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

First Edition (March 1994) Part Number 194061-001

Preface

USING THIS GUIDE

This Maintenance And Service Guide is a troubleshooting reference for servicing the Compaq LTE Elite Family of Personal Computers, the Compaq SmartStation, the Compaq MiniStation/EN, and the Compaq MiniStation/TR.

The guide is organized into the following parts:

o Part 1: Compaq LTE Elite Computer (Chapters 1 through 5)

o Part 2: Compaq SmartStation (Chapters 6 through 10)

o Appendices

Compaq Computer Corporation reserves the right to make changes to the Compaq LTE Elite Family of Personal Computers and its options without notice.

SYMBOLS AND CONVENTIONS

The following format conventions distinguish elements of the text throughout this guide:

- o When keys must be pressed at the same time, the action is represented by the key names and the plus (+) symbol. For example, Ctrl+Alt+Delete.
- o The names of files are presented in uppercase, as shown here: FILENAME.
- o The names of commands or directories are presented in uppercase type as shown here: COMMAND or DIRECTORY. Commands that are to be entered at the system prompt are shown on a separate line.
- o When you are asked to type something without pressing the Enter key, you are directed to "type" the information.
- o When you need to type information and press the Enter key, you are directed to "enter" the information.

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

Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

- IMPORTANT: Text set off in this manner presents clarifying information or specific instructions.
- NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

TECHNICIAN NOTES

Only authorized technicians trained by Compaq Computer Corporation should attempt to repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly/module level repair. Because of the complexity of the individual boards and subassemblies, no one should attempt to make repairs at the component level or to make modifications to any printed circuit board. Improper repairs can create a safety hazard. Any indication of component replacement or printed circuit board modifications may void the warranty or exchange allowances.

To properly ventilate the computer or the expansion base, allow at least 3 inches (7.62 cm) of clearance at the back and sides of the units.

To avoid the risk of electric shock or damage to the computer or expansion base, ensure that all power sources (including the battery pack in the computer) are disconnected before removing and replacing internal parts.

Compaq SmartStation. The Compaq SmartStation expansion base is designed for connection to a grounded (earthed) electrical outlet. The grounding type plug is an important safety feature. To avoid the risk of electric shock or damage to the equipment, do not disable this feature.

LOCATING ADDITIONAL INFORMATION

The following documentation is available to support the Compaq LTE Elite Family of Personal Computers and its options.

- o Documentation included with the computer:
 - Online USER'S GUIDE
 - QUICK SETUP card
 - BEYOND SETUP GUIDE

O COMPAQ SMARTSTATION INSTALLATION AND OPERATIONS GUIDE

- O COMPAQ MINISTATION INSTALLATION GUIDE
- O COMPAQ SERVICE QUICK REFERENCE GUIDE
- o Compaq QuickFind
- o Compaq Service Advisories and Bulletins

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 driveo Display assemblyo Processor boardo 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
_____
                          Internal
     Display
Model
                          Cache RAM
                                     Hard Drive
                Processor
_____
4/75CX
     9.5" Color TFT 486 DX4/75 MHz 16 KB 8 MB
                                     340 or 510 MB
                                8 MB
     9.5" Color TFT 486 DX2/50 MHz 8 KB
4/50CX
                                     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	Battery charging	Front of unit	Orange
	Flashing at one per second	LowBatt 1		
	Flashing at two per second	LowBatt 2		
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		Green
Caps Lock	On	Caps lock selected		Green
Num Lock		Num lock selected		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).

NOTE: The automobile adapter converts 12 volts DC from the automobile to 18.5 volts DC for use by the computer.



Figure 1-5. Access Door for Automobile Adapter Connector

The computer has an access door for the automobile adapter connector that is designed to allow only one type of power input (AC or DC) to be connected at a time (Figure 1-5). Do not attempt to defeat this protective feature of the door or internal damage to the computer may result.

Serial Connector

The serial connector supports the serial interface which meets EIA RS232C specifications.

198-Pin External Options Connector

The 198-pin external options connector handles the signal interface between the computer and the expansion base or convenience base.

NOTE: When connected to an expansion base, power to the computer is carried through the 198-pin connector (DC power).

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 1024×768 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 supplyo Battery packo Automobile adaptero 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





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):

o 4 MB 0 8 MB

o 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)



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 1-10. Internal AC Power Supply



Figure 1-11. Fan

The internal fan (Figure 1-11) draws in fresh air through vent holes in the PCMCIA compartment door, then exhausts it out the back of the computer.

The fan operates on 5 volts and is controlled by temperature sensors located near the internal power supply and the processor board. The fan is designed to turn on automatically when the system approaches maximum reliable operating temperatures (refer to "Temperature Sensors" in this section).

The fan is integrated into the input/output (I/O) bracket/fan assembly. To replace the fan, the I/O bracket/fan assembly must be replaced.

To properly ventilate the computer, allow at least a 3-inch (7.62 cm) clearance at the back and sides of the unit.

Keyboard

The internal keyboard is connected to the system board by a flex cable. In addition to the internal keyboard, there is a connector for an external keyboard/mouse.

Battery Pack

The removable internal nickel metal hydride (NiMH) battery pack connects to the computer through a set of battery contacts mounted on the system board. Battery charging functions are controlled by the DC-to-DC converter on the system board. The battery pack contains RAM memory that saves the last recorded battery operating time and battery fuel gauge values.

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.

Do not crush, puncture, or incinerate the battery pack or short the battery pack external contacts. Do not open a battery pack, as this damages the pack, makes it unusable, and exposes potentially harmful battery components. There are no field-serviceable parts located inside the battery pack.

Auxiliary Battery



Figure 1-12. Auxiliary Battery

The internal auxiliary battery (Figure 1-12), mounted on the I/O bracket, supplies voltage to the system real-time clock and maintains alarm, time, date, and configuration information when the battery pack and external power sources are removed. In addition, the auxiliary battery protects RAM

memory for a one-minute period during Standby to allow a battery pack to be replaced.

The auxiliary battery has a nickel cadmium cell that supplies 7.2 volts for 50 mAmp hours. The auxiliary battery recharges when the computer is on while connected to an external power source or the battery pack. It takes approximately 10 hours to recharge a fully discharged auxiliary battery using AC power and approximately 20 hours to recharge it using the battery pack.

Do not crush, puncture, or incinerate the auxiliary battery or short the auxiliary battery external contacts. Do not open an auxiliary battery, as this damages the battery, makes it unusable, and exposes potentially harmful battery components. There are no field-serviceable parts located inside the battery.

If the computer is unused for approximately 60 days without being connected to an external power source, a fully charged auxiliary battery will drain to a critically low level. This may result in loss of alarm, time, and date information. If this happens, recharge the auxiliary battery or replace it if it is defective (refer to Section 4.8). Run Computer Setup to restore the alarm, time, and date information (refer to Section 1.8).

NOTE: CMOS password and configuration information is copied to an EEPROM so that it is not lost if the auxiliary battery is unplugged or discharged.

Diskette Drive

The standard 11 mm diskette drive is connected to the system board by a cable. The drive reads and writes to 3.5-inch 1.44 MB (high density) and 720 kilobyte (double density) diskettes. With the proper software support, the drive is also capable of reading and writing to 1.2 MB Japanese standard diskettes.

Hard Drive



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.



Compag SmartStation Expansion Base



Compag LTE Lite Desktop Expansion Base (with Upgrade Adapter)



Compag 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 settingso Standbyo 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.





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.

- 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:

- QuickLock
 QuickBlank
 Diskette drive disable
 Diskette boot ability disable
 Serial port disable
 Parallel port disable
 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:

Turn off the computer.
 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

======================================	Beeps	Probable Cause	Recommended Action
5	======================================		 Inspect the ROM placement. Replace the ROM. Flash the ROM. Replace the system board.
101 - I/O ROM Error	None	Option ROM checksum invalid.	 Inspect the ROM placement. Verify the correct ROM. Replace the ROM.
102 - System Board Failure	None	Defective DMA, timers, etc.	 Replace the system board. Replace the processor board.
162 - System Options Error	2 Short	No diskette drive or mismatch in drive type.	· · · · · · · · · · · · · · · · · · ·
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 memory incorrect. apply to both 164 error Detected codes: 1. Autosetup will correct. 2. Verify that memory board is installed correctly. 3. Replace memory board. 4. Replace system board. 164 - Memory 2 Short Configuration memory incorrect. Decrease Detected _____ 168 - CMOS None Auxiliary battery 1. Recharge auxiliary charge is low. Checksum battery. (Refer to Invalid "Auxiliary Battery" in Section 1.6). Run Computer Setup if configuration settings are other than default. ** _____ ** Autosetup configures to the default settings if you do not run Computer Setup. _____ Beeps Probable Cause Recommended Action Message _____ 201 - Memory None RAM failure. 1. Make sure the memory Error module is installed correctly. 2. Clean the contacts of the memory module and system board. 3. Make sure PCMCIA memory card is installed correctly by running PCMCIA card service software and Computer Setup. 4. If using ISA expansion memory module, make sure module is installed correctly. 5. Replace the memory module(s) (if applicable). 6. Replace PCMCIA memory card. 7. Replace ISA memory board. 8. Replace system board. 203 - Memory None RAM failure. Refer to recommended actions for Error Code Address Error 201.

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

4. Replace the system board. _____ 602 - DisketteNoneDiskette in drive A1. Replace the diskette.Bootnot bootable.2. Replace the diskette drive. 3. Replace the system board. _____ 605 - Diskette 2 Short Mismatch in drive Run Computer Setup. Drive Error type. 610 - External None Switch 3 on the Verify switch 3 setting vertical circuit and change if necessary. storage device board is set for failure. an external drive but no tape or diskette drive is installed in the expansion base. _____ External storage 1. Turn on external device not powered storage device and reboot computer. up. 2. Check and/or replace power and signal cables for external storage device. _____ Message Beeps Probable Cause Recommended Action _____ 611 - Primary 2 Short Configuration Run Computer Setup. Floppy Port error. Address Assignment Conflict _____ 612 - Secondary 2 Short Configuration Run Computer Setup. Floppy Port error. Address Assignment Conflict _____ 702 -None Coprocessor error. Replace the processor Coprocessor board. Detection Error _____ 702A -2 Short Coprocessor error. Replace the processor Coprocessor board. Detection Error _____ 703 - CMOS2 ShortCoprocessor or
configurationReports AconfigurationCoprocessor Thaterror. 1. Run the Configuration utility. 2. Replace the processor Coprocessor That Has Not Been board. Detected by POST 1125 - Internal 2 Short Defective internal 1. Run Computer Setup Serial Port serial port. and check it.

Failure

1150 - COM Port Two ports are Run Computer Setup. Configuration configured in the same address. Error _____ 1151 - COM Port 2 Short Both external and Run Computer Setup. internal serial ports are assigned to COM1. 1 Address Assignment Conflict 1152 - COM Port 2 Short Both external and Run Computer Setup. 2 Address internal serial ports are assigned Assignment Conflict to COM2. _____ 1771 - Primary 2 Short Internal and 1. Run Computer Setup. external hard drive 2. Check expansion base Disk Port controllers are switch settings. both assigned to 3. Check unit out of the primary expansion base. Address Assignment Conflict the primary expansion base. address. _____ Message Beeps Probable Cause Recommended Action _____ 1772 - Secondary 2 Short Internal Run Computer Setup. Disk Port and external hard Address drive controllers are both assigned Assignment Conflict to the secondary address. 1780 - Disk 0 None Hard drive/format 1. Run Computer Checkup. Failure error. 2. Replace the drive. -1781 - Disk 1 None Hard drive/format 1. Run Computer Checkup. 2. Replace the drive. Failure error. _____ Hard drive1. Run Computer Checkucircuitry error.2. Replace the drive. 1782 - Disk None 1. Run Computer Checkup. Controller _____ 1790 - Disk 0 None Hard drive error or 1. Run Computer Setup Failure wrong drive type. and Computer Checkup. 2. Replace the drive. _____ 1791 - Disk 1 None Hard drive error or 1. Run Computer Setup wrong drive type. Failure and Computer Checkup. 2. Replace the drive. _____ Incorrect C/D 1792 - Secondary None Verify position of Disk Controller switch settings. C/D and configuration switches in expansion Failure base and run Computer Setup. -----Defective hard 1. Reseat hard drive drive or hard drive cable and replace cable. 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		Refer to probable causes 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
	CPU test failed.	Replace the processor board.
102 - xx		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.	 If using an external keyboard, try another keyboard. If second keyboard passes, replace first one. 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. Speed test slow mode Replace the system board. 112 - xx out of range. _____ Protected mode test 113 - 01 Replace the system board. failed. _____ 1. Check system configuration to 114 - 01 Speaker test failed. 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 _____ Invalid memory Reinsert memory modules in correct location 200 - xx _____ Memory machine ID test The following steps apply to 201 - xx failed. 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. _____ Memory write/read The following steps apply to 203 - xx test failed. 203 - xx through 210 - xx error codes: Memory address test 204 - xx failed. If you don't have a memory expansion board, replace the 206 - xx Increment pattern processor board. test failed. If you have a memory expansion 210 - xx Random pattern test board: 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 _____ Keyboard short test, 301 - xx 1. Check the keyboard connection.

	8042 self-test failed.	<pre>If disconnected, turn off the computer and connect the keyboard. 2. Replace the keyboard. 3. Replace the system board.</pre>
302 - xx	Keyboard long test failed.	 Check the keyboard connection. If disconnected, turn off the computer and connect the keyboard. Replace the keyboard. Replace the system board.
303 - xx	Keyboard LED test, 8042 self-test failed.	 Replace the power interface board. Replace the system board. If external keyboard is being used, replace external keyboard.
304 - xx	Keyboard typematic test failed.	 Check the keyboard connection. If disconnected, turn off the computer and connect the keyboard. Replace the keyboard. Replace the system board.
Table 2-5. Para	allel Printer Computer Che	
		Recommended Action
======================================	Printer failed or not connected.	The following steps apply to 401 - xx through 498 - xx error codes:
402 - xx	Printer data register failed.	 Connect the printer. Check power to the printer.
403 - xx	Printer pattern test failed.	 Install the loopback connector. Replace the system board.
498 - xx	Printer failed or not connected.	
	ette Drive Computer Check	up 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		 Replace the diskette. Check and/or replace the diskette cable. Replace the diskette drive.

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.	
	Diskette drive/media ID error.	1. Replace media. 2. Run Computer Setup.
Table 2-7. Seri	al Computer Checkup Error	
Error Code	Description	Recommended Action
Error Code ====================================	Description	
Error Code 1101 - xx Table 2-8. Mode	Description Serial port test. Communications Computer	Recommended Action Replace the system board. Checkup Error Codes
Error Code 1101 - xx Table 2-8. Mode	Description Serial port test. Communications Computer	Recommended Action Replace the system board. Checkup Error Codes Recommended Action
Error Code 1101 - xx Table 2-8. Mode	Description Serial port test. Communications Computer	Recommended Action Replace the system board. Checkup Error Codes
Error Code 1101 - xx Table 2-8. Mode Error Code	Description Serial port test. M Communications Computer Description Modem internal	Recommended Action Replace the system board. Checkup Error Codes Recommended Action The following steps apply to 1201 - xx through 1210 - xx error codes:
Error Code ====================================	Description Serial port test. m Communications Computer Description Modem internal loopback test.	Recommended Action Replace the system board. Checkup Error Codes Recommended Action The following steps apply to 1201 - xx through 1210 - xx error codes: 1. Refer to modem documentation for correct setup procedures. 2. Check the modem line.
Error Code ====================================	Description Serial port test. m Communications Computer Description Modem internal loopback test. Modem timeout test.	Recommended Action Replace the system board. Checkup Error Codes Recommended Action The following steps apply to 1201 - xx through 1210 - xx error codes: 1. Refer to modem documentation for correct setup procedures.
Error Code 	Description Serial port test. M Communications Computer Description Modem internal loopback test. Modem timeout test. Modem external termination test. Modem auto originate	Recommended Action Replace the system board. Checkup Error Codes Recommended Action The following steps apply to 1201 - xx through 1210 - xx error codes: 1. Refer to modem documentation for correct setup procedures. 2. Check the modem line.
Error Code 1101 - xx Table 2-8. Mode Error Code 1201 - xx 1202 - xx 1203 - xx 1204 - xx	Description Serial port test.	Recommended Action Replace the system board. Checkup Error Codes Recommended Action The following steps apply to 1201 - xx through 1210 - xx error codes: 1. Refer to modem documentation for correct setup procedures. 2. Check the modem line.

