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MAINTENANCE AND SERVICE GUIDE
COMPAQ ARMADA 1100 FAMILY OF PERSONAL COMPUTERS

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Chapter 1 - Product Description

Computer Features and Models

The Compaq Armada 1100 Family of Personal Computers is a line of full-featured, Pentium-based portable computers. The following models are available:

- o Compaq Armada 1110
- o Compaq Armada 1120 and Armada 1125
- o Compaq Armada 1120T

This chapter describes the model offerings and features of the computers.

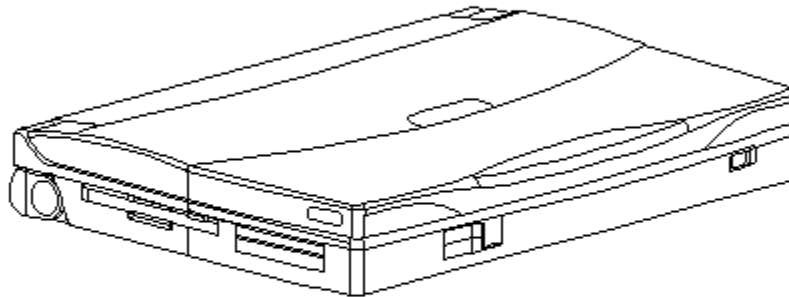


Figure 1-1. Compaq Armada 1100 Personal Computer

Models

The Compaq Armada 1100 Family of Personal Computers is available in the models shown in Table 1-1.

Table 1-1. Compaq Armada 1100 Family Models

Model	Processor	Display	Hard Drive
Armada 1110	75-MHz Pentium	10.4-inch CSTN	810 MB
Armada 1120 Armada 1125	100-MHz Pentium	10.4-inch CSTN	810 MB
Armada 1120T	100-MHz Pentium	10.4-inch CTFT	810 MB

Standard Features

The computers have the following standard features:

- o 75 or 100-MHz Pentium processors
- o 8 MB of dynamic random access memory (DRAM), expandable to 24 MB
- o 810 MB hard drive
- o 10.4-inch Color Super Twist Nematic (CSTN) or 10.4-inch Color Thin Film Transistor (CTFT) VGA displays
- o Nickel metal hydride (NiMH) battery pack
- o Full-size 101-key compatible keyboard, including 12 function keys and embedded numeric keypad
- o Integrated trackball
- o Operates from an internal battery pack or an AC adapter that is compatible with domestic or international power sources
- o Power management and security features
- o Two PCMCIA standard device sockets that will accommodate Types I, II, and III PC Cards
- o Rear panel ports provide connectors for parallel and serial ports, video out, and keyboard/mouse port

Software Fulfillment

Backup software may be ordered directly from Compaq Computer Corporation through the Compaq Order Center. In Europe backup software may be ordered using the Software Diskette Order Form which is included in the For Help... booklet. Both the model and serial numbers of the computer are needed to identify the specific software available.

For technical questions about software for the computer, contact a Compaq Technical Support Engineer. The model and serial numbers of the computer should be available before making the call.

Security Features

The computer has the following security features:

- o Ability to secure the computer to an immovable object with an optional cable lock.
- o Ability to establish power-on and setup passwords.
- o Ability to disable the following devices from the Security menu in Computer Setup: serial port, parallel port, PC Card slots, diskette drive, diskette drive boot ability.

Power Management

The computer supports three power management modes:

- o Local Standby: The ability to send individual subsystems into reduced power modes after predetermined periods of inactivity.
- o Global Standby: The ability to place all subsystems in a reduced power mode after a predetermined period of inactivity.
- o Hibernation: The ability to save the system configuration and user data to the hard disk, for restoration at a later time.

The OFF and ON states also involve power management. In the OFF state, the computer appears to be consuming no power; however, as long as there is a battery capable of supplying current, some components will be powered up, performing housekeeping tasks and waiting to be awakened. In the ON state, all systems are powered up and the unit is completely functional.

Computer Options

The options for the computer that are available from Compaq are described in the following sections.

System Memory Options

The system memory options that are available from Compaq for the computers are 8 and 16 MB memory expansion boards. The memory expansion boards are 70-ns Fast Page Mode DRAM SODIMMs, without parity. Maximum memory is 24 MB of DRAM.

The expansion memory connector is a 144-pin SODIMM socket. Either parity or non-parity SODIMMs may be used, but parity checking will not be enabled by the memory controller.

Miscellaneous Options

The following options for the computer are also available from Compaq:

- o AC Adapter
- o Automobile Adapter
- o Extended Life NiMH battery pack
- o Slipcase
- o AC power cords for international travelers

AC Adapter

The AC adapter supplies DC voltage to the system converter to operate and/or charge the installed battery pack. The adapter provides sufficient power to charge the battery pack in 1.5 hours or less with the system off, or in 3.5 hours or less with the system on. The AC adapter power specifications are presented in Chapter 7.

Automobile Adapter

The automobile adapter is used to charge the computer while traveling in an automobile. The Auto Adapter power specifications are presented in Chapter 7.

Nickel Metal Hydride Battery Pack

Nickel metal hydride battery packs are available for use with the Compaq Armada 1100 Family of Personal Computers.

External Computer Components

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

Front and Left Side Components

The front and left side external components are shown in the following figure and described in this section:

- [1] Handle bracket (2)
- [2] Keyboard tilt feet
- [3] Diskette drive
- [4] PC Card slots
- [5] Display latches (2)
- [6] PC Card release levers
- [7] Battery compartment button

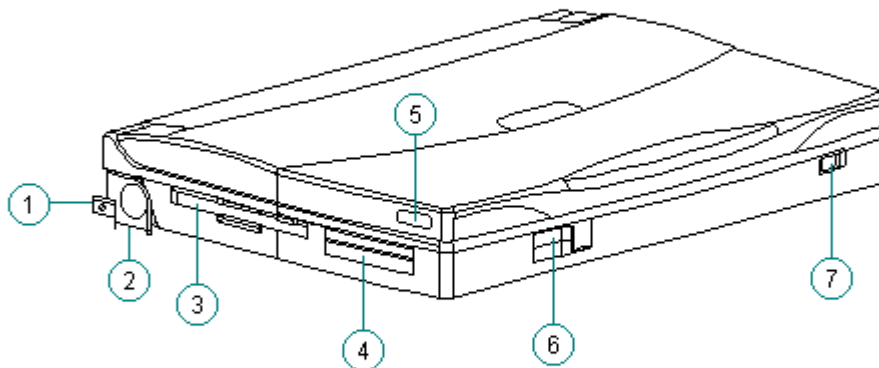


Figure 1-2. Front and Left Side Components

Rear Components

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

- [1] Power connector
- [2] Parallel connector
- [3] Serial connector
- [4] Keyboard/mouse connector
- [5] External monitor connector

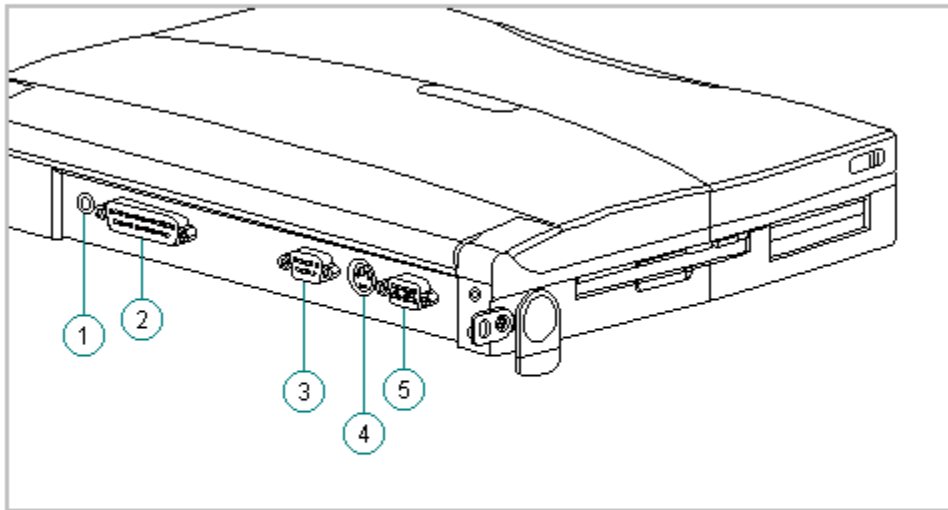


Figure 1-3. Rear Components

Bottom Components

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

- [1] Battery compartment
- [2] Memory compartment

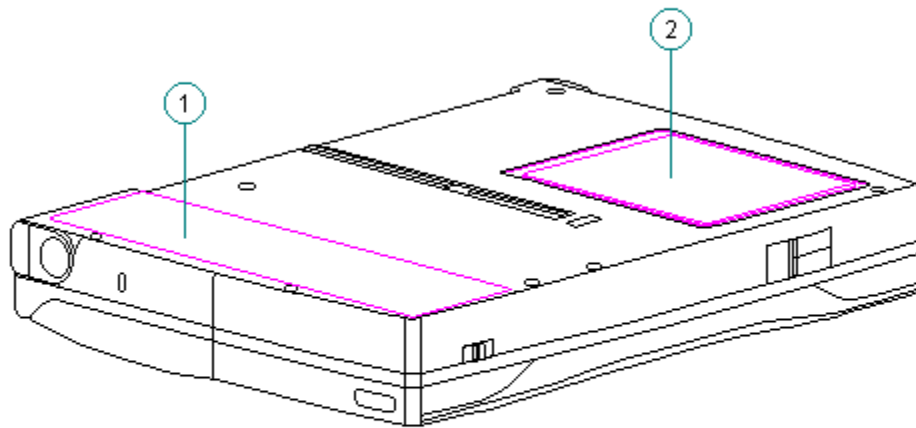


Figure 1-4. Bottom Components

Status Panel Lights

The status panel lights are shown in the following figure and are identified in this section:

- [1] Power/standby
- [2] Battery charge
- [3] Hard drive
- [4] Diskette drive
- [5] Battery gauge
- [6] Caps Lock
- [7] Scroll Lock
- [8] Num Lock

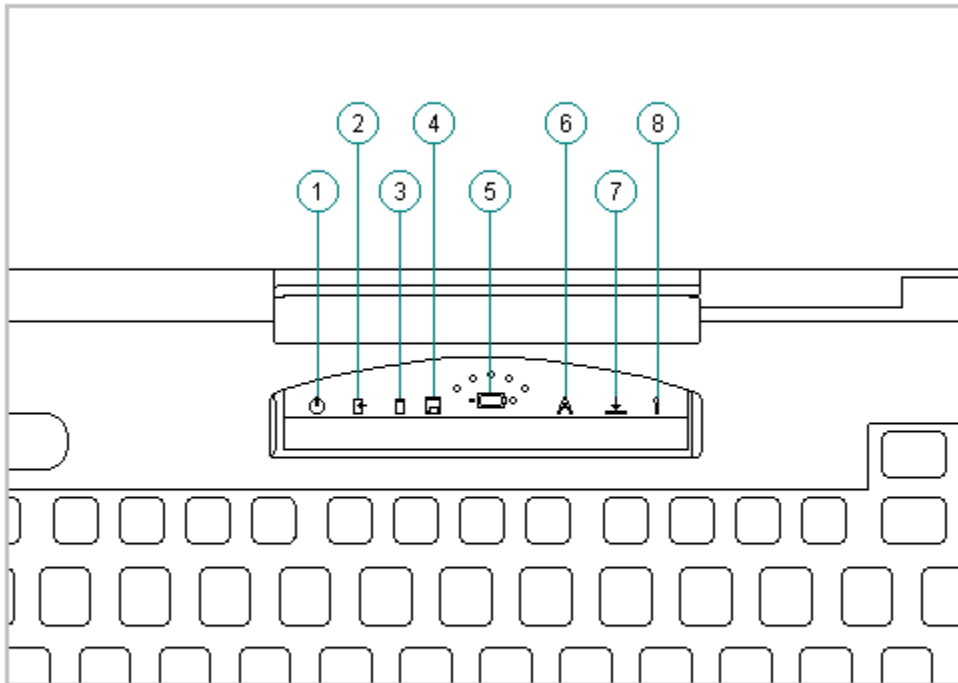


Figure 1-5. Status Panel Lights

System Design

This section provides an overview of the system design.

System Board and Processor

The OPTi-designed Viper-N Chipset provides PCI bus, ISA bus, cache controller, memory controller, and peripherals controller:

- o OPTi 82C557M System Controller
- o OPTi 82C556M Data Buffer Controller
- o OPTi 82C558E Integrated Peripherals Controller

The computer supports a 75-MHz (P54C) CPU at 50-MHz bus speed, and a 100-MHz (P54LM) CPU at 66-MHz bus speed. Bus speed and processor core voltage are configurable through resistor values at manufacturing. The processor is soldered to the system board and is not removable.

System Memory Options

The main memory subsystem supports a standard 8 MB DRAM, expandable to a maximum of 24 MB. The standard memory is soldered onto the system I/O board. Expansion memory is available in 8 or 16 MB increments.

Diskette Drive

The computer uses a standard 3.5-inch, 1.44 MB diskette drive. The system supports a single diskette drive in the computer.

Hard Drive

The computer supports an IDE hard drive. Cable select technology is employed for device 0/device 1 selection. The hard drive mounts to the system board with a hard drive bracket and connects directly to the system board. A screw secures the hard drive bracket in place.

Computer Design Overview

This section presents a brief design overview of the computer. See Chapter 3 for an overview of the system unit and the display assembly from the perspective of replacing components in the field. All replacement parts are listed in Chapter 3, and removal and replacement procedures are presented in Chapter 5.

The computer is a traditional clam shell design with a display unit and a system unit. The computer opens to reveal a backlighted LCD display and a full-sized keyboard. The display is designed to open to 135°.

System Unit

The major components of the system unit are: the CPU cover, keyboard, system board with processor, hard drive, diskette drive, memory expansion board, battery pack and compartment, integrated trackball assembly, Real-Time Clock battery, and PC Card (PCMCIA) ejector rails and components.

Display Unit

The standard video subsystem consists of one of the following internal LCD displays:

- o 10.4-inch VGA CSTN display panel
- o 10.4-inch VGA CTFT display panel

In addition, the video subsystem consists of:

- o Cirrus Viking PCI Bus Graphics Accelerator with 1 MB EDO (two 70-ns 256kx 16) VRAM
- o An inverter to supply AC power to the LCD backlight system
- o A standard external VGA connector for use with CRTs and other VGA compatible displays; also supported: external SVGA (maximum resolution 1024 x 768 x 256)
- o A flex cable connecting the system board to the LCD display and the inverter
- o 48 KB of video ROM integrated into system ROM

Chapter 2 - Troubleshooting

Introduction

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

1. Completing the preliminary steps listed in Section 2.1.
2. Running the Power-On Self-Test (POST) as described in Section 2.4.
3. Running the Computer Checkup (TEST) as described in Section 2.5.
4. Performing the recommended actions described in the diagnostic tables in Section 2.7 if you are unable to exercise POST or Computer Checkup or if the problem persists after running POST and Computer Checkup.

Adhere to the following guidelines when troubleshooting:

- o Complete the recommended actions in the order in which they are given.
- o Repeat POST and Computer Checkup after each recommended action until the problem is resolved and the error message does not return.
- o Once the problem is resolved, do not complete the remaining recommended actions.
- o Refer to Chapter 5 for any removal and replacement procedures that are recommended.

Preliminary Steps

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

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

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

NOTE: The key icon appears on the status display when the computer is turned on to indicate that QuickLock/QuickBlank has been initiated. Type the power-on password to exit QuickLock/QuickBlank. If the password is unknown, it must be cleared (see Section 2.2).

2. Run Computer Setup (Section 2.3).
3. Use the Hotkeys to adjust the brightness (Fn+F9) and contrast (Fn+F10) to the center of their ranges and leave the display open. On models with color TFT displays, contrast is not adjustable.
4. Turn off the computer and all external devices.
5. Disconnect any external devices that you do not want to test. If you want to use the printer to log error messages, leave it connected to the computer.

NOTE: If a problem only occurs when an external device is connected to the

computer, the problem could be with the external device or its cable. Isolate the problem by running POST with and without the external device connected.

6. Use Advanced Diagnostics and loopback plugs in the serial and parallel connectors if you plan to test these ports. To run Advanced Diagnostics, complete the following steps:
 - a. Insert the Diagnostics diskette into the diskette drive and turn on the computer.
 - b. At the Welcome Screen, enter Ctrl+A.
 - c. Press Enter to accept OK.
 - d. Select Computer Checkup (TEST).
 - e. Select Prompted Diagnostics after "Identifying System Hardware" completes.
 - f. Select Interactive Testing and follow the displayed instructions.
7. Ensure that the battery pack is installed in the computer and the AC adapter is connected to the computer and plugged into an AC power source.

After completing the preliminary steps, run POST (Section 2.4) and Computer Checkup (Section 2.5).

Running Computer Setup

The ROM-based Computer Setup displays the current system configuration and allows you to set system and power management parameters. These parameters are stored in CMOS, and a backup copy is saved in a parameter block in system flash ROM.

You can access Computer Setup by pressing F10 when the prompt appears after you turn on the computer. The following configuration parameters can be changed in Computer Setup:

- o Power conservation (when)
- o Power conservation (level)
- o Hibernation on/off
- o Hibernation settings
- o Warning beep
- o Setup password
- o Diskette drive disable
- o Serial ports disable
- o Parallel port disable
- o PC Card slots disable
- o Resume password on/off

- o Boot memory test
- o Keyboard numlock
- o Boot sequence
- o Boot display
- o Serial port settings
- o Parallel port settings
- o Power-on password
- o Diskette drive boot disable

To run Computer Setup, complete the following steps:

Computer Setup automatically recognizes and configures the system for new Compaq devices. It does this without prompting you for information about the devices. However, if you add a memory expansion board, a prompt appears the next time you turn on the computer, notifying you of the new memory configuration.

The first Computer Setup screen displays current settings for the system, ports, and devices. The status bar at the bottom of the screen gives instructions for navigating and choosing options. The status bar also displays descriptions as you highlight menus and menu options.

NOTE: If the main system board is replaced, the serial number on this screen changes to 0 (zero).

Select one of the menus from the menu bar at the top of the screen to view or to change the following configuration settings:

- o Initialization startup preferences
- o Ports, including serial and parallel
- o Power, including Power Management and Hibernation
- o Security, including setup and power-on passwords and device disabling

Initialization Menu

Select the Initialization menu to change the initialization (startup) settings for running the POST memory tests, numlock on or off, the drive boot sequence, and the active display.

Ports Menu

Select the Ports menu to change the default input/output (I/O) addresses and interrupt requests (IRQs) for serial and parallel ports.

NOTE: If you select conflicting settings for the ports, the system automatically changes one of the settings.

Power Menu

Select the Power menu to enable or disable Power Management, low-battery warning beeps, and an external energy-saving monitor. The factory default settings are:

- o PC Card slots
- o Diskette drive

Disabling these devices prevents the unauthorized transfer of data using the devices. To reenable a device, deselect the Disable option and restart the computer.

Exit Menu

The Exit menu has four options:

- o Save and Exit: Saves configuration changes, but some changes do not take effect until the computer is restarted.
- o Exit (No Save): Exits and does not save the changes you have made.
- o Restore Factory Defaults: Replaces the current configuration settings with the original factory default settings.

POST Error Messages

This chapter contains typical error messages that you may encounter during the power-on self-test (POST). POST is a series of tests that run every time you turn on the computer. POST verifies that the system is configured and functioning properly. A successful POST is followed by one or two short beeps.

If you receive an error message listed on the following pages, follow the recommended action. If you receive an error message that is not listed, run Computer Checkup from the Diagnostics diskette. Information about running Computer Checkup is presented later in this chapter.

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

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

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

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

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

Table 2-1. Warning Messages

Message	Description
Clock not ticking correctly	The real time clock is not ticking.
CMOS checksum invalid, run SCU	CMOS RAM information has been corrupted and needs to be reinitialized by running Computer Setup.
CMOS failure, run SCU	CMOS RAM has lost power and needs to be reinitialized by running Computer Setup.
Floppy controller failed	The diskette drive controller failed to respond to the reset command. Power down the system and check all appropriate connections. If the diskette drive controller continues to fail, you may need to replace the system board.
Floppy disk track 0 failed	The diskette drive cannot read track 0 of the diskette in the drive. Try another diskette. If the problem persists, you may need to replace the diskette drive.
Floppy information invalid, run SCU	The drive parameters stored in CMOS RAM do not match the diskette drives detected in the system. Run Computer Setup
Hard disk controller error	The hard drive controller failed to respond to the reset command. Check the drive parameters. Power down the system and check all appropriate connections.
Hardware information does not match video card, run SCU	The video adapter type specified in CMOS RAM does not match the installed hardware. Run Computer Setup
Keyboard controller failure	The keyboard failed the self-test command.
Keyboard failure	The keyboard failed to respond to the RESET ID command.
No interrupts from Timer 0	The periodic timer interrupt is not occurring.
RAM parity error at location xxxx	A RAM parity error occurred at the specified (hex) location.
ROM at xxxx (LENGTH yyyy) with nonzero checksum (zz)	An illegal adapter ROM was located at the specified address. An external adapter (such as a video card) may be causing the conflict.
Time/Date corrupt - run SCU	The time and date stored in the real time clock have been corrupted, possibly by a power loss. Run Computer Setup.
Unexpected amount of memory, run SCU	The amount of memory detected by POST does not match the amount specified in CMOS RAM. Run Computer Setup.
Hard disk xx failure (or error)	A failure or an error occurred when trying to access the hard drive.

Table 2-2. Fatal Error Messages

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

The following table lists some of the Fatal Error beep codes, along with the beep sequence (short, long, pause) and the meaning of the beeps.

Table 2-3. Fatal Error Beep Codes

Beep Code	Beep Sequence	Explanation	Remedy
0	S-S-S-P-S-S-L-P	The DMA page registers are faulty.	Replace system board.
1	S-S-S-P-S-L-S-P	The refresh circuitry is faulty.	Replace system board.
2	S-S-S-P-S-L-L-P	The ROM checksum is incorrect.	1. Flash the ROM 2. Replace system board.
3	S-S-S-P-L-S-S-P	The CMOS RAM test failed.	Replace system board.
4	S-S-S-P-L-S-L-P	The DMA controller is faulty.	Replace system board.
5	S-S-S-P-L-L-S-P	The interrupt controller failed.	Replace system board.
6	S-S-S-P-L-L-L-P	The keyboard controller failed.	Replace system board.
7	S-S-L-P-S-S-S-P	Graphics adapter is faulty.	Replace system board.
8	S-S-L-P-S-S-L-P	Internal RAM is faulty.	Replace processor board.

S = Short, L = Long, P = Pause

Compaq Diagnostics

Run the Compaq Diagnostics utilities diskette when you want to view or test system information and installed or connected devices. The Diagnostics menu includes the following utilities:

- o Computer Checkup (TEST)
- o View System Information (INSPECT)
- o Prepare Computer for a Compaq Service Call (RemotePaq)

If you have a problem you cannot solve, run the Diagnostics utilities before you call for support. Run Computer Checkup and select to save the device list to a file and to print or to save the log of errors. Run the View System Information (INSPECT) utility and select to print or to save that information. Have the files or the printed information available when you call for support.

Computer Checkup (TEST)

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

Follow these steps to run Computer Checkup:

1. Plug the computer into an external power source. (A low battery condition could interrupt the program.)
2. Turn on the external devices that you want to test. Connect the printer if you want to print a log of error messages.
3. Insert the Compaq Diagnostics diskette in drive A.
4. Turn on or restart the computer. The computer starts from drive A, and the Diagnostics Welcome screen appears.
5. Press Enter to continue. The Diagnostics menu appears.
6. Select Computer Checkup from the Diagnostics menu. A Test Option menu appears.
7. Select "View the Device List" from the Test Option menu. A list of the installed Compaq devices appears.
8. If the list of installed devices is correct, select OK. The Test Option menu appears.

NOTE: If the list is incorrect, ensure that any new devices are installed properly.

9. Select one of the following from the Test Option menu:
 - o Quick Check Diagnostics. Runs a quick, general test on each device with a minimal number of prompts. If errors occur, they display when the testing is complete. You cannot print or save the error messages.
 - o Automatic Diagnostics. Runs unattended, maximum testing of each device with minimal prompts. You can choose how many times to run the tests, to stop on errors, or to print or save a log of errors.
 - o Prompted Diagnostics. Allows maximum control over testing the devices. You can choose attended or unattended testing, decide to stop on errors, or choose to print or save a log of errors.
10. Follow the instructions on the screen as the devices are tested. When testing is complete, the Test Option menu appears.
11. Exit the Test Option menu.
12. Exit the Diagnostics menu.

View System Information (INSPECT)

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

Follow these steps to run INSPECT from the Compaq Diagnostics diskette:

1. Turn on the external devices that you want to test. Connect the printer if you want to print the information.
2. Insert the Compaq Diagnostics diskette into drive A.
3. Turn on or restart the computer. The computer starts from drive A, and the Diagnostics Welcome screen appears.
4. Press Enter to continue. The Diagnostics menu appears.
5. Select View System Information (INSPECT) from the Diagnostics menu.
6. Select the item you want to view from the following list:

```

=====
System                Memory
=====
ROM                   Audio

Keyboard              Operating system

System ports          System files

System storage        Windows files

Graphics
=====

```

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

RemotePaq

This utility is only available in certain geographical areas and requires a modem. It allows a Compaq reseller or service provider to automatically run diagnostics on the computer.

To run RemotePaq, follow these steps:

1. Insert the Compaq Diagnostics diskette into drive A.
2. Turn on or restart the computer. The computer starts from drive A, and the Diagnostics Welcome screen appears.
3. Press Enter to continue. The Diagnostics menu appears.
4. Select Prepare Computer for a Compaq Service Call (RemotePaq).
5. Follow the instructions on screen.

Diagnostic Error Codes

Diagnostic error codes occur if the system recognizes a problem while running the Compaq Diagnostic program. These error codes help identify possibly defective subassemblies.

Tables 2-4 through 2-13 list possible error codes, a description of the error condition, and the action required to resolve the error condition.

IMPORTANT: Retest the system after completing each step. If the problem has been resolved, do not proceed with the remaining steps.

For assistance in the removal and replacement of a particular subassembly, see Chapter 5, "Computer Removal and Replacement Procedures."

Table 2-4. Processor Test Error Codes

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

113 - xx	Protected mode test failed	
114 - 01	Speaker test failed	<ol style="list-style-type: none"> 1. Check system configuration. 2. Verify cable connections to speaker. 3. Replace the system board and retest.

Table 2-5. Memory Test Error Codes

Error Code	Description	Recommended Action
200 - xx	Memory machine ID test failed	The following steps apply to error codes 200 - xx and 202 - xx:
202 - xx	Memory system ROM checksum failed	<ol style="list-style-type: none"> 1. Flash the system ROM and retest. 2. Replace the system board and retest.
203 - xx	Write/Read test failed	The following steps apply to error codes 203 - xx through 215 - xx:
204 - xx	Address test failed	<ol style="list-style-type: none"> 1. Remove the memory module and retest. 2. Install a new memory module and retest.
211 - xx	Random pattern test failed	
214 - xx	Noise test failed	
215 - xx	Random address test failed	

Table 2-6. Keyboard Test Error Codes

Error Code	Description	Recommended Action
300 - xx	Failed ID Test	The following steps apply to error codes 300 - xx through 304 - xx:
301 - xx	Failed Self-test/Interface Test	<ol style="list-style-type: none"> 1. Check the keyboard connection. If disconnected, turn off the computer and connect the keyboard. 2. Replace the keyboard and retest.
302 - xx	Failed Individual Key Test	<ol style="list-style-type: none"> 3. Replace the system board and retest.
304 - xx	Failed Keyboard Repeat Test	

Table 2-7. Parallel Printer Test Error Codes

Error Code	Description	Recommended Action
401 - xx	Printer failed or not connected	The following steps apply to error codes 401 - xx through 403 - xx:
402 - xx	Failed Port Test	1. Connect the printer. 2. Check power to the printer.
403 - xx	Printer pattern test failed	3. Install the loopback connector and retest. 4. Check port and IRQ configuration. 5. Replace the system board and retest.

Table 2-8. Diskette Drive Test

Error Code	Description	Recommended Action
600 - xx	Diskette ID drive types test failed	The following steps apply to error codes 600 - xx through 698 - xx:
601 - xx	Diskette format failed	1. Replace the diskette media and retest.
602 - xx	Diskette read test failed	2. Check and/or replace the diskette power and signal cables and retest. 3. Replace the diskette drive and retest.
603 - xx	Diskette write, read, compare test failed	4. Replace the system board and retest.
604 - xx	Diskette random read test failed	
605 - xx	Diskette ID media failed	
606 - xx	Diskette speed test failed	
609 - xx	Diskette reset controller test failed	
610 - xx	Diskette change line test failed	
697 - xx	Diskette type error	
698 - xx	Diskette drive speed not within limits	
699 - xx	Diskette drive/media ID error	1. Replace media. 2. Run the Configuration and Diagnostics Utilities.

Table 2-9. Serial Test Error Codes

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

Table 2-10. Hard Drive Test Error Codes

Error Code	Description	Recommended Action
1701 - xx	Hard drive format test failed	The following steps apply to error codes 1701 - xx through 1736 - xx:
1702 - xx	Hard drive read test failed	1. Run the Diagnostics Utilities and verify drive type.
1703 - xx	Hard drive write/read/compare test failed	2. Replace the hard drive and retest. 3. Replace the system board and retest.
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	
1715 - xx	Hard drive head select test failed	
1716 - xx	Hard drive conditional format test failed	
1717 - xx	Hard drive ECC * test failed	
1719 - xx	Hard drive power mode test failed	
1724 - xx	Network preparation test failed	
1736 - xx	Drive monitoring test failed	

* ECC = Error Correction Code

Table 2-11. Video Test Error Codes

Error Code	Description	Recommended Action
501 - xx	Video controller test failed	The following apply to error codes 501 - xx through 516 - xx:
502 - xx	Video memory test failed	1. Disconnect external monitor and test with internal LCD display.
503 - xx	Video attribute test failed	2. Replace the display assembly and retest.
504 - xx	Video character set test failed	3. Replace the system board and retest.
505 - xx	Video 80 x 25 mode 9 x 14 character cell test failed	
506 - xx	Video 80 x 25 mode 8 x 8 character cell test failed	
507 - xx	Video 40 x 25 mode test failed	
508 - xx	Video 320 x 200 mode color set 0 test failed	
509 - xx	Video 320 x 200 mode color set 1 test failed	
510 - xx	Video 640 x 200 mode test failed	
511 - xx	Video screen memory page test failed	
512 - xx	Video gray scale test failed	
514 - xx	Video white screen test failed	
516 - xx	Video noise pattern test failed	

Error Code	Description	Recommended Action
2402 - xx	Video memory test failed	The following steps apply to error codes 2402 - xx through 2456 - xx:
2403 - xx	Video attribute test failed	1. Run the Configuration and Diagnostics Utilities.
2404 - xx	Video character set test failed	2. Replace the display assembly and retest.
2405 - xx	Video 80 x 25 mode 9 x 14 character cell test failed	3. Replace the system board and retest.
2406 - xx	Video 80 x 25 mode 8 x 8 character cell test failed	
2408 - xx		
2409 - xx	Video 320 x 200 mode color set 1 test failed	
2410 - xx	Video 640 x 200 mode test failed	
2411 - xx	Video screen memory page test failed	
2412 - xx	Video gray scale test failed	
2414 - xx	Video white screen test failed	
2416 - xx	Video noise pattern test failed	
2418 - xx	ECG/VGC memory test failed	

Error Code	Description	Recommended Action
2419 - xx	ECG/VGC ROM checksum test failed	The following steps apply to error codes 2402 - xx through 2456 - xx:
2421 - xx	ECG/VGC 640 x 200 graphics mode test failed	1. Run the Diagnostics Utilities.
2422 - xx	ECG/VGC 640 x 350 16 color set test failed	2. Disconnect external monitor and retest with internal LCD monitor.
2423 - xx	ECG/VGC 640 x 350 64 color set test failed	3. Replace the display assembly and retest.
2431 - xx	640 x 480 graphics test failure	4. Replace the system board and retest.
2432 - xx	320 x 200 graphics (256 color mode) test failure	
2448 - xx	Advanced VGA Controller test failed	
2451 - xx	132-column Advanced VGA test failed	
2456 - xx	Advanced VGA 256 Color test failed	
2458 - xx	Advanced VGA BitBLT test	Replace the system board and retest.
2468 - xx	Advanced VGA DAC test	
2477 - xx	Advanced VGA data path test	
2478 - xx	Advanced VGA BitBLT test	
2480 - xx	Advanced VGA Linedraw test	

Table 2-12. Audio Test Error Codes

Error Code	Description	Recommended Action
3206 - xx	Audio System Internal Error	Replace the system board and retest.

Table 2-13. Pointing Device Interface Test Error Codes

Error Code	Description	Recommended Action
8601 - xx	Mouse test failed	The following steps apply to 8601 - xx and 8602 - xx:
8602 - xx	Interface test failed	1. Replace the Pointing Device and reset. 2. Replace the system board and retest.

Troubleshooting without Diagnostics

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

- o Audio
- o Memory
- o Battery/Battery gauge
- o PC Card
- o Diskette/Diskette drive
- o Power
- o Hard drive
- o Printer
- o Hardware installation
- o Screen (LCD and CRT)
- o Keyboard (Numeric keypad)
- o Software
- o Pointing device

Solving Minor Problems

Some minor problems and possible solutions are outlined in the following tables. If the problem appears related to a software application, check the documentation provided with the software.

Solving Audio Problems

Some common audio problems and solutions are listed in the following table.

Table 2-14. Solving Audio Problems

Problem	Probable Cause	Solution(s)
Computer beeps once after you turn it on.	This is typical; it indicates successful completion of the Power-On Self-Test (POST).	No action is required.
Computer does not beep after the Power-On Self-Test (POST).	Speaker volume is off or has been turned down. Beeps have been turned off.	If the speaker icon is not displayed on the status panel, Press Fn+F5 to turn the speaker on, then adjust the volume. Run Computer Setup and turn on beeps.

Solving Battery and Battery Gauge Problems

Some common causes and solutions for battery problems are listed in the following table. The "Solving Power Problems" section in this chapter also may be applicable.

Table 2-15. Solving Battery and Battery Gauge Problems

Problem	Probable Cause	Solution(s)
Computer won't turn on when battery pack is inserted and power cord is unplugged.	Battery is discharged.	<p>Connect the computer to an external power source and charge the battery pack.</p> <p>Replace the battery pack with a fully charged battery pack.</p> <p>Check the battery connectors on the system board to verify they are evenly spaced and that they are not bent or broken.</p>
Computer is beeping and battery light is blinking.	Battery charge is low.	<p>Immediately save any open file(s). Then do any one of the following:</p> <ul style="list-style-type: none"> o Connect the computer to an external power source to charge the battery pack. o Initiate Standby and replace the battery pack with a fully charged battery pack. o Turn the computer off or initiate Hibernation until you can find another power source or charge the battery pack.
Computer battery light blinks to indicate low battery condition, but computer does not beep.	Low battery beeps were turned off.	Run Computer Setup to turn on the low battery warning beeps.
	Volume is turned off or turned down too low.	Press Fn+F5 to turn the speaker on and then adjust the volume.

Problem	Probable Cause	Solution(s)
Battery light doesn't light and battery pack won't fast charge.	Battery pack is already charged.	No action is necessary.
	Battery pack was exposed to temperature extremes.	Allow time for the battery pack to return to room temperature.
	Battery pack is at end of its life.	Replace battery pack.
You have to set the date and time every time you turn on the computer.	Auxiliary battery charge is low, or the auxiliary battery is at end of its life.	Provide power to the computer (AC or battery). Replace the RTC (lithium) battery.
	Battery is being exposed to high temperatures or extremely cold temperatures.	Keep the battery pack within the recommended temperature ranges: Operating: 50oF to 104oF (10oC to 40oC) Storage: -4oF to 86oF (-20oC to 30oC). Recharge the battery pack.
Battery charge does not last as long as expected.	Battery has partially self-discharged.	Recharge the battery. Discharge the battery completely and then recharge it.
	Power management is disabled.	Set a power management level in Computer Setup.
	An external device or PC Card is draining the battery.	Turn off or disconnect external devices when not using them.
Battery pack is warm to the touch after charging.	Normal warming has occurred due to charging.	No action is required.
Battery gauge is inaccurate.	The battery pack is new or has not been used for a long period.	Fully charge the battery pack until the battery light on the computer turns off.
		Condition the battery pack by fully charging, then fully discharging, and then fully recharging. If condition persists, replace the battery. If the battery gauge is still inaccurate, replace the system board.

