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Foreword

Notice

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COMPAQ PORTABLE 386 PERSONAL COMPUTER
MAINTENANCE AND SERVICE GUIDE

Second Edition (August 1989)
First Edition (September 1987)
Assy No. 107536-002
Binder Number 197537-001
Text Number 107538-002

Compaq Computer Corporation requires that all peripheral devices be connected to this computer/product via shielded cables with metal RFI/EMI connector hoods.

```
================================================================================
WIRE TYPE:        Multipaired, overall shielded; Belden #98XX; Alpha #54XX;
                  or equivalent.

CONNECTOR HOOD:   RFI/EMI metal shield; AMP #74517X-X; or equivalent.
================================================================================
```

It is important that the chassis ground strap of the peripheral device be connected to the computer chassis. An Alpha #1221 flat braided strap is sufficient. The strap is not necessary if a shielded cable connects the two chassis.

COMPAQ PORTABLE 386 PERSONAL COMPUTER MAINTENANCE AND SERVICE GUIDE is a troubleshooting guide that can be used as a reference when servicing the COMPAQ PORTABLE 386 Personal Computer. Compaq Computer Corporation reserves

the right to make changes in its COMPAQ PORTABLE 386 Personal Computer without notice. Accordingly, the diagrams and procedures in this document may not apply to the computer you are servicing.

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CAUTION

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

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CAUTION

For proper ventilation of your system, you must provide at least 3 inches (8 cm) of clearance on all sides of the computer, except underneath.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Chapter 1. Introduction

Chapter 1.1 Summary of Text

This guide contains ten chapters which are summarized below:

Chapter 1. INTRODUCTION provides a brief summary of the contents of each chapter in the guide, a list of needed tools and supplies, and a list of additional reference documents.

Chapter 2. OPERATING AND PERFORMANCE SPECIFICATIONS provides operating and performance specifications for the COMPAQ PORTABLE 386 Personal Computer.

Chapter 3. POWER ON SELF TEST (POST)/PROBLEM ISOLATION describes the internal system diagnostic programs that are automatically executed when you power on the system. This chapter also provides a flowchart for identifying and correcting problems that can occur with the COMPAQ PORTABLE 386 Personal Computer during the Power On Self Test procedure.

Chapter 4. SETUP AND INSPECT (See SUPPORT SOFTWARE MAINTENANCE AND SERVICE GUIDE.)

Chapter 5. DIAGNOSTICS PROGRAM (See SUPPORT SOFTWARE MAINTENANCE AND SERVICE GUIDE.)

Chapter 6. ERROR MESSAGES AND CODES lists the Power On Self Test and DIAGNOSTICS Error Codes. This chapter also provides a required course of action to resolve the problem described by each error code.

Chapter 7. ILLUSTRATED PARTS CATALOG provides an illustrated reference for specific COMPAQ PORTABLE 386 Personal Computer Spare Part Kit Numbers.

Chapter 8. REMOVAL AND REPLACEMENT PROCEDURES describes how to remove and replace field subassemblies for the COMPAQ PORTABLE 386 Personal Computer.

Chapter 9. JUMPER AND SWITCH SETTINGS provides detailed information for setting jumpers and switches.

Chapter 10. MASS STORAGE CONFIGURATIONS provides information on the mass storage capabilities of the 300/600 Megabyte Fixed Disk Drive Expansion Unit.

Chapter 1.2 Required Tools and Supplies

To service the COMPAQ PORTABLE 386 Personal Computer, you need the following tools:

- Torx T-10 Screwdriver
- Torx T-15 Screwdriver

- Torx Angle T-15 Screwdriver
- 3/16 Inch Open End Wrench
- Integrated Circuit (IC) Removal Tool
- Integrated Circuit (IC) Insertion Tool
- Modem Terminating Plug
- DIAGNOSTICS Program
- Parallel Interface Loopback Plug
- Serial Interface Loopback Plug

Chapter 1.3 Additional Reference Information

The following documentation and related software are available to support these and other COMPAQ computer products:

- COMPAQ PORTABLE 386 PERSONAL COMPUTER OPERATIONS GUIDE (PN 107918-001)

- COMPAQ PORTABLE 386 PERSONAL COMPUTER TECHNICAL REFERENCE GUIDE (PN 107920-001)

- COMPAQ PORTABLE 386 PERSONAL COMPUTER MEMORY EXPANSION INSTALLATION GUIDE (PN 107530-002)

- Installation Guides for COMPAQ Portable Computers with Plasma Displays

  Mass Storage Devices (PN 107320-003)

  Expansion Unit (PN 107323-003)

  COMPAQ Internal Modems (PN 107325-002)

  40 Megabyte Tape Drive Expansion Unit (PN 107532-002)

  Second Serial Board for International Only (PN 107533-001)

- Other Installation Guides

  20 MHz 80387 Coprocessor (PN 113165-002)

  COMPAQ Color Monitor (PN 106223-001)

  300/600 MEGABYTE FIXED DISK DRIVE EXPANSION UNIT INSTALLATION AND OPERATIONS GUIDE (PN 115835-002)

- COMPAQ ENHANCED COLOR GRAPHICS BOARD INSTALLATION AND OPERATIONS GUIDE (PN 106540-001)

- COMPAQ ENHANCED COLOR GRAPHICS BOARD/COMPAQ COLOR MONITOR TECHNICAL REFERENCE GUIDE (PN 106733-001)

- Information Cards

  Desktop Pedestal for COMPAQ Personal Computers with Dual Mode Plasma Displays (PN 107326-002)

  Carrying Case for COMPAQ Personal Computers with Dual Mode Plasma Displays (PN 107327-002)

- MS-DOS Version 4 Software and Documentation (PN 114493-001 and PN 114496-001)
- MS-DOS VERSION 3 REFERENCE GUIDE (PN 114024-001)
- BASIC VERSION 3 REFERENCE GUIDE (PN 104030-001)
- MICROSOFT Operating System/2 Standard Version 1.1
- Service Advisories and Bulletins
- HOW TO DO BUSINESS WITH COMPAQ SERVICE
- COMPAQ SERVICE QUICK REFERENCE GUIDE (PN 106854-001)

Chapter 2. Operating and Performance Specifications

Chapter 2.1 Introduction

This chapter provides operating and performance specifications for the COMPAQ PORTABLE 386 Personal Computer (Figure 2-1).

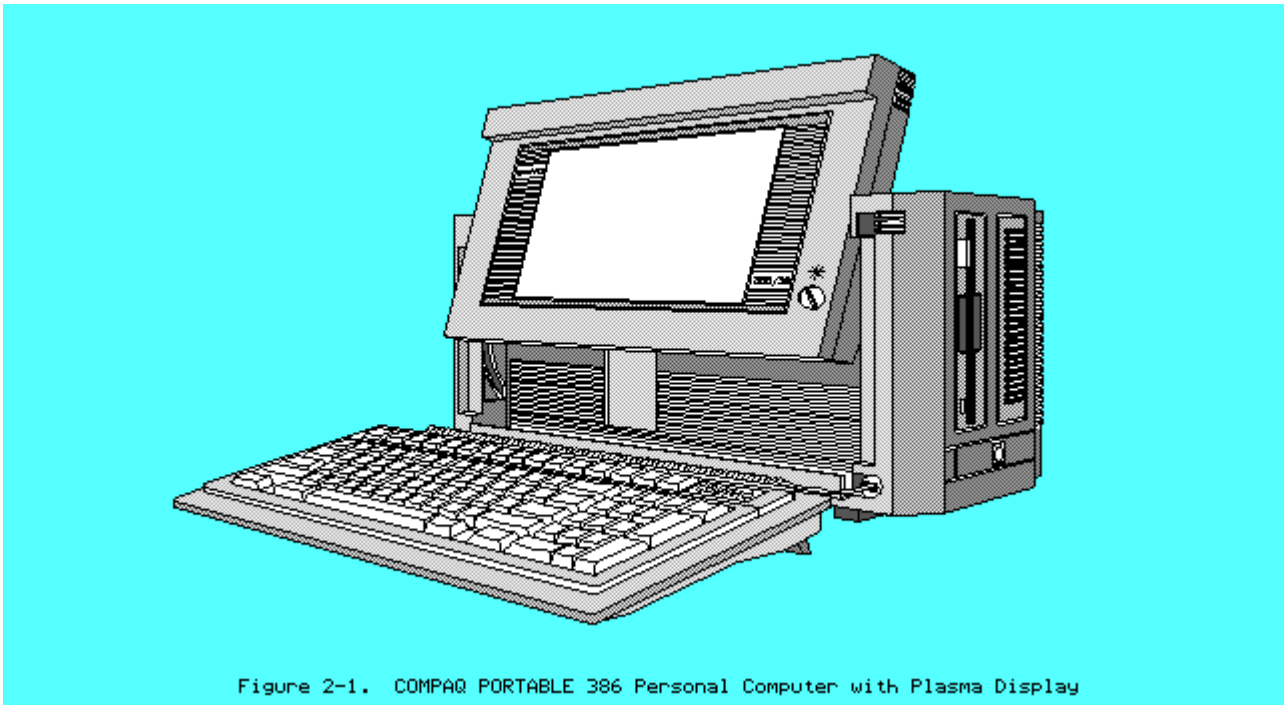


Figure 2-1. COMPAQ PORTABLE 386 Personal Computer with Plasma Display

Chapter 2.2 System Unit

Table 2-1 lists the electrical and mechanical specifications for the COMPAQ PORTABLE 386 Personal Computer system unit.

Table 2-1. Electrical and Mechanical Specifications

Dimensions:		
Height	9.8 in. (24.8 cm)	
Depth	7.8 in. (19.8 cm)	
Width	16.0 in. (40.6 cm)	
Weight:		
Model 40	20 lb (9.1 kg)	
Model 100	21 lb (9.5 kg)	
Model 110	21 lb (9.5 kg)	
Power Requirements:	**Domestic**	**International**
Nominal Line Voltage	120 VAC	230 VAC
Range Line Voltage	102 VAC to 132 VAC	204 VAC to 264 VAC
Line Frequency	60 Hz	50 Hz
Current	3A	2A

AC Power Cord:	
Length	6 ft (1.8 m)
Gauge	18 AWG
Environmental Requirements:	
Temperature:	
Operating	50oF to 104oF (10oC to 40oC)
Nonoperating	14oF to 122oF (-10oC to 50oC)
Shipping	-22oF to 140oF (-30oC to 60oC)
Humidity:	
Operating	20% to 80% noncondensing
Nonoperating	Not less than 5% nor more than 90% noncondensing
Shock and Vibrations:	
Shock	5 g, 11 ms, half sine (operating) 40 g 11 ms, half sine (nonoperating)
Vibration	1.0 g, 5 to 500 Hz (nonoperating) 0.15 g, 5 to 500 Hz (operating)
Heat Dissipation:	
Minimum Configuration	35 watts 119.5 BTU/hr
Maximum Configuration	145 watts 495.1 BTU/hr
Maximum Unpressured Altitude:	
Operating	10,000 ft (3000 m)
Nonoperating	30,000 ft (9100 m)

Chapter 2.3 Portable Enhanced Keyboard

Table 2-2 lists the specifications for the portable enhanced keyboard.

Table 2-2. Keyboard Assembly Specifications

Dimensions:	
Height	1.2 in. (3.0 cm)
Depth	7.1 in. (18.0 cm)
Width	15.8 in. (40.1 cm)
Cable Length:	
Compressed	8.0 in. (20.3 cm)
Extended	30.0 in. (76.2 cm)
Coil Diameter	0.6 in. (1.5 cm)
Interface	Industry standard 5 pin circular DIN type connector

Chapter 2.4 Compaq Dual Mode Plasma Display

Table 2-3 lists the specifications for the COMPAQ Dual Mode Plasma Display.

Table 2-3. COMPAQ Dual Mode Plasma Display Specifications

Viewing Area Dimensions:	
Height	5.2 in. (13.2 cm)
Width	8.3 in. (21.1 cm)
Diagonal	10.0 in. (25.4 cm)
Weight	2.0 lb. (0.9 kg)
Graphic Resolution	640 x 400 640 x 200 320 x 200
Text Resolution	640 x 400 (80 characters x 25 lines)

Chapter 2.5 1.2 Megabyte Diskette Drive

Table 2-4 lists specifications for the 1.2 megabyte diskette drive.

Table 2-4. 1.2 Megabyte Diskette Drive Specifications

Dimensions:	
Height	1.1 in. (2.8 cm)
Depth	8.0 in. (20.3 cm)
Width	5.8 in. (14.6 cm)
Weight	1.9 lb (0.9 kg)
Media:	
Tracks per Inch	96 (1.2 megabyte format) 48 (360 Kbyte format)
Number of Tracks	80 (1.2 megabyte format) 40 (360 Kbyte format)
Data Transfer Rate	500 Kb/s (1.2 megabyte format) 300 Kb/s (360 Kbyte format)

Chapter 2.6 360 KByte Diskette Drive

Table 2-5 lists the specifications for the 360 Kbyte diskette drive.

Table 2-5. 360 Kbyte Diskette Drive Specifications

Dimensions:	
Height	1.1 in. (2.8 cm)
Depth	8.0 in. (20.3 cm)
Width	5.8 in. (14.6 cm)
Weight	1.9 lb (0.9 kg)
Media:	

Tracks per Inch	48
Number of Tracks	40
Data Transfer Rate	250 Kb/s

Chapter 2.7 3 1/2 Inch 1.44 Megabyte Diskette Drive

Table 2-6 lists the specifications for the 3 1/2 inch 1.44 megabyte diskette drive.

Table 2-6. 3 1/2 Inch 1.44 Megabyte Diskette Drive

Dimensions:	
Height	1.00 in. (2.5 cm)
Depth	5.91 in. (15.0 cm)
Width	4.00 in. (10.2 cm)
Weight	1.00 lb (0.45 kg)
Media:	3 1/2 inch 1.44 megabyte double sided diskette; dual density (720 Kbyte format); high density (1.44 megabyte format)
Tracks per Inch	135
Number of Tracks	160
Data Transfer Rate	250 Kb/s (1.44 megabyte format) 500 Kb/s (720 Kbyte format)
Average Access Time	100 ms
Rotational Speed	300 rpm
Motor Start Time	800 ms
Sectors per Track	18 (1.44 megabyte format) 9 (720 Kbyte format)
Bytes per Sector	512

Chapter 2.8 40 Megabyte Fixed Disk Drive

Table 2-7 lists the specifications for the 40 megabyte fixed disk drive.

Table 2-7. 40 Megabyte Fixed Disk Drive Specifications

Dimensions:	
Height	1.5 in. (3.8 cm)
Depth	4.0 in. (10.2 cm)
Width	5.8 in. (14.6 cm)
Weight	1.9 lb (0.9 kg)

Drive Type (used in SETUP program)	17 or 43
Media:	
Number of Surfaces	4
Tracks per Surface	805
Number of Logical Data Heads	5
Number of Logical Cylinders	980
Average Access Time	less than 30 ms
Data Transfer Rate	8 Mb/s
Interleave	1:1 for Drive Type 43 3:1 for Drive Type 17

Chapter 2.9 100 Megabyte Fixed Disk Drive

Table 2-8 lists the specifications for the 100 megabyte fixed disk drive.

Table 2-8. 100 Megabyte Fixed Disk Drive Specifications

Dimensions:	
Height	1.6 in. (3.8 cm)
Depth	5.8 in. (14.6 cm)
Width	4.0 in. (10.2 cm)
Weight	2.9 lb. (1.9 kg)
Drive Type (used in SETUP program)	45
Media:	
Number of Surfaces	8
Tracks per Surface	748
Number of Logical Data Heads	8
Number of Logical Cylinders	748
Average Access Time	less than 25 ms
Data Transfer Rate	10 Mb/s
Interleave	3:1

Chapter 2.10 110 Megabyte Fixed Disk Drive

Table 2-9 lists the specifications for the 110 megabyte fixed disk drive.

Table 2-9. 110 Megabyte Fixed Disk Drive Specifications

Dimensions:	
Height	1.62 in. (4.1 cm)
Depth	5.75 in. (14.6 cm)
Width	4.00 in. (10.2 cm)
Weight	1.8 lb (0.81 kg)
Drive Type (Used in SETUP program)	33
Number of Logical Data Heads	8
Number of Logical Cylinders	832
Average Access Time	less than 25 ms
Data Transfer Rate	10 Mb/s
Sectors per Track	33
Interleave	1:1

Chapter 2.11 Compaq 1200 Baud Internal Modem

Table 2-10 lists the specifications for the COMPAQ 1200 Baud Internal Modem, which is Hayes compatible.

Table 2-10. COMPAQ 1200 Baud Internal Modem Specifications

Dimensions:	
Height	3.4 in. (8.6 cm)
Depth	0.7 in. (1.9 cm)
Width	5.4 in. (13.7 cm)
Type	Bell 103J protocol at 300 baud Bell 212A and CCITT V.22 protocols at 1200 baud

International modem specifications available locally.

Chapter 2.12 Compaq 2400 Baud Internal Modem

Table 2-11 lists the specifications for the COMPAQ 2400 Baud Internal Modem, which is compatible with the Hayes command set for asynchronous modems.

Table 2-11. COMPAQ 2400 Baud Internal Modem Specifications

Dimensions:	
Height	3.4 in. (8.6 cm)
Depth	0.7 in. (1.9 cm)
Width	5.4 in. (13.7 cm)
Type	Bell 103J and CCITT V.21 protocol at 300 baud Bell 212A and CCITT V.22 protocols at 1200 baud CCITT V.22bis protocol at 2400 baud

International modem specifications available locally.

Chapter 2.13 Expansion Unit

Table 2-12 lists the specifications for the expansion unit.

Table 2-12. Expansion Unit Specifications

Dimensions:	
Height	6.0 in. (15.2 cm)
Depth	2.4 in. (6.1 cm)
Width	14.5 in. (36.8 cm)
Slots	Two 8/16 bit slots *

* Fully skirted 8 bit expansion boards will not fit.

Chapter 2.14 40 Megabyte Tape Drive Expansion Unit

Table 2-13 lists the specifications for the 40 megabyte tape drive expansion unit.

Table 2-13. 40 Megabyte Tape Drive Expansion Unit Specifications

Dimensions:	
Height	6.0 in. (15.2 cm)
Depth	2.4 in. (6.1 cm)
Width	14.5 in. (36.8 cm)
Media:	
Tracks per Inch	83
Number of Tracks	20
Data Transfer Rate	500 Kb/s

Chapter 2.15 Power Supply

Table 2-14 lists the specifications for the power supply.

Table 2-14. Power Supply Specifications

Input Requirements:				
Line Voltage	120/230			
Line Fuse	3A at 120, 2A at 230			
Line Frequency	47/62 Hz			
Power:				
Steady State	165 watts			
Peak State	180 watts			
Cooling	Forced air via 12 VDC fan			
VDC Output:				
Nominal Voltage	Current Minimum	Nominal Continuous Current Maximum	Maximum Peak Current	Regulation Tolerance
+5.0 VDC	3.0A	14.3A		3%
+12.0 VDC	1.0A	3.0A	5.0A	5%
-12.0 VDC	0.0	0.56A	1.0A	5%
+200.0 VDCI	0.0	0.16A	ñ 5 VDC	
5.0 VDCI	0.0	0.06A		5%

NOTE: These values are maximum values based on nominal operating conditions for temperature, line voltage, frequency, and altitude. Also, a minimum load of +12 VDC must be maintained for proper power supply operation.

Chapter 2.16 300/600 Megabyte Fixed Disk Drive Expansion Unit

Table 2-15 lists the specifications for the 300/600 Megabyte Fixed Disk Drive Expansion Unit.

Table 2-15. 300/600 Megabyte Fixed Disk Drive Expansion Unit Specifications

Dimensions:	
Height	6.4 in. (16.1 cm)
Depth	16.5 in. (41.9 cm)
Width	14.5 in. (35.9 cm)
Weight:	
300 Megabyte Unit	27.5 lb (12.4 kg)
600 Megabyte Unit	35.5 lb (15.9 kg)
Environmental Requirements:	
Temperature:	
Operating	Not less than 50oF or more than 104oF (10oC to 40oC)
Nonoperating	Not less than 50oF or more than 104oF (10oC to 40oC)
Shipping	Not less than -22oF or more than 140oF (-30oC to 60oC)
Humidity:	
Operating	Not less than 20% or more than 80%

	(noncondensing)	
Nonoperating	Not less than 5% or more than 90% (noncondensing)	
Controller	1:1 interleave buffered ESDI external fixed disk drive controller board installs in one 8/16 bit expansion slot in the system unit.	
External Interface Adapter	External interface adapter supports one or two 300 megabyte fixed disk drives	
LED Indicator	Green	
Power Requirements:	U.S.	International
Nominal Line Voltage	120 VAC, 60 Hz	230 VAC, 50 Hz
Range Line Voltage	102 VAC to 132 VAC	204 VAC to 264 VAC
Line Frequency	47 to 63 Hz	47 to 63 Hz
Power	192 watts (steady state) 220 watts (peak power)	
Current	5A (fuse rating)	4A (fuse rating)
Power Cable:		
Length	78 in (2.0 m)	
Interface	NEMA 5-15P (U.S.)	
Signal Cable:		
Length	60 in. (1.52 m)	
Type	44 lead twisted pair	
Connectors	44 pin subminiature D - shell (2)	

Chapter 3. Power On Self Test (POST)/Problem Isolation

Chapter 3.0 Introduction

This chapter lists the assemblies checked by the Power On Self Test (POST) and briefly describes the types of error codes that can occur. The chapter also includes problem isolation procedures and a flowchart for quick reference.

Chapter 3.1 POST

POST is a series of diagnostic tests that automatically run on the COMPAQ PORTABLE 386 Personal Computer when the system is turned on.

POST checks the following assemblies to ensure that the computer system is functioning properly:

- Keyboard
- Power supply
- System board
- Display controller board
- Memory expansion boards
- Memory
- Diskette drives
- Fixed disk drives

POST also detects the type of mass storage devices installed in the computer.

If POST finds an error in the system, an error code results. The error code can be audible, visual, or both. See Chapter 6, "Error Messages and Codes," for an explanation of error codes.

Chapter 3.2 Preliminary Steps to Problem Isolation

If you encounter an error condition, complete the following steps before starting problem isolation procedures:

1. Turn off the computer.
2. Disconnect the AC power cord from the AC outlet.
3. Disconnect the signal cables of any peripheral devices from the computer.
4. Remove any boards not manufactured by Compaq.
5. Install a loopback plug connector in both the parallel interface and the serial interface. If you have a COMPAQ Internal Modem, install a modem terminating plug in the modem RJ11 jack.

NOTE: To test your printer during the printer test or log errors to a

printer, remove the loopback plug from the parallel interface and connect the printer instead.

6. Reconnect the AC power cord to a well grounded AC outlet.

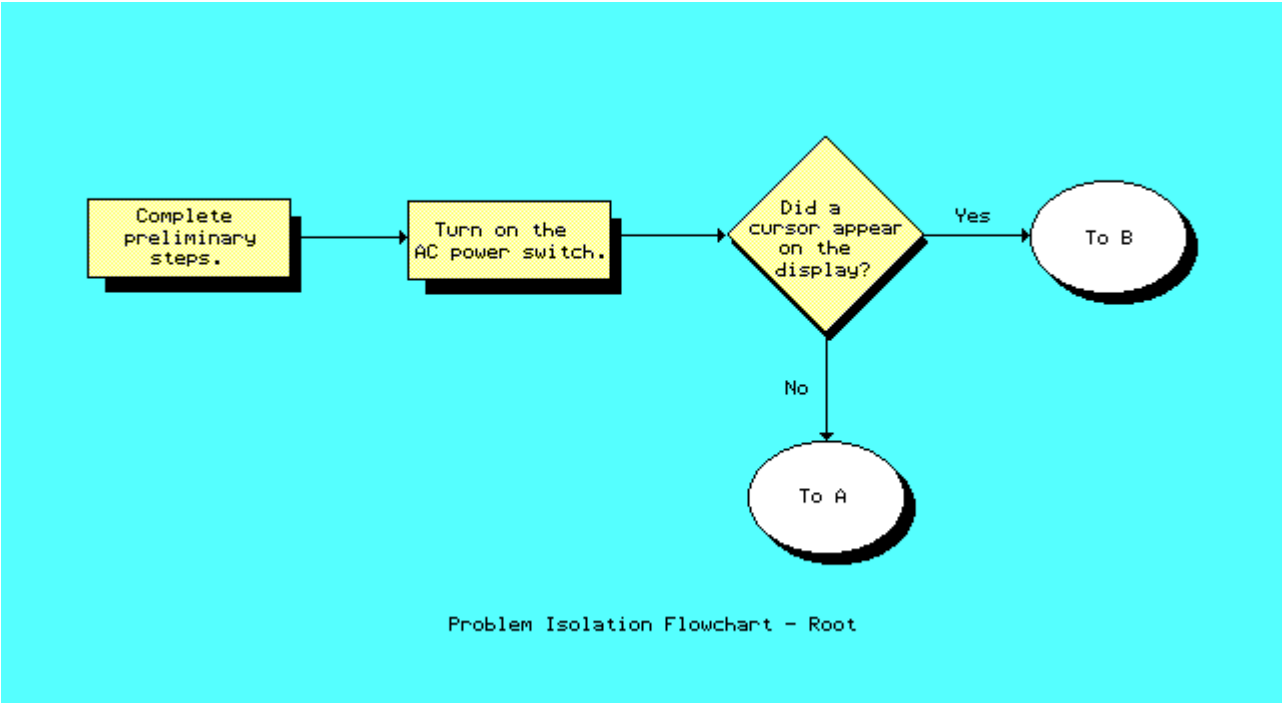
7. Insert the latest version of the COMPAQ DIAGNOSTICS diskette into Drive A (Drive Position 1), and push in on the drive button.