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.	 Run Computer Setup and verify drive type.
1702 - xx	Hard drive read test failed.	2. Reseat the hard drive. 3. Try another hard drive. If
1703 - xx	Hard drive write/read/compare test failed.	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 Code	Description	Recommended Action
1900 - xx	Tape ID failed.	The following steps apply to 1900 - xx through 1906 - xx error
1901 - xx	Tape servo write failed.	codes:
1902 - xx	Tape format failed.	 Replace the tape cartridge. Check the switch settings on the adapter board.
1903 - xx	Tape drive sensor test failed.	3. Check and/or replace the signal cable.
1904 - xx	Tape BOT/EOT test failed.	 Replace the tape adapter board (if applicable). Replace the tape drive. Replace the system board.
1905 - xx	Tape read test failed.	
1906 - xx	Tape write/read/ compare test failed.	
	ideo Computer Checkup Erro:	r Codes ====================================
Error Code	Description	Recommended Action
2402 - xx	Video memory test failed.	The following step applies to 2402 - xx through 2480 - xx error codes:
2403 - xx	Video attribute test failed.	Replace the system board.
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.	
2/1/ - xx	Video white screen	

2414 - xx Video white screen

test failed. 2416 - xx Video noise pattern test failed. 2417 - xx Light pen text mode test failed, no response. ECG/VGC memory test 2418 - xx failed. 2419 - xx ECG/VGC ROM checksum test failed. 2421 - xx ECG/VGC 640 x 200 graphics mode test failed. _____ Recommended Action Error Code Description _____ ECG/VGC 640 x 350 16 The following step applies to 2422 - xx color set test failed. 2402 - xx through 2480 - xx error codes: ECG/VGC 640 x 350 64 2423 - xx 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 The following step applies to test failure. 2402 - xx through 2480 - xx error codes: 320 x 200 graphics 2432 - xx (256 color mode) test Replace the system board. failure. Advanced VGA 2448 - xx 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. Advanced VGA data 2477 - xx path test.

2478 - xx	Advanced VGA BitBLT test.		
2480 - xx	Advanced VGA Linedraw test.		
	io Computer Checkup Error	Codes	
Error Code	Description	Recommended Action	
3206 - xx	Audio system internal error.	Replace the system board.	
Table 2-13. Net	work Controller Computer (Checkup Error Codes	
Error Code	Description	Recommended Action	
6000 - xx	Error occurred while attempting to identify a particular network interface controller.	 Run the ISA setup utility, reconfigure the failing network controller, and retest. Ensure that the network controller is seated properly, if applicable. Remove any cables attached to the network controller(s) and retest. 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.) If the network controller is a stand-alone board, replace the board. If the network controller is integrated into the expansion base system board, replace the expansion base system board. If using multiple network controller boards, attempt to locate the defective board by completing the following steps: a. Remove all network controller boards. Install one network controller board. Retest with Computer Checkup. Keep adding the boards one at a time and retesting until the defective board is located. 	
6001 - xx	Network card setup failed.	The following steps apply to 6001 - xx and 6002 - xx error codes:	

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 The following steps apply to configuration test 6054 - xx and 6056 - xx error failed. codes: 6056 - xx Token Ring reset test failed. 1. Run the ISA setup utility, reconfigure the failing network controller, and retest. 2. Ensure that the network controller is seated properly, if applicable. 3. Replace the network controller. _____ Token Ring internal Refer to recommended actions for 6068 - xx loopback test failed. Error Code 6028 - xx. Token Ring externalRefer to recommended actions forloopback test failed.Error Code 6029 - xx. 6069 - xx _____ Token Ring open. 6089 - xx Refer to recommended actions for Error Code 6029 - xx. _____ * MAU = Multi-station Access Unit ** UTP/STP = Unshielded Twisted Pair/Shielded Twisted Pair _____

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.

	CSI Computer Checkup Error C	odes - SCSI Device Names
Error Code	Description	
65xx - xx 66xx - xx 67xx - xx	Disk CD Tape	
	CSI Computer Checkup Error C	
Error Code	Description	
xx00 - xx xx05 - xx xx06 - xx xx23 - xx	ID Read SA/Media Random Read	
		Codes - SCSI Test Error Codes
Error Code	Description	Recommended Action
		Check cable connections.
xxxx - 03	Media not in drive.	Check for and install DATA CD or write-enabled tape in drive.
xxxx - 05		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.
		Replace the indicated device.
	Illegal drive command.	Replace the indicated device.
xxxx - 16		Replace the indicated device.
		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. _____ 1. Replace current DATA CD with 66xx - 24 Media hard error. 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. _____ Unrecoverable error. Replace the indicated device. xxxx - 31 _____ xxxx - 32 Controller/drive Replace the indicated device. disconnected. _____ Illegal controller xxxx - 33 Replace the indicated device. command. _____ 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. Error status from drive. Replace the indicated device. xxxx - 39 Replace the indicated device. Target timed out. xxxx - 40 _____ SCSI bus stayed busy. Replace the indicated device. xxxx - 41 _____ 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. MSG, C/D and/or I/O lines Replace the indicated device. xxxx - 52 bad. xxxx - 53 BSY never went busy. Replace the indicated device.

_____ xxxx - 54 BSY stayed busy. Replace the indicated device. _____ xxxx - 60 Controller CONFIG-1 Replace the indicated device. register bad. xxxx - 61 Controller CONFIG-2 Replace the indicated device. register bad. _____ Table 2-15. Pointing Device Interface Computer Checkup Error Codes _____ Recommended Action Error Code Description _____ 8601 - xx Pointing Device Interface 1. Run Computer Setup, test failed check trackball settings. 2. Clean trackball. 3. Reseat display cable in trackball board. 4. Reseat display cable in system board. 5. Verify that bottom of trackball board is not shorting to display shield. Place capton tape on bottom of board. 6. Replace trackball. 7. Replace display cable. 8. Replace system board. _____

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

the computer malfunction against the problem description in the troubleshooting tables to avoid a misdiagnosis.

To avoid a potential shock hazard during troubleshooting procedures, disconnect all power sources before removing the keyboard cover or the display bezel.

Before Replacing Parts

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

o Verify that cables are connected properly to the suspected defective parts. Try reseating the cables even if they appear to be properly connected.

o Run Computer Setup after connecting external devices.

o Verify that all required device drivers are installed.

o Verify that all required changes have been made to the CONFIG.SYS file.

o Verify that all required changes have been made to the AUTOEXEC.BAT file.

o Verify that printer drivers have been installed for each application.

Table 2-16. Battery Problems *

Problem	Probable Cause	Solution(s)
=======================================		
Battery LED flashes to indicate low battery condition, but computer does not beep.	Low battery beeps were turned off.	Use Power Management to turn on the low battery warning beeps (Section 1.10).
	Volume is turned down too low.	Press the Fn + F5 keys, and press the right arrow key to increase the volume. Use the down arrow key to test the volume.
Battery LED does not come on and the battery gauge does not reflect a change in battery charge level.	Battery pack is already charged.	
	Battery pack is trickle charging.	Allow battery pack to continue charging for 30 minutes and recheck the

		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.	

Battery chargePower conservation isSet a power conservationdoes not last asdisabled or set tolevel. (Section 1.10). long as expected. "None." _____ An external device or Turn off or remove the PCMCIA card is draining external device when not the battery. using it. _____ Battery pack is Normal warming has No action is required. warm to the touch occurred due to after charging. charging. _____ * 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 860F (-200C to 300C). The recommended operating temperature range is 50oF to 104oF (10oC to 40oC). _____ Table 2-17. Battery Gauge Problems _____ Probable Cause Solution(s) Problem _____ Battery gauge If battery pack is new, displays a question mark is pack until the battery LED question mark. displayed until battery pack is fully charged. still exists, complete the following steps: following steps: 1. Allow the battery pack to cool off. 2. Partially discharge the battery pack. 3. Fully recharge the battery pack. -----The battery pack has Fully charge the battery been unused for five or pack until the battery LED more days. turns off. _____ Battery pack has been Condition the battery pack * partially recharged too (Appendix B). many times without being fully recharged. _____ Battery gauge Battery pack has been Condition the battery pack * partially recharged too (Appendix B). appears many times or computer inaccurate. has been in Standby for an extended period of time. * 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 Diskette is damaged. Run CHKDSK on the diskette. At the system prompt, type: LED stays on. CHKDSK A: Software program is Check the program diskettes. damaged. _____ Diskette drive Diskette is write-Disable the diskette's cannot write to a protected. write-protect feature or use diskette. a diskette that is not write-protected. _____ Computer is writing to Check the drive letter in the wrong drive. the path statement. the wrong drive. Drive error has Run Computer Checkup. occurred. Diskette is not Format the diskette. formatted. _____ Diskette driveThe wrong type ofUse the type of diskettecannot read adiskette is being used.required by the drive. diskette. _____ Diskette has a bad Copy files to the hard drive sector. or another diskette. Reformat or replace the bad diskette. _____ Drive error has Run Computer Checkup. occurred. _____ Diskette is not Format the diskette. formatted. _____ Table 2-19. Display Problems _____ Probable Cause Solution(s) Problem _____ Control slide forAdjust the slide control(s)brightness or contraston the right side of the(if applicable) is notdisplay. * Characters are dim. set properly. _____ Computer screen is in Tilt display or move direct light. direct light. computer. _____ Power Management setting Use the Fn + F7 hotkeys or is set on high or run Power Management to change setting to medium. custom. _____ Power Management Adjust brightness setting in brightness setting is 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)
Problem Screen is blank, the power/standby LED is flashing, and the battery LED is flashing.	Probable Cause System has entered a low battery Standby condition. The computer will next activate Hibernation, if this feature is not disabled.	
Screen is blank, the power/standby LED is flashing, and the battery	System has entered a low battery Standby condition. The computer will next activate Hibernation, if this	Solution(s) If available, immediately connect the computer to an external power source or insert a charged battery pack. Then press the standby

computer back on. _____ Internal displayDisplay function wasPress the Fn + F4 keys tois blank and theswitched to the externalactivate the internalscreen on anmonitor.display. Press the keys external monitor again to display information simultaneously. ** displays information. Distorted or The ANSI.SYS driver is not in the CONFIG.SYS the CONFIG.SYS file. Add the ANSI.SYS driver to the CONFIG.SYS file and the following line: incorrect. with text. DEVICE=C:\ANSI.SYS _____ An Energy Star monitor Deselect Energy Star monitor is selected when one is in Power Management. not connected. _____ Internal display Using 800 X 600 or Restart the computer. If simultaneous display is desired, use 640 x 480 resolution. ** computer is internal display, which connected to only supports 640 X 480 resolution. _____ Probable Cause Solution(s) Problem _____ Internal displayExternal monitor wasTurn the computer off andand externalconnected after theconnect the externalmonitor do notcomputer was turned on.monitor. Turn the external display monitor on, then turn on the information computer. simultaneously. ** Press the Fn + F4 keys to "toggle" through the three display possibilities. _____ The light tubes Improper backlight or on the edge of display cable 1. Reseat the display cable to the system board. the display panel connections. 2. Reseat the display cable do not light up to the inverter board. at all and Power-3. Reseat the backlight On-Self-Test cable to the inverter (POST) completes board. when the unit is powered up. * * * _____ Defective inverter Replace the inverter board. 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 Display switch is stuck Remove keyboard cover and in the off position. on the edge of inspect the display switch. the display panel Replace the following one at a time until switch has light up momentarily when proper movement: unit is powered 1. Display switch spring. up, but turn off 2. Keyboard cover. during or after POST. Power LED lights up on front of unit but not on top. *** _____ The light tubes Defective system board. Replace the system board. 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. *** _____ Problem Probable Cause Solution(s) _____ BacklightPower ManagementVerify that you have not(brightness)settings are set high,
causing a dim display.selected a Power Management adjusted with the output of the backlight. brightness control slide. ***** _____ Control slide is seated Remove the control slide from the display bezel and reseat it. improperly. _____ Improper display cable 1. Reseat the display cable to the inverter board. connections. 2. Reseat the display cable to the system board. _____ Defective inverter Replace the inverter board. * * * * board. _____ Defective display cable. Replace the display cable. * * * * _____ Defective system board. Replace the system board. * * * * _____ Contrast cannot Control slide improperly Remove the plastic control be adjusted with seated. slide from the display bezel the contrast and reseat it. control slide (color STN models only). * _____

Improper display cable Reseat the display cable to connections. the following one at a time until the problem is solved: 1. Inverter board. 2. System board. 3. Display panel. _____ Defective inverter Replace the inverter board. * * * * board. _____ Defective display cable. Replace the display cable. **** _____ Defective display panel. Replace the display panel. * * * * _____ Probable Cause Problem Solution(s) _____ The display panel Improper display cable Reseat the display cable to has a continuous connections. the following until the pattern across it problem is solved: (e.g., a "jailbars" 1. System board pattern), has a 2. Display board 3. Inverter board 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). _____ Defective display cable. Replace the display cable. **** _____ Replace the inverter board (on color STN models only). Defective inverter board. Defective system board. Replace the system board. _____ A single line, Defective display panel. Replace the display panel. small group of * * * * lines, or block appears on the display panel. This failure occurs in only a section of the display panel. ***** _____ The displayDefective display switchRemove keyboard cover. Pushswitch does notspring or keyboardthe display switch on thefunctioncoverpower interface board function. cover. power interface board. If (Section 1.4) 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 Replace power interface interface board. 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 Dr				
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	<pre>====================================</pre>		
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 turned on. enable the Num Lock function computer keyboard and embedded numeric keypad. is disabled. _____ Embedded numericExternal numeric keypadDisconnect the externalkeypad isis connected to thenumeric keypad from thedisabled and Numcomputer.computer. Lock function is on. _____ External keyboard External keyboard is not Ensure that the external does not work. securely connected or is keyboard is securely connected to anconnected to the appropriateincorrect externalexternal connector. connector. _____ Table 2-23. Memory Problems _____ Solution(s) Problem Probable Cause _____ Memory count
during Power-OnOptional memory card is
installed incorrectly,1. Ensure that the
appropriate memory card
has been installed
correctly.Self-Test (POST)
is incorrect.is incompatible with
the computer, or is
configured incorrectly.1. Ensure that the
appropriate memory card
has been installed
correctly. _____ "Out of Memory" Too many TSRs * are Delete any TSR applications message is installed. that are not needed displayed on the screen, or insufficient memory error occurs during operation. _____ Memory configuration is Reconfigure the memory using not set up correctly. MS-DOS MEMMAKER. -----System ran out of memory 1. Check the application for the application. documentation for memory requirements. 2. Install additional memory. _____ * 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:

b Eagle Etherxpert EP2000 Plus
b Madge AT Ringnode
b Madge ISA Ringnode
b Madge Smart AT Ringnode
b Madge Smart 16/4 AT Ringnode
b Novell NE-2000
b Standard Microsystems Corp. Arcnet PC 130
c Standard Microsystems Corp. Arcnet PC 130E
b Tiara Lancard/A
b Silicom Modular Pocket Ethernet Adapter
c 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 Ensure that the cable and the cable or a device at device at the other end of the other end of the the network connection are operating properly. _____ There is a generalEnsure that the network younetwork failure.are connected to is running and has not experienced any errors or problems that would prevent connection. _____ The files for the Reinstall the network network drivers have drivers. been corrupted. _____ When using the A software patch is Install the software patch. Compaq LTE Elite, required. (Refer to "Network Adapter the network Patch" in this section.) adapter drivers cannot be loaded, the network application has slow performance, or the network application loses the network connection. ______ Table 2-25. PCMCIA Problems _____ Solution(s)Problem Probable Cause _____ When turned on, Card is not inserted Remove and reinsert the card the computer does properly. in the correct orientation. not beep when a PCMCIA card is inserted. PCMCIA beeps are From MS-DOS: Run the PCCARD disabled. utility to reenable PCMCIA beeps. From Windows: Select Computer Setup from the Compaq Control Center and select the PCMCIA option to reenable PCMCIA beeps. _____ Speaker volume is turned Press the Fn + F5 keys, and down. press the right arrow key to increase the volume. Use the down arrow key to test the volume. _____ PCMCIA drivers are not Select Computer Setup from loaded. the Compaq Control Center and select the PCMCIA option to enable the PCMCIA drivers.

_____ The PCMCIA slot is From non-Windows disabled. 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 Contact Compaq Reseller not PCMCIA compliant. Support for a list of PCMCIA cards tested successfully in Compaq PCMCIA platforms. Problem Probable Cause Solution(s) _____ The PCMCIA The PCMCIA slot is From non-Windows drivers (Socket disabled. environment: Select Security Services, Card Management from the Services, Card Configuration and ID) fail with Diagnostics menu to enable error messages the PCMCIA slot. when the computer is turned on. From Windows environment: Select Security Management from the Compaq Control Center to enable the PCMCIA slot. PCMCIA modem or Wrong COM port being From MS-DOS: Run CARDINFO to fax card does not used to access the card. determine which COM port is work. 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 From MS-DOS: Run PCCARD to the system board serial select a different COM port device. 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 Contact Compaq Reseller compliant. 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	======================================		
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 P:				
Problem	Probable Cause	Solution(s)		
Computer is beeping and battery LED is flashing.	Computer has entered a low battery condition.	Immediately save any open file(s). Then do any one of the following: O Connect the computer to an external power source, then charge the battery pack.		
---	---	--		
		o Replace the battery pack with a fully charged battery pack.		
		<pre>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.</pre>		
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.	Power switch not functioning.	<pre>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 guitch (small)</pre>
If the other LEDs come for any period of time (even for a momentary flash), this is not a "no power"		power switch (small button on power interface board) moves freely. If it binds or is damaged, replace the keyboard cover.
problem.		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,	Short circuit on one of the power supply outputs.	 Remove the following parts one at a time until the short circuit is located: NOTE: After verifying
LEDS flash on, then off. (This takes place in less than three		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.

