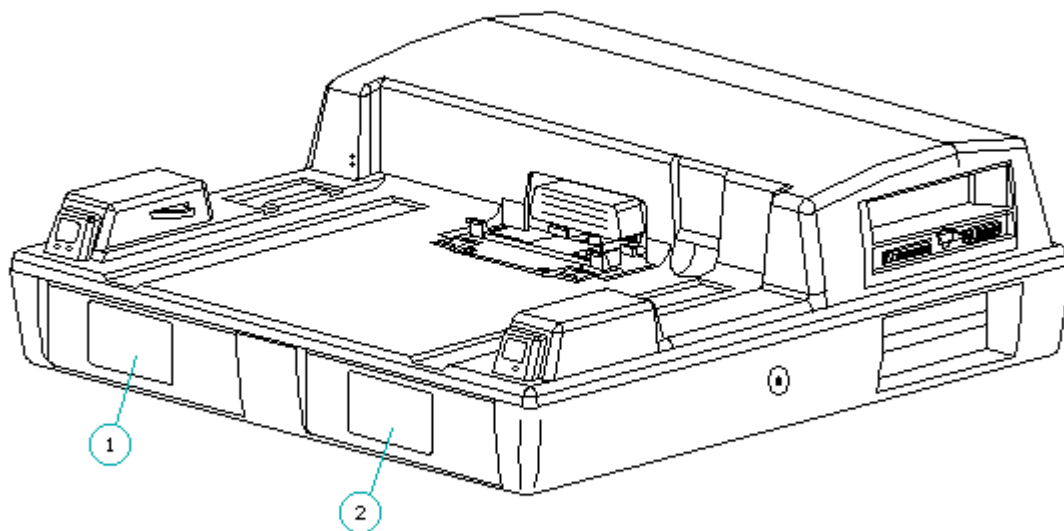


Figure 9-29. Drive Bays

NOTE: Internal SCSI-2 drives must be installed in drive position 2 to use the SCSI-2 signal cable included with the expansion base. Refer to Appendix F for more information on connecting and configuring SCSI-2 drives.

When installing a drive that is different from a drive being removed, ensure that the logical drive designations and the configuration switch settings are correct (Appendix C). In addition, the first time the computer is docked after installing a different drive, the computer may detect a configuration change and prompt you to run Computer Setup to configure optional devices (Section 6.7). After running Computer Setup, run Computer Checkup to verify that the drive is functioning properly (Section 2.3).

NOTE: When installing a third-height drive that has a front panel, install a sixth-height panel to cover the space above or below the drive. The sixth-height panel and its two screws are included with the expansion base.

## Installing an Integrated Drive Electronics (IDE) Hard Drive

**IMPORTANT:** MS-DOS 6 or higher (5.0 or higher as published by Compaq) is required to use an optional IDE hard drive in the expansion base. When using a previous version of MS-DOS, the computer does not recognize the optional IDE hard drive.

The expansion base has a hard drive interface for an IDE drive (which has a built-in controller). There are special procedures for configuring the system (computer, drive, and expansion base) when installing an IDE drive (Appendix C).

**IMPORTANT:** If the hard drive has no front panel, install a blank panel over the drive bay opening (Figure 9-30). Place the panel tabs [1] behind the metal tabs at the front of the hard drive frame [2]. If the panel is installed in front of the metal tabs, the bottom cover of the expansion base cannot close properly.

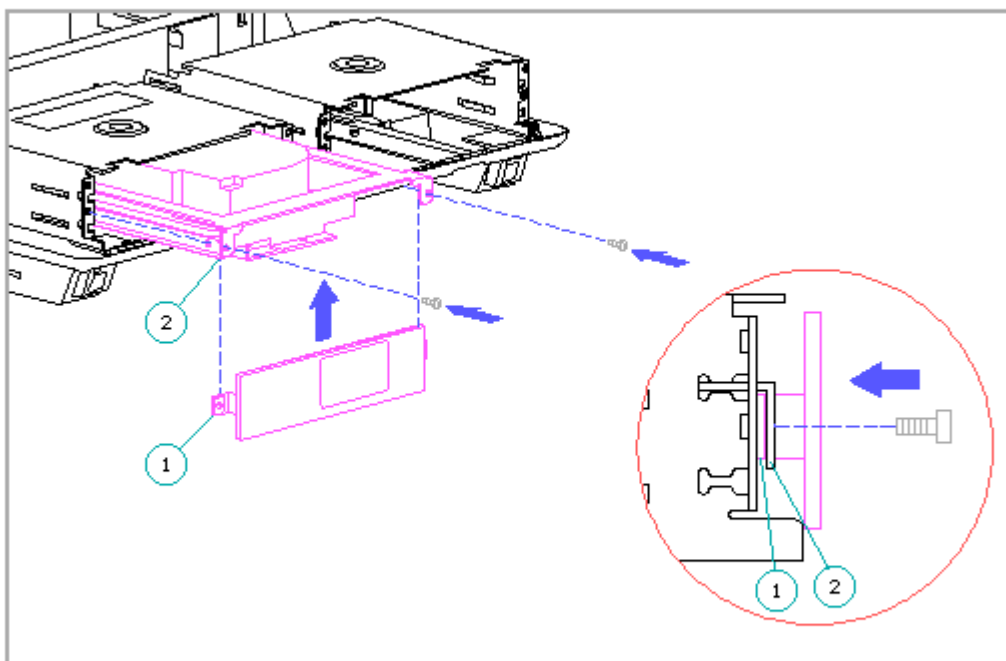


Figure 9-30. Installing a Blank Drive Panel

Drive Cables

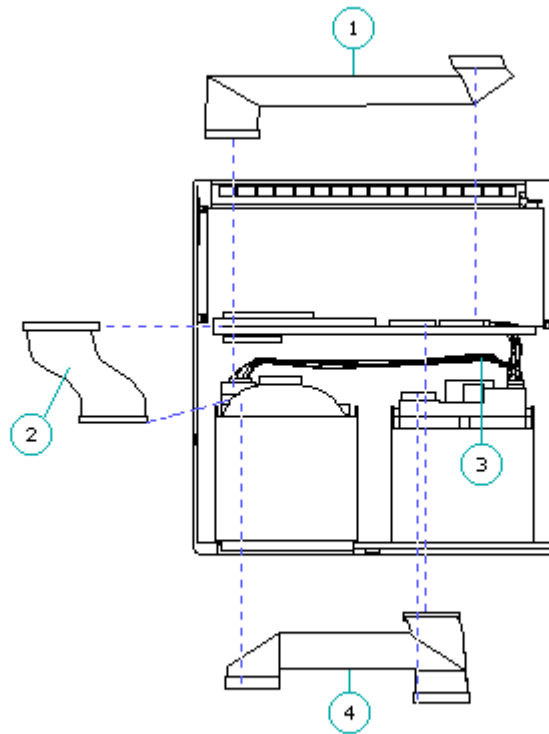


Figure 9-31. Drive Cable Locations

1. IDE Hard drive signal
2. SCSI-2
3. Drive power
4. Tape/diskette drive signal

The drive power cable [3] is a daisy chain type that can connect to either one or two drives and comes preinstalled on the vertical circuit board. The IDE hard drive signal cable [1], the SCSI-2 cable [2], and the tape/diskette drive signal cable [4] come with the expansion base, but are not preinstalled (Figure 9-31).

Each cable has a printed description, a Compaq spare part number, and a Compaq assembly part number. The vertical circuit board also has a printed description of where drive cables connect to it.

NOTE: The SCSI-2 drive cable connects to the system board, not to the vertical circuit board.

Table 9-1 provides information regarding cable connector locations, preinstallation, and number of drives supported:

Table 9-1. Drive Cables

Cable Description	Preinstalled	Connector Location	Number of Drives Supported
Drive Power	Yes	Vertical Circuit Board	1 or 2
IDE Drive Signal	No	Vertical Circuit Board	1
Tape/Diskette Drive Signal	No	Vertical Circuit Board	1 or 2
Internal SCSI-2	No	System Board	1

To remove a drive cable, complete the following steps:

1. Remove the bottom cover (refer to Section 9.6).
2. Disconnect the drive cable from the drive(s).
3. Disconnect the drive cable from the vertical circuit board or the system board.

IMPORTANT: When replacing a drive cable, fold the cable so that it:

- Lies flat and is not under stress.
- Does not interfere with the operation of the manual eject override mechanism.
- Does not interfere with the installation of another drive or drive cable.

## 9.16 Drive Cages

The expansion base has two drive cages that are interchangeable and that can be removed and replaced separately.

### Removing the Drive Cage

To remove a drive cage, complete the following steps:

1. Remove the bottom cover (Section 9.6).
2. Remove any installed drives and drive bezels (Section 9.15).
3. Remove the four screws that attach the drive cage [1] to the top cover (Figure 9-32).
4. Remove the drive cage and the drive cage spacer [2] (Figure 9-32).

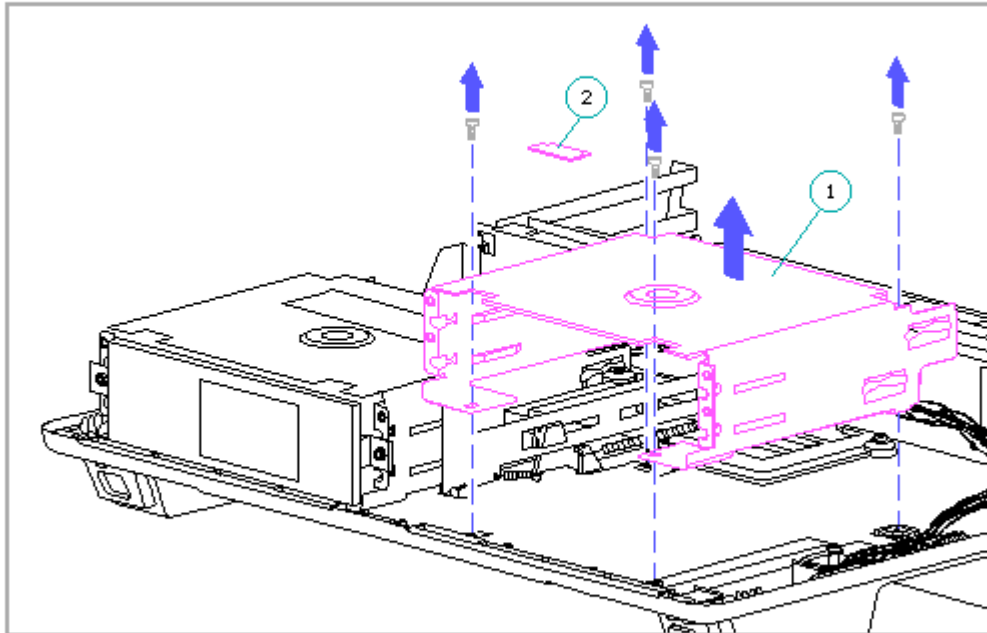


Figure 9-32. Removing the Drive Cage and the Drive Cage Spacer

### Replacing the Drive Cage

**IMPORTANT:** To prevent the top cover from bowing and causing interference during docking and undocking, the drive cage spacer must be properly installed when replacing the drive cage.

To replace the drive cage, complete the following steps:

1. Place the drive cage(s) in position (Figure 9-33).
2. Replace the drive cage screws, but do not tighten them (Figure 9-33).

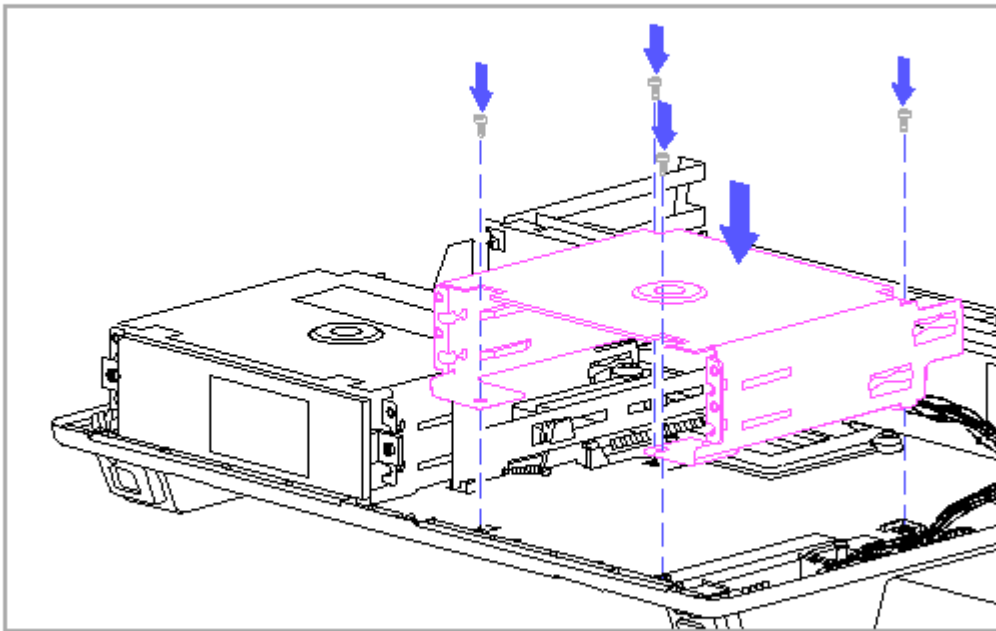


Figure 9-33. Placing the Drive Cage in Position

3. If the other drive cage was not removed, loosen its screws.
4. Slide both drive cages toward the center of the top cover as much as the screw holes allow (Figure 9-34).

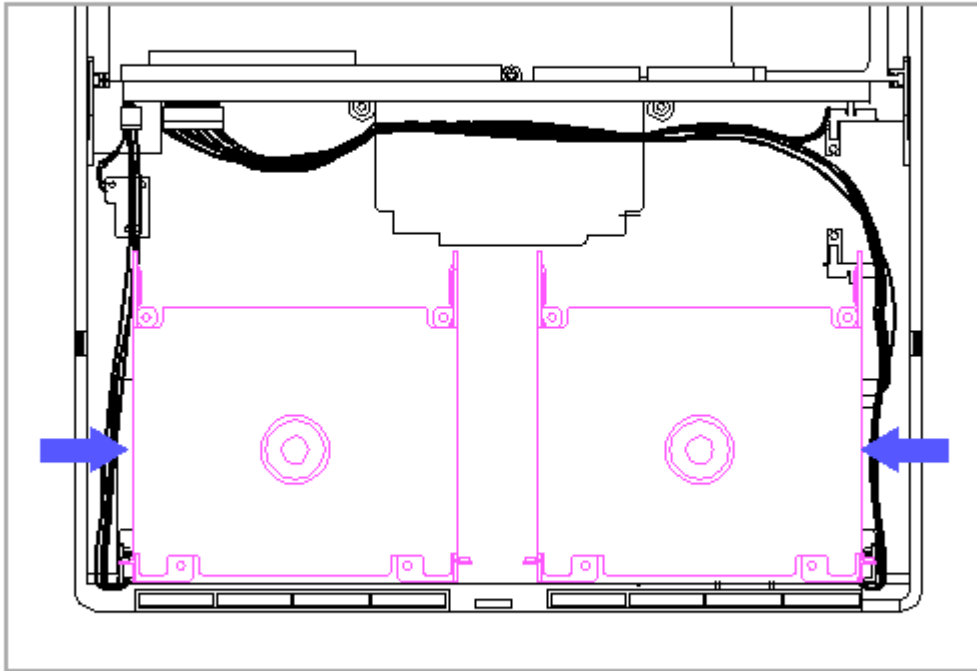


Figure 9-34. Moving the Drive Cages Toward the Center

5. Tighten the screws.
6. Place the first end of the drive spacer [1] into the slot [2] of the first drive cage (Figure 9-35).



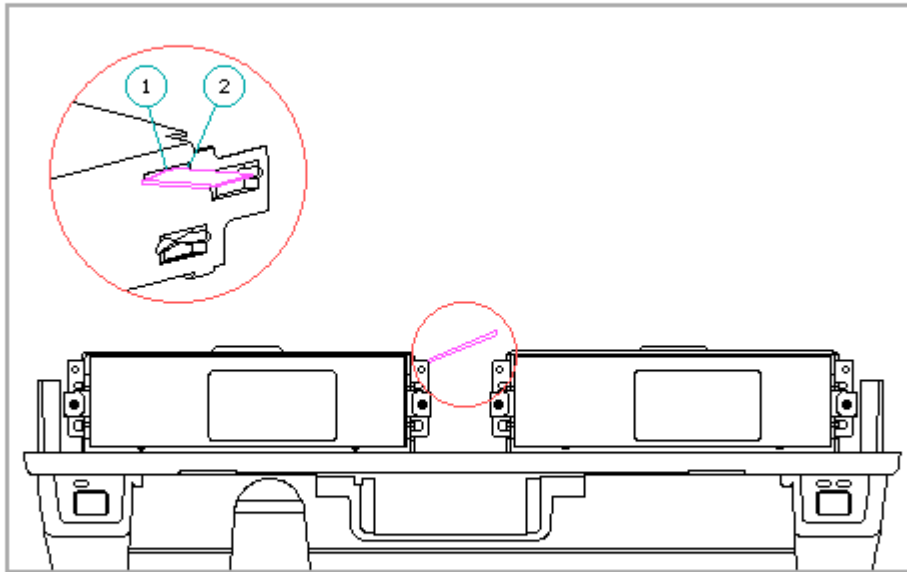


Figure 9-35. Installing the First End of the Drive Cage Spacer

7. Flex the top cover of the expansion base downward [1] to slightly widen the gap between the drive cages (Figure 9-36).
8. While the top cover is flexed, place the other end of the drive cage spacer [2] into the slot on the other drive cage [3], and release the tension on the top cover (Figure 9-36).

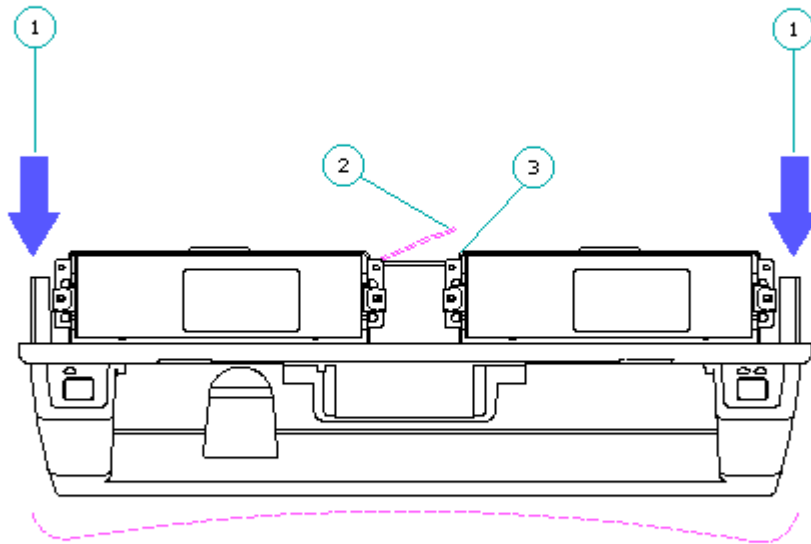


Figure 9-36. Installing the Other End of the Drive Cage Spacer

### 9.17 Cable Harnesses And PCMCIA Card Sensor

This section covers removal and replacement procedures for the cable harnesses and the PCMCIA card sensor. Refer to Section 6.6 for more information about the cable harnesses and the PCMCIA card sensor.

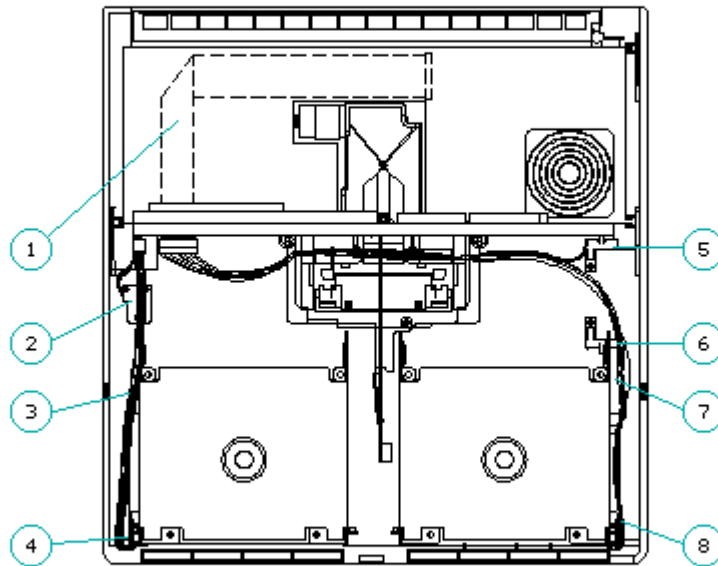


Figure 9-37. Cable Harnesses and the PCMCIA Card Sensor

1. Harness extension cable
2. Keylock switch
3. Eject switch cable harness
4. Eject switch
5. PCMCIA card sensor emitter
6. PCMCIA card sensor receiver
7. Power switch cable harness
8. Power switch

NOTE: Refer to Section 9.18 for removal and replacement procedures for power switch and the eject switch components.