8. Turn on the computer.

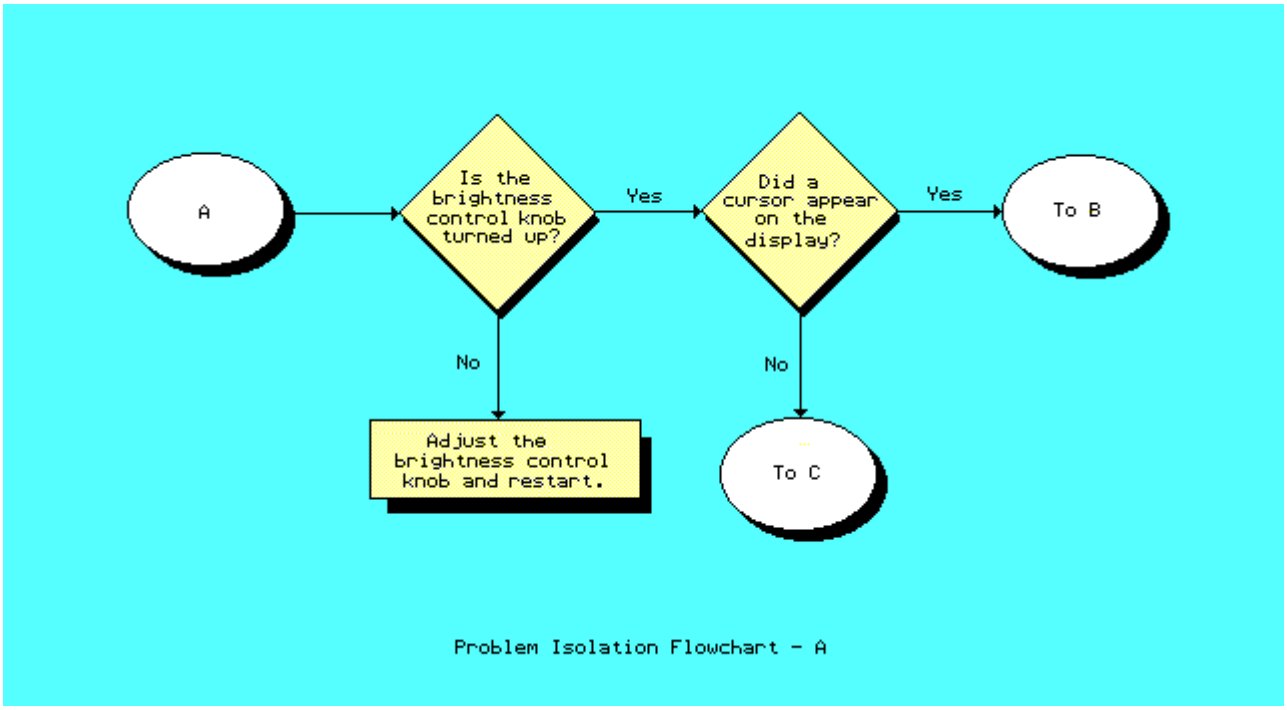
See the SUPPORT SOFTWARE MAINTENANCE AND SERVICE GUIDE for detailed information on problem isolation.

Chapter 3.3 Problem Isolation Flowchart

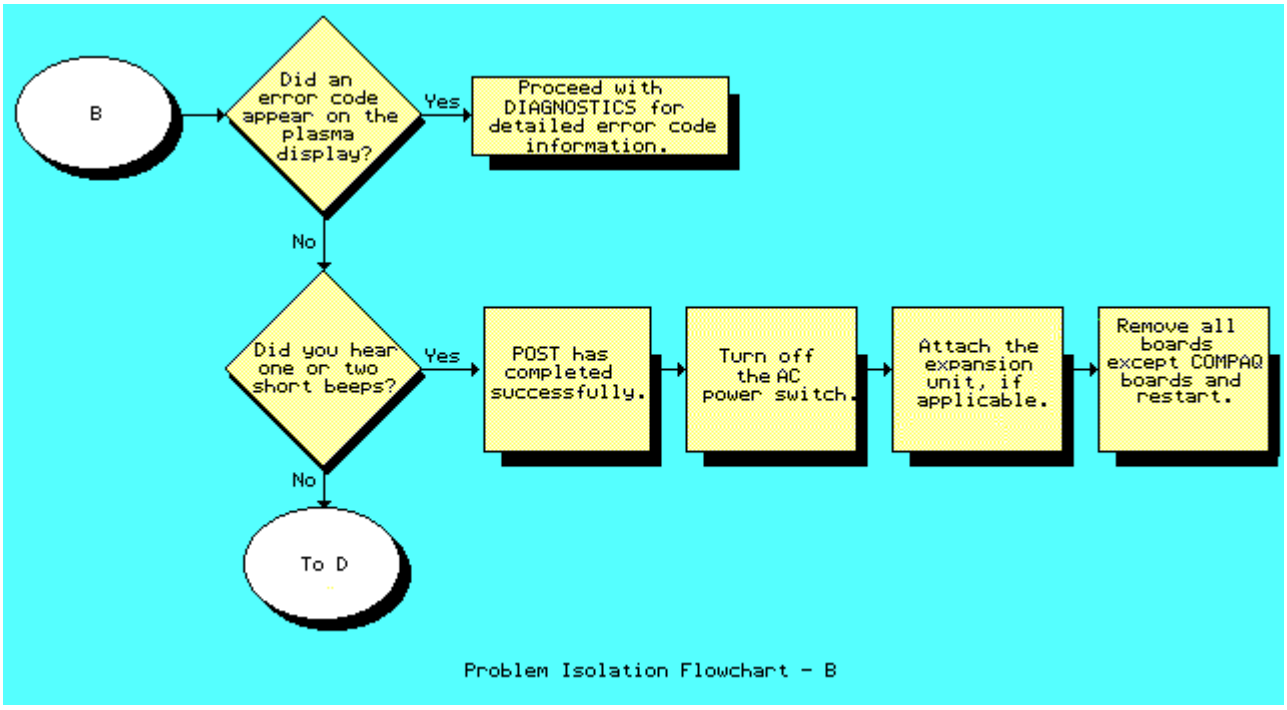
The problem isolation flowchart provides a quick reference for identifying and correcting problems that may occur during POST. The flowchart gives troubleshooting procedures for identifying malfunctions. It also directs you to the SUPPORT SOFTWARE MAINTENANCE AND SERVICE GUIDE and to Chapter 6, "Error Messages and Codes," for more detailed troubleshooting information.



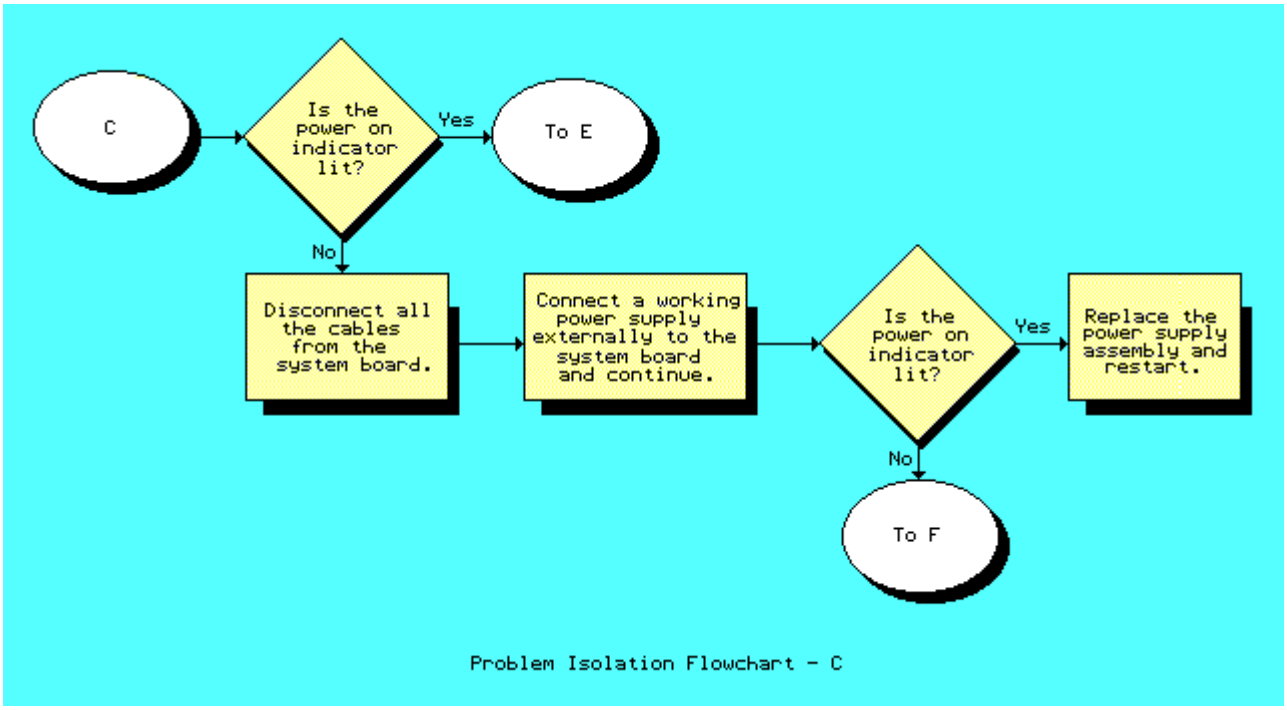
Problem Isolation Flowchart - Root



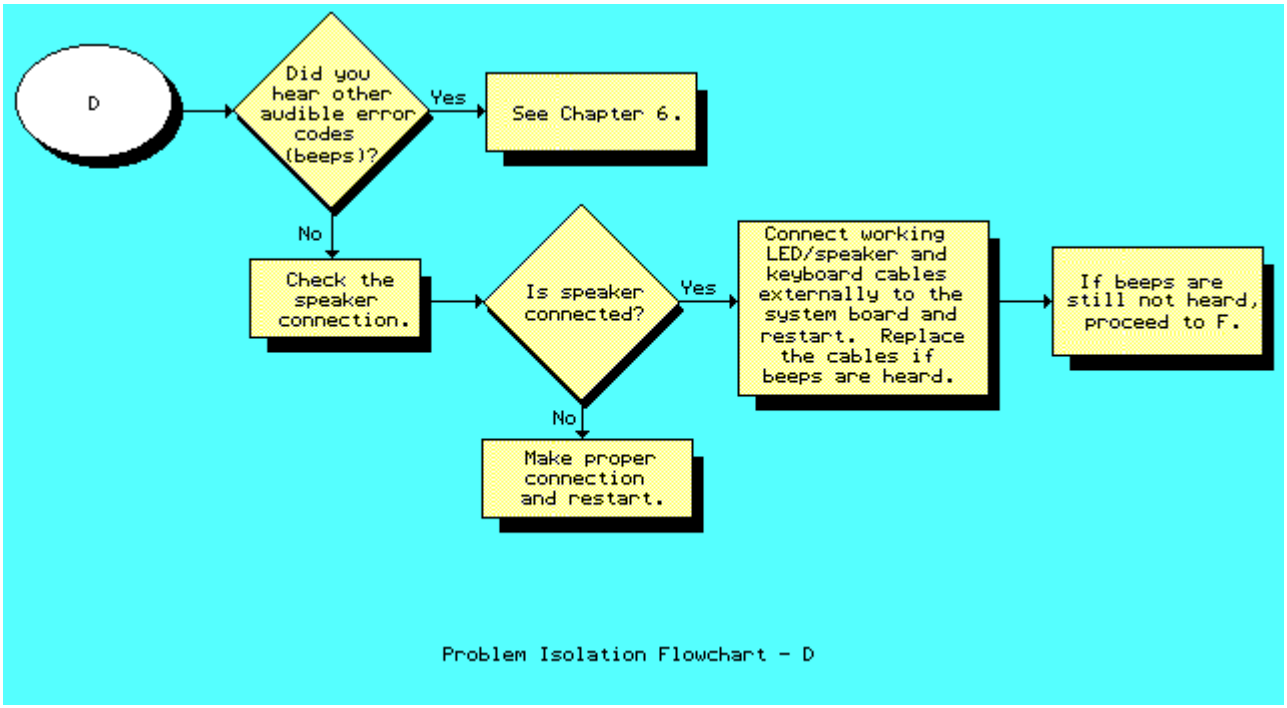
Problem Isolation Flowchart - A



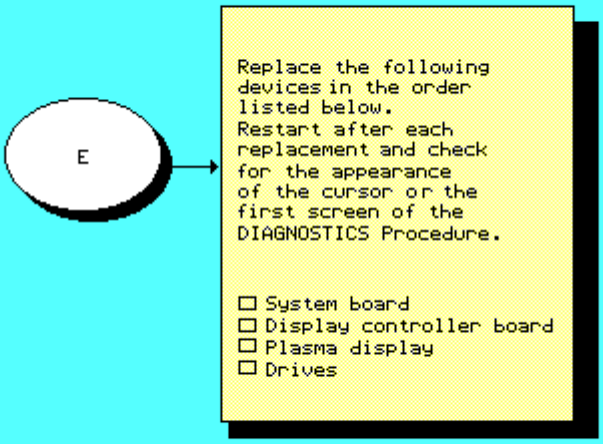
Problem Isolation Flowchart - B



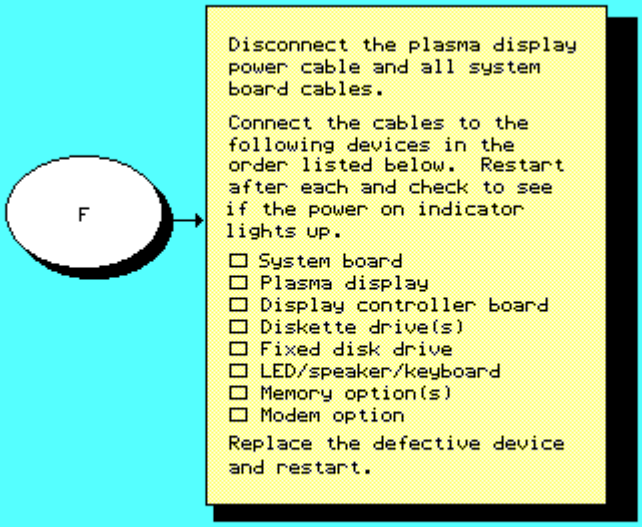
Problem Isolation Flowchart - C



Problem Isolation Flowchart - D



Problem Isolation Flowchart - E



Problem Isolation Flowchart - F

Chapter 4. Setup and Inspect

Chapter 4.0 Introduction

Please consult the SUPPORT SOFTWARE MAINTENANCE AND SERVICE GUIDE for current information on SETUP and INSPECT.

Chapter 5. Diagnostics Program

Chapter 5.0 Introduction

Please consult the SUPPORT SOFTWARE MAINTENANCE AND SERVICE GUIDE for current information on DIAGNOSTICS.

Chapter 6. Error Messages and Codes

Chapter 6.1 Introduction

This chapter provides Power On Self Test error messages, DIAGNOSTIC error codes, and memory error codes.

The messages and codes are given in tables that list the message or error code, a description of the error, and the probable failure or action required to resolve the error condition.

Chapter 6.2 Power On Self Test Messages

An error message results if a problem is encountered during the Power On Self Test. This Power On Self Test runs automatically when the system is turned on.

Table 6-1 lists the messages, audible (beep) message, probable cause, and the recommended action.

Table 6-1. Power On Self Test Error Messages

Message	Beeps	Probable Cause	Recommended Action
101 - ROM Error	1 Long, 1 Short	System ROM	1. Inspect ROM placement 2. Verify correct ROM location 3. Replace ROM
102 - System Board Failure	None	System board	Replace system board
162 - System Options Not Set	2 Short	System configuration incorrect	Run SETUP.
163 - Time & Date Not Set	2 Short	Invalid time or date	Run SETUP.
164 - Memory Size Error	2 Short	System configuration incorrect	Check memory configuration and run SETUP.
XX000YY ZZ - 201 Memory Error	None	RAM failure	Refer to Section 6.4, "Memory Error Codes."
301 - Keyboard Error	None	Keyboard failure	Replace keyboard.
303 - Keyboard Controller Error	None	Keyboard controller failure	Replace system board.
Message	Beeps	Probable Cause	Recommended Action

304 - Keyboard or System Unit Error	None	Keyboard or system board failure	1. Replace keyboard. 2. Replace system board.
401 - Printer Interface Error	None	System board failure	Replace system board.
402 - Monochrome Adapter Error	1 Long, 2 Short	System board or plasma display controller board failure	1. Replace plasma display controller board 2. Replace system board
501 - Display Adapter Failure	1 Long, 2 Short	Plasma display or plasma display controller board	1. Replace plasma display controller board. 2. Replace plasma display
601 - Diskette Controller Error	None	System board failure	Replace system board.
701 - Coprocessor Error	None	Coprocessor Error	Replace coprocessor.
702 - Coprocessor Detection Error	None	Coprocessor installation	1. Check jumper setting. 2. Replace coprocessor.
Message	**Beeps**	**Probable Cause**	**Recommended Action**
1780 - Disk 0 Failure	None	Fixed disk drive/ format error	Run DIAGNOSTICS.
1782 - Disk Controller Failure	None	Fixed disk drive controller error	Run DIAGNOSTICS.
1790 - Disk 0 Failure	None	Fixed disk drive	1. Run SETUP. 2. Run DIAGNOSTICS.
Parity Check 2 XX000 Y ZZ	None	Expansion RAM failure	Run DIAGNOSTICS.
Audible	1 Short	Power on successful	None.
Audible	2 Short	Power on successful	None.
(RESUME ="F1" KEY)	None	As indicated on display	Press F1 key.

Chapter 6.3 Diagnostic Error Codes

DIAGNOSTIC error codes occur if the system recognizes a problem while running the COMPAQ DIAGNOSTICS Program. These error codes help identify possible defective subassemblies. Tables 6-2 through 6-13 list possible error codes, a description of the error condition, and the action required to resolve the error condition.

In each case, the Recommended Action column lists steps necessary to correct

the problem. After completing each step, run the DIAGNOSTICS Program to verify that the error condition has been corrected. If the error code reappears, perform the next step, then run the DIAGNOSTICS Program. Continue until the DIAGNOSTICS Program no longer detects an error condition.

The error codes are in the form of AYY - XX or AAYY - XX. A or AA represents the faulty subassembly. YY denotes the test or action that failed. XX denotes a specific problem. For example, error code 603 - 07 indicates that the diskette drive write/read/compare test failed.

For assistance in the removal and replacement of a particular subassembly, see Chapter 8, "Removal and Replacement Procedures."

Table 6-2. Central Processing Unit Error Codes (1xx - xx Range)

Error Code	Error Description	Recommended Action
101 - 01	Central Processing Unit	Replace the system board and retest for error code 101 - 01
102 - 01	Numeric coprocessor initial status word incorrect	The following steps apply to error codes 102 - 01 through 102 - 15: 1. Verify jumper setting. 2. Verify coprocessor is the proper speed. 3. Replace the coprocessor and retest. 4. Replace the system board and retest.
102 - 02	Numeric coprocessor initial control word incorrect	
102 - 03	Numeric coprocessor tag word not all ones	
102 - 04	Numeric coprocessor tag word not all zeros	
102 - 05	Numeric coprocessor exchange command failed	
102 - 06	Numeric coprocessor masked exception incorrectly handled	
102 - 07	Numeric coprocessor unmasked exception incorrectly handled	
102 - 08	Numeric coprocessor wrong mask bit set in status register	The following steps apply to error codes 102 - 01 through 102 - 15: 1. Verify jumper setting. 2. Verify coprocessor is the proper speed. 3. Replace the coprocessor and retest. 4. Replace the system board
102 - 09	Numeric coprocessor unable to store real number	
102 - 10	Numeric coprocessor real number calculation	

	test failed	and retest.
102 - 11	Numeric coprocessor speed test failed	
102 - 12	Numeric coprocessor pattern test failed	
102 - 14	Switch indicates no coprocessor present	
102 - 15	Coprocessor is inoperative or socket is unoccupied	

Error Code	Error Description	Recommended Action
103 - 01	Direct memory access page registers test failed	Replace the system board and retest for error codes 103 - 01 through 113 - 01.
103 - 02	Direct memory access byte controller test failed	
103 - 03	Direct memory access word controller test failed.	
104 - 01	Interrupt controller master test failed.	
104 - 02	Interrupt controller slave test failed.	
104 - 03	Interrupt controller software RTC is inoperative.	
105 - 01	Port 61, bit 6 not at zero.	
105 - 02	Port 61, bit 5 not at zero.	
105 - 03	Port 61, bit 3 not at zero.	
105 - 04	Port 61, bit 1 not at zero.	

Error Code	Error Description	Recommended Action
105 - 05	Port 61, bit 0 not at zero.	Replace the system board and retest for error codes 103 - 01 through 113 - 01.
105 - 06	Port 61, bit 5 not at one.	
105 - 07	Port 61, bit 3 not at one.	
105 - 08	Port 61, bit 1 not at one.	
105 - 09	Port 61, bit 0 not at one.	
105 - 10	Port 61 I/O test failed.	
105 - 11	Port 61, bit 7 not at zero.	

105 - 12 Port 61, bit 2 not at zero.

105 - 13 No interrupt generated by fail safe timer.

105 - 14 NMI not triggered by fail safe timer.

106 - 01 Keyboard controller self test failed.

107 - 01 CMOS RAM test failed.

108 - 02 CMOS interrupt test failed.

108 - 03 CMOS interrupt test, CMOS not properly initialized.

Error Code	Error Description	Recommended Action
109 - 01	CMOS clock load data test failed.	Replace the system board and retest for error codes 103 - 01 through 113 - 01.
109 - 02	CMOS clock rollover test failed.	
109 - 03	CMOS clock test, CMOS not properly initialized.	
110 - 01	Programmable timer load data test failed.	
110 - 02	Programmable timer dynamic test failed.	
110 - 03	Programmable timer 2 load data test failed.	
111 - 01	Refresh detect test failed.	
112 - 01	Speed test slow mode out of range.	
112 - 02	Speed test mixed mode out of range.	
112 - 04	Unable to enter slow mode in speed test.	

Error Code	Error Description	Recommended Action
112 - 05	Unable to enter mixed mode in speed test.	Replace the system board and retest for error codes 103 - 01 through 113 - 01.
112 - 06	Unable to enter fast mode in speed test.	
112 - 07	Speed test system error.	

112 - 08	Speed test unable to enter auto mode.	
112 - 09	Speed test unable to enter high mode.	
112 - 10	Speed test high mode out of range.	
112 - 11	Speed test auto mode out of range.	
112 - 12	Speed test variable speed mode inoperative.	
113 - 01	Protected mode test failed.	
114 - 01	Speaker test failed.	1. Verify that speaker is connected. 2. Replace the speaker and retest. 3. Replace the system board and retest.
199 - 00	Installed devices test failed.	1. Check system configuration. 2. Verify cable connections. 3. Check switch settings. 4. Run SETUP. 5. Replace system board and retest.

Table 6-3. Memory Error Codes (2xx - xx Range)

Error Code	Error Description	Recommended Action
201 - 01	Memory machine ID test failed.	The following steps apply to error codes 201 - 01 through 202 - 03:
202 - 01	Memory system ROM checksum failed.	1. Replace plasma display controller board. 2. Replace the system ROM and retest. 3. Replace the system board and retest.
202 - 02	RAM/ROM system test failed.	
202 - 03	RAM/ROM protect test failed.	
203 - 01	Memory write/read test failed test failed.	Replace the appropriate memory module(s) or memory board and retest for error codes 203 - 01 through 210 - 03. Refer to Section 6.4.
203 - 02	Error during saving program memory in write/read test.	
203 - 03	Error during restore of program in write/read test	
204 - 01	Memory address test failed	

Error Code	Error Description	Recommended Action
204 - 02	Error during saving program memory in address test.	
204 - 03	Error during restore of program memory in address test.	
204 - 04	A20 address test failed.	
204 - 05	Page hit address test failed.	Replace the appropriate memory module(s) or memory board and retest for error codes 203 - 01 through 210 - 03. Refer to Section 6.4.
205 - 01	Walking I/O test failed.	
205 - 02	Error during saving program memory in walking I/O test.	
205 - 03	Error during restore of program memory in walking I/O test.	
205 - 04	Insufficient memory to perform test.	
208 - 01	Memory refresh test failed.	
208 - 02	Error during saving program memory in refresh test.	
208 - 03	Error during restore of program memory in refresh test.	
210 - xx	Random Pattern Test	
210 - 01	Random pattern test failed.	
210 - 02	Error during saving program.	
210 - 03	Error while restore of program.	