Table 2-27. Printer Problems *

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.
if it is a printe with the printer		
	re Application Problems	
Problem	Probable Cause	Solution(s)
Problem	Probable Cause	
Problem ====================================	Probable Cause The application has not been added to the PATH	Solution(s) 1. Add or edit the application entry in the AUTOEXEC.BAT file. 2. Run the program with the
Problem Cannot use an application. Application fails or does not work	Probable Cause The application has not been added to the PATH statement. A conflict exists	<pre>Solution(s) I. Add or edit the application entry in the AUTOEXEC.BAT file. I. Run the program with the full path name. Close all applications</pre>
Problem 	Probable Cause The application has not been added to the PATH statement. A conflict exists between applications. Too many TSRs * are	Solution(s) 1. Add or edit the application entry in the AUTOEXEC.BAT file. 2. Run the program with the full path name. Close all applications being used. Delete any TSR applications

Memory configuration is Reconfigure the memory using not set up correctly. MS-DOS MEMMAKER. _____ System ran out of memory 1. Check the application for the application. documentation for memory requirements. 2. Install additional memory. _____ * 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 notSpeaker volume has beenPress the Fn + F5 keys, andbeep after theturned down.and press the right arrow Power-On key to increase the volume. Self-Test (POST). Use the down arrow key to test the volume. Beeps have been turned Turn on beeps in Power off. Management utility (Section 1.10). _____ Table 2-30. Standby Problems _____ Probable Cause Problem Solution(s) _____ The standby Defective keyboard Remove the keyboard cover. button is cover. Press the Standby button pressed, but the located on the power interface board. If problem unit does not go into standby. is solved, install a new keyboard cover. Defective power Replace the power interface interface board. board. Defective system board. Replace the system board. _____ Table 2-31. System Booting Problems _____ Problem Probable Cause Solution(s) _____ Computer powers Bad contacts between Remove processor board and up, power/standby processor board and clean connectors on LED is on, but system board. processor board and system computer does not board with isopropyl begin POST. alcohol. _____ Defective processor Replace processor board. 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:

- 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	
<pre>2. Input/output (I/O) Bracket Includes: - I/O bracket - Fan</pre>	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 - 486 DX2/50 MHz - 486 DX2/40 MHz	194147-001 194146-001 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 - 8 MB	194007-001 149508-001
5. Memory Expansion Board (70 ns): - 4 MB - 8 MB - 16 MB	194188-001 194189-001 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
==:	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	

9.5 8.4 9.5 9.5	play Cable Inch Color TFT Inch Color TFT Inch Black and White TFT Inch Color STN 4 Inch Color TFT	149589-001 ** 149604-001 197632-001 149737-001 197909-001
9.5 8.4 9.5 9.5	play Ground Cable Inch Color TFT Inch Color TFT Inch Black and White TFT Inch Color STN 4 Inch Color TFT	149589-001 ** 197857-001 194637-001 *** 194637-001 *** 197937-001
9.5 8.4 9.5 9.5	play Enclosure Inch Color TFT Inch Color TFT Inch Black and White TFT Inch Color STN 4 Inch Color TFT	149589-001 ** 149596-001 197664-001 149596-001 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. 		
col oti gra	e ground cable used on the 9.5" blac lor STN displays may be 2 inches sho ner models. In addition, the shorter bund clip inside the display enclosu	rter than the one used in the ground cable may not have a re.
	Display Parts	
Descrip		Spare Part Number
	ntrol Slide(s)	(Refer to Table 3-10.)
6. Tra	ackball Board	149597-001
	tches (left and right)	149592-001
	splay Latches	(Refer to Table 3-8.)
11. Cor	mpaq Display Logos ****	149605-001 *****
e	The Compaq display logos are also in enclosure. Not Shown.	cluded with the display
	ANT: Each display type must use the board, and bezel that are liste performance.	exact panel, cable, inverter

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

Description Spare Part Number 1. NiMH Battery Pack 149599-001 2. Auxiliary Battery 149598-001	Table 3-5. Batteries	
-	Description	Spare Part Number
	-	119099 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					
<pre>4. Power Cord - U.S./Canadian - European - U.K. - Japanese - Australian</pre>	149710-001 149710-002 * 149710-003 * 149710-007 * 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 *

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*	N	ot	sł	101	m.																	
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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. Compag LTE Elite Screws and Fasteners Kit _____ Spare Part Number Description _____ Compag LTE Elite Screws and Fasteners Kit (Quantity = 25)149763-001 _____ Table 3-12b. Compaq LTE Elite Screw and Fastener Locations _____ Maximum Torque Ref. Part Description Type Drive (in.-lbs.) Qty Number Where Used _____ DISPLAY ENCLOSURE AND BOARDS: Bezel to Screw, Truss, T8/SL 3.0 4 144864-004 display M2.5 x 6.0 MA, enclosure CS (2 through clutches) _____
 Clutches to
 Screw,
 Truss,
 T8/SL
 3.0
 2
 144864-004

 display
 M2.5 x 6.0
 MA,
 2
 144864-004
 2
 144864-004
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 <t display enclosure CS _____ Screw, Truss, T8 3.0 4 121187-006 Panel to Screw, Tru M3.0 x 6.0 MA, display enclosure CS _____ Inverter Screw, Truss, T8/SL 2.0 2 144863-005 board to M2.0 x 6.0 MA, display CS enclosure _____ Screw,Truss, T82.02144863-005M2.0 x 6.0MA, Trackball Screw, board to display CS enclosure _____

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, CS to system unit enclosure (at rear) _____ Maximum Torque Ref. Part Type Drive (in.-lbs.) Qty Number Where Used Description Serial, Screwlock, Hex, 3/16" 4.0 parallel, 4-40 sems, MA, external ext. tooth, CS monitor _____ 8 106902-005 monitor, F external options connectors (at rear) _____ PIB/PCMCIA Screw, Tru rails to M 2.0 x 20.5 MA, 2 Truss, T8/SL 2.0 144863-007 system unit CS enclosure (long screws) _____
 Keyboard to
 Screw,
 Truss, T8/SL
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 2
 144864-004

 system unit
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 enclosure CS System board Screw, Truss, T8/SL 3.0 6 144864-004 to system M 2.5 x 6.0 MA, unit CS enclosure _____ Truss, T8/SL 2.0 PIB to Screw, 3 144863-005 M2.0 x 6.0 MA, PCMCIA connector CS (short screw) _____
 Keyboard/
 Screw,
 Truss,
 T8/SL
 3.0
 1
 144864-004

 mouse
 M2.5 x 6.0
 MA,
 1
 144864-004
 1
 144864-004
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 connector CS _____ Screw,Truss,T8/SL2.02144863-005M2.0 x 6.0MA, Automobile Screw, adapter CS connector to system unit enclosure _____

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





Table 3-13. Tools

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

3.14 Options





4

5





Figure 3-9. Options and Accessories

Table 3-14. Compaq LTE Elite Options and Accessor	ies
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 198866-001 (196825 - 001)_____ 6. PCMCIA Modem (data/fax): Compaq SpeedPaq 144/P Modem 198109-001 194131-001 Compaq PCMCIA 2400/9600 Data and Fax Modem 194098-001 *** (198116 - 001)_____ 7. CD ROM Adapter (16 Bit with 25" cable) 121467-002 (142519 - 001)_____ 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) 149589-001 *** (194037-001) (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 *** 196799-001 *** 16 MB (196806-001) (Refer to Table 3-2.) _____ 13. Processor Board 486 DX4/75 MHz (194048-001) 194147-001 *** (Refer to Table 3-2.) -----* The Compag 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



Figure 3-10. Compaq MiniStation

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>					
To avoid the risk of electric shock, the I/O bracket overlay must be installed on the I/O bracket of the Compaq MiniStation.					
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>					
Table 3-15. Compaq MiniStation Convenience Bases					
Description	Spare Part Number				
1. Monitor Support Cover	198860-001				
 Plastics and Mechanical Parts Kit, including: Top enclosure Docking mechanism Bottom enclosure Ventilation chamber 	195564-001				
<pre>7. Power Cord - U.S./Canadian - European - U.K. - Australian</pre>	149710-001 149710-002 * 149710-003 * 149710-008 *				

_____ 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 Spare Part Number Description _____ Compag Diagnostics Diskette 109728-001 EZ-SCSI Configuration Software Diskette 146994-001 EZ Tape 122098-001 PCMCIA Software Kit 198821-001 ROMPag Upgrade Diskette Kit 129899-001 Portables ROMPag 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	
	194641 194641		

French Italian Spanish Swedish Dutch	194641-051 194641-061 194641-071 194641-101 194641-331
Quick Setup card and Beyond Setup guide: English German French Italian Spanish Danish Norwegian Swedish Latin American Spanish Japanese Brazilian Portuguese Dutch Finnish	149709-001 149709-041 149709-051 149709-061 149709-071 149709-081 149709-091 149709-101 149709-161 149709-191 149709-201 149709-331 149709-351
Compaq MiniStation Installation Guide English German French Italian Spanish Swedish Dutch	196786-001 196786-041 196786-051 196786-061 196786-071 196786-101 196786-331
Compaq Service Quick Reference Guide (Quantity = 5)	106954-001
Compaq QuickFind: U.S./Canadian International (other than U.S./Canadian): Authorized Compaq Reseller Version End User Version	137906-00X 137907-00X 137908-00X
Compaq EZ-SCSI Software Reference English German French	196785-002 196785-042 196785-052

3.18 Shipping Box

Table3-18. Shipping Box	
Description	Spare Part Number
Compaq LTE Elite Shipping Box	149593-001

Chapter 4 - Compaq LTE Elite Removal and Replacement Procedures

Introduction

This chapter provides subassembly level removal and replacement procedures for the Compaq LTE Elite. Unless otherwise specified, the steps for replacement procedures are the reverse of the steps for the removal procedures.

After completing all necessary removal and replacement procedures, run POST and Computer Setup to verify that all components operate properly (refer to Chapter 2).

4.1 Precautions

This section covers precautions that must be followed when servicing the computer.

Electrostatic Discharge (ESD)

A sudden electrostatic discharge (ESD) can destroy static-sensitive devices or microcircuitry. Use proper packaging and grounding techniques to prevent damage. Refer to Appendix E for more information on ESD.

Electrostatic discharge can damage electronic components. Be sure that you are properly grounded before performing any maintenance and service procedures.

Cables

Use the following precautions when handling cables to avoid irreparable damage to the cable or the computer:

o Always handle cables by their connectors.

o Avoid bending, twisting, or pulling on the cables.

- o Apply the minimum required force when seating or unseating the cables from their connectors.
- o Place cables in such a manner that they cannot be caught or snagged by parts being removed or replaced.

o Handle flex cables with extreme care, as they can easily tear.

ZIF Connectors

The computer uses zero insertion force (ZIF) connectors for the following connections:

o Keyboard to system boardo Diskette drive to system boardo Display cable to system boardo Display cable to display panel (black-and-white TFT only)

To remove a cable from a ZIF connector, lift both corners of the ZIF connector slide simultaneously with constant light force until the connector slide releases, then remove the cable (Figure 4-1).

A ZIF connector and its attached cable can be easily damaged. Handle only the connector slide when removing or replacing a cable. Never pull or twist on the cable while it is connected.



Figure 4-1. Reomving a Cable from a ZIF Connector

IMPORTANT: Due to space limitations inside the system unit, the display cable cannot be removed from the system board ZIF connector using the standard removal technique. To remove the cable, the connector removal tool must be used. Refer to "Removing the Display Assembly" in Section 4.9. Screws

Screws in the unit are not interchangeable. Damage may occur if you insert an incorrect screw. As you remove screws, place them with the component you removed to help avoid error.

Plastics

Use care when handling the plastic case and housing assemblies, as they can be damaged from excessive force during assembly and disassembly.

Plated plastic surfaces require special handling to ensure that they are not scratched. Scratches may flake the plated material, contaminate the electronics, and cause system failure.

4.2 Required Tools And Software

The following tools and software are required to service the computer:

```
o Torx T-8 screwdriver
o 3/16-inch nut driver (for screwlocks)
o Pair of needle-nosed pliers
o Compaq trackball removal tool (Table 3-13)
o Connector removal tool (Table 3-13)
o Display bezel removal tool (Table 3-13)
o Compaq diagnostics diskette
```

NOTE: Most of the screws in the computer are slotted Torx T-8 type, which can be removed and replaced with a Torx T-8 or flat-bladed screwdriver.

4.3 Removal And Replacement List

The following list outlines the removal and replacement procedures covered in this chapter:

- 4.4 Preparation procedures for removal and replacement
- 4.5 Battery pack
- 4.6 Memory expansion board
- 4.7 Keyboard cover
- 4.8 Auxiliary battery
- 4.9 Display assembly
 - Display bezel
 - Display panel
 - Inverter board
 - Trackball board

- Display cable - Display latches - Display clutches - Display enclosure 4.10 Keyboard 4.11 Diskette drive and cable 4.12 Hard drive - Hard drive security clips 4.13 Processor board 4.14 Power interface board (PIB) 4.15 PCMCIA ejector rails 4.16 Internal AC power supply 4.17 System board and I/O bracket 4.18 LED cable assembly 4.19 Computer base enclosure 4.20 PCMCIA compartment door 4.21 Battery pack/hard drive release latch assemblies

4.4 Preparation Procedures For Removal And Replacement

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

1. Read and observe the precautions in Section 4.1.

- 2. Turn off the computer.
- 3. Undock the computer if it is docked in an expansion base or a convenience base (refer to Appendix D, "Docking and Undocking").
- 4. Disconnect the power cord.
- 5. Remove the battery pack (Section 4.5).
- 6. Remove any installed diskette.
- 7. Remove PCMCIA cards.

To prevent damage to the system unit or the peripheral devices, ensure that the system unit power is off before connecting or disconnecting cables.

- 8. Turn off all external devices, then disconnect them from the computer.
- 9. Close the display.

Electrostatic discharge (ESD) can damage electronic components. Be sure that you are properly grounded before performing the following procedures.

NOTE: When removing and replacing parts in the system unit with the display assembly still attached, the computer may try to tip backward. You may want to partially install the battery pack upside down to provide additional weight to the system unit while preventing the battery pack from touching its contacts.

To prevent the battery pack from falling out and causing possible injury or damaging the battery pack, be sure to remove it before moving the computer.

4.5 Battery Pack

This section covers procedures for removing and replacing the battery pack. Refer to Appendix B for the following information:

- o Battery pack operating time o Ensuring battery gauge accuracy o Conditioning the battery pack o Disposal of a used battery pack

Metal objects can damage the battery pack as well as the battery contacts in the battery compartment. To prevent damage, do not allow metal objects to touch the battery contacts. Place only the battery pack for the Compag LTE Elite Family of Personal Computers into the battery compartment. The Compaq LTE Elite battery pack and the battery compartment are keyed to allow only a correct insertion. Do not attempt to insert a battery pack for a Compaq LTE Lite computer or any other battery pack. Do not force the battery pack in if insertion does not occur easily.

Do not crush, puncture, or incinerate the battery pack. Do not open a battery pack, as this damages the pack, makes it unusable, and exposes potentially harmful battery components. There are no field-serviceable parts located inside the battery pack.

Removing the Battery Pack

To remove the battery pack, complete the following steps:

- 1. Press on the front of the battery pack [1] (Figure 4-2).
- 2. While holding the battery pack in, press the battery release button [2] and release the pressure on the battery pack.

The battery pack springs outward for removal [3].



Figure 4-2. Removing the Battery Pack

Replacing the Battery Pack

To replace the battery pack, complete the following steps:

- 1. Insert the battery pack with the large label facing up and the battery contacts facing the inside of the battery compartment.
- 2. Push firmly on the battery pack.

When released, it locks into place.

4.6 Memory Expansion Board

Random access memory (RAM) can be added to the computer by installing a memory expansion board. Refer to Section 1.6 and Table 3-2 for more information on RAM expansion.

Electrostatic discharge (ESD) can damage electronic components. Ensure that you are properly grounded before beginning these procedures.

Removing the Memory Expansion Board

Before removing the memory expansion board, refer to Section 4.4, "Preparation Procedures for Removal and Replacement."

To remove the memory expansion board, complete the following steps:

- 1. Turn the unit display-side down.
- 2. Release the latch on the memory access cover (Figure 4-3).
- 3. Slide the cover in the direction indicated by the embossed arrow on the cover and remove it.

Do not lift on the middle of the memory expansion board or you may damage it. Lift simultaneously from the connector ends of the board.

4. Carefully remove the memory expansion board by lifting from the connector ends of the board (Figure 4-3).



Figure 4-3. Removing the Memory Expansion Board

Installing the Memory Expansion Board

To install the memory expansion board, complete the following steps:

The two connectors on the memory expansion board are similar in appearance, but they are keyed so you can only insert them in the proper manner. To avoid damage to the system board or the memory expansion board, be sure that you are aligning the correct connectors.

1. Position the memory expansion board over the system board connectors, ensuring that it is correctly oriented (Figure 4-4).

Do not apply pressure to the middle of the memory expansion board or you may damage it. Press only in the area directly over the connectors. Ensure that both connectors on the memory expansion board snap into place.

- 2. Snap the memory expansion board into place by applying pressure directly over each connector (Figure 4-4).
- 3. Replace the memory access cover by sliding it back into place (Figure 4-4).



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 4-6. Removing the Keyboard Cover

IMPORTANT: When replacing the keyboard cover, angle the front edge of the keyboard cover into place at the front of the computer, ensuring that the tabs on the keyboard cover correctly align with the corresponding recesses on the computer. Gently press the rear edge of the keyboard cover into place at the back of the computer, and verify that the front edge is aligned. If the seam between the computer and the keyboard cover is uneven, remove the keyboard cover and realign the tabs and recesses.

4.8 Auxiliary Battery

Refer to "Auxiliary Battery" in Section 1.6 for more information on the auxiliary battery.