#### Power Switch Cable Harness

To remove the power switch cable harness, complete the following steps:

1. Remove the bottom cover (Section 9.6).
2. Remove the drive if one is installed in the drive cage above the power switch (Section 9.15).
3. Remove the drive cage above the power switch (Section 9.16).

4. Remove the power switch screw (Figure 9-38).

**IMPORTANT:** The power switch screw is also used to attach one of the horizontal guides. When replacing the power switch, be sure the horizontal guide is still properly aligned (Section 9.19).

5. Remove the power switch from the top cover (Figure 9-38).

**IMPORTANT:** If the power switch does not come out easily, the LED light pipes may be catching on the top cover. If this happens, press firmly on the light pipes while removing the switch to allow the light pipes to clear the top cover.

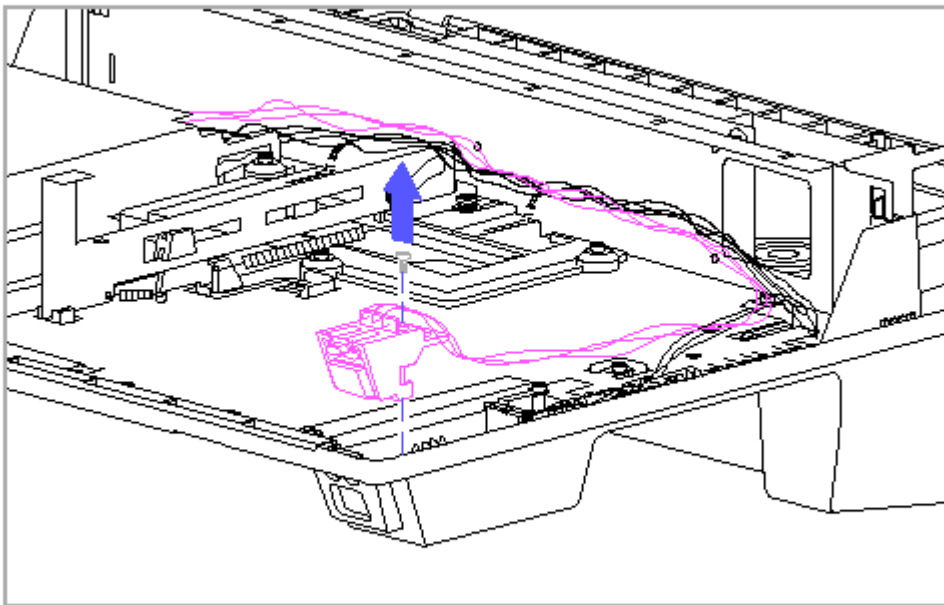


Figure 9-38. Removing the Power Switch from the Top Cover

6. Disconnect the computer status sensor cables from the docking mechanism (Figure 9-39).

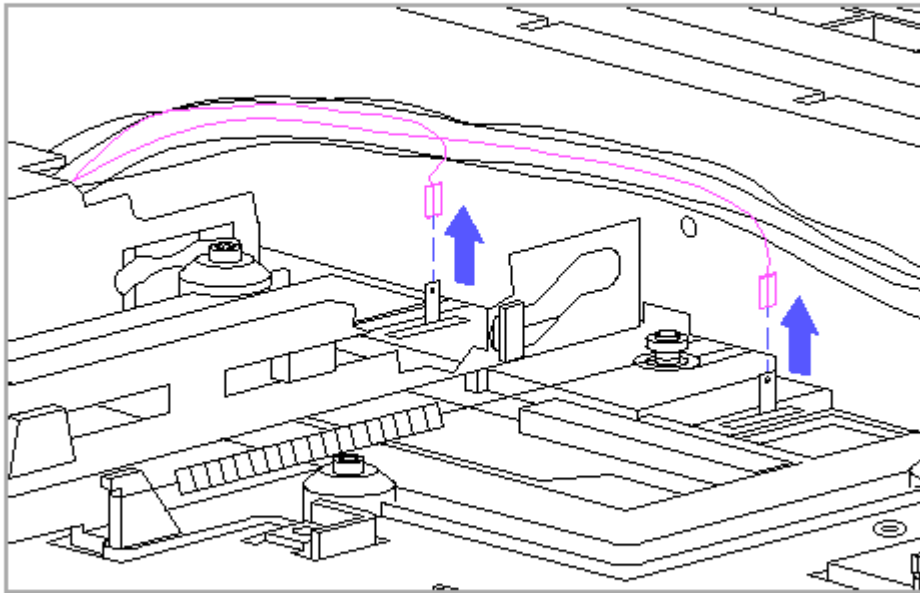


Figure 9-39. Disconnecting the Computer Status Sensor Cables

7. Remove the screws from the PCMCIA card sensor emitter and receiver frames (Figure 9-40).
8. Remove the receiver [1] and disconnect its cable [2] (Figure 9-40).
9. Remove the emitter [3] and disconnect its cable [4] (Figure 9-40).



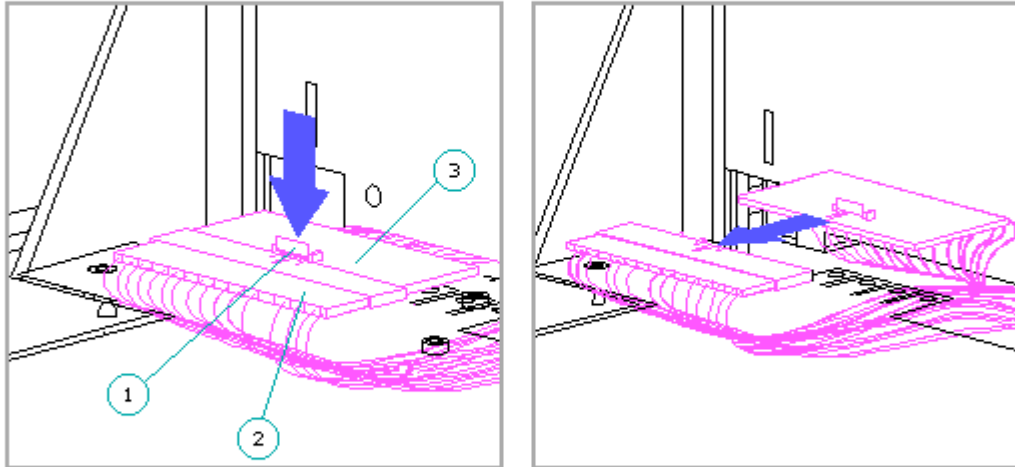


Figure 9-41. Disconnecting the Power Switch Cable Harness from the Harness Extension Cable

**IMPORTANT:** When replacing the power switch cable harness, ensure that the cable harness is reconnected to the harness extension cable or the computer cannot dock properly. Ensure that the cable lock on the harness extension cable snaps back into place.

11. Remove the power switch cable harness (Figure 9-42).

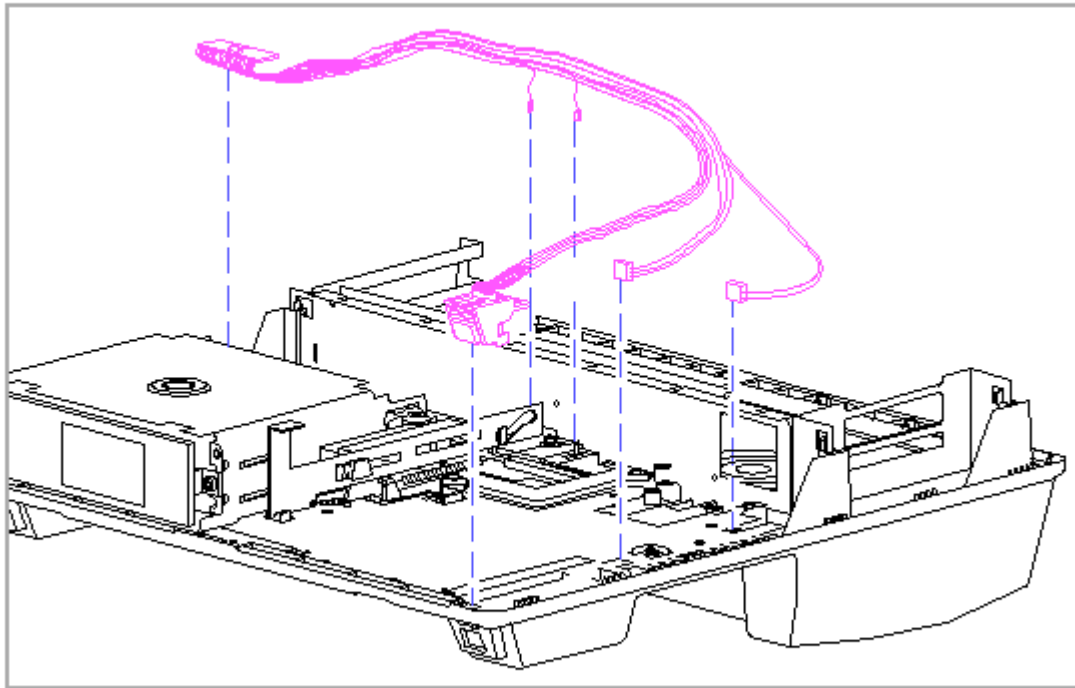


Figure 9-42. Removing the Power Switch Cable Harness

#### PCMCIA Card Sensor (Emitter and Receiver)

The PCMCIA card sensor is a light curtain type and is composed of emitter and receiver boards that are housed in individual frames. The receiver is located toward the front of the expansion base [1] while the emitter is located toward the rear [2] (Figure 9-43).



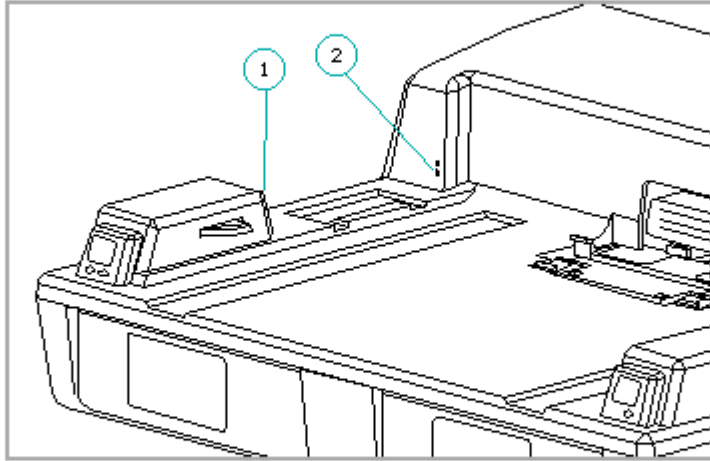


Figure 9-43. PCMCIA Card Sensor Emitter and Receiver Locations

The emitter and receiver are similar in appearance. To tell them apart easily, note that the receiver frame has one small hole [1] and the emitter frame has two small holes [2] (Figure 9-44). The single hole in the receiver frame corresponds with a single infra-red component on the receiver board while the two holes in the emitter frame correspond with two LEDs on the emitter board.

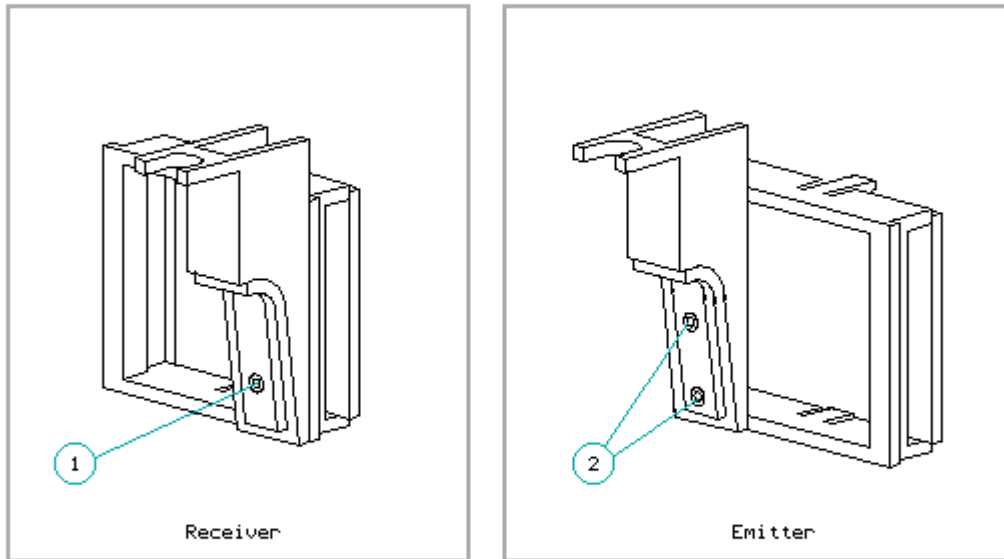


Figure 9-44. PCMCIA Card Sensor Receiver and Emitter

NOTE: The small holes in the emitter and receiver frames may become blocked with debris that interferes with their operation. Before replacing the emitter and receiver, ensure that the holes are free of debris.

To remove the PCMCIA card sensor emitter and receiver, complete the following steps:

1. Complete steps 1 through 9 as listed in "Power Switch Cable Harness" in this section to remove the emitter and receiver from the top cover.
2. To remove the emitter and receiver boards from their frames, gently pull back on the plastic snaps and lift the boards out (Figure 9-45).

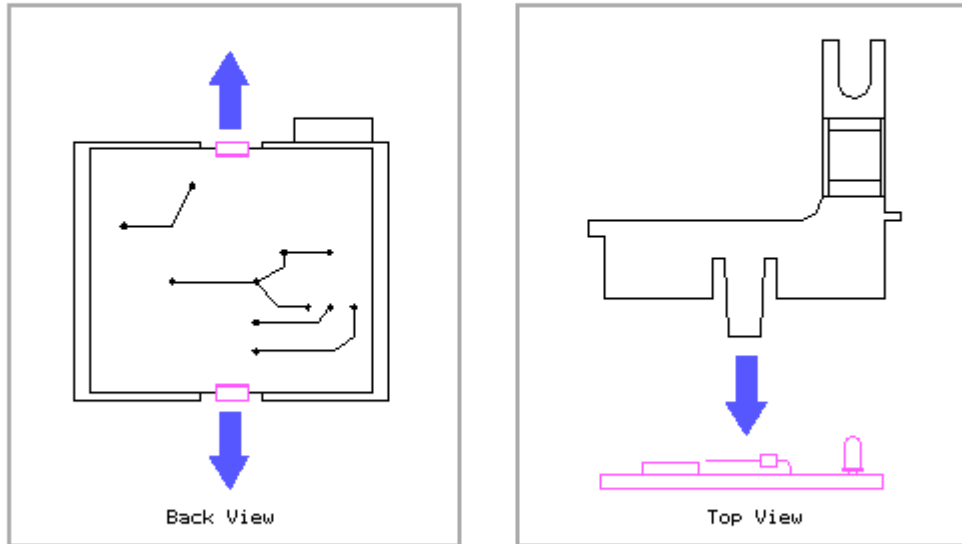


Figure 9-45. Removing the PCMCIA Card Sensor Emitter/Receiver Board from the Frame

**IMPORTANT:** When replacing the emitter board in its frame, it is possible to install it backwards. To connect the emitter board to the power switch cable harness, ensure that the connector on the board faces the outside of the expansion base.

#### Eject Switch Cable Harness

To remove the eject switch cable harness, complete the following steps:

1. Remove the bottom cover (Section 9.6).
2. Remove the drive if one is installed in the drive cage above the eject switch (Section 9.15).
3. Remove the drive cage above the eject switch (Section 9.16).
4. Remove the eject switch screw (Figure 9-46).

**IMPORTANT:** The eject switch screw is also used to attach one of the horizontal guides. When replacing the eject switch, be sure the horizontal guide is still properly aligned (Section 9.19).

5. Remove the eject switch from the top cover (Figure 9-46).

**IMPORTANT:** If the eject switch does not come out easily, the LED light pipe may be catching on the top cover. If this happens, press firmly on the light pipe while removing the switch to allow the light pipe to clear the top cover.

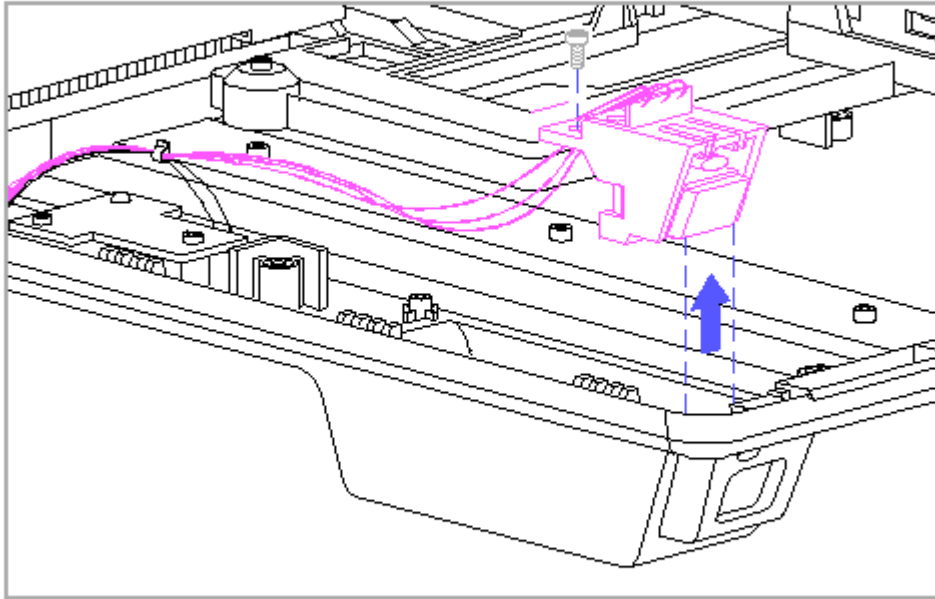


Figure 9-46. Removing the Eject Switch from the Top Cover

6. Remove the two screws that attach the metal keylock plate to the top cover and remove the keylock plate (Figure 9-47).

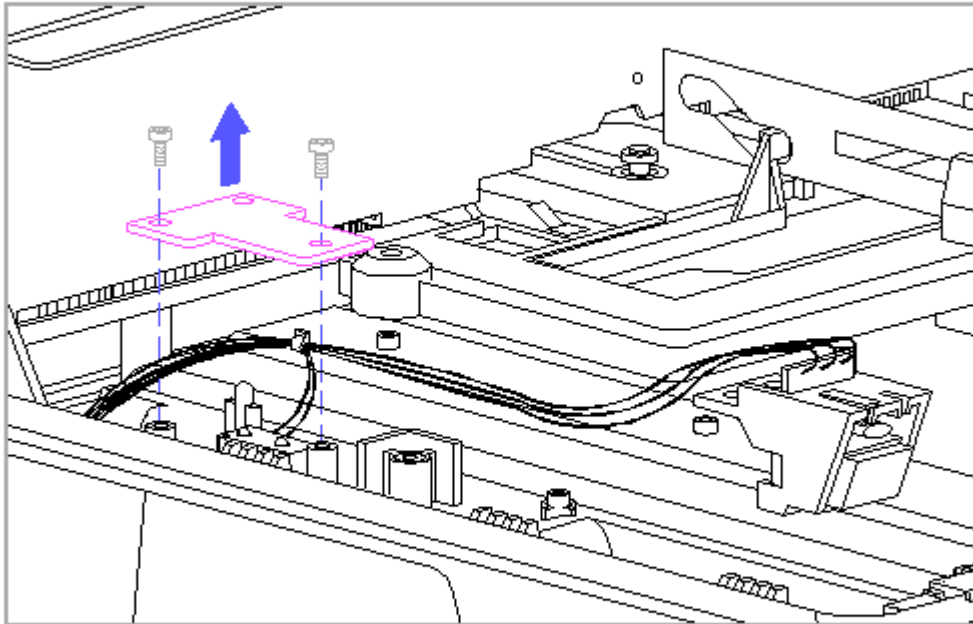


Figure 9-47. Removing the Keylock Plate

7. Remove the keylock switch (Figure 9-48).

**IMPORTANT:** When replacing the keylock switch, it is possible to install it upside down. Ensure that the switch actuator faces the outside of the expansion base or the switch cannot function (Figure 9-48).