Table 6-4. Keyboard Error Codes (3xx - xx Range)

Error Code	Error Description	Recommended Action
301 - 01	Keyboard short test, 8042 self test failed.	The following steps apply to error codes 301 - 01 through 304 - 06.
301 - 02	Keyboard short test, interface test failed.	1. Check the keyboard connector. If disconnected, turn off the computer and connect the keyboard.
301 - 03	Keyboard short test, echo test failed	2. Replace the keyboard and retest.
301 - 04	Keyboard short test, keyboard retest failed.	3. Replace the system board and retest.
302 - 01	Keyboard long test failed.	

Error Code	Error Description	Recommended Action
303 - 01	Keyboard LED test, 8042 self test failed.	The following steps apply to error codes 301 - 01 through 304 - 06.
303 - 02	Keyboard LED test, retest test failed.	1. Check the keyboard connector. If disconnected, turn off the computer and connect the keyboard.
303 - 03	Keyboard LED test, retest failed.	2. Replace the keyboard and retest.
303 - 04	Keyboard LED test, LED command test failed.	3. Replace the system board and retest.
303 - 05	Keyboard LED test, LED command test failed.	
303 - 06	Keyboard LED test, LED command test failed.	
303 - 07	Keyboard LED test, LED command test failed.	
303 - 08	Keyboard LED test, command byte restore test failed.	
303 - 09	Keyboard LED test, LEDs failed to light.	
304 - 01	Keyboard repeat key test failed.	
304 - 02	Unable to enter mode 3.	
304 - 03	Incorrect scan code from keyboard.	
304 - 04	No make code observed.	
304 - 05	Cannot disable repeat key feature.	
304 - 06	Unable to return to normal mode.	

Table 6-5. Parallel Printer Error Codes (4xx - xx Range)

Error Code	Error Description	Recommended Action
401 - 01	Printer connected test failed.	The following steps apply to error codes 401 - 01 through 498 - 00:
402 - 01	Printer data register failed	1. If a printer is connected, be sure it is turned ON and in the online mode.
402 - 02	Printer control register failed.	2. Check the jumper settings on the system board (see Chapter 9, "Jumper and Switch Settings").

Error Code	Error Description	Recommended Action
402 - 03	Printer data and control registers failed.	3. Replace the Serial/Parallel Interface Board, if applicable, and retest.
402 - 04	Printer loopback failed.	4. Replace the printer and/or the printer cable and retest.
402 - 05	Printer loopback and data registers failed.	5. Replace the system board and retest.
402 - 06	Printer loopback and control registers failed.	
402 - 07	Printer loopback, data, and control registers failed.	
402 - 08	Printer interrupt test failed.	
402 - 09	Printer interrupt and data registers failed.	
402 - 10	Printer interrupt and control registers failed.	
402 - 11	Printer interrupt, control, and data registers failed.	The following steps apply to error codes 401 - 01 through 498 - 00:
402 - 12	Printer interrupt and loopback failed.	1. If a printer is connected, be sure it is turned ON and in the online mode.
402 - 13	Printer interrupt, loopback, and data registers failed.	2. Check the jumper settings on the system board (see Chapter 9, "Jumper and Switch Settings").
402 - 14	Printer interrupt, loopback, and control registers failed.	3. Replace the Serial/Parallel Interface Board, if applicable, and retest.
402 - 15	Printer interrupt, loopback, control, and data registers failed.	4. Replace the printer and/or the printer cable and retest.
402 - 16	Printer unexpected interrupt received.	5. Replace the system board and retest.
403 - 01	Printer pattern test failed.	
498 - 00	Printer failed or not connected.	

Table 6-6. Video Error Codes (5xx - xx Range) (For External Video Display Units Only)

Error Code	Error Description	Recommended Action
501 - 01	Video controller test failed.	The following steps apply to error codes 501 - 01 through 516 - 01:
502 - 01	Video memory test failed.	
503 - 01	Video attribute test failed.	1. Replace the video display controller board and retest.

		2. Replace the monitor and retest. 3. Replace the system board and retest.
504 - 01	Video character set test failed.	
505 - 01	Video 80 x 25 mode 9 x 14 character cell test failed.	
506 - 01	Video 80 x 25 mode 8 x 8 character cell test failed.	
507 - 01	Video 40 x 25 mode test failed.	
508 - 01	Video 320 x 200 mode color set 0 test failed.	
509 - 01	Video 320 x 200 mode color set 1 test failed.	
510 - 01	Video 640 x 200 mode test failed.	
511 - 01	Video screen memory page test failed.	
512 - 01	Video gray scale test failed.	
514 - 01	Video white screen test failed.	
516 - 01	Video noise pattern test failed.	

Error Code	Error Description	Recommended Action
517 - xx	Lightpen Test	The following steps apply for error codes 517 - xx:
517 - 01	Lightpen test failed; no response.	1. Replace the lightpen and retest 2. Replace the video display controller board and retest. 3. Replace the system board and retest.
517 - 02	Lightpen text mode test failed; invalid response.	
517 - 03	Lightpen medium resolution mode test failed; no response.	
517 - 05	Lightpen medium resolution mode test failed; invalid response.	

Table 6-7. Diskette Drive Error Codes (6xx - xx Range)

Error Code	Error Description	Recommended Action
600 - xx	Diskette Drive ID Test	The following steps apply to error codes 600 - xx through 699 - 00:
600 - 05	Failed to reset controller	1. Replace the diskette and retest. 2. Check the jumper settings on
600 - 20	Failed to get drive type	

		the system board and retest
601 - xx	Format Test	(see Chapter 9, "Jumper and Switch Settings").
601 - 05	Failed to reset controller	3. Check the diskette power and signal cable.
601 - 09	Failed to format a track	4. Replace the diskette power and signal cables and retest.
601 - 23	Failed to set drive type in ID media	5. Replace the diskette drive and retest.
		6. Replace the system board and
602 - xx	Diskette Read Test	retest.
602 - 01	Exceeded maximum soft error limit	
602 - 02	Exceeded maximum hard error limit	
602 - 03	Previously exceeded maximum soft error limit	
602 - 04	Previously exceeded maximum hard error limit	

Error Code	Error Description	Recommended Action
602 - 05	Failed to reset controller	The following steps apply to error codes 600 - xx through 699 - 00:
602 - 06	Fatal error while reading	1. Replace the diskette and retest.
603 - xx	Diskette Write/Read/Compare Test	2. Check the jumper settings on the system board and retest (see Chapter 9, "Jumper and Switch Settings").
603 - 07	Fatal error while writing	3. Check the diskette power and signal cables.
603 - 08	Failed compare of write/read buffers	4. Replace the diskette power and signal cables and retest.
604 - xx	Diskette Random Seek Test	5. Replace the diskette drive and retest.
604 - 01	Exceeded maximum soft error limit	6. Replace the system board and retest.
604 - 02	Exceeded maximum hard error limit	
604 - 03	Previously exceeded soft error limit	
604 - 04	Previously exceeded hard error limit	
604 - 05	Failed to reset controller	
604 - 06	Fatal error while reading	

Error Code	Error Description	Recommended Action

605 - xx	Diskette ID Media Test	The following steps apply to error codes 600 - xx through 699 - 00: 1. Replace the diskette and retest. 2. Check the jumper settings on the system board and retest (see Chapter 9, "Jumper and Switch Settings"). 3. Check the diskette power and signal cables. 4. Replace the diskette power and signal cables and retest. 5. Replace the diskette drive and retest. 6. Replace the system board and retest.
605 - 20	Failed to get drive type	
605 - 24	Failed to read diskette media	
605 - 25	Failed to verify diskette media	
606 - xx	Diskette Speed Test	
606 - 26	Failed to read media in speed test	
606 - 26	Failed speed limits	
607 - xx	Diskette Wrap Test	
607 - 10	Failed sector wrap test	
608 - xx	Diskette Write Protect Test	
608 - 28	Failed Write Protect Test	
609 - xx	Diskette Reset Controller Test	
609 - 05	Failed to Reset Controller	
610 - xx	Diskette Change Line Test	
610 - 21	Failed to get change line status	
610 - 22	Failed to clear change line status	
697 - 00	Diskette type error.	
698 - 00	Diskette drive speed not within limits	
699 - 00	Drive/media ID error; rerun SETUP	

Table 6-8. Monochrome Video Board Error Codes (8xx - xx Range)

Error Code	Error Description	Recommended Action
802 - 01	Video memory test failed.	1. Replace monitor and retest. 2. Replace monochrome board and retest. 3. Replace system board and retest.
824 - 01	Monochrome text mode test failed.	

Table 6-9. Serial Communications Error Codes (11xx - xx Range)

Error

Code	Error Description	Recommended Action
1101 - xx	Asynchronous Communications Interface Test	The following steps apply to error codes 1101 - xx:
1101 - 01	UART DLAB bit failed.	1. Check the switch settings on the Serial/Parallel Interface Board, if applicable. 2. Check the jumper settings on the system board. 3. Replace the Serial/Parallel Interface Board, if applicable. 4. Replace the system board and retest.
1101 - 02	Line input or UART fault.	
1101 - 03	Address line fault.	
1101 - 04	Data line fault.	
1101 - 05	UART control signal failed.	
1101 - 06	UART THRE bit failed.	
1101 - 07	UART DATA READY bit failed.	
1101 - 08	UART TX/RX buffer failed.	
1101 - 09	Interrupt circuit failed.	
1101 - 10	COM1 set to interrupt 3.	
1101 - 11	COM2 set to interrupt 4.	
1101 - 12	Drive/receiver control signal failed.	
1101 - 13	UART control signal interrupt failed.	
1101 - 14	Drive/receiver data failed.	

Error Code	Error Description	Recommended Action
1109 - 01	Clock register initialization failed.	The following steps apply to error 1109 - xx:
1109 - 02	Clock register rollover failed.	1. Check the jumper settings on the system board (see Chapter 9, "Jumper and Switch Settings"). 2. Replace the system board and retest.
1109 - 03	Clock reset failed.	
1109 - 04	Input line or clock failed.	
1109 - 05	Address line fault.	
1109 - 06	Data line fault.	

Table 6-10. Modem Communications Error Codes (12xx - xx Range)

Error Code	Error Description	Recommended Action
1201 - xx	Modem Internal Loopback Test	The following steps apply to error codes 1201 - 01 through 1210 - 11: 1. Check the jumper settings on the system board (see Chapter 9, "Jumper and Switch Settings"). 2. Check the modem connection to the 32 bit memory/modem interface board. 3. Replace the modem and retest. 4. Replace the 32 bit memory/modem interface board and retest. 5. Replace the system board and retest.
1201 - 01	UART DLAB bit failed.	
1201 - 02	Line input or UART failed.	
1201 - 03	Address line fault.	
1201 - 04	Data line fault.	
1201 - 05	UART control signal failed.	
1201 - 06	UART THRE bit failed.	
1201 - 07	UART DATA READY bit failed.	
1201 - 08	UART TX/RX buffer failed.	
1201 - 09	INTERRUPT circuit failed.	
1201 - 10	COM1 set to invalid interrupt.	
1201 - 11	COM2 set to invalid interrupt.	
1201 - 12	DRIVER/RECEIVER control signal failed.	
1201 - 13	UART control signal interrupt failed.	

Error Code	Error Description	Recommended Action
1201 - 14	DRIVER/RECEIVER data failed.	The following steps apply to error codes 1201 - 01 through 1210 - 11: 1. Check the jumper settings on the system board (see Chapter 9, "Jumper and Switch Settings"). 2. Check the modem connection to the 32 bit memory/modem interface board. 3. Replace the modem and retest. 4. Replace the 32 bit memory/modem interface board and retest. 5. Replace the system board and retest.
1201 - 15	Modem detection failed.	
1201 - 16	Modem ROM, checksum failed.	
1201 - 17	Tone detection failed.	
1202 - xx	Modem Time Out Test	
1202 - 01	Modem timed out waiting for SYNC.	
1202 - 02	Modem timed out waiting for response.	
1202 - 03	Modem exceeded data block retry limit.	
1203 - xx	Modem External Termination Test	

Error Code	Error Description	Recommended Action
1203 - 01	Modem external TIP/RING failed.	
1203 - 02	Modem external DATA TIP/RING failed.	
1203 - 03	Modem line termination failed.	

Error Code	Error Description	Recommended Action
1204 - xx	Modem Auto Originate Test	The following steps apply to error codes 1201 - 01 through 1210 - 11: 1. Check the jumper settings on the system board (see Chapter 9, "Jumper and Switch Settings"). 2. Check the modem connection to the 32 bit memory/modem interface board. 3. Replace the modem and retest. 4. Replace the 32 bit memory/modem interface board and retest. 5. Replace the system board and retest.
1204 - 01	Modem timed out waiting for SYNC.	
1204 - 02	Modem timed out waiting for response.	
1204 - 03	Modem exceeded data block retry limit.	
1204 - 04	RVC exceeded carrier lost limit.	
1204 - 05	XMIT exceeded carrier lost limit.	
1204 - 06	Time out waiting for dial tone.	
1204 - 07	Dial number string too long.	
1204 - 08	Modem timed out waiting for remote response.	
1204 - 09	Modem exceeded maximum redial limit.	
1204 - 10	Line quality prevented remote connection.	

Error Code	Error Description	Recommended Action
1204 - 11	Modem timed out waiting for remote connection.	The following steps apply to error codes 1201 - 01 through 1210 - 11:
1205 - xx	Modem Auto Answer Test	1. Check the jumper settings on the system board (see Chapter 9, "Jumper and Switch Settings"). 2. Check the modem connection to the 32 bit memory/modem interface board. 3. Replace the modem and retest. 4. Replace the 32 bit memory/modem interface board and retest.
1205 - 01	Modem timed out waiting for SYNC.	
1205 - 02	Modem timed out waiting for response.	
1205 - 03	Modem exceeded data block	

	retry limit.	5. Replace the system board and retest.
1205 - 04	RCV exceeded carrier lost limit.	
1205 - 05	XMIT exceeded carrier lost limit.	
1205 - 06	Time out waiting for dial tone.	
1205 - 07	Dial number string too long.	
1205 - 08	Modem timed out waiting for remote response.	
1205 - 09	Modem exceeded maximum redial limit.	

Error Code	Error Description	Recommended Action
1205 - 10	Line quality prevented remote connection.	The following steps apply to error codes 1201 - 01 through 1210 - 11:
1205 - 11	Modem timed out waiting for remote connection.	1. Check the jumper settings on the system board (see Chapter 9, "Jumper and Switch Settings").
1206 - xx	Dial Multifrequency Tone Test	2. Check the modem connection to the 32 bit memory/modem interface board.
1206 - 17	Tone detection failed.	3. Replace the modem and retest.
1210 - xx	Modem Direct Connect Test	4. Replace the 32 bit memory/modem interface board and retest.
1210 - 01	Modem timed out waiting for SYNC.	5. Replace the system board and retest.
1210 - 02	Modem timed out waiting for response.	
1210 - 03	Modem exceeded data block retry limit.	
1210 - 04	RCV exceeded carrier lost limit.	
1210 - 05	XMIT exceeded carrier lost limit.	
1210 - 06	Time out waiting for dial tone.	
1210 - 07	Dial number string too long.	
1210 - 08	Modem timed out waiting for remote response.	

1210 - 09	Modem exceeded maximum redial limit.	
1210 - 10	Line quality prevented remote connection.	
1210 - 11	Modem timed out waiting for remote connection.	

Table 6-11. Fixed Disk Drive Error Codes (17xx - xx Range)

Error Code	Error Description	Recommended Action
1700 - xx	Fixed Disk Drive ID Test	The following steps apply to error codes 1700 - xx through 1717 - 73: 1. Check the system board jumper settings and retest (see Chapter 9, "Jumper and Switch Settings"). 2. Replace the fixed disk drive signal and power cables and retest. 3. Replace the fixed disk drive and retest. 4. Replace the system board and retest.
1700 - 05	Failed to reset controller	
1700 - 09	Failed to format a track	
1700 - 41	Failed to ID fixed disk drive (drive not ready).	
1700 - 42	Recalibrate fixed disk drive failed.	
1700 - 45	Failed to get fixed disk drive parameters from ROM.	
1700 - 46	Invalid fixed disk drive parameters found in ROM.	
1700 - 66	Failed to initialize fixed disk drive parameter.	
1700 - 69	Failed to read drive size from controller.	
1700 - 70	Failed translate mode.	
1700 - 71	Failed nontranslated mode.	

Error Code	Error Description	Recommended Action
1701 - xx	Fixed Disk Format Test	The following steps apply to error codes 1700 - xx through 1717 - 73: 1. Check the system board jumper settings and retest (see Chapter 9, "Jumper and Switch Settings"). 2. Replace the fixed disk drive signal and power cables and retest. 3. Replace the fixed disk drive
1701 - 05	Failed to reset controller	
1701 - 09	Failed to format a cylinder	
1701 - 42	Recalibrate fixed disk drive failed.	
1701 - 58	Failed to write sector buffer.	

		and retest.
1701 - 59	Failed to read sector buffer.	4. Replace the system board and retest.
1701 - 66	Failed to initialize fixed disk drive parameter.	
1702 - xx	Fixed Disk Drive Read Test	
1702 - 01	Exceeded maximum soft error limit.	
1702 - 02	Exceeded maximum hard error limit.	
1702 - 03	Previously exceeded maximum soft error limit.	
1702 - 04	Previously exceeded maximum hard error limit.	

Error Code	Error Description	Recommended Action
1702 - 05	Failed to reset controller	The following steps apply to error codes 1700 - xx through 1717 - 73: 1. Check the system board jumper settings and retest (see Chapter 9, "Jumper and Switch Settings"). 2. Replace the fixed disk drive signal and power cables and retest. 3. Replace the fixed disk drive and retest. 4. Replace the system board and retest.
1702 - 06	Fatal error while reading	
1702 - 40	Failed cylinder 0.	
1702 - 65	Exceeded maximum bad sector per track.	
1702 - 68	Failed to read long.	
1702 - 70	Failed to translate mode.	
1702 - 71	Failed nontranslated mode.	
1702 - 72	Exceeded maximum bad track limit.	
1702 - 73	Previously exceeded maximum bad track limit.	
1703 - xx	Fixed Disk Drive Write/Read/ Compare Test	
1703 - 01	Exceeded maximum soft error limit.	

Error Code	Error Description	Recommended Action
1703 - 02	Exceeded maximum hard error limit.	The following steps apply to error codes 1700 - xx through 1717 - 73:
1703 - 03	Previously exceeded maximum	1. Check the system board jumper

	soft error limit.	settings and retest (see Chapter 9, "Jumper and Switch Settings").
1703 - 04	Previously exceeded maximum hard error limit.	2. Replace the fixed disk drive signal and power cables and retest.
1703 - 05	Failed to reset controller.	3. Replace the fixed disk drive and retest.
1703 - 06	Fatal error while reading.	4. Replace the system board and retest.
1703 - 07	Fatal error while writing.	
1703 - 08	Failed compare of write/ read buffers.	
1703 - 40	Cylinder 0 error.	
1703 - 55	Cylinder 1 error.	
1703 - 63	Failed soft error rate.	
1703 - 65	Exceeded maximum bad sector per track.	
1703 - 67	Failed to write long.	

Error Code	Error Description	Recommended Action
1703 - 68	Failed to read long.	The following steps apply to error codes 1700 - xx through 1717 - 73:
1703 - 70	Failed translate mode.	
1703 - 71	Failed nontranslated mode.	1. Check the system board jumper settings and retest (see Chapter 9, "Jumper and Switch Settings").
1703 - 72	Exceeded maximum bad track limit.	2. Replace the fixed disk drive signal and power cables and retest.
1703 - 73	Previously exceeded maximum bad track limit.	3. Replace the fixed disk drive and retest.
1704 - xx	Fixed Disk Drive Random Seek Test.	4. Replace the system board and retest.
1704 - 01	Exceeded maximum soft error limit.	
1704 - 02	Exceeded maximum hard error limit.	
1704 - 03	Previously exceeded maximum soft error limit.	
1704 - 04	Previously exceeded maximum hard error limit.	
1704 - 05	Failed to reset controller.	

1704 - 06 Fatal error while reading.

Error Code	Error Description	Recommended Action
1704 - 40	Cylinder 0 error.	The following steps apply to error codes 1700 - xx through 1717 - 73: 1. Check the system board jumper settings and retest (see Chapter 9, "Jumper and Switch Settings"). 2. Replace the fixed disk drive signal and power cables and retest. 3. Replace the fixed disk drive and retest. 4. Replace the system board and retest.
1704 - 55	Cylinder 1 error.	
1704 - 65	Exceeded maximum bad sector per track.	
1704 - 70	Failed translate mode.	
1704 - 71	Failed nontranslated mode.	
1704 - 72	Exceeded maximum bad track limit.	
1704 - 73	Previously exceeded maximum bad track limit.	
1705 - xx	Fixed Disk Drive Controller Test.	
1705 - 05	Failed to reset controller.	
1705 - 44	Failed fixed disk drive controller diagnostics.	
1705 - 56	Failed controller RAM diagnostics.	
1705 - 57	Failed controller to drive diagnostics.	

Error Code	Error Description	Recommended Action
1706 - xx	Fixed Disk Drive Ready Test	The following steps apply to error codes 1700 - xx through 1717 - 73: 1. Check the system board jumper settings and retest (see Chapter 9, "Jumper and Switch Settings"). 2. Replace the fixed disk drive signal and power cables and retest. 3. Replace the fixed disk drive and retest. 4. Replace the system board and retest.
1706 - 41	Drive not ready.	
1707 - xx	Fixed Disk Drive Recalibrate Test	
1707 - 42	Failed to recalibrate fixed disk drive.	
1708 - xx	Fixed Disk Drive Format Bad Track Test	
1708 - 02	Exceeded maximum hard error limit.	
1708 - 05	Failed to reset controller.	

1708 - 09 Format track bad failed.

1708 - 42 Recalibrate drive failed.

1708 - 43 Failed to format a cylinder bad.

1708 - 58 Failed to write sector buffer.

1708 - 59 Failed to read sector buffer.

Error Code	Error Description	Recommended Action
1709 - xx	Fixed Disk Drive Reset Controller Test	The following steps apply to error codes 1700 - xx through 1717 - 73:
1709 - 05	Failed to reset controller.	1. Check the system board jumper settings and retest (see Chapter 9, "Jumper and Switch Settings").
1710 - xx	Fixed Disk Drive Park Head Test	2. Replace the fixed disk drive signal and power cables and retest.
1710 - 45	Failed to get fixed disk drive parameters from ROM.	3. Replace the fixed disk drive and retest.
1710 - 47	Failed to park heads.	4. Replace the system board and retest.
1714 - xx	Fixed Disk Drive File Write Test	
1714 - 01	Exceeded maximum soft error limit.	
1714 - 02	Exceeded maximum hard error limit.	
1714 - 03	Previously exceeded maximum soft error limit.	
1714 - 04	Previously exceeded maximum hard error limit.	
1714 - 05	Failed to reset controller.	
1714 - 06	Fatal error while reading.	

Error Code	Error Description	Recommended Action
1714 - 07	Fatal error while writing.	The following steps apply to error codes 1700 - xx through 1717 - 73:
1714 - 08	Failed compare of write/ read buffers.	1. Check the system board jumper settings and retest

Error Code	Error Description	Recommended Action
1714 - 10	Failed diskette sector wrap during read.	(see Chapter 9, "Jumper and Switch Settings"). 2. Replace the fixed disk drive signal and power cables and retest. 3. Replace the fixed disk drive and retest. 4. Replace the system board and retest.
1714 - 20	Failed to get diskette drive type.	
1714 - 24	Failed to read diskette media.	
1714 - 25	Failed to verify diskette media.	
1714 - 40	Cylinder 0 error.	
1714 - 48	Failed to move disk table to RAM.	
1714 - 49	Failed to read diskette media in File Write Test.	
1714 - 50	Failed File I/O Write Test.	
1714 - 51	Failed File I/O Read Test.	
1714 - 52	Failed File I/O Compare Test.	
1714 - 55	Failed cylinder 1.	The following steps apply to error codes 1700 - xx through 1717 - 73: 1. Check the system board jumper settings and retest (see Chapter 9, "Jumper and Switch Settings"). 2. Replace the fixed disk drive signal and power cables and retest. 3. Replace the fixed disk drive and retest. 4. Replace the system board and retest.
1714 - 65	Exceeded maximum bad sector per track.	
1714 - 70	Failed translate mode.	
1714 - 71	Failed nontranslated mode.	
1714 - 72	Exceeded maximum bad track limit.	
1714 - 73	Previously exceeded maximum bad track limit.	
1715 - xx	Fixed Disk Drive Head Select Test	
1715 - 45	Failed to get fixed disk drive parameters from ROM.	
1715 - 53	Failed Drive/Head register test.	
1715 - 54	Failed Digital Input register test.	

Error Code	Error Description	Recommended Action
1716 - xx	Fixed Disk Drive Conditional Format Test	The following steps apply to error codes 1700 - xx through 1717 - 73:
1716 - 01	Exceeded maximum soft error limit.	1. Check the system board jumper settings and retest (see Chapter 9, "Jumper and Switch Settings").
1716 - 02	Exceeded maximum hard error limit.	2. Replace the fixed disk drive signal and power cables and retest.
1716 - 05	Failed to reset controller.	3. Replace the fixed disk drive and retest.
1716 - 06	Fatal error while reading.	4. Replace the system board and retest.
1716 - 07	Fatal error while writing.	
1716 - 08	Failed compare of write/ read buffers.	
1716 - 09	Failed to format a cylinder.	
1716 - 40	Cylinder 0 failed.	
1716 - 42	Failed recalibrate.	
1716 - 55	Cylinder 1 error.	
1716 - 58	Failed to write sector buffer.	