To remove the auxiliary battery, complete the following steps:

1. Remove the keyboard cover (Section 4.7).

To avoid a potential short to the computer, do not use a metal tool to

remove the auxiliary battery connector.

- Using a non-metallic tool such as the connector removal tool (Table 3-13), slightly press the auxiliary battery connector toward the internal power supply to release the retentive force on the connector
 [1] (Figure 4-7).
- 3. Remove the auxiliary battery connector [2] (Figure 4-7).
- 4. Remove the auxiliary battery from its bracket (Figure 4-7).



Figure 4-7. Removing the Auxiliary Battery

NOTE: When the auxiliary battery is reconnected, alarm, time, and date information must be reset by running Computer Setup (Section 1.8). Password and configuration information are not lost when the auxiliary battery is disconnected.

4.9 Display Assembly

The display can be upgraded to the 9.5-inch color TFT model by replacing the display assembly. In addition, to ensure regulatory compliance and

parts compatibility, the spare display panel, inverter board, display cable, and display enclosure for the 9.5-inch color TFT model come preinstalled in the display assembly. To replace these parts, replace the entire display assembly (color TFT model only).

If required, the trackball board may be replaced separately on the color TFT model.

Removing the Display Assembly

To remove the display assembly, complete the following steps:

1. Remove the keyboard cover (Section 4.7).

The display cable and its ZIF connector on the system board can be easily damaged. Do not pull or twist on the cable while it is connected. To avoid bending the small posts inside the slide, release each corner of the connector slide with the connector removal tool using constant light force.

- Using the connector removal tool (Table 3-13), release the ZIF connector slide by applying a constant light force on each corner of the connector slide [1] [2] (Figure 4-8).
- 3. Remove the cable [3] (Figure 4-8).



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.
- Remove the display ground cable [1] from the ground clip [2] on the input/output (I/0) 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 4-9. Removing the Display Ground Cable from the Ground Clip

- IMPORTANT: When replacing the display ground cable, ensure that it is fully seated to prevent it from disconnecting from the ground clip.
- 5. Remove the four screws that attach the display clutches to the computer (Figure 4-10).

To avoid damaging the display assembly, handle it carefully. Lift it from both sides with equal force.

6. Remove the display assembly from the system unit (Figure 4-10).



Figure 4-10. Removing the Display Assembly

IMPORTANT: When replacing the display assembly, close the display and check to ensure that the display latches align properly. If the latches require a realignment, loosen (do not remove) the four display clutch screws, align the latches, then reseat the screws.

Display Bezel

Be sure that all power sources (including the battery pack, AC power cord and Automobile Adapter) are removed from the computer before removing or replacing the display bezel. If power sources are still connected to the computer when the display bezel is being removed or replaced, there is the possibility of electrical shock from high voltage in the inverter board or damage to the system components.

Do not operate the computer with the display bezel removed.

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

- Remove the display control slide(s) by lifting up on one of its ends (Figure 4-11).
 - NOTE: The color STN display has two control slides (brightness and contrast), while all other displays have only one control slide (brightness).

To prevent damage to the inverter board when replacing the display control slide(s), fully snap the bezel back into place before you replace the slide(s). Insert the slide(s) back into place, ensuring that they are properly aligned with the controls on the inverter board.

2. Remove the four screws and screw covers from the corners of the display bezel (Figure 4-11).



Figure 4-11. Removing the Control Slide, Bezel Screws, and Screw Covers

3. Pull the bezel away from the display enclosure by separating the snaps. Begin unsnapping the bezel along the top inside edge of the viewing area (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).



Figure 4-13. Disconnecting the Backlight Cable from the Inverter Board

To avoid damaging the display panel, do not remove any Phillips screws on the display panel. These screws hold the display panel together. There are no serviceable parts located inside the display panel.

3. Remove the four T-8 screws that attach the display panel to the display enclosure (Figure 4-14).



Figure 4-14. Removing the Display Panel Screws

- IMPORTANT: When replacing the display panel, replace (but do not tighten) the display panel screws and position the panel as far to the right of the display enclosure as the screws allow before tightening them. This allows the light feedback circuit to function properly to ensure proper display brightness. In addition, ensure that one of the mounting tabs of the display ground cable is connected beneath the display panel and is attached by the lower-left display panel screw.
- 4. Carefully lift the display panel up to provide access to the display cable connector on the left side of the panel (Figure 4-15).

The display panel is fragile. Handle it carefully. When moving or tilting the display panel, support the weight of the panel at both ends to avoid bending it.



Figure 4-15. Lifting the Display Panel to Acccess the Connector

The display cable and ZIF connector on the black-and-white TFT display panel can be easily damaged. Handle only the connector slide when removing or replacing the cable; never pull or twist on the cable while it is connected. Lift both corners of the ZIF connector slide simultaneously with constant light force until the connector slide releases.

- 5. Remove the display cable connector from the display panel (Figure 4-16). The display panel has one of the following types of connectors:
 - o Plug-and-socket type for the color TFT and color STN displays [1].
 - o ZIF type for the black-and-white TFT display [2].



Figure 4-16. Removing the Display Cable from the Display Panel

- IMPORTANT: When replacing the cable into the ZIF connector on the black-and-white TFT display panel, 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.
- 6. Lift the display panel out of the display enclosure.

Inverter Board

Be sure that all power sources (including the battery pack, AC power cord and Automobile Adapter) are removed from the computer before removing or replacing the inverter board. If power sources are still connected to the computer when the inverter board is being removed or replaced, there is the possibility of electrical shock from high voltage in the inverter board or damage to the system components. Do not operate the computer with the display bezel removed.

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.

To avoid damage to the trackball cable when replacing the inverter board, be sure that the inverter board screws do not come in contact with the trackball cable.

Trackball Board

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

- 1. Remove the keyboard cover (Section 4.7).
- 2. Remove the display bezel (refer to "Display Bezel" in this section).
- 3. Remove the two screws [1] that attach the trackball board to the display enclosure (Figure 4-18).
 - IMPORTANT: When replacing the trackball board screws, note that there is a small amount of slack available for adjustment. Before tightening the screws, position the trackball board so that the trackball retaining ring will be centered in the trackball opening of the display bezel. If the trackball retaining ring is not centered, the display bezel may interfere with removal of the trackball retaining ring. If the display bezel interferes, remove it (refer to "Display Bezel" in this section), loosen the trackball board screws, and realign the trackball board before retightening the screws.
- 4. While the trackball board is still attached to the display cable, carefully tilt it up and disconnect the display cable [2] (Figure 4-18).
- 5. Remove the trackball board (Figure 4-18).



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).

- 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. Remove the display inverter board (refer to "Inverter Board" in this section).
- 6. Remove the trackball board (refer to "Trackball Board" in this section).
- 7. Remove the display cable (refer to "Display Cable" in this section).
- Remove the display latches (refer to "Display Latches" in this section).
 - IMPORTANT: Before removing the screws for the clutches (step 9), note the placement of the mounting tab for the trackball shield. Refer to "Display Clutches" for more information.
- 9. Remove the display clutches (refer to "Display Clutches" in this section).
- 10. Remove the trackball shield (refer to "Display Clutches" in this section).
- 11. Remove the display ground cable.

The display enclosure is all that remains.

NOTE: When replacing the enclosure, install the logo that appears on the outside. Install the logo so that it has the same orientation as the textured logo that is part of the display enclosure. Ensure that you use the correct logo for the appropriate computer model (Table 3-3).

4.10 Keyboard

Removing the Keyboard

- To remove the keyboard, complete the following steps:
- 1. Remove the keyboard cover (Section 4.7).
- 2. Remove the two screws from the keyboard (Figure 4-22).

To avoid damage to the keyboard cable, be careful when handling the keyboard, since the cable is still connected. Do not pull on the cable.

3. Gently slide the keyboard toward the display to release its front edge from the computer (Figure 4-22).



Figure 4-22. Releasing the Keyboard

 Slightly lift up the keyboard [1] to access the keyboard cable (Figure 4-23).

The keyboard cable and ZIF connector on the system board can be easily damaged. Handle only the connector slide when removing the cable; never pull or twist on the cable while it is connected. Lift both corners of the ZIF connector slide simultaneously with constant light force until the connector slide releases.

- 5. Release the keyboard cable ZIF connector [2] and remove the cable [3] (Figure 4-23).
- 6. Remove the keyboard (Figure 4-23).



Figure 4-23. Removing the Keyboard

Replacing the Keyboard

To replace the keyboard, complete the following steps:

The keyboard cable and ZIF connector on the system board can be easily damaged. Handle only the connector slide when replacing the cable; never pull or twist on the cable while it is connected.

- 1. Connect the keyboard cable to the ZIF connector on the system board.
 - IMPORTANT: 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.
- 2. Place the keyboard toward the back of the computer approximately 7 millimeters from its normal installed position (Figure 4-24).
- 3. Slide the keyboard forward to engage the keyboard alignment tabs at the

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

centered on the drive so that it does not protrude over the plastic ribs of the battery bay or the hard drive bay and interfere with reassembly.

To avoid damage to the drive, handle the drive by the sides. Do not handle the drive by the top or bottom, since the drive enclosure is designed primarily as a shield.

4. With the cable still attached to the diskette drive, remove the drive by lifting it up by its sides near the rear of the drive and sliding it toward the display to release the drive button from the front of the computer (Figure 4-25).

The diskette drive cable and ZIF connector on the system board can be easily damaged. Handle only the connector slide when removing or replacing the cable; never pull or twist on the cable while it is connected to the ZIF connector. Lift both corners of the ZIF connector slide simultaneously with constant light force until the connector slide releases.

5. Release the diskette drive cable ZIF connector [1] and remove the cable [2] (Figure 4-25).

When replacing the diskette drive 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.

 Remove the diskette drive with its attached cable from the unit [3] (Figure 4-25).



Figure 4-25. Removing the Diskette Drive

7. If required, remove the cable from the diskette drive.

To avoid damage to the diskette drive, do not remove the drive from its metal enclosure.

4.12 Hard Drive

Removing the Hard Drive

The hard drive in the computer is removable from the front without requiring disassembly. However, if the hard drive security clips are installed, the computer must be partially disassembled to remove these clips (refer to "Hard Drive Security Clips" later in this section).

To prevent damage to the hard drive and loss of information, observe these precautions when handling the hard drive:

- o Remove and replace the hard drive only when the computer is OFF, unplugged, and the battery pack is removed. Do not remove or replace a hard drive while the computer is ON, in Standby, or in Hibernation. To determine whether the computer is in Hibernation, complete the following steps:
 - a. Turn on the computer and notice whether you are prompted to restore from Hibernation. If you are restoring from Hibernation, let the computer complete this task.
 - b. Save all files and exit all applications.
 - c. Turn off the computer.
- o Before handling the hard drive, ensure that you are discharged of static electricity. Avoid touching the connectors.
- o Handle the drive carefully. Do not drop.
- o When removing the hard drive, immediately place the drive into the hard drive carrying case, which was provided with the computer (Table 3-4).
- o Avoid exposing the hard drive to temperature extremes.
- o Avoid exposure to products that have magnetic fields such as monitors or speakers.
- o Do not spray the hard drive with cleaners or expose it to liquids.
- o When mailing the hard drive, use the original shipping container for the hard drive, if available.

To remove the hard drive, complete the following steps:

- 1. Close or pull the display forward so that the computer won't tip backward when the hard drive is removed.
- 2. Open the hard drive compartment door by releasing the latch on the door (Figure 4-26).



Figure 4-26. Opening the Hard Drive Compartment Door

NOTE: The hard drive may have either a metal handle (Figure 4-27) or a plastic pull tab that is attached directly to the hard drive enclosure.

To avoid damage to the hard drive or the computer, do not pull on the hard drive handle or pull tab unless you first press and hold down the hard drive release button. Do not use excessive force when pressing on the hard drive release button or pulling on the hard drive handle or pull tab. If the hard drive will not come out easily, or if a hard drive lock label is attached to the hard drive, check to see that the hard drive security clips have been removed before proceeding (refer to "Hard Drive Security Clips" later in this section).

3. Hold down the hard drive release button [1], while pulling gently on the hard drive handle [2] (Figure 4-27).



Figure 4-27. Removing the Hard Drive

4. Remove the hard drive from the unit and immediately place it in the hard drive carrying case.

To avoid damage to the hard drive, do not remove the drive from its metal enclosure.

Replacing the Hard Drive

The Compaq Diagnostics utilities (which include Computer Setup) on the Compaq LTE Elite reside in a hidden partition on the 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.

NOTE: On the option kit hard drives, the hidden partition is already created and the diagnostics utilities are already installed.

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 4-28. Hard Drive Lock Label

To remove the hard drive security clips, complete the following steps:

- 1. Remove the keyboard cover (Section 4-7).
- 2. Reinsert the battery pack halfway into the battery compartment [1] so that the battery pack does not touch the battery contacts on the system board (Figure 4-29).
 - NOTE: The added weight of the battery pack keeps the computer from tipping backward when accessing the hard drive security clips. You may want to insert the battery pack upside down for additional protection against it touching its contacts.

To prevent the battery pack from falling out and being damaged or causing possible injury, be sure to remove it before moving the computer or turning the computer over.

3. Cover the display panel with a soft, static-free cloth [2] so that it won't be damaged (Figure 4-29).



Figure 4-29. Preparing to Release the Keyboard

4. Remove the two remaining screws on the keyboard [1] (Figure 4-30).

To avoid damage to the keyboard, be careful when handling it, since the keyboard cable is still connected. Do not pull on the cable.

5. Gently slide the keyboard toward the display to release its front edge from the computer [2] (Figure 4-30).



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

 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

Electrostatic discharge (ESD) can damage electronic components. Ensure that you are properly grounded before beginning these procedures.

Removing the Processor Board

To remove the processor board, complete the following steps:

1. Remove the keyboard cover (Section 4.7).

To avoid damage to the processor board, do not lift from the middle of the processor board or from the processor heat sink. Lift simultaneously from the left corners of the processor board to remove it from the connectors beneath the board.

2. Remove the processor board from the system board by simultaneously lifting from the left corners of the processor board (Figure 4-33).



Figure 4-33. Removing the Processor Board

Replacing the Processor Board

To replace the processor board, complete the following steps:

1. Position the processor board over the connectors on the system board, ensuring that it is aligned correctly (Figure 4-34).

The two connectors on the processor board are similar in appearance, but they are keyed so that you can only insert them in the proper manner. To avoid damage to the processor board and the system board, be sure that you are aligning the correct connectors.

To avoid damage to the processor board, do not press on the middle of the processor board or on the processor heat sink. Press only in the area directly over the connectors. Be sure that both connectors on the processor board snap into place.

2. Press down on the connector sides of the processor board (Figure 4-34).



Figure 4-34. Replacing the Processor Board

4.14 Power Interface Board (PIB)

To remove the power interface board (PIB), complete the following steps:

- 1. Remove the keyboard cover (Section 4.7).
- 2. Remove the three PIB screws [1] [2] and the display switch spring [3], which is secured by the back left PIB screw (Figure 4-35).



Figure 4-35. Removing the Power Interface Board Screws and Display Switch Spring

IMPORTANT: When replacing the PIB, be sure to align the display switch spring in its alignment hole before replacing the back left screw.

To avoid damage to the computer base enclosure when replacing the PIB, be sure to install the screws in the correct holes. The three screws are different lengths (two long screws and one short screw). The short screw goes in the hole in the front right of the PIB.
To avoid damage to the connector pins on the system board, disconnect the PIB only from the right side, since that is the side located directly over the connector. Do not lift the PIB from the left side.

When replacing the PIB, be sure to line up the connector pins, as they can be easily misaligned and damaged.

- 3. Lift up on the right side of the PIB [1] to disconnect it from the connector pins on the system board [2] (Figure 4-36).
- 4. Remove the PIB insulator [3] and PIB shield [4] (Figure 4-36).



Figure 4-36. Removing the Power Interface Board, Insulator, and Shield

4.15 PCMCIA Ejector Rails

Two PCMCIA ejector rails (ejectors) are mounted on the system board.

IMPORTANT: Be sure there are no PCMCIA cards or spacers installed before

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 4-39. Inserting the PCMCIA Spacer

- 4. Replace the PIB, PIB insulator, and PIB shield (Section 4.14).
 - NOTE: After installing the screws for the PIB, the PCMCIA spacer can be removed or left in the PCMCIA slot for storage.
- 5. Replace the keyboard cover (Section 4.7).

4.16 Internal AC 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.

Be sure that all power sources (including the battery pack, AC power cord, and Automobile Adapter) are removed from the computer before removing or replacing the internal AC power supply. If power sources are still connected to the computer when the internal AC power supply is being removed or replaced, there is the possibility of injury due to electrical shock or damage to system components. Do not disassemble the internal power supply, as there are no field serviceable parts inside.

To remove the internal AC power supply, complete the following steps:

- 1. Remove the keyboard cover (Section 4.7).
- 2. Remove the hinge cover from the top of the internal AC power supply by sliding it toward the front of the unit (Figure 4-40).



Figure 4-40. Removing the Hinge Cover

3. Remove the two screws that attach the power supply to the top of the system unit (Figure 4-41).



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 4-42. Removing the Rear Internal AC Power Supply Screws

To avoid damage to the internal AC power supply, be careful when lifting up on it, since the cable is still attached. Do not attempt to fully remove the internal AC power supply until the cable is disconnected.

- 5. Lift up the power supply to allow access to the power supply cable (Figure 4-43).
- 6. Disconnect the internal AC power supply cable (Figure 4-43).
- 7. Remove the internal AC power supply (Figure 4-43).