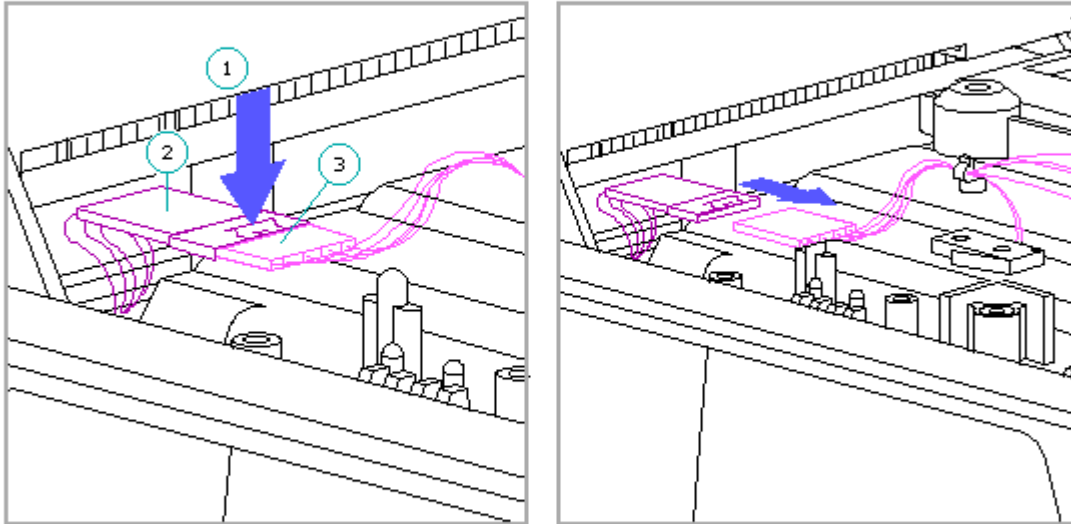


Figure 9-49. Disconnecting the Harness Extension Cable from the Eject Switch Cable Harness

**IMPORTANT:** When replacing the eject switch cable harness, ensure that the cable harness is reconnected to the harness extension cable or the computer cannot undock properly. Ensure that the cable lock on the harness extension cable snaps back into place.

9. Remove the eject switch cable harness (Figure 9-50).

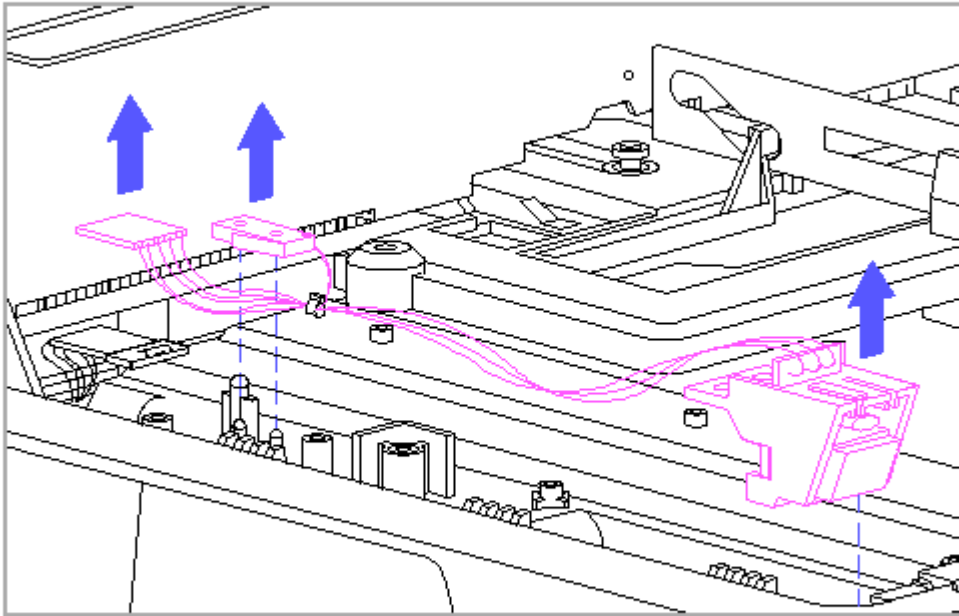


Figure 9-50. Removing the Eject Switch Cable Harness

#### Keylock Switch

The keylock switch is integrated into the eject switch cable harness. To replace the keylock switch, the eject switch cable harness must be replaced (refer to "Eject Switch Cable Harness" above).

#### Harness Extension Cable

The harness extension cable [1] connects the system board to the power switch cable harness [7] and the eject switch cable harness [3] (Figure 9-37). To remove the harness extension cable, follow the procedures for removing the system board (Section 9.13).

### 9.18 Power And Eject Switch Components

This section covers removal and replacement procedures for the power and eject switch components. The components include the following:

- o Switch frames
- o Light pipes (for LEDs mounted on the switch boards)
- o Switch springs and buttons

The switch frames, light pipes, and springs are interchangeable. The switch



buttons are not interchangeable. The switch components are available in the Miscellaneous Small Mechanical Parts Kit (Table 8-8).

NOTE: The power and eject switch boards are integrated into the power and eject switch cable harnesses. To replace the switch boards, the cable harnesses must be replaced (Section 9.17).

To remove the switch components, complete the following steps:

1. Remove the power switch by completing steps 1 through 5 as listed in "Power Switch Cable Harness" in Section 9.17.
2. Remove the eject switch by completing steps 1 through 5 as listed in "Eject Switch Cable Harness" in Section 9.17.
3. Remove the clear plastic light pipe(s) by sliding them out of the switch.

NOTE: The power switch has two light pipes and the eject switch has one.

IMPORTANT: When replacing the light pipe(s), be sure that the textured ends are facing out.

4. Simultaneously press the two release buttons on the switch and remove the switch button and spring (Figure 9-51).

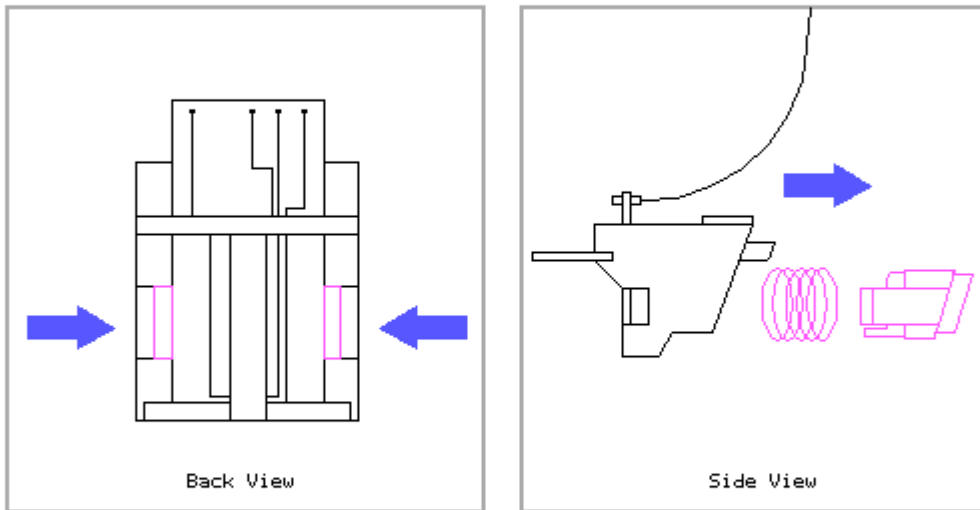


Figure 9-51. Removing the Switch Button and Spring

5. Slide the switch board out of the switch frame (Figure 9-52).

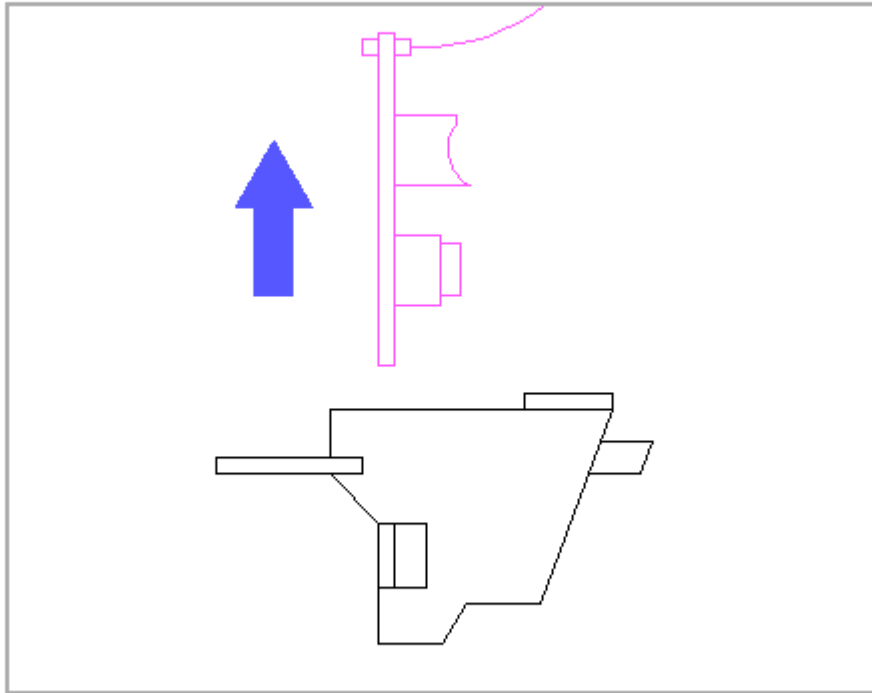


Figure 9-52. Removing the Switch Board from the Switch Frame

## 9.19 Horizontal Guides And Springs

The expansion base has two horizontal guides and springs: one located under the power switch (the power switch side) and one located under the eject switch (the eject switch side). The horizontal guides and springs are interchangeable and the procedures for removing them are the same for both sides. However, the procedures for replacing each side are slightly different.

### Removing the Horizontal Guides and Springs

To remove the horizontal guides and springs, complete the following steps:

1. Remove the bottom cover (Section 9.6).
2. Remove any installed drives and drive bezels (Section 9.15).
3. Remove the drive cages (Section 9.16).
4. Remove the screws that attach the power switch and the eject switch to the top cover (Figure 9-53).
5. Remove the eject switch [1] and the power switch [2] from the top cover (Figure 9-53).

NOTE: The eject switch and the power switch are still attached to their cable harnesses.

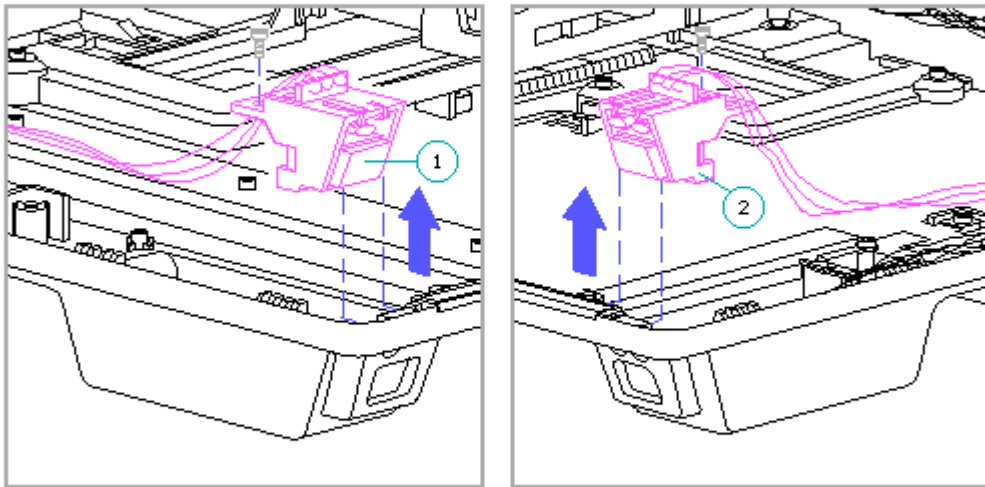


Figure 9-53. Removing the Eject Switch and the Power Switch

6. Remove the horizontal guides and springs (Figure 9-54).

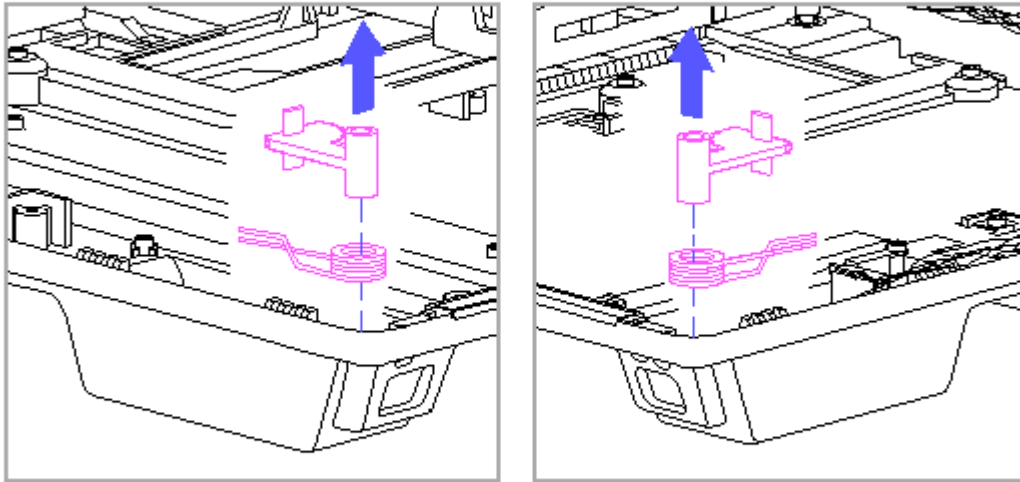


Figure 9-54. Removing the Horizontal Guides and Springs

#### Replacing the Horizontal Guides and Springs

NOTE: One of the legs on each spring is straight and the other leg is bent.

#### Eject Switch Side

To replace the horizontal guide and spring for the eject switch side, complete the following steps:

1. Position the spring so that the legs of the spring are on the top [1] (Figure 9-55).
2. With the curved surface of the horizontal guide [2] facing right, place the spring post of the horizontal guide [3] in the coil of the spring [4]. Ensure that both legs of the spring are to the left of the horizontal guide (Figure 9-55).

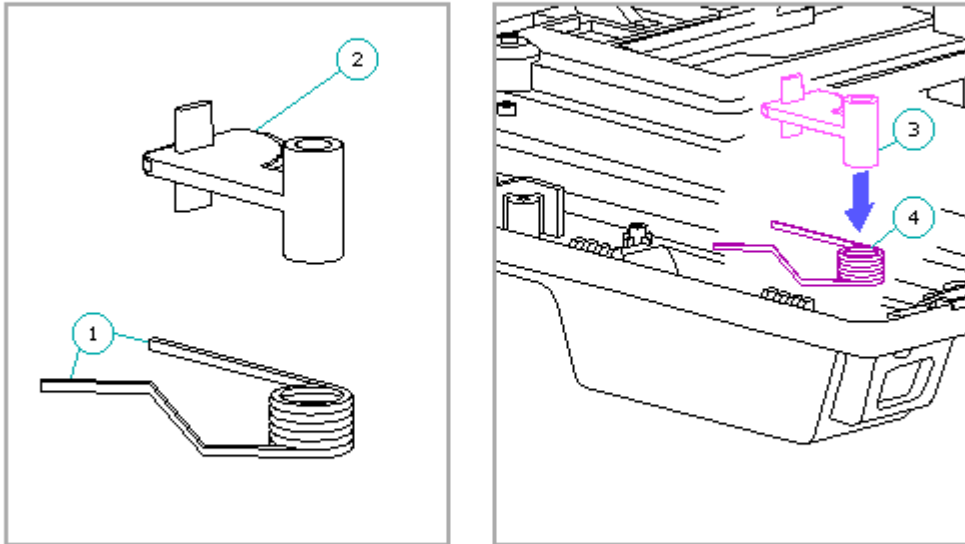


Figure 9-55. Positioning the Spring onto the Horizontal Guide (Eject Switch Side)

3. Compress the spring by holding the horizontal guide and rotating the bent leg of the spring [1] toward the guide (Figure 9-56).

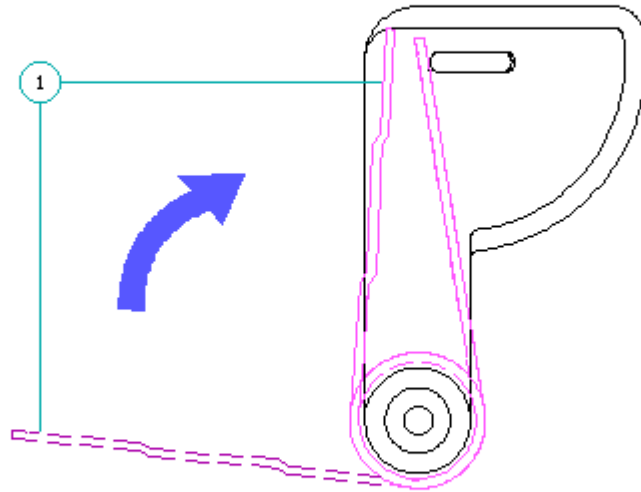


Figure 9-56. Compressing the Spring on the Guide (Eject Switch Side)

NOTE: The horizontal guide mounts on the horizontal guide pivot post [1] in the top cover with the curved surface of the horizontal guide in the horizontal guide slot [2] (Figure 9-57).

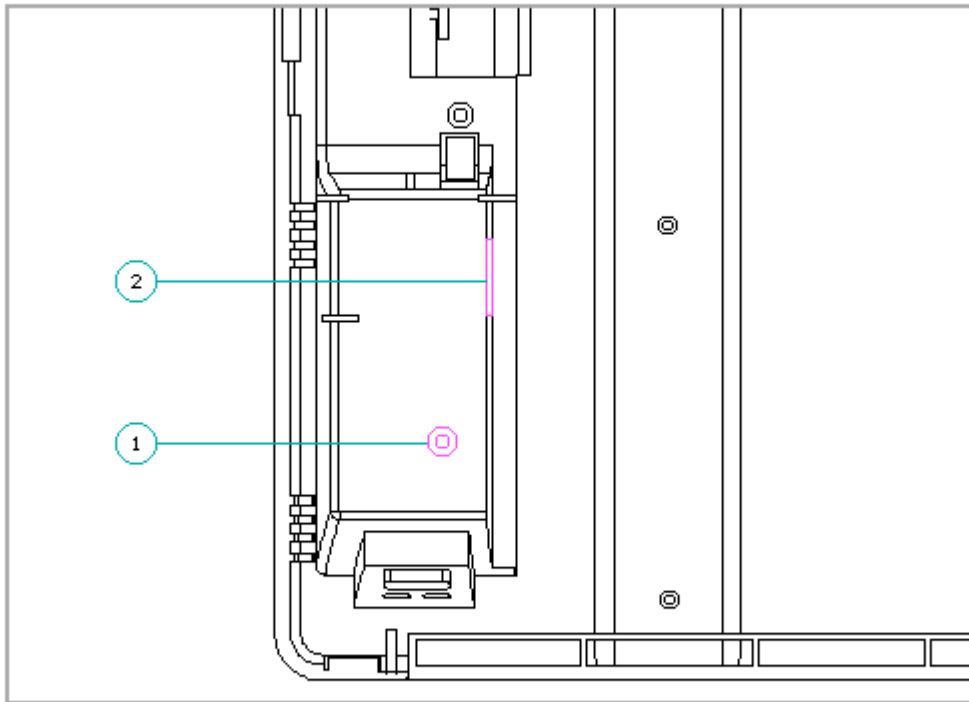


Figure 9-57. Horizontal Guide Pivot Post and Slot (Eject Switch Side)

4. Keeping the spring compressed, place the horizontal guide over the horizontal guide pivot post in the top cover and the curved surface of the horizontal guide into the horizontal guide slot and release the spring (Figure 9-58).