Battery pack operating time is far less than the documented average operating time.	Power management is turned off or disabled.	Enable power management in Computer Setup and in Windows Power Properties. The power management icon should be visible on the status panel.
	An external device or PC Card is draining the battery.	Turn off or disconnect external devices when not using them.
	Battery pack has partially self-discharged.	Condition the battery pack by fully charging, fully discharging, then fully recharging it. To maintain the charge, leave battery packs in the computer when it is connected to external power. If the computer is disconnected from external power for more than two weeks, remove battery packs from the computer to reduce the discharge rate.

Problem	Probable Cause	Solution(s)
	Battery pack is being exposed to high temperatures or extremely cold temperatures.	Keep the battery pack within the recommended temperature ranges. operating: 50oF to 104oF (10oC to 40oC) storage: -4oF to 86oF (-20oC to 30oC). Recharge the battery pack.

Solving Diskette and Diskette Drive Problems

Some common causes and solutions for diskette and diskette drive problems are listed in the following table.

Table 2-16. Solving Diskette and Diskette Drive Problems

Problem	Probable Cause	Solution(s)
Diskette drive icon does not turn on.	Diskette drive is not installed properly.	Remove the diskette drive and install it properly.
Diskette drive icon stays on.	Diskette is damaged.	Run SCANDISK on the diskette. At the system prompt, enter SCANDISK A:
	Diskette is incorrectly inserted.	Remove diskette and reinsert.
	Software program is damaged.	Check the program diskettes.
Diskette drive cannot write to a diskette.	Diskette is write-protected.	Disable the diskette's write-protect feature or use a diskette that is not write-protected.
	Computer is writing to the wrong drive.	Check the drive letter in the path statement.
	Not enough space is left on the diskette.	Use another diskette.
	Drive error has occurred.	Run Computer Checkup from the Compaq Diagnostics diskette.
	Diskette is not formatted.	Format the diskette. At the system prompt, enter FORMAT A:
Diskette drive cannot read a diskette.	The wrong type of diskette is being used.	Use the type of diskette required by the drive.
	Diskette has a bad sector.	Copy files to hard drive or another diskette. Reformat bad floppy.
	Drive error has occurred.	Run Computer Checkup from the Compaq Diagnostics diskette.
	Diskette is not formatted.	Format the diskette. At the system prompt, enter FORMAT A:
Cannot boot from diskette	Bootable diskette is not in drive A	Put the bootable diskette in drive A.
	Diskette Boot is disabled in Computer Setup.	Run Computer Setup and enable Diskette Boot on the Initialization menu.

Solving Keyboard/Numeric Keypad Problems

Some common causes and solutions for keyboard/numeric keypad problems are listed in the following table.

Table 2-19. Solving Keyboard/Numeric Keypad Problems

Problem	Probable Cause	Solution(s)
Embedded numeric keypad on computer keyboard is disabled.	Num Lock function is not enabled.	Press the Fn+NumLk keys to enable the Num Lock function and embedded numeric keypad. The Num Lock icon on the status panel turns on.
Embedded numeric keypad is disabled and Num Lock function is on.	External numeric keypad is connected to the computer.	Disconnect the external numeric keypad from the computer.
Keyboard is locked.	You initiated QuickLock.	Enter your password to exit QuickLock.

Solving Pointing Device Problems

Some common causes and solutions for trackball and mouse problems are listed in the following table.

Table 2-20. Solving Pointing Device Problems

Problem	Probable Cause	Solution(s)
External pointing device does not work.	The device driver is not installed in Windows.	Install the device driver in Windows.
Integrated pointing device does not work.	An external pointing device is connected and the system has disabled the internal pointing device.	Initiate Standby and disconnect the external pointing device.

Solving Memory Problems

Some common causes and solutions for memory problems are listed in the following table.

Table 2-21. Solving Memory Problems

Problem	Probable Cause	Solution(s)
Memory count during Power-On Self-Test (POST) is incorrect.	Optional memory expansion card is installed incorrectly, is incompatible with the computer, or is defective.	Ensure that the optional memory expansion card is installed correctly.
"Out of Memory" message is displayed on the screen or insufficient memory error occurs during operation.	System ran out of memory for the application. Too many TSR (terminate and stay resident) applications are running.	Check the application documentation for memory requirements. Install additional memory. Remove from memory any TSR applications that you do not need.

Solving PC Card Problems

Some common causes and solutions for PC Card problems are listed in the following table.

Table 2-22. Solving PC Card Problems

Problem	Probable Cause	Solution(s)
PC Card error messages appear when the computer is turned on.	The PC Card slot is disabled.	Run Computer Setup and enable the PC Card slots on the Security Menu.
When turned on, the computer does not beep when a PC Card is inserted.	Card is not inserted properly.	Ensure the card is inserted in the correct orientation.
	PC Card beeps are disabled.	Double-click the PC Card icon in the Control Panel, click the Global Settings tab, the enable PC Card sound effects.
	Speaker is turned off.	Press Fn+F5 to turn the speaker on.
	PC Card drivers are not installed.	Double click the Add New Hardware icon in the Control Panel for installation instructions. If PC Card or drivers are not compatible with Windows 95, install drivers and use the PC Card in MS-DOS mode.
	The PC Card slots are disabled.	Run Computer Setup and then select the Security menu to enable PC Card slots.
	Card or card driver is not supported.	Contact your Compaq authorized service provider for a list of PC Cards tested successfully in Compaq PC Card platforms.
The PC Card drivers (Socket Services, Card Services, Card ID) fail with error messages when the computer is turned on.	The PC Card slot is disabled.	Run Computer Setup and select the Security menu to enable PC Card slots.

PC Card modem, fax, or network card does not work.	Card is not fully inserted into the slot or is not inserted properly.	Ensure the card is inserted in the correct orientation.
	Telephone cord is not plugged in all the way.	Check and secure telephone connection.
	Necessary drivers are not installed (turned on).	Install drivers.
PC Card modem or fax card does not work.	You are trying to access the card using the wrong COM port.	Right click My Computer on the Windows desktop. Left click Properties, then Device Manager, and double-click Port Settings to view the COM port settings.
	The card conflicts with a serial device.	
	The card is not supported.	Use supported cards only.
Modem network PC Card does not work.	Network driver is not installed or is not set up properly.	Install driver.
	Telephone cord is not properly connected.	Verify telephone connection.
Memory or storage card does not work.	SRAM and flash memory cards require the memory card driver to be loaded (turned on).	Install driver.
	Flash memory cards require the Microsoft FlashFile System to be loaded.	
	Hard drives on flash mass storage cards require the PC Card ATA driver to be loaded.	
	You are trying to access the hard drive card using the wrong drive letter.	Double-click My Computer to verify the drive letter assigned to the card.
	The card is not supported.	Check the list of PC Cards tested successfully in Compaq PC Card platforms.

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Solving Power Problems

Also see "Solving Battery and Battery Gauge Problems" in this chapter.

Table 2-23. Solving Power Problems

Problem	Probable Cause	Solution(s)
Computer won't turn on and battery pack is not inserted.	Computer is not connected to a power source.	Insert battery or connect an external power source.
	Power cords to the external power source are unplugged.	Ensure that power cords connecting the computer and the external power source are plugged in properly.
	System board is defective.	<ol style="list-style-type: none">1. See section "Measuring Power Signals" to check for proper voltages.2. Replace system board and restart.
Computer turned off while it was left unattended and the power icon is off.	System initiated Hibernation due to a critical low-battery condition.	Replace the battery pack with a fully charged battery pack or connect the computer to an external power source. Then turn on the computer.
	System initiated Hibernation after a preset timeout.	Turn on the computer.
Computer initiated Standby automatically or turned off automatically.	The unit temperature was exceeded.	Computer is in an exceedingly hot environment. Let the computer cool down.

Measuring Power Signals

The following power signals can be measured on the top side of the PCA.

VDD (+5V)	Across Tantalum CAPs C574, C573
+3.3V	Across Tantalum CAPs C578, C575
VCPU (3.3V on -001 and 2.9V on -002)	Across Tantalum CAPs C572, C571, C570, and C569
VBAT	At Fuse F1
+12V	Across CAP C522, near PCMCIA connector

VCC1 can be measured at Pin 28 of U539.

Solving Printer Problems

If you experience problems printing, run a printer self-test. Refer to the documentation provided with your printer for instructions. If the self-test fails, it is a printer-specific problem. Also refer to the printing section of your application documentation.

Table 2-24. Solving Printer Problems

Problem	Probable Cause	Solution(s)
Printer will not turn on.	The signal cable may not be connected properly, or the printer is unplugged.	Ensure that the signal cable is properly connected and that the power cord is connected to the electrical outlet.
Printer will not print.	Printer is not turned on or is off line.	Turn the printer on and set it to online.
	The device drivers for your application are not installed.	Refer to the printer documentation to Install the correct printer driver.
	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.
	Paper tray is empty.	Fill the paper tray with paper and set the printer to on line.

Printer prints garbled information.

Correct printer drivers are not installed.

Refer to the printer documentation to Install the correct printer driver.

Cable is not connected properly.

Ensure that the printer signal cable is properly connected to the computer.

Cable is defective.

Replace the printer cable and retest.

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Solving Screen Problems

This section lists some common causes and solutions for computer display and external monitor problems.

IMPORTANT: Verify that the display jumpers are set properly for the display before proceeding with any troubleshooting.

You can perform a monitor self-test on an external VGA color or monochrome monitor by disconnecting the monitor from the computer. To do so, 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 2-25. Solving Screen Problems

Problem	Probable Cause	Solution(s)
Characters are dim.	The brightness or contrast (if applicable) control is not set properly.	Adjust the control(s) on the right side of the computer display.
	Computer screen is in direct light.	Tilt the display or move computer.
Screen is blank.	You initiated QuickLock/QuickBlank.	Enter the password to exit QuickLock/QuickBlank.
	You may have another screen blanking utility installed.	Press any key and/or enter your password.
	Screen save was initiated after the Power Management timeout period of inactivity	Press any key or click the mouse.
	If an STN screen is used, brightness/contrast needs adjusting.	Use the control on the display to adjust the brightness/contrast.
	Standby was initiated.	Press the standby button to exit Standby.
Computer screen is blank and the screen on an external monitor displays information.	Display was switched to the external monitor.	Press the Fn+F4 hotkey to display information on the computer screen.
Garbled characters on internal display or flashing internal display when connected to external monitor.	You are using 800 x 600 or higher resolution on external display and have toggled back to internal display, which only supports 640 x 480 resolution.	Restart your computer. If simultaneous display is desired, use 640 x 480 resolution.
The image on the external monitor does not fill the screen.	You are using an external monitor and simultaneously displaying an image on the computer display.	This is typical; no action is required.
Small red, green, or blue spots appear on the computer TFT display.	Small spots, called on-pixels, often appear on TFT screens. Compaq limits the number of these on-pixels to 0.003 percent of the approximately 1 million transistors that are on a 10.4-inch display.	This is typical; no action is required.

Solving Software Application Problems

Most software application or installation problems occur as a result of one or more of the following:

- o The application was not installed correctly.
- o The CONFIG.SYS file was not configured correctly.
- o Memory was not allocated correctly.
- o The AUTOEXEC.BAT file was not edited correctly.
- o A conflict exists between applications.

Table 2-26. Solving Software Application Problems

Problem	Probable Cause	Solution(s)
Cannot use an application.	The application has not been added to the PATH statement.	Run the program with the full path name.
Insufficient memory to run application.	System ran out of memory for the application.	Check the application documentation for memory requirements. Install additional memory.
	Too many TSR (terminate and stay resident) applications are running.	Remove from memory any TSR applications that you do not need.

Chapter 3 - Illustrated Parts

Introduction

This chapter provides an illustrated parts breakdown and a reference for spare part numbers for the Compaq Armada 1100 Family of Personal Computers.

The computer combines a display assembly and system unit module. The display and system unit module are joined together by clutches on either side, which are secured by screws in the chassis and display enclosure, and which allow the display to open and close. The system unit module is secured to the CPU base by screw locks in the rear and screws in the bottom of the system unit enclosure. The display assembly is secured by screws installed in the front bezel of the display enclosure.

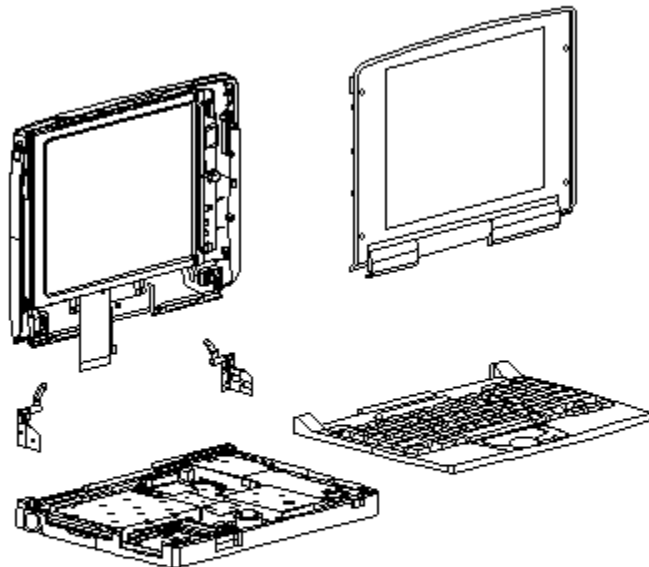


Figure 3-1. Display Assembly, Keyboard Assembly, and CPU Base

System Unit Module Overview

The system unit module (Figure 3-2) contains the following major components:

- o Hard drive - The hard drive mounts to the system chassis with a hard drive bracket and connects directly to the system board with no intervening cables. The hard drive bracket attaches to the hard drive with four screws. The drive is protected by an insulator between the system board and the drive.
- o Memory expansion board - System memory can be upgraded with an optional memory expansion board. An expansion board is added or replaced from the bottom of the computer through the memory compartment cover. The memory expansion board connects directly to the system board with one connector.
- o Battery pack - The nickel metal hydride battery pack is accessed through the battery compartment.
- o Integrated trackball assembly - The optical trackball is centrally located at the bottom of the keyboard assembly. The assembly consists of the trackball, retaining ring, and connector. The trackball assembly connects directly to the system board and is secured by two screws.
- o System board with processor - The system board is mounted directly to the system chassis. All removable components connected to the system board, except for the PC Card rails, EMI clip, and heatspreader must be removed prior to removing the system board. The processor is soldered to the system board and is not removable. It is covered by a heatspreader designed to dissipate heat generated by the processor. There is a bottom heatsink on the chassis, beneath the system board and the processor. A spare parts kit containing a replacement system board comes with the processor and heatspreader built on it. A chassis spare parts kit includes the bottom heatsink.
- o PC Card rails - The PC Card rails are replaceable and are secured by two screws from the bottom of the system board and a clip on top of the rails. The header attaches directly to the system board and cannot be removed. The top and bottom PC Card ejection levers are replaceable.
- o Real-Time Clock Battery - The battery is located in the left corner at the rear of the computer.
- o Diskette drive - The diskette drive attaches to the system board by a bracket and three screws; the bracket also attaches to the heatspreader with two screws. The drive is connected by a diskette drive cable and LIF connector. The bracket attaches to the drive with four screws. The drive is protected by an insulator between the system board and the drive.

The memory expansion board and battery pack are accessed from the bottom of the computer. To service the remaining system unit module components, the keyboard assembly must be removed. A complete list of replaceable parts is included in Table 3-1.

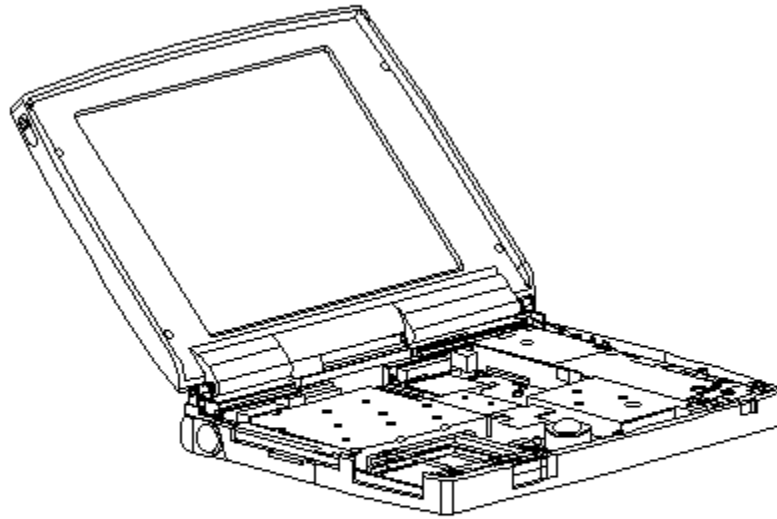


Figure 3-2. System Unit Module

Display Assembly Overview

All display assemblies (Figure 3-3) include the following replaceable parts:

- o Bezel
- o Enclosure latches
- o Liquid crystal display (LCD) panel
- o Shield
- o Enclosure
- o Display cable
- o Display ground cable
- o Inverter board
- o Clutches

The display cable is a prefolded, flex cable that connects to the display inverter board with a low insertion force (LIF) connector. The other end of the display cable is exposed at the bottom of the display enclosure and connects to the system board with a zero insertion force (ZIF) slide connector. The cable connects to the display panel directly on the CTFT model and through a crossover PCA on the CSTN models.

The display ground cable connects to the display shield on one end, and the other end clips to the flex ground bracket located above the serial port between the system board and system chassis.

The display inverter board is aligned to the right of the display enclosure with pins. One end connects to the display cable; the other end connects to the backlight cable of the LCD panel.

To replace the display assembly, the assembly must be removed from the system unit module. This is done by removing the keyboard assembly, disconnecting the display cable and display ground cable from the system unit module, removing the tilt feet and handle brackets, removing the rear clutch screws, and lifting off the display assembly.

To service display components, do not remove the display assembly from the system unit module (unless replacement of the display enclosure or clutch is required). Access display components (inverter board or latches) by removing the bezel secured with four screws on the front of the display.

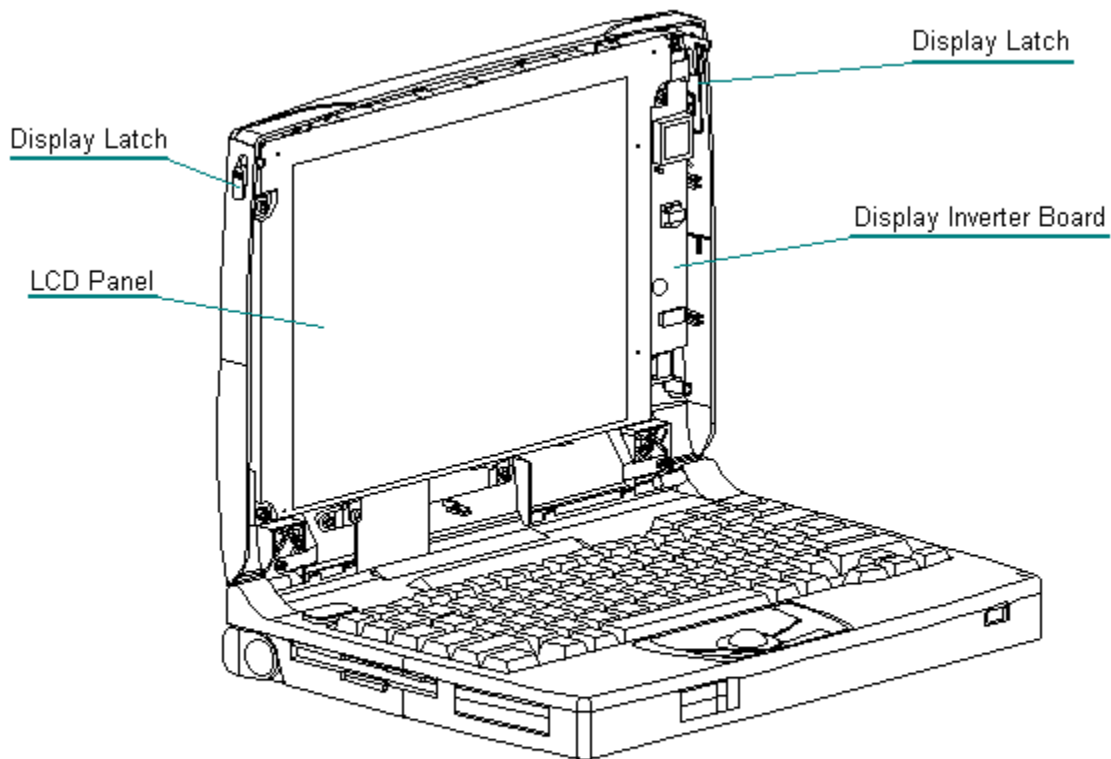


Figure 3-3. Display Assembly

System Unit Module Parts

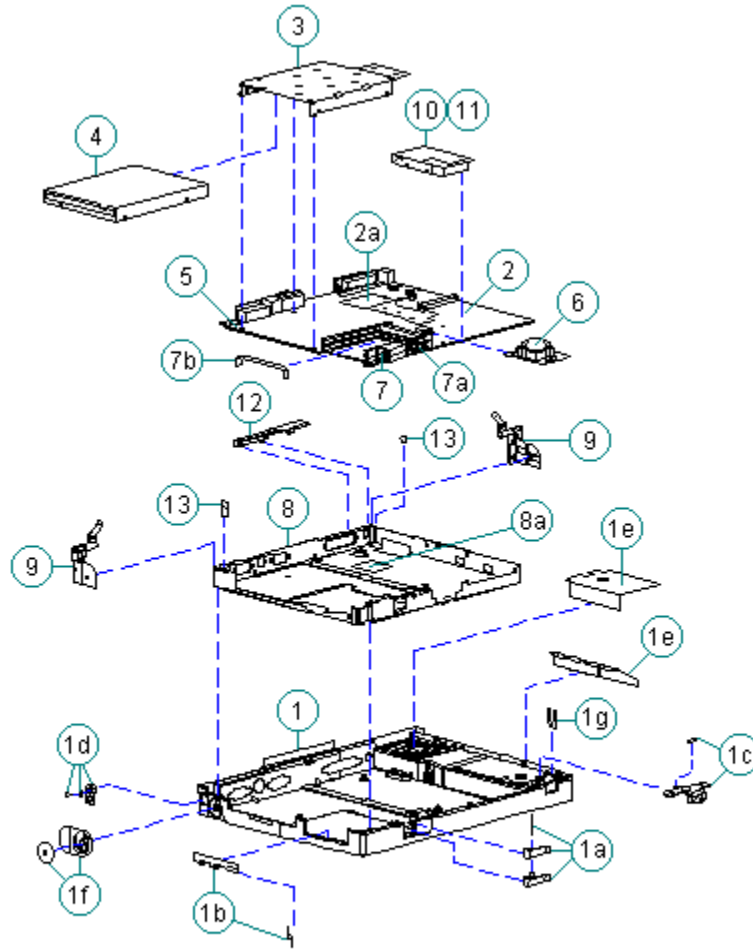


Figure 3-4. System Unit Module Parts

Table 3-1. System Unit Module

Description	Spare Part Number	Notes
1. Base enclosure	262492-001	Includes: a. PC Card eject levers and pin b. bottom PC Card door and spring c. battery latch button and spring d. handle bracket, screws, and washers e. battery shield, insulator f. tilt foot and screws g. battery clip h. battery warning label * i. lock plate * j. label - A2860E, Service * k. label - AY2860F, Service *

2. System board		Includes:
- with 75 MHz processor	262406-001	a. heatspreader plate
		b. diskette drive and hard drive insulators *
- with 100 MHz processor	262407-001	c. EMI gasket *
		d. heatspreader clip *
		e. heatspreader screws *

3. Diskette drive bracket	189240-001	

4. Diskette drive	147963-001	Includes:
		a. label *
		b. battery clip, spring, spacer assembly *
		c. sleeve, 4x4 floppy *

5. Real-time clock battery	117099-001	Includes Read this First card *

6. Optical trackball	189197-001	

7. PC Card ejection assembly	189242-001	Includes the following:
		a. rails
		b. clip
		c. screws *

8. Chassis	262493-001	Includes:
		a. bottom heatsink assembly
		b. battery clip *

9. Clutches	147858-001	Includes:
		a. Left and right clutches
		b. handle bracket screws and washers
		c. tilt foot screws

10. Hard drive 810 MB	262468-001	

11. Hard drive bracket	147872-001	

12. Trough	189262-001	

13. Left and right clutch ground clips	189262-001 (Miscellaneous hardware kit)	See Table 3-11 for contents of Miscellaneous/hardware kit

14. Memory expansion board *		
8 MB	220584-001	Includes Tamper Evident labels *
16 MB	220585-001	

15. NiMH battery pack *	190626-001	Includes Battery Installation card *

16. Screws kit * (See Table 3-12 for contents and where used matrix.)	147885-001	

* Not Shown

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Color STN (10.4 in) Display Assembly Parts

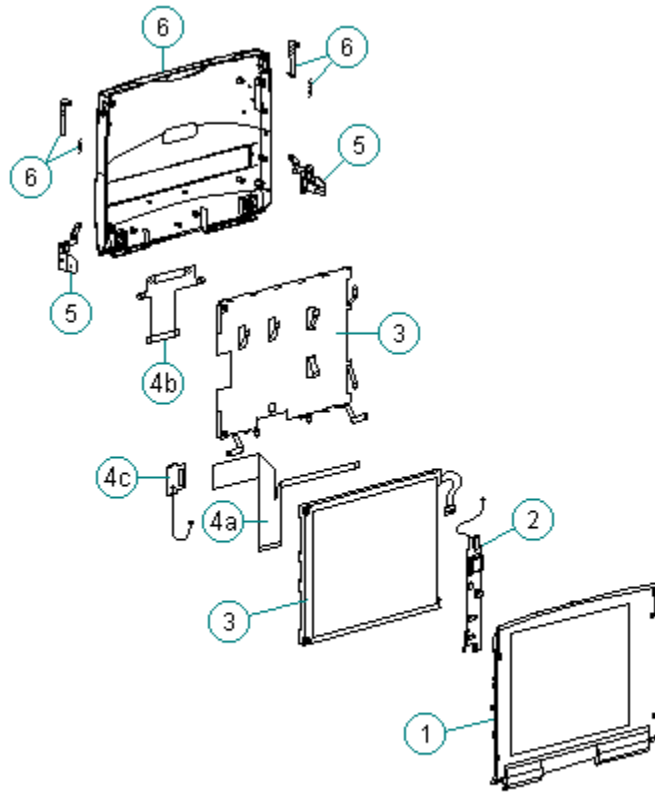


Figure 3-5. CSTN (10.4 in) Display Assembly Parts

Table 3-2. CSTN (10.4 in) Display Assembly

Description	Spare Part Number	Notes
1. Display bezel	189246-001	
2. Backlight inverter board	189135-001	Includes Caution, High Voltage label
3. Display panel	262466-001	Includes: shield display shipping box assembly, Read This First card, and cable depressor *
4. Display cables with XOVER board	262494-001	Includes: a. display cable b. display ground cable c. XOVER board
5. Display clutch (left and right)	147858-001	Includes screws and washers for handle bracket, and screws for tilt feet *

6. Display enclosure 189245-001

Includes:
left and right latches,
springs, left and right
display clutches

logos (for Armada 1100 and
Contura 400), pad for
Sharp CSTN (for use with
Contura 400 CSTN), and
bezel screws *

7. Screw kit * 147885-001
(See Table 3-12
for contents and
where used matrix.)

* Not Shown

Color TFT (10.4 in) Display Assembly Parts

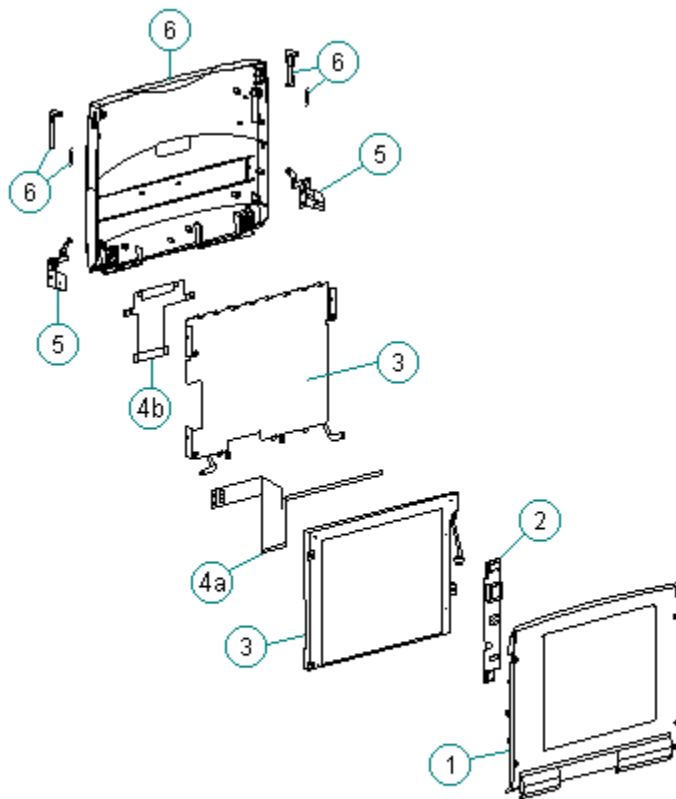


Figure 3-6. CTFT (10.4 in) Display Assembly Parts

Table 3-3. CTFT (10.4 in) Display Assembly

Description	Spare Part Number	Notes
1. Display bezel	189244-001	
2. Backlight inverter board	189136-001	Includes Caution, High Voltage label *
3. Display panel	189114-001	Includes: shield display shipping box assembly *
4. Display cables with XOVER board	189247-001	Includes: a. display cable (CTFT) b. display ground cable c. display cable (CSTN) d. XOVER board for CSTN *
5. Display clutch (left and right)	147858-001	Includes screws and washers for handle bracket, and screws for tilt feet *
6. Display enclosure	189243-001	Includes: left and right latches, springs, left and right display clutches logos (for Armada 1100 and Contura 400), and bezel screws *
7. Screw kit * (See Table 3-12 for contents and where used matrix.)	147885-001	
* Not Shown		

Keyboards

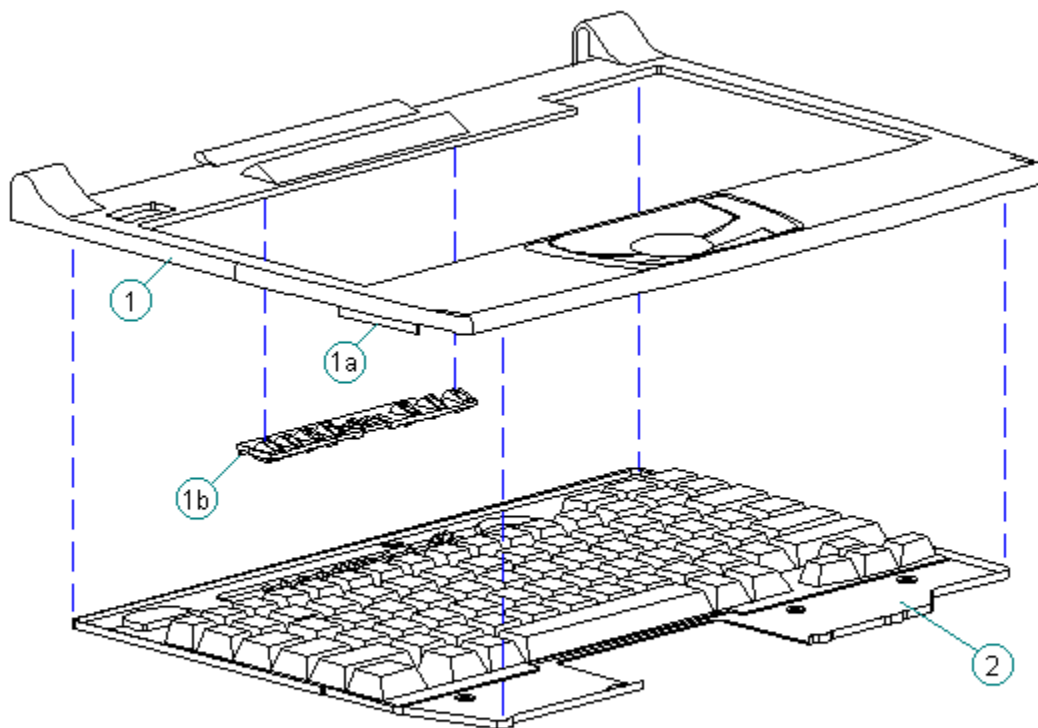


Figure 3-7. Keyboard Assembly

Table 3-4. Armada 1100 Notebook Keyboards

Description	All Models
1. CPU cover includes: a. PC Card door b. light deflector c. spring *	147860-001
2. U.S.	147875-001
3. U.K.	147875-003 *
4. German	147875-004 *
5. French	147875-005 *
6. Italian	147875-006 *
7. Spanish	147875-007 *
8. Danish	147875-008 *
9. Norwegian	147875-009 *

10. Swedish/Finnish	147875-010 *
11. Swiss	147875-011 *
12. French Canadian	147875-012 *
13. Portuguese	147875-013 *
14. Latin American	147875-016 *
15. Belgian	147875-018 *
16. Japanese	147875-019 *
17. Hangeul	147875-033 *
18. Brazilian	147875-035 *
* Not Shown	

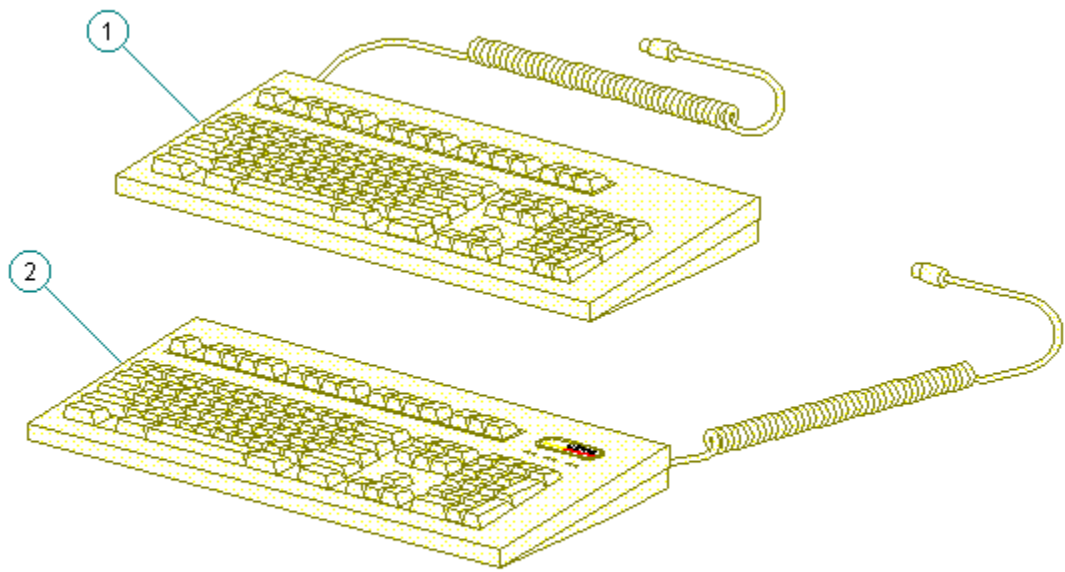


Figure 3-8. Enhanced Keyboards

Table 3-5. Optional Enhanced Keyboards

Description	All Models
1. Enhanced III - Domestic	140536-101
2. Enhanced III - U.K.	140536-103

3.	Enhanced III - German	140536-104 *
4.	Enhanced III - French	140536-105 *
5.	Enhanced III - Italian	140536-106 *
6.	Enhanced III - Spanish	140536-107 *
7.	Enhanced III - Danish	140536-108 *
8.	Enhanced III - Norwegian	140536-109 *
9.	Enhanced III - Swedish/Finnish	140536-110 *
10.	Enhanced III - Swiss	140536-111 *
11.	Enhanced III - French Canadian	140536-112 *
12.	Enhanced III - Portuguese	140536-113 *
13.	Enhanced III - Turkish	140536-114 *
14.	Enhanced III - Greek	140536-115 *
15.	Enhanced III - Latin American	140536-116 *
16.	Enhanced III - Arabic	140536-117 *
17.	Enhanced III - Belgian	140536-118 *
18.	Enhanced III - Japanese	140536-119 *
19.	Enhanced III - BHCSY **	140536-120 *
20.	Enhanced III - Hungarian	140536-121 *
21.	Enhanced III - Polish	140536-122 *
22.	Enhanced III - Slovakian	140536-123 *
23.	Enhanced III - Russian	140536-124 *
24.	Enhanced III - Czech	140536-129 *
25.	Enhanced III - Thai	140536-130 *
26.	Enhanced III - Beijing	140536-132 *
27.	Enhanced III - Hangeul	140536-133 *
28.	Enhanced III - Taipei	140536-134 *
29.	Enhanced III - Brazil	140536-135 *