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 interferes with the installation of the system board.



Figure 4-45. Replacing the Automobile Adapter Connector

To avoid a potential short to the computer, do not use a metal tool to remove the fan connector.

- 14. Using a non-metallic tool such as the connector removal tool (Table 3-13), slightly press down against the top of the fan connector [1] to release the retentive force on the connector (Figure 4-46).
- 15. Remove the fan connector [2] (Figure 4-46).



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.
- 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:

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.

NOTE: The I/O connector cover, Automobile Adapter door, and hard drive compartment door are available in the Doors Kit (Table 3-9).

4.20 PCMCIA Compartment Door

The PCMCIA compartment door comes installed on the computer base enclosure. The door and spring are also available separately in the Doors Kit (Table 3-9).

Removing the PCMCIA Compartment Door

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

1. Open the door.

To avoid possible damage to the PCMCIA connector or cards, be sure that all PCMCIA cards have been removed before removing the PCMCIA compartment door.

- 2. Carefully flex the door near the front [1] (Figure 4-54) to release the hinge from the computer base enclosure.
- 3. Carefully flex the door near the rear [2] to release the hinge and spring from the computer base enclosure (Figure 4-54).



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).

Removing the Release Latch Assembly

To remove either the battery pack or hard drive release latch assembly, complete the following steps:

- 1. If you are removing the hard drive release latch assembly, remove the hard drive (Section 4.12).
- 2. Remove the keyboard cover (Section 4.7).

3. Remove the keyboard (Section 4.10).

- 4. Remove the latch spring [1] by holding it with needle-nosed pliers near its wide end and pulling it straight up out of its slot (Figure 4-57).
- 5. Remove the e-clip [2] that holds the latch [3] in place and slide the latch up from its post (Figure 4-57).
- 6. Remove the release button [4] (Figure 4-57).

To avoid damage to the computer base enclosure, do not attempt to replace the latch spring unless it is necessary, since the spring is firmly attached to the enclosure. Leave the existing spring installed unless it is defective. When it is necessary to replace the spring, remove the spring straight up out of its slot. Do not twist the spring when removing it.



Figure 4-57. Removing the Hard Drive Release Latch Assembly

Replacing the Release Latch Assembly

IMPORTANT: The parts for the battery release latch and hard drive release latch assemblies are similar in appearance. However, note that the battery latch is color-coded white, and the hard drive latch is color-coded black. Be sure to use the correct set of parts for this procedure.

To replace the release latch assembly, complete the following steps:

- 1. Replace the release button [1] (Figure 4-58).
- 2. Replace the latch [2] by sliding the latch onto its post (Figure 4-58).
 - NOTE: If the existing latch spring was left in place prior to replacing the latch, move the free end of the spring slightly out of the way to allow the latch to be at the bottom of the post.

To avoid damage to the computer base enclosure, do not attempt to replace the latch spring unless it is necessary, since the spring is firmly attached to the enclosure. Leave the existing latch spring installed unless it is defective.

- 3. Replace the e-clip [3] over the latch (Figure 4-58).
- 4. To replace the latch spring, gently slide the spring [4] down into its slot while placing its free end [5] over the triangular-shaped ledge of the latch (Figure 4-58).
 - IMPORTANT: Be sure that the latch and latch spring are assembled exactly as shown in Figure 4-58 to provide tension for the battery latch mechanism.



Figure 4-58. Replacing the Hard Drive Release Latch Assembly

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

Compuer Model Specifications							
Internal							
Model	Display	Processor	Cache	RAM	Hard Drive		
====== 4/75CX	9.5" Color TFT	486 DX4/75 MHz	======================================	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 Enviromental

Physial and Environmental Specifications					
Dimensions: Height Width Depth	2.06 in 11.8 in 8.9 in	5.23 cm 29.97 cm 22.60 cm			
With 9.5" Mono TFT Display With 8.4" Color TFT Display	6.60 lb 6.74 lb 6.64 lb 6.73 lb	3.0 kg 3.1 kg 3.0 kg 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 47 - 63 Hz Operating Frequency 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 500F to 1040F 100C to 400C Nonoperating ** -40F to 1400F -200C to 600C _____ Maximum Rate of Temperature Change: 180F/hr 100C/hr 360F/hr 200C/hr Operating Nonoperating _____ Relative Humidity Requirements: Operating (non condensing) 10% to 90% Nonoperating 5% to 95% *** _____ Shock: 10G, 11 ms, half-sine Operating Nonoperating 60G, 11 ms, half-sine _____ Vibration ****: 0.25G Operating 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 7.6 x 5.7 in (192 x 144 mm) STN Typical Value _____ Height Outline Dimensions: Width Thickness 9.5" (Diagonal) Color TFT Typical Value 242.5 mm 179.9 mm 9 mm 8.4" (Diagonal) Color TFT Typical Value 179.4 mm 9 mm 242.5 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): * Format Pitch Configuration 9.5" (Diagonal) Color TFT Typical Value .3 x .3 mm 640 x 480 RGB Stripe 8.4" (Diagonal) Color .27 x .27 mm 640 x 480 TFT Typical Value 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 67 CD/M² TFT Typical Value 8.4" (Diagonal) Color TFT Typical Value 67 CD/M² 9.5" (Diagonal) Mono TFT Typical Value 67 CD/M² 9.5" (Diagonal) Color STN Typical Value 67 CD/M² _____ 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 CCFT Edge-Lit at the Top TFT Typical Value 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 bo	ottom of pa	nel				
8.4" (Diagonal) Color TFT Typical Value	Left side on bo	ottom of pa	nel				
9.5" (Diagonal) Mono TFT Typical Value	Bottom of panel facing left)	l (right an	gle ZIF co	onnector			
9.5" (Diagonal) Color STN Typical Value	9.5" (Diagonal) Color STN Typical Value Left side on bottom of panel						
Display Inverter Board: (@ ma		s setting)					
9.5" (Diagonal) Color	Operating Vol		-	Input Power			
TFT Typical Value	500 VRMS Typ	pical	5 ma	3.2W @ 12V			
8.4" (Diagonal) Color TFT Typical Value	500 VRMS Typ	pical	5 ma	3.2W @ 12V			
9.5" (Diagonal) Mono TFT Typical Value	500 VRMS Typ	pical	3 ma	2.0W @ 12V			
9.5" (Diagonal) Color STN Typical Value	500 VRMS Typ	pical	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.OW						
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) Average (ms) Settling Time (ms) Latency Average (ms)	3/6 80/160 15 100
Cylinders (High/Low)	80/80
Number of Read/Write Heads	2
* 1.2 MB Japanese standard also sup	pported.

5.6 Hard Drive

Hard rive Specifications						
	170 MB	250 MB	340 MB	510 MB		
Capacity Per Drive		250.3 MB				
Drives Supported			1	1		
Form Factor						
	65	20		65		
Sector Interleave	1:1	1:1	1:1	1:1		
Controller	Integrated	Integrated	Integrated	Integrated		
Logical Configuration Cylinders Heads Sectors per track Bytes per sector	989 10 34	485 16 63 512	915 15 49 512	996 16 63 512		
Seek Times (Typical, Single track Average Full stroke	9 17 26	ling in ms): 3 12 30	9 17 26	5 17 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

Interal AC-TO-DC Power Supply Dimensions		
Dimensions: Height Width (not including mounting bracket) Depth (not including AC receptacle)	.88 in 4.29 in 2.34 in	2.22 cm 10.89 cm 5.93 cm
Weight	0.256 lb	0.116 kg
AC Inputs: Operating Voltage Maximum Steady State Input Current (Operating Current) Operating Frequency	100 - 120/220 - .8/.4A RMS 47 - 63 Hz	240 V RMS
DC Outputs: Maximum Output Voltage Maximum Output Current Maximum Output Power	18.5V 3A 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	DC-TO-DC Power Supply Specifications							
	Requirements		======			======		
Input Vo	-		10.0 - 2	0.0 V				
Standby	2	6	6.5 - 17	.0 V				
Input Fu			5.0A					
Power Out								
Nominal		1	11W					
Peak		2	24W					
Cooling Me	Cooling Method Natural convection (forced air when fan is operating)							
DC OUTPUT	:							
		Maximun						
Nominal				Maximum	-	-		
voltage	Minimum	Current	C 	Peak Current	Tolerance	Power		
3.3V	0.0A	3.1A		3.1A	+- 4%	5.2W		
	0.0A			3.4A				
12.0V	0.0A	0.06A		0.06A	+- 5%	0.012W		

5.9 Battery Pack

Battey Pack Specifications _____ Nickel Metal Hydride (NiMH) Type Dimensions: .8 in Height 2.1 Cm 5.9 in Length 15.1 cm Width 3.8 in 9.7 Cm _____ 1.2 lb .6 kg Weight Battery Operating Time: * Hours 2.5 - 4.0 hr 4/75CX 2.5 - 4.5 hr 4/50CX 4/40CX 2.5 - 5.0 hr 4/50E 3.0 - 5.5 hr 3.0 - 5.5 hr 4/40C _____ Energy: Nominal Open Circuit Voltage 12V (14V fully charged) 2.2 Ah Capacity Power 26.4W _____ Environmental Requirements: 500F to 1040F 100C to 400C Operating Temperature Nonoperating (Storage) Temperature ** No time limit -40F to 860F -200C to 300C Maximum of 3 months -4oF to 104oF -200C to 400C Maximum of 1 month-40F to 1220FCharging Temperature ***590F to 950F -200C to 500C 150C to 350C _____ * 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).

Chapter 6 - Compaq SmartStation Product Overview

Introduction



Compag 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 Off	Expansion base and CPU power on Expansion base and CPU power off	Green
Drive Activity	On Off	Hard drive being accessed Hard drive not accessed	Green
Battery Charger	On Off	Spare battery pack fast charging Spare battery pack trickle charging or no spare battery present	Orange
	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.	

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



Figure 6-8. Battery Charger

The battery charger [1] (Figure 6-8), controlled by the system board, charges a Compaq LTE Elite spare battery pack. The battery charger operates whenever the expansion base is connected to an electrical outlet, whether the expansion base is on or off. In addition to charging the spare battery pack in the battery charger, the expansion base simultaneously charges the battery pack in the docked computer, whether the system is on or off.

To prevent damage to the expansion base and the battery pack, use only Compaq LTE Elite battery packs in the battery charging compartment. Do not attempt to insert a battery pack for a Compaq LTE Lite or any other battery pack. The battery pack and the battery charging compartment are keyed to allow only a correct insertion. Do not force the battery pack if insertion does not occur easily.

Power Supply

The expansion base internal power supply provides all power to the expansion base and to a docked computer. The power supply fan maintains acceptable temperatures within the power supply, drive cages, and expansion board cage. Refer to Section 10.2 for power supply specifications.

The power supply provides separate voltage outputs for the following

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 bayso Expansion board slotso Integrated Ethernet and SCSI-2 circuitryo 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.



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 powero IDE hard drive signalo Tape/diskette drive signalo 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 cableo Keylock switch and its soldered cableo 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.

Chapter 7 - Compaq SmartStation Troubleshooting

Introduction

This chapter contains troubleshooting tables that provide a quick reference for diagnosing problems with the SmartStation. It includes EXTDSK.SYS error messages (Section 7.2) that may occur when the Compag LTE Lite is docked.

To troubleshoot the SmartStation, complete the following steps:

- 1. Go to the troubleshooting table that covers the type of problem you are encountering.
 - NOTE: Since symptoms can appear to be similar, carefully compare the symptoms of the malfunction with the problem description in the troubleshooting tables to avoid a misdiagnosis.
- 2. Follow the recommended actions in the table one at a time in given order.
- If the recommended actions include part replacement, refer to "Before Replacing Parts." If required, follow the procedures provided in Chapter 9 for any recommended removal or replacement procedures.
- 4. After completing each recommended action, check to see if the problem is solved before going to the next step. (Once the problem is solved, do not complete the remaining recommended actions.)

5. After completing the repair, dock the computer in the expansion base (Appendix D) and run POST and Computer Checkup (Chapter 2) to verify that the system is functioning properly.

Before Replacing Parts

To avoid a potential shock hazard during troubleshooting procedures, disconnect all power sources before removing the bottom cover.

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

- o Verify that cables are connected properly to the suspected defective parts. Try reseating the cables even if they appear to be properly connected.
- o Run Computer Setup after connecting external devices.

NOTE: The first time you dock the computer in the expansion base or

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

install optional devices, the computer may detect a configuration change and prompt you to run Computer Setup. (Section 6.7).

- o Verify that all required device drivers are installed.
- o Verify that all required changes have been made to the CONFIG.SYS file.
- o Verify that all required changes have been made to the AUTOEXEC.BAT file.
- o Verify that printer drivers have been installed for each application.
- o Determine whether an external device or its cable is responsible for the problem by running POST with and without the external device connected.
- NOTE: To deactivate most of the sensors for the purposes of troubleshooting a problem, turn configuration switch number 6 off (Section C.2). Turning switch number 6 off deactivates the keylock switch and all sensors except for the motor position sensor and the computer-present sensor.

Be sure to turn configuration switch number 6 back on when troubleshooting is complete to avoid possible data loss or damage to the system that may occur during docking or undocking.

7.1 Troubleshooting Tables

This section contains troubleshooting information for diagnosing the following problems with the SmartStation:

```
o Battery charging
o Docking/undocking
o Enclosure alignment
o Hardware installation
o LEDs
o Power
o SCSI
Table 7-1. Battery Charging Problems
_____
Problem
                    Probable Cause Recommended Action(s)
_____
The battery chargerSpare battery pack isNo action is required.LED on the expansionalready fully charged.(Unless needed in the
base turns on briefly,
                                           computer, leave in the
then turns off.
                                           battery charging
                                           compartment to maintain a
                                          full charge.)
_____
The battery chargerThe spare battery packRemove the battery packLED on the expansionis not the correctand insert a Compaq LTEbase is flashing.battery pack for thisElite battery pack.
                     charger.
                     _____
```

	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. 2	<pre>contacts board is attached properly to the expansion base system board. . 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).</pre>
	The battery contacts are damaged.	 Ensure that all battery contacts are straight. 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.
	ocking Problems (Docking)	
Problem	Probable Cause	Recommended Action(s)
The motor does not engage and no beep is emitted.	No power.	 Ensure that the power cord is properly connected to the expansion base. 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. 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. The motor is not in the Press the eject button unloaded position to reset the motor to unloaded position. to reset the motor to the unloaded position. There is physical Undock the computer by interference. 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. _____ Recommended Action(s) Probable Cause _____ The computer status sense Check to see if the pads on the bottom of the sense tabs are bent or computer are not making deformed. If so, contact with the sense replace the docking tabs on the docking mechanism. mechanism sled.

Problem

The motor does not engage and no beep is emitted.	Docking mechanism sled is not interrupting the computer-present sensor.	 Ensure that the external options door on the rear panel of the computer is open. Ensure that the 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. 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. 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 The motor cable is loose 1. Verify that the engage but a beep is or disconnected. motor cable is emitted one second tightly connected after attempt to to the motor. If dock. 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 Verify that the defective on the voltage outputs for expansion base system the motor cable are board. 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 OV. When the motor is turning backward, the red wire is OV 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 There is physical Undock the computer computer does not interference. by pressing the eject button. If the completely dock and a computer does not beep is emitted. undock, remove the computer using the manual eject override method (Section D.1), and complete the following steps as required:

	Probable Cause	
Problem	Probable Cause	Recommended Action(s)
	Connector is not aligned.	 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. 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: Ensure that the connector shield is on properly. Loosen the screws securing the docking mechanism and the expansion base system board. Ensure that the

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). Probable Cause Recommended Action(s) Problem _____ The top cover is bowing Check for bowing in the top cover. *** If up. 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 Replace the docking mechanism. mechanism. The motor engages but A non-supported computer Ensure that the cycles the computer in is being used. computer is a Compaq and out. LTE Lite or a Compag LTE Elite. **** -----The reflectors on the 1. Ensure that the plastic gear are blocked white reflectors on or missing. the plastic gear are present and are clear of debris. 2. Replace the docking mechanism. -----The motor position sensor 1. Ensure that the two on the expansion base small lenses on the system board is blocked motor position or defective. sensor are clear of debris. 2. Ensure that the motor position

sensor is aliqned 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, A foreign object is Ensure that there is but the docking interfering. no foreign object mechanism doesn't between the pull the computer computer and the towards the expansion expansion base. base. The top cover is bowing Check for bowing in the top cover. *** If up. 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. -----The docking mechanism 1. Ensure that the sled is defective. docking mechanism sled is functioning properly. 2. Replace the docking mechanism. _____ Table 7-2b. Docking/Undocking Problems (Undocking) _____ Problem Probable Cause Recommended Action(s) _____ The motor does not No power. 1. Ensure that the engage, and no beeps power cord is are emitted. properly connected to the expansion

		 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.
computer show expansion bas scuff marks of docking bay,	ng whether the top cover is bowed up ald ride on the outer edges of the d se and not in the center area. If the or if the computer can rock from side this indicates that the top cover i	locking bay of the ne center area has le to side while in the .s bowed up.
Problem ======	Probable Cause The computer is on while attempting to undock in a non-Windows environment (Section D.1).	Turn off the computer
	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

(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 1. Replace the eject harness or harness switch cable harness. extension cable is 2. Replace the defective. harness extension cable. _____ The motor does notThe expansion base systemReplace the expansionengage, and no beepsboard is defective.base system board. are emitted. -----The computer status sense pads on the bottom of the computer are not making contact with the sense tabs on the docking tabs on the docking tabs on the docking mechanism. mechanism sled. The motor does not The expansion base is Ensure that the locked. engage but there is keylock is unlocked an immediate beep. 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 1. Ensure that the blocked, disconnected, or lenses of the defective. 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. _____ Probable Cause Recommended Action(s) Problem _____ The computer is on while Turn off the computer attempting to undock in a before undocking. non-Windows environment (Section D.1). _____ The motor does notThe motor cable is loose1. Verify that theengage but a beep isor disconnected.motor cable is emitted one second tightly connected after attempt to to the motor. If undock. 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 Verify that the defective on the expansion voltage outputs base system board. 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.	<pre>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.</pre>
	or the motor cable's red and e of the motor, as follows:	white wires vary
When the motor is tur wire is OV.	ning forward, the red wire is	+ 18V and the white
When the motor is tur wire is + 18V.	ning backward, the red wire i	s OV and the white
wire is + 18.	turning, the red wire is + 1	
Problem		Recommended Action(s)
=	The top cover is bowing	

	up.	<pre>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.</pre>
	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.	 Make sure that the docking mechanism sled can slide freely on the top cover. Clean the mechanism if necessary. Replace the docking mechanism.
	The top cover is bowing up.	<pre>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.</pre>
*** 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.	 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.	 Ensure that the two small lenses on the motor position sensor are clear of debris. Ensure that the motor position sensor is aligned straight over its holes in the expansion base system board. 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.
	t of the sensors for the purp problem, turn configuration	
Table 7-2c. Manual Undoc	king (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.	 Push the computer toward the expansion base until you hear the hooks spring back, then remove the computer. If the computer still does not release, remove the docking mechanism (it may fit tightly), then remove the computer.