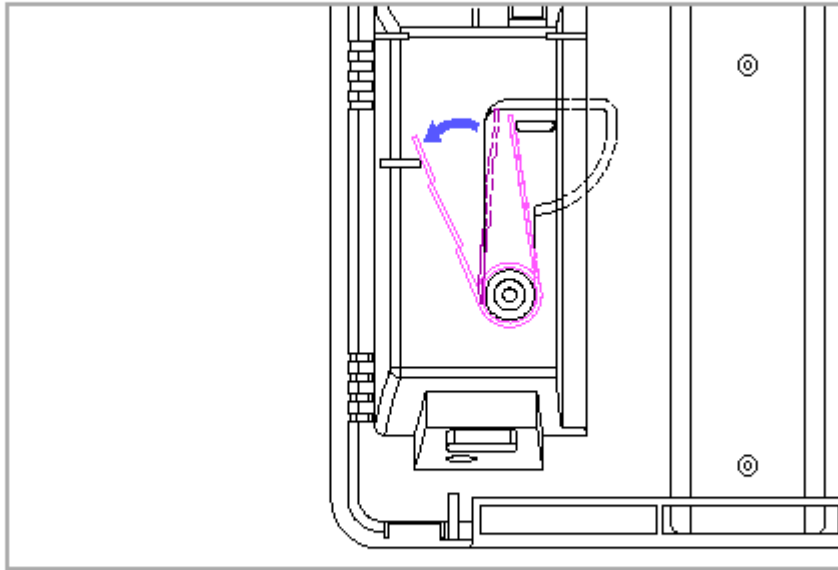


Figure 9-58. Installing the Horizontal Guide (Eject Switch Side)

5. Replace the eject switch and screw (Figure 9-59).

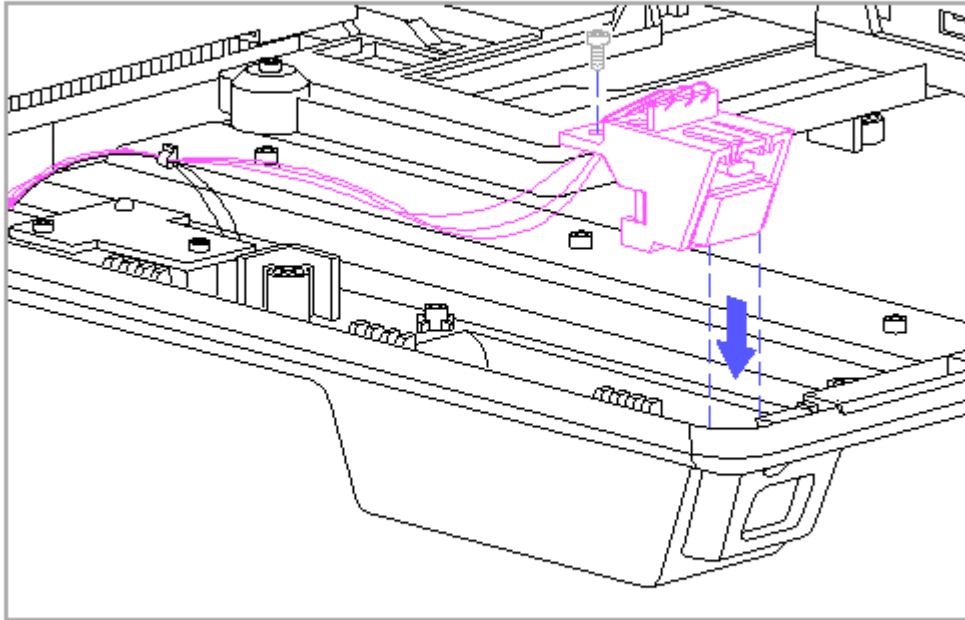


Figure 9-59. Replacing the Eject Switch and Screw

NOTE: The screw that attaches the eject switch to the top cover is also used to attach the horizontal guide.

#### Power Switch Side

To replace the horizontal guide and spring for the power switch side, complete the following steps:

1. Position the spring so that the legs of the spring are on the top [1] (Figure 9-60).
2. With the curved surface of the horizontal guide [2] facing left, place the spring post of the horizontal guide [3] in the coil of the spring [4]. Ensure that both legs of the spring are to the right of the horizontal guide (Figure 9-60).

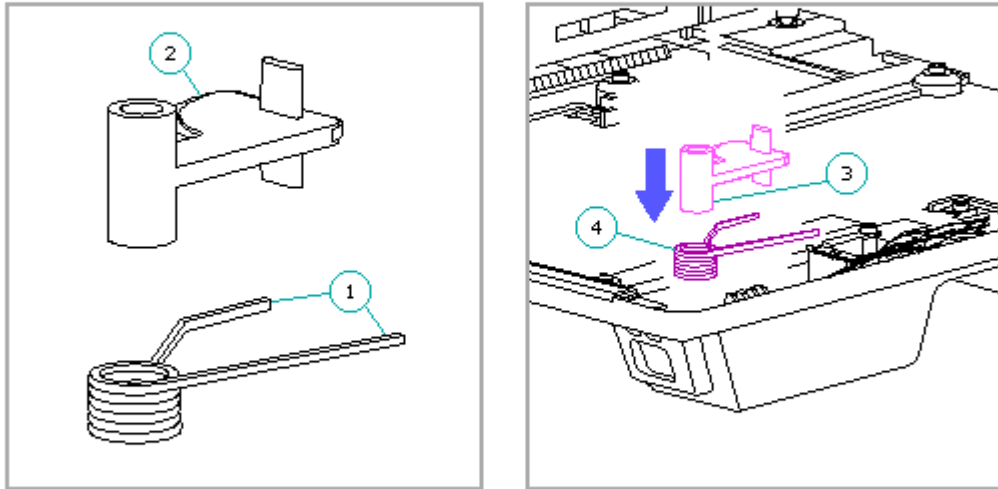


Figure 9-60. Positioning the Spring onto the Horizontal Guide  
(Power Switch Side)

3. Compress the spring by holding the horizontal guide and rotating the straight leg of the spring [1] toward the guide (Figure 9-61).

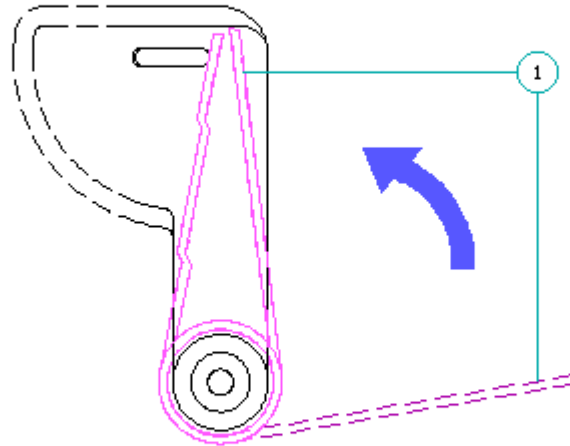


Figure 9-61. Compressing the Spring on the Guide (Power Switch Side)

NOTE: The horizontal guide mounts on the horizontal guide pivot post [1] in the top cover with the curved surface of the horizontal guide in the horizontal guide slot [2] (Figure 9-62).

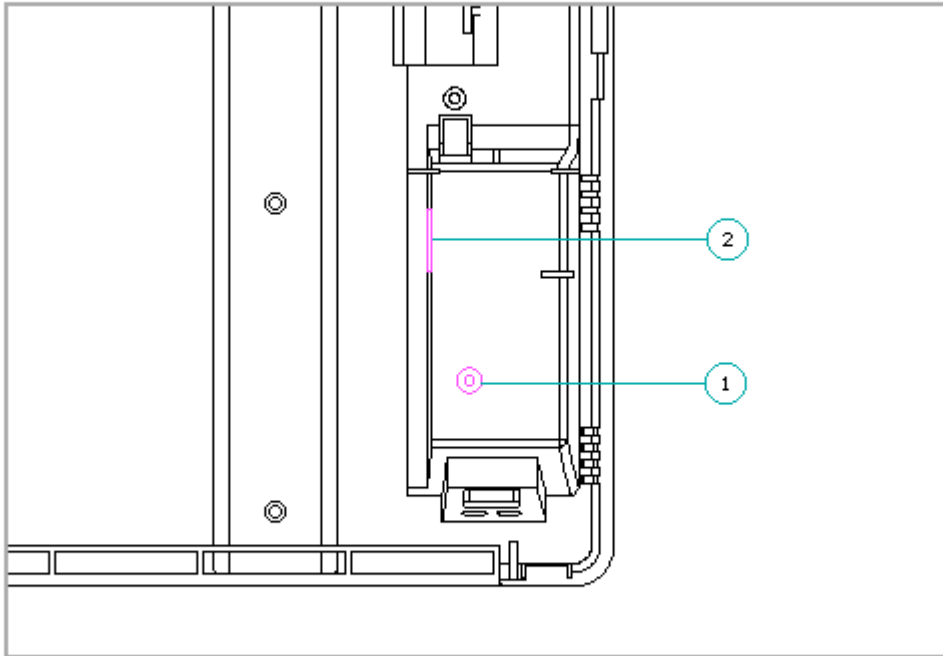


Figure 9-62. Horizontal Guide Pivot Post and Slot (Power Switch Side)

4. Keeping the spring compressed, place the horizontal guide over the horizontal guide pivot post in the top cover and the curved surface of the horizontal guide into the horizontal guide slot and release the spring (Figure 9-63).

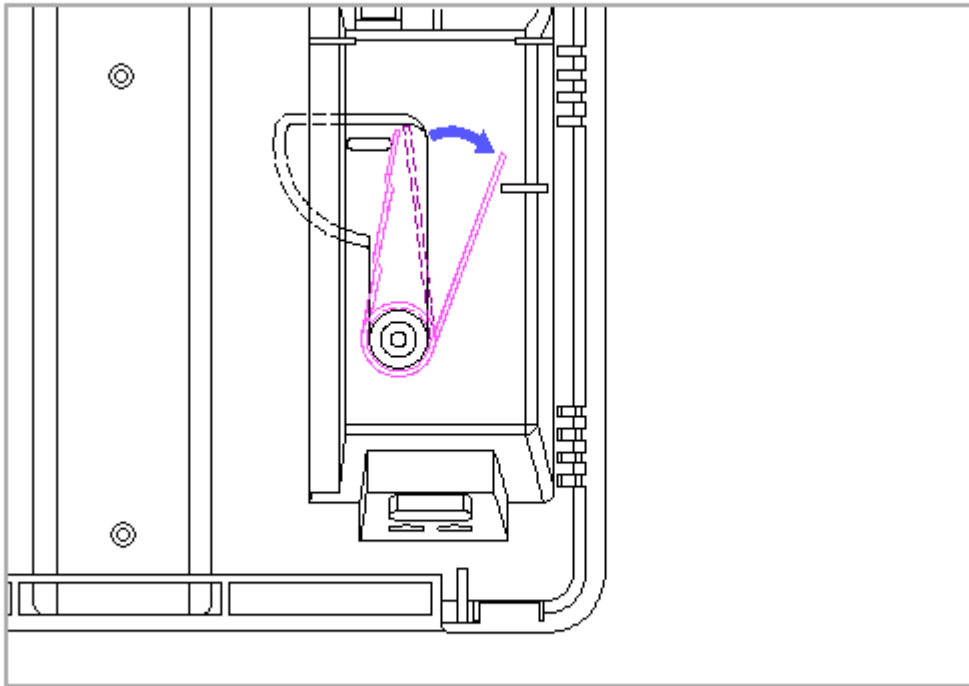


Figure 9-63. Installing the Horizontal Guide (Power Switch Side)

5. Replace the power switch and screw (Figure 9-64).

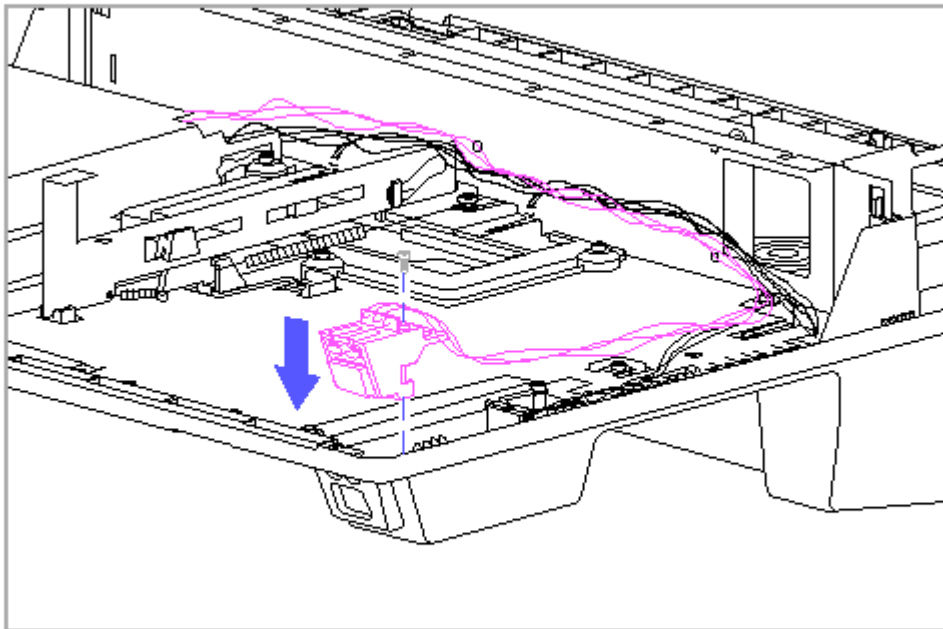


Figure 9-64. Replacing the Power Switch and Screw

NOTE: The screw that attaches the power switch to the top cover is also used to attach the horizontal guide.

## 9.20 Top Cover

To remove the top cover, complete the following steps:

1. Remove the bottom cover (Section 9.6).
2. Remove any installed drives and drive bezels (Section 9.15).
3. Remove the drive cages (Section 9.16).
4. Remove the power switch and eject switch cable harnesses (Section 9.17)
5. Remove the PCMCIA card sensor (Section 9.17).
6. Remove the horizontal guides and springs (Section 9.19).
7. Remove the expansion board cage (Section 9.9).
8. Remove the power supply and bezel (Section 9.11).

9. Remove the docking mechanism (Section 9.12).

10. Remove the system board/battery charging compartment assembly (Section 9.13).



# Chapter 10 - Compaq SmartStation Specifications

## Introduction

This chapter covers the following specifications of the Compaq SmartStation expansion base:

- o Physical and environmental
- o Power supply
- o Compaq Ethernet 16E controller
- o IEEE 802.3 Ethernet standards
- o SCSI-2 controller

## 10.1 Physical and Environmental

	U.S.	Metric
Dimensions		
Height:		
From base of unit to top of monitor support cover	5.3 in	13.4 cm
From base of unit to surface of docking bay	2.5 in	6.3 cm
Width	15.7 in	39.9 cm
Depth	16.1 in	40.8 cm
-----		
Weight (with monitor support cover)	17 lbs	7.7 kg
-----		
Expansion Board Slots	Two 8-/16-bit ISA	
-----		
Temperature Requirements:		
Operating	50oF to 95oF	10oC to 35oC
Nonoperating ***	-22oF to 140oF	-30oC to 60oC
-----		
Maximum Rate of Temperature Change:		
Operating	18oF/hr	10oC/hr
Nonoperating	36oF/hr	20oC/hr
-----		
Relative Humidity:		
Operating (noncondensing)	20 to 80%	
Nonoperating	5 to 90% *	
-----		
Maximum Unpressurized Altitude:		
Operating	10,000 ft	3,048 m
Nonoperating	30,000 ft	9,144 m
-----		
Shock:		
Operating	5G, 11 ms, half-sine	
Nonoperating	20G, 11 ms, half-sine	
-----		
Vibration **		
Operating	.25G	

Nonoperating	.50G	
Maximum Heat Output (calculated)	676 BTU/hr	198W
Maximum Drive Bay Length: (both drive positions)	8.5 in	21.59 cm
Monitor Support Monitor support cover supports a monitor weighing up to:	55 lb	25 kg
* 102oF (38.7oC) maximum wet bulb		
** 0 to peak, 5 to 500 Hz sine, .5 octave/minute sweep rate		
*** No battery pack installed in battery charging compartment		

## 10.2 Power Supply

### Specifications of the Power Supply

Output Voltages:		
Main electronics (for ISA slots, optional drives, etc.)	+5V, -5V	+12V, -12V
VBatt1	18.5V	
VBatt2	18.5V	
Output Power: (Steady State Power)		
Main Electronics (for ISA slots, optional drives, etc.)	92W	
VBatt1	29 - 35W	
VBatt2	15 - 18W	
Total	145W	
Power Allocated for Optional Internal Devices:	7A (35W) for the +5V output	3A (36W) for the +12V output
Input Voltage (Operating Voltage):		
Voltage Range	100 - 120/220 - 240V	
Operating Frequency	47 - 63 Hz	
Maximum Steady State Input Current: (Operating Current)		
	4/2A RMS	
Input Power Rating	200W RMS true input power	
AC Line Transient Handling	Meets IEC 801-4 and IEC 801-5	

## 10.3 Compaq Ethernet 16E Controller

### Specification of the Compaq Ethernet 16E Controller

Memory	64 KB RAM on board
--------	--------------------

```
-----
Transfer Width                16-bit
-----
```

```
Worst-Case Power Consumption:
  AUI Connector              500 mA @ +12V
  RJ-45 Connector           0 mA @ +12V *
-----
```

```
* When the RJ-45 connector is used, the controller does not consume any
  power at +12V. It passes +12V through to power any external transceiver
  connected to the AUI cable.
=====
```

### 10.4 IEEE 802.3 Ethernet Standards

```
=====
```

Parameter	10BASE5 (Thick Ethernet)	10BASE2 (Thin Ethernet)	10BASE-T (Twisted Pair)
Data Rate	10Mb/s	10Mb/s	10Mb/s
Segment Length	500 M	185 M	100 M (node-to-node)
Topology	Bus (Multi-point)	Bus (Multi-point)	Star (Point-to-point)
Cable	0.40 Dia, 50 ohms double shield coax	0.20 Dia, 50 ohms single shield coax	24 Gauge, 100 ohms twisted pair
Connector	AUI	BNC	RJ-45
Transceiver Drop AUI Interface	0.390 Dia, multiway cable 15 pin D connector 50M max length	N/A	N/A

```
=====
```

### 10.5 SCSI-2 Controller

```
=====
```

Column Title	Column Title
Protocol	SCSI-2 asynchronous/synchronous
SCSI Electrical Interface	Single-ended
Drives Supported	Up to seven SCSI-2 devices
Data Transfer Method	16-bit PIO
Maximum Transfer Rate	10 Mb/s
Simultaneous Drive Transfer Channels	One
Total Channel Transfer Rate	5 Mb/s

```
=====
```

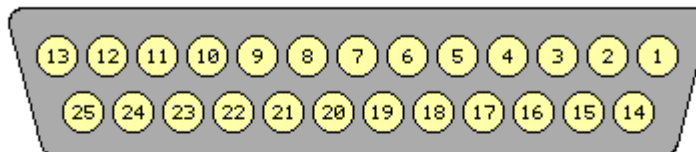
# Appendix A - Connector Pin Assignments

## Introduction

This appendix provides connector pin assignment tables for the Compaq LTE Elite and the SmartStation expansion base. For more information on connectors, refer to Section 1.5 for connectors located on the computer and to Section 6.5 for connectors located on the expansion base.

NOTE: The signals in all tables of this appendix are considered active high unless otherwise indicated by an asterisk (\*).