* Not Shown

** Bosnia - Herzegovina, Croatia, Slovenia, and Yugoslavia
=====

Cables

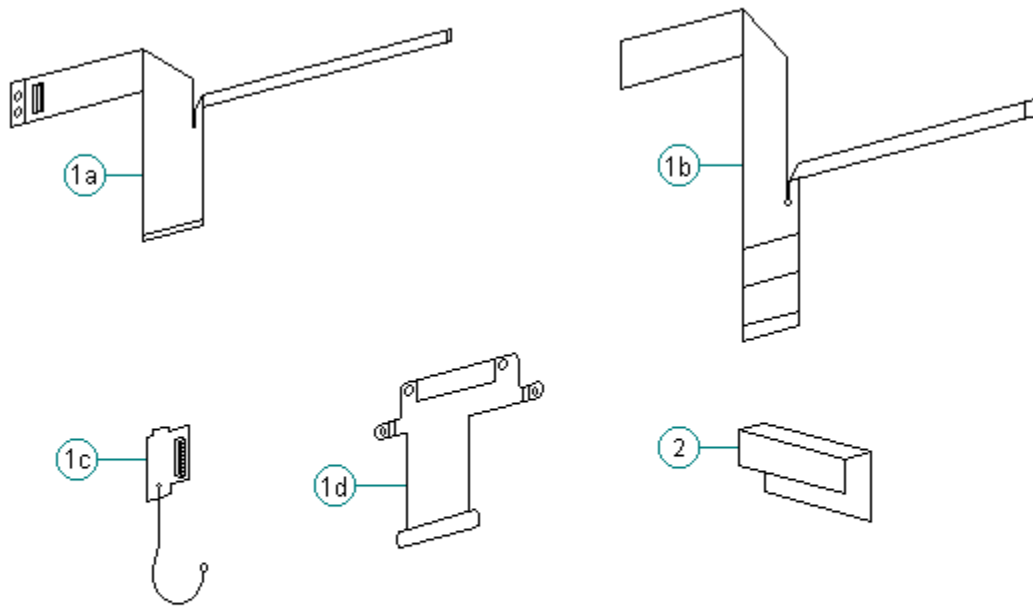


Figure 3-9. Cables

Table 3-6. Cables

Description	Spare Part Number
1. Display cables	
a. CTFT display cable	189247-001
b. CSTN display cable	189247-001, 262494-001
c. XOVER board for CSTN	189247-001, 262494-001
d. Ground cable	189247-001, 262494-001
2. Diskette cable	147866-001

AC Adapter and Power Cord

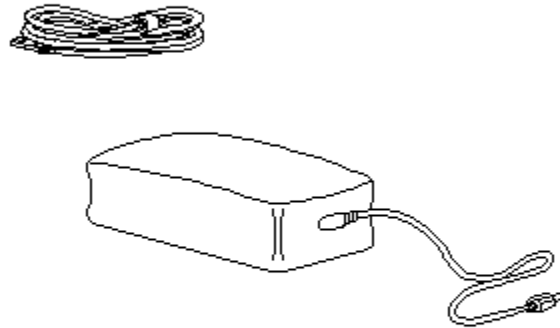


Figure 3-10. AC Adapter

Table 3-7. AC Adapter and Power Cord

Description	Spare Part Numbers
1. AC adapter	147679-002
2. Power cord (U.S./Canada)	197230-001
3. Power cord (U.K.)	197232-001 *
4. Power cord (Europe)	197231-001 *
5. Power cord (Japan)	197233-001 *
6. Power cord (Australia)	197234-001 *
7. Power cord (Korea)	262488-001 *

* Not shown

Memory Expansion Boards

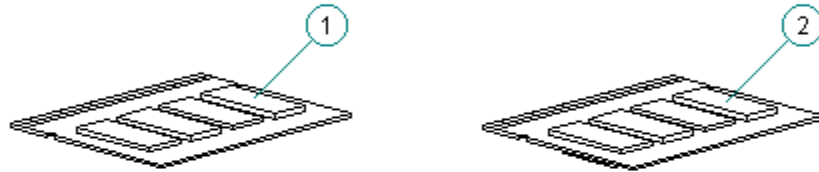


Figure 3-11. Memory Boards

Table 3-8. Memory Boards

Description	Spare Part Numbers
Memory expansion boards	
1. 8 MB	220584-001
2. 16 MB	220585-001

Slipcase

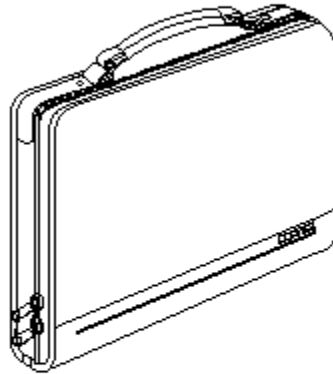


Figure 3-12. Slipcase

Table 3-9. Slipcase

Description	Spare Part Number
Slipcase	194162-001

Automobile Adapter

Table 3-10. Automobile Adapter

Description	Spare Part Number
Automobile Adapter	218079-001

Miscellaneous CPU Kits

Table 3-11. Miscellaneous CPU Kits

Description	Spare Part Number
Miscellaneous/hardware	189262-001
Includes:	
Tilt feet	
Trough	
Battery latch	
PCMCIA door	
Foot shoulder screws	
Battery tray assembly	
Extension spring (battery eject button, display latches)	
Lock plate	
Flex ground bracket	
Keyboard ground clips	
Left and right clutch ground clips	
Handle bracket	
Memory assembly door	
PC Card ejection levers and pin	
-----	-----
System clock battery	117099-001
-----	-----
Handle	147678-001
-----	-----
Keyboard warning labels	189288-001
-----	-----
Logos	189292-001
-----	-----
Memory door	169713-001
-----	-----
Anti-skid feet	147859-001
-----	-----
RomPaq upgrade	181088-001
-----	-----
Trackball removal tool	147779-001
-----	-----
Country kit - domestic retail	262538-001
-----	-----
Miscellaneous screws kit (See Table 3-12 for contents and where used matrix.)	147885-001
-----	-----
Shipping carton, (Quantity = 5)	262485-001
-----	-----
Shipping carton with buns, (Quantity = 1)	262486-001
-----	-----

Computer Miscellaneous Screws Kit

Table 3-12a. Computer Miscellaneous Screws Kit Contents and Use

Description	Spare Part Number
Screws and Fasteners Kit	147885-001

Table 3-12b. Computer Miscellaneous Screws Kit Contents and Use

Description:	M2.0
Type:	Fillister
Where Used:	PCMCIA header
Drive:	T8
Quantity Required:	2
Description:	M2.0
Type:	Fillister
Where Used:	PCMCIA rails
Drive:	T8
Quantity Required:	2
Description:	M3.0
Type:	Truss
Where Used:	Heatspreader to system board
Drive:	T8
Quantity Required:	3
Description:	M2.5 x 5.0
Type:	
Where Used:	Diskette drive bracket to system board
Drive:	SL/T8
Quantity Required:	3
Description:	M2.5 x 5.0
Type:	
Where Used:	PCA
Drive:	SL/T8
Quantity Required:	6
Description:	M2.5 x 5.0
Type:	
Where Used:	Display assembly - internal
Drive:	SL/T8
Quantity Required:	6
Description:	M2.5 x 5.0
Type:	
Where Used:	Bezel
Drive:	SL/T8
Quantity Required:	4
Description:	M2.5 x 5.0
Type:	
Where Used:	Lower clutch
Drive:	SL/T8
Quantity Required:	4

Description:	M2.5 x 5.0
Type:	
Where Used:	Trackball assembly to base
Drive:	SL/T8
Quantity Required:	2

Description:	M2.5 x 5.0
Type:	
Where Used:	Hard drive bracket to system chassis
Drive:	T8
Quantity Required:	1

Description:	M2.5 x 4.0
Type:	
Where Used:	CPU cover to keyboard
Drive:	SL/T8
Quantity Required:	7

Description:	M2.5 x 24.0
Type:	
Where Used:	Bottom of unit
Drive:	SL/T8
Quantity Required:	7

Description:	M2.5
Type:	Shoulder
Where Used:	Handle Bracket to clutch/through CPU base
Drive:	T8
Quantity Required:	2

Description:	M3.0
Type:	Truss
Where Used:	Hard drive bracket to hard drive
Drive:	T8
Quantity Required:	4

Description:	M3.0
Type:	Truss
Where Used:	Diskette drive bracket to diskette drive
Drive:	T8
Quantity Required:	2

Description:	M2.6
Type:	Fillister
Where Used:	Diskette drive bracket to diskette drive
Drive:	T8
Quantity Required:	4

Description:	
Type:	Screw lock
Where Used:	Back of unit
Drive:	3/16" Hex
Quantity Required:	6

Description:	M3.0
Type:	Truss
Where Used:	Panel Display
Drive:	T8
Quantity Required:	4

Description:	M2.5 x 10.0
Type:	Truss
Where Used:	Heatspreader to chassis
Drive:	T8
Quantity Required:	1
=====	

Documentation

Table 3-13. Documentation

Description	Spare Part Numbers
Maintenance and Service Guide	262489-001
Illustrated Parts Map	262490-001
Armada 1100 Family Reference Guide and Quick Setup	262539-001 *

* To order these documents in other languages, use the following extensions: -041 German, -051 French, -061 Italian, -101 Swedish, -331 Dutch, -081 Danish, -351 Finnish, -091 Norwegian, -161 Latin American Spanish, -201 Brazilian Portuguese, -191 Japanese, and -AD1 Hangeul.

Chapter 4 - Removal and Replacement Preliminaries

Introduction

This chapter provides general service information for the Compaq Armada 1100 Family of Personal Computers.

Adherence to the procedures and precautions described in this chapter is essential for proper service.

Electrostatic Discharge

A sudden discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt or heard, but damage occurs. An electronic device exposed to electrostatic discharge (ESD) 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.

Generating Static

Table 4-1 shows how different activities generate static electricity and at different electrostatic voltage levels.

Table 4-1. Typical Electrostatic Voltages

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

NOTE: 700 volts can degrade a product.

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 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 electronic-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.

Removing Batteries

Compaq recommends that you remove all batteries from the computer before beginning the disassembly procedures. Failure to do so could cause damage to computer components.

Preventing Damage to Drives

To prevent static damage to hard drives, use the following precautions:

- o Handle drives gently, using static-guarding techniques.
- o Store drives in the original shipping containers.
- o Avoid dropping drives from any height onto any surface.
- o Handle drives on surfaces that have at least one inch of shock proof foam.
- o Always place drives with the PCB assembly side down on the foam.

Grounding Methods

The method for grounding must include 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 4-2. Static-Shielding Protection Levels

Method	Voltages
Antistatic Plastic	1,500
Carbon-Loaded Plastic	7,500
Metallized Laminate	15,000

Grounding Workstations

To prevent static damage at the workstation, use the following precautions:

- o Cover the workstation with approved static-dissipative material. Provide a wrist strap connected to the work surface and properly grounded tools and equipment.
- o Use static-dissipative mats, heel straps, or air ionizers to give added protection.
- o Handle electrostatic sensitive components, parts, and assemblies by the case or PCB laminate. Handle them only at static-free workstations.
- o Avoid contact with pins, leads, or circuitry.
- o Turn off power and input signals before inserting and removing connectors or test equipment.
- o Use fixtures made of static-safe materials when fixtures must directly contact dissipative surfaces.
- o Keep work area free of non-conductive 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.

Grounding Equipment

Use the following equipment to prevent static electricity damage to the equipment:

Wrist Straps are flexible straps with a minimum of 1 megohm +/- 10% resistance to 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.

Heel straps/Toe straps/Bootstraps can be used at standing workstations and are compatible with most types of boots and shoes. On conductive floors or dissipative floor mats, use straps 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.

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

Chapter 5 - Computer Removal and Replacement Procedures

Introduction

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

Serial Number

The computer serial number should be reported to Compaq when requesting information or ordering spare parts. The serial number is displayed on the bottom of the CPU, next to the memory compartment cover [1].

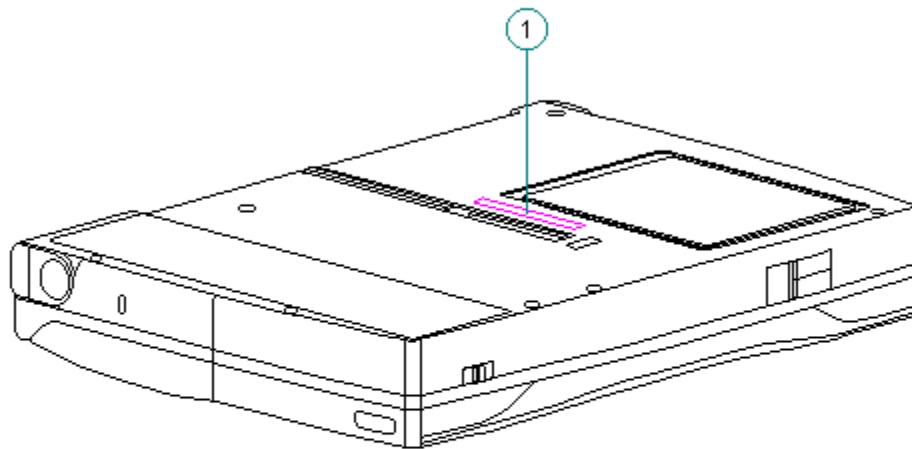


Figure 5-1. Serial Number Location

Disassembly Sequence Chart

Use the following chart to determine the section number and disassembly sequence for removing components from the computer.

- 5.3 | -- Preparing the Computer
 - | --AC Adapter
 - | --Diskette
 - | --Battery pack
 - | --PC Card

- 5.4 | -- Handle bracket
- 5.5 | -- Tilt
- 5.6 | -- Memory expansion board
- 5.7 | -- Keyboard assembly
 - | -- Keyboard
 - | -- CPU cover
 - | -- Top PC Card (PCMCIA) door and spring
- 5.8 | -- Battery compartment components
 - | -- Battery compartment
 - | -- Anti-skid pad
 - | -- Battery release spring and button
- 5.9 | -- Hard drive
- 5.10 | -- Real-time clock battery
- 5.11 | -- Integrated optical trackball assembly
- 5.12 | -- Diskette drive assembly
 - | -- Diskette drive
 - | -- Diskette drive bracket
- 5.13 | -- System board
- 5.14 | -- PC Card (PCMCIA) assembly
- 5.15 | -- PC Card ejection levers and pin
- 5.16 | -- PC Card doors and springs
- 5.17 | -- System chassis
 - | -- Trough
- 5.18 | -- CPU base
 - | -- Battery shield clip
 - | -- Lock provision plate
 - | -- Anti-skid pads
- 5.19 | -- Display assembly components
 - | -- Bezel
 - | -- Latches
 - | -- Inverter board
- 5.20 | -- Color STN (10.4") display
 - | -- LCD panel
 - | -- Shield
 - | -- Display cable
 - | -- Display ground cable
- 5.21 | -- Color TFT (10.4") display
 - | -- LCD panel
 - | -- Display cable
 - | -- Shield
 - | -- Display ground cable
- 5.22 | -- Display enclosure
- 5.23 | -- Clutches and ground clips

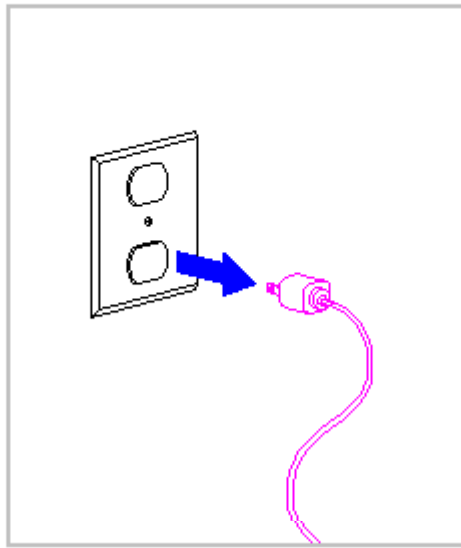


Figure 5-2. Disconnecting the AC Adapter from the Electrical Outlet

5. Disconnect the AC Adapter power cord from the computer (Figure 5-3).
6. Eject the diskette (Figure 5-3).

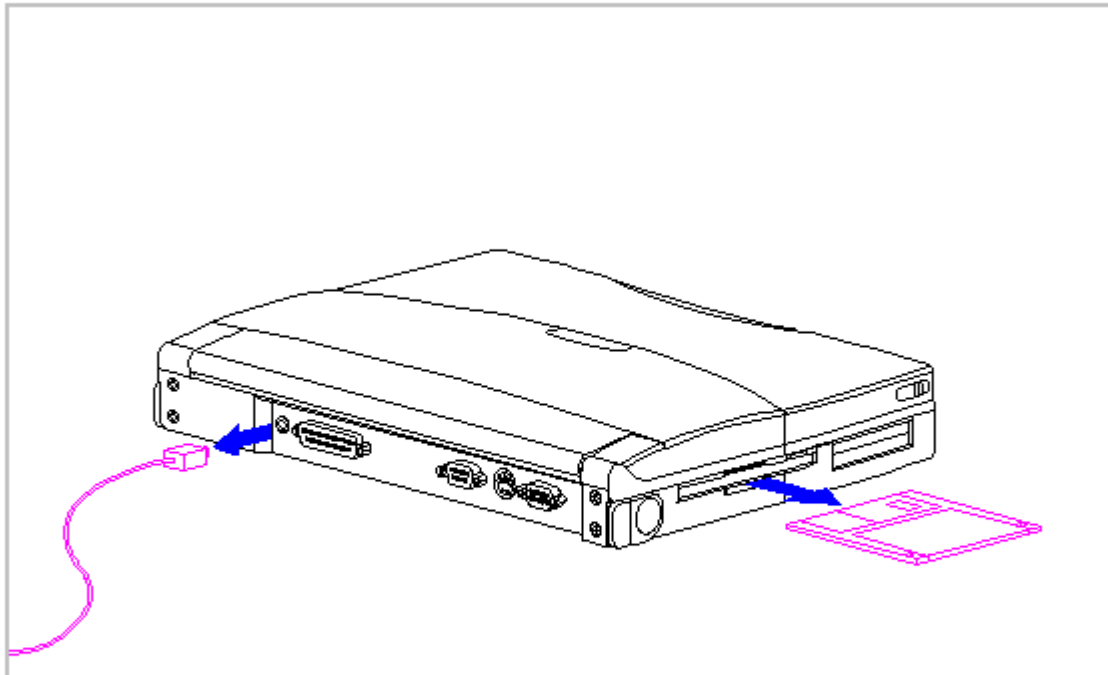


Figure 5-3. Disconnecting the AC Adapter and Ejecting the Diskette

7. Open the battery compartment by lifting up the front of the computer [1] and sliding the battery compartment release button to the right [2]. The battery compartment opens slightly. Lower the compartment [3] (Figure 5-4).

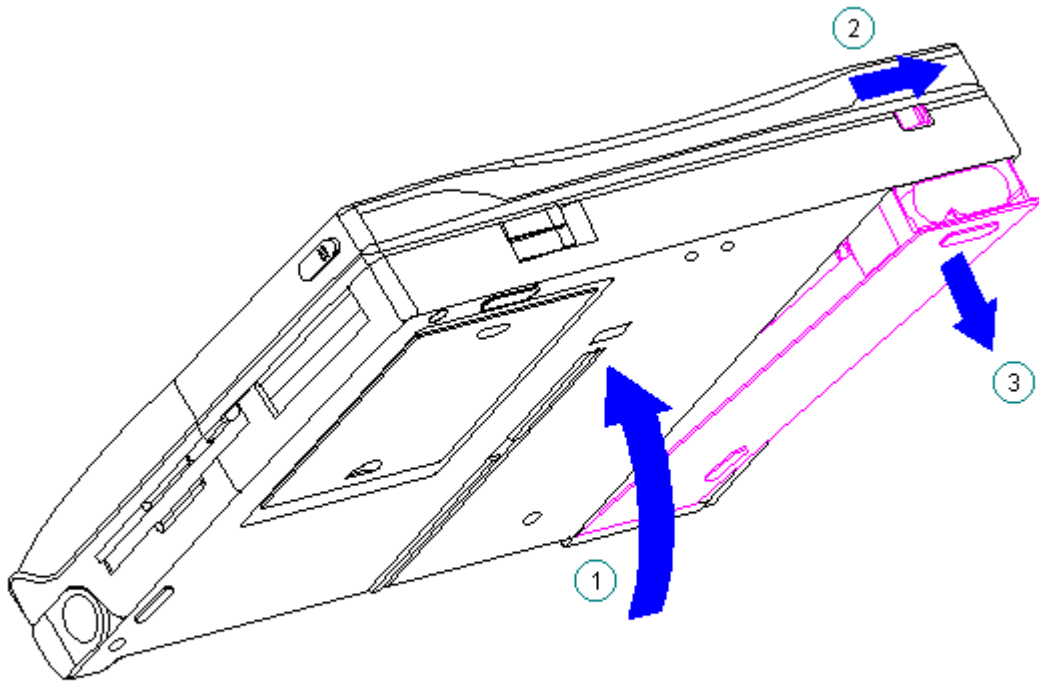


Figure 5-4. Opening the Battery Compartment

8. Remove the battery pack (Figure 5-5).

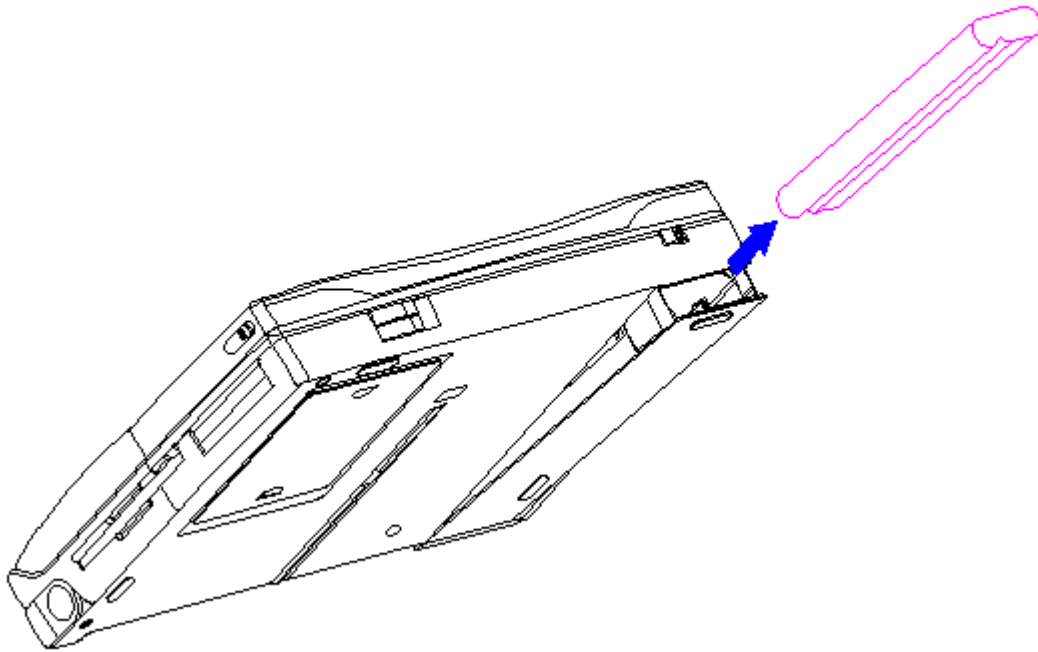


Figure 5-5. Removing the Battery Pack

Handle Bracket

This procedure is necessary if replacing the handle bracket or if separating the display assembly from the system unit module.

Removing the Handle Bracket

To remove the handle bracket, follow these steps:

1. Turn the computer off and remove all external devices, including the battery pack and the AC Adapter. Remove the diskette and PC Card, if installed (Section 5.3).
2. Close the computer and turn it topside down.
3. Move the tilt foot toward the front of the computer, exposing the handle bracket screw on either side of the computer (Figure 5-7).

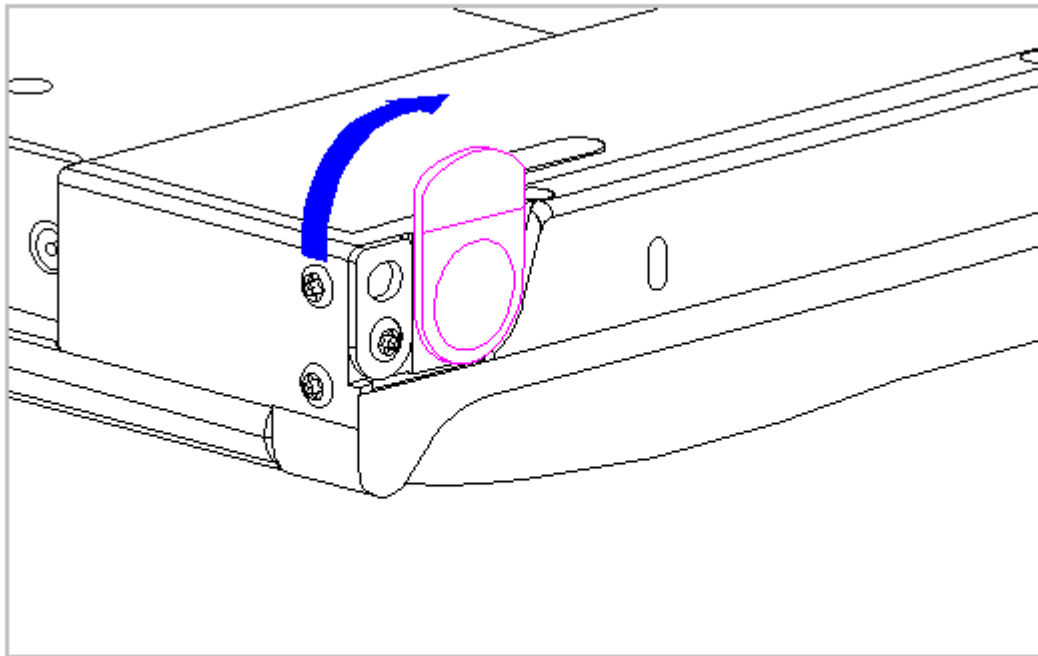


Figure 5-7. Positioning the Tilt Foot

4. Remove the screw and washer from each handle bracket. These screws are not reusable and must be discarded.
5. Remove the handle bracket (Figure 5-8).

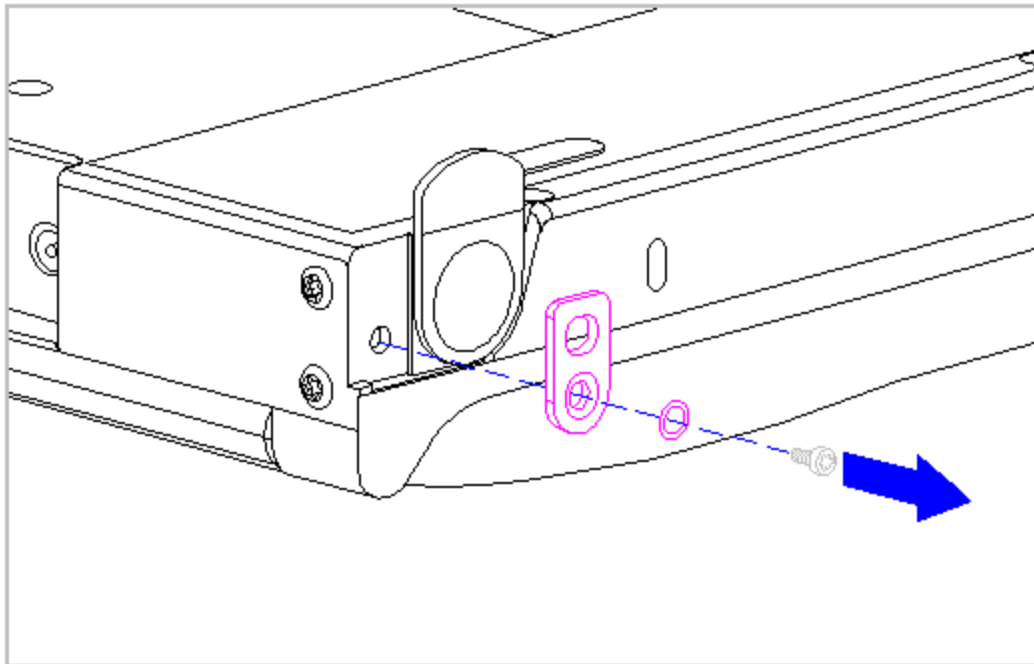


Figure 5-8. Removing the Handle Bracket

6. To install the handle bracket, reverse the previous steps. Discard the old screws and replace with new screws.

Tilt Feet

This procedure is necessary if replacing the tilt feet or if separating the display assembly from the system unit module.

Removing the Tilt Feet

To remove the tilt feet, follow these steps:

1. Turn the computer off and remove all external devices, including the battery pack and the AC Adapter. Remove the diskette and PC Card, if installed (Section 5.3).
2. Remove the tilt foot screw (Figure 5-9). Screws from the tilt feet are not reusable and must be discarded.
3. Remove the tilt foot (Figure 5-9).

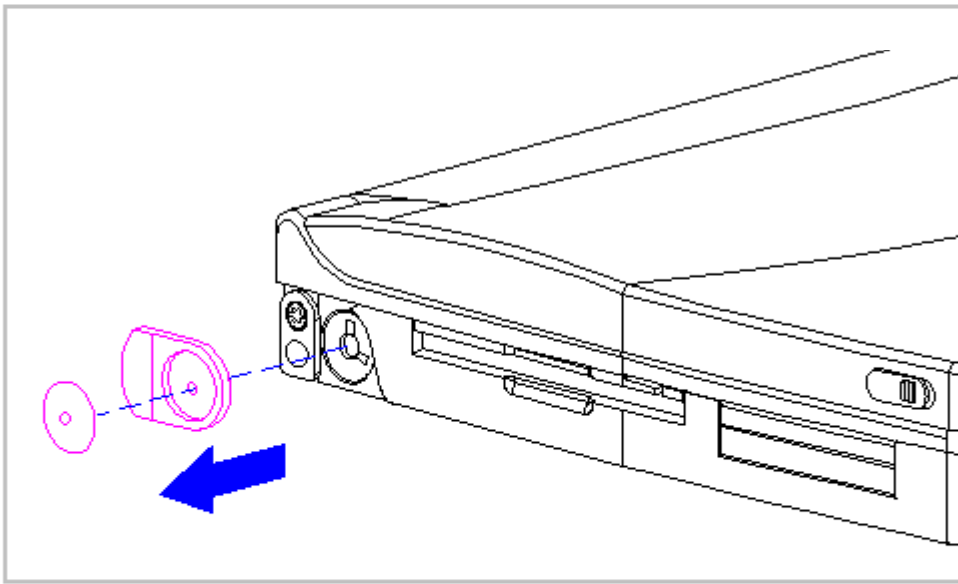


Figure 5-9. Removing the Tilt Foot

4. To install the tilt foot, reverse the previous steps. Discard the old screws and replace with new screws.

Memory Expansion Board

This section contains removal and replacement procedures for the memory compartment cover and the memory expansion board.

The memory compartment cover and the bottom of the CPU base are embossed with arrows and two icons that indicate whether the memory compartment cover is unlocked [1] or locked [2] (Figure 5-10).

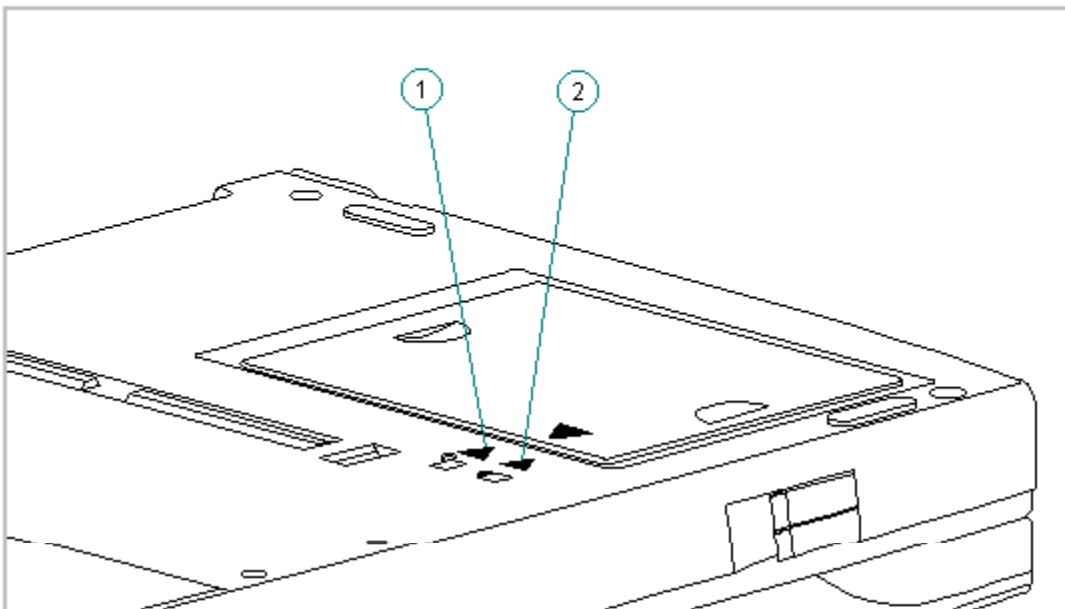


Figure 5-10. Memory Compartment Cover Icons

Removing and Replacing the Memory Compartment Cover

To remove the memory compartment cover, follow these steps:

1. Turn the computer off and remove all external devices, including the battery pack and the AC Adapter. Remove the diskette and PC Card, if installed (Section 5.3).
2. Close the computer and turn it topside down.
3. Slide the memory compartment cover toward the rear of the computer and lift up (Figure 5-11).

IMPORTANT: Be sure to maintain the same orientation of the cover to the computer when removing and replacing.

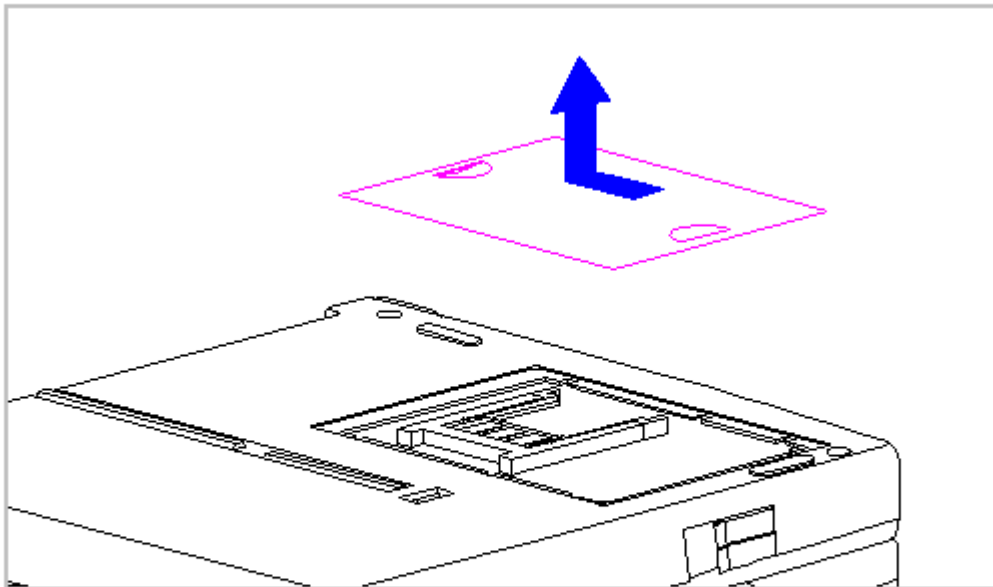


Figure 5-11. Removing the Memory Compartment Cover

4. To replace the memory compartment cover, reverse the previous steps.

Removing the Memory Expansion Board

To remove the memory expansion board, follow these steps:

1. Remove the memory compartment cover. Refer to "Removing and Replacing the Memory Compartment Cover" in this section.
2. Press in on one of the small tabs holding the board in place [1], let the board pop up, then pull it slightly up and out [2] (Figure 5-12).