The manual eject The override blocker Ensure that the override bracket cannot move freely. override blocker can cannot be accessed. move freely in the (Bracket is not bottom cover. If it visible through its cannot move freely, slot.) ***** replace the bottom cover. _____ The manual eject override 1. Straighten the bracket is bent. manual eject override bracket. 2. Replace the docking mechanism. _____ The manual ejectThe manual eject override1. Ensure that theoverride bracketbracket spring is notsmall spring ondoes not spring backattached.the back of the after the computer is mechanism is removed. ***** 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 1. Straighten the bracket is bent. 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 Metal liners are in the 1. Ensure that the latch firmly. metal liners are way. straight all around the expansion base. If not, attempt to straighten them. 2. If the liners cannot be straightened,

replace the bottom or top cover (whichever applies). Plastic latches are worn Ensure that the plastic latches are plastic latches are not worn off. If they are, replace the bottom cover. ______ Table 7-4. Hardware Installation Problems _____ Probable Cause Recommended Action(s) Problem _____ The drive or optionalThe drive or optionalUse only supporteddevice does not fit indevice is not supported.drives or optional the drive bay. devices (Table 8-10) that meet the maximum drive bay length requirement listed in Section 10.1. _____ 1. Determine if there Drive cage is bent. 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 The power switch of the Turn off the system, new external device was then turn on the external device, then system was turned on. integrate the new device. -----Computer Setup has to be Run Computer Setup. run to configure the new device. _____ The signal cable or power Ensure that all cable of the new device is cables are properly loose or disconnected. and securely connected. The switch settings on the Correct the switch vertical circuit board are settings on the incorrect. vertical circuit board. -----More than one optional
device has the sameCorrect 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.	<pre>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</pre>

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 1. Reseat the cable switch cable harness or harness.
eject switch cable 2. Replace the cable harness. harness) * is defective or is not making a complete 3. Replace the connection. 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 _____ Probable Cause Recommended Action(s) Problem _____ When a computer isThe power button is notEnsure that the powerdocked and thebeing pressed completelybutton is being fully docked and the being pressed completely button is being fully expansion base power or is defective. pressed on the power button is pressed, the switch board by expansion base and completing the computer do not power following steps: on, no beep is 1. Remove the power emitted, and there is switch from the no LED activity on top cover of the either the expansion expansion base, base or the computer. but do not disconnect the power switch cable harness. 2. Remove the power switch board from the rest of the plastic power

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 cable1. Reseat the cableharness or harnessharness.extension cable is not2. Replace the cable making a complete harness. 3. Reseat the harness connection or is defective. extension cable. 4. Replace the harness extension cable. -----The expansion base system Replace the board is defective. expansion base system board. _____ When a Compaq LTEThe power button on the
computer is not being1. Remove the
computer frElite is docked andcomputer is not beingcomputer fr computer from the the power switch on activated. expansion base and the computer is attempt to power pressed, the expansion on the computer by base and the computer itself. do not power on, no 2. If the computer beep is emitted, and does not power on there is no LED by itself, the activity on either the problem is with expansion base or the the the computer 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.	 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). 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).

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

Table 7-7. EXTDISK.SYS Messages

no setting for single, set the jumper switches to master. Time-Out on Disk 1The power or signal cableEnsure that the powerSecondary controlleris not properly connectedand signal cables areEXTDISK not installedto the drive.properly and securely properly and securely connected. _____ Incorrect version of Install the version of EXTDISK.SYS EXTDISK.SYS. included with the SmartStation Adapter. _____ There is an interrupt Eliminate the IRQ request (IRQ) conflict. 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 If only one IDE hard drive is in the are improperly set. 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 Determine if the cable connected to the power and/or signal drive is defective. 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 Includes configuration label **	198992-001
4. Top Cover	199002-001
5. Monitor Support Cover	137948-001 *
<pre>* Not shown ** Drive cage is interchangeable for drive position </pre>	1 or 2.

8.2 Power Supply



Figure 8-2. Power Supply

Table 8-2. Power Supply	
Description	Spare Part Number
<pre>1. Power Supply 2. Power Supply Bezel</pre>	198997-001 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
 System Board Vertical Circuit Board Battery Contacts Board 	195603-001 195602-001 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 Includes: Keylock Key Pawl with retaining clip Plastic keylock barrel Metal keylock plate	199004-001