## A.1 Connector Pin Assignments



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 Out	25	Ground
13	Select	Shell	Ground

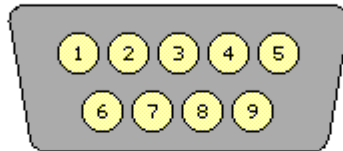
Parallel Connector

Table A-1. 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 Out	25	Ground
13	Select	Shell	Ground

=====



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	Shell	Ground

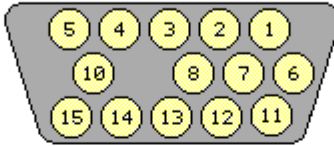
Serial Connector

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	Shell	Ground

=====



Pin	Signal	Pin	Signal
1	Red Analog	9	Not Connected
2	Green Analog	10	Ground
3	Blue Analog	11	Not Connected
4	Not Connected	12	Not Connected
5	Ground	13	Horizontal Sync
6	Ground Analog	14	Vertical Sync
7	Ground Analog	15	Not Connected
8	Ground Analog	Shell	Ground

External Monitor Connector

Table A-3. External Monitor Connector

Pin	Signal	Pin	Signal
1	Red Analog	9	Not connected
2	Green Analog	10	Ground
3	Blue Analog	11	Not connected
4	Not connected	12	Not connected
5	Ground	13	Horizontal Sync
6	Ground Analog	14	Vertical Sync
7	Ground Analog	15	Not connected
8	Ground Analog	Shell	Ground



Pin	Signal	Pin	Signal
1	Data	4	+5V
2	Reserved	5	Clock
3	Ground	6	Reserved
		Shield	Ground

Keyboard/Mouse Connector

Table A-4. Keyboard/Mouse Connector

Pin	Signal	Pin	Signal
1	Data	4	+5V
2	Reserved	5	Clock
3	Ground	6	Reserved
		Shield	Ground



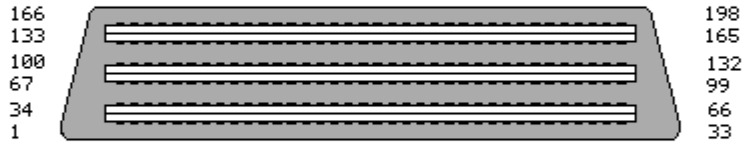
Pin	Signal	Pin	Signal
Ring	Ground	Tip	Data/Power

Compaq LTE Elite Numeric Keypad Connector

Table A-5. Compaq LTE Elite Numeric Keypad Connector

Pin	Signal	Pin	Signal
Ring	Ground	Tip	Data/Power





Compaq LTE Elite 198-Pin External Options Connector

Table A-6. Compaq LTE Elite 198-Pin External Options Connector

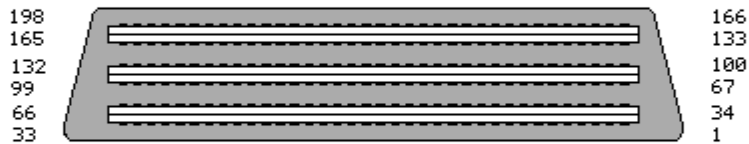
Pin	Signal	Pin	Signal
1	Printer Select	100	+5V Fused (computer)
2	Printer Busy	101	Printer Auto Line Feed *
3	Printer Data Bit 7	102	Printer Error *
4	Printer Data Bit 5	103	Ground
5	Ground	104	Printer Initialize *
6	Printer Data Bit 3	105	Diskette Write Gate *
7	Printer Data Bit 1	106	Diskette Read Data *
8	Printer Strobe *	107	Ground
9	Spare	108	Power On *
10	Battery Voltage	109	Exp Device Connected *
11	Power Good Exp. Base	110	I/O Error Check *
12	Standby	111	Ground
13	Mouse Data	112	System Address Bit 4
14	Battery Voltage	113	System Address Bit 5
15	CRT-Red Analog	114	System Address Bit 6
16	CRT-Green Analog	115	Ground
17	CRT-Blue Analog	116	System Address Bit 7
18	CRT Horizontal Sync	117	System Address Bit 8
19	CRT Vertical Sync	118	System Address Bit 9
20	Ground	119	Ground
21	Serial-Data Term Ready	120	System Address Bit 10

22	Serial-Ring Indicator	121	System Address Bit 11
23	Serial Transmit Data	122	System Address Bit 12
24	Serial Clear-to-Send	123	System Address Bit 13
25	Ground	124	Ground
26	Serial Receive Data	125	System Address Bit 14
27	Serial Ready-to-Send	126	System Address Bit 15
28	Serial Carrier Detect	127	System Address Bit 16
29	Serial-Data Set Ready	128	Ground
30	Ground	129	System Address Bit 17
31	DMA Acknowledge 2 *	130	System Address Bit 18
32	DMA Acknowledge 1 *	131	System Address Bit 19
33	DMA Acknowledge 0 *	132	Ground
34	+5V Fused (computer)	133	Printer Select In *
35	Printer Paper Out	134	Diskette Boot
36	Printer Acknowledge *	135	Diskette Low Den. Media *
37	Printer Data Bit 6 *	136	Diskette Direction In *
38	Printer Data Bit 4	137	Ground
39	Ground	138	Diskette Index *
40	Printer Data Bit 2	139	Diskette Change *
41	Printer Data Bit 0	140	Diskette Head Select
42	Keypad Data	141	Ground
43	Battery Voltage	142	Reserved
44	Keyboard Clock	143	No Wait States *
45	Keyboard Data	144	Bus Ready
46	Mouse Clock	145	Ground
47	Battery Voltage	146	I/O Read Control *
48	Ground-CRT	147	I/O Write Control *
49	Ground-CRT	148	ISA Bus Clock
50	Ground-CRT	149	Ground
51	Ground-CRT	150	Address Latch Enable
52	Ground-CRT	151	DMA Cycle Indicator
53	DMA Request 1	152	Unlatched Address Bit 17
54	DMA Request 7	153	Ground
55	DMA Request 6	154	Unlatched Address Bit 18
56	Ground	155	Unlatched Address Bit 19
57	DMA Request 5	156	Unlatched Address Bit 20
58	DMA Request 3	157	Unlatched Address Bit 21
59	DMA Request 2	158	Ground
60	Ground	159	Unlatched Address Bit 22
61	DMA Request 0	160	Unlatched Address Bit 23
62	DMA Acknowledge 7 *	161	System Address Bit 0
63	DMA Acknowledge 6 *	162	Ground
64	Ground	163	System Address Bit 1
65	DMA Acknowledge 5 *	164	System Address Bit 2
66	DMA Acknowledge 3 *	165	System Address Bit 3
67	Spare	166	Diskette Drive Select *
68	Reserved	167	Diskette Low Density *
69	Ground	168	High Density
70	Reserved	169	External Diskette Connected *
71	Diskette Write Protect *	170	Tape Select *
72	Diskette Write Data *	171	Ground
73	Ground	172	Diskette Motor *
74	Diskette Step *	173	16-Bit I/O Cycle *
75	Diskette Track 0 *	174	Low Memory *
76	Reset	175	Ground
77	Ground	176	Memory Read Control *
78	System Data Bit 15	177	Memory Write Control *
79	System Data Bit 14	178	16-Bit Memory Cycle *
80	System Data Bit 13	179	Ground
81	Ground	180	Bus Master Grab *

82	System Data Bit 12	181	Byte High Enable *
83	System Data Bit 11	182	Refresh *
84	System Data Bit 10	183	Ground
85	Ground	184	Interrupt Request 15
86	System Data Bit 9	185	Interrupt Request 14
87	System Data Bit 8	186	Interrupt Request 12
88	System Data Bit 7	187	Ground
89	System Data Bit 6	188	Interrupt Request 11
90	Ground	189	Interrupt Request 10
91	System Data Bit 5	190	Interrupt Request 9
92	System Data Bit 4	191	Interrupt Request 7
93	System Data Bit 3	192	Ground
94	Ground	193	Interrupt Request 6
95	System Data Bit 2	194	Interrupt Request 5
96	System Data Bit 1	195	Interrupt Request 4
97	System Data Bit 0	196	Reserved
98	Ground	197	Interrupt Request 3
99	DMA Terminal Count	198	Ground

-----  
\* Active low  
=====

IMPORTANT: There are differences between the pin-outs for the 198-pin external options connector on the Compaq LTE Elite and the Compaq SmartStation.



Compaq SmartStation 198-Pin External Options Connector

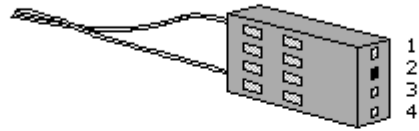
Table A-7. Compaq SmartStation 198-Pin External Options Connector

Pin	Signal	Pin	Signal
1	Printer Select	100	+5V Fused (computer)
2	Printer Busy	101	Printer Auto Line Feed *
3	Printer Data Bit 7	102	Printer Error *
4	Printer Data Bit 5	103	Ground
5	Ground	104	Printer Initialize *
6	Printer Data Bit 3	105	Diskette Write Gate *
7	Printer Data Bit 1	106	Diskette Read Data *
8	Printer Strobe *	107	Ground
9	+5V from Main Exp. Base	108	Power On *
10	Battery Voltage	109	Exp Device Connected *
11	Power Good Exp. Base	110	I/O Error Check *
12	Standby	111	Ground
13	Mouse Data	112	System Address Bit 4
14	Battery Voltage	113	System Address Bit 5
15	CRT-Red Analog	114	System Address Bit 6
16	CRT-Green Analog	115	Ground
17	CRT-Blue Analog	116	System Address Bit 7
18	CRT Horizontal Sync	117	System Address Bit 8
19	CRT Vertical Sync	118	System Address Bit 9
20	Ground	119	Ground
21	Serial-Data Term Ready	120	System Address Bit 10
22	Serial-Ring Indicator	121	System Address Bit 11
23	Serial Transmit Data	122	System Address Bit 12
24	Serial Clear-to-Send	123	System Address Bit 13
25	Ground	124	Ground
26	Serial Receive Data	125	System Address Bit 14
27	Serial Ready-to-Send	126	System Address Bit 15
28	Serial Carrier Detect	127	System Address Bit 16
29	Serial-Data Set Ready	128	Ground
30	Ground	129	System Address Bit 17
31	DMA Acknowledge 2 *	130	System Address Bit 18
32	DMA Acknowledge 1 *	131	System Address Bit 19
33	DMA Acknowledge 0 *	132	Ground
34	+5V Fused (computer)	133	Printer Select In *
35	Printer Paper Out	134	Diskette Boot
36	Printer Acknowledge *	135	Diskette Low Den. Media *
37	Printer Data Bit 6	136	Diskette Direction In *
38	Printer Data Bit 4	137	Ground
39	Ground	138	Diskette Index *
40	Printer Data Bit 2	139	Diskette Change *
41	Printer Data Bit 0	140	Diskette Head Select
42	Keypad Data	141	Ground
43	Battery Voltage	142	Reserved
44	Keyboard Clock	143	No Wait States *
45	Keyboard Data	144	Bus Ready
46	Mouse Clock	145	Ground
47	Battery Voltage	146	I/O Read Control *
48	Ground-CRT	147	I/O Write Control *
49	Ground-CRT	148	ISA Bus Clock
50	Ground-CRT	149	Ground
51	Ground-CRT	150	Address Latch Enable
52	Ground-CRT	151	DMA Cycle Indicator
53	DMA Request 1	152	Unlatched Address Bit 17
54	DMA Request 7	153	Ground
55	DMA Request 6	154	Unlatched Address Bit 18

56	Ground	155	Unlatched Address Bit 19
57	DMA Request 5	156	Unlatched Address Bit 20
58	DMA Request 3	157	Unlatched Address Bit 21
59	DMA Request 2	158	Ground
60	Ground	159	Unlatched Address Bit 22
61	DMA Request 0	160	Unlatched Address Bit 23
62	DMA Acknowledge 7 *	161	System Address Bit 0
63	DMA Acknowledge 6 *	162	Ground
64	Ground	163	System Address Bit 1
65	DMA Acknowledge 5 *	164	System Address Bit 2
66	DMA Acknowledge 3 *	165	System Address Bit 3
67	Expansion Base Present	166	Diskette Drive Select *
68	Reserved	167	Diskette Low Density *
69	Ground	168	High Density
70	Reserved	169	External Diskette Connected *
71	Diskette Write Protect *	170	Tape Select *
72	Diskette Write Data *	171	Ground
73	Ground	172	Diskette Motor *
74	Diskette Step *	173	16-Bit I/O Cycle *
75	Diskette Track 0 *	174	Low Memory *
76	Reset	175	Ground
77	Ground	176	Memory Read Control *
78	System Data Bit 15	177	Memory Write Control *
79	System Data Bit 14	178	16-Bit Memory Cycle *
80	System Data Bit 13	179	Ground
81	Ground	180	Bus Master Grab *
82	System Data Bit 12	181	Byte High Enable *
83	System Data Bit 11	182	Refresh *
84	System Data Bit 10	183	Ground
85	Ground	184	Interrupt Request 15
86	System Data Bit 9	185	Interrupt Request 14
87	System Data Bit 8	186	Interrupt Request 12
88	System Data Bit 7	187	Ground
89	System Data Bit 6	188	Interrupt Request 11
90	Ground	189	Interrupt Request 10
91	System Data Bit 5	190	Interrupt Request 9
92	System Data Bit 4	191	Interrupt Request 7
93	System Data Bit 3	192	Ground
94	Ground	193	Interrupt Request 6
95	System Data Bit 2	194	Interrupt Request 5
96	System Data Bit 1	195	Interrupt Request 4
97	System Data Bit 0	196	Reserved
98	Ground	197	Interrupt Request 3
99	DMA Terminal Count	198	Sense Computer Present

-----  
\* Active low  
=====

IMPORTANT: There are differences between the pin-outs for the 198-pin external options connector on the Compaq LTE Elite and the Compaq SmartStation.

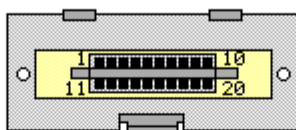


Pin	Signal	Pin	Signal
1	+VBatt (18.5V)	3	Reserved
2	Key	4	Ground

Compaq LTE Elite Internal AC Power Supply Output Connector

Table A-8. Compaq LTE Elite Internal AC Power Supply Output Connector

Pin	Signal	Pin	Signal
1	+VBatt (18.5V)	3	Reserved
2	Key	4	Ground

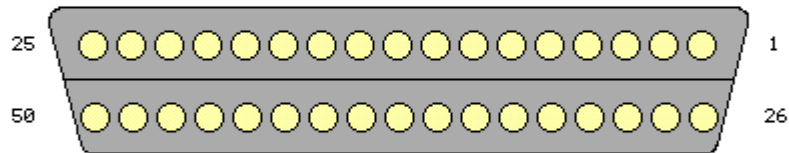


Pin	Signal	Pin	Signal
1	GND	11	VBATT2 (18.5 V)
2	GND	12	PWRGOOD
3	GND	13	VBATT1 (18.5 V)
4	GND	14	PWRON
5	GND	15	+12 V
6	GND	16	+12 V
7	-5 V	17	+5 V
8	GND	18	+5 V
9	-12 V	19	+5 V
10	GND	20	+5 V

Compaq SmartStation Power Supply Output Connector

Table A-9. Compaq SmartStation Power Supply Output Connector

Pin	Signal	Pin	Signal
1	Ground	11	VBatt2 (18.5V)
2	Ground	12	PwrGood
3	Ground	13	VBatt1 (18.5V)
4	Ground	14	PwrOn
5	Ground	15	+12V
6	Ground	16	+12V
7	-5V	17	+5V
8	Ground	18	+5V
9	-12V	19	+5V
10	Ground	20	+5V



Compaq SmartStation External SCSI-2 Connector

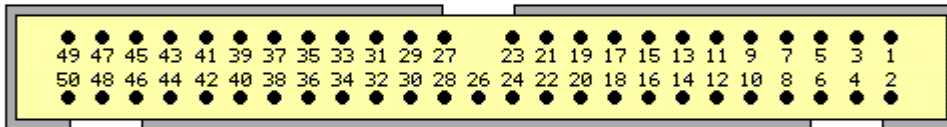
Table A-10. Compaq SmartStation External SCSI-2 Connector

Pin	Signal	Pin	Signal
1	Ground	26	SCSI Data Bit 0
2	Ground	27	SCSI Data Bit 1
3	Ground	28	SCSI Data Bit 2
4	Ground	29	SCSI Data Bit 3
5	Ground	30	SCSI Data Bit 4
6	Ground	31	SCSI Data Bit 5
7	Ground	32	SCSI Data Bit 6
8	Ground	33	SCSI Data Bit 7
9	Ground	34	SCSI Data Parity
10	Ground	35	Ground
11	Ground	36	Ground
12	Ground	37	Ground
13	Not connected	38	Term Power
14	Ground	39	Ground
15	Ground	40	Ground
16	Ground	41	Attention *
17	Ground	42	Ground
18	Ground	43	Busy *
19	Ground	44	Acknowledge *
20	Ground	45	Reset *
21	Ground	46	Message *



22	Ground	47	Select *
23	Ground	48	Control/Data *
24	Ground	49	Request *
25	Ground	50	Input/Output *

=====



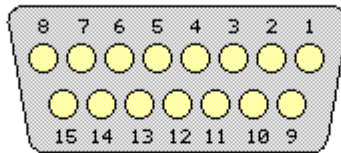
Compaq SmartStation Internal SCSI-2 Connector

Table A-11. Compaq SmartStation Internal SCSI-2 Connector

Pin	Signal	Pin	Signal
1	Ground	26	Term Power
2	SCSI Data Bit 0	27	Ground
3	Ground	28	Ground
4	SCSI Data Bit 1	29	Ground
5	Ground	30	Ground
6	SCSI Data Bit 2	31	Ground
7	Ground	32	Attention *
8	SCSI Data Bit 3	33	Ground
9	Ground	34	Ground
10	SCSI Data Bit 4	35	Ground
11	Ground	36	Busy *
12	SCSI Data Bit 5	37	Ground
13	Ground	38	Acknowledge *
14	SCSI Data Bit 6	39	Ground
15	Ground	40	Reset *

16	SCSI Data Bit 7	41	Ground
17	Ground	42	Message *
18	SCSI Data Parity	43	Ground
19	Ground	44	Select *
20	Ground	45	Ground
21	Ground	46	Control/Data *
22	Ground	47	Ground
23	Ground	48	Request *
24	Ground	49	Ground
25	Key	50	Input/Output *

=====



Pin	Signal	Pin	Signal
1	Ground	9	Collision #
2	Collision	10	Data Transmit #
3	Data Transmit	11	Ground
4	Ground	12	Data Receive #
5	Data Receive	13	+12V
6	Ground	14	Ground
7	Not Connected	15	Not Connected
8	Ground		

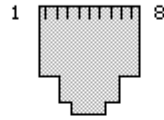
Compaq SmartStation Ethernet AUI Connector

Table A-12. Compaq SmartStation Ethernet AUI Connector

=====

Pin	Signal	Pin	Signal
1	Ground	9	Collision #
2	Collision	10	Data Transmit #
3	Data Transmit	11	Ground
4	Ground	12	Data Receive #
5	Data Receive	13	+12V
6	Ground	14	Ground
7	Not connected	15	Not connected
8	Ground		

=====

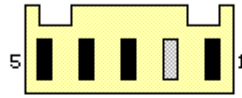


Pin	Signal	Pin	Signal
1	Data Transmit	5	Not Connected
2	Data Transmit #	6	Data Receive #
3	Data Receive	7	Not Connected
4	Not Connected	8	Not Connected

Compaq SmartStation Ethernet RJ-45 Connector

Table A-13. Compaq SmartStation Ethernet RJ-45 Connector

Pin	Signal	Pin	Signal
1	Data Transmit	5	Not connected
2	Data Transmit #	6	Data Receive #
3	Data Receive	7	Not connected
4	Not connected	8	Not connected

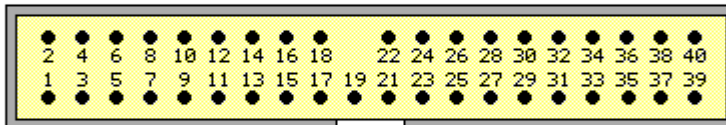


Pin	Signal	Pin	Signal
1	+12 V	4	Ground
2	Key	5	+5 V
3	Ground		

Compaq SmartStation Drive Power Connector

Table A-14. Compaq SmartStation Drive Power Connector

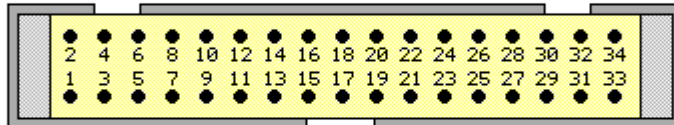
Pin	Signal	Pin	Signal
1	+12V	4	Ground
2	Key	5	+5V
3	Ground		



Compaq SmartStation IDE Hard Drive Signal Connector

Table A-15. Compaq SmartStation IDE Hard Drive Signal Connector

Pin	Signal	Pin	Signal
1	Reset	21	Not connected
2	Ground	22	Ground
3	Data Bit 7	23	I/O Write Control *
4	Data Bit 8	24	Ground
5	Data Bit 6	25	I/O Read Control *
6	Data Bit 9	26	Ground
7	Data Bit 5	27	Not connected
8	Data Bit 10	28	Not connected
9	Data Bit 4	29	Not connected
10	Data Bit 11	30	Ground
11	Data Bit 3	31	Interrupt Request
12	Data Bit 12	32	16-Bit I/O Cycle *
13	Data Bit 2	33	System Address Bit 1
14	Data Bit 13	34	Not connected
15	Data Bit 1	35	System Address Bit 0
16	Data Bit 14	36	System Address Bit 2
17	Data Bit 0	37	Chip Select 0 *
18	Data Bit 15	38	Chip Select 1 *
19	Ground	39	Drive Activity LED
20	Key	40	Ground



Compaq SmartStation Tape/diskette Drive Signal Connector

Table A-16. Compaq SmartStation Tape/diskette Drive Signal Connector

Pin	Signal	Pin	Signal
1	Ground	18	Diskette Direction In *
2	Diskette Low Density *	19	Ground
3	Ground	20	Diskette Step *
4	Diskette Low Density Media *	21	Ground
5	Ground	22	Diskette Write Data *
6	Tape Select *	23	Ground
7	Ground	24	Diskette Write Gate *
8	Diskette Index *	25	Ground
9	Ground	26	Diskette Track 0 *
10	Not connected	27	Ground
11	Ground	28	Diskette Write Protect *
12	Diskette Drive Select *	29	Ground
13	Ground	30	Diskette Read Data *
14	Not connected	31	Ground
15	Ground	32	Diskette Head Select
16	Diskette Motor *	33	Ground
17	Ground	34	Diskette Disk Change *

# Appendix B - Battery Pack Operating Time

## Introduction

This appendix covers the following information concerning battery pack operating time:

- o Increasing battery pack operating time
- o Ensuring battery gauge accuracy
- o Conditioning a battery pack
- o Disposal of a used battery pack

## B.1 Increasing Battery Pack Operating Time

Battery pack operating time differs depending on several variables. To avoid unnecessary replacement, consider the following variables when determining how long a charged battery pack should last:

- o Power management settings
- o Hardware configuration
- o Software applications
- o Installed options
- o Display brightness
- o Hard drive usage
- o Changes in operating temperature
- o Type and number of installed PCMCIA cards

NOTE: The power consumption requirements for PCMCIA cards vary widely. Some cards drain the battery pack very rapidly.