Error Code	Error Description	Recommended Action
1716 - 59	Failed to read sector buffer.	The following steps apply to error codes 1700 - xx through 1717 - 73:
1716 - 60	Failed to compare sector buffer.	1. Check the system board jumper settings and retest (see Chapter 9, "Jumper and Switch Settings").
1716 - 65	Exceeded maximum bad sector per track.	2. Replace the fixed disk drive signal and power cables and retest.
1716 - 66	Failed to initialize drive parameter.	3. Replace the fixed disk drive and retest.
1716 - 70	Failed translate mode.	4. Replace the system board and retest.
1716 - 71	Failed nontranslate mode.	
1716 - 72	Exceeded maximum bad track limit.	
1716 - 73	Previously exceeded maximum bad track limit.	

1717 - xx Fixed Disk Drive ECC Test

1717 - 01 Exceeded maximum soft error limit.

1717 - 02 Exceeded maximum hard error limit.

Error Code	Error Description	Recommended Action
1717 - 03	Previously exceeded maximum soft error limit.	The following steps apply to error codes 1700 - xx through 1717 - 73: 1. Check the system board jumper settings and retest (see Chapter 9, "Jumper and Switch Settings"). 2. Replace the fixed disk drive signal and power cables and retest. 3. Replace the fixed disk drive and retest. 4. Replace the system board and retest.
1717 - 04	Previously exceeded maximum hard error limit.	
1717 - 05	Reset controller failed.	
1717 - 06	Fatal error while reading (BIOS st.>=0x20).	
1717 - 07	Fatal error while writing.	
1717 - 08	Failed compare of write/read buffers.	
1717 - 40	Cylinder 0 failed.	
1717 - 55	Cylinder 1 error.	
1717 - 61	Failed uncorrectable error.	
1717 - 62	Failed correctable error.	
1717 - 65	Exceeded maximum bad sector per track.	
1717 - 67	Failed to write long.	
1717 - 68	Failed to read long.	
1717 - 70	Failed translate mode.	
1717 - 71	Failed nontranslate mode.	
1717 - 72	Exceeded maximum bad track limit.	
1717 - 73	Previously exceeded maximum bad track limit.	

Table 6-12. Tape Drive Error Codes (19xx - xx Range)

Error Code	Error Description	Recommended Action
1900 - xx	Tape Test	The following codes apply to error codes 1900 - xx through 1991 - xx: 1. Replace the tape cartridge and retest. 2. Replace the tape drive expansion unit and retest. 3. Replace the system board and retest.
1900 - 01	Tape not installed.	
1900 - 02	Drive installed in other drive 3.	
1900 - 26	Cannot identify drive.	
1900 - 27	Drive not compatible with controller.	
1900 - 92	Tape drive mismatched.	
1900 - 93	Tape cartridge mismatched.	
1901 - xx	Tape Servo Write Test	
1901 - 01	Drive not installed.	
1901 - 02	Cartridge not installed.	
1901 - 03	Tape motion error.	
1901 - 04	Drive busy error.	
1901 - 05	Track seek error.	
1901 - 06	Tape write protected error.	

Error Code	Error Description	Recommended Action
1901 - 07	Tape already servo written.	The following codes apply to error codes 1900 - xx through 1991 - xx: 1. Replace the tape cartridge and retest. 2. Replace the tape drive expansion unit and retest. 3. Replace the system board and retest.
1901 - 08	Unable to servo write.	
1901 - 11	Drive recalibration error.	
1901 - 21	Got servo pulses second time but not first.	
1901 - 22	Never got to end of tape after servo check.	
1901 - 25	Unable to erase cartridge.	
1901 - 27	Drive not compatible with controller.	
1902 - xx	Tape Format Test	

1902 - 01 Drive not installed.

1902 - 02 Cartridge not installed.

1902 - 03 Tape motion error.

1902 - 04 Drive busy error.

1902 - 05 Track seek error.

Error Code	Error Description	Recommended Action
1902 - 06	Tape write protected error.	The following codes apply to error codes 1900 - xx through 1991 - xx:
1902 - 09	Unable to format.	
1902 - 10	Format mode error.	1. Replace the tape cartridge and retest.
1902 - 11	Drive recalibration error.	2. Replace the tape drive expansion unit and retest.
1902 - 12	Tape not servo written.	3. Replace the system board and retest.
1902 - 13	Tape not formatted.	
1902 - 21	Got servo pulses second time but not first.	
1902 - 22	Never got to end of tape after servo check.	
1902 - 27	Drive not compatible with controller.	
1902 - 28	Format gap error.	
1903 - xx	Tape Drive Sensor Test	
1903 - 01	Drive not installed.	

1903 - 23 Change line unset.

Error Code	Error Description	Recommended Action
1903 - 27	Drive not compatible with controller.	The following codes apply to error codes 1900 - xx through 1991 - xx:
1904 - xx	Tape Beginning of Tape/End of Tape Test	1. Replace the tape cartridge and retest.
1904 - 01	Drive not installed.	2. Replace the tape drive expansion unit and retest.
1904 - 02	Cartridge not installed.	3. Replace the system board and retest.
1904 - 03	Tape motion error.	

1904 - 04 Drive busy error.

1904 - 05 Track seek error.

1904 - 15 Sense error flag.

1904 - 27 Drive not compatible with
           controller.

1905 - xx Tape Read Test

1905 - 01 Drive not installed.

1905 - 02 Cartridge not installed.

1905 - 03 Tape motion error.

Error Code	Error Description	Recommended Action
1905 - 04	Drive busy error.	The following codes apply to error codes 1900 - xx through 1991 - xx:
1905 - 05	Track seek error.	
1905 - 14	Drive timeout error.	1. Replace the tape cartridge and retest.
1905 - 16	Block locate (block ID) error.	2. Replace the tape drive expansion unit and retest.
1905 - 17	Soft error limit exceeded.	3. Replace the system board and retest.
1905 - 18	Hard error limit exceeded.	

1905 - 19 Write (probably ID error).

1905 - 27 Drive not compatible with
           controller.

1906 - xx Tape Write, Read, Compare Test

1906 - 01 Drive not installed.

1906 - 02 Cartridge not installed.

1906 - 03 Tape motion error.

1906 - 04 Drive busy error.

1906 - 05 Track seek error.

Error Code	Error Description	Recommended Action

1906 - 06	Tape write protected error.	The following codes apply to error codes 1900 - xx through 1991 - xx: 1. Replace the tape cartridge and retest. 2. Replace the tape drive expansion unit and retest. 3. Replace the system board and retest.
1906 - 14	Drive timeout error.	
1906 - 16	Block locate (block ID) error.	
1906 - 17	Soft error limit exceeded.	
1906 - 18	Hard error limit exceeded.	
1906 - 19	Write (probably ID error).	
1906 - 20	765 Fatal error.	
1906 - 24	Fail write protect test.	
1906 - 26	Cannot ID drive.	
1906 - 27	Drive not compatible with controller.	
1991 - 12	Tape has not been servo written.	

Table 6-13. COMPAQ Video Graphics Error Codes (24xx - xx Range)

Error Code	Error Description	Recommended Action
2402 - 01	Video Memory Test	The following steps apply to error codes 2402 - 01 through 2416 - 01: 1. Verify switch settings on the video board and system board. 2. Replace the video board and retest. 3. Replace the system board and retest.
2403 - 01	Video Attribute Test	
2401 - 01	Video Character Set Test	
2405 - 01	Video 80 x 25 Mode 9 x 14 Character Cell Test	
2406 - 01	Video 80 x 25 Mode 8 x 8 Character Cell Test	
2407 - 01	Video 40 x 25 Mode Test	
2408 - 01	Video 320 x 200 Mode Color Set 0 Test	
2409 - 01	Video 320 x 200 Mode Color Set 1 Test	
2410 - 01	Video 640 x 200 Mode Test	
2411 - 01	Video Screen Memory Page Test	
2412 - 01	Video Gray Scale Test	

2414 - 01 Video White Screen Test

2416 - 01 Video Noise Pattern Test

Error Code	Error Description	Recommended Action
2417 - 01	Lightpen text mode test failed; no response.	The following steps apply to error codes 2417 - xx.
2417 - 02	Lightpen text mode test failed; invalid response.	1. Check the switch settings on the video board (see Chapter 9, "Jumper and Switch Settings").
2417 - 03	Lightpen medium resolution mode test failed; no response.	2. Replace the lightpen and retest.
2417 - 04	Lightpen medium resolution mode test failed; invalid response.	3. Replace the video board and retest. 4. Replace the system board and retest.

Error Code	Error Description	Recommended Action
2418 - 01	VGC memory test failed.	The following steps apply to error codes 2418 - xx through 2425 - xx.
2418 - 02	VGC and ECG shadow RAM test failed.	1. Verify the switch settings.
2419 - 01	VGC and ECG ROM checksum test failed.	2. Replace the video board and retest.
2420 - 01	VGC and ECG attribute test failed.	3. Replace the system board and retest.
2421 - 01	VGC and ECG 640 x 200 graphics mode test failed.	
2422 - 01	VGC and ECG 640 x 350 16 color set test failed.	
2423 - 01	VGC and ECG 640 x 350 64 color set test failed.	
2424 - 01	VGC and ECG monochrome text mode test failed.	
2425 - 01	VGC and ECG monochrome graphics mode test failed.	

Table 6-14. COMPAQ Dual Mode Plasma Display Error Codes (51xx - xx Range)

Error Code	Error Description	Recommended Action
5101 - 01	Video controller Test	The following steps apply to error codes 5101 - 01 through 5129 - 01:
5102 - 01	Video Memory Test	

5103 - 01 Video Attribute Test	1. Replace the plasma display controller board and retest. 2. Replace the plasma display and retest. 3. Replace the system board and retest.
5104 - 01 Video Character Set Test	
5105 - 01 Video 80 x 25 Mode 9 x 14 Character Cell Test	
5106 - 01 Video 80 x 25 Mode 8 x 8 Character Cell Test	
5107 - 01 Video 40 x 25 Mode Test	
5108 - 01 Video 320 x 200 Mode Color Set 0 Test	
5109 - 01 Video 320 x 200 Mode Color Set 1 Test	
5110 - 01 Video 640 x 200 Mode Test	
5111 - 01 Video Screen Memory Page Test	
5112 - 01 Video Gray Scale Test	
5114 - 01 Video White Screen Test	
5116 - 01 Video Noise Pattern Test	
5124 - 01 Monochrome Test	
5129 - 01 Video 640 x 400 Mode Test	

Chapter 6.4 Memory Error Codes

Memory error codes result when the system detects a memory fault during the Power On Self Test or as a result of a DIAGNOSTIC test. The TEST programs attempt to isolate the memory fault to a specific chip, then generate a memory error code that identifies the system board, memory board, or the defective memory module to replace.

In some cases, replacing the memory module will not solve the problem because:

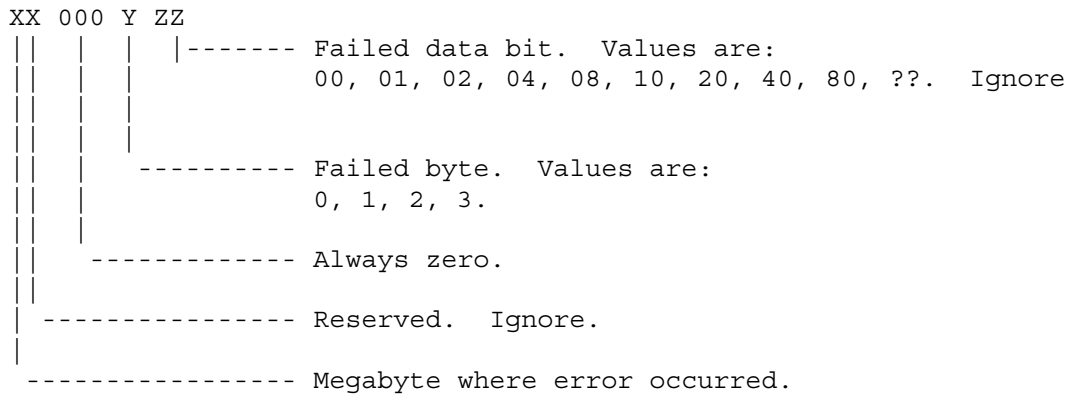
- The system may not be able to accurately determine which module is at fault if multiple memory errors are detected.
- The problem may be due to a failure in the memory support circuitry, not the memory.

The memory error code points to a specific memory address. The physical location of the memory address depends on the memory expansion board or memory module used.

Defective Memory Isolation

Memory error codes are shown on the display in an 8 digit format (XX000Y ZZ). The XX and Y alphanumeric codes are the key identification points for defective memory isolation. Due to the design of the COMPAQ PORTABLE 386 Personal Computer, the remaining codes in the format are not required for determining memory locations.

The 8 digit code is defined as follows:



Memory Locations

After identifying X and Y use Figures 6-1, 6-2, 6-3, and 6-4 to locate the defective memory module or board. For information on removing and replacing the system board or the memory options, see Chapter 8, "Removal and Replacement Procedures."

Memory Replacement

Replace 512 Kbyte Memory Modules J1 through J8 with PN 107687-001.

Replace the 4 Megabyte Memory Expansion Board with PN 107688-001.

Replace the 4 Megabyte Memory Extension Board with PN 107685-001.

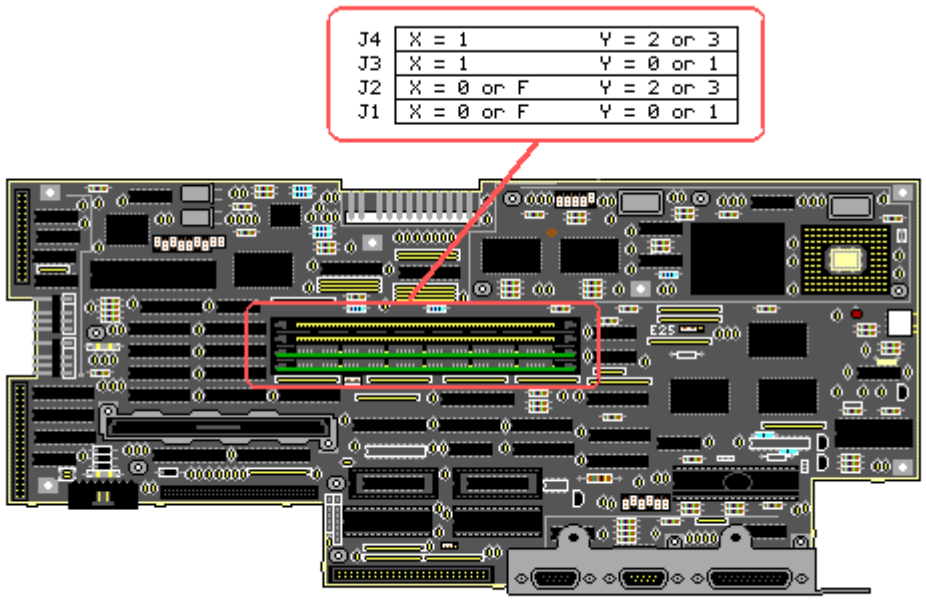


Figure 6-1. COMPAQ PORTABLE 386 Personal Computer System Board Memory Error Map

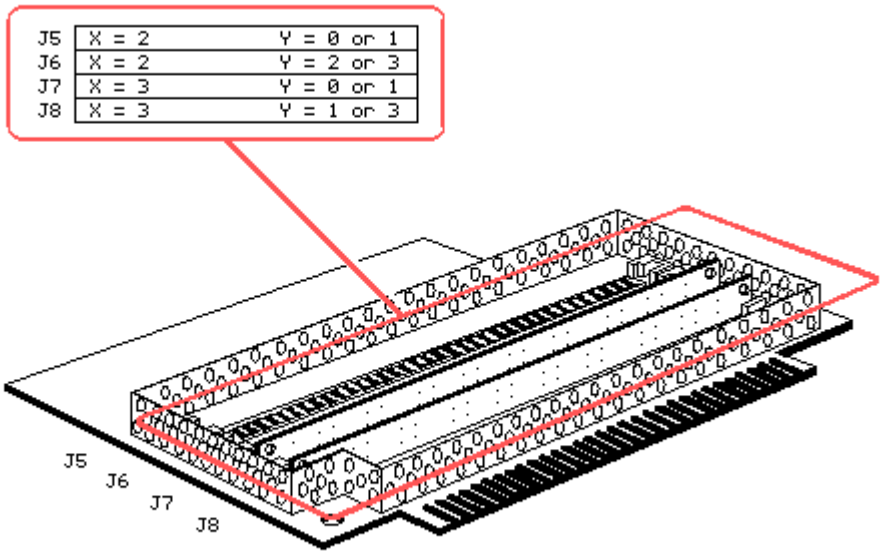


Figure 6-2. 1 to 2 Megabyte Memory Expansion Board Error Map

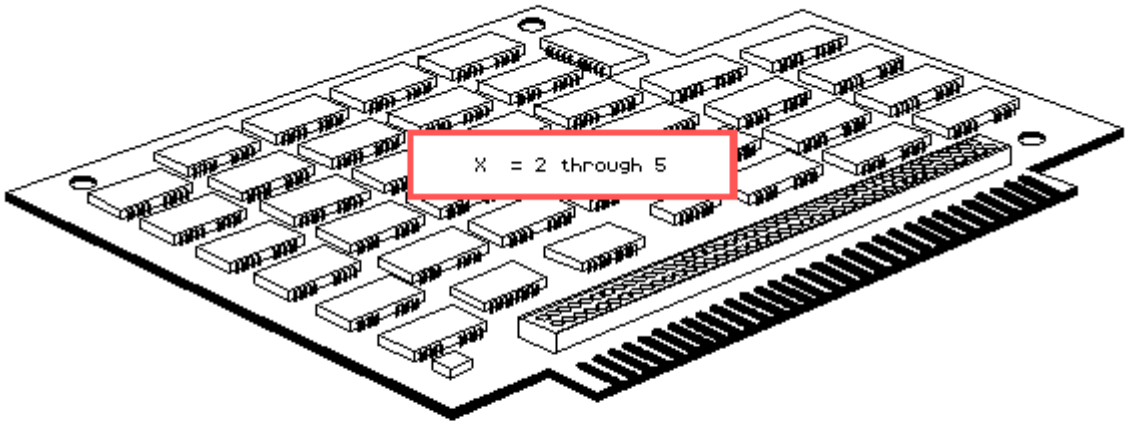


Figure 6-3. 4 Megabyte Memory Expansion Board Error Map

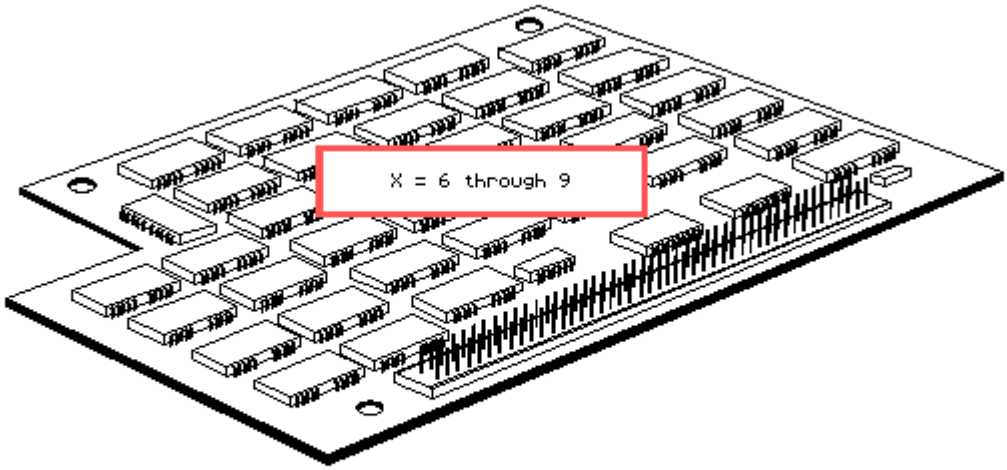


Figure 6-4. 4 Megabyte Memory Extension Board Error Map

Chapter 7. Illustrated Parts Catalog

Chapter 7.1 Introduction

This chapter provides a spare parts reference for the COMPAQ PORTABLE 386 Personal Computer.

The information in each section is presented in tabular form. Each table contains the following columns:

- Description - name of the particular part or parts kit.
- Part Number - to be used when ordering parts from Compaq Computer Corporation.

Tables 7-1 through 7-4 contain a third column that provides reference numbers keyed to specific illustrations.

Table 7-5 lists spare parts for the various options available for the COMPAQ PORTABLE 386 Personal Computer.

Tables 7-6 and 7-7 list parts that are available only in a kit, and each kit has only one part number.

Chapter 7.2 Display Enclosure Assembly

Table 7-1 lists the spare parts for the COMPAQ PORTABLE 386 Personal Computer display enclosure. Items numbered 1 through 8 are illustrated in Figure 7-1. Items numbered 9 through 15 are illustrated in Figure 7-2.

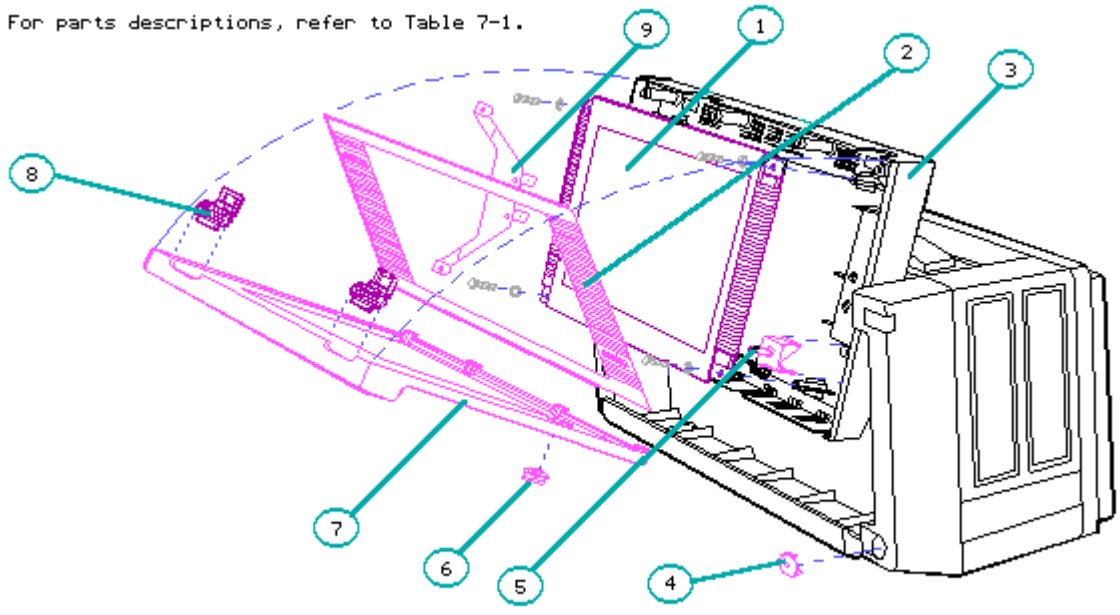


Figure 7-1. Display Enclosure Assembly (Items 1 - 9)

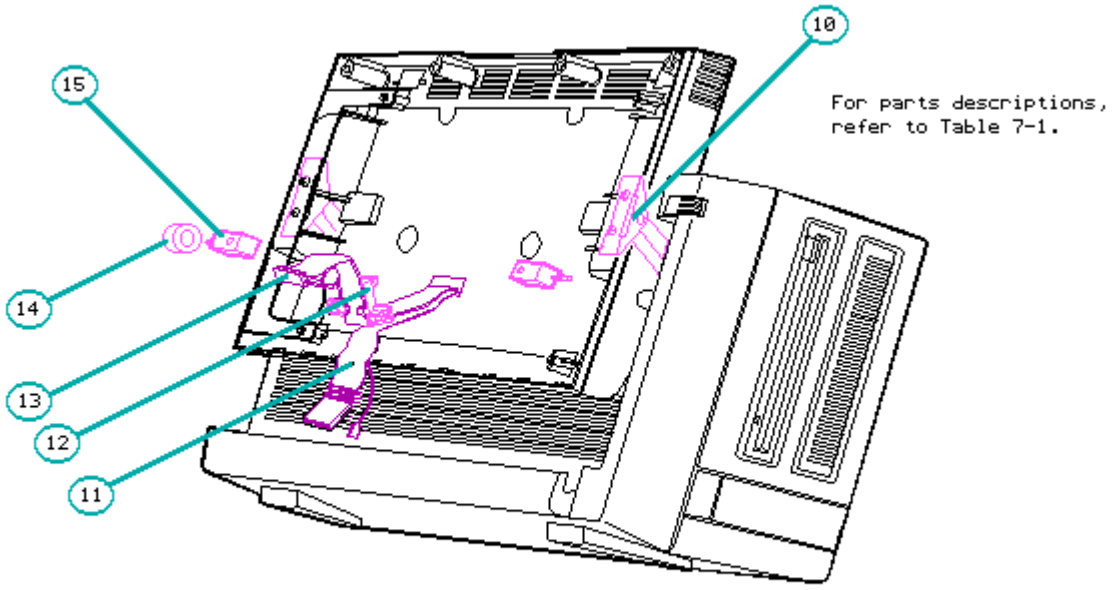


Figure 7-2. Display Enclosure Assembly (Items 10 - 15)

Table 7-1. Display Enclosure Assembly

Item	Description	Part Number
1.	COMPAQ Dual Mode Plasma Display	107381-001
2.	Display Filter Assembly	107689-001
3.	Display Enclosure	107043-001
4.	Keyboard Connector Cover *	107120-001
5.	Brightness Control Assembly	107384-001
6.	Brightness Control Knob *	107121-001
7.	Display Bezel	107044-001 (replaced by 107975-001)
8.	Latch *	107221-001
9.	Ground Plate	107560-001
10.	Plasma Display Hinge *	107386-001
11.	Display Power Cable Assembly **	107382-001
12.	Strain Relief Bracket *	107386-001
13.	Display Data Cable Assembly **	107382-001
14.	Roller *	107386-001

15.	Mandrel *	107386-001

* Included in the Miscellaneous Hardware Kit (PN 107386-001).
** Included in the Cable Kit (PN 107382-001).