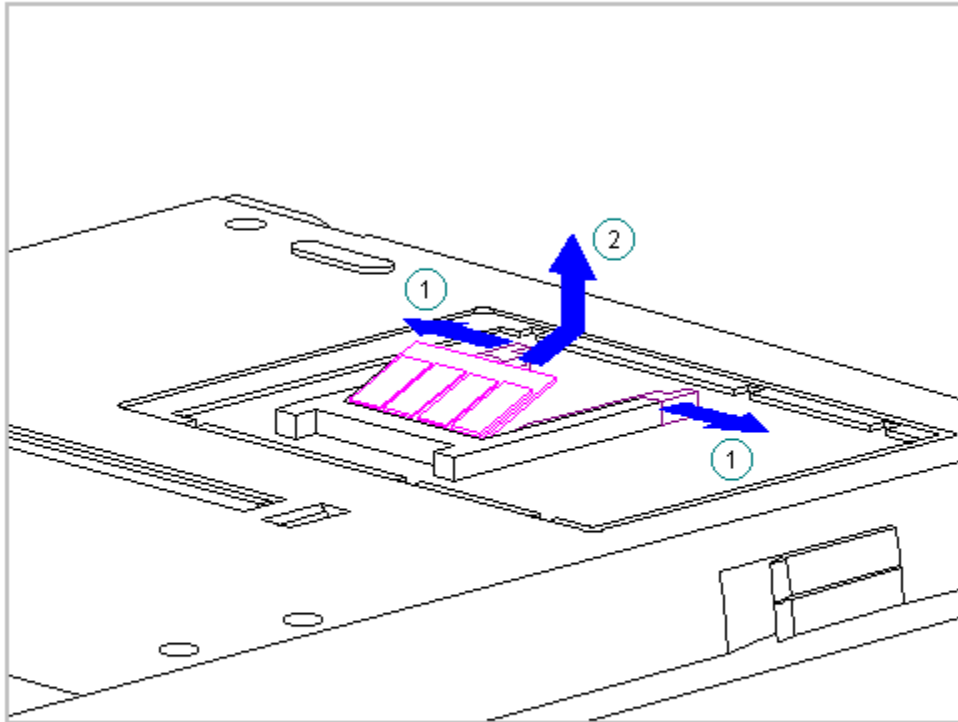


Figure 5-12. Disconnecting the Memory Expansion Board

Replacing the Memory Expansion Board

To replace the memory expansion board, follow these steps:

1. Angle in the board [1] (Figure 5-13).
2. Press down [2], so that the small tabs snap into place and hold the board (Figure 5-13).

6. Remove the keyboard assembly by lifting it up [1] and off the front of the computer [2] (Figure 5-17).

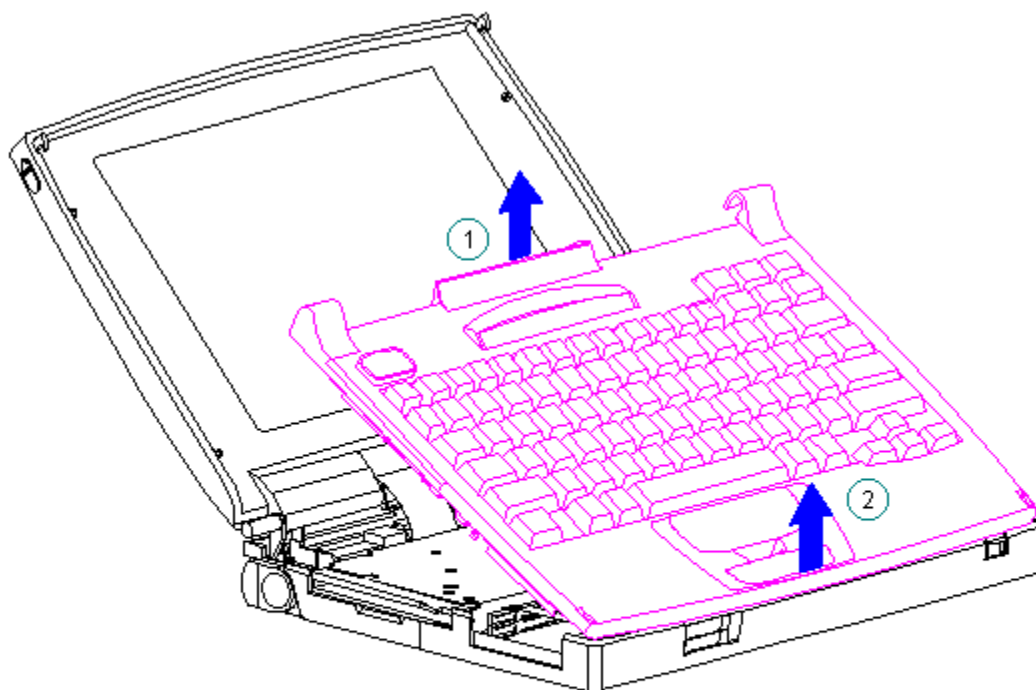


Figure 5-17. Removing the Keyboard Assembly

7. Position the display to a 90-degree angle (Figure 5-18).

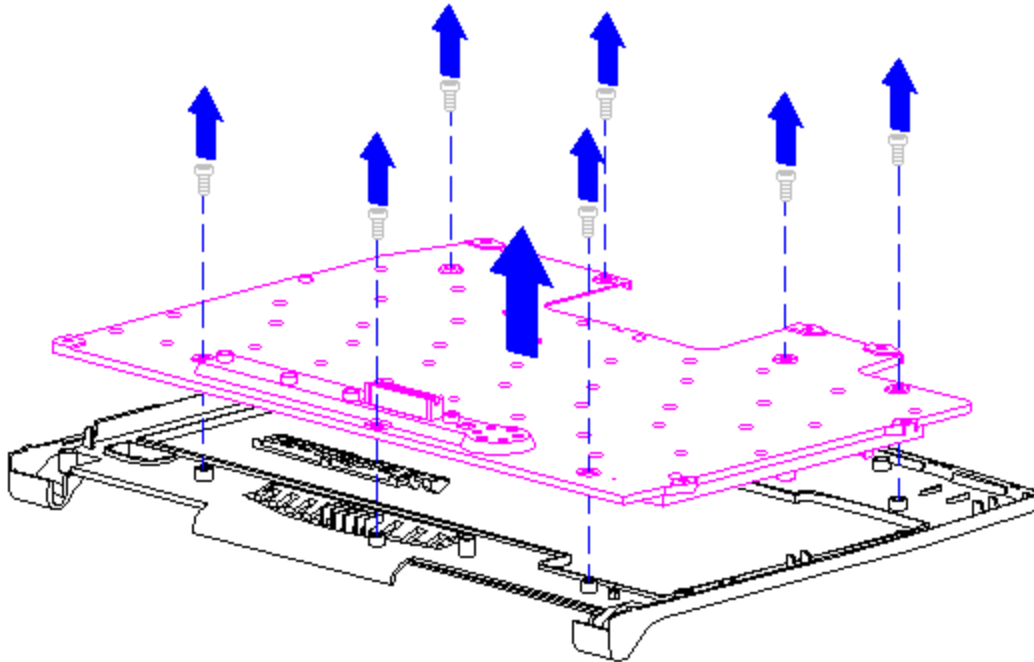


Figure 5-19. Removing the CPU Cover from the Keyboard

5. To replace the CPU cover, reverse the previous steps.

IMPORTANT: A set of warning labels can be ordered as a spare parts kit (spare part number 189288-001). Install the label in the upper right-corner of the cover. This label contains a warning message to prevent physical discomfort and harm. Installation of this label is essential.

Removing the Top PC Card (PCMCIA) Door and Spring

To remove the top PC Card door and spring from the keyboard assembly, follow these steps:

1. Remove the keyboard assembly from the computer. Refer to "Removing the Keyboard Assembly" in this section.
2. Turn the keyboard assembly topside down.
3. To remove the PC Card door from the keyboard assembly, unsnap the PC Card door [1] from the posts, and remove the door (Figure 5-20).
4. Remove the spring [2] from the PC Card door (Figure 5-20).

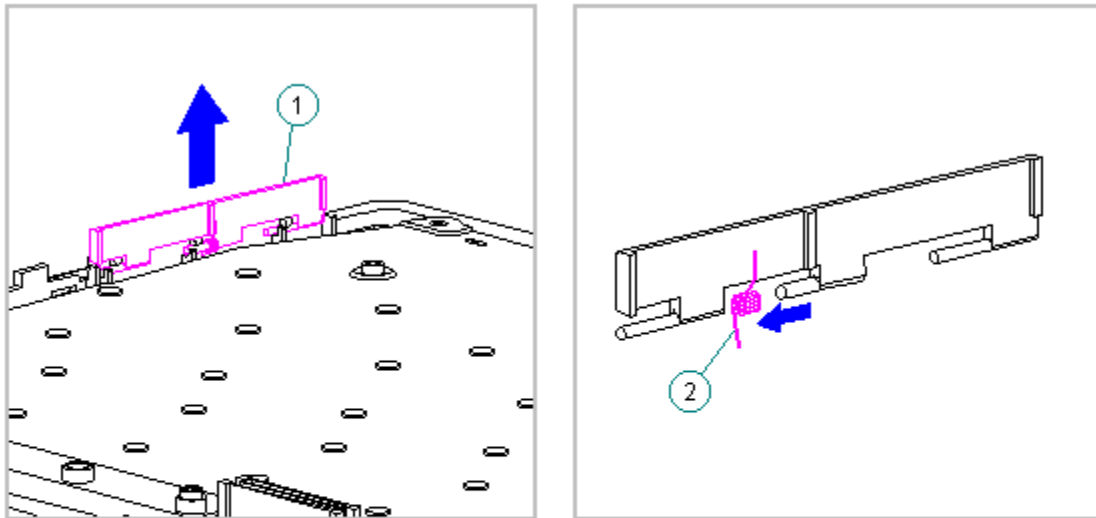


Figure 5-20. Removing the PC Card Door and Spring from the Keyboard Assembly

Replacing the Top PC Card (PCMCIA) Door and Spring

To replace the top PC Card door and spring to the keyboard assembly, follow these steps:

1. Install the PC Card spring on the door post, ensuring that the bent arm of the spring is placed against the rib on the PC Card door (Figure 5-21).

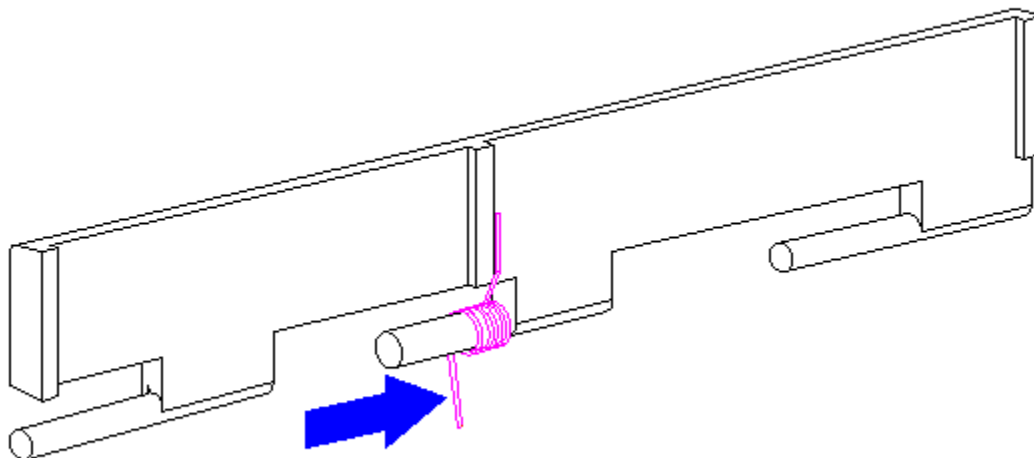


Figure 5-21. Replacing the PC Card Spring

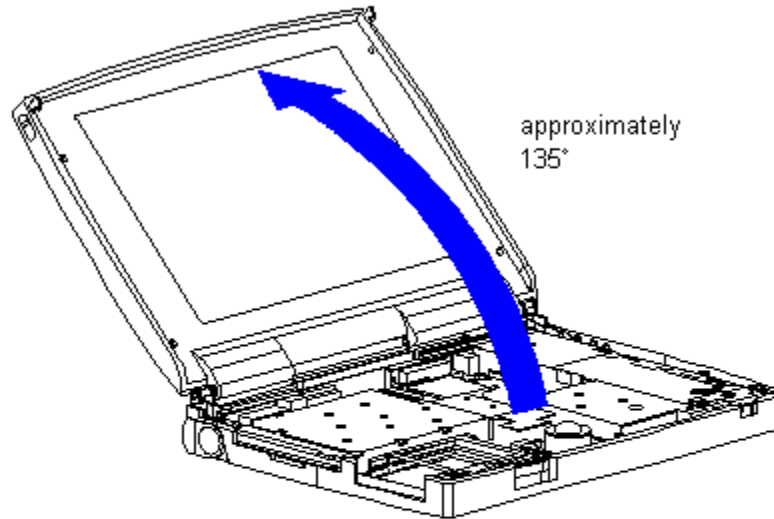


Figure 5-23. Opening the Display to a 135-Degree Angle

2. Angle the front end of the keyboard assembly into place at the front edge of the system unit module.
3. Ensure that the front plastic seams of the keyboard assembly and the front of the system unit module are aligned and flush with each other.
4. Carefully lower the rear of the keyboard assembly to the system unit module and press the outside rear corners until the keyboard assembly snaps into place.
5. Verify the alignment of the keyboard assembly to the computer base. Check the seams between the front and side edges of the computer base and the keyboard assembly. If the seam is uneven, remove the keyboard assembly and correctly align the tabs and recesses.
6. Press firmly in the center of the keyboard assembly below the status panel [1] to connect the keyboard connector [2] to the system board [3] (Figure 5-24).

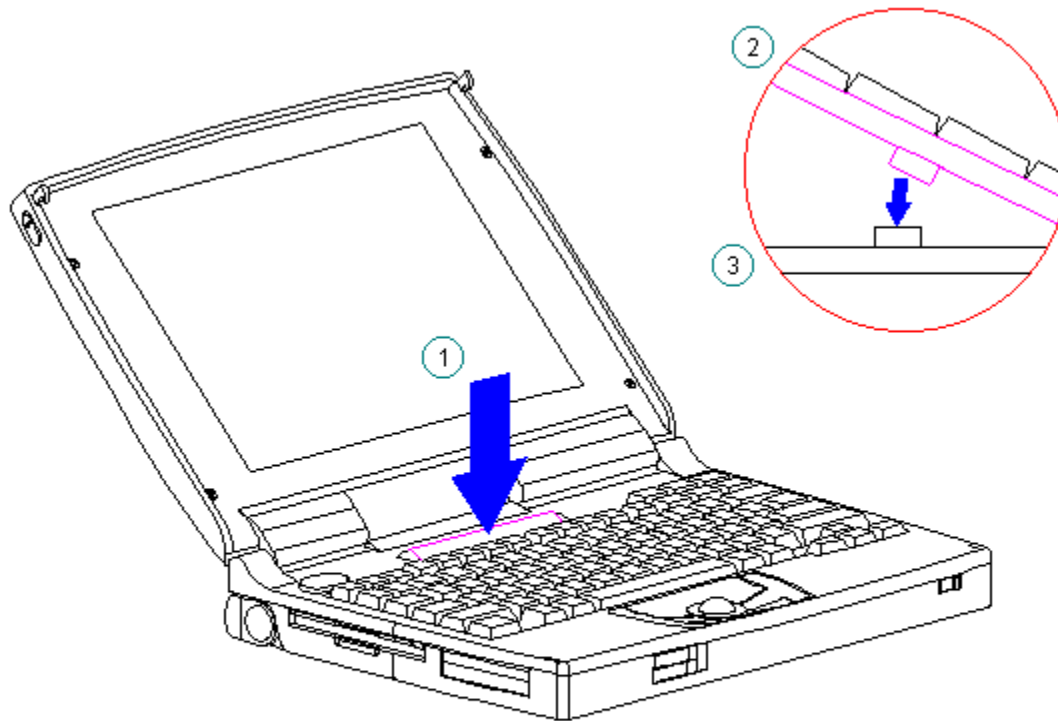


Figure 5-24. Connecting the Keyboard Assembly Connector

Battery Compartment Components

This section contains removal procedures for the following battery compartment components:

- o Battery compartment
- o Anti-skid pad
- o Battery release button spring
- o Battery release button

Removing the Battery Compartment

To remove the battery compartment components, follow these steps:

1. Turn the computer off and remove all external devices, including the battery pack and the AC Adapter. Remove the diskette and PC Card, if installed (Section 5.3).
2. Turn the computer topside down.
3. Gently squeeze in the sides of the compartment, rocking it back and forth, then lifting it up from the bottom of the base (Figure 5-25).

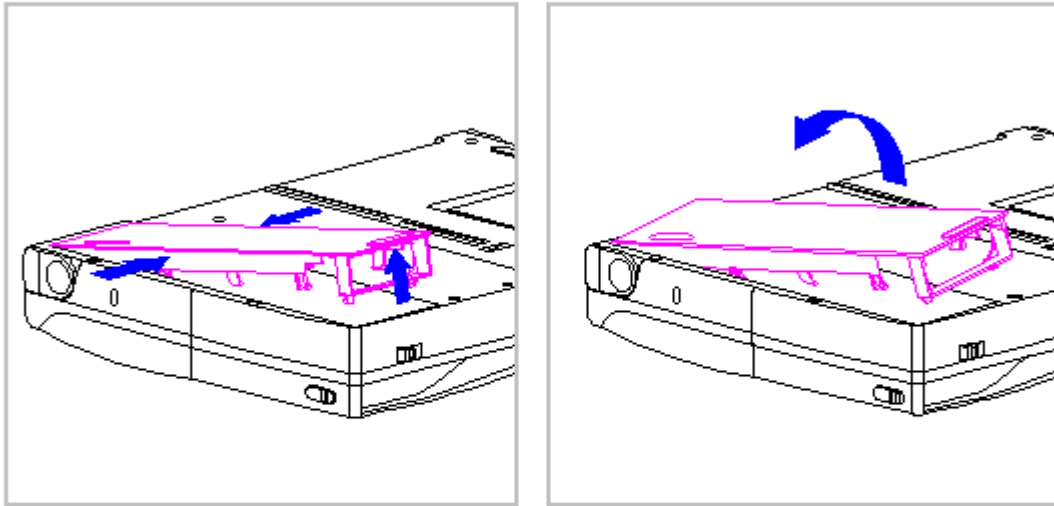


Figure 5-25. Removing the Battery Compartment

4. To replace the battery compartment, reverse the previous steps.

Attaching the Anti-Skid Pads

If installing a new battery compartment, two anti-skid pads must be attached to the bottom of the battery compartment. To attach the anti-skid pads, follow these steps:

1. Peel off the top layer of one of the anti-skid pads to expose the adhesive.
2. With the adhesive-side down, place the anti-skid pad into the raised oval outline on the battery compartment (Figure 5-26).

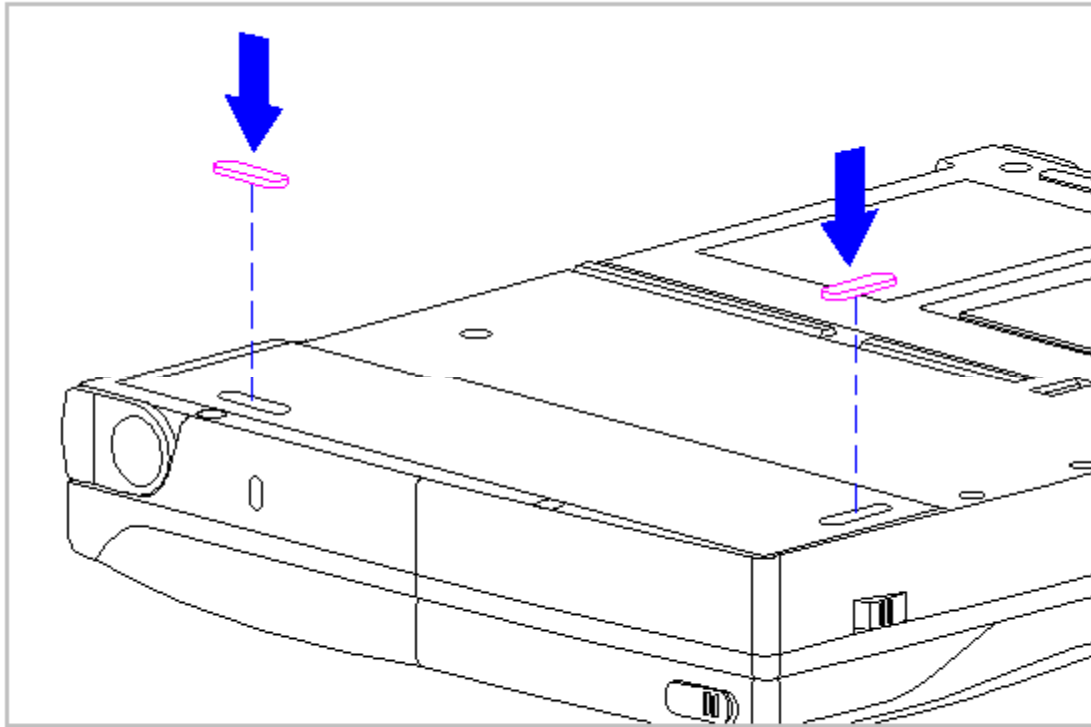


Figure 5-26. Attaching Anti-Skid Pads on the Battery Compartment

4. Rotate the battery release button counterclockwise, until it bows slightly, and lift it up to clear the hook on the computer base (Figure 5-28).

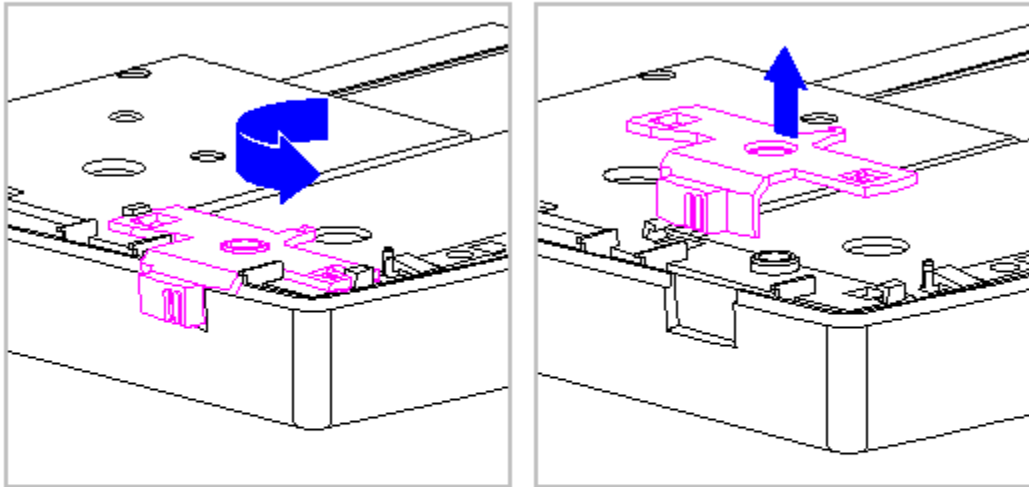


Figure 5-28. Removing the Battery Release Button

5. To replace the battery release button and spring, reverse the previous steps.

Hard Drive

This section contains removal procedures for the following hard drive components:

- o Hard drive
- o Hard drive bracket

Removing the Hard Drive

To remove the hard drive, follow these steps:

1. Turn the computer off and remove all external devices, including the battery pack and the AC Adapter. Remove the diskette and PC Card, if installed (Section 5.3).
2. Remove the keyboard assembly (Section 5.7).
3. Remove the screw that secures the hard drive bracket to the system chassis (Figure 5-29)

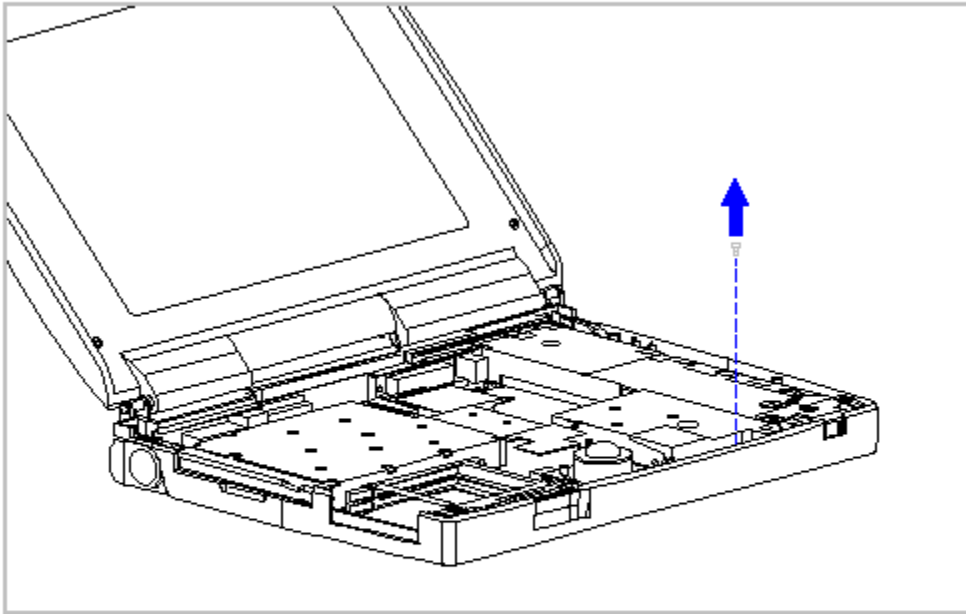


Figure 5-29. Removing the Screw Connecting the Hard Drive Bracket to the System Chassis

4. Grasp the hard drive bracket and slide it toward the front of the computer to disconnect the hard drive from the system board . Then lift it up and out of the system chassis (Figure 5-30).

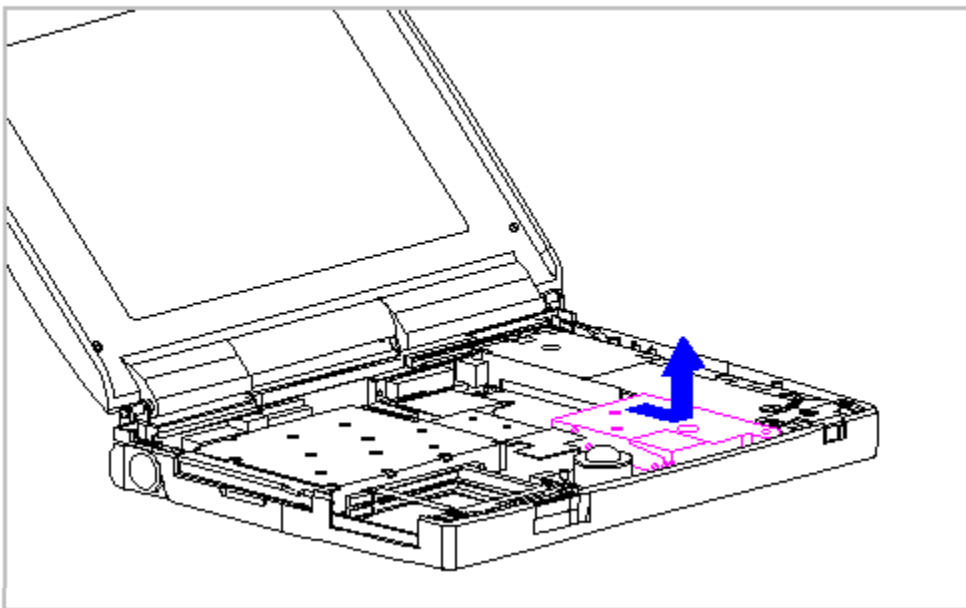


Figure 5-30. Disconnecting the Hard Drive from the System Board

Removing the Hard Drive Bracket

1. Remove the keyboard assembly (Section 5.7).
2. Remove the hard drive and bracket. Refer to "Removing the Hard Drive" in this section.
3. Remove the four screws from the sides of the hard drive bracket and separate the bracket from the hard drive (Figure 5-31).

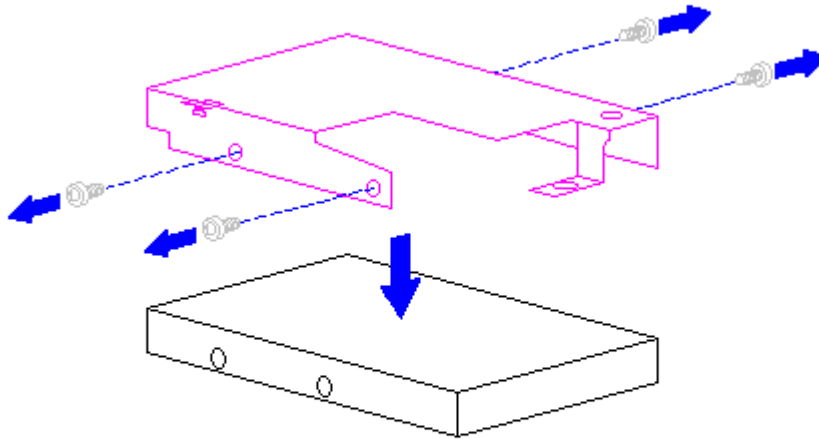


Figure 5-31. Separating the Hard Drive Bracket from the Hard Drive

4. To replace the hard drive bracket, reverse the previous steps. For proper alignment, replace the rear screws first.

Replacing the Hard Drive

To replace the hard drive, follow these steps:

1. Set the hard drive and bracket in place and slide it back to connector (Figure 5-32).

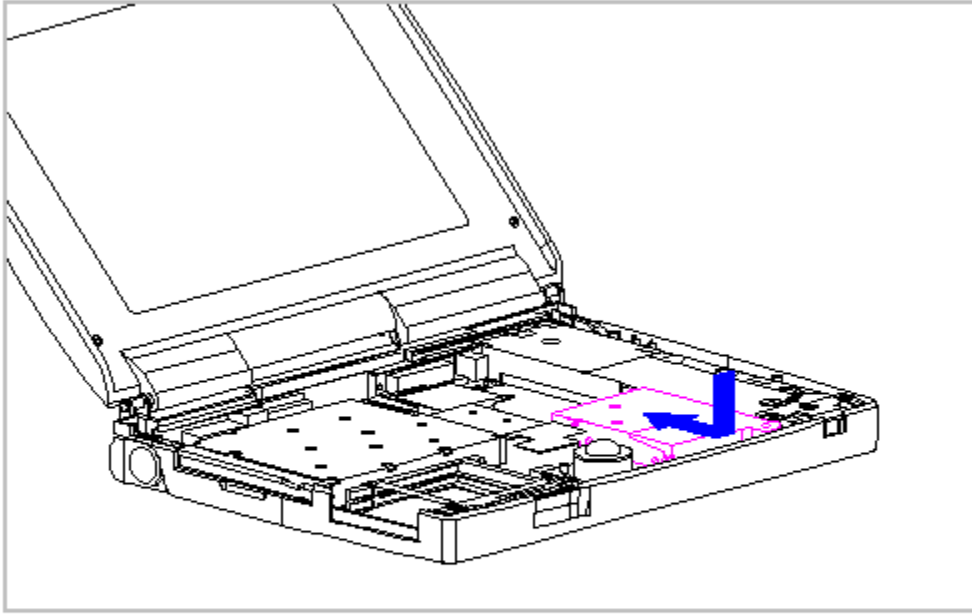


Figure 5-32. Replacing the Hard Drive

2. Replace the screw that connects the hard drive and bracket to the system chassis (Figure 5-33).

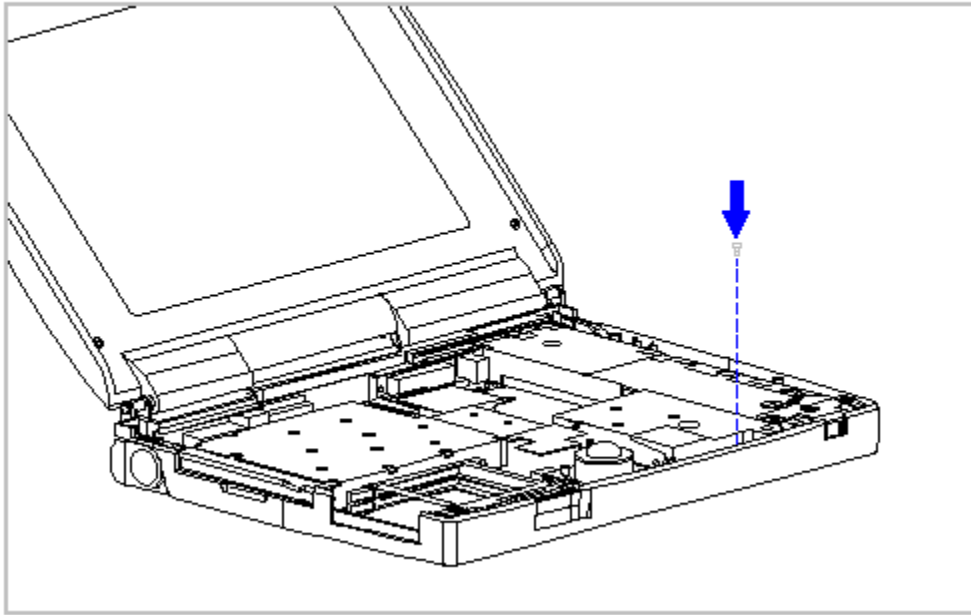


Figure 5-33. Replacing the Screw that Connects the Hard Drive Bracket to the System Chassis

4. Disconnect the integrated optical trackball assembly from the system board by pulling upward on the trackball assembly (Figure 5-36).

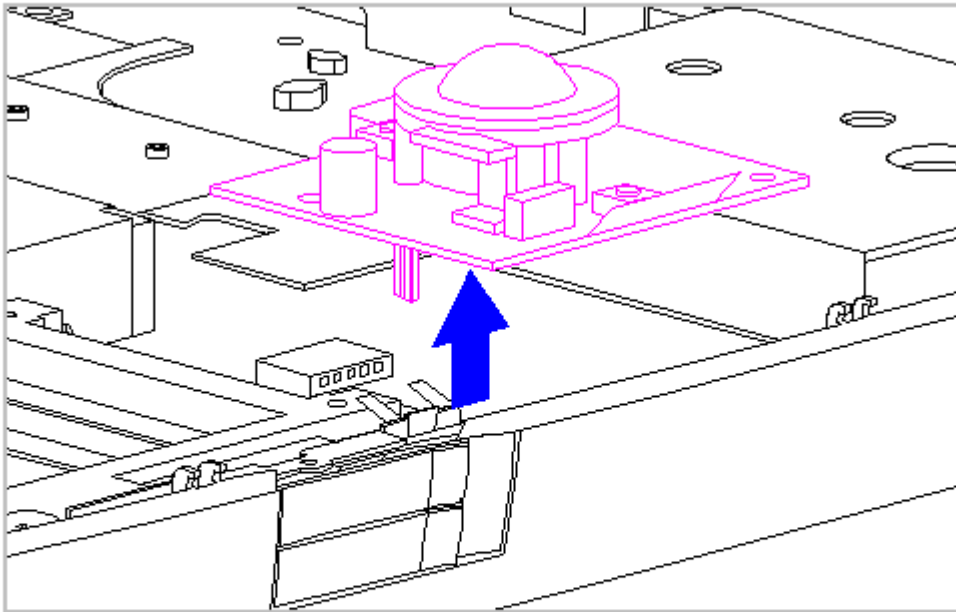


Figure 5-36. Disconnecting the Optical Trackball Assembly from the System Board

5. To replace the integrated optical trackball assembly, reverse the previous steps.

Trackball Cleaning Procedures

1. Turn off the computer, disconnect AC power, and remove the battery pack.
2. Remove the optical trackball.
3. Remove any large particles of debris that have fallen into the trackball housing.
4. Dip a cotton swab in isopropyl alcohol and squeeze off excess liquid.
5. Carefully wipe inside the cage to remove residue from surfaces. Clean the ball bearings by rubbing with the swab. Do not attempt to remove the bearings. **DO NOT USE ALCOHOL ON THE SENSOR WINDOW.** Instead, gently wipe the sensor window with a soft, dry, lint-free cloth until all debris is removed. Allow enough time for the parts to air dry before reassembling.
6. Replace the ball and gently secure the retaining ring by rotating it clockwise.