Table B-1 shows battery pack operating times by model based on worst to best case.

Table B-1. Battery Operating Time

Computer	Hours
LTE Elite 4/75CX	2.5 - 4.0 hr
LTE Elite 4/50CX	2.5 - 4.5 hr
LTE Elite 4/40CX	2.5 - 5.0 hr
LTE Elite 4/50E	3.0 - 5.5 hr
LTE Elite 4/40C	3.0 - 5.5 hr

Battery pack operating time can be increased by as much as 50% by controlling the energy required by the computer and the energy stored in the battery pack.

### Minimizing the Energy Required

To minimize the energy required by the computer, practice the following:

- o Set the power conservation levels in the Power Management utility to "High."
- o Customize the timeout values to work more efficiently with the applications. The amount of battery life depends on the values selected.

### Maximizing the Energy Stored

To maximize the energy stored in the battery pack, follow these guidelines:

- o Condition the battery pack at least every 60 days to improve overall battery performance and ensure the continued accuracy of the battery gauge.
- o Keep a battery pack in the computer when using it with AC power to supply the battery pack with a constant trickle charge.
- o Store the battery pack in a cool, dry place when not in use.

## B.2 Ensuring Battery Gauge Accuracy

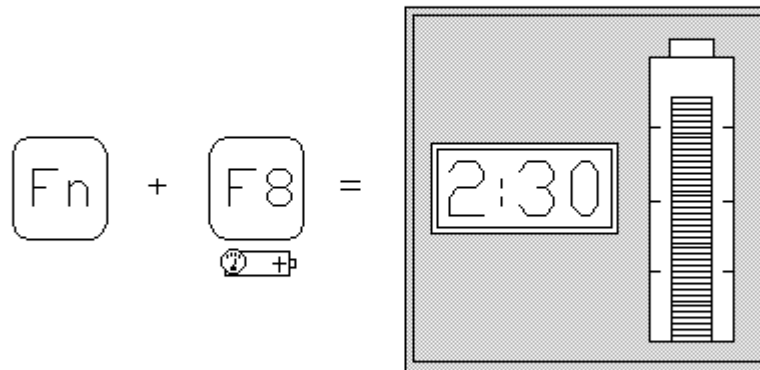


Figure B-1. Battery Gauge







# Appendix C - Configuring the System for Optional Drives in SmartStation

## Introduction

This appendix covers configuring the system for optional drives (other than SCSI-2) that are installed in the Compaq SmartStation and includes the following:

- o Configuring an IDE hard drive
- o Setting configuration switches for a diskette, tape or an IDE hard drive
- o Changing the A/B and C/D logical drive designations
- o Installing EXTDISK.SYS on the Compaq LTE Lite

NOTE: Refer to Appendix F to configure the system for optional SCSI-2 devices.

If you are installing an IDE hard drive, follow the procedures in Section C.1 to configure the system. If you are installing an IDE hard drive in an expansion base that will dock a Compaq LTE Lite, install the EXTDISK.SYS file as described in Section C.4.

If you are installing a diskette drive, set the configuration switches as described in Section C.2 and read the information on changing the A/B drive designations in Section C.3.

If you are installing a tape drive, set the configuration switches as described in Section C.2 and install the tape utility as described in the documentation included with the tape drive.

## C.1 Configuring An IDE Hard Drive

The Compaq SmartStation has its own interface for an integrated drive electronics (IDE) hard drive. A hard drive installed in the expansion base operates on a separate IDE adapter from the one used by the hard drive in the computer.

IMPORTANT: MS-DOS 6 or higher (5.0 or higher as published by Compaq) is required to use an optional IDE hard drive in the Compaq SmartStation. When using a previous version of MS-DOS, the computer will not recognize the optional IDE hard drive in the Compaq SmartStation.

To configure the system for an IDE hard drive, complete the following steps:

1. Before installing the drive, ensure that the master/slave/single jumpers on the drive are set correctly.



10. Format the hard drive using the MS-DOS FORMAT command. Enter

FORMAT D:

IMPORTANT: When formatting an IDE drive that will be used as a bootable drive, add the /S switch to the FORMAT command so that you can use the C/D drive selection switch. Enter

FORMAT D:/S

11. If the C/D switch on the vertical circuit board is enabled (the default), set the C/D drive selection switch to operate the hard drive in the expansion base as logical drive C or D. (The default position is D.)
12. Turn the system off with the power switch, then on again to integrate the new information.
13. If the computer does not automatically reconfigure the system when you turn it on, run Computer Setup (Section 6.7).
14. Run Computer Checkup to ensure that the drive is working properly (Section 2.3).

## **C.2 Setting The Configuration Switches**

The configuration switches on the Compaq SmartStation vertical circuit board (Figure C-1) must be set when a diskette drive, tape drive, or IDE hard drive is installed in the expansion base. The six configuration switches are accessible when the bottom cover is removed. However, you may have to remove optional expansion boards to gain access.

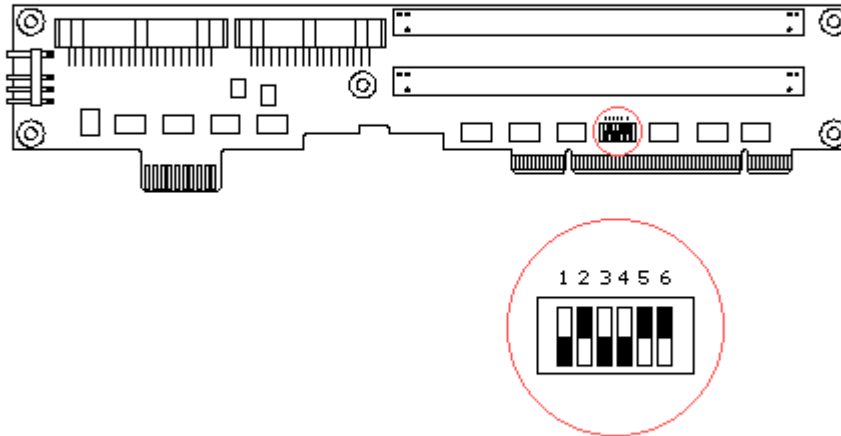


Figure C-1. Configuration Switches (Factory Default Settings)

Set the configuration switches to correspond with the new drive configuration and whether you want to disable the A/B and/or C/D drive selection switches. The configuration switch settings are listed in Table C-1 and are also listed on a label on the bottom of the drive cage in drive position 1.

Table C-1. Configuration Switch Settings

Switch	On/Closed	Off/Open
1	IDE hard drive installed	No IDE hard drive installed *
2	IRQ15 for IDE drive set to D *	IRQ10 for IDE drive set to D **
3	Tape/diskette installed	No tape/diskette installed *
4	A/B switch disabled	A/B switch enabled *
5	C/D switch enabled *	C/D switch disabled
6	Smart docking enabled *	Smart docking disabled ***

\* Factory default settings

\*\* Switch 2 should not be placed in the off position unless another device conflicts with an optional IDE hard drive in the expansion base.

\*\*\* Switch 6 should be placed in the off position only to disable the sensors for troubleshooting purposes. Switch 6 disables all sensors except the motor position sensor and the computer-present sensor.



To change the A/B drive designations, set the new switch position before turning on the computer.

#### Designating Logical Drive C

When a Compaq LTE Elite is docked, the C/D drive selection switch sets an optional IDE hard drive in the expansion base to operate as logical drive C (the boot drive) or as logical drive D. The default position is D (the hard drive in the expansion base is D).

NOTE: When a Compaq LTE Lite is docked in the Compaq SmartStation, an IDE hard drive installed in the expansion base cannot be set as logical drive C or used as the boot drive. Setting the C/D drive selection switch to C has no effect.

Before changing the C/D drive selection switch from D to C, follow the procedures in Section C.1 to configure the system for a new IDE hard drive.

To change the C/D drive designations, set the new switch position before turning on the computer.

IMPORTANT: When the C/D switch is reset: (1) software programs, batch files, and the CONFIG.SYS file must have the correct logical drive designations in directory paths to access files located on the C and D drives. (2) If the computer has more than one partition, logical drives other than C and D also change designations. (3) The Compaq LTE Elite should be turned off before undocking if the computer was booted from a hard drive in the expansion base.

NOTE: The computer cannot boot from a SCSI-2 hard drive in the expansion base. Selecting the A/B or C/D drive selection switches on the rear panel of the expansion base or enabling the A/B or C/D configuration switches on the vertical circuit board have no effect on a SCSI-2 drive.

## C.4 Installing EXTDISK.SYS On The Compaq LTE Lite

When using a Compaq LTE Lite, the updated EXTDISK.SYS device driver must be installed from the Supplemental Programs diskette included with the SmartStation Adapter. The EXTDISK.SYS file included with the computer will not recognize the IDE hard drive in the Compaq SmartStation.

NOTE: The Compaq LTE Elite does not require the EXTDISK.SYS driver.

To install EXTDISK.SYS, complete the following steps:

1. Copy the EXTDISK.SYS file from the Supplemental Programs diskette to the Compaq LTE Lite hard drive.
2. Add the following line to the CONFIG.SYS file:

```
DEVICE = [drive:] [path] \EXTDISK.SYS
```



(where [drive:] [path] specifies the logical drive and directory where  
EXTDISK.SYS is located)

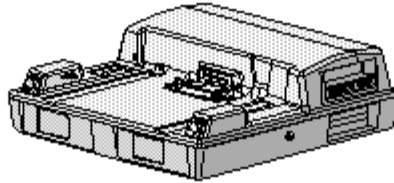
3. Reboot the computer by pressing the Ctrl+Alt+Delete keys to integrate  
the new information.

NOTE: The EXTDISK.SYS file on the Supplemental Programs diskette for MS-DOS  
6 is the only file on that diskette that is needed for the Compaq LTE  
Lite to work properly with the expansion base. The file is compatible  
with MS-DOS 5.0 or higher as published by Compaq.

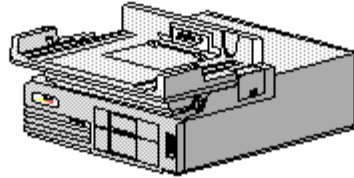
# Appendix D - Docking and Undocking

## Introduction

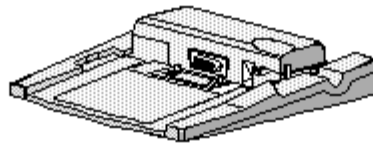
This appendix covers procedures for docking and undocking (1) the Compaq LTE Elite or the Compaq LTE Lite in the Compaq SmartStation, (2) the Compaq LTE Elite in the Compaq LTE Lite Desktop Expansion Base with an upgrade adapter, and (3) the Compaq LTE Elite in the Compaq MiniStation (Figure D-1).



Compaq SmartStation Expansion Base



Compaq LTE Lite Desktop Expansion Base  
(with Upgrade Adapter)



Compaq MiniStation

Figure D-1. Docking Options

## D.1 Docking In The Compaq Smartstation

This section covers docking in the Compaq SmartStation and includes the following:

- o Docking and undocking the Compaq LTE Elite
- o Docking and undocking the Compaq LTE Lite (with SmartStation Adapter)
- o Manually ejecting either computer

The Compaq SmartStation cannot be turned on until the computer is docked.

To dock the computer, the user inserts the computer into the expansion base docking bay. Docking is completed by an automatic docking mechanism in the expansion base. If a motor timeout occurs while docking, the motor reverses direction and undocks the computer (not available in some early production units).

If the computer does not undock automatically due to a power outage or system malfunction, the computer can be manually ejected from the expansion base, as described under "Using the Manual Eject Override" in this section.

If the expansion base does not dock or undock the computer automatically, it may emit an audible beep or display an on screen error message (refer to Chapter 7, "Compaq SmartStation Troubleshooting").

Before Docking the Compaq LTE Elite

Table D-1 compares docking capabilities of the Compaq LTE Elite when operating in the preinstalled Windows 3.1 environment and in non-Windows 3.1 environments.

Table D-1. Docking Capabilities of the Compaq LTE Elite with the Compaq SmartStation

Computer State While Docking	Preinstalled Windows 3.1 Environment	Non-Windows 3.1 Environment
Off	Full functionality available after docking and turning computer on.	Full functionality available after docking and turning computer on.
On	Pop-up message states that user will have only the monitor, pointing device, and keyboard available after docking. Asks user to continue as is or save files and reboot the computer.	Does not dock.
Standby	Pop-up message states that user will have only the monitor, pointing device, and keyboard available after docking. Asks user to continue as is or save files and reboot the computer.	Does not dock.
Hibernation	Docks while hibernated, but message states that user must choose to reboot the computer and lose the Hibernation state or undock and restore the files.	Docks while hibernated, but message states that user must choose to reboot the computer and lose the Hibernation state or undock and restore the files.

NOTE: In addition to the computer state and operating environment, the following conditions can also prevent docking:



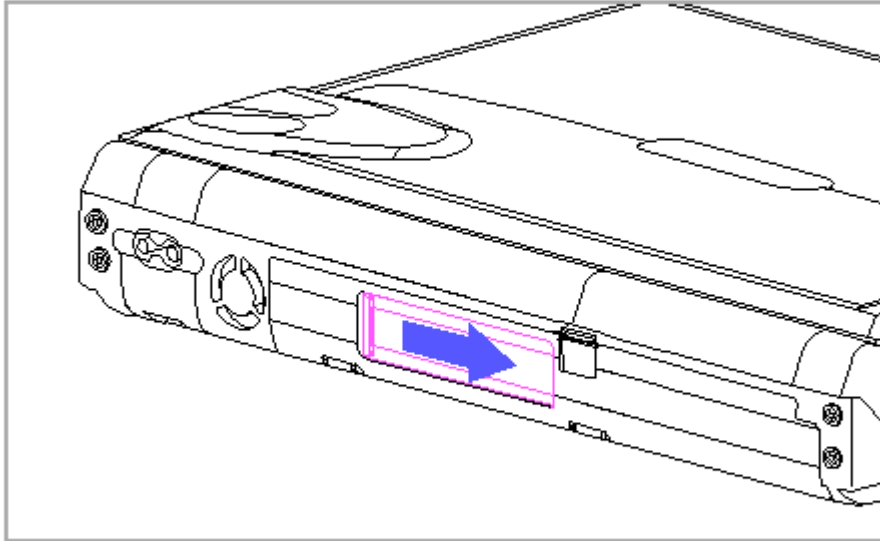


Figure D-2. Opening the External Options Connector Door on the Compaq LTE Elite

7. Unlock the expansion base keylock (Figure D-3).

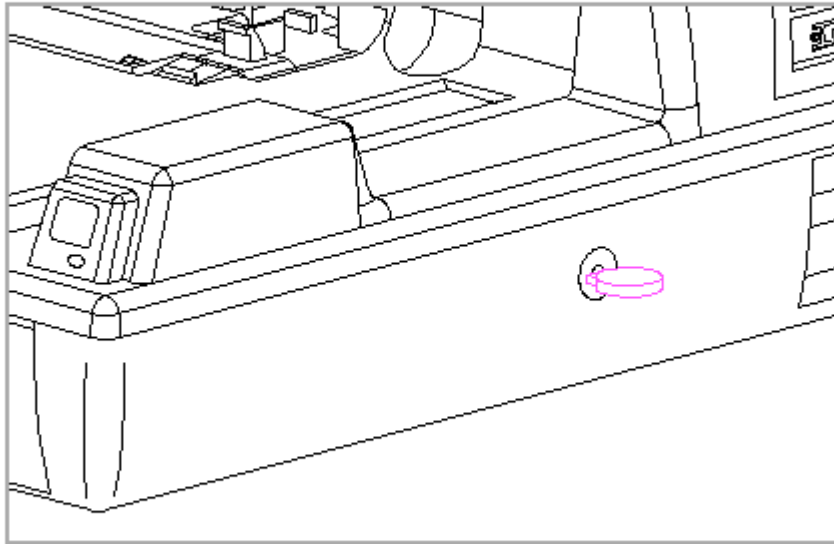


Figure D-3. Compaq SmartStation Keylock in Unlocked Position

8. Slide the computer forward in the docking bay until you feel the computer being pulled from your hands (Figure D-4).

NOTE: If the expansion base beeps or if the docking mechanism pushes the computer toward you, the computer cannot dock in the expansion base. Verify that you have completed steps 1 through 8 and try again. If the computer still does not dock, refer to Chapter 7 for troubleshooting information.

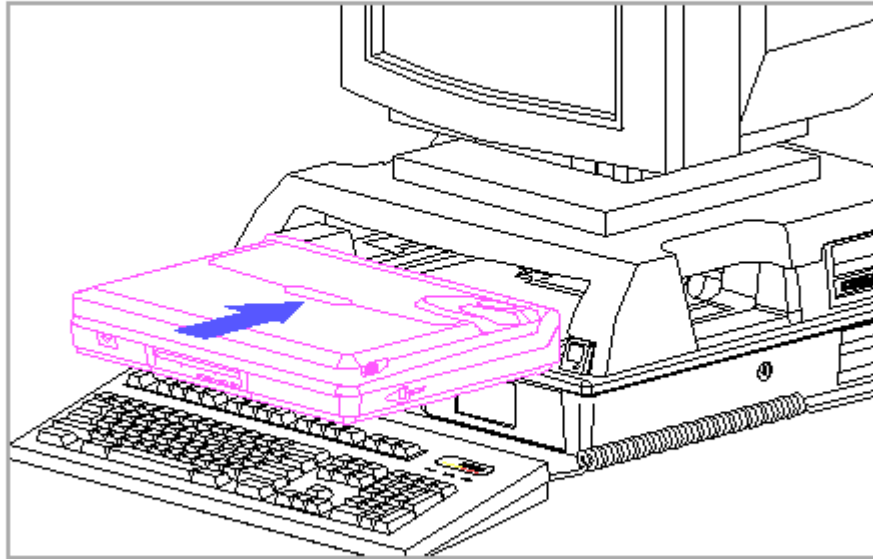


Figure D-4. Docking the Compaq LTE Elite in the Compaq SmartStation

9. Turn on external devices that are connected to the expansion base.
10. Be sure that A/B and C/D drive selection switches are correctly set (Section C.3).
11. Turn the system on with the power switch on the computer or the power switch on the expansion base.

NOTE: The first time you dock the Compaq LTE Elite in the expansion base, you may be prompted to run Computer Setup to configure optional devices. The computer automatically detects and configures many optional devices. In some instances you are prompted to accept or reject a configuration change. Follow the instructions on the screen to change the system configuration. Refer to Section 6.7 for more information on running Computer Setup.

12. To turn off the computer (but remain docked) use one of the following methods:
  - o Save and close open files, then turn off the power switch on the expansion base or the power switch on the computer.
  - o Enter Shutdown at the DOS prompt or select Shutdown from the Compaq Utilities group box within Microsoft Windows, then save open files

when prompted.