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
                                   198990-001
(Quantity = 25)
_____
Table 8-9b. Screw and Fastener Locations
_____
Where Used:
               Expansion board cage blanks
Description:
              SCR, 6-32 x 3/16
               TT, CS, pan
Type:
Drive:
              T15/SL
Maximum Torque:
             12.0 in.-lb.
Quantity:
               2
Reference Part Number: 101517-066
_____
             Vertical circuit board to expansion board cage SCR, M3 x 8.0 with star washer
Where Used:
Description:
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
               SCR, 4-40 x 3/8
Description:
               MA, CS, pan
Type:
               T10
Drive:
Maximum Torque:
               6.0 in.-lb.
```

Quantity: 2 Reference Part Number: 114145-121 _____ Where Used: External monitor, parallel, serial connectors (at rear) Screwlock, 4/40 sems, ext. tooth, F Description: MA, CS, Hex Type: 3/16 Drive: 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 N/A Drive: 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 N/A Maximum Torque: Quantity: 1 Reference Part Number: 142034-001 _____ Where Used: AUI connector Description: SCR, 4-40, slide latch Shoulder Type: Drive: SLMaximum Torque: 4.0 in.-lb. Quantity: 2 Reference Part Number: 142036-001 _____ Where Used: SCSI-2 connector SCR, 2-56 x 3/8 Description: Type: MA, SS, pan Drive: Τ8 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 PT, pan Type: Drive: T10/SL 6.0 in.-lb. Maximum Torque: Quantity: 2 Reference Part Number: 198922-002 _____ Where Used: PCMCIA sensor (emitter and receiver) SCR, M3 -.5 x 6.0 Description: Type: PT, pan T10/SL Drive: Maximum Torque: 6.0 in.-lb. Quantity: 2 Reference Part Number: 198922-001 _____

Where Used: Keylock plate Description: SCR, M3 - .5 x 6.0 PT, pan Type: Drive: T10/SL Maximum Torque: 6.0 in.-lb. Quantity: 2 Reference Part Number: 198922-001 _____ Where Used: Drive cages SCR, M3 x 6.0 Description: MA, pan Type: Drive: T10/SL Maximum Torque: 6.0 in.-lb. Quantity: 8 Reference Part Number: 198889-001 _____ Where Used: Power supply to top cover SCR, M3 x 6.0 Description: MA, pan Type: Drive: T10/SL 6.0 in.-lb. Maximum Torque: Quantity: 2 Reference Part Number: 198889-001 _____ Power supply bezel to power supply SCR, M3 x 6.0 Where Used: Description: Type: TTT10/SL Drive: 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 MA, pan Type: 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 MA, pan Type: Drive: T10/SL Maximum Torque: 6.0 in.-lb. 3 Quantity: Reference Part Number: 198889-001 _____ System board/ battery charger housing to top cover Where Used: SCR, M3 x 30.0 with washer Description: MA, pan Type: T10/SL Drive: Maximum Torque: 6.0 in.-lb. Quantity: 4 Reference Part Number: 184006-001 _____ Where Used: Blank drive panels SCR, 6-32 x 3/8 Description: TT, CS Type: 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 ****

550 MB Fast EZ-SCSI Fixed Disk Drive (196411-001)	142038-001	****
525 MB Fixed Disk Drive [IDE] (196410-001)	197014-001	* * * *
340 MB Fixed Disk Drive [IDE] (196409-001)	199966-001	* * * *
330 MB Fast EZ-SCSI Fixed Disk Drive (142016-001)	142037-001	* * * *
270 MB Fixed Disk Drive [IDE] (196408-001)	197441-001	* * * *
120/250 MB Tape Drive (197412-002)	197490-001	* * * *
Internal DualSpeed CD-ROM Drive (133856-001)	133881-001	* * * *
External DualSpeed CD-ROM Drive (133865-001)	133882-001	* * * *
Internal TrayLoad CD-ROM Drive (142193-001)	142223-001	* * * *
External TrayLoad CD-ROM Drive (142251-001)	199430-001	* * * *
	525 MB Fixed Disk Drive [IDE] (196410-001) 340 MB Fixed Disk Drive [IDE] (196409-001) 330 MB Fast EZ-SCSI Fixed Disk Drive (142016-001) 270 MB Fixed Disk Drive [IDE] (196408-001) 120/250 MB Tape Drive (197412-002) Internal DualSpeed CD-ROM Drive (133856-001) External DualSpeed CD-ROM Drive (133865-001) Internal TrayLoad CD-ROM Drive (142193-001)	525 MB Fixed Disk Drive [IDE] (196410-001) 197014-001 340 MB Fixed Disk Drive [IDE] (196409-001) 199966-001 330 MB Fast EZ-SCSI Fixed Disk Drive (142016-001) 142037-001 270 MB Fixed Disk Drive [IDE] (196408-001) 197441-001 120/250 MB Tape Drive (197412-002) 197490-001 Internal DualSpeed CD-ROM Drive (133856-001) 133881-001 External DualSpeed CD-ROM Drive (133865-001) 133882-001 Internal TrayLoad CD-ROM Drive (142193-001) 142223-001

- * 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 _____ Compag LTE Elite/Compag SmartStation Maintenance and 149601-001 Service Guide _____ Compaq SmartStation Installation and Operations Guide U.S./Canadian 184126-001 German 184126-041 French 184126-051 184126-061 Italian 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 _____

Chapter 9 - Compaq SmartStation Removal and Replacement Procedures

Introduction

This chapter provides subassembly level removal and replacement procedures for the expansion base. Unless otherwise specified, the steps for replacement procedures are the reverse of the steps for the removal procedures.

After completing all necessary removal and replacement procedures, run POST and Computer Checkup (TEST) (with the computer docked in the expansion base) to verify that all components operate properly (refer to Chapter 2).

9.1 Precautions

This section covers precautions that must be followed when servicing the expansion base.

Electrostatic Discharge (ESD)

A sudden electrostatic discharge (ESD) can destroy static-sensitive devices or microcircuitry. Use proper packaging and grounding techniques to prevent damage. Refer to Appendix E, "Electrostatic Discharge (ESD)", for more information on ESD.

Electrostatic discharge can damage electronic components. Be sure that you are properly grounded before performing any maintenance and service procedures.

Cables

Use the following precautions when handling cables to avoid irreparable damage to the cable or the expansion base:

o Always handle cables by their connectors.

- o Avoid bending, twisting, or pulling on the cables.
- o Apply the minimum required force when seating or unseating the cables from their connectors.
- o Place cables in such a manner that they cannot be caught or snagged by parts being removed or replaced.
- o Handle ribbon or flex type cables with extreme care since they can easily tear.
- o When replacing prefolded ribbon cables, ensure that they are placed in their proper location.

Screws

Screws in the unit are not interchangeable. Damage may occur if you insert an incorrect screw. As you remove screws, place them with the component you removed to help avoid error.

To avoid stripping out plastic or metal parts, do not over tighten plastite or taptite screws.

Plastics

Use care when handling the plastic case and battery charging compartment, since they can be damaged from excessive force during removal and replacement procedures.

Liners

The metal liners attached to the inside of the expansion enclosure are for shielding purposes. Be careful not to damage the liners during removal and replacement procedures. Be sure that the fingers of the liners make good contact with the adjacent liners when replacing the bottom cover on the unit.

Power Cord

The expansion base uses a three-prong grounded power cord that should be connected to a grounded external outlet for safe operation.

The expansion base is designed for connection to a grounded (earthed) electrical outlet. The grounding type plug is an important safety feature. To avoid the risk of electric shock or damage to the equipment, do not disable this feature.

9.2 Tools Required

The following tools are required to service the expansion base:

o Flat-bladed screwdriver
o Torx T-8 screwdriver
o Torx T-10 screwdriver
o Torx T-15 screwdriver
o 3/16-inch nut driver (for screwlocks)

NOTE: Most of the screws in the expansion base are slotted Torx T-10 type, which can be removed and replaced with a Torx T-10 or flat-bladed screwdriver.

9.3 Removal And Replacement List

The following list outlines the removal and replacement procedures that are covered in this chapter:

9.4 Preparation procedures for removal and replacement 9.5 Battery pack 9.6 Bottom cover 9.7 Keylock assembly 9.8 Expansion boards 9.9 Expansion board cage 9.10 Vertical circuit board 9.11 Power supply and bezel 9.12 Docking mechanism 9.13 System board and battery charging compartment 9.14 Battery contacts board 9.15 Drives - Drive cables 9.16 Drive cages 9.17 Cable harnesses and PCMCIA sensor 9.18 Power and eject switch components 9.19 Horizontal guides and springs 9.20 Top cover

9.4 Preparation Procedures For Removal And Replacement

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

- 1. Read and observe the precautions in Section 9.1.
- 2. Undock the computer if it is docked in the expansion base (refer to Appendix D).
- 3. Remove the battery pack from the battery charger in the expansion base, if one is installed (Section 9.5).
- 4. Turn off the expansion base.
- 5. Disconnect the power cord from the electrical outlet.

To avoid the risk of electric shock or damage to the expansion base, ensure that the power cord is disconnected before removing and replacing internal parts.

- 6. Turn off all external devices, then disconnect them from the expansion base.
- 7. If a monitor is being used, remove it, then remove the monitor stand.

9.5 Battery Pack

This section covers procedures for removing and replacing the battery pack from the battery charger in the expansion base.

Refer to Appendix B for the following information:

o Increasing battery pack operating timeo Ensuring battery gauge accuracyo Conditioning the battery packo Disposal of a used battery pack

Metal objects can damage the battery pack as well as the battery contacts in the battery charging compartment. To prevent damage, do not let metal objects touch any of the battery contacts. Place only the Compaq LTE Elite battery pack in the battery charging compartment. Do not attempt to insert a battery pack for a Compaq LTE Lite Personal Computer or any other battery packs. The battery pack and the battery charging compartment are keyed to allow only a correct insertion. Do not force the battery pack if insertion does not occur easily.

Do not crush, puncture, incinerate or short external contacts on the battery pack. Do not open a battery pack, as this damages the pack, makes it unusable, and exposes potentially harmful battery components. There are no field-serviceable parts located inside the battery pack.

Removing the Battery Pack

To remove a battery pack from the battery charging compartment, simply pull it out.

Inserting the Battery Pack

To insert the battery pack in the battery charging compartment, complete the following steps:

- 1. Insert the battery pack into the battery charging compartment with the label on the battery pack facing up.
- 2. Push firmly on the battery pack to lock it into place.
- NOTE: Whenever external electrical power is connected to the expansion base, power is connected to the battery charging circuit, even when the expansion base is turned off.

The battery charging LED turns on briefly when the battery is inserted. The LED stays on, turns off, or flashes depending on the status of the battery pack (Table 6.1).

9.6 Bottom Cover

To remove the bottom cover, complete the following steps:

1. Remove the battery pack from the battery charging compartment (Section 9.5).

Failure to remove the battery pack from the expansion base may enable the battery pack to fall out of the unit, resulting in possible injury and damage to the battery pack.

2. Unlock the expansion base by turning the key to the unlocked (horizontal) position (Figure 9-1).



Figure 9-1. Unlocking the Expansion Base

- 3. Turn the expansion base upside down.
- 4. Press the two release latches [1] at the rear of the expansion base (Figure 9-2).
- 5. Tilt the bottom cover up from the back edge [2] (Figure 9-2) to release the front edge from the expansion base.

NOTE: The front edge of the bottom cover is toed-in to the expansion base.



Figure 9-2. Removing the Bottom Cover

The toe-in feature connects the front edge of the bottom cover at three points. When replacing the bottom cover, ensure that all three points are lined up (Figure 9-3), that cables will not be pinched when the bottom cover closes, and that both latches snap back into place.



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 9-6. Removing the Keylock Barrel

NOTE: The blocker for the manual eject override mechanism is integrated into the bottom cover. To replace the blocker, the bottom cover must be replaced (Section 9.6). The blocker spring, however, may be replaced by itself, and is accessible when the bottom cover is removed.

9.8 Expansion Boards

ESD can damage electronic components. Ensure that you are properly grounded before removing or installing an expansion board.

The expansion board cage contains two slots for optional ISA expansion boards.

IMPORTANT: To maintain proper air flow to the expansion base, keep expansion board slot covers [1], [2] in all empty expansion board slots (Figure 9-7).



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).
- 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.



Figure 9-11. Removing the Expansion Board Cage

9.10 Vertical Circuit Board

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ESD can damage electronic components. Ensure that you are properly grounded before removing or replacing the vertical circuit board.

To remove the vertical circuit board, complete the following steps:

- 1. Remove the bottom cover (refer to Section 9.6).
- 2. Remove any expansion boards that are installed (Section 9.8).
- 3. Remove the expansion board cage (Section 9.9).

To avoid damage to the edge card connector on the vertical circuit board or the system board, remove the expansion board cage before removing or replacing the vertical circuit board.

- 4. Remove the five screws that attach the vertical circuit board to the expansion board cage (Figure 9-12).
- 5. Remove the vertical circuit board (Figure 9-12).



Figure 9-12. Removing the Vertical Circuit Board

9.11 Power Supply And Bezel

Whenever external electric power is connected to the expansion base, power is connected to the power supply, even when the expansion base is turned off. To avoid the risk of electric shock or damage to the expansion base, ensure that the power cord is disconnected before removing and replacing the power supply.

- 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 9-15. Removing the Power Supply and Bezel Assembly

7. To remove the bezel from the power supply, remove the two screws that attach them (Figure 9-16).

The power supply bezel is connected to the power supply with two taptite screws which can be easily over tightened. To avoid damage to the power supply when reattaching the bezel, do not over tighten the screws.



Figure 9-16. Removing the Bezel from the Power Supply

9.12 Docking Mechansim

NOTE:Do not lubricate the docking mechanism. To ensure freedom of movement in the docking mechanism sled, manually move the sled when a computer is not docked.

To remove the docking mechanism, 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).

The terminals on the docking mechanism motor and computer status sensor are fragile. To avoid damaging the terminals, handle the cables carefully when removing and replacing them.

4. Disconnect the two cables from the docking mechanism motor (Figure 9-17).



Figure 9-17. Disconnecting the Motor Cables on the Docking Mechanism

To avoid damage to the expansion base system board when replacing the docking mechanism, ensure that the motor cables are securely reconnected before connecting external power to the expansion base. If they are not reconnected, the motor cables (which carry +/- 18 V) may accidentally touch together or touch ground and short out the expansion base system board.

Ensure that the red wire of the motor cable is reconnected to the motor terminal identified by a red dot and that the white wire is reconnected to the other terminal. If the motor cable is not reconnected correctly, the motor rotates backwards.

5. Disconnect the computer status sensor cables (Figure 9-18).



Figure 9–18. Disconnecting the Computer Status Sensor Cables

- IMPORTANT: When replacing the docking mechanism, ensure that the computer status sensor is reconnected. If it is not reconnected the computer cannot dock.
- 6. Remove the four screws [1], [2] that attach the docking mechanism [3] to the top cover (Figure 9-19).

To properly secure the docking mechanism and avoid damage to the top cover when replacing the mechanism, the longer screw must be replaced in the proper hole.

7. Remove the docking mechanism [3], ensuring that you clear the power cable harness and the drive cage spacer [4] (Figure 9-19).



Figure 9-19. Removing the Docking Mechanism

9.13 System Board And Battery Charging Compartment

ESD can damage electronic components. Ensure that you are properly grounded before removing or replacing the system board and battery charging compartment.

To remove the system board and battery charging compartment, 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. Disconnect the SCSI cable if it is connected to the system board.

To avoid damage to the cable harnesses or the harness extension cable, be sure to press and hold the lock on the connector before removing the cable harnesses.

- 6. Press the lock [1] to disconnect the power switch cable harness [2] from the harness extension cable [3] (Figure 9-20).
- Press the other lock [4] to disconnect the eject switch cable harness
 [5] (Figure 9-20).



Figure 9-20. Disconnecting the Cable Harnesses from the Harness Extension Cable

- IMPORTANT: When replacing the system board/battery charging compartment, ensure that the cable harnesses are reconnected to the harness extension cable or the computer cannot dock and undock properly. Ensure that the two cable locks on the harness extension cable snap back into place.
- 8. Remove the three remaining screws that attach the system board and battery charging compartment to the top cover (Figure 9-21).
 - IMPORTANT: When replacing the three screws for the system board/battery charging compartment assembly, leave the screws loose until the long docking mechanism screw is tightened first [1]

(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:

 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).
- Guide the battery contacts board connector [3] through the guide hole
 [4] in the battery charging compartment (Figure 9-27).



Figure 9-27. Removing the Battery Contacts Board

To avoid damage to the battery contacts board cable when replacing the battery contacts board, ensure that the connector is routed through the guide hole in the battery charging compartment.

9.15 Drives

ESD can damage electronic components. Ensure that you are properly grounded before removing or installing drives.

Removing a Drive

To remove a drive, complete the following steps:

1. Remove the bottom cover (Section 9.6).

2. Remove the two drive-mounting screws (and blank panel if installed) from

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



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 tae/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).
- 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 9-40. Removing the PCMCIA Card Sensor Emitter and Receiver

IMPORTANT: When replacing the power switch cable harness, ensure that it is routed correctly. There are two types of cable harnesses: the type wrapped with tape and the type wrapped with tie wraps. The routing depends on which type of cable harness is being used. The type that is wrapped with tape should be routed underneath the drive cage, while the type wrapped with tie wraps should be routed behind the drive cage. (If the tie wrapped type is routed underneath the drive cage, it could interfere with installation of the drive.)

To avoid damage to the power switch cable harness or the harness extension cable, be sure to press and hold down the lock on the connector before removing the cable harness.

10. Press the lock [1] to disconnect the power switch cable harness [2] from the harness extension cable [3] (Figure 9-41).



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 9-48. Removing the Keylock Switch

To avoid damage to the eject switch cable harness or the harness extension cable, be sure to press and hold down the lock on the connector before removing the cable harness.

8. Press the lock [1] to disconnect the harness extension cable [2] from the eject switch cable harness [3] (Figure 9-49).



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).
- 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:

- Position the spring so that the legs of the spring are on the top [1] (Figure 9-60).
- 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).
- 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 environmentalo Power supplyo Compaq Ethernet 16E controllero IEEE 802.3 Ethernet standardso SCSI-2 controller

10.1 Physical and Enviromental

_____ U.S. Metric _____ Dimensions Height: From base of unit to top of 5.3 in 13.4 cm monitor support cover From base of unit to surface of docking bay 2.5 in 6.3 cm Width 15.7 in 39.9 cm 16.1 in 40.8 cm Depth _____ 7.7 kg Weight (with monitor support cover) 17 lbs _____ Expansion Board Slots Two 8-/16-bit ISA _____ Temperature Requirements: 50oF to 95oF 10oC to 35oC -22oF to 140oF -30oC to 60oC Operating Nonoperating *** Maximum Rate of Temperature Change: 180F/hr100C/hr360F/hr200C/hr Operating Nonoperating _____ Relative Humidity: Operating (noncondensing) 20 to 80% Nonoperating 5 to 90% * _____ Maximum Unpressurized Altitude: 10,000 ft 30,000 ft Operating 3,048 m Nonoperating 9,144 m _____ Shock: 5G, 11 ms, half-sine Operating 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
<pre>* 102oF (38.7oC) maximum wet bulb ** 0 to peak, 5 to 500 Hz sine, .5 oc *** No battery pack installed in batter</pre>		-

10.2 Power Supply

Speciications of the Power Supply	
Output Voltages: Main electronics (for ISA slots, optional drives, etc.)	+5V, -5V +12V, -12V
VBatt1 VBatt2	18.5V 18.5V
Output Power: (Steady State Power) Main Electronics (for ISA slots, optional drives, etc.)	92W
VBatt1 VBatt2 Total	29 - 35W 15 - 18W 145W
Power Allocated for Optional Internal Devices:	-
Input Voltage (Operating Voltage): Voltage Range Operating Frequency	100 - 120/220 - 240V 47 - 63 Hz
Maximum Steady State Input Current: (Operating Current)	4/2A RMS
	200W RMS true input power
	Meets IEC 801-4 and IEC 801-5

10.3 Compaq Ethernet 16E Controller

Speciication of th	e 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 th	rough 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)
=======================================	(Infek Benefice)	(111111 1011011100)	
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	coax	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 Ø	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 2	Strobe * Data Bit 0	14 15	Auto Linefeed * 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	Veritcal 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 2 3 4 5 6 7	Red Analog Green Analog Blue Analog Not connected Ground Ground Analog Ground Analog	9 10 11 12 13 14 15	Not connected Ground Not connected Not connected Horizontal Sync Vertical Sync Not connected
7 8 ======	Ground Analog 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

Compag LTE Elite Numeric Keypad Connector

 Table A-5. Compaq LTE Elite Numeric Keypad Connector

 Pin
 Signal

 Pin
 Signal

 Ring
 Ground
 Tip

 Data/Power

166	[]	198
133	/	165
100 67)		132 99
34	·	
1		33

Compag LTE Elite 198-Pin External Options Connector

	1 1		1
======		=========	
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

Table A-6. Compaq LTE Elite 198-Pin External Options Connector

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 Serial Receive Data 26 125 System Address Bit 14 27 Serial Ready-to-Send 126 System Address Bit 15 28 Serial Carrier Detect 127 System Address Bit 16 128 Ground 29 Serial-Data Set Ready 30 Ground 129 System Address Bit 17 31 DMA Acknowledge 2 * 130 System Address Bit 18 DMA Acknowledge 1 * 32 131 System Address Bit 19 33 DMA Acknowledge 0 * 132 Ground +5V Fused (computer) Printer Select In * 34 133 35 Printer Paper Out 134 Diskette Boot Printer Acknowledge * 36 135 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 142 Reserved 43 Battery Voltage Keyboard Clock 143 No Wait States * 44 45 Keyboard Data 144 Bus Ready 145 46 Mouse Clock Ground I/O Read Control * 47 Battery Voltage 146 147 I/O Write Control * 48 Ground-CRT 49 148 ISA Bus Clock Ground-CRT 50 Ground-CRT 149 Ground Address Latch Enable 51 Ground-CRT 150 DMA Cycle Indicator 52 Ground-CRT 151 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 Unlatched Address Bit 20 DMA Request 5 156 DMA Request 3 157 Unlatched Address Bit 21 58 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 67 166 Diskette Drive Select * Spare 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 * 80 179 System Data Bit 13 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.



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 *
LO	Battery Voltage	109	Exp Device Connected *
.1	Power Good Exp. Base	110	I/O Error Check *
2	Standby	111	Ground
.3	Mouse Data	112	System Address Bit 4
4	Battery Voltage	113	System Address Bit 5
.5	CRT-Red Analog	114	System Address Bit 6
.6	CRT-Green Analog	115	Ground
.7	CRT-Blue Analog	116	System Address Bit 7
.8	CRT Horizontal Sync	117	System Address Bit 8
.9	CRT Vertical Sync	118	System Address Bit 9
20	Ground	119	Ground
21	Serial-Data Term Ready	120	System Address Bit 10
2	Serial-Ring Indicator	121	System Address Bit 11
3	Serial Transmit Data	122	System Address Bit 12
4	Serial Clear-to-Send	123	System Address Bit 13
5	Ground	124	Ground
6	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)	132	Printer Select In *
94 85	Printer Paper Out	134	Diskette Boot
6	Printer Acknowledge *	134	Diskette Low Den. Media *
7	Printer Data Bit 6	135	Diskette Direction In *
8	Printer Data Bit 6 Printer Data Bit 4	138	
9		137	Ground Diskette Index *
	Ground Printer Data Bit 2		
:0		139	Diskette Change *
1	Printer Data Bit 0	140	Diskette Head Select
2	Keypad Data	141	Ground
3	Battery Voltage	142	Reserved
.4	Keyboard Clock	143	No Wait States *
5	Keyboard Data	144	Bus Ready
6	Mouse Clock	145	Ground
7	Battery Voltage	146	I/O Read Control *