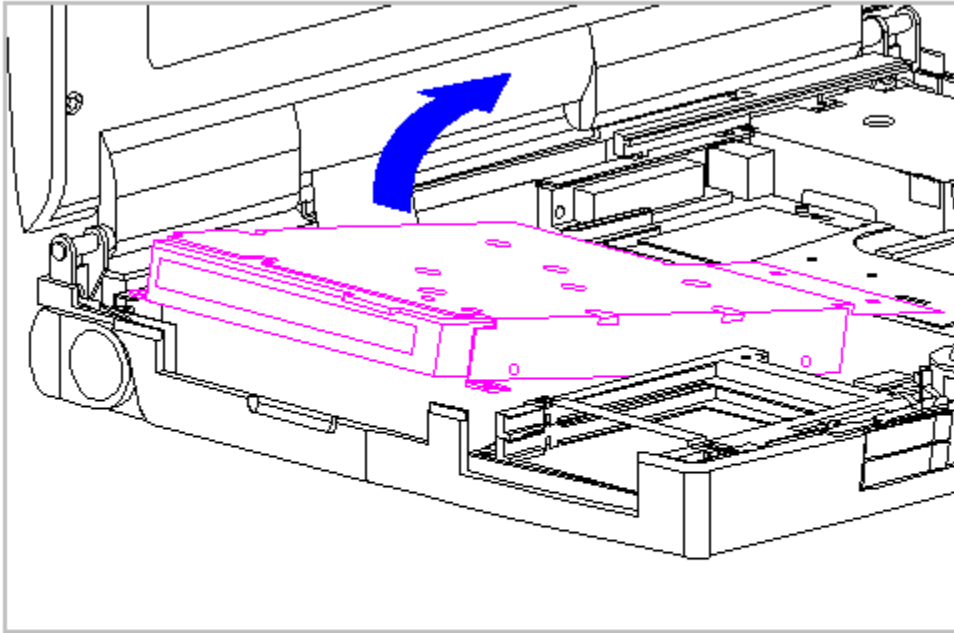


Figure 5-39. Removing the Diskette Drive from the System Chassis

Removing the Diskette Drive from the Diskette Drive Bracket

1. Remove the diskette drive from the system chassis. Refer to "Removing the Diskette Drive" in this section.
2. Remove the diskette drive from the bracket by removing the four screws from both sides of the bracket (Figure 5-40).

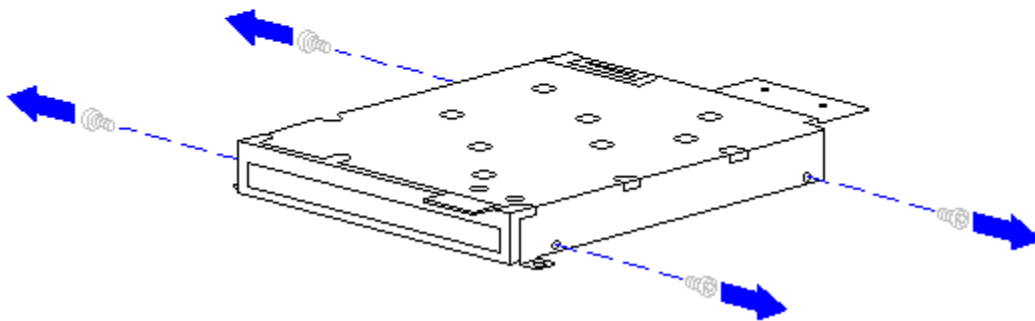


Figure 5-40. Removing the Diskette Drive Bracket Screws

1. Replace the diskette drive into the diskette drive bracket. Use the four screws to secure the diskette drive to the bracket.

NOTE: When replacing the diskette drive into the bracket, secure the front two screws first.

2. Toe in the back end of the diskette drive into the system chassis.

IMPORTANT: Ensure that the diskette drive door does not catch on the outside edge of the system unit module.

3. Close the diskette drive door slightly while lowering the front of the diskette drive into the system chassis (Figure 5-42).

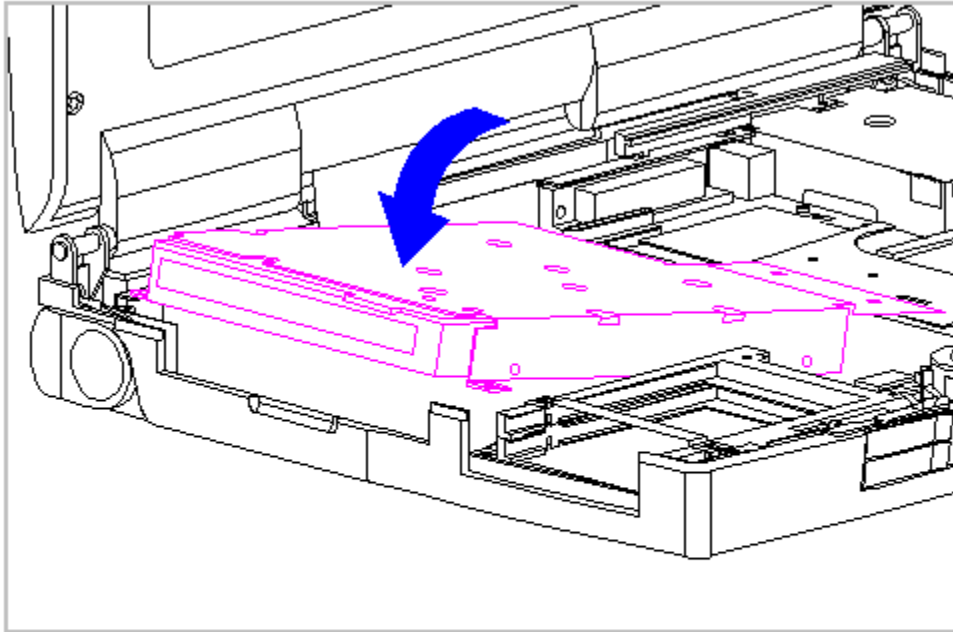


Figure 5-42. Replacing the Diskette Drive

4. Reconnect the diskette drive cable and reinstall the five screws.

IMPORTANT: The screw order for the five screws is important. The three screws that connect the diskette drive bracket to the system board have a tighter tolerance than the two screws that connect the bracket to the heatspreader; therefore, you must install the three screws to the system board before you install the two screws to the heatspreader.

The System Board

To remove the system board, follow these steps:

1. Turn the computer off and remove all external devices, including the battery pack and the AC Adapter. Remove the diskette and PC Card, if

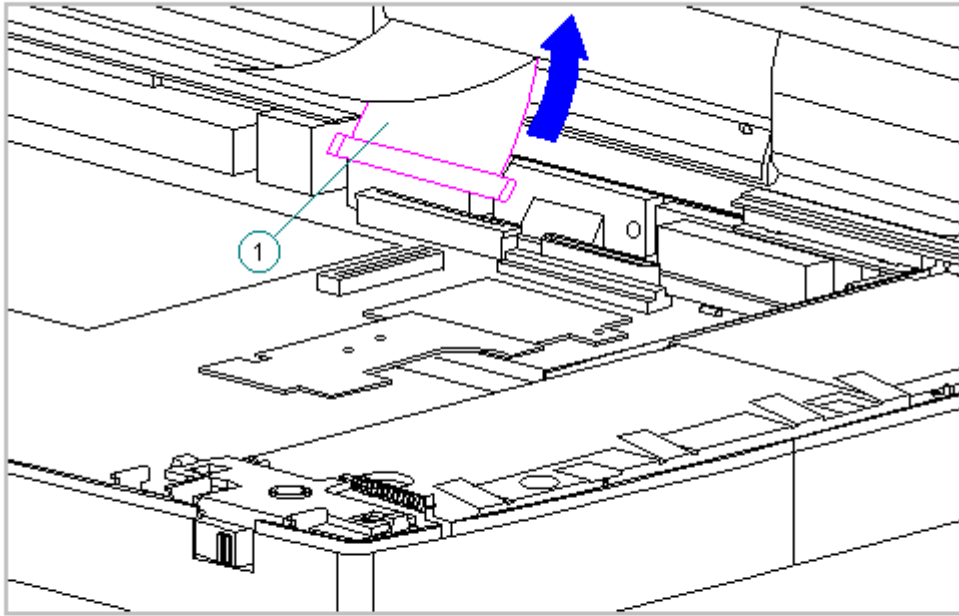


Figure 5-45. Disconnecting the Display Ground Cable

11. Remove the two keyboard ground clips from the chassis (Figure 5-46).

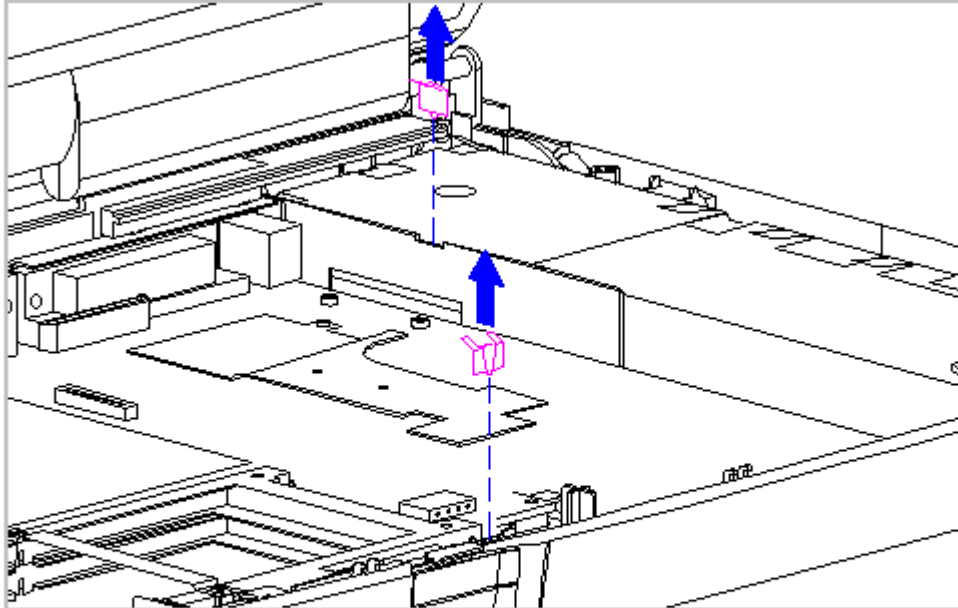


Figure 5-46. Removing the Keyboard Ground Clips from the System Board

12. Remove the left clutch ground clip from the system chassis (Figure 5-47).

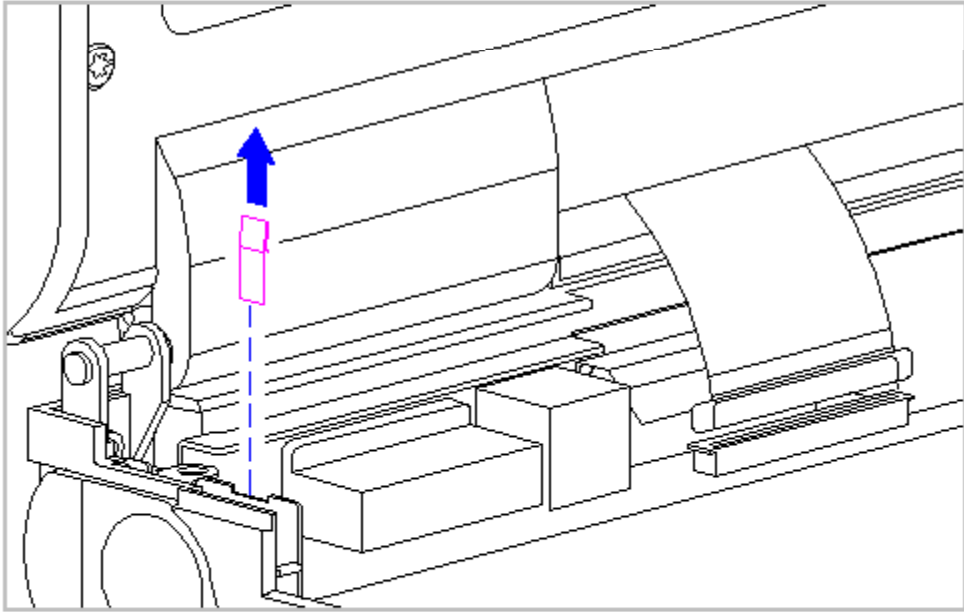


Figure 5-47. Removing the Left Clutch Ground Clip (All Models)

- 13. Remove the five screws from the system board and the two screws from the battery contact (Figure 5-48).

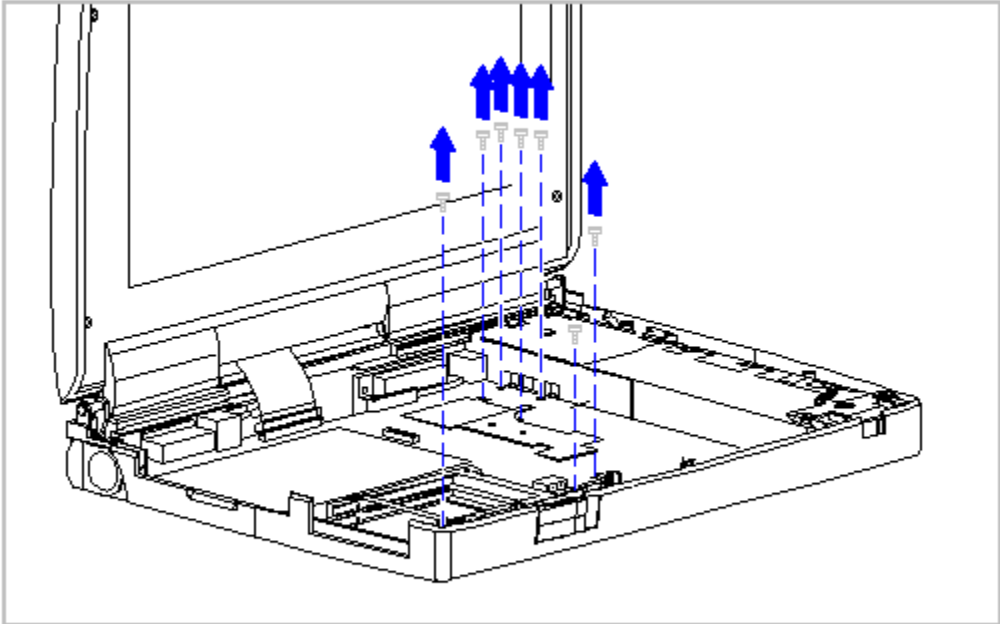


Figure 5-48. Removing the Five System Board and the Two Battery Contact Screws

14. From the front of the computer, tilt the system board up, then lift the system board out of the system chassis (Figure 5-49).

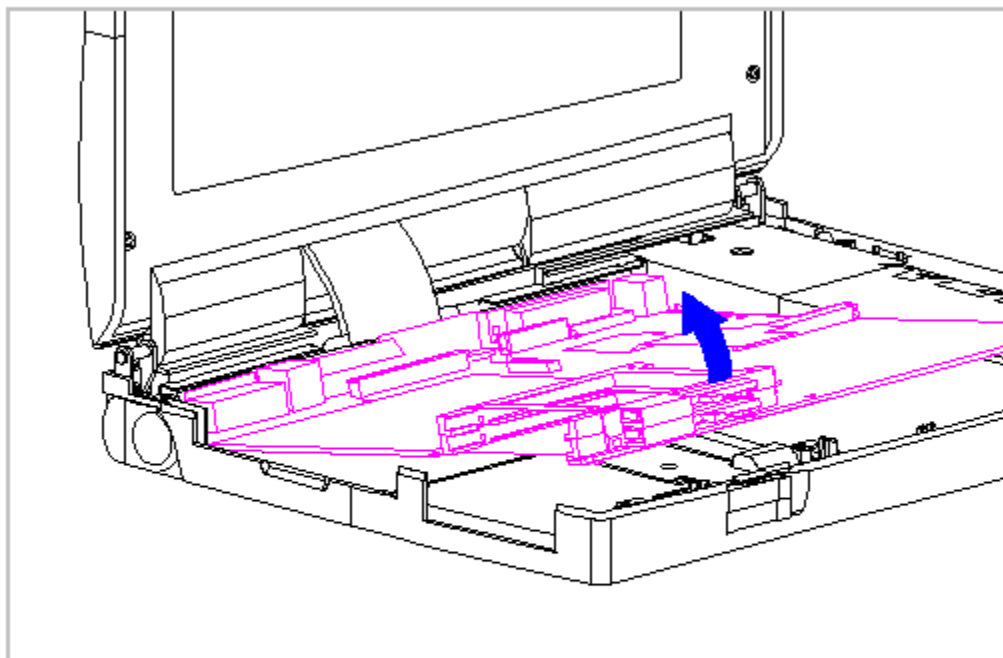


Figure 5-49. Removing the System Board

At this time, remove the PCMCIA rails from the system board if you have not ordered or acquired a replacement set of rails for the new system board you are about to install. If you need to remove the rail set, refer to "Removing the PC Card (PCMCIA) Rails" in Section 5.14.

15. Remove the flex ground bracket from above the serial port connector between the system board and the system chassis (Figure 5-50).

installed (Section 5.3).

2. Remove the keyboard assembly (Section 5.7).
3. Remove the PC Card ejection lever pin from the system chassis (Figure 5-55).

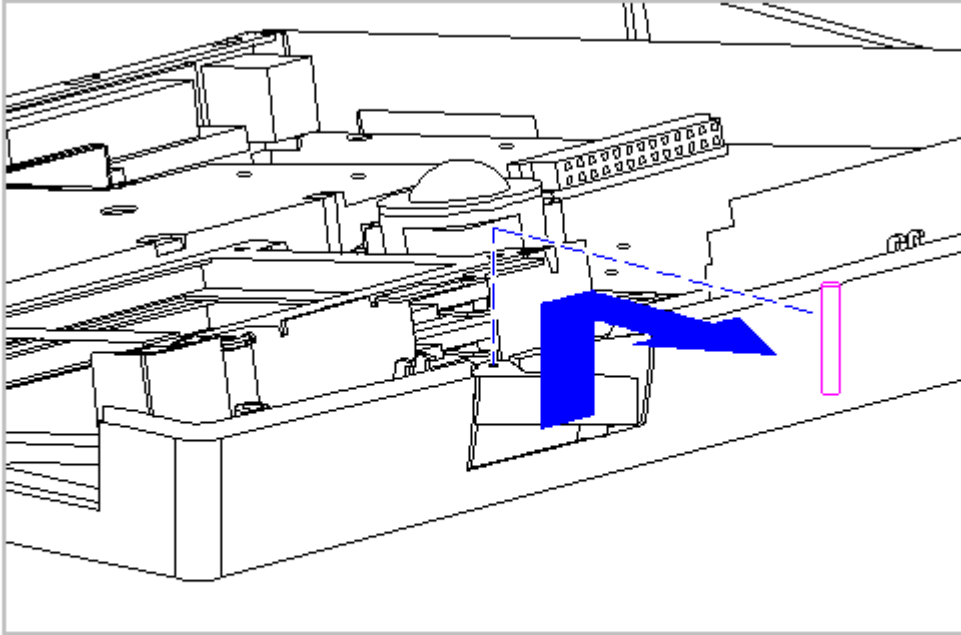


Figure 5-55. Remove the PC Card Ejection Lever Pin

4. Remove the top PC Card ejection lever (Figure 5-56).

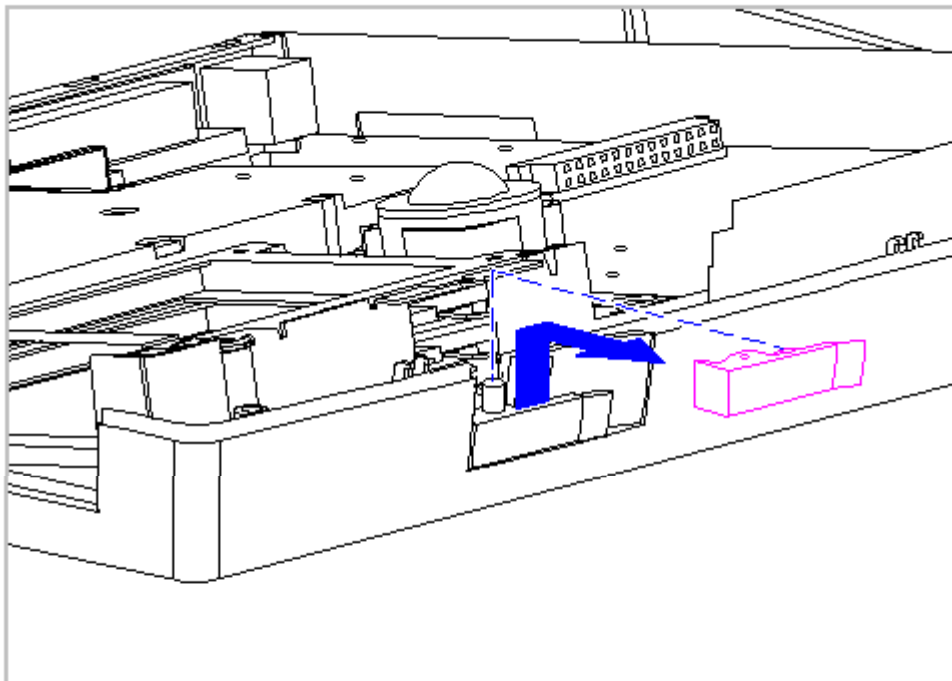


Figure 5-56. Removing the Top PC Card Ejection Lever

5. Remove the bottom PC Card ejection lever from the boss on the CPU base (Figure 5-57).

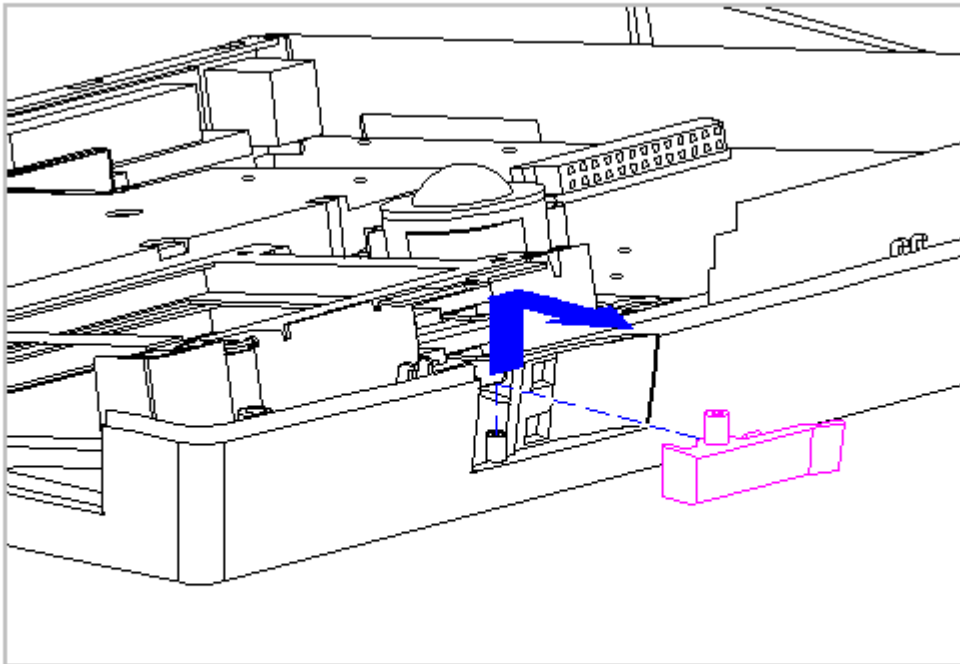


Figure 5-57. Remove the Bottom PC Card Ejection Lever

6. To replace the PC Card ejection levers and pin, reverse the previous steps.

PC Card (PCMCIA) Doors and Springs

This section contains removal and replacement procedures for the PC Card doors and springs. The top PC Card door and spring are located on the keyboard assembly and the bottom PC Card door and spring are located on the CPU base.

Top PC Card Door and Spring

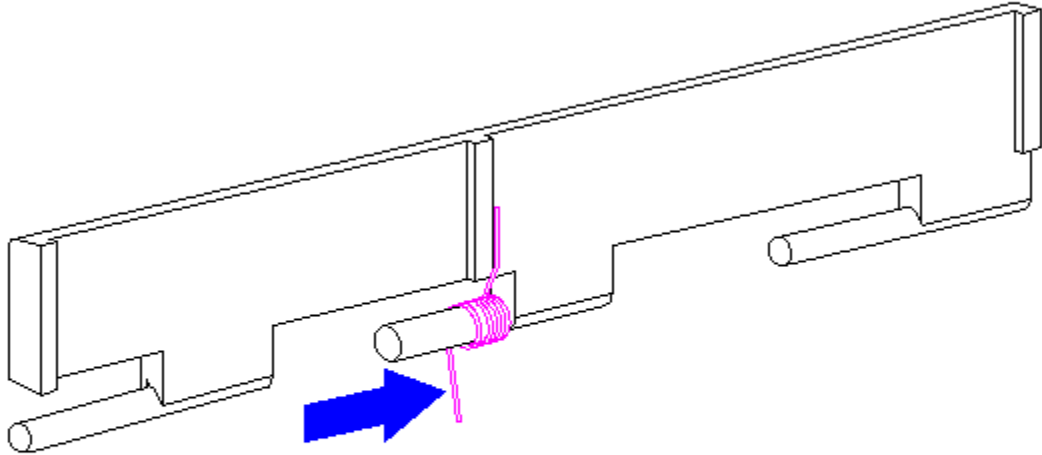


Figure 5-59. Replacing the PC Card Spring

2. Install the PC Card door, making sure the spring is placed between the notch [1] and the rib [2] (Figure 5-60).

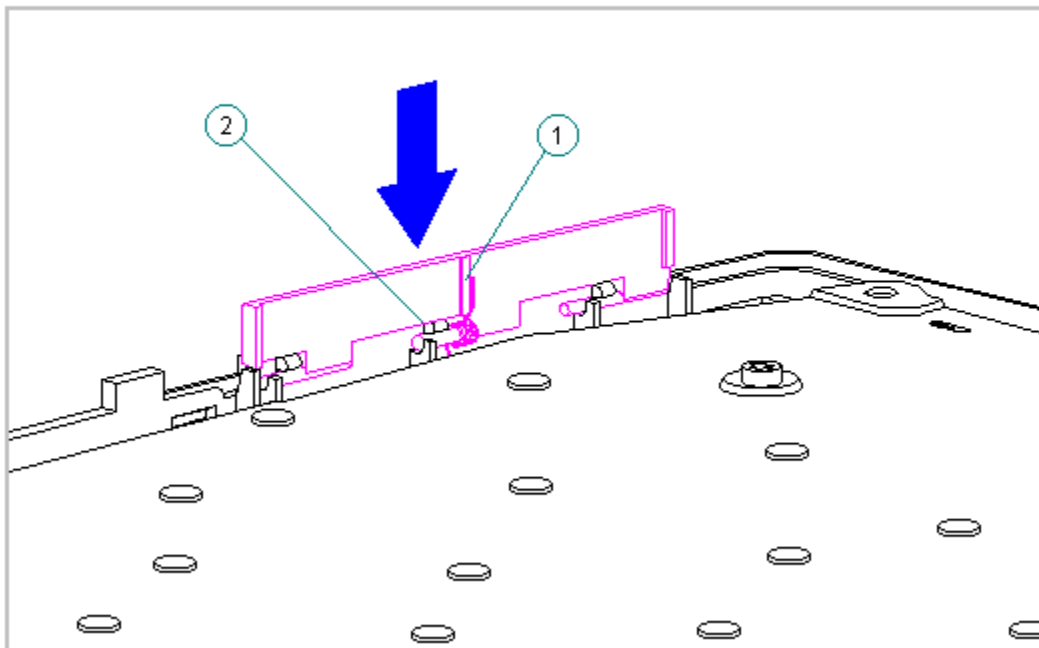


Figure 5-60. Replacing the PC Card Door on the Keyboard Assembly

To replace the bottom PC Card spring and door, follow these steps:

1. Install the PC Card spring on the door post, making sure the bent arm of the spring is placed against the rib on the PC Card door (Figure 5-62).

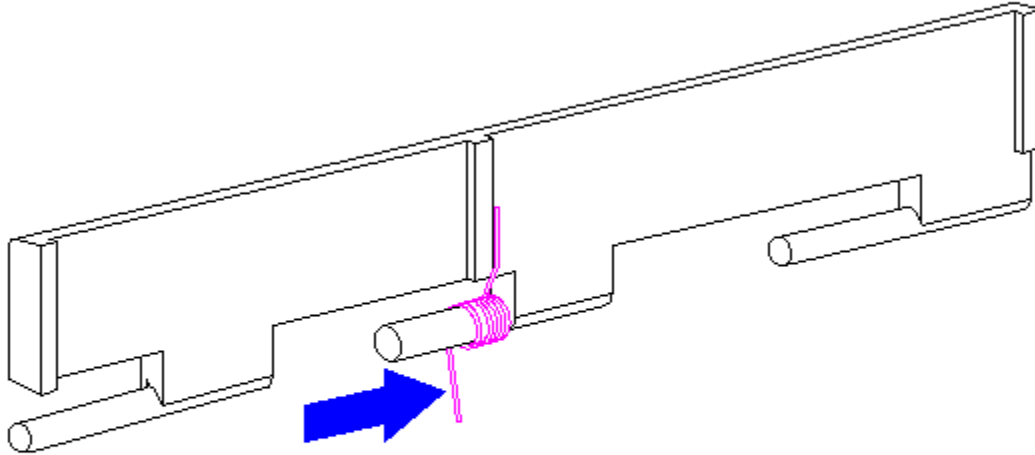


Figure 5-62. Replacing the PC Card Spring

2. Install the PC Card door, making sure the spring is placed between the notch [1] and the rib [2] (Figure 5-63).

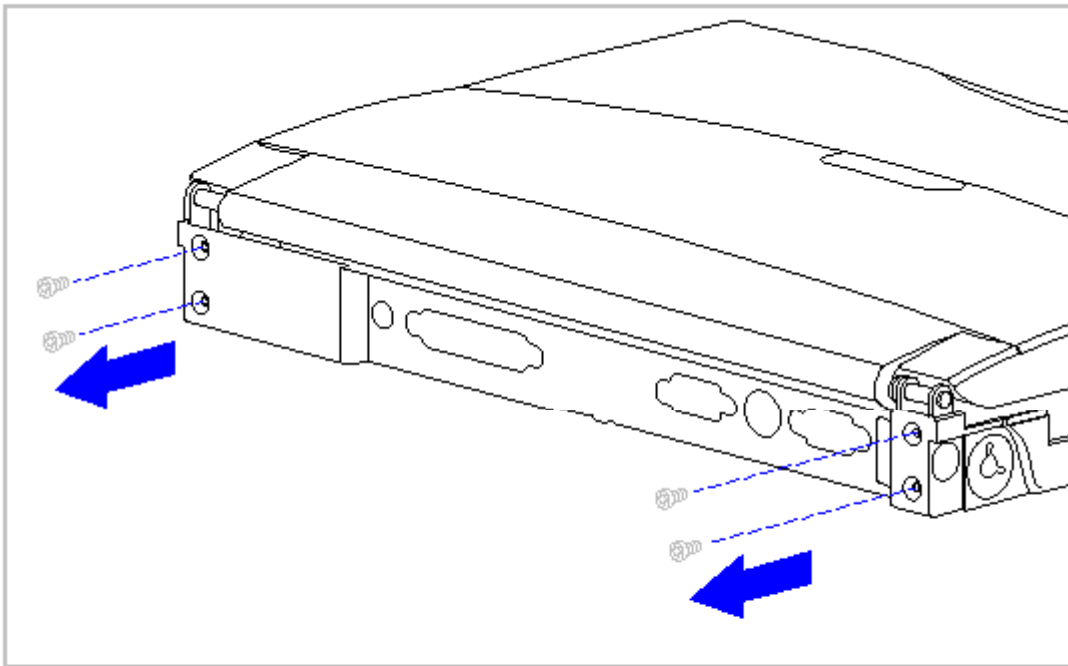


Figure 5-64. Removing the Rear Clutch Screws

8. Remove the display assembly from the system unit module (Figure 5-65).

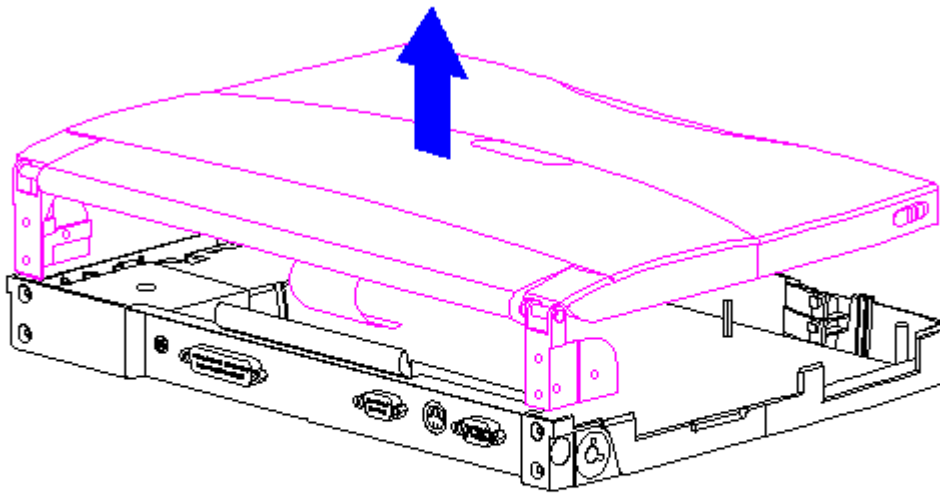


Figure 5-65. Removing the Display Assembly

9. Slide the trough at the rear of the CPU base to the right, then lift up to remove (Figure 5-66).

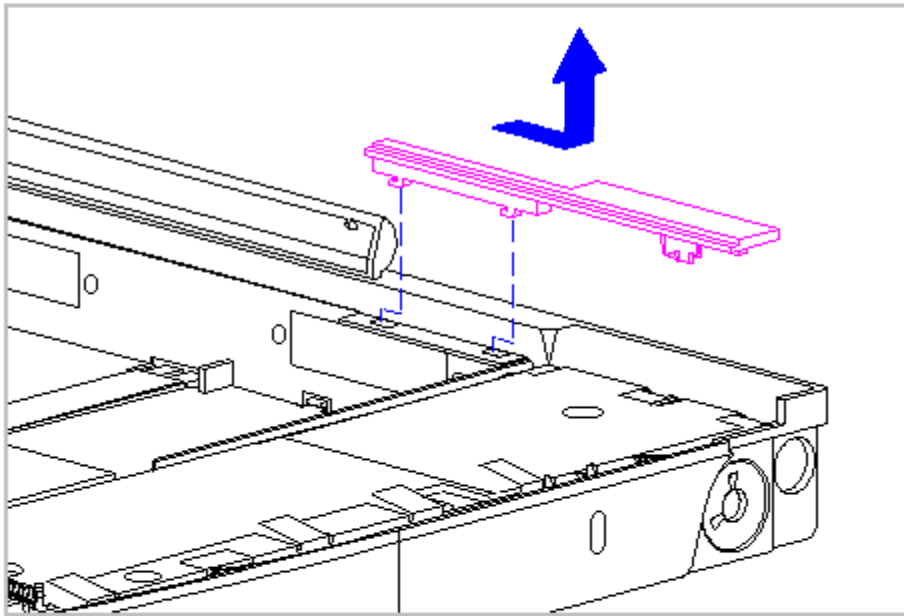


Figure 5-66. Removing the Trough from the CPU Base

10. Remove the PC Card ejection levers and pin (Section 5.15).
11. Remove the system chassis by gently separating it from the CPU base and lifting out the system chassis (Figure 5-67).

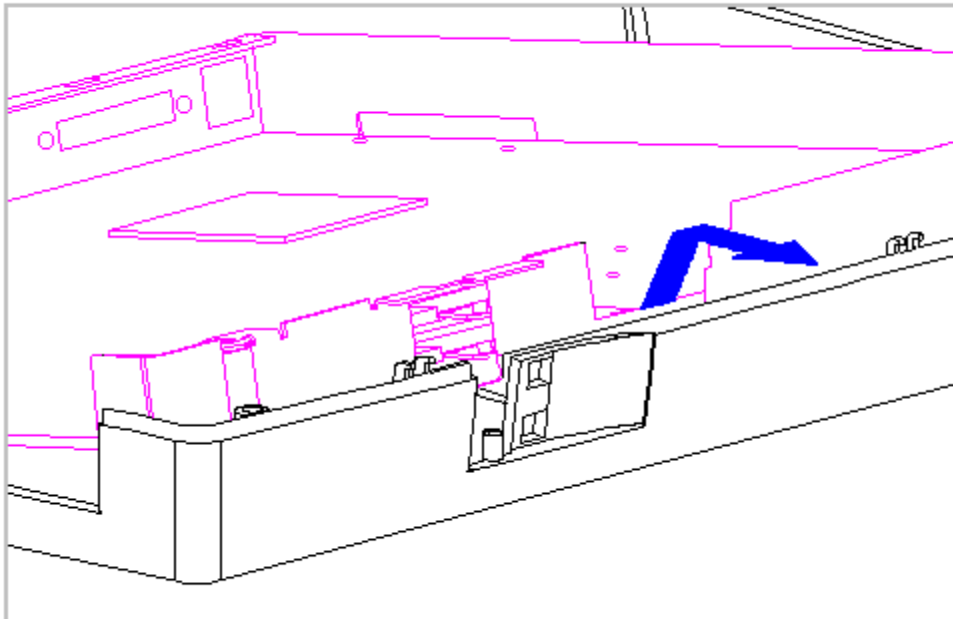


Figure 5-67. Removing the System Chassis

4. To replace the lock provision plate, reverse the previous steps.

Attaching the Anti-Skid Pads

If replacing the CPU base, two anti-skid pads for the battery tray and the two for the CPU base must be attached to the bottom of the base. To attach the anti-skid pads, follow these steps:

1. Peel off the top layer of one of the anti-skid pads to expose the adhesive.
2. With the adhesive side down, place the anti-skid pad into the raised oval outline on the CPU base and the battery tray (Figure 5-70).