Chapter 7.3 Portable Enhanced Keyboard Assembly

Table 7-2 lists the keyboard assembly for the COMPAQ PORTABLE 386 Personal Computer, which is illustrated in Figure 7-3.

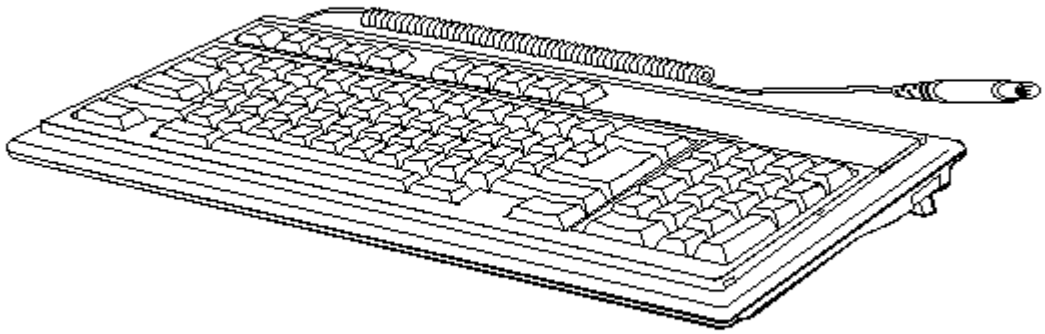


Figure 7-3. Keyboard Assembly

Table 7-2. Portable Enhanced Keyboard Assembly

Item	Description	Part Number
1.	Keyboard Assembly - Domestic	107672-001
2.	Keyboard Assembly - United Kingdom	107674-001 *
3.	Keyboard Assembly - German	107675-001 *
4.	Keyboard Assembly - French	107676-001 *
5.	Keyboard Assembly - Italian	107677-001 *
6.	Keyboard Assembly - Spanish	107678-001 *
7.	Keyboard Assembly - Danish	107679-001 *
8.	Keyboard Assembly - Norwegian	107680-001 *
9.	Keyboard Assembly - Swedish/Finnish	107681-001 *
10.	Keyboard Assembly - Swiss	107682-001 *
11.	Logo Kit	107690-001 *

* Not shown in Figure 7-3.

Chapter 7.4 Chassis - Rear Assembly

Table 7-3 lists the spare parts for the COMPAQ PORTABLE 386 Personal Computer chassis rear assembly. Items numbered 1 through 14 are illustrated in Figure 7-4, and items numbered 15 through 34 are illustrated in Figure 7-5.

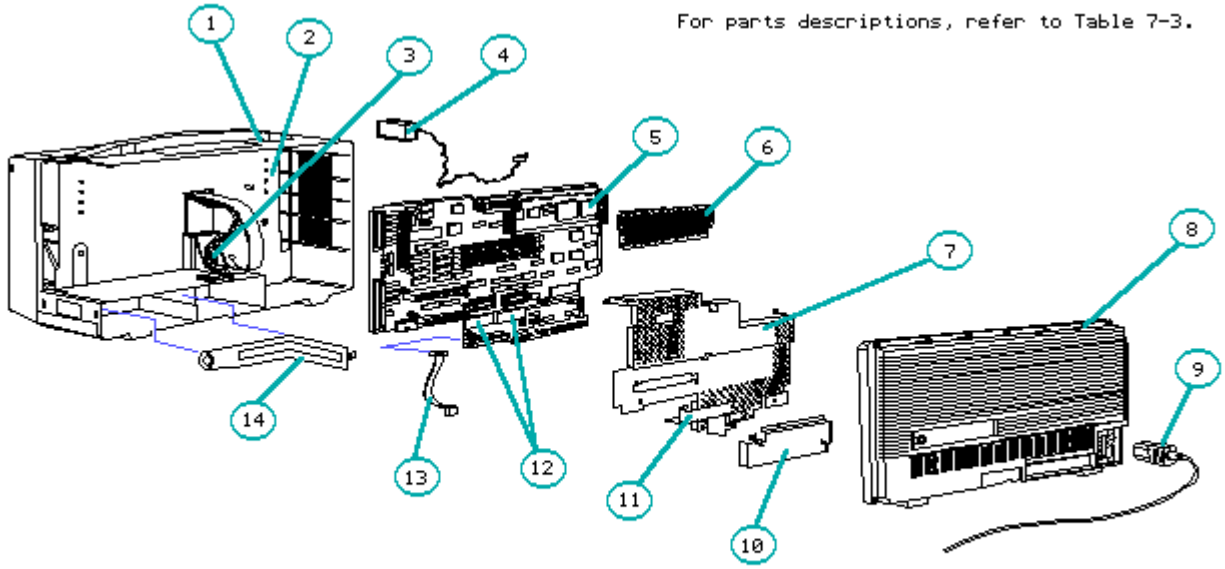


Figure 7-4. Chassis - Rear Assembly (Items 1 - 14)

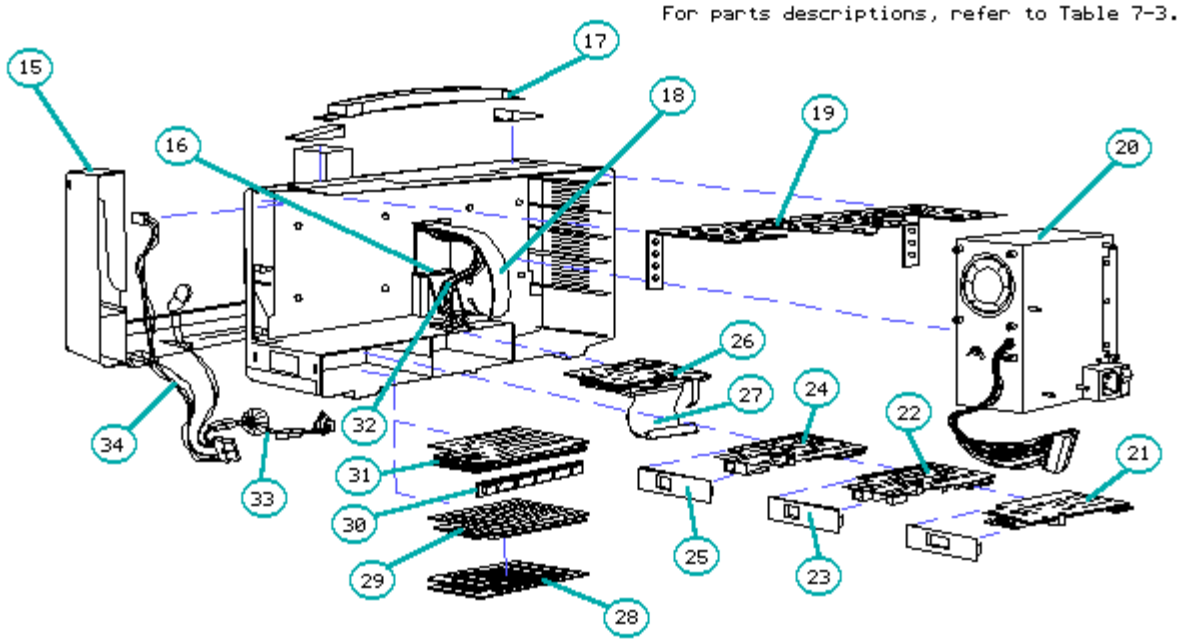


Figure 7-5. Chassis - Rear Assembly (Items 15 - 34)

Table 7-3. Chassis - Rear Assembly

Item	Description	Part Number
1.	Main Housing Enclosure	107072-002
2.	Chassis Shield	107705-001

3.	Power Supply Ground Subassembly	107624-001
4.	Battery	107786-001
5.	System Board	107683-001
6.	Microprocessor Cover	107617-001
7.	System Board Cover	107704-001
8.	Rear Panel	107168-001
9.	AC Power Cord	101155-001
10.	Interface Connector Cover	107737-001
11.	32 Bit Memory/Modem Interface Board	107684-001
12.	System ROMs	107796-001
13.	RGB Data Cable **	107386-001
14.	Options Compartment Shield	107799-001
15.	Front Main Bezel	107034-001 (replaced by 107803-001)
16.	Strain Relief Clip *	107386-001
17.	Handle Assembly	107377-001

Item	Description	Part Number
18.	Display Data Cable Assembly **	107382-001
19.	Spreader Plate	107292-001
20.	Power Supply	107373-001
21.	Second Serial Interface Board (International Only)	107871-001
22.	COMPAQ 2400 Baud Internal Modem	107791-001
23.	2400 Baud Modem Bezel *	107387-001
24.	COMPAQ 1200 Baud Internal Modem	107376-001
25.	1200 Baud Modem Bezel *	107387-001
26.	Plasma Display Controller Board	107787-001
27.	Display Controller Data Cable **	107382-001
28.	4 Megabyte Memory Extension Board	107685-001
29.	4 Megabyte Memory Expansion Board	107688-001
30.	512 Kbyte Memory Module	107687-001

31.	1 to 2 Megabyte Memory Expansion Board	107686-001
32.	Display Data Cable Assembly **	107382-001
33.	LED/Speaker Cable	107926-001
34.	Keyboard Cable (Internal)	107924-001

* Included in the Miscellaneous Hardware Kit (PN 107386-001).
** Included in the Cable Kit (PN 107382-001).

Chapter 7.5 Chassis - Side Assembly

Table 7-4 lists the spare parts for the COMPAQ PORTABLE 386 Personal Computer chassis side assembly, which is illustrated in Figure 7-6.

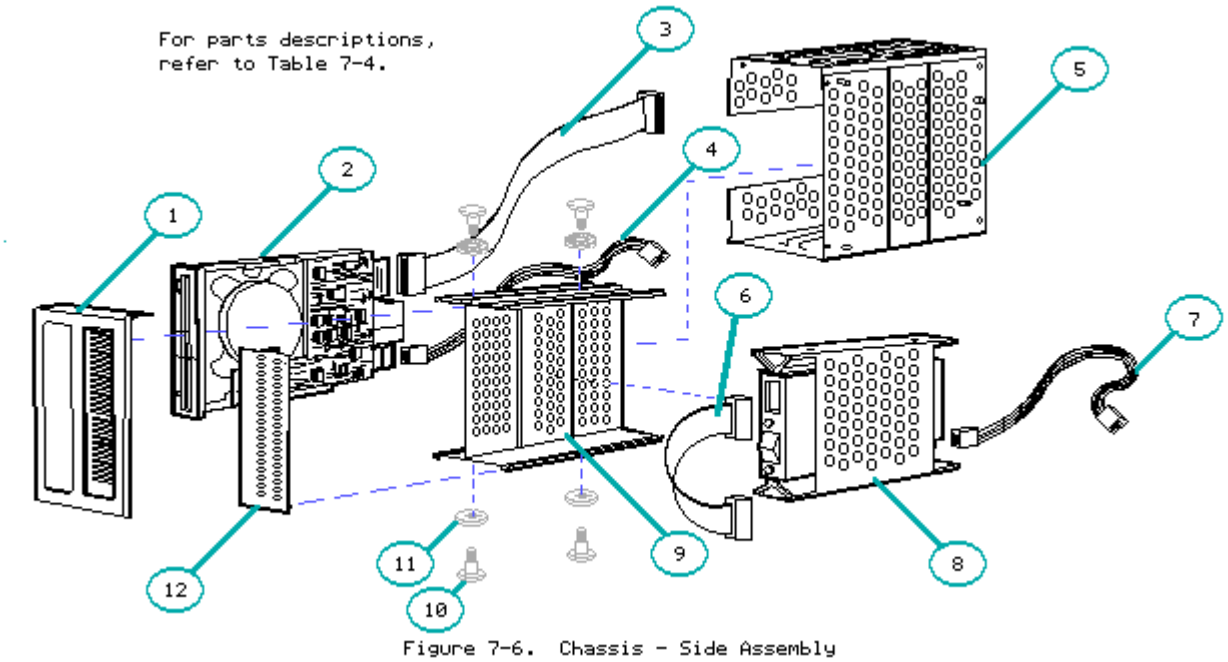


Figure 7-6. Chassis - Side Assembly

Table 7-4. Chassis - Side Assembly

Item	Description	Part Number
1.	Drive Bezel	107202-001 (No longer available)
2.	1.2 Megabyte Diskette Drive	107359-001
	360 Kbyte Diskette Drive	107360-001
	3 1/2 Inch 1.44 Megabyte Diskette Drive	109595-001
3.	Diskette Drive Data Cable **	107177-001
4.	Diskette Drive Power Cable **	101741-004

5.	Mass Storage Device Enclosure	107131-004
6.	Fixed Disk Drive Data Cable **	107798-001
7.	Fixed Disk Drive Power Cable **	101741-003
8.	40 Megabyte Fixed Disk Drive (3:1)	107357-001 (replaced by 142365-001)
	40 Megabyte Fixed Disk Drive (1:1 Drive Type 17)	110358-001 (replaced by 142365-001)
	40 Megabyte Fixed Disk Drive (1:1 Drive Type 43)	114106-001 (replaced by 142365-001)
	100 Megabyte Fixed Disk Drive	107790-001
	110 Megabyte Fixed Disk Drive	107982-001
9.	Drive Bracket Assembly	107112-001
10.	Drive Shoulder Bolts **	107386-001
11.	Drive Vibration Isolators **	107386-001
12.	Drive Cover	107480-001

* Included in the Miscellaneous Hardware Kit (PN 107386-001).
** Included in the Cable Kit (PN 107382-001).

Chapter 7.6 Spare Parts for Options

Table 7-5 lists spare parts for the options available for the COMPAQ PORTABLE 386 Personal Computer and their part numbers. The spare parts are illustrated in Figures 7-7 through 7-17.

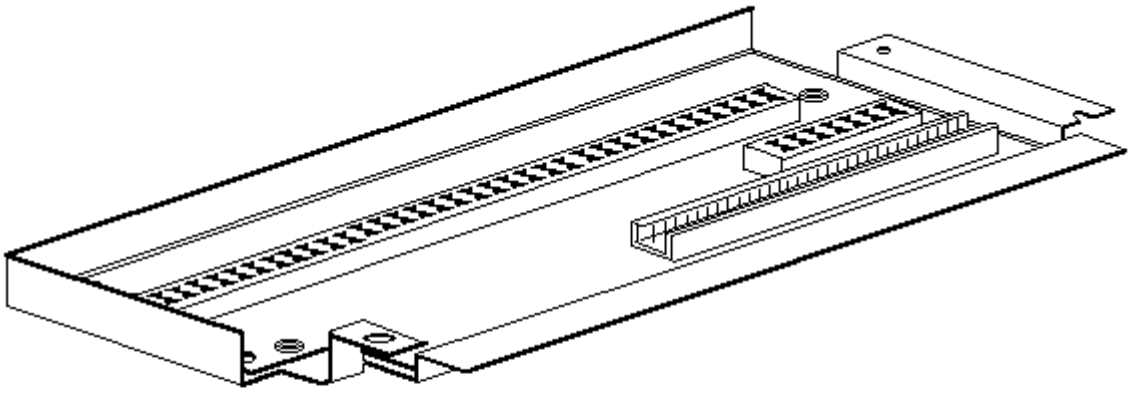


Figure 7-7. Optional 32 Bit Memory/Modem Interface Board

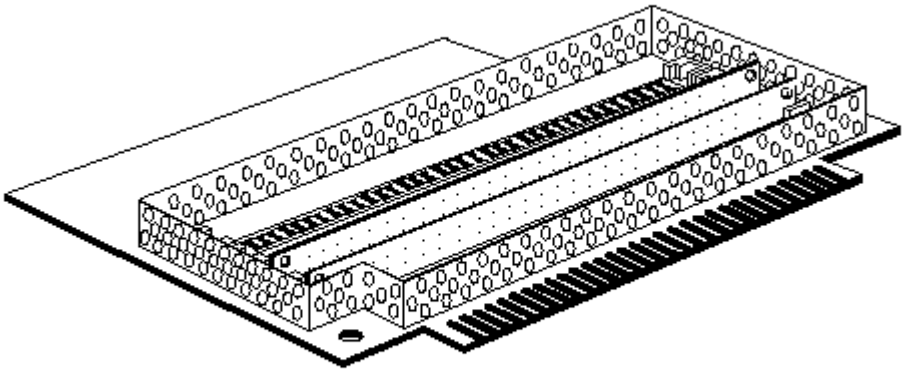


Figure 7-8. Optional 1 to 2 Megabyte Memory Expansion Board

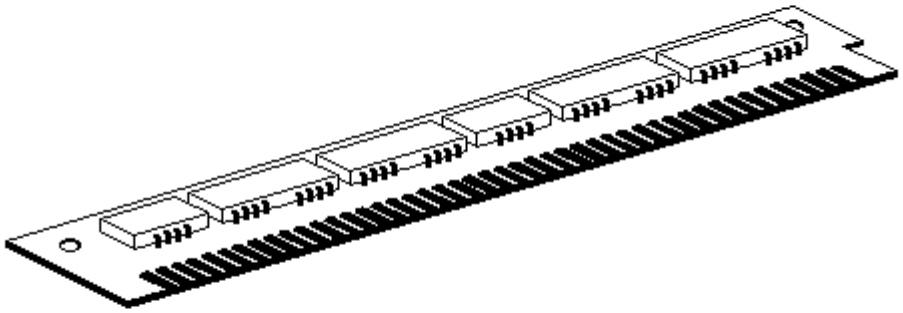


Figure 7-9. Optional 512 Kbyte Memory Module

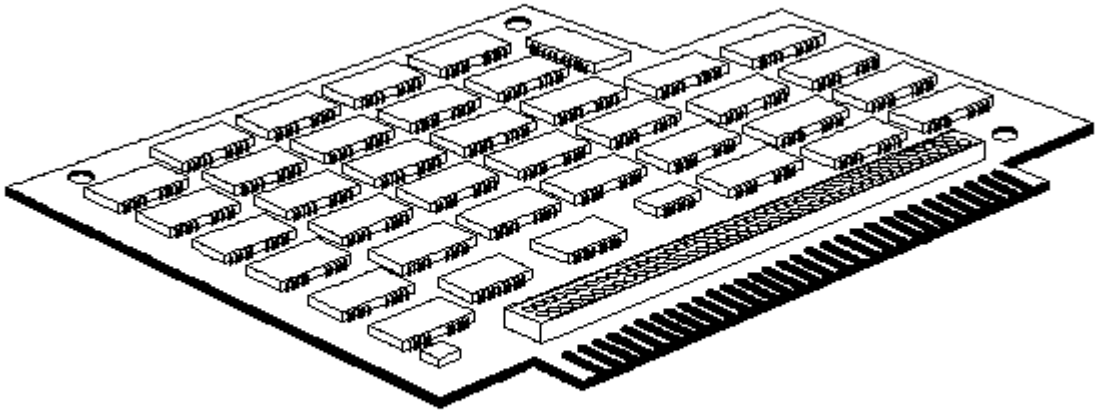


Figure 7-10. Optional 4 Megabyte Memory Expansion Board

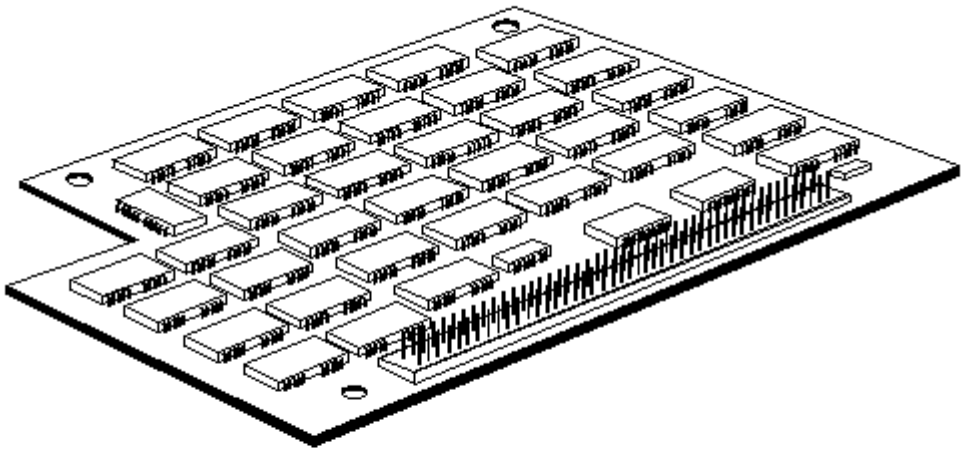


Figure 7-11. Optional 4 Megabyte Memory Extension Board

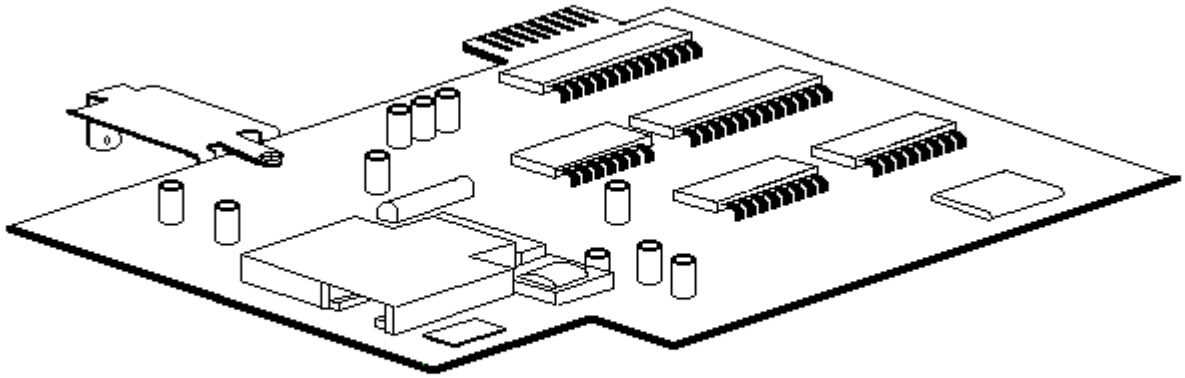


Figure 7-12. Optional COMPAQ 1200 Baud Internal Modem

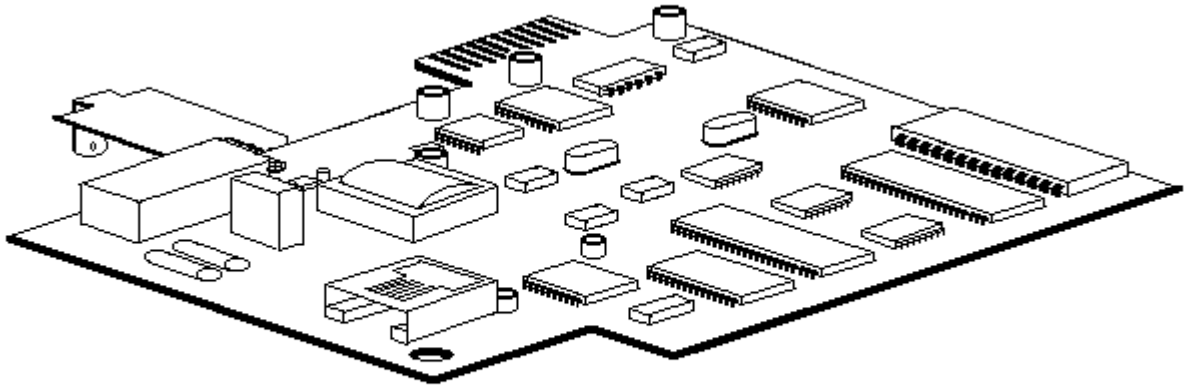


Figure 7-13. Optional COMPAQ 2400 Baud Internal Modem

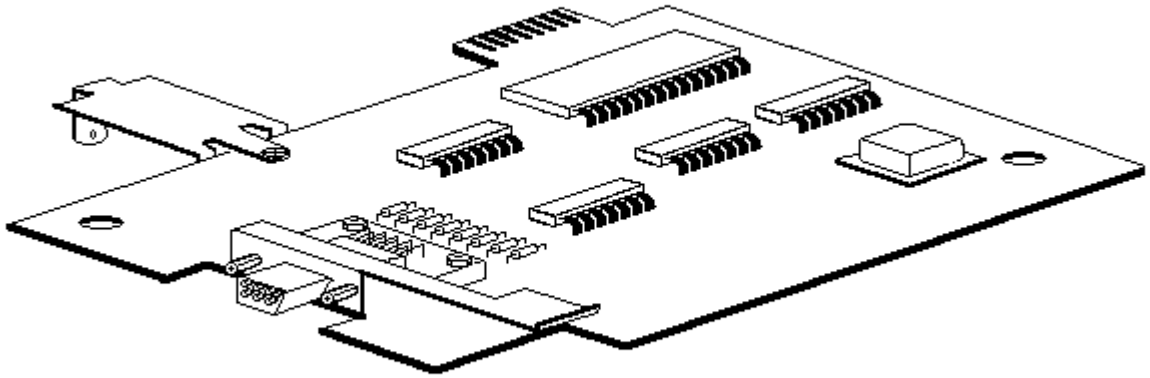


Figure 7-14. Optional Second Serial Interface Board (International Only)