IMPORTANT: Do not undock the computer before reading "Undocking the Compaq LTE Elite."

#### Before Undocking the Compaq LTE Elite

Table D-2 compares undocking capabilities of the Compaq LTE Elite when operating in the preinstalled Windows 3.1 environment and in non-Windows 3.1 environments.

Table D-2. Undocking Capabilities of the Compaq LTE Elite with the Compaq SmartStation

Computer State	Preinstalled Windows 3.1 Environment	Non-Windows 3.1 Environments
Off	Undocks.	Undocks.
On	When pressing eject button: Asks if user wants the computer to undock with power on. If answer is yes, cautions user to close all files opened from network or secondary drives before undocking.  When clicking on Shutdown icon: Message prompts user to save open applications, then turns off system (computer and expansion base). User has option to undock or stay in expansion base.	Does not undock.
Standby	Not applicable. (Standby not supported in expansion base.)	Not applicable. (Standby not supported in expansion base.)
Hibernation	Not applicable. (Hibernation not supported in expansion base.)	Not applicable. (Hibernation not supported in expansion base.)

NOTE: In addition to the computer state and operating environment, the following conditions can also prevent undocking:

- The expansion base is locked with the key.
- The PCMCIA door is open.

#### Undocking the Compaq LTE Elite

When using the Compaq preinstalled Windows operating environment, the Compaq LTE Elite can be undocked from the Compaq SmartStation with the system on or off. Although Standby cannot be initiated while the computer





A Compaq LTE Lite computer must have a SmartStation Adapter (Figure D-5) connected to it before it can dock in the Compaq SmartStation. This SmartStation Adapter is available as an option (Table 8-10).

NOTE: Early model Compaq LTE Personal Computers (not Compaq LTE Lite models) such as the Compaq LTE 386s/20 cannot dock in the Compaq SmartStation.

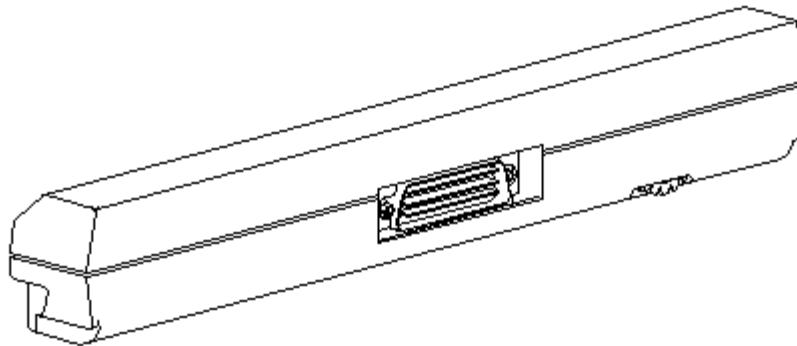


Figure D-5. SmartStation Adapter

The following features are not available when using the Compaq LTE Lite:

- o Sensor protection that prevents undocking the computer when a cable or option extends beyond the enhanced option slot.
- o Ability to dock when the computer is on or in Standby and to undock when the computer is on.
- o Software shutdown that turns off power and undocks the computer from the expansion base.
- o Use of the C/D drive selection switch to boot from an IDE hard drive in the expansion base.
- o AC power conservation for an external monitor and an optional IDE hard



NOTE: If you insert the SmartStation Adapter without the computer, the adapter will be ejected from the expansion base.

IMPORTANT: The SmartStation Adapter has a programmable array logic (PAL) enable/disable switch located above the external options connector (Figure D-7). The switch is accessible from the outside of the SmartStation Adapter with a pencil or small screwdriver. The switch has two positions: enabled [1] and disabled [2]. The switch comes from the factory in the disabled position. Functional problems may occur if the switch is left in the disabled position when completing bus mastering activity with certain early models of Compaq LTE Lites in the Compaq SmartStation.

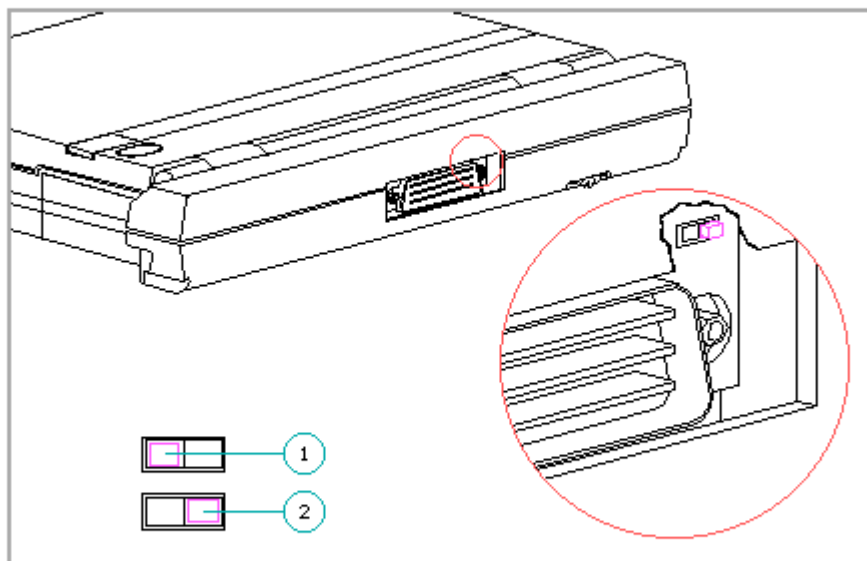


Figure D-7. Programmable Array Logic (PAL) Enable/Disable Switch on the SmartStation Adapter

#### Using Diskettes Included with the SmartStation Adapter

Four diskettes included with the SmartStation Adapter are used for the following tasks:

- o Diagnostics diskette - Use to run Computer Setup, Computer Checkup (TEST), Power Management, and Security Management. (Do not use internal Setup or the diagnostics diskette included with the computer.)



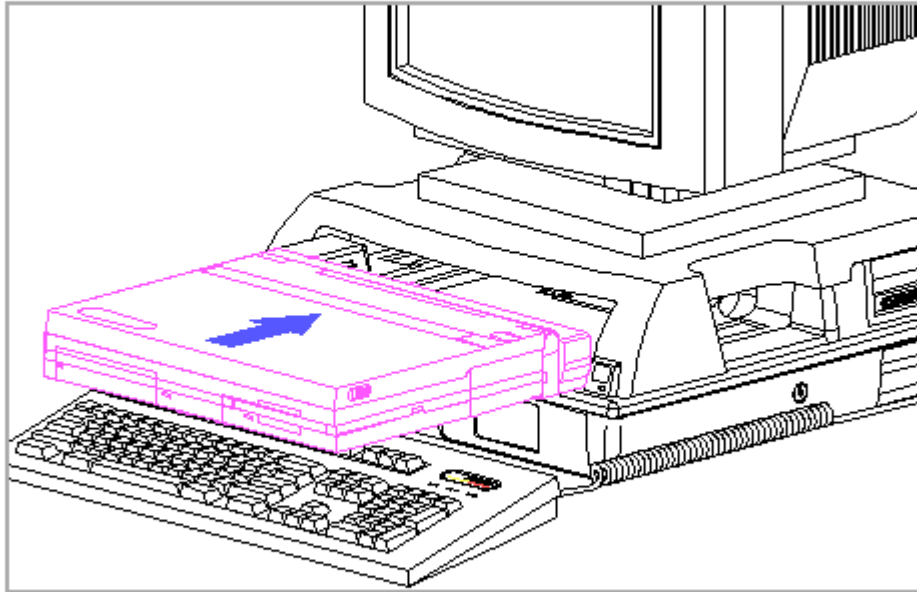


Figure D-8. Docking the Compaq LTE Lite (with SmartStation Adapter)  
in the Compaq SmartStation

9. Turn on external devices that are connected to the expansion base.
10. Be sure that the A/B drive selection switch is correctly set on the expansion base (Section C.3).

NOTE: The C/D drive selection switch on the expansion base has no effect when a Compaq LTE Lite is docked.

11. Turn the system on with the power button on the expansion base. (The power switch on the Compaq LTE Lite is inoperable while docked in the expansion base.)

NOTE: The first time you dock the Compaq LTE Lite or when you install new devices, the system detects a configuration change and may prompt you to run Computer Setup.

Use the Diagnostics diskette included with the SmartStation Adapter to run Computer Setup, Computer Checkup (TEST), Power Management, and Security Management. Do not use internal Setup or the Diagnostics diskette included with the computer. Refer to Section 6.7 for more information on running Computer Setup.

**IMPORTANT:** Do not undock the computer before reading "Undocking the Compaq LTE Lite."









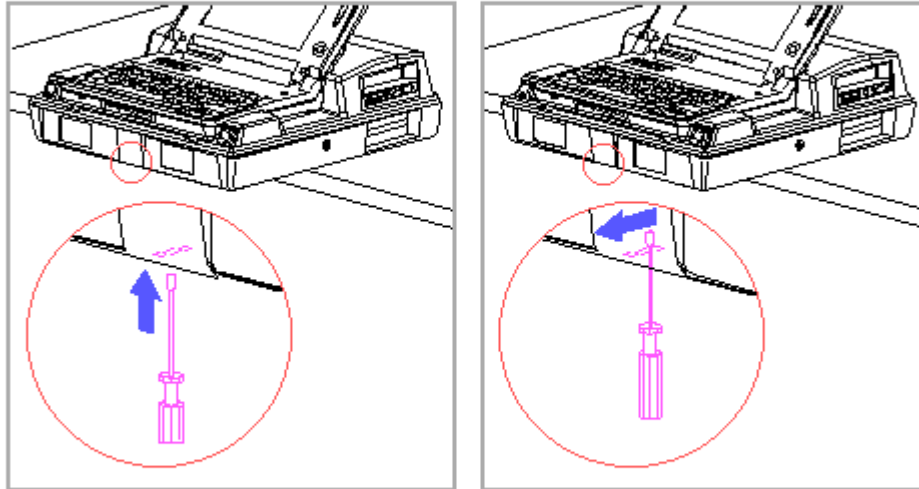


Figure D-10. Releasing the Eject Override Mechanism

9. While holding the eject override mechanism in the released position, press the computer slightly toward the rear of the expansion base.
10. Remove the tool from the override mechanism slot.
11. Remove the computer.
12. Slide the expansion base fully onto the table.
13. Remove the computer, being careful not to lift up on it until it is fully removed from the expansion base.

NOTE: If the computer does not eject using the manual eject override method, the docking mechanism may have to be removed (Section 9.12).

## D.2 Docking The Compaq LTE ELITE In The Compaq LTE Lite Desktop Expansion Base

The Compaq LTE Elite can be manually docked in the Compaq LTE Lite Desktop Expansion Base after installing the upgrade adapter from the Compaq LTE Lite Desktop Expansion Base Upgrade Kit (Table 3-14).

Connecting the Upgrade Adapter



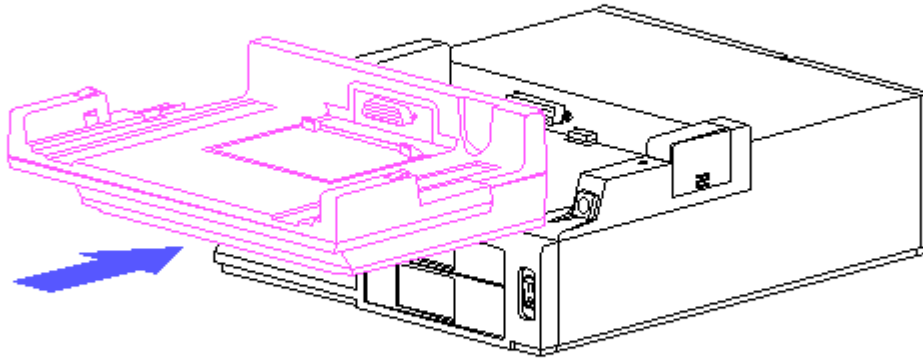


Figure D-11. Inserting the Compaq LTE Lite Desktop Expansion Base Upgrade Adapter

NOTE: The upgrade adapter must be removed from the Compaq LTE Lite Desktop Expansion Base when docking the Compaq LTE Lite. To remove the upgrade adapter, simultaneously press the release buttons on the rear of both side rails of the adapter while pulling the adapter forward to disconnect the 198-pin external options connector.

#### Docking the Computer

To dock the Compaq LTE Elite in the Compaq LTE Lite Desktop Expansion Base, complete the following steps:

1. Install the upgrade adapter on the expansion base (refer to "Connecting the Upgrade Adapter").
2. Turn the expansion base off.
3. Connect the expansion base to an electrical outlet.
4. Turn off and disconnect any external devices that are connected to the computer.











the front of the convenience base to the fully forward position (Figure D-14).

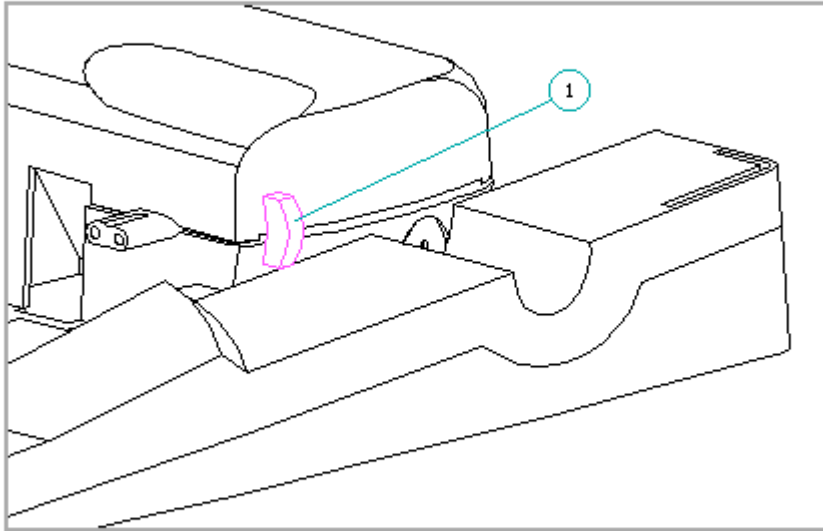


Figure D-14. Pulling the Docking Lever Forward

8. Place the computer on the convenience base guide rails and slide it toward the back until you feel a slight resistance (Figure D-15).

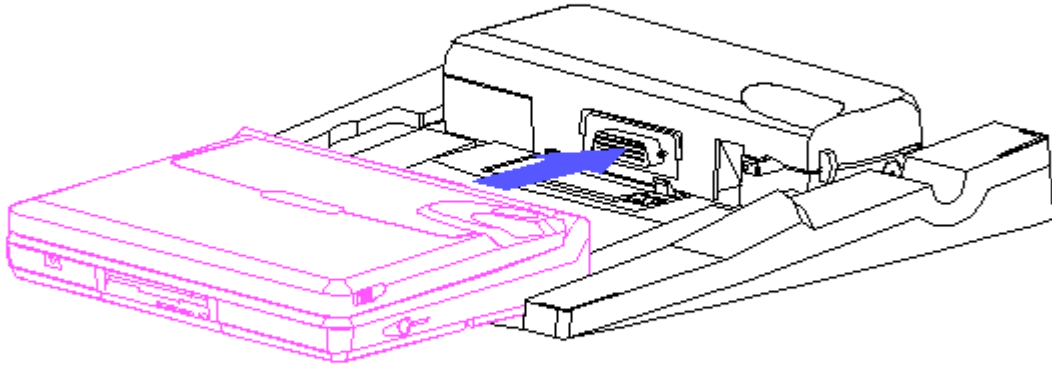


Figure D-15. Docking the Computer in the Compaq MiniStation Convenience Base

9. Push the lever toward the back of the convenience base (Figure D-16).

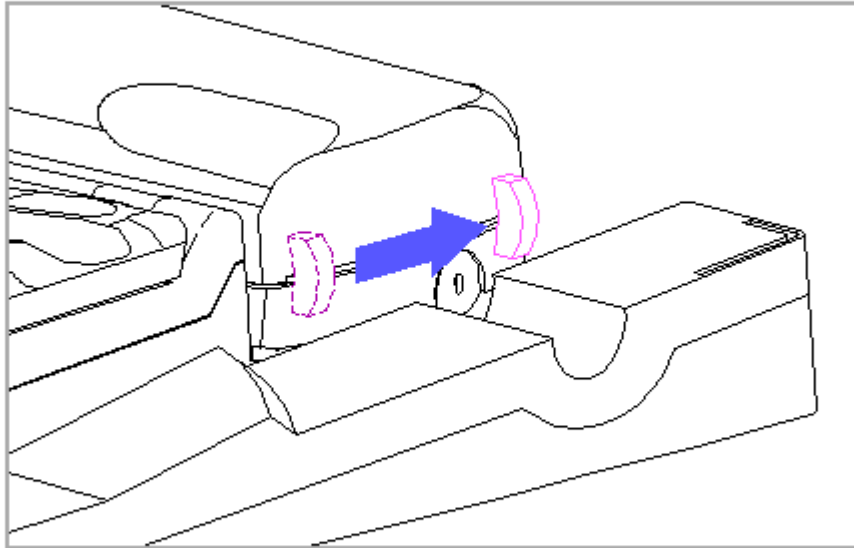


Figure D-16. Pushing the Docking Lever Back

10. Turn on the external devices that are connected to the convenience base.
11. Turn on the system, using either the convenience base power button [1] or the computer power switch [2] (Figure D-17).

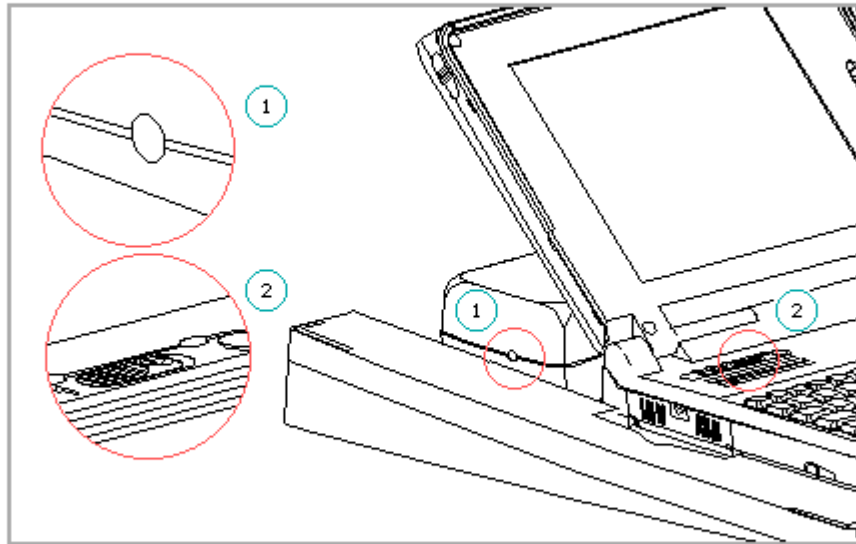


Figure D-17. Computer Power Switch and Compaq MiniStation Convenience Base Power Button

NOTE: The first time you dock the computer in the convenience base, you may be prompted to run Computer Setup to configure optional devices. The computer automatically detects and configures many optional devices. In some instances you will be prompted to accept or reject a configuration change or to run Computer Setup. Follow the instructions on the screen to change the system configuration when required. Refer to Section 6.7 for more information on running Computer Setup.

12. To turn off the computer (but not undock) use one of the following methods:
  - o Save and close open files and turn off system power with the power button on the convenience base or the power switch on the computer.
  - o From the Compaq Tab or Compaq Group box, go to Compaq Utilities and select Shutdown. Then select Options. Save open files when prompted.

IMPORTANT: Do not eject from the convenience base before reading the next section "Undocking the Computer."

#### Undocking the Computer

To undock the Compaq LTE Elite from the Compaq MiniStation, complete the



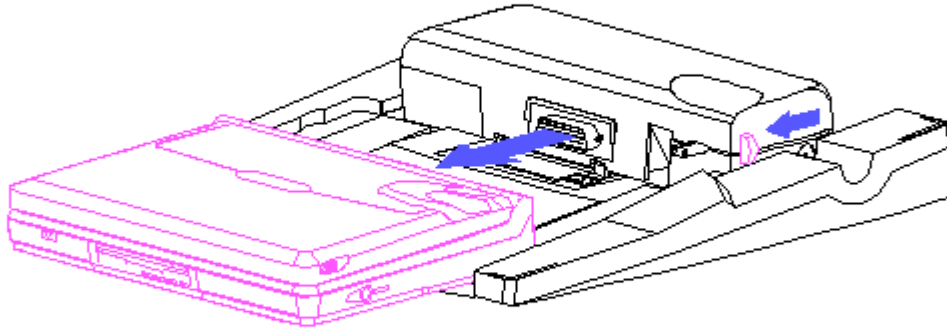


Figure D-18. Undocking the Computer from the Compaq MiniStation Convenience Base

5. Slide the computer toward you to remove it from the convenience base.

# Appendix E - Electrostatic Discharge

## Introduction

This appendix covers the proper methods for grounding and the use of recommended materials and equipment for preventing damage from electrostatic discharge (ESD).