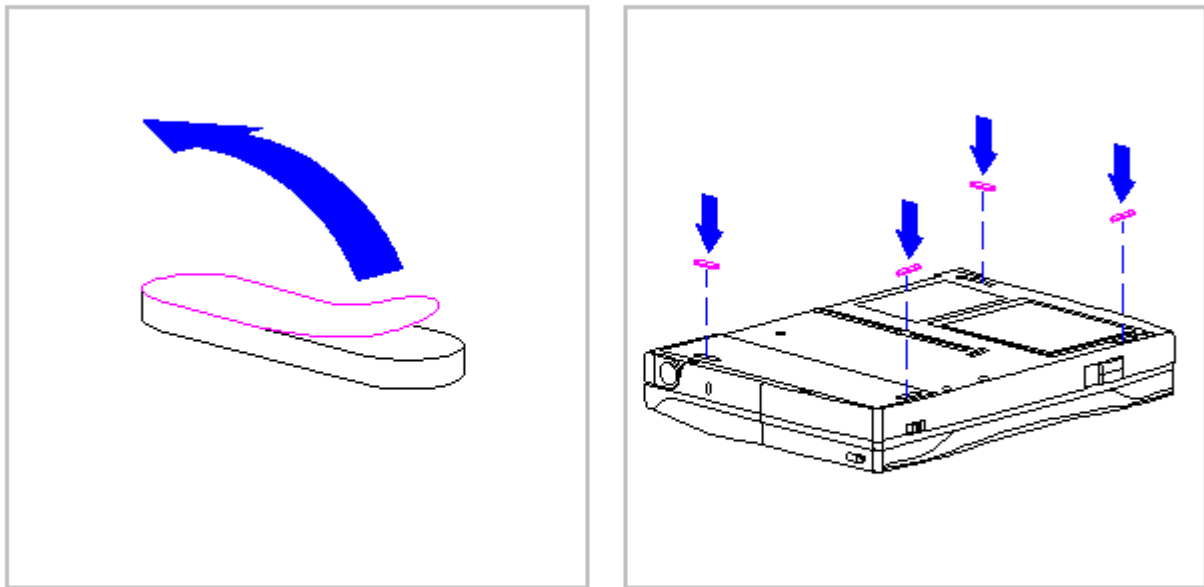


Figure 5-70. Attaching Anti-Skid Pads on the CPU Base

Display Assembly Components

This section contains removal and replacement procedures for the following display assembly components:

- o Bezel
- o Latches
- o Inverter board

Removing and Replacing the Display Bezel

To remove the display bezel, follow these steps:

1. Turn the computer off and remove all external devices, including the battery pack and the AC Adapter. Remove the diskette and PC Card, if installed (Section 5.3).
2. Open the computer.
3. Remove the four screws from the display bezel (Figure 5-71).

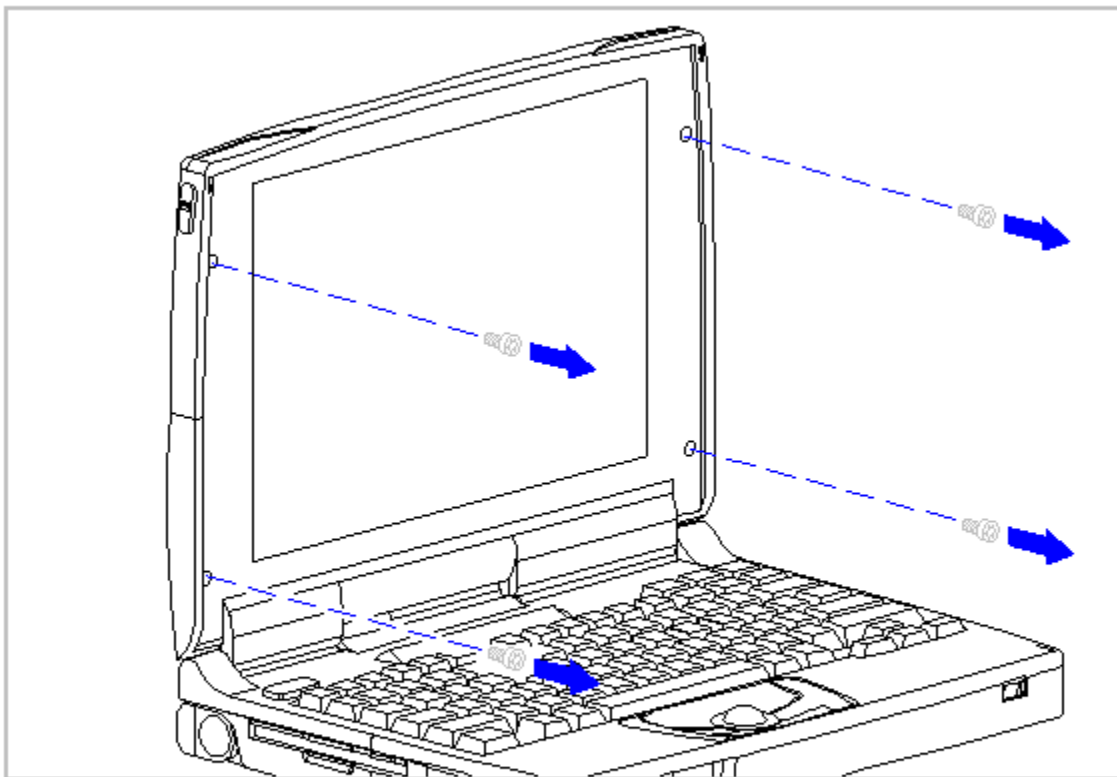


Figure 5-71. Removing the Display Bezel Screws

4. Tilt the display to approximately a 110-degree angle.
5. Using the case utility tool, separate the display bezel from the display assembly (Figure 5-72).

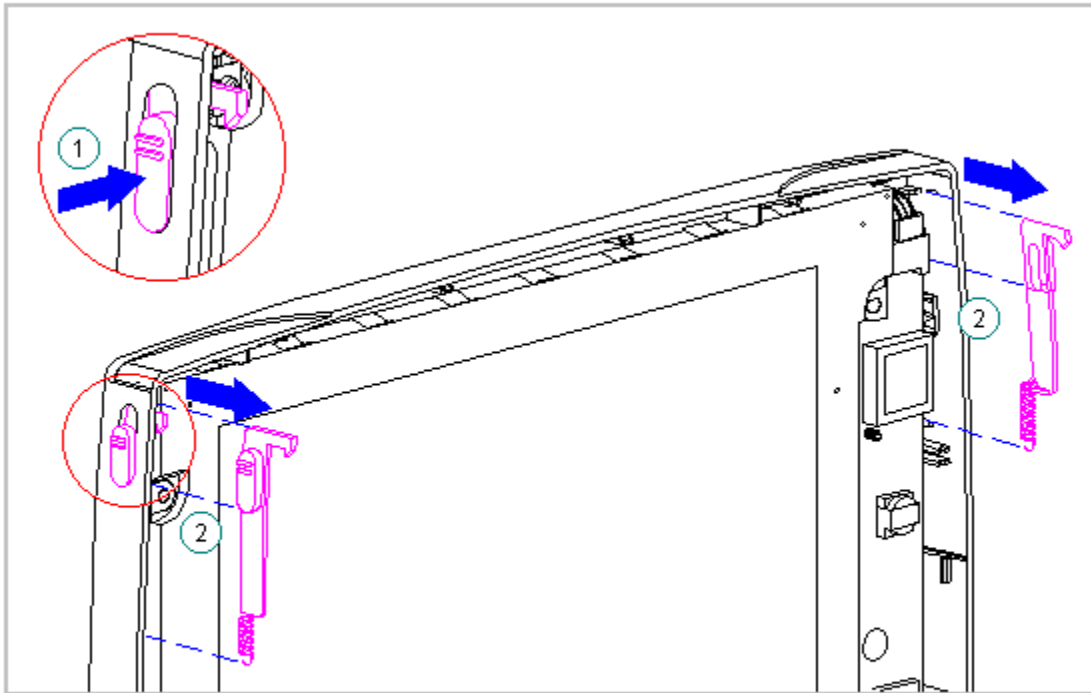


Figure 5-73. Removing the Display Latch from the Display Enclosure

6. Remove the display latch spring from the latch (Figure 5-74).

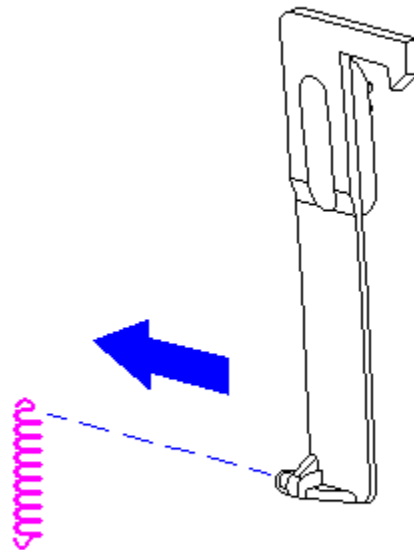


Figure 5-74. Removing the Display Latch Spring from the Latch

Replacing the Display Enclosure Springs and Latches

To replace the display springs and latches, follow these steps:

1. Hook the display latch spring on to the display latch [1] and place the display latch spring over the post in the display enclosure [2] (Figure 5-75).

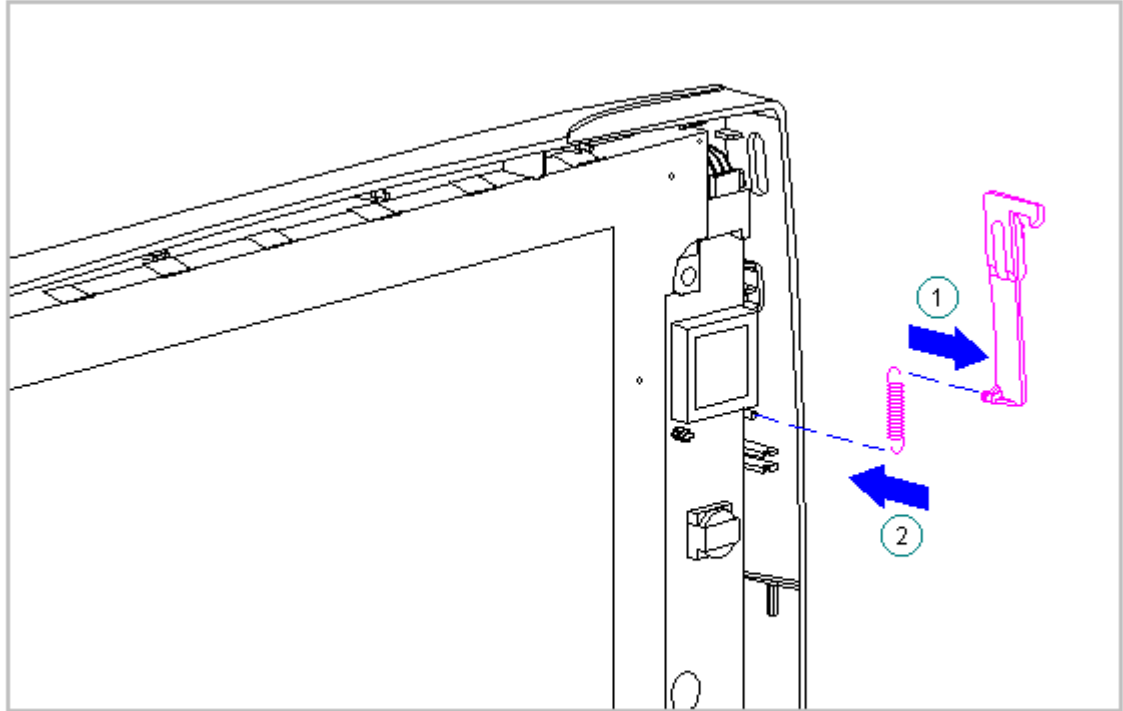


Figure 5-75. Replacing the Display Latch Spring

2. Slide the display latch into place on either side of the display enclosure (Figure 5-76).

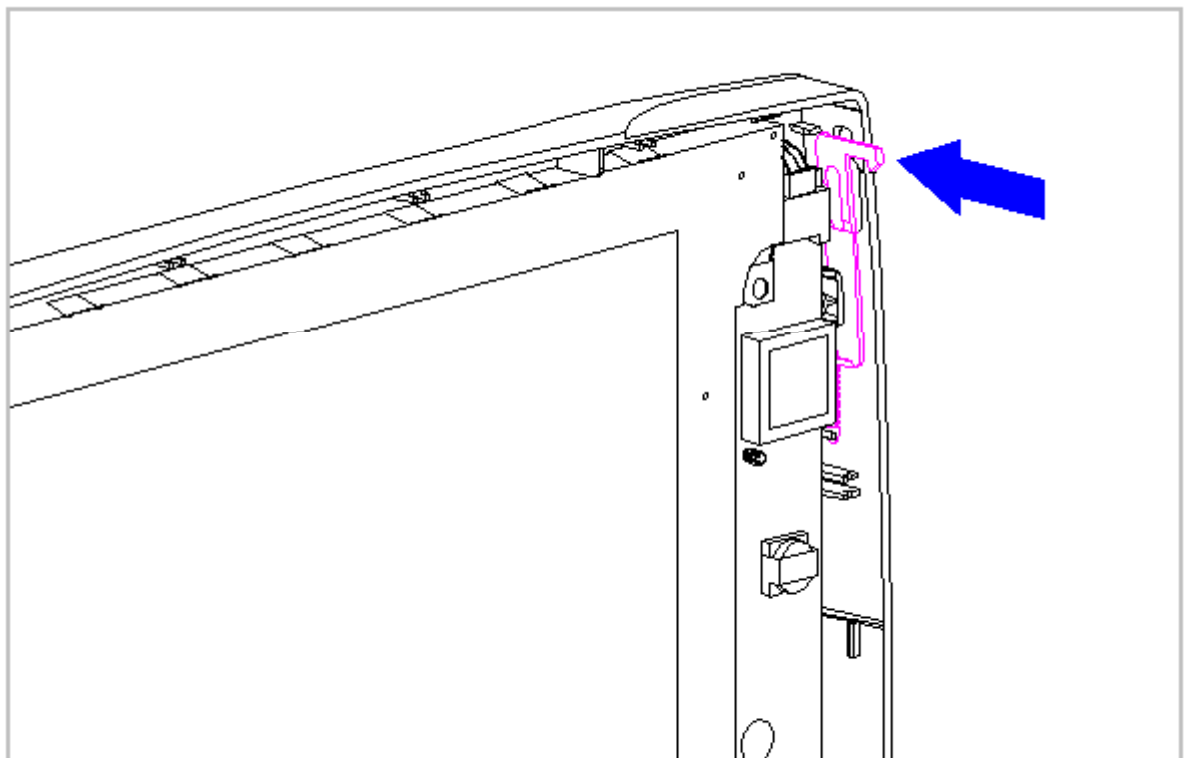


Figure 5-76. Replacing the Display Latch

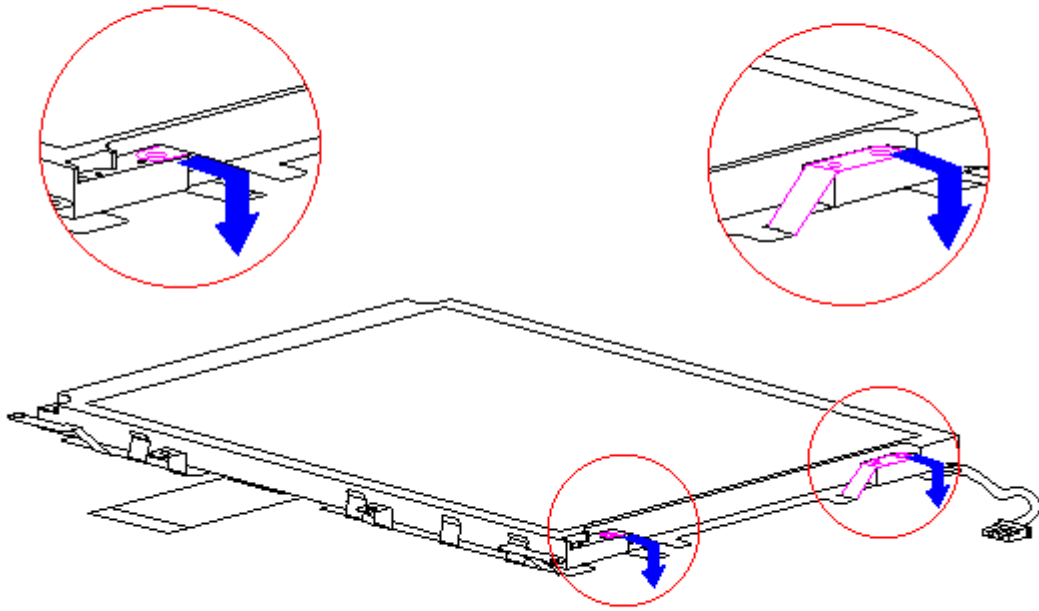


Figure 5-87. Removing the Display Shield Tabs - CSTN (10.4 in) Display

14. Lay the CSTN (10.4 in) panel face down on a clean surface.
15. Slide the display shield off the panel (Figure 5-88).

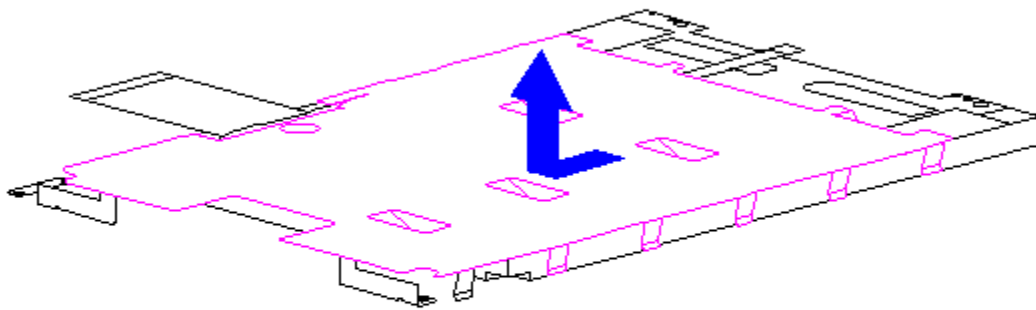


Figure 5-88. Removing the Display Shield from the CSTN (10.4 inch) Panel

16. Disconnect the display cable from the connector on the back of the CSTN (10.4 in) panel (Figure 5-89).

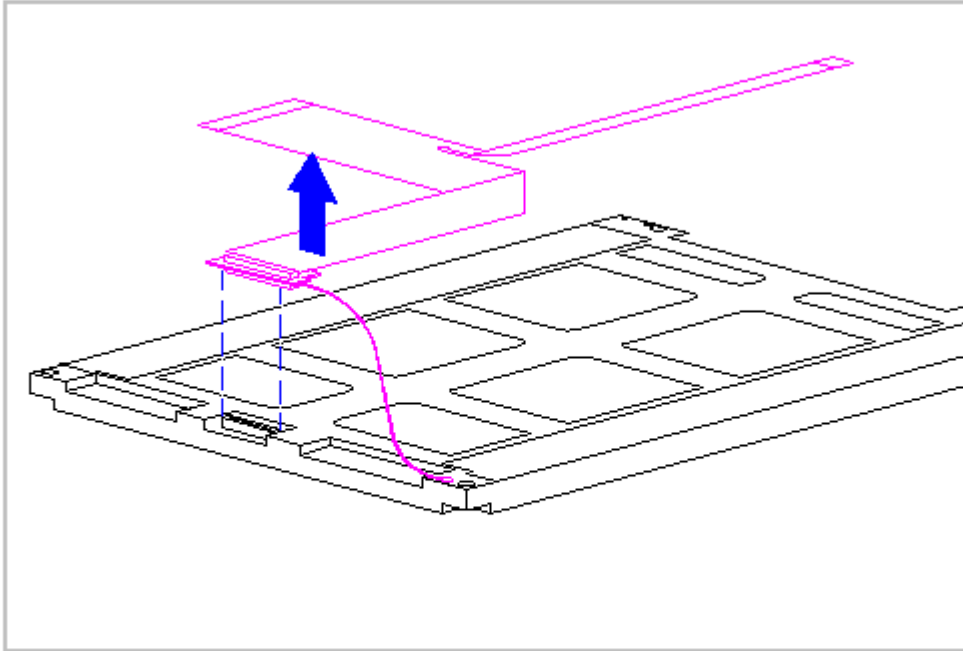


Figure 5-89. Removing the Display Cable from the CSTN (10.4 in) Panel

17. Lift the display ground cable out of the display enclosure (Figure 5-90).

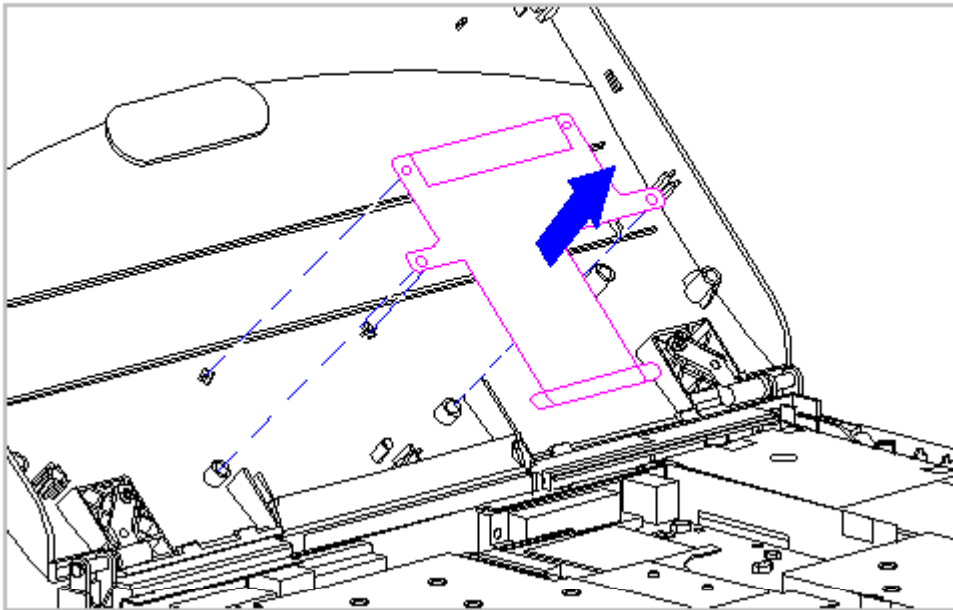


Figure 5-90. Removing the Display Ground Cable from the Display Enclosure - CSTN (10.4 in) Display

Replacing the Display Ground Cable, Display Cable, Shield, and the CSTN (10.4 in) Panel

To replace the display ground cable, display cable, shield, and the CSTN (10.4 in) panel, follow these steps:

1. Position the display ground cable in the display enclosure, aligning the cable with the bosses in the display enclosure (Figure 5-91).

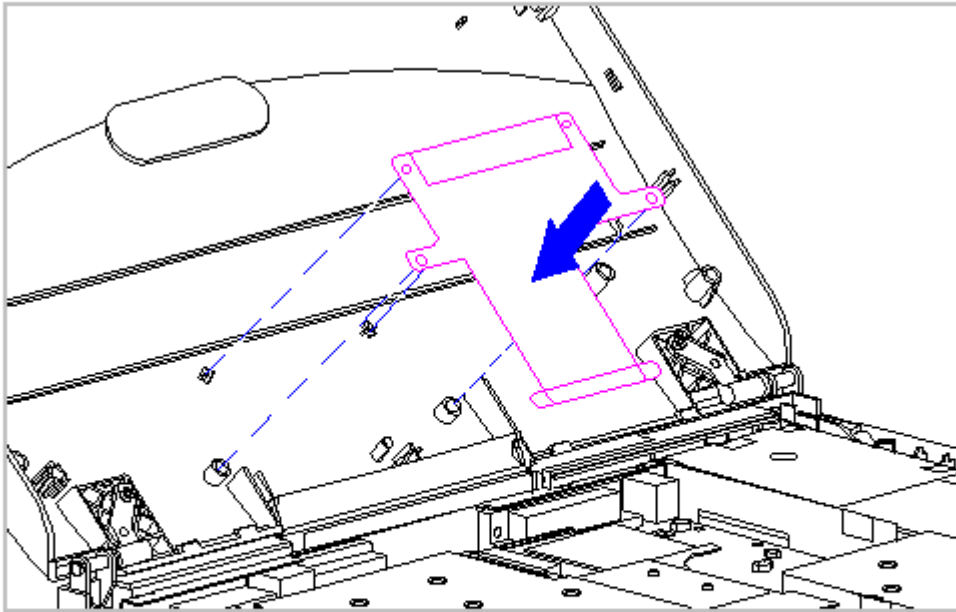


Figure 5-91. Replacing the Display Ground Cable - CSTN (10.4 in) Display

2. Connect the display cable to the XOVER Board. Then connect the XOVER Board to the connector on the back of the panel (Figure 5-92).

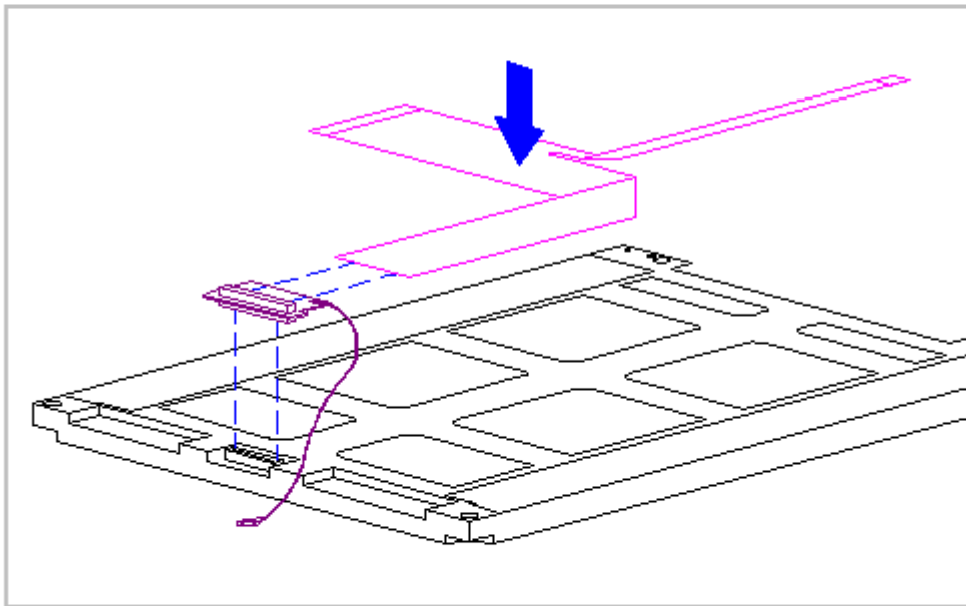


Figure 5-92. Replacing the Display Cable to the CSTN (10.4 in) Panel

3. Slightly lift the tabs on the left side of the display shield and slide the shield onto the CSTN (10.4 in) panel. Ensure that the LIF connector end of the display cable is exposed on the right side of the panel (Figure 5-93).

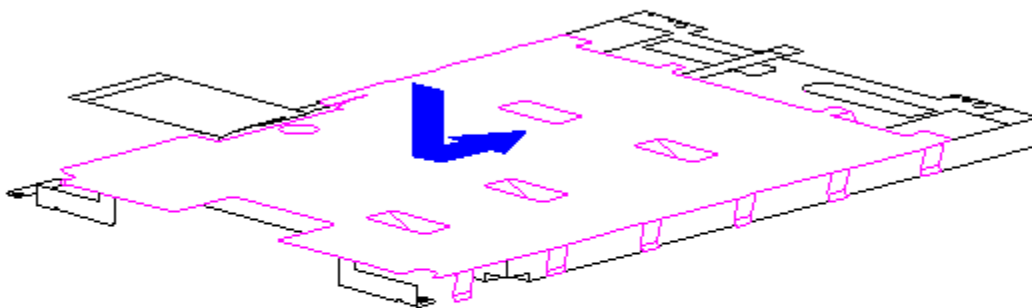


Figure 5-93. Placing the Display Shield on the CSTN (10.4 inch) Panel

4. Place the display shield tabs in the indentations on the sides of the CSTN (10.4 in) panel (Figure 5-94).

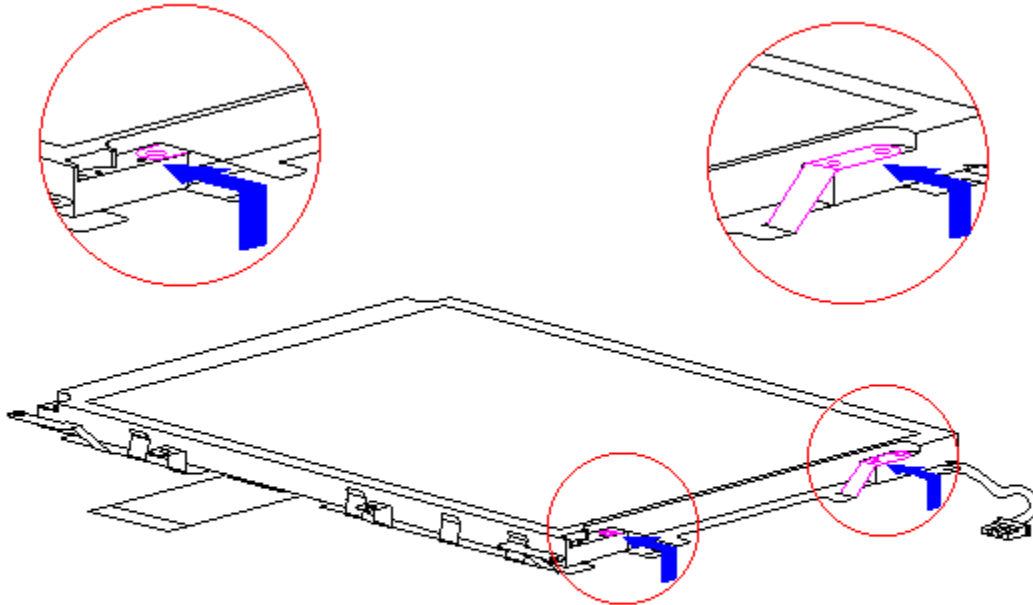


Figure 5-94. Positioning the Display Shield Tabs - CSTN (10.4 in) Display

5. Align the CSTN (10.4 in) panel, display cable, and shield in the display enclosure and replace the screws. Before replacing the screw in the lower-left corner, route the XOVER board ground wire around the boss at the bottom of the display enclosure. Hold the end of the wire over the screw hole and install the screw, attaching the wire. Ensure that the ZIF connector end of the display cable and the end of the display ground cable are exposed at the bottom of the display enclosure (Figure 5-95).

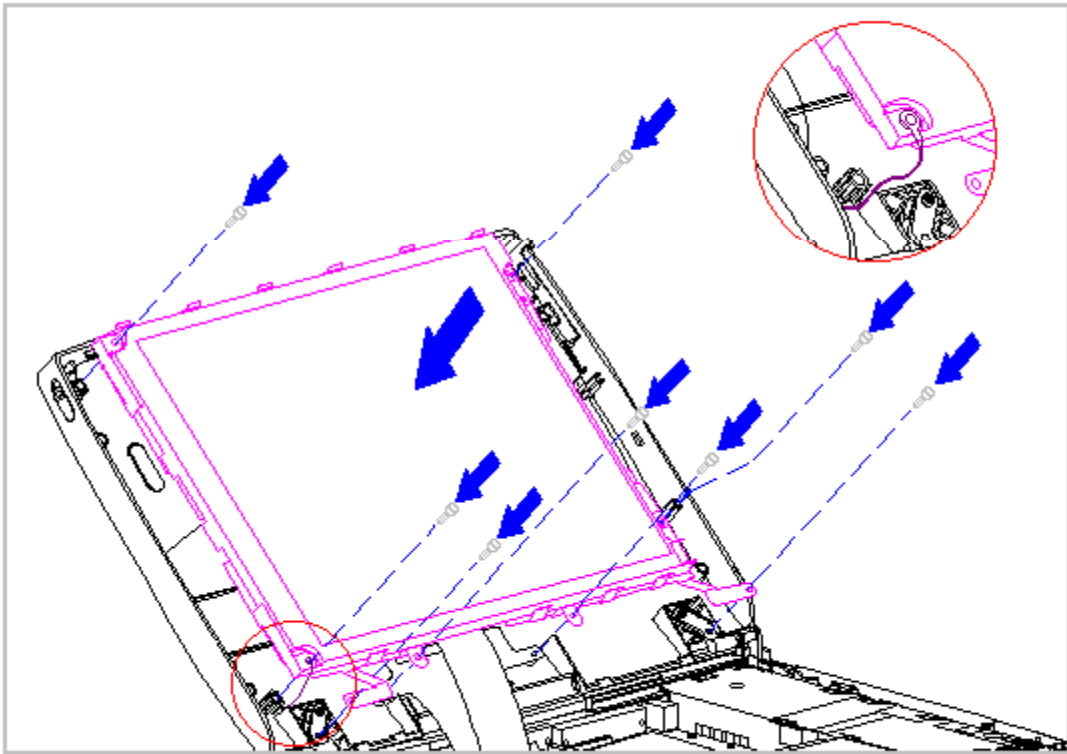


Figure 5-95. Replacing the CSTN (10.4 in) Panel and the Display Shield

6. Connect the display cable and the backlight cable to the inverter board (Section 5.19).
7. Replace the inverter board (Section 5.19).
8. Replace the bezel (Section 5.19).
9. Connect the display ground cable [1] to the flex ground bracket above the serial port connector (Figure 5-96).

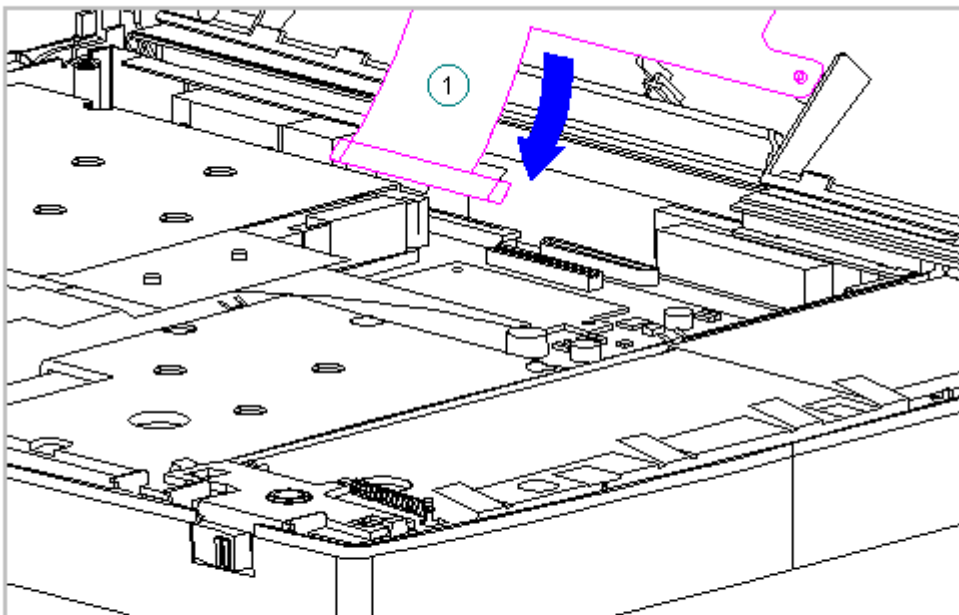


Figure 5-96. Connecting the Display Ground Cable - CSTN (10.4 in Display)

10. Carefully insert the end of the display ground cable into the ZIF connector slide on the system board.

IMPORTANT: Ensure that the ZIF connector slide is in its fully upward position and that it remains so while you are inserting the cable into it. Before closing the slide, ensure that the cable is fully seated (to the white insertion line) in the ZIF connector.

11. While holding the end of the display cable inside the ZIF connector slide, press down both ends of the slide simultaneously to secure the cable in the ZIF connector (Figure 5-97).