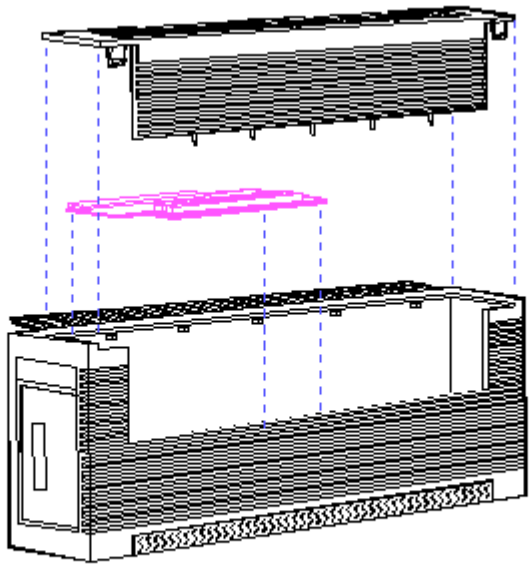


Figure 7-15. Optional Expansion Unit

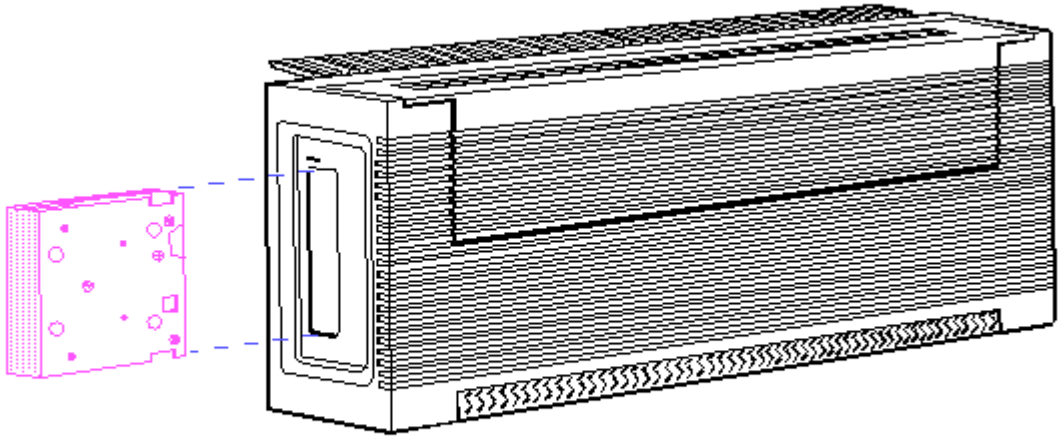


Figure 7-16. Optional Tape Drive Expansion Unit

Table 7-5. Spare Parts for Options

Description	Part Number
32 Bit Memory/Modem Interface Board	107684-001
1 to 2 Megabyte Memory Expansion Board	107686-001
512 Kbyte Memory Module	107687-001

4 Megabyte Memory Expansion Board	107688-001
4 Megabyte Memory Extension Board	107685-001
COMPAQ 1200 Baud Internal Modem	107376-001
COMPAQ 2400 Baud Internal Modem	107791-001
Second Serial Interface Board (International)	107871-001
Expansion Unit (complete)	107453-001
Tape Drive Expansion Unit	107785-001
Tape Cartridge (40 Megabyte)	108142-001
Video Graphics Controller Board	109253-001
Video Graphics Color Monitor	109255-001
Video Graphics Monochrome Monitor	109254-001
Intel 80387 (20 MHz) Coprocessor	113220-001
Weitek 3167 Coprocessor	115517-001
300/600 Megabyte Fixed Disk Drive Expansion Unit	
External Fixed Disk Drive Controller Board	115839-001
I/O Cable	115810-001 (replaced by 130844-001)
External Interface Adapter Board	115838-001
Power Supply	108065-001
Power Cord	101155-001
300 Megabyte Fixed Disk Drive	113219-001
Signal Cable (34 position)	115812-001 *
Signal Cable (20 position)	115812-001 *
Universal Drive Power Cable	101137-001
Expansion Unit Cover and Bezel	
United States	115804-001
International	115804-002
Logo, Kit	115836-001

* Contained in the External Fixed Disk Drive Cable Kit (PN 115812-001)

Chapter 7.7 Cable Kit

Table 7-6 lists the spare parts in the cable kit (PN 107382-001) for the COMPAQ PORTABLE 386 and COMPAQ PORTABLE III Personal Computers.

Table 7-6. Cable Kit

Description	Quantity
Diskette Drive Data Cable	1
Diskette Drive Power Cable	1
Fixed Disk Drive Data Cable (COMPAQ PORTABLE III)	1
Fixed Disk Drive Power Cable (COMPAQ PORTABLE III)	1
Display Data Cable Assembly	1
Display Power Cable Assembly	1
RGB Data Cable	1
Fixed Disk Drive Data Cable (COMPAQ PORTABLE 386)	1
Fixed Disk Drive Power Cable (COMPAQ PORTABLE 386)	1
Modem Cable	1
Display Controller Data Cable	1

Chapter 7.8 Miscellaneous Hardware Kit

Table 7-7 lists the spare parts in the Miscellaneous Hardware Kit (PN 107386-001) for the COMPAQ PORTABLE 386 and COMPAQ PORTABLE III Personal Computers.

Table 7-7. Miscellaneous Hardware Kit

Description	Quantity
Screw - Power Supply/Drive Enclosure	25
Screw - Rear Panel Long	25
Screw - Rear Panel Short	10
Drive Shoulder Bolt	10
Drive Vibration Isolators	10
Cable Tie, 3/4 inch wide, 3 7/8 inch wide	50
Strain Relief Bracket	2
Strain Relief Clip	2
Brightness Control Knob	5
Mandrel	2
Roller	4
Plasma Display Hinge	2
Latch	4
Keyboard Connector Cover	5
Modem Bezel	2
Keyboard Skid Pad	5
Blank Modem Bezel	2
LED	1

Chapter 8. Removal and Replacement Procedures

Chapter 8.1 Introduction

Before starting the removal procedures, review Chapter 7, "Illustrated Parts Catalog," to become familiar with the various part numbers and locations.

After completing all removal and replacement procedures, run the DIAGNOSTICS Program on the COMPAQ PORTABLE 386 Personal Computer to verify the proper operation of the replaced component.

Chapter 8.2 Preparation Procedure

Before beginning the procedures in this chapter, complete the following steps:

1. Turn off the computer.
2. Disconnect any peripheral devices (printer, monitors, and so on) from the computer.
3. Disconnect the AC power cord from the AC outlet and from the computer (Figure 8-1).

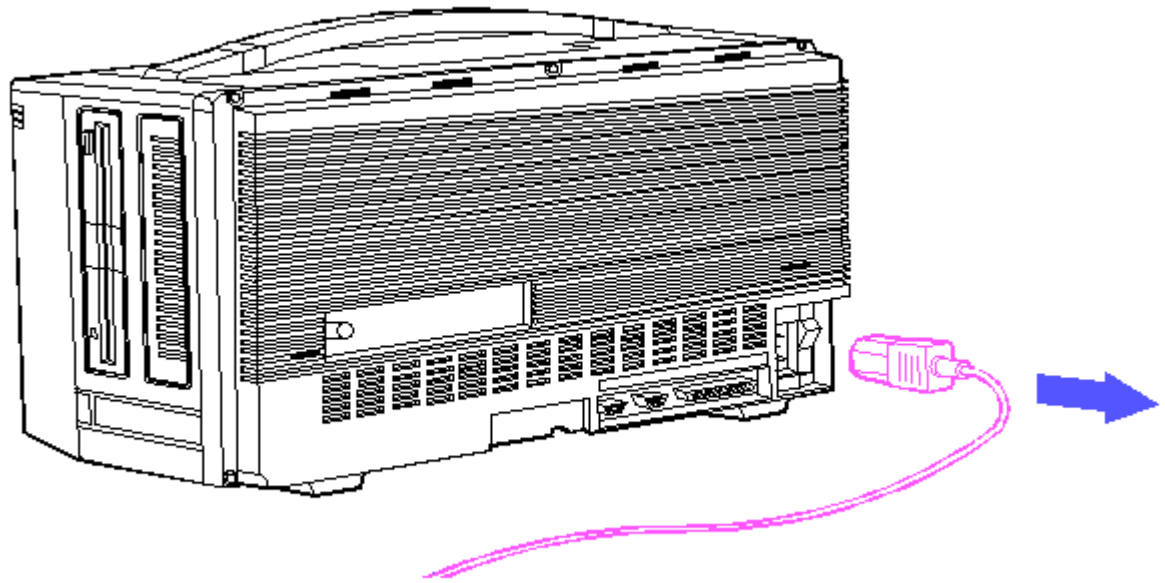


Figure 8-1. Disconnecting the AC Power Cord

Chapter 8.3 Keyboard Assembly

To remove the keyboard assembly:

1. Complete the preparation procedure (see Section 8.2).

2. Detach the keyboard from the system unit.

3. Grasp the keyboard cord near where it connects to the computer. Gently pull it away from the keyboard connector on the computer (Figure 8-2).

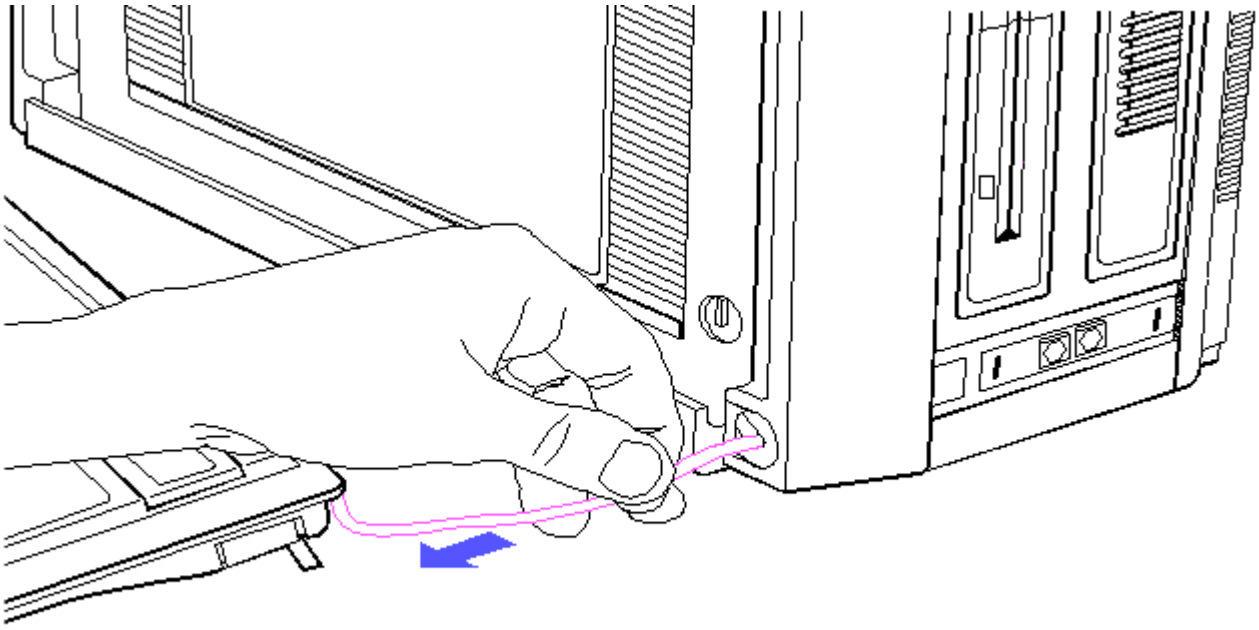


Figure 8-2. Disconnecting the Keyboard Cord

4. Slide the keyboard connector cover off of the keyboard cord and set it aside (Figure 8-3).

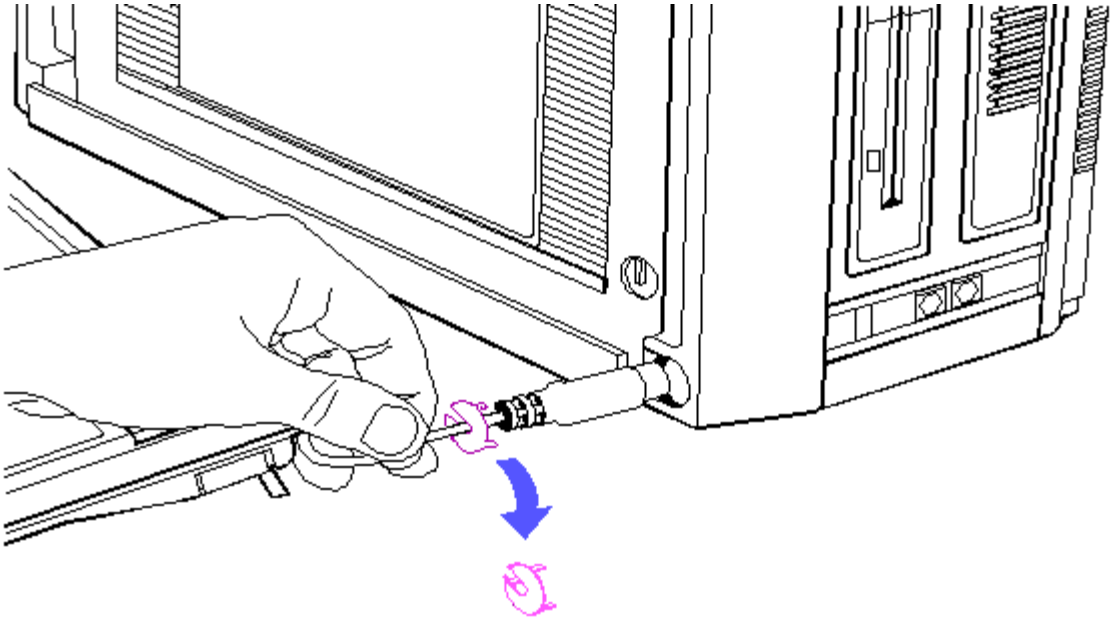


Figure 8-3. Removing the Keyboard Connector Cover

To replace the keyboard assembly, reverse steps 1 through 4.

Chapter 8.4 Rear Panel

To remove the rear panel:

1. Complete the preparation procedure (see Section 8.2).
2. Place the computer keyboard side down on a level surface with the rear panel facing upward.
3. Remove the six screws and washers that secure the rear panel to the computer (Figure 8-4). Note that the two screws you removed from the center position are shorter than the other four screws.

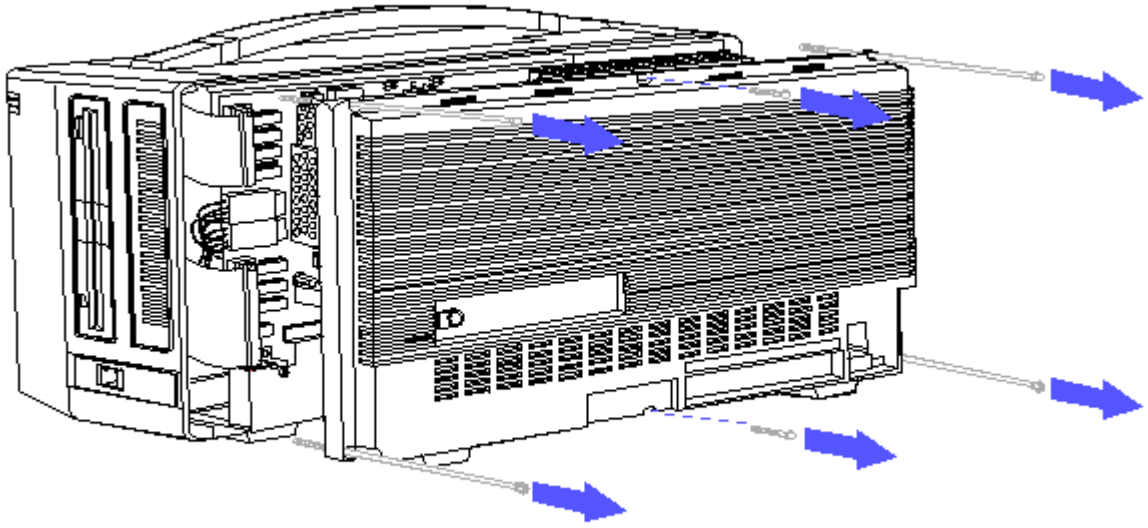


Figure 8-4. Removing the Screws from the Rear Panel

4. Carefully pull the rear panel away from the computer and set it aside.

To replace the rear panel:

1. Place the rear panel on the computer.
2. Insert the two shorter screws and washers in the center holes.
3. Insert the four remaining screws and washers in the corner holes.
4. Start all six screws before completely tightening them.
5. Beginning with the center screws, tighten each screw.

>>>

CAUTION

Do not overtighten the screws.

>>

Chapter 8.5 Interface Connector Cover

The interface connector cover protects the 32 bit memory/modem interface connector when nothing is installed in the options compartment. This cover must be removed before either modem, the second serial interface board, or any of the memory expansion boards can be installed.

To remove the interface connector cover:

1. Complete the preparation procedure (see Section 8.2).

2. Remove the rear panel (see Section 8.4).

3. Locate the interface connector cover shown in Figure 8-5.

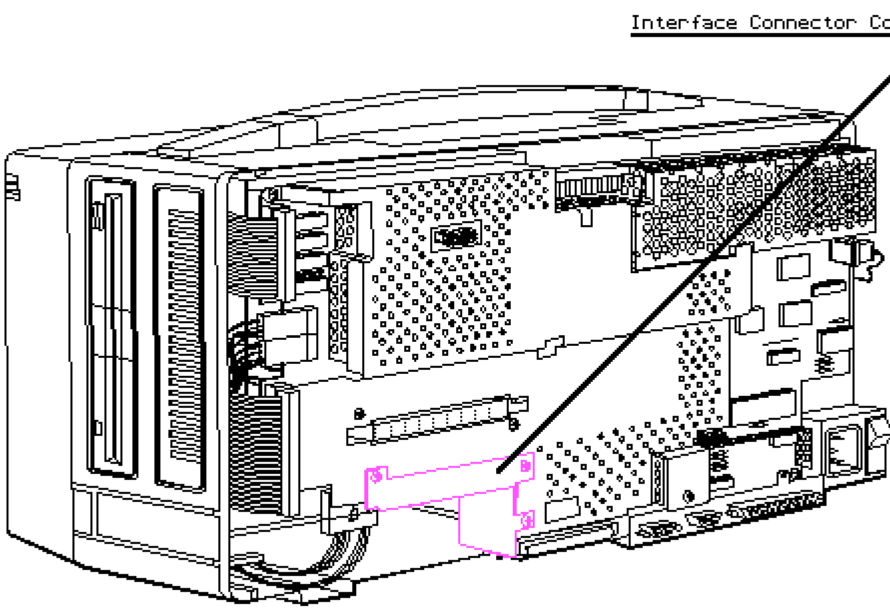


Figure 8-5. Interface Connector Cover Location

4. Remove the three screws securing the interface connector cover and set them aside.

5. Remove the interface connector cover from the system board and set it

aside (Figure 8-6).

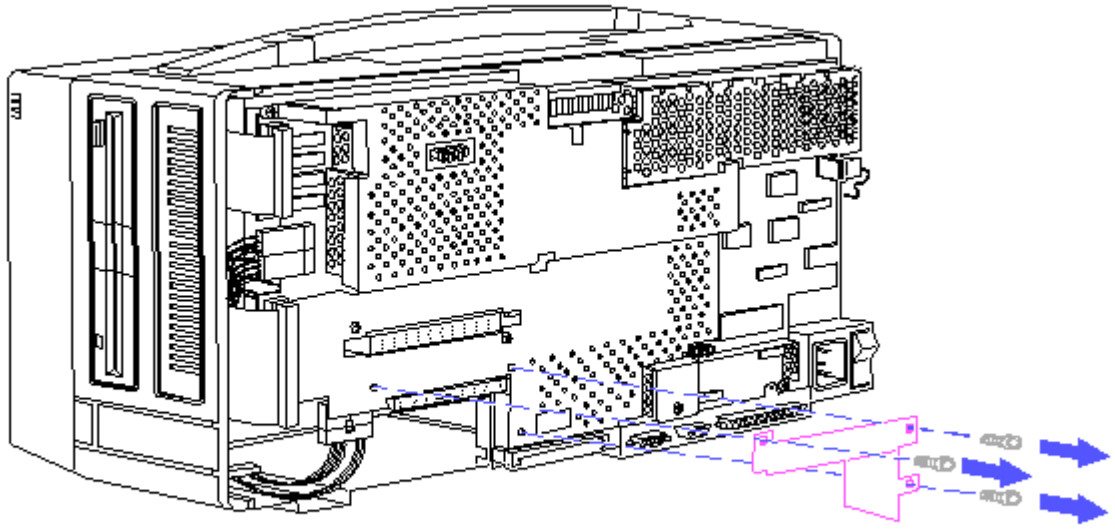


Figure 8-6. Removing the Interface Connector Cover

To replace the interface connector cover, reverse steps 1 through 5.

Chapter 8.6 Microprocessor Cover

To remove the microprocessor cover:

1. Complete the preparation procedure (see Section 8.2).
2. Remove the rear panel (see Section 8.4).
3. Locate the microprocessor cover shown in Figure 8-7.

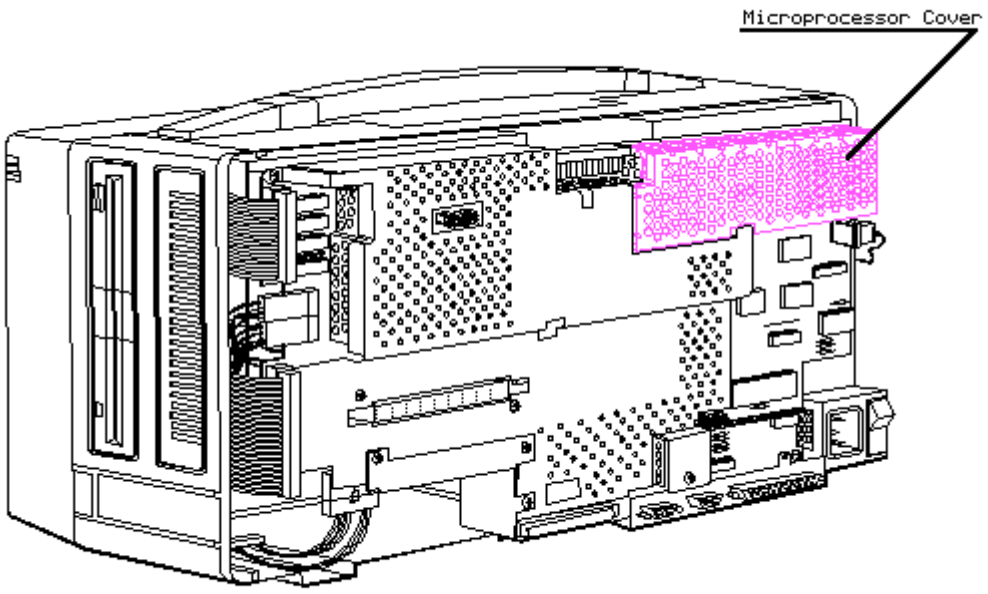


Figure 8-7. Microprocessor Cover Location

4. Grasp the microprocessor cover at its edges; gently lift it up and away from the system board and set it aside (Figure 8-8).

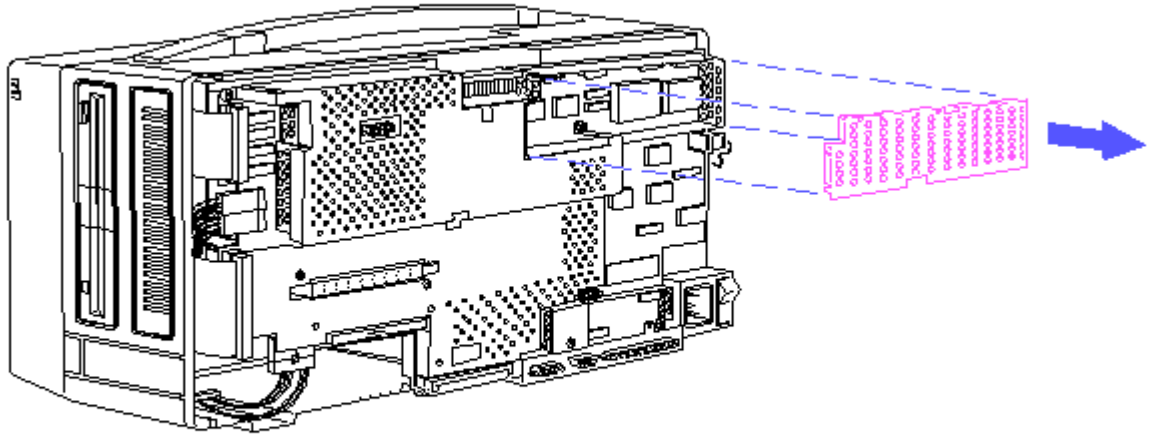


Figure 8-8. Removing the Microprocessor Cover

To replace the microprocessor cover, reverse steps 1 through 4.