A sudden discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or micro circuitry. Often the spark is neither felt nor heard, but damage occurs. An electronic device exposed to electrostatic discharge may not be affected at all and will work perfectly throughout a normal cycle. Or it may function normally for a while, then degrade in the internal layers, reducing its life expectancy.

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.

## E.1 Generating Static

Table E-1 shows how different activities generate static electricity and at different electrostatic voltage levels.

Table E-1. Typical Electrostatic Voltages

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

NOTE: 700 volts can degrade a product.

## E.2 Preventing Electrostatic Damage To Equipment

Many electronic components are sensitive to ESD. Circuitry design and structure determine the degree of sensitivity. The following proper packaging and grounding precautions are necessary to prevent damage:

- o To avoid hand contact, transport products in static-safe containers such as tubes, bags, or boxes.
- o Protect all electrostatic parts and assemblies with conductive or approved containers or packaging.
- o Keep electrostatic sensitive parts in their containers until they arrive at static-free stations.
- o Place items on a grounded surface before removing them from their container.
- o Always be properly grounded when touching a sensitive component or assembly.
- o Place reusable electrostatic-sensitive parts from assemblies in protective packaging or conductive foam.

Use transporters and conveyors made of antistatic belts and metal roller bushings. Mechanized equipment used for moving materials must be wired to ground and proper materials selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

#### Preventing Damage To Drives

To prevent static damage to diskette drives and hard drives, use the following precautions:

- o Handle drives gently, using static-guarding techniques.
- o Store drives in the original shipping containers.
- o Avoid dropping drives from any height onto any surface.
- o Handle drives on surfaces that have at least one inch of shock-proof foam.
- o Always place drives PCB assembly side down on the foam.

### E.3 Grounding Methods

The method for grounding 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. When standing, use footstraps and a grounded floor mat.

Table E-2. Static-Shielding Protection Levels

Method	Voltages
Antistatic plastic	1,500
Carbon-loaded plastic	7,500
Metallized laminate	15,000



## Grounding Workstations

To prevent static damage at the workstation, use the following precautions:

- o Cover the workstation with approved static-dissipative material. Provide a wrist strap connected to the work surface and properly grounded tools and equipment.
- o Use static-dissipative mats, heel straps, or air ionizers to give added protection.
- o Handle electrostatic sensitive components, parts, and assemblies by the case or PCB laminate. Handle them only at static-free workstations.
- o Avoid contact with pins, leads, or circuitry.
- o Turn off power and input signals before inserting and removing connectors or test equipment.
- o Use fixtures made of static-safe materials when fixtures must directly contact dissipative surfaces.
- o Keep work area free of nonconductive materials such as ordinary plastic assembly aids and Styrofoam.
- o Use field service tools, such as cutters, screwdrivers, vacuums, that are conductive.
- o Use a portable field service kit with a static dissipative vinyl pouch that folds out of a work mat. Also use a wrist strap and a ground cord for the work surface. Ground the cord to the chassis of the equipment undergoing test or repair.

## E.4 Grounding Equipment

Use the following equipment to prevent static electricity damage to equipment:

Wrist Straps are flexible straps with a minimum of 1 megohm +/- 10% resistance in the ground cords. To provide proper ground, a strap must be worn snug against the skin. On grounded mats without banana-plug connectors, connect a wrist strap with alligator clips.

Heelstraps/Toestraps/Bootstraps 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 1 megohm resistance between operator and ground. To be effective, the conductive strips must be worn in contact with the skin.

## E.5 Recommended Materials And Equipment

Other materials and equipment that are recommended for use in preventing static electricity include:

- o Antistatic tape
- o Antistatic smocks, aprons, or sleeve protectors
- o Conductive bins and other assembly or soldering aids
- o Conductive foam
- o Conductive table-top workstations with ground cord of 1 megohm resistance
- o Static dissipative table or floor mats with hard tie to ground
- o Field service kits
- o Static awareness labels
- o Wrist straps and footwear straps providing 1 megohm +/-10% resistance
- o Material handling packages
- o Conductive plastic bags
- o Conductive plastic tubes
- o Conductive tote boxes
- o Metal tote boxes
- o Opaque shielding bags
- o Transparent metallized shielding bags
- o Transparent shielding tubes

# Appendix F - Connecting and Configuring Optional SCSI-2 Devices

## Introduction

This appendix contains guidelines for using SCSI-2 (small computer system interface-2) devices, and explains how to connect external SCSI-2 devices, install an internal SCSI-2 drive in the Compaq SmartStation, and install SCSI-2 device drivers.

The expansion base has a built-in SCSI-2 controller, which allows you to daisy-chain up to seven (one internal) SCSI-2 devices, such as hard drives, CD-ROM drives, tape drives, WORM (write once read many) drives, DAT (digital audio tape) drives, scanners, and printers. The expansion base supports most external SCSI-2 compliant devices.

NOTE: Refer to Section 10.5 for SCSI-2 controller specifications.

The Compaq SCSI-2 Controller is supported under MS-DOS Version 5.0 or higher and Microsoft Windows Version 3.1 or higher.

NOTE: You cannot boot from a SCSI-2 hard drive in the expansion base. Selecting the A/B or C/D drive selection switches (Section C.3) on the rear panel of the expansion base or enabling the A/B or C/D configuration switches (Section C.2) on the vertical circuit board have no effect on a SCSI-2 drive.

## F.1 SCSI-2 General Guidelines

The following are general guidelines for using SCSI-2 devices:

1. Not all SCSI devices are compatible with the integrated SCSI-2 controller. Ensure that the options you are installing are SCSI-2 compliant.
2. Every SCSI-2 device requires a unique ID number, from 0 to 7. The ID number uniquely defines each peripheral device and determines the device priority on the bus. ID number 7 has the highest priority; ID number 0 has the lowest. ID 7 has been assigned to the integrated SCSI-2 controller in the expansion base.
3. Every SCSI chain requires two terminators - one on the first device in the chain and one on the last device in the chain. Termination is used to control noise and signal reflection on the lines.

The integrated SCSI-2 controller in the expansion base has an active terminator that automatically becomes deactivated according to your configuration. If you use only internal devices or only external devices, the SCSI-2 controller is automatically terminated. If you mix internal and external devices, the SCSI-2 controller is not terminated.

Refer to the documentation included with the SCSI-2 device to determine whether it has an active terminator or a passive terminator that you

must install or remove according to your configuration.

4. External cables must be a minimum of 1 foot in length (0.3 meters). The combined length of SCSI-2 cables in a chain must not be longer than approximately 20 feet (6 meters).
5. Generally, each SCSI-2 device requires a software driver.
6. Most SCSI-2 drivers require that their associated device be turned on during startup to recognize the device. Therefore, turn on external SCSI-2 devices before turning on the expansion base.

## **F.2 Sample SCSI-2 Configuration**

Figure F-1 shows a sample configuration with a mixture of internal and external SCSI-2 devices. The device at each end of the chain is terminated. The controller and the devices plugged into the middle of the chain are not terminated.

NOTE: The SCSI-2 controller has active termination; you do not have to install or remove a terminator on the controller.

1. Expansion base
2. Internal SCSI-2 device - terminated (T)
3. SCSI-2 controller - automatically terminated (AT) when required
4. External SCSI-2 device - terminated (T)
5. External SCSI-2 device - not terminated

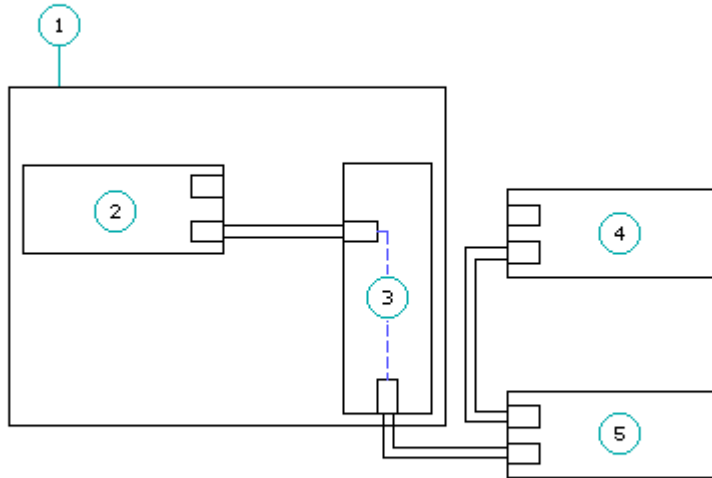


Figure F-1. Sample Configuration for Internal and External SCSI-2 Devices

### F.3 Changing The SCSI-2 Ddefault Configuration

By default, the integrated SCSI-2 controller has the configuration settings listed in Table F-1. To adjust the default settings, refer to the Compaq EZ-SCSI Software Reference Guide.

Table F-1. SCSI Default Configuration

Parameter	Value
SCSI ID	7
Parity	Disabled
Disconnect	Disabled (no disconnect)
Synchronous Negotiation	Disabled (do not attempt synchronous negotiations)

**IMPORTANT:** If Parity, Disconnect, or Synchronous Negotiation is not supported by a SCSI-2 device in the chain, you may want to leave that feature disabled.

Parity: When the Parity feature is enabled, the controller checks the parity of received data from the SCSI-2 bus. The controller always generates parity when transmitting data onto the SCSI-2 bus.

Disconnect: When the Disconnect feature is enabled, the controller overlaps communications across the SCSI-2 bus. The controller can request operation from multiple SCSI-2 devices in parallel, increasing overall bus performance. If Disconnect is disabled or a SCSI-2 device does not support this mode, the controller then communicates with only one device at a time.

#### Synchronous

Negotiation: When the Synchronous Negotiation feature is enabled, the controller uses the SCSI-2 synchronous data transfer mode to communicate with peripheral devices supporting this mode of data transfer across the SCSI-2 bus. The effect is to improve overall throughput performance on the SCSI-2 bus. If Synchronous Negotiation is disabled, Asynchronous mode is used for all data transfers.

### Hardware Configuration

Table F-2 lists the default hardware configuration. To change the input/output (I/O) address and the Interrupt Level, run Computer Setup (Section 6.7).

Table F-2. Hardware Configuration

Parameter	Default Value	Alternate Value
I/O Address	340 to 35Eh	140 to 15Eh
Interrupt Level	IRQ 11	IRQ 10
Connector Type	SCSI-2	
Data Transfer Type	16-bit PIO (DMA not supported)	

## F.4 Installing An Internal SCSI-2 Drive

This section covers installation procedures for an internal SCSI-2 drive in the Compaq SmartStation.

NOTE: Prior to installing the drive, refer to the SCSI-2 drive manufacturer's instructions to verify the parity, termination, and SCSI ID of the drive and to obtain additional installation information.

The SCSI-2 signal cable included with the expansion base supports a SCSI-2 drive in drive position 2 only. The steps to install the drive are basically the same as those for installing a non-SCSI drive.

To install a SCSI-2 drive, complete the following steps:

1. Install the SCSI-2 drive (Section 9.15).
2. Connect the SCSI-2 signal and power cables (Figure F-2) as follows:
  - Connect one end of the SCSI-2 signal cable [1] to the connector on the system board.
  - Connect the other end [2] to the connector on the rear of the drive.
  - Connect the outside connector of the drive power cable [3] to the connector on the rear of the drive.
  - Be sure that the other end of the drive power cable [4] is connected to the vertical circuit board.

NOTE: Cables and connectors are keyed to allow only a correct match. Connectors on the drive may be in a different location than those shown.

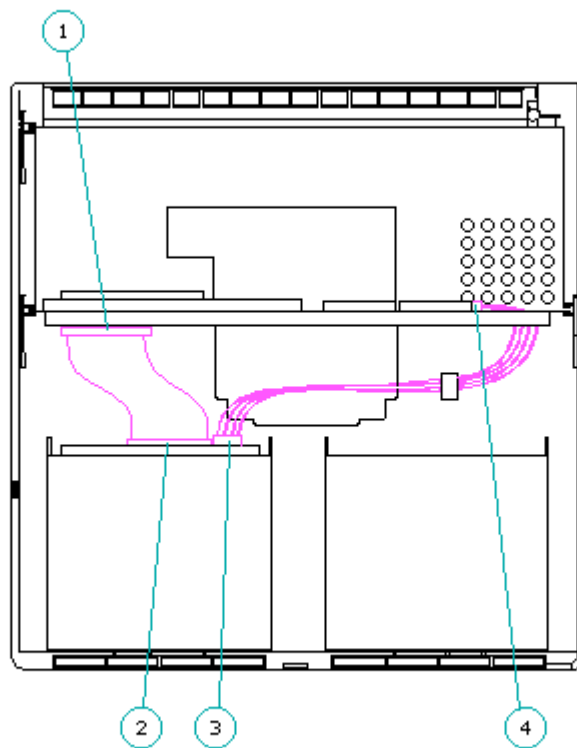


Figure F-2. Connecting SCSI-2 Signal and Power Cables

3. Replace the bottom cover on the expansion base.
4. If a Class 1 Laser label accompanied the SCSI-2 drive, attach the label near the nameplate label on the bottom cover of the expansion base for regulatory compliance. Do not block any ventilation openings.

5. Install the SCSI-2 drivers to allow the computer to recognize the SCSI-2 drive in the expansion base (Section F.6).
6. If you installed a SCSI-2 hard drive, format and partition the drive. Refer to the Compaq EZ-SCSI Software Reference Guide for additional information.
7. Reboot the computer by pressing the Ctrl+Alt+Delete keys to integrate the new information.
8. If the computer does not automatically reconfigure the system when you turn it on, run Computer Setup (Section 6.7).
9. Run Computer Checkup to ensure that the drive is working properly (Section 2.3)

NOTE: Refer to the Compaq EZ-SCSI Software Reference Guide for additional information on SCSI drivers and on formatting and partitioning a SCSI-2 hard drive.

## **F.5 Connecting An External SCSI-2 Device**

This section covers procedures for connecting an external SCSI-2 device to the expansion base.

NOTE: Prior to connecting a SCSI-2 device, refer to the SCSI-2 drive manufacturer's instructions to verify the parity, termination, and SCSI ID of the drive and to obtain additional installation information.

To connect a SCSI-2 device to the expansion base, complete the following steps:

1. Turn off the expansion base.
2. Turn off the SCSI-2 device.
3. Connect the Compaq external SCSI-2 cable (included with the Compaq SCSI-2 device) to the expansion base and the device.
4. Turn on the SCSI-2 device.
5. Turn on the expansion base (computer must be docked first).
6. Install the SCSI-2 drivers to allow the computer to recognize the SCSI-2 device(s) connected to the expansion base (Section F.6).
7. If you connected a SCSI-2 hard drive, refer to the Compaq EZ-SCSI Software Reference Guide to format and partition the drive.

## **F.6 Installing SCSI-2 Drivers**



The SCSI drivers enable the computer to communicate with optional SCSI-2 devices. For detailed information about the SCSI-2 drivers and utilities, refer to the Compaq EZ-SCSI Software Reference Guide.

**IMPORTANT:** To ensure that the computer recognizes a SCSI-2 device and installs all necessary drivers, turn on the device before turning on the computer and ensure that the device is turned on when you install the device drivers.

#### Installing SCSI-2 Drivers on the Compaq LTE Elite

The SCSI-2 drivers are on the Compaq LTE Elite hard drive in the directory C:\EZSCSI.

To display installation instructions from within Microsoft Windows, select SCSI Setup in the Compaq Utilities group box.

To install the SCSI-2 drivers from MS-DOS, complete the following steps:

1. Exit Windows.
2. To change to the EZSCSI directory, enter  
CD\EZSCSI
3. Enter  
INSTALL
4. Follow the instructions on the screen.
5. When the device driver installation is complete, reboot the computer by pressing the Ctrl+Alt+Delete keys.

#### Installing SCSI-2 Drivers on the Compaq LTE Lite

The SCSI-2 drivers for the Compaq LTE Lite are on the EZ-SCSI Configuration Software diskette included with the SmartStation Adapter. To install the drivers, complete the following steps:

1. Insert the EZ-SCSI diskette into drive A.
2. Exit Windows.  
  
**NOTE:** If you start the installation from Windows, you will receive an error message.
3. Change to drive A.
4. At the A: prompt, enter  
INSTALL
5. Follow the instructions on the screen.
6. When the device driver installation is complete, reboot the computer by pressing the Ctrl+Alt+Delete keys.

# Appendix G - Cleaning the Trackball Assembly

## Introduction

This appendix covers the procedures for cleaning the trackball assembly. Under normal circumstances, the display bezel and trackball can be wiped clean with a dry, soft, lint-free cloth. If, however, the cursor or trackball skips or moves abnormally, the ball should be removed and cleaned.

## G.1 Removing The Ball

To remove and clean the ball, complete the following steps:

1. Turn off the computer.
2. Fully open the display.
3. Place the trackball removal tool [1] over the retaining ring [2] and turn it counterclockwise approximately 100 to loosen it (Figure G-1).

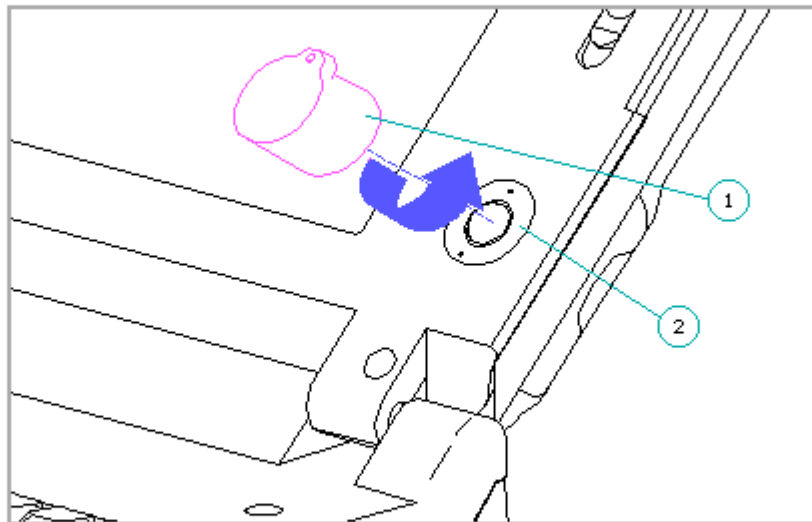


Figure G-1. Removing the Trackball Retaining Ring



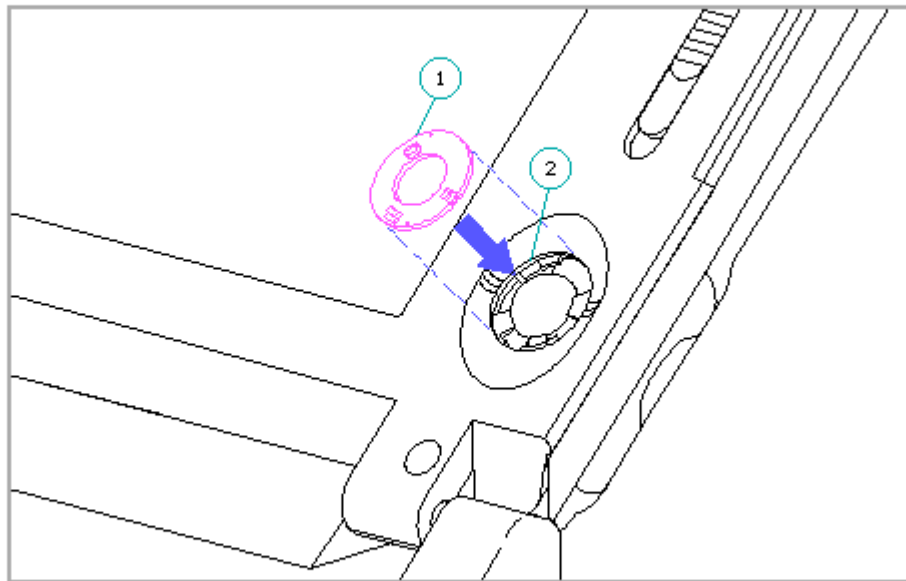


Figure G-2. Aligning the Retaining Ring