8	Ground-CRT	147	I/O Write Control *
9	Ground-CRT	148	ISA Bus Clock
0	Ground-CRT	149	Ground
51	Ground-CRT	150	Address Latch Enable
2	Ground-CRT	151	DMA Cycle Indicator
53	DMA Request 1	152	Unlatched Address Bit 17
54	DMA Request 7	153	Ground
	DMA Request 6	154	Unlatched Address Bit 18

Table A-7. Compaq SmartStation 198-Pin External Options Connector

56	Ground	155	Unlatched Address Bit 19
57	DMA Request 5	156	Unlatched Address Bit 19
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 22 Unlatched Address Bit 23
62	DMA Acknowledge 7 *	161	System Address Bit 0
63	DMA Acknowledge 6 *	162	Ground
64	Ground	162	System Address Bit 1
		163	1
65	DMA Acknowledge 5 *	164 165	System Address Bit 2
66	DMA Acknowledge 3 *		System Address Bit 3
67	Expansion Base Present Reserved	166	Diskette Drive Select *
68		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 Elit	e Interna	l AC Power Supply Output Connector
======= Pin	Signal	Pin	Signal
======= 1 2	+VBatt (18.5V) Key	3 4	Reserved Ground
========			



Signal	Pin	Signal
GND	11	VBATT2 (18.5 V)
GND	12	PWRGOOD
GND	13	VBATT1 (18.5 V)
GND	14	PWRON
GND	15	+12 V
GND	16	+12 V
-5 V	17	+5 V
GND	18	+5 V
-12 V	19	+5 V
GND	20	+5 V
	GND GND GND GND GND GND -5 V GND -12 V	GND 11 GND 12 GND 13 GND 14 GND 15 GND 16 -5 V 17 GND 18 -12 V 19

Compag 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
=======			



Compag 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 *
====			

4 9 4 7										9		
50 48												

Compag SmartStation Internal SCSI-2 Connector

Table A-11. Compaq SmartStation Internal SCSI-2 Connector

=========			
Pin	Signal	Pin	Signal
========	~ 1	==========	
1	Ground	26	Term Power
2	SCSI Data Bit O	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	Кеу	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		

Compag 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

Compag SmartStation Ethernet RJ-45 Connector

Table A-13. Compaq SmartStation Ethernet RJ-45 Connector

======= Pin	Signal	Pin	Signal
======= 1 2 3 4	Data Transmit Data Transmit # Data Receive Not connected	5 6 7 8	Not connected Data Receive # Not connected Not connected
========	=======================================		=======================================



Pin	Signal	Pin	Signal
1	+12 V	4	Ground
2	Key	5	+5 V
3	Ground		

Compag SmartStation Drive Power Connector

Table A-14. Compaq SmartStation Drive Power ConnectorPinSignalPinSignal1+12V42Key53Ground

• 2	• 4	•	•	• 10	• 12	• 14	• 16	• 18		• 22	• 24	• 26	• 28	• 30	• 32	• 34	• 36	• 38	• 40
1 •	3	5	?	9 •	11 •	13 •	15 •	17 •	19 •	21 •	23 •	25 •	27 •	29 •	31 •	33 •	35	37	39 •

Compag 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 O	37	Chip Select 0 *
18	Data Bit 15	38	Chip Select 1 *
19	Ground	39	Drive Activity LED
20	Кеу	40	Ground
=========		===========	

Table A-15. Compaq SmartStation IDE Hard Drive Signal Connector

	• 2 1	<u>ک</u>	5	7		11	13	15	17	19	21	23	25	27	29	31	• 34 33	
	-	-	-	-	-	-	-			-		-	-	-	-	-		

Compaq SmartStation Tape/diskette Drive Signal Connector

Table A-		Kelle DII	
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 *
========		=========	

Table A-16. Compaq SmartStation Tape/diskette Drive Signal Connector

Appendix B - Battery Pack Operating Time

Introduction

This appendix covers the following information concerning battery pack operating time:

o Increasing battery pack operating timeo Ensuring battery gauge accuracyo 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

By pressing the Fn+F8 hotkeys, the battery gauge window displays the operating time and percentage of battery power remaining (Figure B-1). The battery gauge can be displayed when operating the computer under battery power or AC power. The time remaining on the battery gauge varies depending on the power requirements of any applications currently being used, and options currently installed.

NOTE: When the power cord is connected to an external outlet, the battery gauge displays a power cord plug symbol.

If question marks are displayed in the battery gauge, it means that the gauge is no longer accurate. To restore the accuracy of the battery gauge condition the battery pack.

B.3 Conditioning A Battery Pack

To avoid a loss of data, ensure that all data is saved before discharging a battery pack.

The battery fastcharger option can condition a battery pack automatically.

To condition a battery pack without the battery fastcharger option, complete the following steps:

- 1. Turn off the computer.
- 2. Undock the computer if it is docked in a convenience base or expansion base.
- 3. Disconnect any external power source (AC power or Automobile Adapter) from the computer.
- 4. Turn on the computer.
- 5. Use the Fn+F7 hotkeys to select the drain level of power conservation from the popup window.
- 6. Leave the computer on until it discharges to at least the LowBatt2 level.
- NOTE: An alternate method of discharging the battery pack is to leave the computer on overnight. The power/low battery light turns off when the battery pack is discharged.
- 7. Connect the AC power cord to the computer.
- 8. Turn on the computer. The battery LED turns on to indicate that the battery pack is charging. When the battery LED goes off, the battery pack is fully charged.

9. Use the Fn+F7 hotkeys to reset the power conservation level.

It takes approximately 1 hour to fast charge the battery pack if the computer is turned off, and approximately 1 1/2 to 2 hours if the computer is being used.

NOTE: The battery pack can be charged in the computer, the battery charging compartment in the expansion base, or the battery fastcharger option (Table 3-14).

B.4 Disposal Of A Used Battery Pack

In the interest of safeguarding our environment, Compaq Computer Corporation recommends that nickel metal hydride (NiMH) and nickel cadmium (NiCad) battery packs be recycled. Battery packs should be handled in accordance with country, state, province, or local regulations.

Never attempt to open or service a battery pack. Opening a battery pack not only damages the pack and makes it unusable, but also exposes potentially harmful battery components.

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.

- IMPORTANT: If the expansion base has one IDE hard drive, set the drive jumpers to the "single" drive position. If the drive does not have a "single" position, set the jumpers to "master." Do not set the jumpers to the "slave" position unless a second IDE drive in the expansion base is set to "master." Refer to the drive manufacturer's instructions for information on how to set the jumpers and other important installation instructions.
- 2. Install the hard drive (Section 9.15).
- 3. While the bottom cover is off the expansion base, set the configuration switches on the vertical circuit board to reflect the number and kinds of drives installed (drive configuration) and whether you want to disable the C/D switch. Refer to Section C.2 for information on the configuration switches and to Section C.3 for information on the C/D switch.
- 4. Replace the bottom cover (Section 9.6) and turn the expansion base right side up.
- 5. If configuration switch number 5 is enabled (the default), ensure that the C/D drive selection switch is set to the D (default) position.
- 6. Turn the system off with the power switch, then on again to integrate the selected configuration and C/D switch settings.
- 7. When using a Compaq LTE Lite, install the EXTDISK.SYS external device driver to allow the computer to recognize the IDE hard drive in the expansion base (Section C.4).

NOTE: The Compaq LTE Elite does not require the EXTDISK.SYS driver.

Designating an incorrect drive when using the MS-DOS FDISK command or the MS-DOS FORMAT command can cause a loss of all data on the computer hard drive. To avoid a loss of data, verify that the C/D drive selection switch is set to D when you turn on the computer so that the hard drive in the computer is logical drive C, which FDISK refers to as Current Fixed Disk Drive: 1.

- 8. Using the MS-DOS FDISK command, partition the hard drive in the expansion base, which FDISK refers to as Current Fixed Disk Drive: 2.
 - IMPORTANT: When partitioning an IDE drive that will be used as a bootable drive, use the FDISK command to create a primary MS-DOS partition on Current Fixed Disk Drive: 2 and make the partition active.
- 9. Reboot the computer by pressing the Ctrl+Alt+Delete keys to integrate the new information.

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 \star	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.

NOTE: Switch number 6 can be turned off to deactivate the keylock switch and most of the sensors for troubleshooting purposes.

Be sure to turn configuration switch number 6 back on when troubleshooting is complete to avoid possible data loss or damage to the system that may occur during docking or undocking.

C.3 Changing Logical Drive Designations

The A/B and C/D drive selection switches are mounted on the system board and are accessible from the outer rear panel of the expansion base (Figure C-2).



Figure C-2. A/B and C/D Drive Selection Switches

Designating Logical Drive A

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 default position for the A/B drive selection switch is B (the diskette drive in the expansion base is B).

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).



Compag SmartStation Expansion Base



Compag LTE Lite Desktop Expansion Base (with Upgrade Adapter)



Compag 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, "Compag 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.
	to the computer state and opera	5

following conditions can also prevent docking:

- The expansion base is locked with the key.
- The external options connector door is closed.
- A motor timeout occurs that is caused by physical interference during docking, failure of the motor position sensor, etc.

Docking the Compag LTE Elite

To dock the Compaq LTE Elite in the Compaq SmartStation, complete the following steps:

- 1. Connect the expansion base to an electrical outlet.
- 2. Turn off and disconnect any external devices that are connected to the computer.

To avoid damage to the PCMCIA connector when docking and undocking, be sure to remove any PCMCIA cards and cables that do not allow the PCMCIA compartment door to fully close.

3. Remove any cable or card that does not allow the PCMCIA compartment door to fully close.

An ISA expansion board with older technology could cause a conflict. To prevent loss of data, save your files before docking with the computer on or in Standby the first time you dock after an optional ISA expansion board has been installed.

- 4. If you are using a non-Windows environment or if you will need to use optional devices that are connected to or installed in the expansion base, turn off the computer. (Do not initiate Standby or Hibernation.)
- 5. If the monitor support cover is being used, close the computer display.

6. Slide open the external options door (Figure D-2).



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 Non-Windows 3.1 While Undocking Windows 3.1 Environment Environments _____ Undocks. Off Undocks. _____ When pressing eject button: Does not undock. On 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. _____ Not applicable. (Standby not Not applicable. (Standby Standby supported in expansion not supported in base.) expansion base.) _____ Hibernation Not applicable. (Hibernation Not applicable. not supported in expansion (Hibernation not base.) 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 is docked, pressing the eject button with the system on initiates Standby briefly so that files remain open after undocking.

IMPORTANT: When using a non-Windows operating environment, the system must be turned off before undocking the computer. When the system is off, there is still AC power available to the docking mechanism, as long as the power cord is connected to an electrical outlet.

To undock the computer from the expansion base, complete the following steps:

- 1. Remove any cable or card that does not allow the PCMCIA door to close fully. The PCMCIA card sensor prevents the computer from undocking if a card or cable keeps the spring-loaded PCMCIA door open.
- 2. Unlock the expansion base keylock.

To avoid loss of data, turn off the computer before undocking if the hard drive in the expansion base is set as logical drive C (the boot drive).

- 3. Undock from the expansion base in one of the following ways:
 - Save and close open files, turn off the system by pressing the power button on the computer or the expansion base, then press the eject button.
 - When using the Compaq preinstalled Windows operating environment, press the eject button with the system on. Before undocking, you will be prompted to save all files that were opened from a source other than a drive in the computer.
 - Select the Eject option on the Shutdown utility or enter:

SHUTDOWN/EJECT

at the DOS prompt. Save open files when prompted.

The docking mechanism disconnects the computer from the external options connector and pushes the computer toward you.

- NOTE: A beep indicates that the computer cannot be undocked. Verify that you have completed steps 1 through 3 and try again. If the expansion base still beeps, refer to Chapter 7 for troubleshooting information.
- 4. Slide the computer out of the expansion base. Do not lift the computer up as you slide it out.

Before Docking the Compag LTE Lite

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

drive in the expansion base.

o Use of the Compaq SmartStation expansion base battery charger.

Connecting the SmartStation Adapter

To connect the SmartStation Adapter to the Compaq LTE Lite, complete the following steps:

1. Slide open the external options door (Figure D-2).

- 2. Connect the adapter to the back of the computer so that the thumbwheel faces outward.
- 3. To secure the adapter to the computer, tighten the thumbwheel until you feel a slight resistance (Figure D-6).

If the SmartStation Adapter is not secured to the computer with the thumbwheel, the computer can be pulled from the expansion base whether or not the keylock is in the locked position, allowing theft, accidental undocking, and possible damage to the connectors.



Figure D-6. Attaching the SmartStation Adapter to the Compaq LTE Lite

- 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.) o Network Drivers diskette - Use to install network drivers.

- o SCSI Drivers diskette Use to install SCSI drivers (Section F.6).
- o Supplemental Programs diskette Use to copy the updated EXTDISK.SYS file to the hard drive (Section C.4). EXTDISK.SYS is the only file you need on this diskette.

Docking the Compaq LTE Lite

To dock the Compaq LTE Lite in the Compaq SmartStation, complete the following steps:

- 1. Connect the expansion base to an electrical outlet.
- 2. Turn off and disconnect any external devices that are connected to the computer.
- 3. Remove any cable or option that extends beyond the enhanced option slot.

If a cable or option extends beyond the Enhanced Option Slot when docking or undocking the computer, the option connectors may be damaged.

- 4. Attach the SmartStation Adapter to the Compaq LTE Lite (refer to "Connecting the SmartStation Adapter").
- 5. Turn the computer off.
 - NOTE: The computer cannot be docked while in Standby. If the computer is in Hibernation, you may be prompted either to reboot or to eject and restore the Hibernation state. However, with some configurations, you will receive no error message if attempting to dock while in Hibernation, even though you will not have use of all optional devices connected to the expansion base.
- 6. If the monitor support cover is being used, close the computer display.
- 7. Unlock the expansion base keylock (Figure D-3).
- 8. Slide the computer forward in the docking bay until you feel the computer being pulled from your hands (Figure D-8).
 - NOTE: A beep indicates that the computer cannot be docked. Verify that you have completed steps 1 through 8 and try again. If the expansion base still beeps, refer to Chapter 7 for troubleshooting information.



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." Undocking the Compaq LTE Lite

To undock the Compaq LTE Lite from the Compaq SmartStation, complete the following steps:

1. Remove any cable or option that extends beyond the enhanced option slot.

If a cable or option extends beyond the enhanced option slot when docking or undocking the computer, the option connectors may be damaged.

- 2. Unlock the expansion base keylock (Figure D-3).
- 3. Save and close open files.
- 4. Turn off the system by pressing the expansion base power button.
- 5. Press the eject button.
 - NOTE: A beep indicates that the computer cannot be undocked. Verify that you have completed steps 1 through 5 and try again. If the expansion base still beeps, refer to Chapter 7 for troubleshooting information.
- 6. The docking mechanism disconnects the computer from the external options connector and pushes the computer toward you.
- 7. Slide the computer out of the expansion base. Do not lift the computer up as you slide it out.
- To disconnect the SmartStation Adapter from the computer, turn the thumbwheel counterclockwise, then carefully pull the adapter from the computer (Figure D-9).



Figure D-9. Removing the SmartStation Adapter from the Compaq LTE Lite

Using the Manual Eject Override

If the Compaq LTE Elite or the Compaq LTE Lite cannot undock automatically from the Compaq SmartStation because of a power outage or system malfunction, it can be manually ejected from the expansion base. To eject using the manual override method, complete the following steps:

1. Save and close all open files.

2. Turn off the expansion base.

Power is still available to certain circuits even when the expansion base is turned off. To disconnect power to the expansion base, disconnect the power cord. Failure to disconnect the power cord may expose you to the risk of electric shock.

3. Disconnect the power cord from the electrical outlet.

4. If an external monitor is on the monitor support cover, remove the monitor.

If a cable or option extends beyond the PCMCIA slots or the enhanced option slot when manually ejecting from the expansion base, the connectors in the option or in the computer may be damaged.

- 5. Ensure that nothing extends beyond the PCMCIA slot in the Compaq LTE Elite or the enhanced option slot in the Compaq LTE Lite.
- 6. Unlock the expansion base (Figure D-3).

NOTE: Unlocking the expansion base does the following:

- Unlocks the top and bottom covers.
- Electronically enables the automatic docking mechanism.
- Uncovers the manual eject override slot.

Sliding the expansion base past the edge of the table so far that it becomes unstable may result in damage to the system and the risk of personal injury.

- 7. To gain access to the manual override slot on the bottom of the expansion base, carefully slide the expansion base forward until the override slot clears the edge of the table.
- Insert a small tool (flat-bladed screwdriver, key, etc.) into the override slot and pull forward to release the eject override mechanism (Figure D-10).


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

To install the upgrade adapter on the Compaq LTE Lite Desktop Expansion Base, complete the following steps:

- 1. Turn off the expansion base.
- 2. Remove the Compaq LTE Lite monitor support cover and extender panel if installed.

To prevent possible damage to the expansion base and the upgrade adapter, turn off the expansion base before connecting the upgrade adapter.

3. Place the upgrade adapter on the flat surface of the expansion base in front of the horizontal guide latches (Figure D-11).

To prevent possible damage to the connectors on the upgrade adapter and the expansion base, apply equal pressure on both sides of the adapter and avoid tilting the adapter as you slide it into the expansion base.

 Using both hands, slide the upgrade adapter straight back into the expansion base until the 198-pin external options connector is fully seated (Figure D-11).



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.

To avoid damage to the PCMCIA connector when docking, be sure to remove any PCMCIA cards and cables that do not allow the PCMCIA compartment door to close fully.

5. Remove any cable or card that does not allow the PCMCIA compartment door to fully close.

To avoid data loss from a computer reboot, turn the computer off before docking it in the expansion base. Do not initiate Standby or Hibernation before docking.

6. Turn the computer off.

7. If the monitor support cover is being used, close the computer display.

To avoid damage to the external options connector on the expansion base or the external options door on the computer, be sure that the external options door is fully open before docking.

8. Fully slide open the external options door (Figure D-2).

Do not press on the top edge of the display when docking the computer, as this may cause damage to the display hinges.

9. Place the computer into the docking bay of the expansion base and apply even pressure below the front edge of the display (Figure D-12) to seat the 198-pin external options connector.



Figure D-12. Press Points for Docking the Computer in the Compaq LTE Lite Desktop Expansion Base

- 10. Turn on external devices that are connected to the expansion base.
- 11. Turn the system on with the power button on the expansion base.
 - NOTE: The first time you dock the computer in the expansion base or when you install new devices, the system detects a configuration change and may prompt you to run Computer Setup. Refer to Section 6.7 for more information on running Computer Setup.
 - IMPORTANT: Do not undock from the expansion base before reading the next section, "Undocking the Computer."

Undocking the Computer

To undock the Compaq LTE Elite from the Compaq LTE Lite Desktop Expansion Base, complete the following steps:

To avoid damage to the PCMCIA connector when undocking, be sure to remove any PCMCIA cards and cables that do not allow the PCMCIA compartment door to fully close.

- 1. Remove any cable or card that does not allow the PCMCIA door to fully close.
- 2. Save and close all open files.
- 3. Turn off the system by pressing the expansion base power button.

To avoid data loss from a computer reboot, be sure that the expansion base and the computer are turned off before pressing the eject button.

4. Undock the computer by pressing the eject button on the expansion base (Figure D-13).



Figure D-13. Undocking the Computer from the Compaq LTE Lite Desktop Expansion Base

5. Slide the computer out of the expansion base. Do not lift the computer up as you slide it out.

D.3 Docking The Compaq LTE ELITE In The Compaq Ministation

NOTE: The Compaq LTE Lite Family of Personal Computers cannot dock in the Compaq MiniStation/EN or the Compaq MiniStation/TR convenience base.

Docking the Computer

To dock the Compaq LTE Elite in the Compaq MiniStation/EN or the Compaq MiniStation/TR convenience base, complete the following steps:

- 1. Connect the convenience base to an electrical outlet.
- 2. Turn off and disconnect any external devices that are connected to the computer.

To avoid damage to the PCMCIA connector when docking, be sure to remove any PCMCIA cards and cables that do not allow the PCMCIA compartment door to close fully.

3. Remove any cable or card that does not allow the PCMCIA compartment door to close fully.

To avoid data loss from a computer reboot, turn the computer off before docking it in the convenience base. Do not initiate Standby or Hibernation before docking.

- 4. Turn the computer off.
- 5. Close the computer display (optional, if the monitor support cover is removed from the convenience base).

To avoid damage to the external options connector on the convenience base or the external options door on the computer, be sure that the external options door is fully open before docking.

- 6. Fully slide open the external options door or remove the input/output (I/O) connector cover (Figure D-2).
- 7. Pull the docking lever on the right side of the convenience base toward

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 Compag 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

following steps:

To avoid damage to the PCMCIA connector when undocking, be sure to remove any PCMCIA cards and cables that do not allow the PCMCIA compartment door to close fully.

- 1. Remove any cable or card that does not allow the PCMCIA door to close fully.
- 2. Save and close all open files.
- 3. Turn off the system.

To avoid data loss from a computer reboot, be sure that the system is turned off before undocking the computer.

4. Pull the docking lever toward the computer (Figure D-18).



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.

	Relative Humidity			
Event	10%	40%	55%	
Walking across carpet	======================================	======================================	======= 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.				

Table E-1. Typical Electrostatic Voltages

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 lease 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 LevelsMethodVoltagesAntistatic plastic1,500Carbon-loaded plastic7,500Metallized laminate15,000

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.

- 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.
- 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			

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).
- 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

- 4. Remove the retaining ring.
- 5. Remove the ball by tilting the display forward so that the ball falls out into your hand.
- 6. Clean the ball with an alcohol pad and dry it with a lint-free cloth.

To avoid damage to the trackball parts, clean the parts only with alcohol. Do not dip or soak the parts in the alcohol. Do not use soap, tap water, or any other solvent.

7. Remove dust, lint fibers, and build-up accumulated in the cage, rollers, or tracking posts by scrubbing with a foam swab dampened with alcohol.

G.2 Replacing The Ball

To replace the ball, complete the following steps:

- 1. Place the ball back in the ball cage.
- 2. Align the tabs on the retaining ring [1] with the notches in the ball cage [2] (Figure G-2).



Figure G-2. Aligning the Retaining Ring