NOTE: Position the cover so that the edges slanted in go inside the fence and those slanted out go outside the fence. Press the cover securely into place by working from one end to the other.

Chapter 8.7 System Board Cover

To remove the system board cover:

1. Complete the preparation procedure (see Section 8.2).
2. Remove the rear panel (see Section 8.4).
3. Remove the interface connector cover, if installed (see Section 8.5).
4. Remove the 32 bit memory/modem interface board, if installed (see Section 8.8).
5. Remove the microprocessor cover (see Section 8.6).
6. Locate the system board cover shown in Figure 8-9.

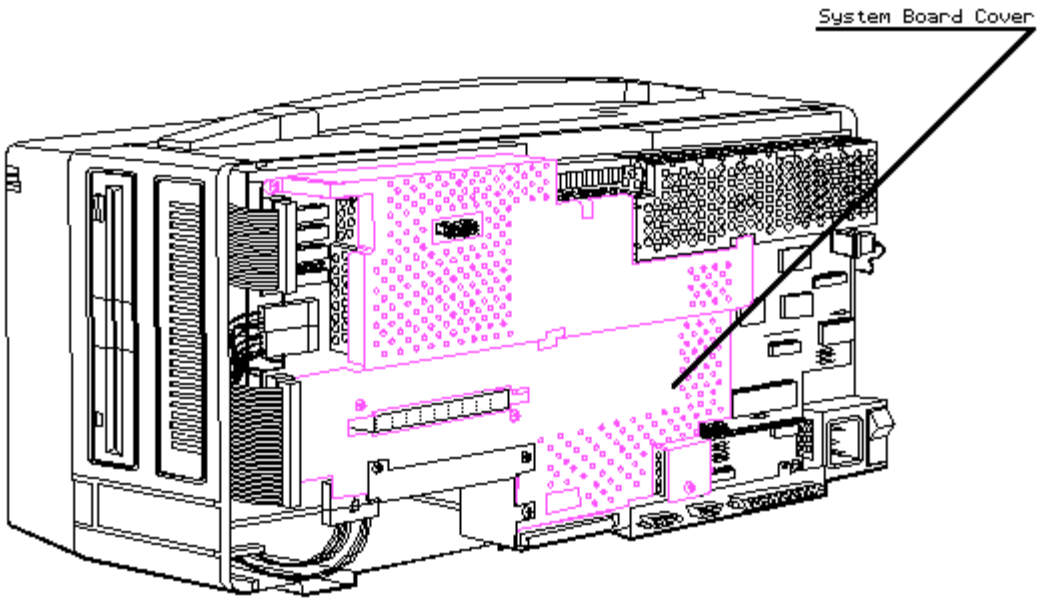


Figure 8-9. System Board Cover Location

7. Remove the screws that secure the system board cover to the system board assembly and set them aside.
8. Lift the system board cover up and away from the computer and set it aside (Figure 8-10).

To replace the system board cover, reverse steps 1 through 8.

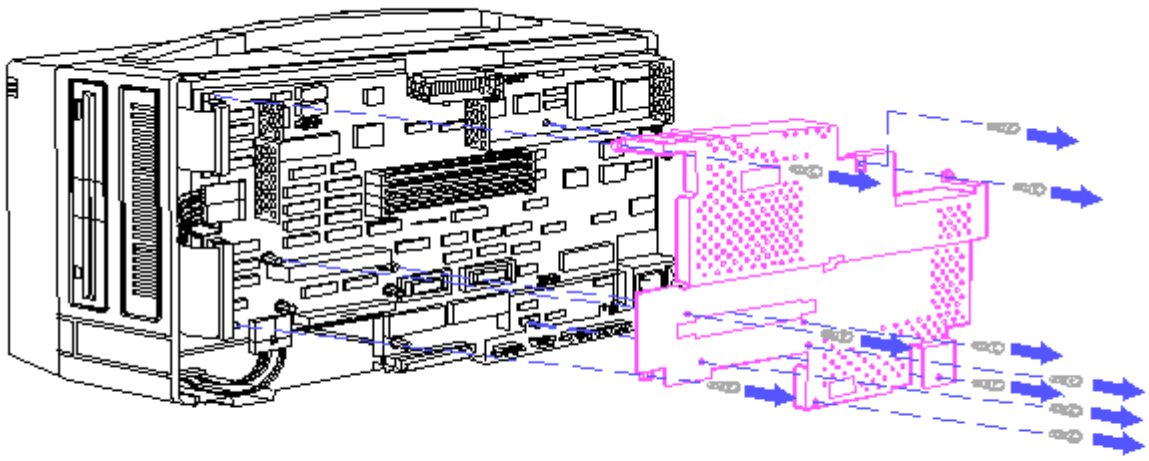


Figure 8-10. Removing the System Board Cover

Chapter 8.8 32 Bit Memory/Modem Interface Board

The 32 bit memory/modem interface board connects the memory expansion boards, either internal modem, and the second serial interface board to the system board. If one or a combination of these options is installed, the 32 bit memory/modem interface board will also be in place.

To remove the 32 bit memory/modem interface board:

1. Complete the preparation procedure (see Section 8.2).

2. Remove the rear panel (see Section 8.4).

3. Locate the 32 bit memory/modem interface board shown in Figure 8-11.

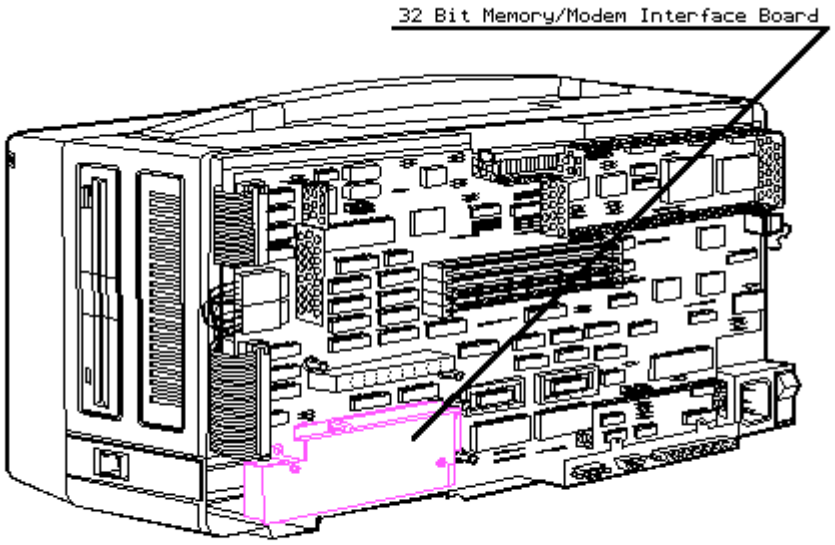


Figure 8-11. 32 Bit Memory/Modem Interface Board Location

4. Remove the screws securing the 32 bit memory/modem interface board and set them aside.

5. Grasp the 32 bit memory/modem interface board at its edges and, without rocking it, lift it straight up and away from the computer (Figure 8-12).

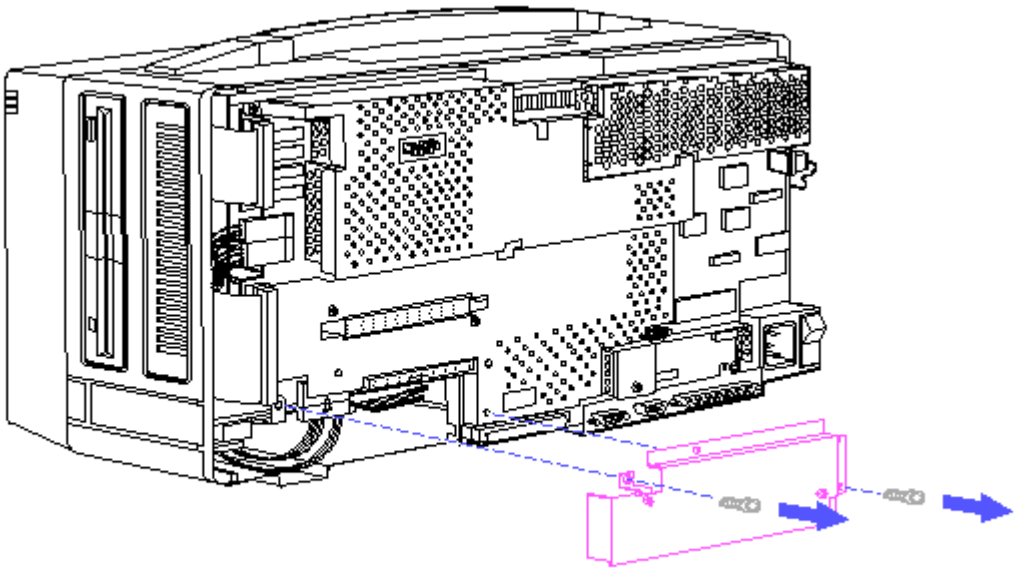


Figure 8-12. Removing the 32 Bit Memory/Modem Interface Board

When the 32 bit memory/modem interface board is removed, the options compartment with its two expansion slots is revealed (Figure 8-13).

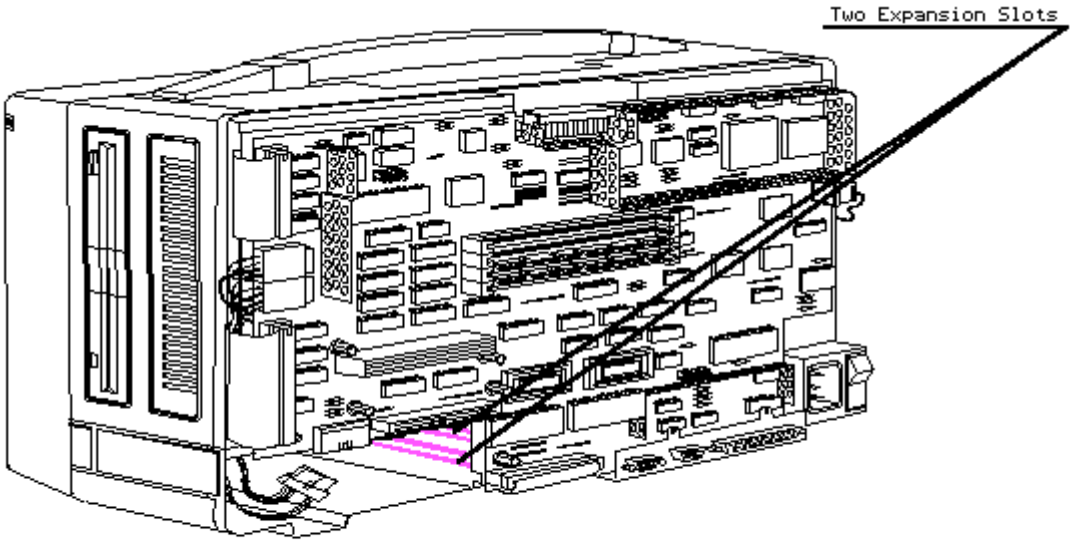


Figure 8-13. Options Compartment with Two Expansion Slots

The top slot holds the second serial interface board or one of the internal modems. Both the COMPAQ 1200 Baud Internal Modem and the COMPAQ 2400 Baud Internal Modem, are approved for use with the COMPAQ PORTABLE 386 Personal Computer.

The second slot allows memory expansion using any of three different memory expansion board combinations (see Section 8.8).

To replace the 32 bit memory/modem interface board, reverse steps 1 through 4.

Chapter 8.9 Internal Modems

To remove either the COMPAQ 1200 Baud Internal Modem or COMPAQ 2400 Baud Internal Modem:

1. Complete the preparation procedure (see Section 8.2).

2. Remove the rear panel (see Section 8.4).

3. Remove the 32 bit memory/modem interface board (see Section 8.8).

4. Press the top tab and disconnect the LED/speaker and keyboard cables from the system board (Figure 8-14).

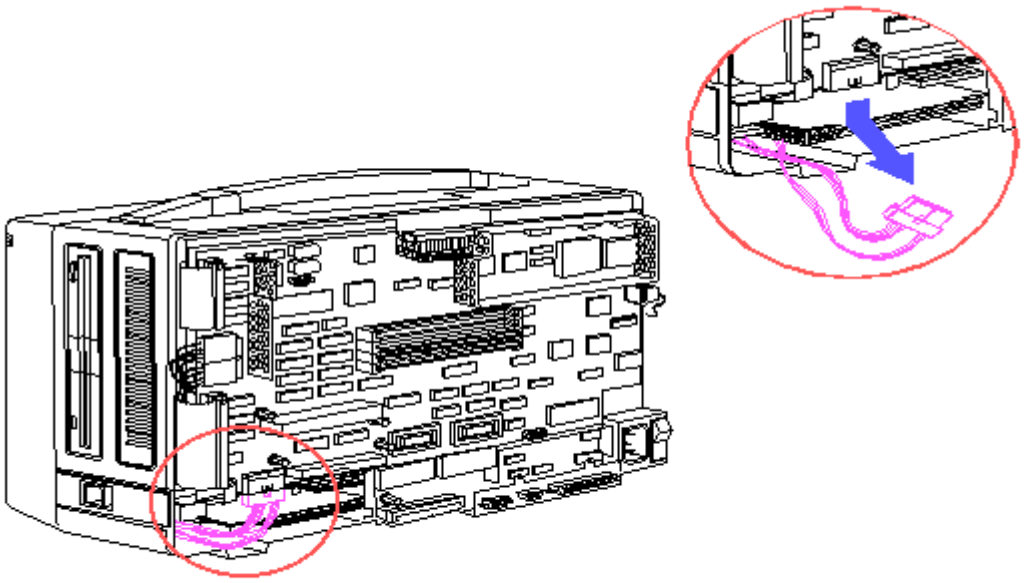


Figure 8-14. Disconnecting the LED/Speaker and Keyboard Cables

5. Locate the internal modem and modem ground bracket shown in Figure 8-15.

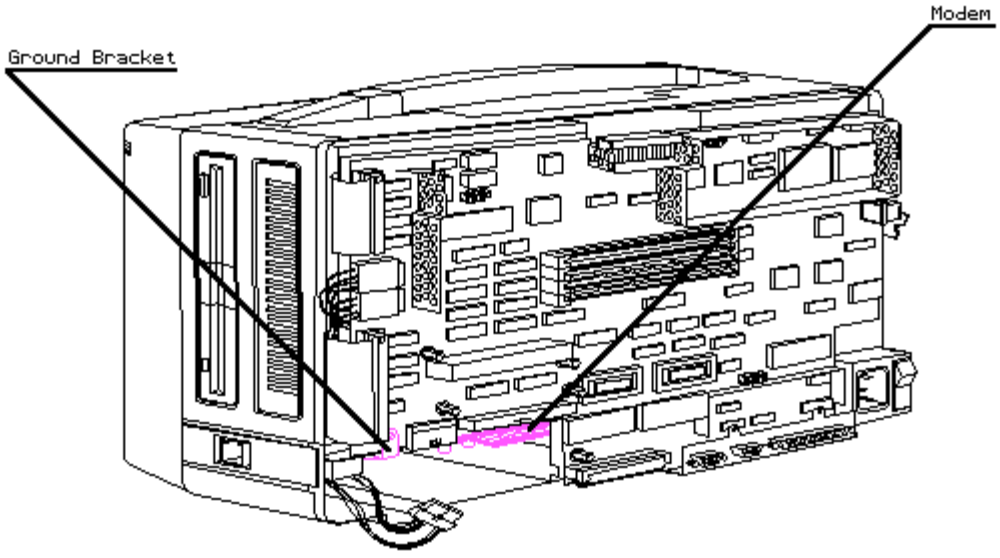


Figure 8-15. Internal Modem and Modem Ground Bracket Locations

6. Remove the one screw that secures the modem ground bracket to the system board (Figure 8-16).

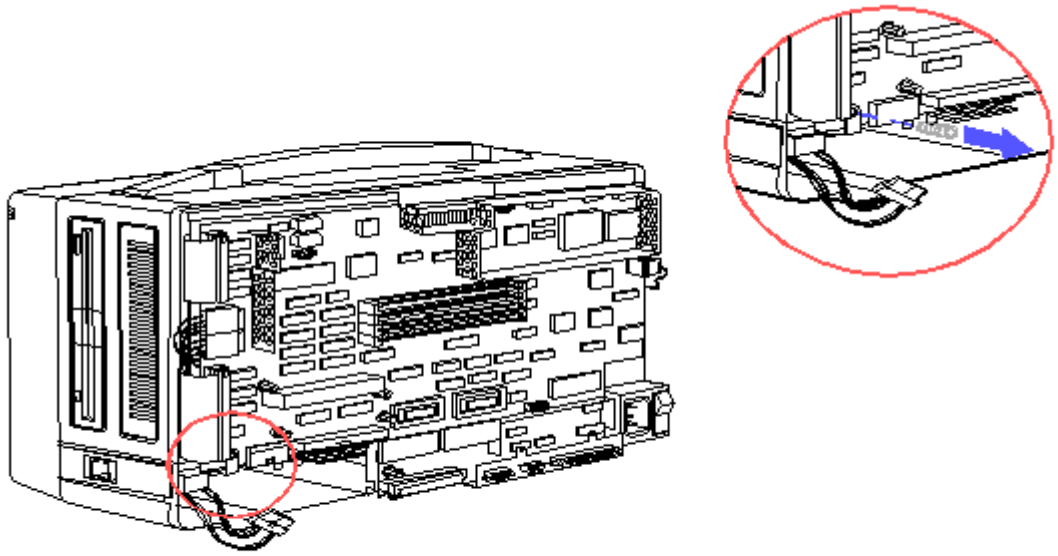


Figure 8-16. Removing the Modem Ground Bracket Screw

7. Remove the modem bezel (Figure 8-17).

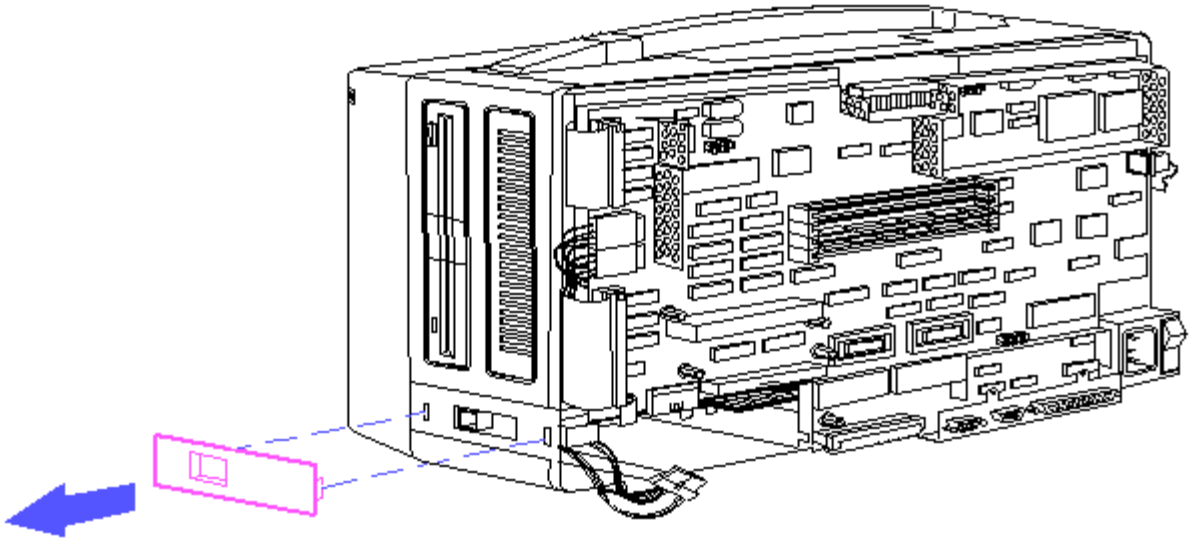


Figure 8-17. Removing the Modem Bezel

8. Slide the internal modem out of the options compartment and set it aside (Figure 8-18).

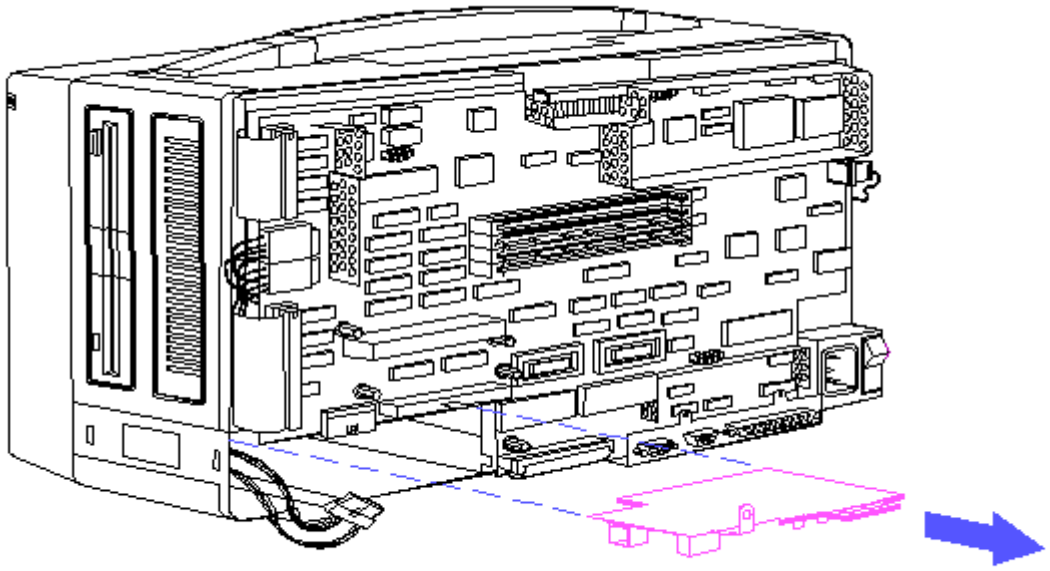


Figure 8-18. Removing the Internal Modem

To replace the internal modem option, reverse steps 1 through 8.

Chapter 8.10 Second Serial Interface Board (International Only)

To remove the second serial interface board:

1. Complete the preparation procedure (see Section 8.2).
2. Remove the rear panel (see Section 8.4).
3. Remove the 32 bit memory/modem interface board (see Section 8.8).
4. Press the top tab and disconnect the LED/speaker and keyboard cables from the system board (Figure 8-19).