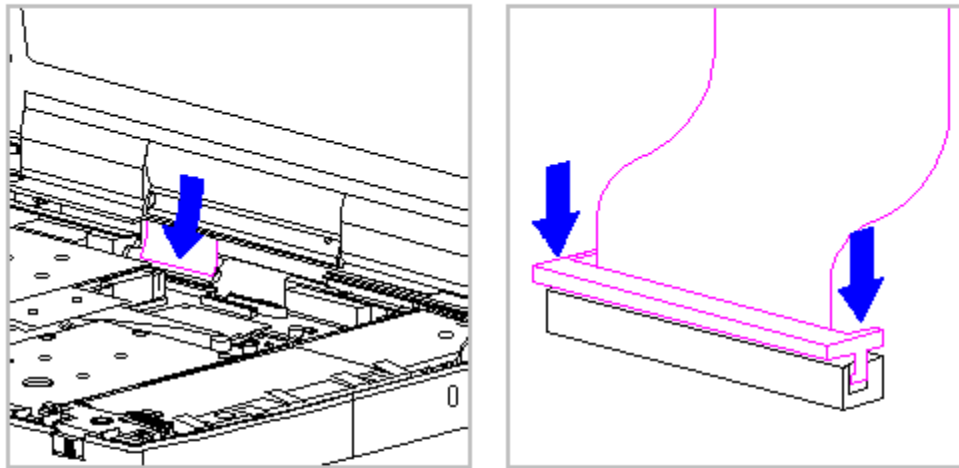


Figure 5-97. Connecting the Display Cable to the System Board - CSTN (10.4 in) Display

12. Ensure that the cable has been seated evenly and that the white line on the cable is level.

13. Replace the keyboard assembly (Section 5.7).

Color TFT (10.4 in) Display

This section contains removal and replacement procedures for the following CTFT (10.4 in) display components:

NOTE: The inverter board of the CTFT (10.4 in) display fits partially behind the display. Loosen the screws on the display to slide the inverter out from behind the display.

5. Remove the inverter board (Section 5.19).
6. Remove the display cable and backlight cable from the inverter board (Section 5.19).
7. Remove the four screws that secure the panel to the display enclosure (Figure 5-99).

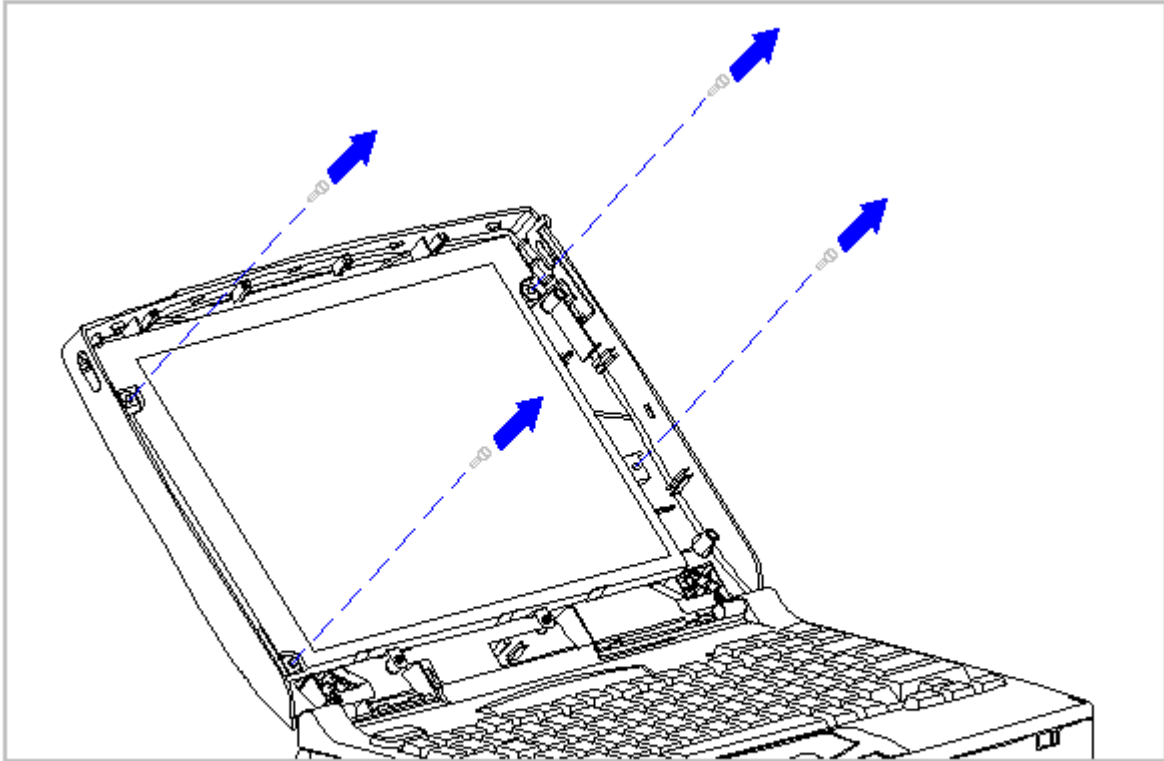


Figure 5-99. Removing the Screws from the CTFT (10.4 in) Panel

8. Carefully rotate the CTFT (10.4 in) panel down and out of the display enclosure, laying the panel gently on the keyboard assembly (Figure 5-100).

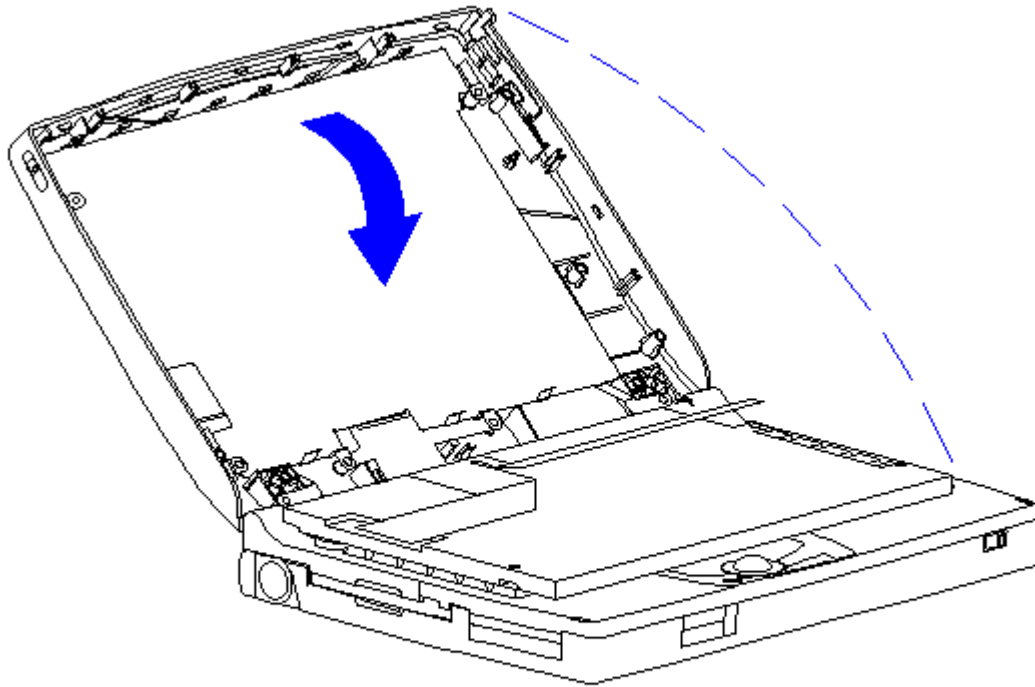


Figure 5-100. Removing the CTFT (10.4 inch) Panel from the Display Enclosure

9. Remove the display cable from the connector on the back of the panel by pulling upward on the tabs on the back of the connector (Figure 5-101).

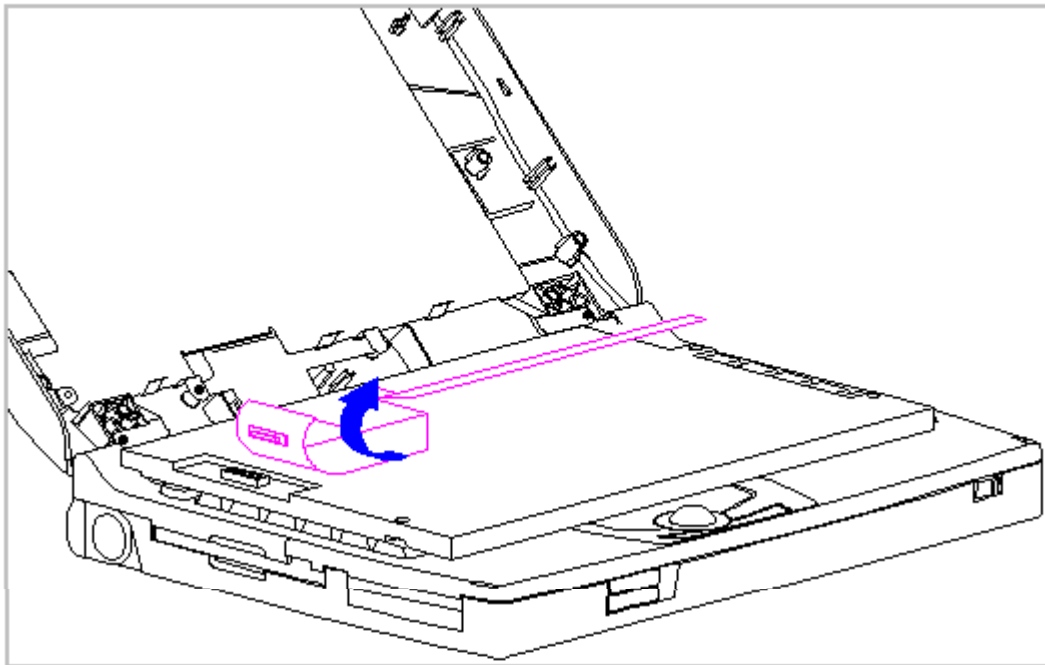


Figure 5-101. Removing the CTFT (10.4 inch) Display Cable from the Panel

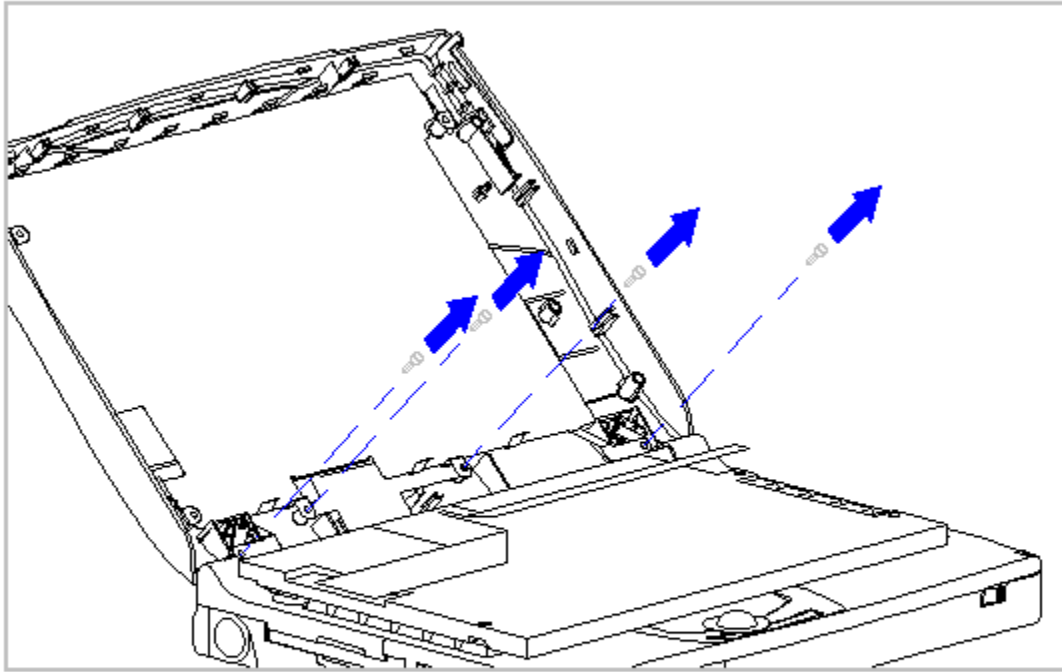


Figure 5-106. Removing Screws from the CTFT (10.4 in) Display Shield

8. Lift the display shield up and away from the display enclosure (Figure 5-107).

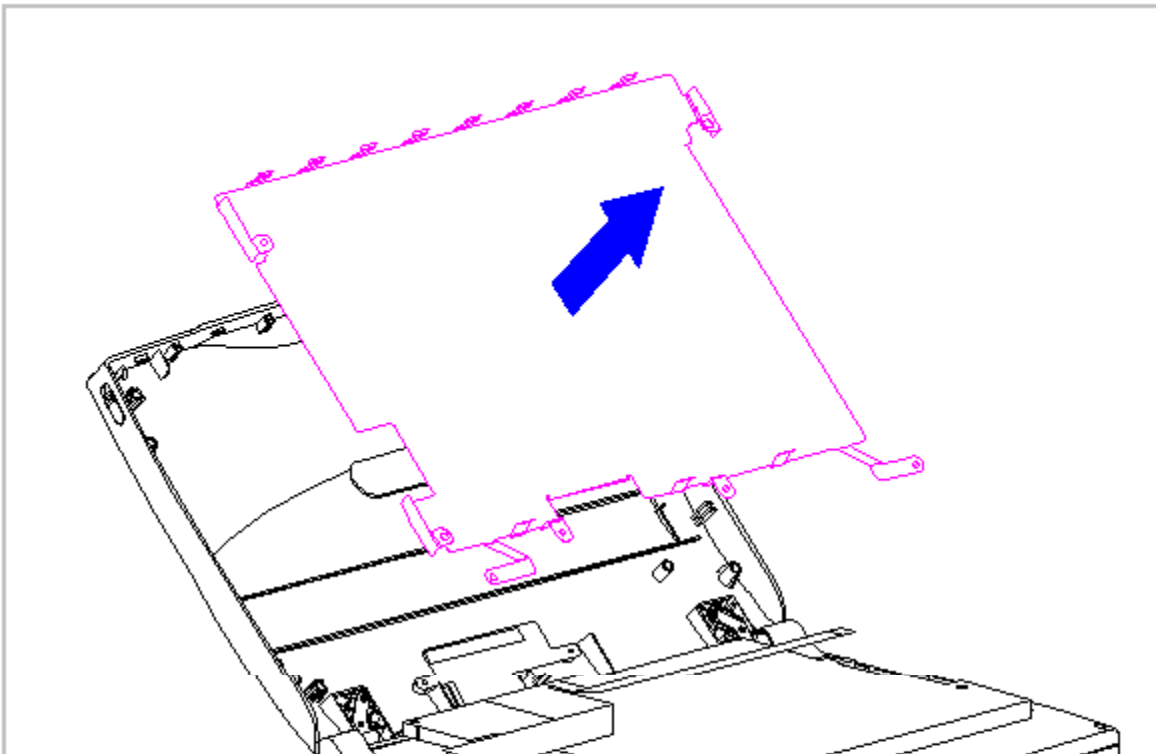


Figure 5-107. Removing the CTFT (10.4 in) Display Shield

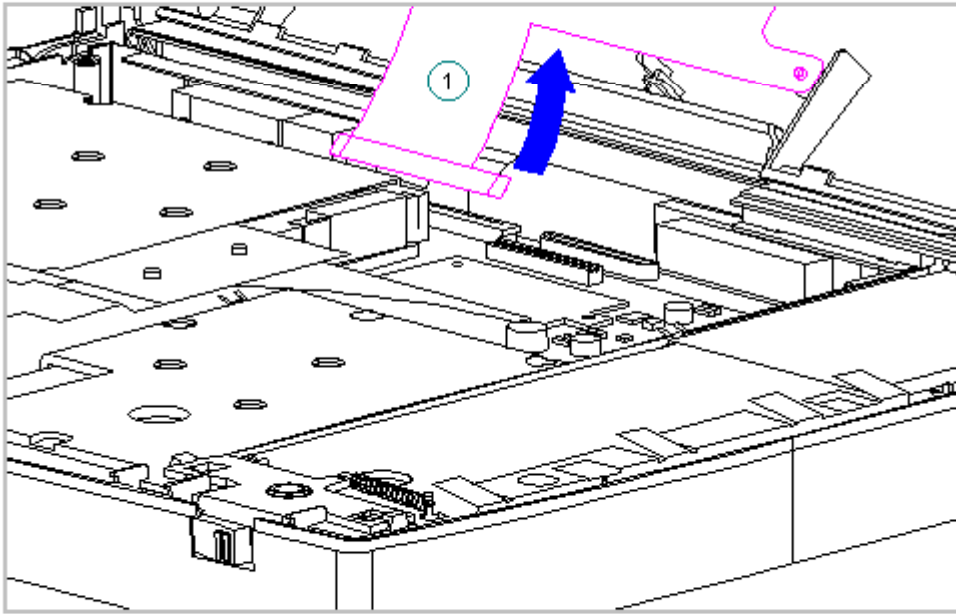


Figure 5-108. Disconnecting the Display Ground Cable - CTFT (10.4 in) Display

10. Lift the display ground cable out of the display enclosure (Figure 5-109).

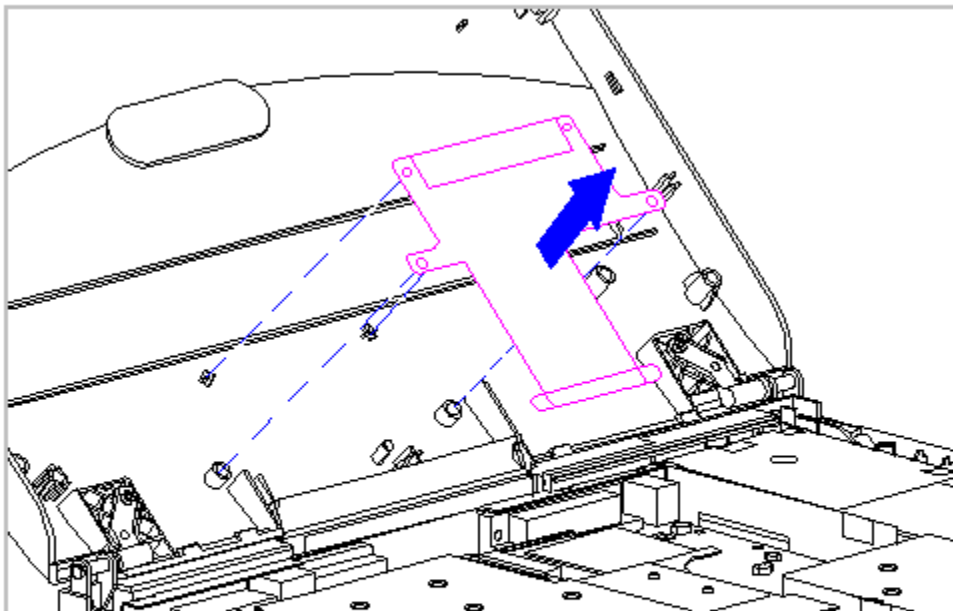


Figure 5-109. Removing the Display Ground Cable - CTFT (10.4 in) Display

6. Lift up both ends of the ZIF connector slide simultaneously [1], carefully opening the slide [2] (Figure 5-111).
7. Lift the display cable out of the connector slide [3], being careful not to pull or twist the cable (Figure 5-111).

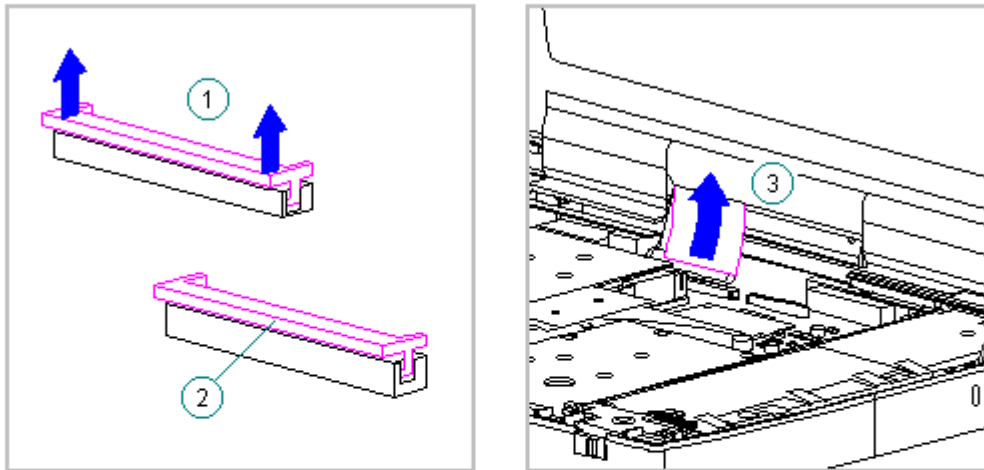


Figure 5-111. Disconnecting the Display Cable from the System Board

8. Disconnect the display ground cable [1] from the flex ground bracket (Figure 5-112).

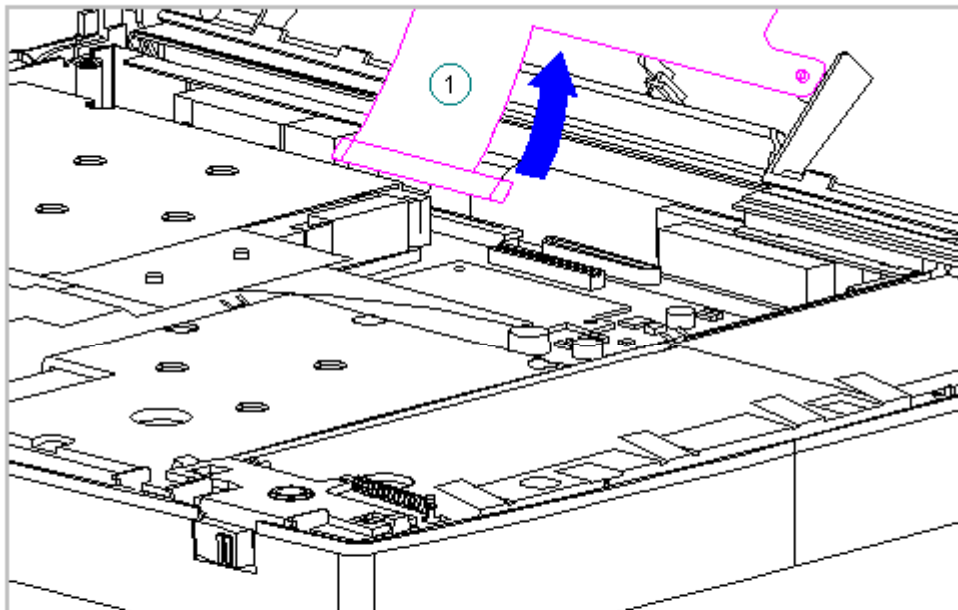


Figure 5-112. Disconnecting the Display Ground Cable from the Flex Ground Bracket

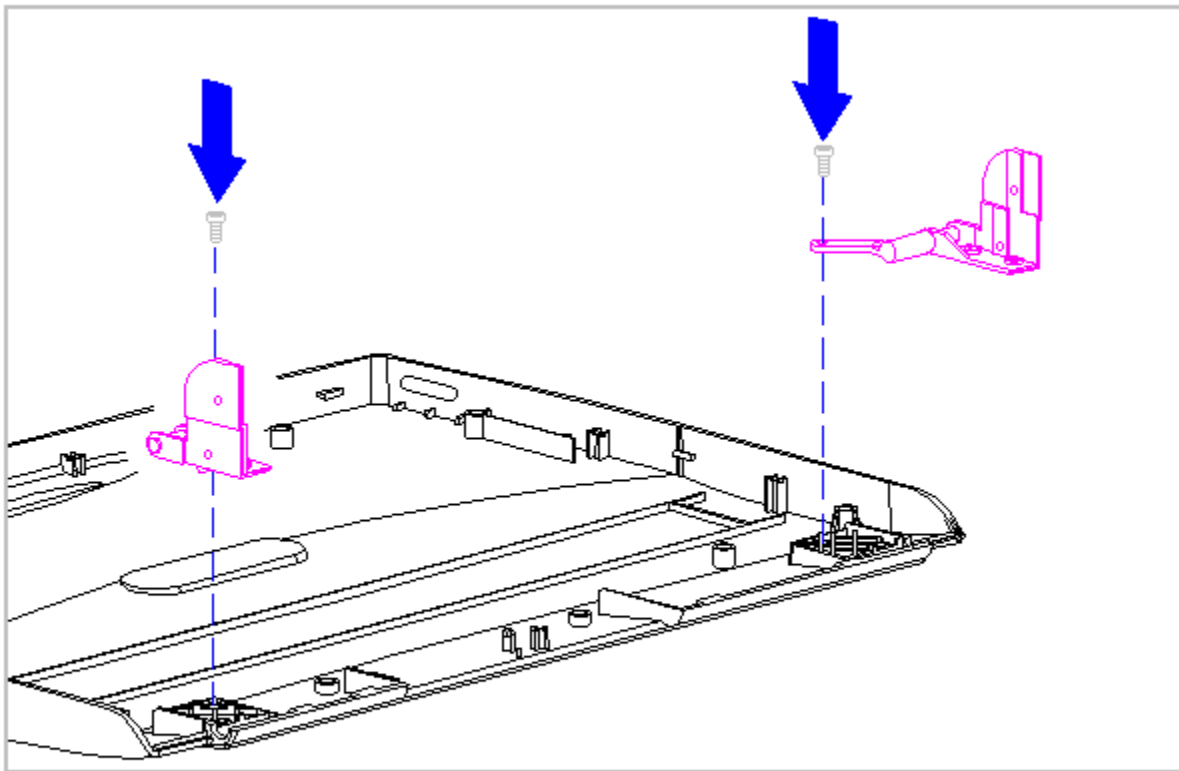


Figure 5-116. Replacing the Display Clutches

21. Replace the display ground cable, the LCD panel, the shield, and the display cable into the display enclosure as follows:
 - o If replacing a CSTN (10.4 in) panel and shield, refer to Section 5.20.
 - o If replacing a CTFT (10.4 in) panel and shield, refer to Section 5.21.
22. Connect the display cable and backlight cable to the inverter board (Section 5.19).
23. Replace the inverter board (Section 5.19).
24. Replace the display latches and springs (Section 5.19).
25. Replace the bezel (Section 5.19).
26. Position the display clutches at a 90-degree angle (Figure 5-117).

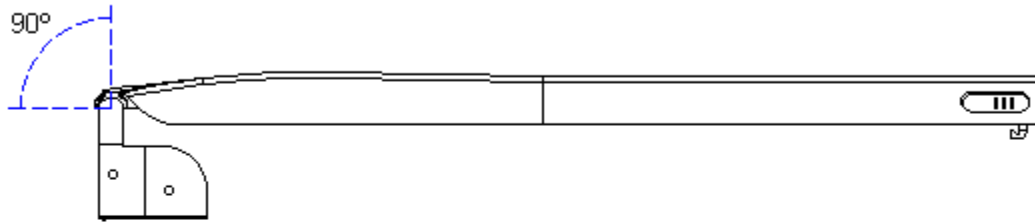


Figure 5-117. Positioning Display Clutches

27. Align the clutches with the system unit module, ensuring that the display ground cable and the display cable are positioned on top of the system unit module (Figure 5-118).

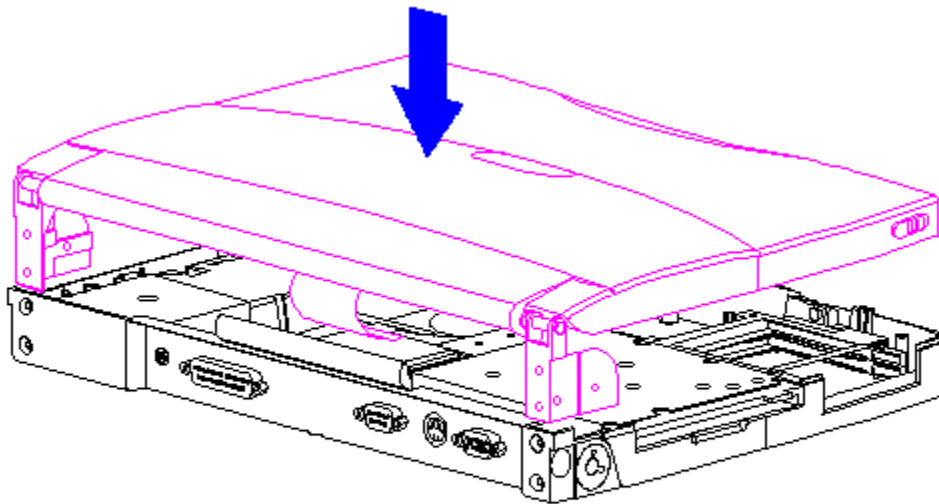


Figure 5-118. Replacing the Display Assembly

28. Replace the four rear clutch screws (Figure 5-119).

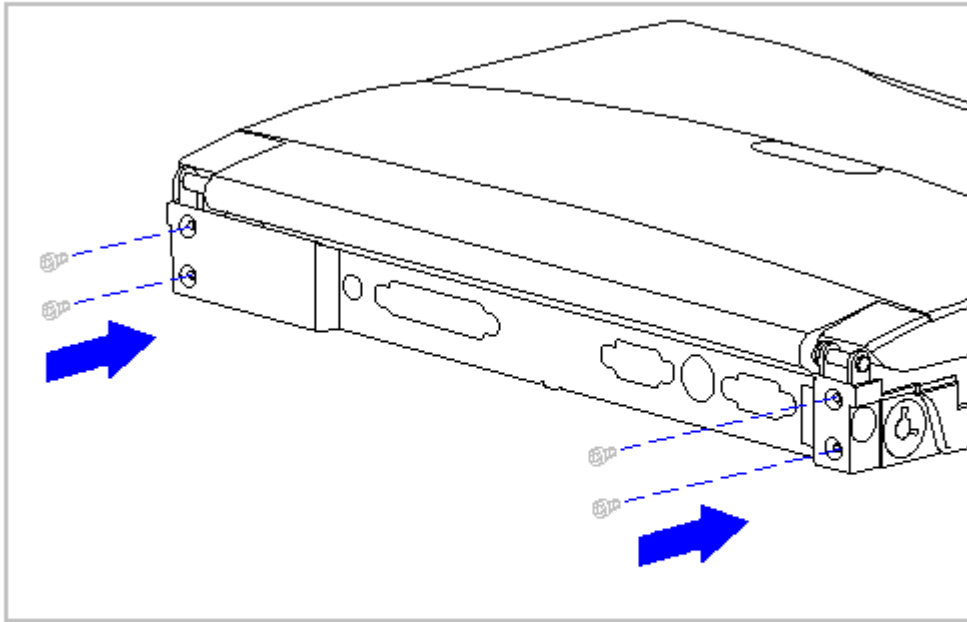


Figure 5-119. Replacing the Rear Clutch Screws

29. Open the display to a 90-degree angle (Figure 5-120).

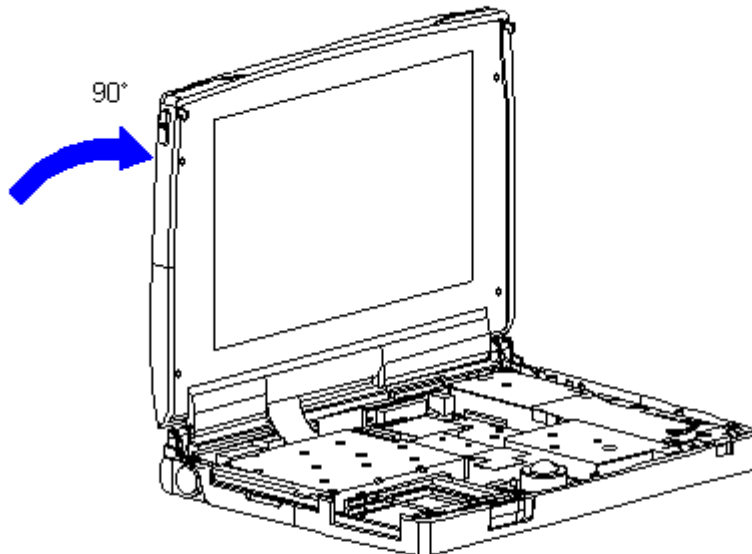


Figure 5-120. Opening the Display

30. Connect the display ground cable [1] to the flex ground bracket above the serial port connector between the system board and the system chassis (Figure 5-121).

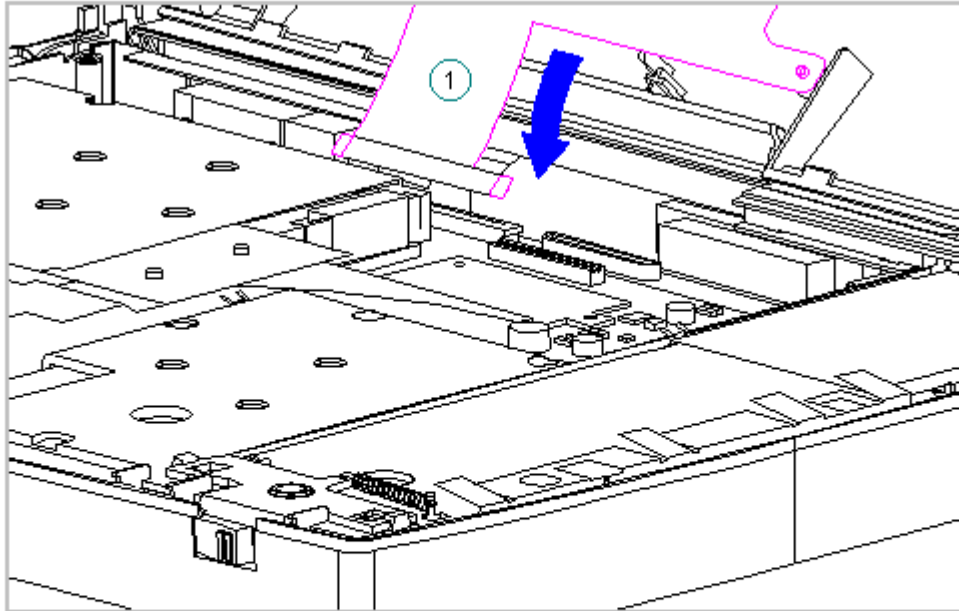


Figure 5-121. Connecting the Display Ground Cable to the Flex Ground Bracket on the System Unit Module

31. Carefully insert the end of the cable into the ZIF connector slide on the system unit.

IMPORTANT: Ensure that the ZIF connector slide is in its fully upward position and that it remains so while you are inserting the cable into it. Before closing the slide, ensure that the cable is fully seated (to the white insertion line) in the ZIF connector.

32. While holding the end of the display cable inside the ZIF connector slide, press down both ends of the slide simultaneously to secure the cable in the ZIF connector (Figure 5-122).

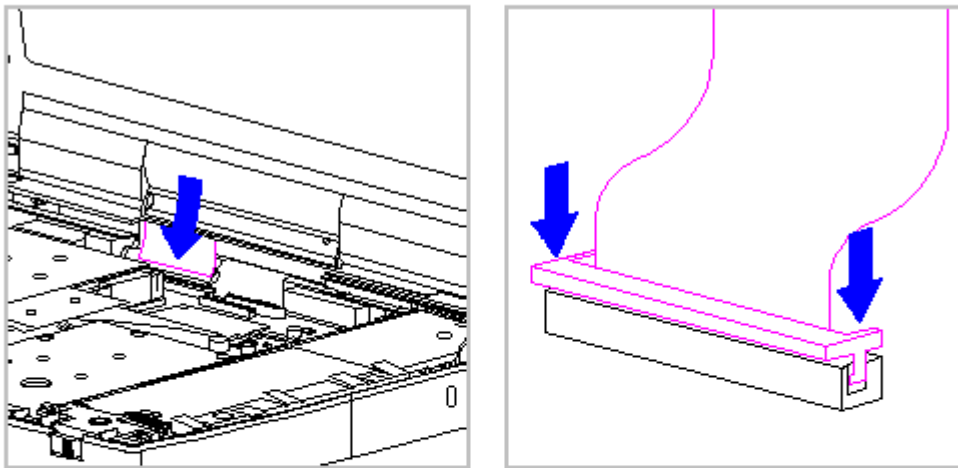


Figure 5-122. Connecting the Display Cable to the System Unit Module

33. Ensure that the cable has been seated evenly and that the white line on the cable is level.
34. Replace the right clutch ground clip located between the clutch and the CPU base (Figure 5-123).

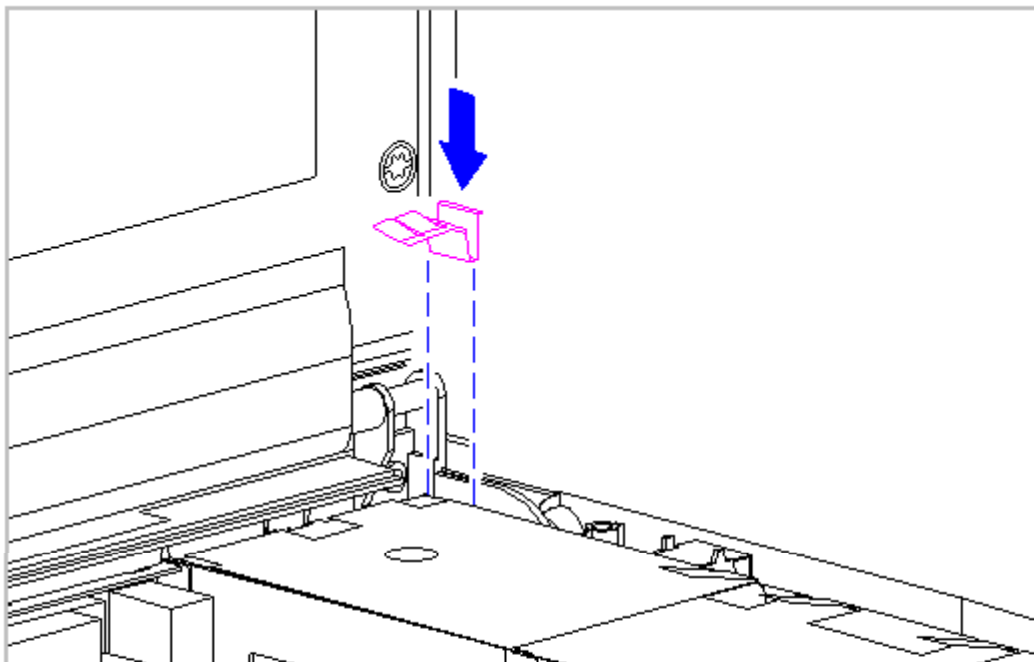


Figure 5-123. Replacing the Right Clutch Ground Clip

35. Replace the keyboard assembly (Section 5.7).
36. Replace the tilt feet (Section 5.5).
37. Replace the handle bracket (Section 5.4).

Clutches and Ground Clips

This section contains removal and replacement procedures for the clutch ground clips located between the system chassis and CPU base, and for the clutches that join the system unit module and the display enclosure.

Removing and Replacing the Clutch Ground Clips

To remove the left and right clutch ground clips, follow these steps:

1. Turn the computer off and remove all external devices, including the battery pack and the AC Adapter. Remove the diskette and PC Card, if installed (Section 5.3).
2. Remove the keyboard assembly (Section 5.7).
3. Remove the left clutch ground clip from the system chassis (Figure 5-124).

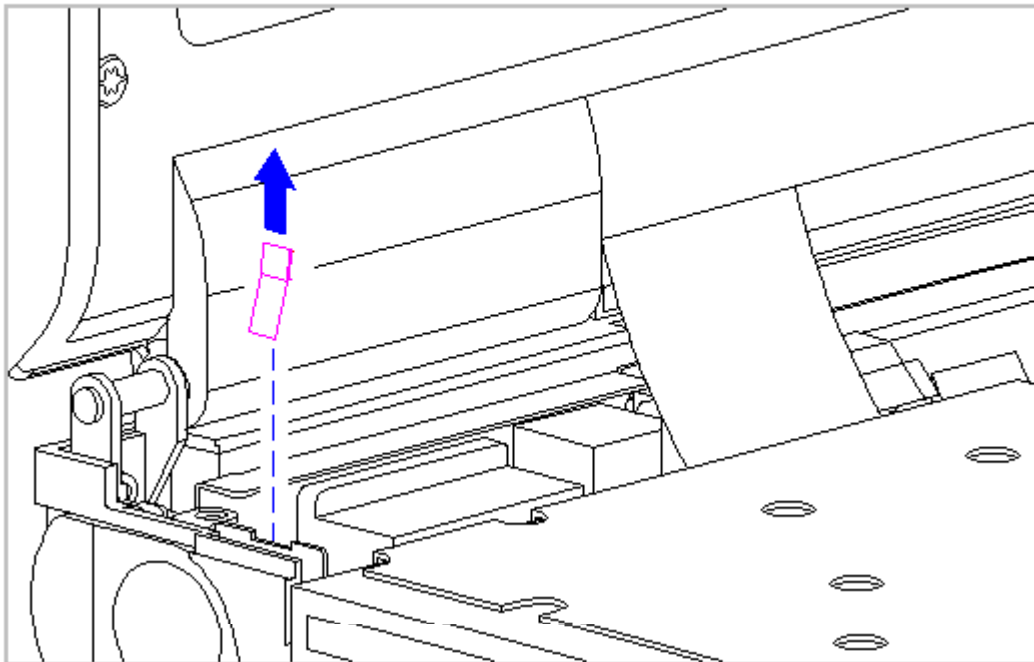


Figure 5-124. Removing the Left Clutch Ground Clip

4. Remove the right clutch ground clip located between the clutch and the CPU base (Figure 5-125).

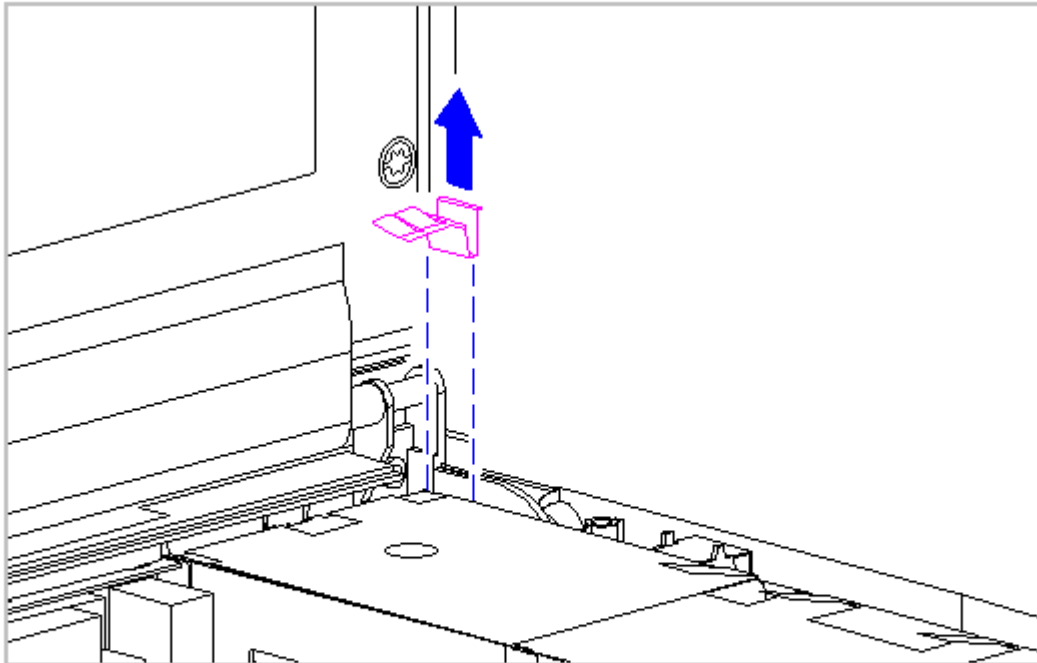


Figure 5-125. Removing the Right Clutch Ground Clip

5. To replace the clutch ground clips, reverse the previous steps.

Removing and Replacing the Clutches

To remove the clutches, follow these steps:

1. Turn the computer off and remove all external devices, including the battery pack and the AC Adapter. Remove the diskette and PC Card, if installed (Section 5.3).
2. Remove the handle brackets from each side of the computer (Section 5.4).

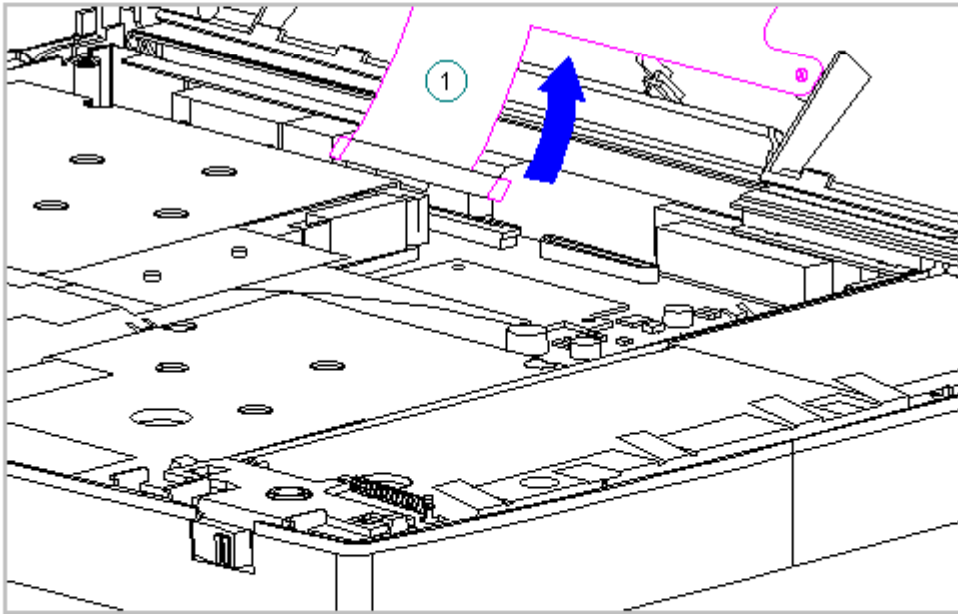


Figure 5-127. Disconnecting the Display Ground Cable from the Flex Ground Bracket

9. Using a Torx T8 or slotted driver, remove the four clutch screws on the rear of the system unit module (Figure 5-128).

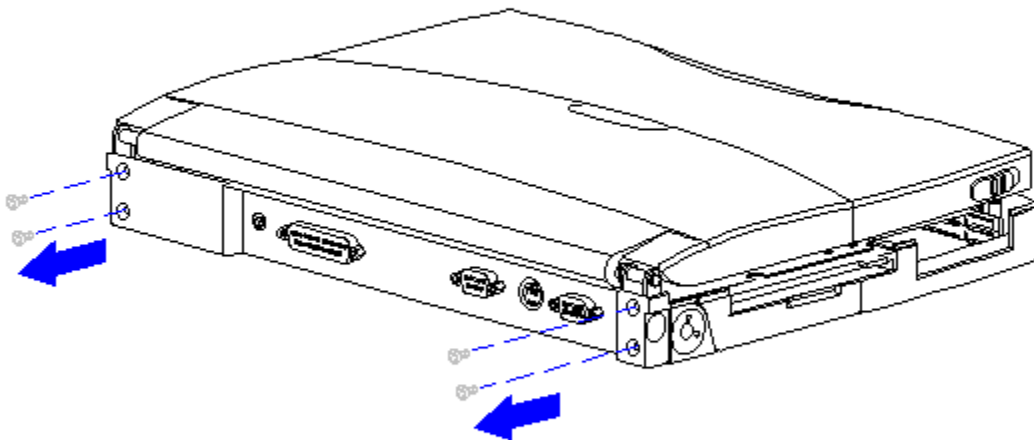


Figure 5-128. Removing the Rear Clutch Screws

10. Lift the display assembly off the system unit module (Figure 5-129).

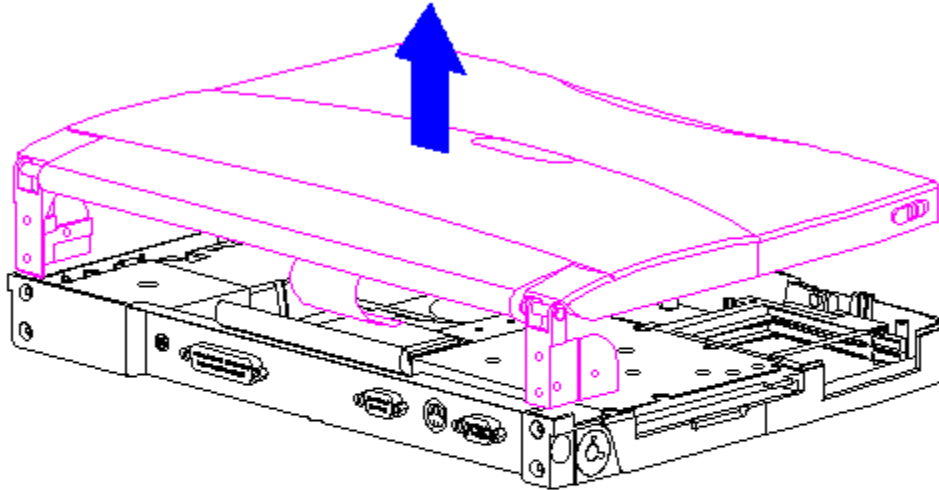


Figure 5-129. Removing the Display Assembly from the System Unit Module

11. Place the display assembly topside up.
12. Remove the display bezel (Section 5.19).
13. Remove the screws from the clutches on either side of the display enclosure.
14. On either side of the display enclosure, slide the clutches from underneath the display shield tabs (Figure 5-130).

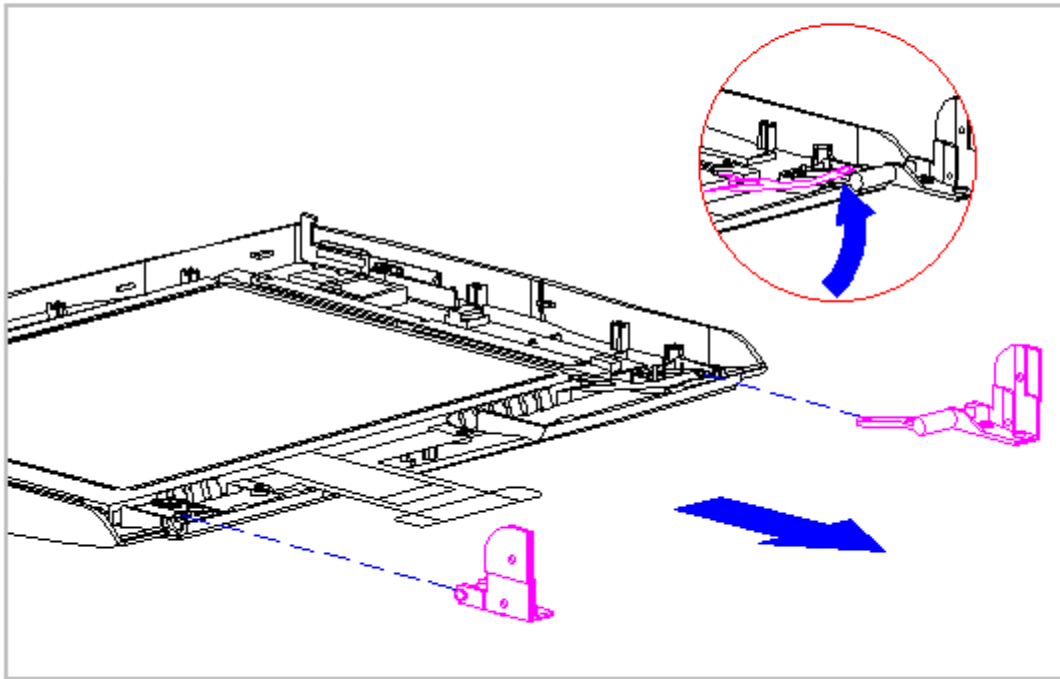


Figure 5-130. Removing the Clutches from Underneath the Display Shield

15. Slide the clutches out of the display enclosure.

16. To replace the clutches, reverse the previous steps.

IMPORTANT: When replacing the display clutch screws, ensure proper alignment of the display clutches on either side of the display enclosure with the shield (Figure 5-131).

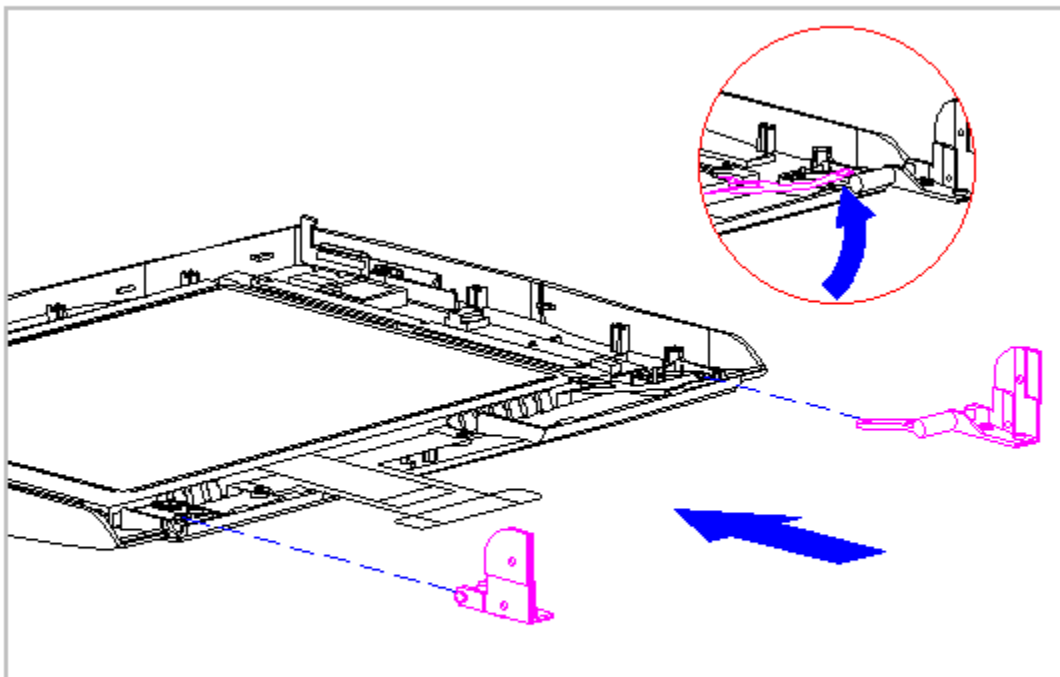


Figure 5-131. Replacing the Display Clutches

Chapter 6 - Compaq Utilities

Introduction

This chapter describes Computer Setup, a Compaq utility that can be helpful when servicing the Compaq Armada 1100 Family of Personal Computers.

Computer Setup

Computer Setup automatically recognizes and configures the system for new Compaq devices. It does this without prompting you for information about the devices. However, if you add a memory expansion board, a prompt appears the next time you turn on the computer, notifying you of the new memory configuration.

You can run Computer Setup to view or to change the current configuration settings. Run Computer Setup when you first turn on the computer by pressing F10 when the prompt appears on the screen.

The first Computer Setup screen displays current settings for the system, ports, and devices. The status bar at the bottom of the screen gives instructions for navigating and choosing options. The status bar also displays descriptions as you highlight menus and menu options.

NOTE: If the main system board is replaced, the serial number on this screen will change to 0 (zero).

Select one of the menus from the menu bar at the top of the screen to view or to change the following configuration settings:

- o Initialization, which sets startup preferences
- o Ports, including serial and parallel
- o Power, including power management and Hibernation
- o Security, including setup and power-on passwords and device disabling

Initialization Menu

Select the Initialization menu to change the initialization (startup) settings for running the POST memory tests, numlock on or off, the drive boot sequence, and the active display.

Ports Menu

Select the Ports menu to change the default input/output (I/O) addresses and interrupt requests (IRQs) for serial and parallel ports.

NOTE: If you select conflicting settings for the ports, the system will automatically change one of the settings.

Power Menu

Select the Power menu to enable or disable Power Management, low-battery warning beeps, and an external energy saving monitor. The factory default settings are Power Management Enabled While on Battery, Conservation Level Medium, Low-Battery Warning Beeps Enabled, and External Energy Saving Monitor Disabled.

- o Diskette drive boot ability

Disabling these devices prevents the unauthorized transfer of data using the devices. To reenable a device, deselect the Disable option and restart the computer.

Exit Menu

The Exit menu has four options:

- o Save and Exit: Saves configuration changes, but some changes do not take effect until the computer is restarted.
- o Save and Reboot: The computer reboots and all configuration changes take effect.
- o Exit (No Save): Exits and does not save the changes you have made.
- o Restore Factory Defaults: Replaces the current configuration settings with the original factory default settings.

Chapter 7 - Specifications

Introduction

This chapter provides physical and performance specifications for the following:

- o Computer
- o Display
- o Hard drives
- o Diskette drive
- o Battery pack
- o External power sources

The chapter also includes:

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

Computer

Table 7-1. Computer Specifications

	U.S.	Metric
Dimensions:		
10.4" Color STN	8.9" x 11.9" x 2.25"	22.61cm x 30.23 x 5.72cm
10.4" Color TFT	8.9" x 11.9" x 2.25"	22.61cm x 30.23 x 5.72cm
Weight (w/o battery):		
10.4" Color STN	5.0 lbs	2.25 kg
10.4" Color TFT	5.0 lbs	2.25 kg
Weight (w/battery):		
10.4" Color STN	6.1 lbs	2.75 kg
10.4" Color TFT	6.1 lbs	2.75 kg
Stand-Alone (Battery)		
Power Requirements:		
Nominal Operating Voltage	10.8 V	
Nominal Operating	12.0 W	
Peak Operating	15.0 W	
Environmental Requirements:		
Temperatures		

Operating	50oF to 95oF	10oC to 35oC
Nonoperating	-4oF to 140oF	-20oC to 60oC

Environmental Requirements:

Relative Humidity

Operating	10% to 90%	10% to 90%
Nonoperating	5% to 95%	5% to 95%

=====

Displays

Table 7-2. Color STN (10.4 in) VGA Display

	U.S.	Metric

Dimensions (display size):		
Height	6.3 in	16.0 cm
Width	8.4 in	21.3 cm

Number of Colors	256	

Color Palette	256 K	

Contrast Ratio	20:1	

Brightness	90 NIT	

Refresh Rate	60 Hz	

Pixel Resolution		
Pitch	0.33 x 0.33 mm	
Format	640 x 480	
Configuration	RGB Stripe	

Backlight	CCFT Edge-Lit at the Top	

Inverter		
Input voltage	+5Vdc, 10 - 18 Vdc	
Output voltage	500Vac	
Max input power	3.2W	
Max output power	2.6W	

Character Display	80 x 25	

Total Power		
Consumption	4 W (Maximum)	
=====		

Table 7-3. Color TFT (10.4 in) VGA Display

	U.S.	Metric

Dimensions (display size)		
Height	6.3 in	16.0 cm
Width	8.4 in	21.3 cm

Number of Colors	256	

Color Palette	256 K	

Contrast Ratio	100:1
Brightness	90 NIT
Refresh Rate	60 Hz
Pixel Resolution	
Pitch	0.33 x 0.33 mm
Format	640 x 480
Configuration	RGB Stripe
Backlight	CCFT Edge-Lit at the Top
	80 x 25
	+5Vdc, 10 - 18 Vdc
	500Vac
	3.2W
	2.6W
Total Power Consumption	4 W (Maximum)

Hard Drive

Table 7-4. Hard Drive Specifications

Model Standard Configurations 810 MB	
Formatted Capacity per Drive (MB):	
Physical	815.9
Logical	814.9
Drive Type	65
Drive Size:	
Inches	4.0 x 2.5 x .5
Millimeters	102 x 70 x 12.7
Transfer Rate:	
Media (Mb/s)	27.4 to 54
Interface (MB/s)	Up to 16.7
Sector Interleave	1:1
Typical Seek Time (including settling):	
Single Track (ms)	4
Average (ms)	15
Full Stroke (ms)	24
Disk Rotational Speed (RPM)	3634
Physical Configuration:	
Cylinders	3915
Data Heads	3
Sectors/Track	90-180
Bytes/Sector	512

Logical Configuration:

Cylinders	1579
Data Heads	16
Sectors/Track	63
Bytes/Sector	512

Buffer Size (KB)	128
------------------	-----

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Diskette Drive

Table 7-5. Diskette Drive Specifications

=====

Diskettes:

Size	3.5 in (8.9 cm)
High Density (MB)	1.44
Low Density (KB)	720

Light	Green
-------	-------

Height	One-third
--------	-----------

Bytes per Sector	512
------------------	-----

Sectors per Track:

High Density	18
Low Density	9

Tracks per Side:

High Density	80
Low Density	80

Read/Write Heads	2
------------------	---

Average Access Time (ms):

Track-to-Track (high/low)	3/3
Average (high/low)	94/94
Settling Time (ms)	15
Latency Average (ms)	100

=====

Battery Pack

Table 7-6. Nickel Metal Hydride Battery Pack

=====

	U.S.	Metric
=====		
Dimensions:		
Height	0.724 in	1.84 cm
Length	8.07 in	20.5 cm
Width	2.04 in	5.18 cm

Weight	1.09 lb	0.495 Kg

Energy:		
Nominal Open Circuit Voltage	10.8 V dc	
Rated Capacity	2400 mAh	
Standard Recharge Rate	27 W Maximum	
	7 W Minimum	

Environmental Requirements:

Operating temperatures	50oF to 104oF	10oC to 40oC
Storage temperatures		
No time limit	-4oF to 86oF	-20oC to 30oC
Not longer than 3 months	-4oF to 104oF	-20oC to 40oC
Not longer than 1 month	-4oF to 122oF	-20oC to 50oC

External Power Sources

Table 7-7. AC Adapter

AC Adapter Power Supply Ratings

Rated Voltage Range	100-120/220-240 V
Rated Input Current	0.8/0.4 Amp
Rated Input Frequency	50 - 60 Hz
Maximum Output Voltage	16.5 V dc
Maximum Output Current	2.6 Amp
Maximum Output Power	27 W

Table 7-8. Automobile Adapter

Auto Adapter Power Supply Ratings

Power Supply (Input)	
Nominal Voltage	13.8 VDC
Operating Voltage	10.5 - 14.8 VDC
Maximum Voltage	16.0 VDC
Input Fuse Protection	8.0 A
Power Supply (Output)	
Nominal Voltage	120 VAC
Load Regulated Voltage	108 - 125 VAC
Line Regulated Voltage	105 to 125 VAC
Output Frequency	60 Hz +/- 3 Hz
Output Overload Protection	150W @ 2 sec.

System Interrupts

Table 7-9

Hardware IRQ	System Function
IRQ0	Timer interrupt
IRQ1	Keyboard
IRQ2	Interrupt controller cascade
IRQ3	COM 2 - used by MSIO or PCMCIA controller
IRQ4	COM 1 - used by MSIO or PCMCIA controller
IRQ5	Available for use
IRQ6	Diskette Drive controller
IRQ7	Available for use

IRQ8	Real-Time Clock (MSIO)
IRQ9	Available for use
IRQ10	Available for use
IRQ11	Available for use
IRQ12	Mouse
IRQ13	Floating point error input
IRQ14	Hard Drive
IRQ15	
IRQA	EPP parallel port

=====

System DMA

Table 7-10

Hardware DMA	System Function
DMA 0/A (mappable)	Not assigned
DMA 1/B	PCMCIA controller
DMA 2	Diskette drive controller
DMA 3	EPP parallel port
DMA 4	Not assigned
DMA 5	Not assigned
DMA 6	Not assigned
DMA 7	Not assigned

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

=====

System I/O Address

Table 7-11

I/O Address (Hex)	System Function (Shipping Configuration)
000 - 00F	Master DMA Controller # 1
010 - 011	Unused
012 - 01F	Unused
020 - 021	Peripheral Interrupt Controller # 1
022 - 024	Opti Chipset Configuration Registers
025 - 03F	Unused

040 - 043	Counter/Timer Registers
044 - 05F	Unused
060	Keyboard Data
061	Port B
062 - 063	Unused
064	Keyboard Command/Status
065 - 06F	Unused
070	CMOS Index Address
071	CMOS Data
072 - 073	Unused
074	Reserved
075	Unused
076	Reserved
077 - 077F	Unused
080 - 08F	DMA Page Registers
084 - 085	POST Code Output Port
090 - 091	Unused
092	Fast Reset Register
093 - 09F	Unused

I/O Address (Hex)	System Function (Shipping Configuration)
-------------------	--

0A0 - 0A1	Interrupt Controller # 2
0A2 - 0BF	Unused
0C0 - 0DF	DMA Controller # 2
0E0 - 0E1	Unused
0E2 - 0E3	MSIO Configuration Registers
0E4 - 0EF	Unused
0F0 - 0F1	NCP Numerics Register
0F9	Unused
0FA	Unused
0FB	Unused

0FC - 0FF	Unused
100 - 101	Unused
103 - 16F	Unused
170 - 177	Hard Drive Secondary Registers
178 - 1EF	Unused
1F0 - 1F7	Hard Drive Primary Registers
1F8 - 1FF	Unused
200 - 21F	Unused
220 - 22F	Unused
230 - 23F	Unused
240 - 24F	Unused
250 - 25F	Unused
260 - 277	Unused
278 - 27A	LPT2 and High Speed Parallel Port Registers
27B - 27F	LPT2 High Speed Printer Port Registers

I/O Address (Hex)	System Function (Shipping Configuration)
280 - 2F7	Unused
2F8 - 2FF	Serial Control Register COM2
300 - 36F	Unused
370 - 371	Reserved
372	Diskette Digital Output Register
373	Unused
374	Reserved
375	Diskette Main Status/Data Registers
376	Reserved
377	Diskette Input/Control Registers
378 - 37A	LPT1 and High Speed Parallel Port Registers
37B - 37F	Unused
380 - 387	Unused
388 - 38B	Unused
38C - 3AF	Unused

3B0 - 3BB	Cirrus Logic Video Controller
3BC - 3BE	LPT3 and High Speed Parallel Port Registers
3BF	LPT1 High Speed Parallel Port Registers
3C0 - 3CD	Cirrus Logic Video Controller
3D0 - 3DF	Cirrus Logic Video Controller
3F0 - 3F7	Diskette Drive Controller Primary Registers
3F8 - 3FF	COM1 Serial Controller Registers
400 - 4CF	Unused
480 - 48F	Extended DMS Registers
4D0 - CF6	Unused
CF7	Configuration/NVM Data Register
CF8 - CFB	PCI Configuration Index Register
CFC - CFF	PCI Configuration Data Register
D00 - FFF	Unused

=====

System Memory Map

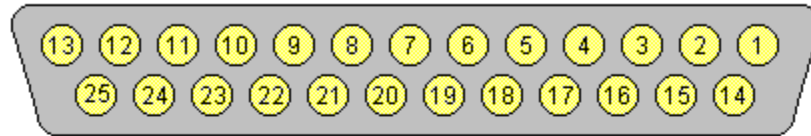
Table 7-12

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

=====

Appendix A - Connector Pin Assignments

This appendix contains the pin assignments for all external connectors.



Pin	Signal	Pin	Signal
1	Strobe*	10	Acknowledge*
2	Data Bit 0	11	Busy
3	Data Bit 1	12	Paper Out
4	Data Bit 2	13	Select
5	Data Bit 3	14	Auto Linefeed*
6	Data Bit 4	15	Error*
7	Data Bit 5	16	Initialize Printer*
8	Data Bit 6	17	Select In*
9	Data Bit 7	18-25	Ground

* = Active Low

Location of Pin Assignments for the Parallel Connector

IPA-1

Table A-1. Parallel Connector

Pin	Signal
1	Strobe *
2	Data Bit 0
3	Data Bit 1
4	Data Bit 2
5	Data Bit 3
6	Data Bit 4
7	Data Bit 5
8	Data Bit 6
9	Data Bit 7

10	Acknowledge *
11	Busy
12	Paper Out
13	Select
14	Auto Linefeed *
15	Error *
16	Initialize Printer *
17	Select In *
18	Ground
19	Ground
20	Ground
21	Ground
22	Ground
23	Ground
24	Ground
25	Ground

* = Active low



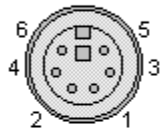
Pin	Signal
1	Carrier Detect
2	Receive Data
3	Transmit Data
4	Data Terminal Ready
5	Ground
6	Data Set Ready
7	Request to Send
8	Clear to Send
9	Ring Indicator

Location of Pin Assignments for the Serial Connector

IPA-2A

Table A-2. Serial Connector

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



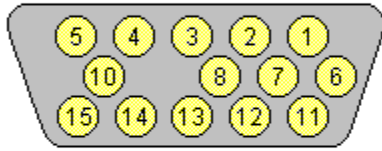
Pin	Signal
1	Data
2	Reserved
3	Ground
4	+5V
5	Clock
6	Reserved

Location of Pin Assignments for the Keyboard/Mouse Connector

IPA-2B

Table A-3. Keyboard/Mouse Connector

Pin	Signal
1	Data
2	Reserved
3	Ground
4	+5V
5	Clock
6	Reserved



Pin	Signal
1	Red Analog
2	Green Analog
3	Blue Analog
4	Not Connected
5	Ground
6	Ground Analog
7	Ground Analog
8	Ground Analog
9	Not Connected
10	Ground
11	Not Connected
12	Not Connected
13	Horizontal Synch
14	Vertical Synch
15	Not Connected

Location of Pin Assignments for the External VGA Monitor Connector

IPA-2C

Table A-4. External VGA Monitor Connector

Pin	Signal
1	Red Analog
2	Green Analog
3	Blue Analog
4	Not Connected
5	Ground
6	Ground Analog
7	Ground Analog
8	Ground Analog
9	Not Connected
10	Ground
11	Not Connected
12	Not Connected
13	Horizontal Synch
14	Vertical Synch
15	Not Connected

Table A-5. PC Card (PCMCIA) Connector

Pin	Signal
1	Ground
2	Data bit 3
3	Data bit 4
4	Data bit 5
5	Data bit 6
6	Data bit 7
7	Card enable 1
8	Address bit 10
9	Output enable
10	Address bit 11
11	Address bit 9
12	Address bit 8
13	Address bit 13
14	Address bit 14
15	Program/Write enable
16	Ready or busy/Interrupt request
17	Power
18	Programming and Peripheral supply 1
19	Address bit 16
20	Address bit 15
21	Address bit 12
22	Address bit 7
23	Address bit 6
24	Address bit 5
25	Address bit 4

Pin	Signal
26	Address bit 3
27	Address bit 2
28	Address bit 1
29	Address bit 0
30	Data bit 0
31	Data bit 1
32	Data bit 2
33	Write protect/IO Port is 16-bit
34	Ground
35	Ground
36	Card detect 1
37	Data bit 11
38	Data bit 12
39	Data bit 13
40	Data bit 14
41	Data bit 15
42	Card enable 2
43	Refresh
44	IO Read
45	IO Write
46	Address bit 17
47	Address bit 18
48	Address bit 19

Pin	Signal
49	Address bit 20
50	Address bit 21
51	Power
52	Programming and peripheral supply 2
53	Address bit 22
54	Address bit 23
55	Address bit 24
56	Address bit 25
57	Reserved
58	Card reset
59	Extend bus cycle
60	Input port acknowledge
61	Register select and IO enable
62	Battery voltage detect 2/Audio digital waveform
63	Battery voltage detect 1/Card status changed
64	Data bit 8
65	Data bit 9
66	Data bit 10
67	Card detect 2
68	Ground

Appendix B - Power Cord Set Requirements

2-Conductor Power Cord Set

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

The power plug or power cord set (appliance coupler, flexible cord, and wall plug) you received with your computer meets the requirements for use in the country where you purchased your computer.

Power cord sets for use in other countries must meet the requirements of the country where you use the computer. For more information on power cord set requirements, contact your Compaq authorized dealer.

General Requirements

The requirements listed below are applicable to all countries:

1. The length of the power cord set must be at least 6.00 feet (1.8 m) and a maximum of 9.75 feet (3.0 m). The measurements only apply to the power cord set. The length of a surge suppresser, if one is used, is not taken into account in these length requirements.
2. All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country where the power cord set will be used.
3. The power cord set must have a minimum current capacity of 2.5A and a nominal voltage rating of 125 or 250 volts AC, as required by each country's power system.
4. The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C7 connector, for mating with appliance inlet on the AC Adapter.

Country-Specific Requirements

-- 2-Conductor Power Cord Set Requirements - By Country --

Country	Accredited Agency	Applicable Note Numbers
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1

Japan	JIS	3
The Netherlands	KEMA	1
Norway	NEMKO	1
Sweden	SEMKO	1
Switzerland	SEV	1
United Kingdom	BSI	1
United States	UL	2

NOTES: 1. Flexible cord must be Type HO3VV-F, 2-conductor, 0.75 mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.

2. Flexible cord must be Type SPT-2 or equivalent, No. 18 AWG, 2-conductor. Wall plug must be a two-pole type with a NEMA 1-15P (15A, 125V) configuration.

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