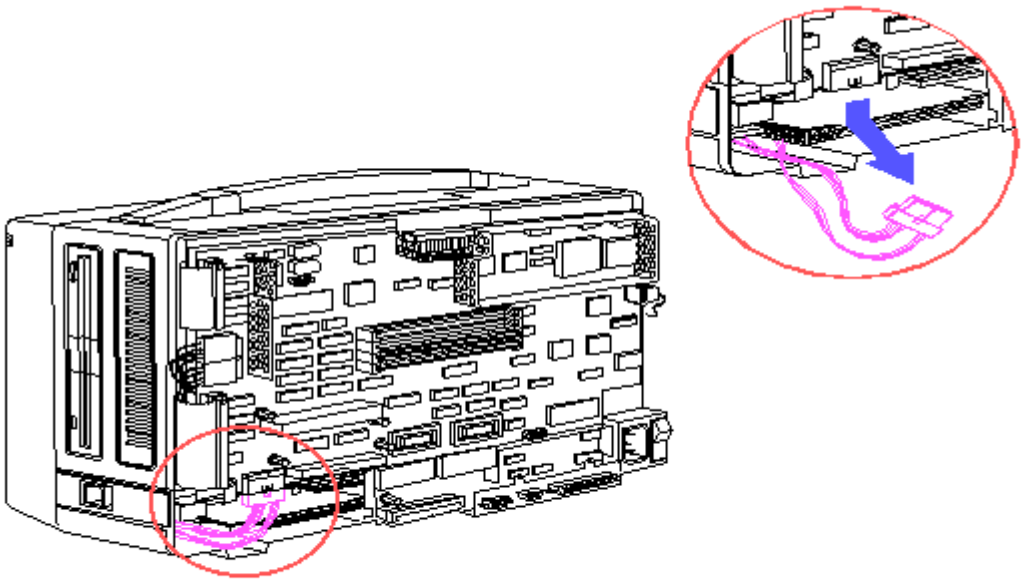


Figure 8-19. Disconnecting the LED/Speaker and Keyboard Cables

5. Locate the second serial interface board shown in Figure 8-20.

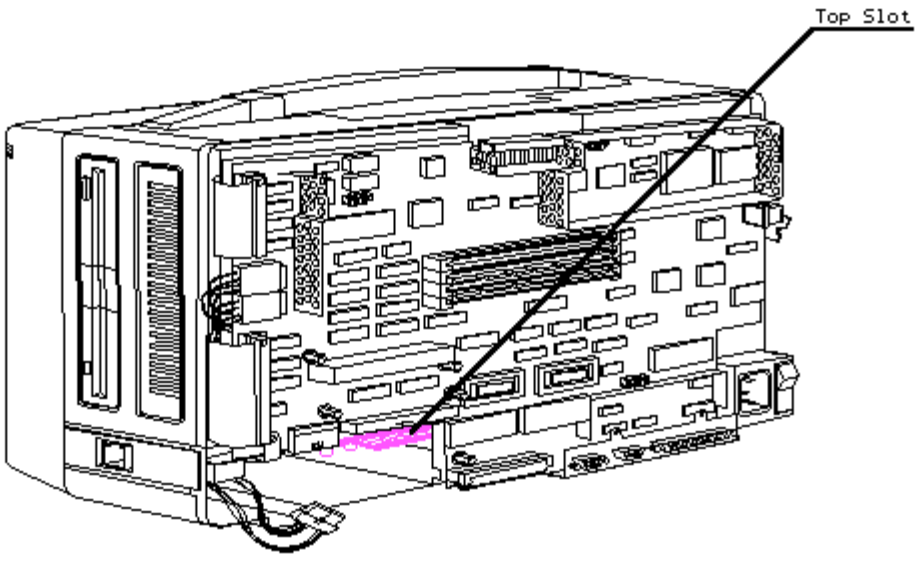


Figure 8-20. Second Serial Interface Board Location

6. Slide the second serial interface board out of the options compartment and set it aside (Figure 8-21).

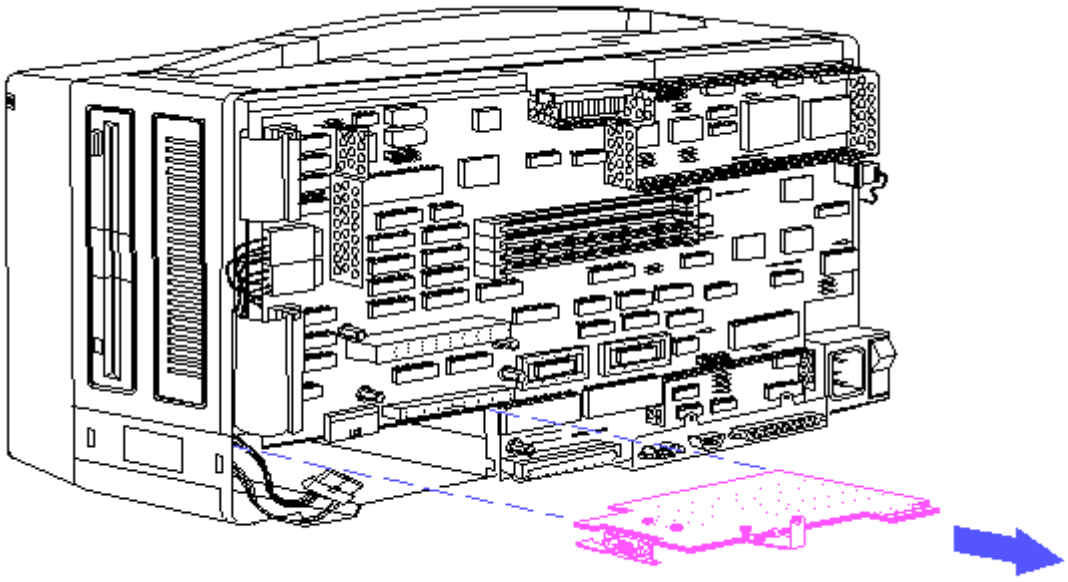


Figure 8-21. Removing the Second Serial Interface Board

To replace the second serial interface board, reverse steps 1 through 6.

Chapter 8.11 Memory Expansion Boards

Three memory expansion boards are available for the COMPAQ PORTABLE 386 Personal Computer:

- 1 to 2 Megabyte Memory Expansion Board, which comes standard with four sockets and one megabyte of random access memory (RAM). The one megabyte of RAM is in the form of a memory upgrade kit (two 512 Kbyte memory modules), which is installed in two of the sockets. A second memory upgrade kit can be added to bring the memory expansion board up to its two megabyte capacity. This board cannot be used in combination with either the 4 megabyte memory expansion board or the 4 megabyte memory extension board.

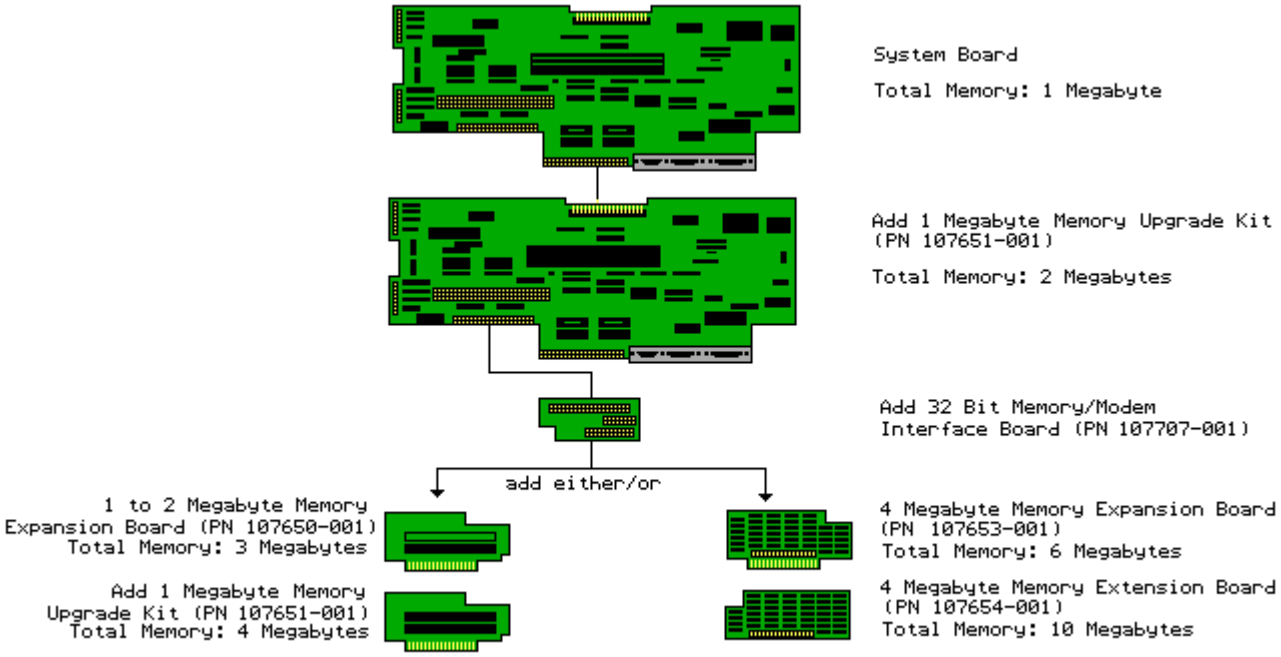
- 4 Megabyte Memory Expansion Board comes standard with four megabytes of RAM surface mounted to the board. This board may be used alone or in combination with the 4 megabyte memory extension board.

- 4 Megabyte Memory Extension Board also comes standard with four megabytes of RAM surface mounted to the board. However, this board can be used only when connected to the 4 megabyte memory expansion board.

Each memory expansion board (or combination) fits into the same options compartment slot in the COMPAQ PORTABLE 386 Personal Computer.

The diagram on the following for a quick reference to the memory expansion process.

NOTE: Memory expansion boards cannot be added until the system board is fully populated with two megabytes of RAM.



COMPAQ PORTABLE 386 Memory Expansion Process

To remove a memory expansion board:

1. Complete the preparation procedure (see Section 8.2).
2. Remove the rear panel (see Section 8.4).
3. Remove the 32 bit memory/modem interface board (see Section 8.8).
4. Press the top tab and disconnect the LED/speaker and keyboard cables from the system board (Figure 8-22).

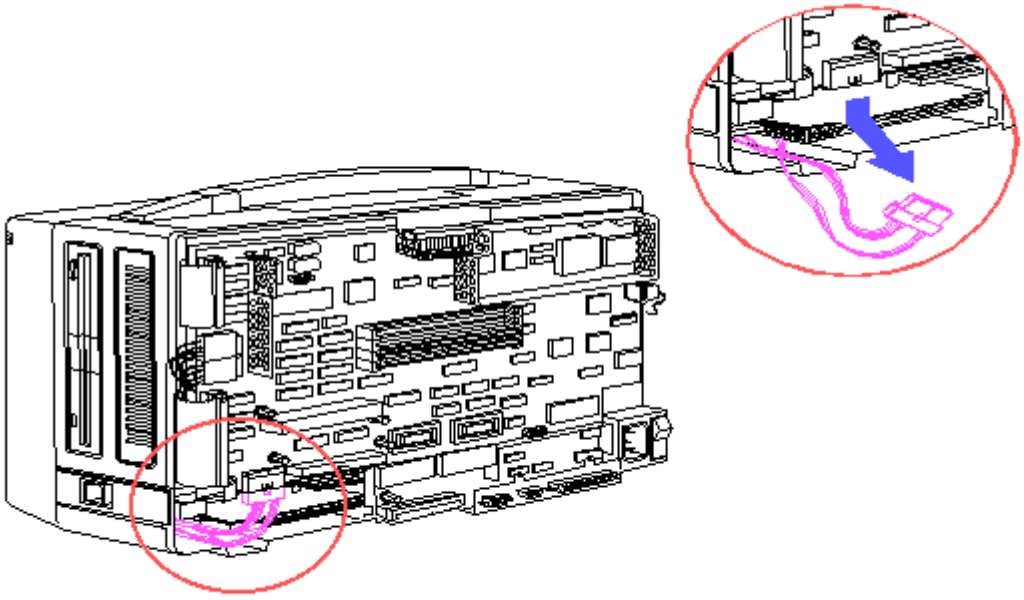


Figure 8-22. Disconnecting the LED/Speaker and Keyboard Cables

5. Locate the memory expansion board shown in Figure 8-23.

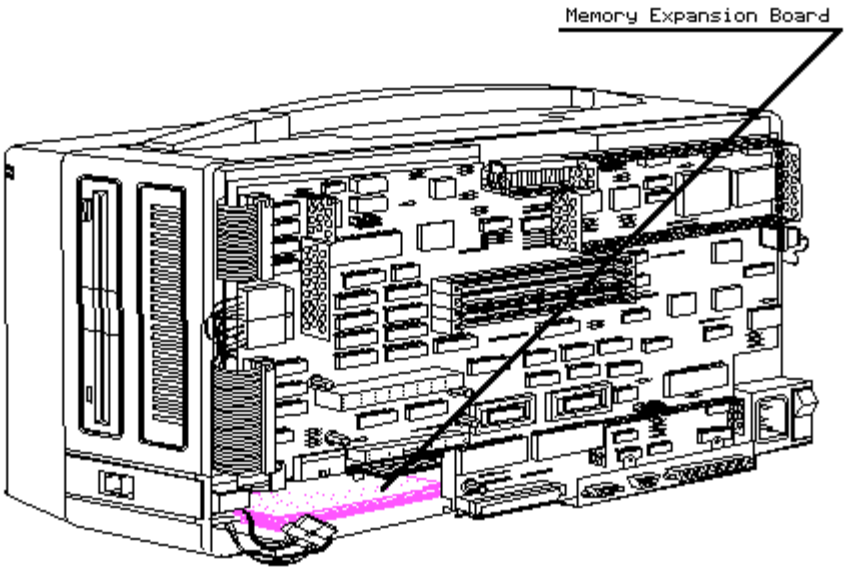


Figure 8-23. Memory Expansion Board Location

6. Slide the memory expansion board out of the options compartment and set it aside (Figure 8-24).

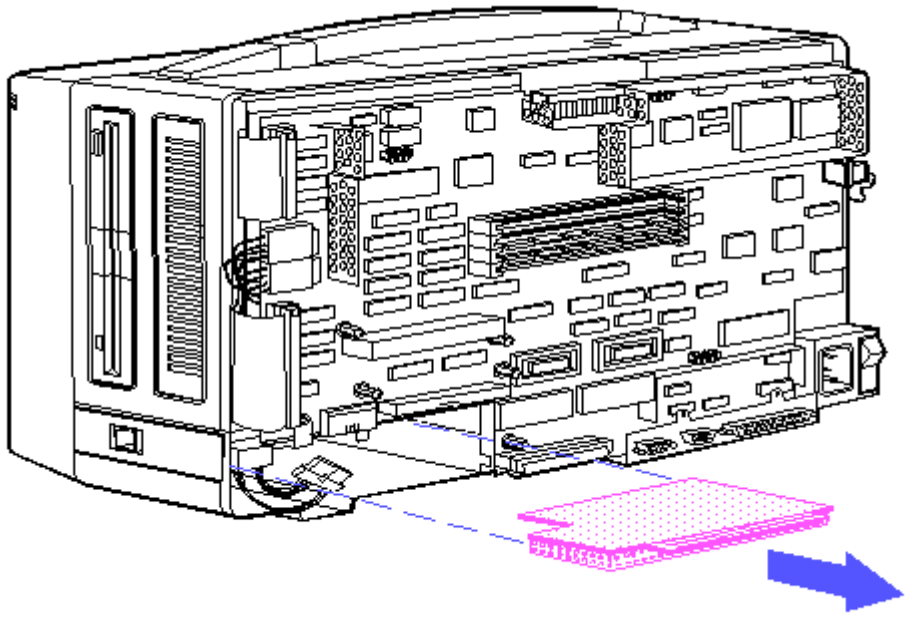


Figure 8-24. Removing a Memory Expansion Board

To replace the memory expansion board, reverse steps 1 through 6.

Chapter 8.12 Memory Upgrade Kit

Each 1 megabyte memory upgrade kit consists of two 512 Kbyte memory modules, which are surface mounted with four 256K x 4, 80 ns RAM chips and two 256K x 1, 80 ns RAM chips.

The memory upgrade kits are used on the system board to expand its base one megabyte of standard RAM to two megabytes. The memory upgrade kits also provide the memory capacity of the 1 to 2 megabyte memory expansion board.

To remove a memory module from the system board:

1. Complete the preparation procedure (see Section 8.2).

2. Remove the rear panel (see Section 8.4).

3. Remove the system board cover (see Section 8.6).

4. Locate the memory module that is to be replaced (Figure 8-25).

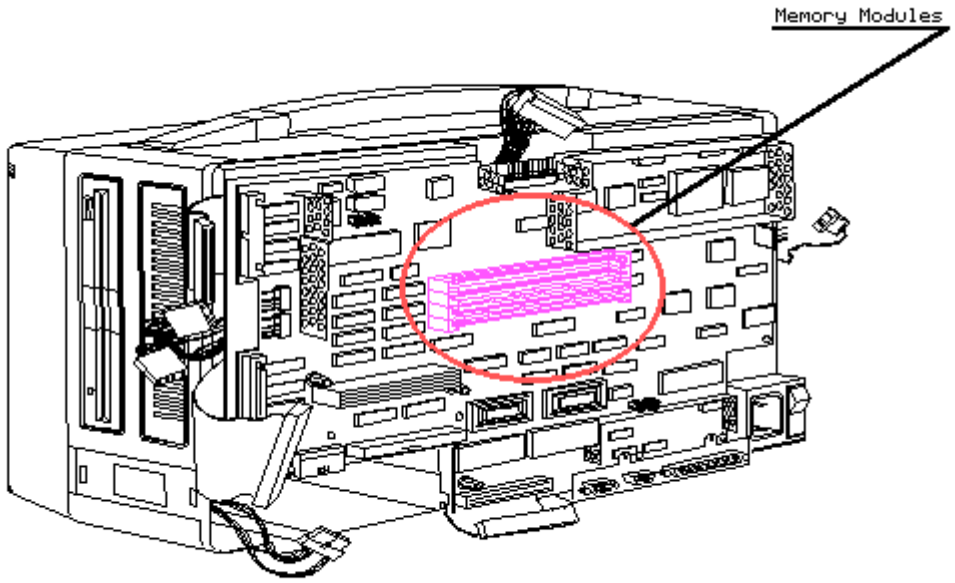


Figure 8-25. Memory Module Location on the System Board

5. To release the module, insert a tool, such as a ball point pen, into the hole at one end of the module.

6. Grasp the end of the module, pull up, and "peel" it away from its socket (Figure 8-26).

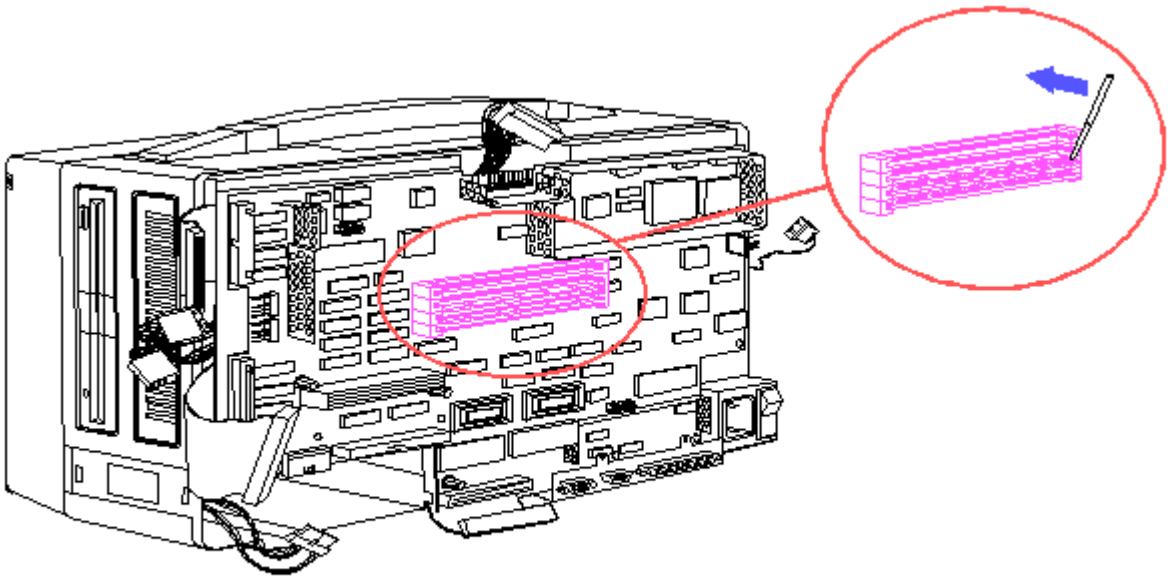


Figure 8-26. Removing the Memory Module from the System Board

To replace the memory module, simply reinsert it into its socket, then reverse steps 1 through 3.

To remove a memory module from the 1 to 2 megabyte memory expansion board:

1. Complete the preparation procedure (see Section 8.2).

2. Remove the rear panel (see Section 8.4).

3. Remove the 32 bit memory/modem interface board (see Section 8.8).

4. Remove the 1 to 2 megabyte memory expansion board (see Section 8.11).

5. Locate the memory module that is to be replaced (Figure 8-27).

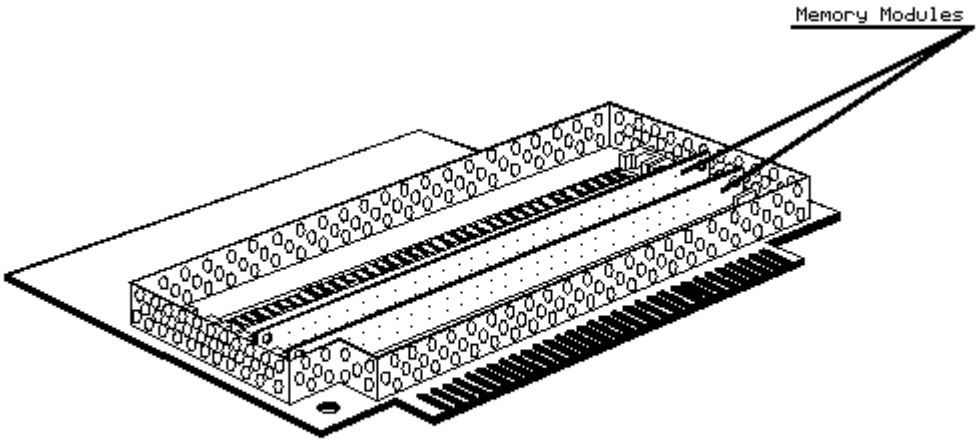


Figure 8-27. Memory Module Location

6. To release the module, insert a tool, such as a ball point pen, into the hole at one end of the module.

7. Grasp the end of the module, pull up, and "peel" it away from its socket (Figure 8-28).

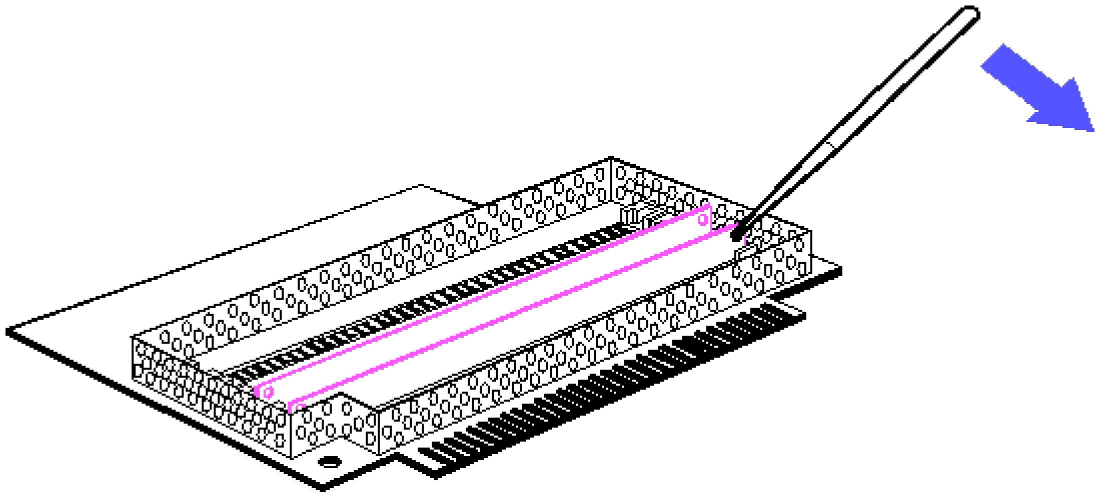


Figure 8-28. Removing the Memory Module from the 1 to 2 Megabyte Memory Expansion Board

To replace the memory module, simply reinsert it fully into its socket, then reverse steps 1 through 5.

Chapter 8.13 System ROM

To remove the system ROM:

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

CAUTION

The ROMs are sensitive to static electricity and are shipped on conductive foam to protect them from accidental electrostatic discharge. Do not remove them from the conductive shipping foam until you are ready to install them.

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1. Complete the preparation procedure (see Section 8.2).

2. Remove the rear panel (see Section 8.4).

3. Remove the interface connector cover, if installed (see Section 8.5).

4. Remove the microprocessor cover (see Section 8.6).

5. Remove the system board cover (see Section 8.7).

6. Remove the 32 bit memory/modem interface board, if installed (see Section 8.8).

7. Locate the system ROM shown in Figure 8-29.

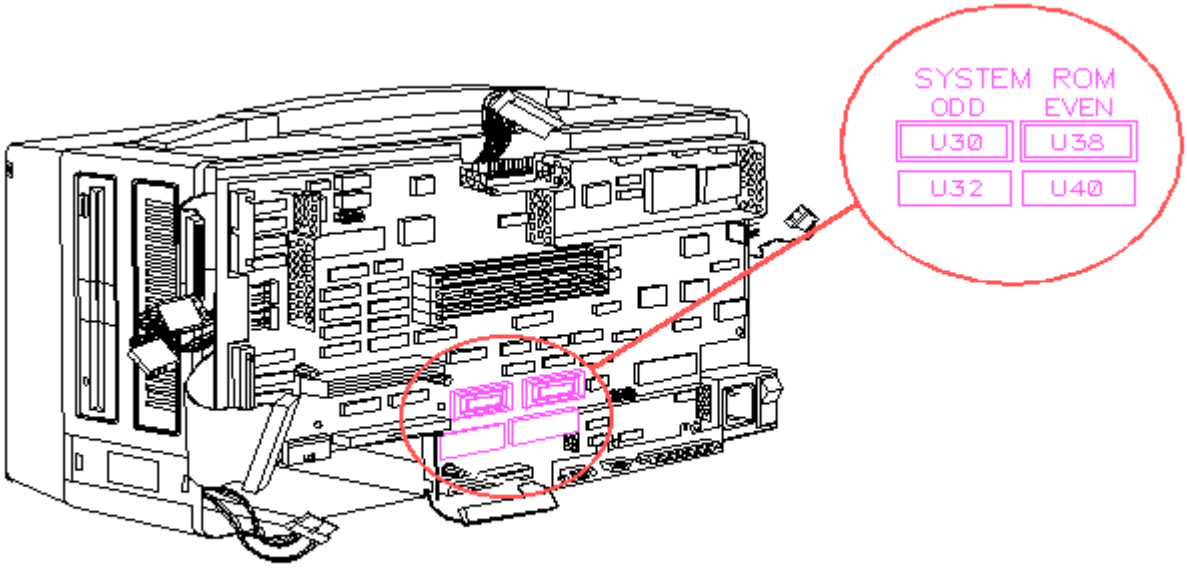

Figure 8-29. System ROM Location

8. Using an IC removal tool, remove the system ROM (Figure 8-30).

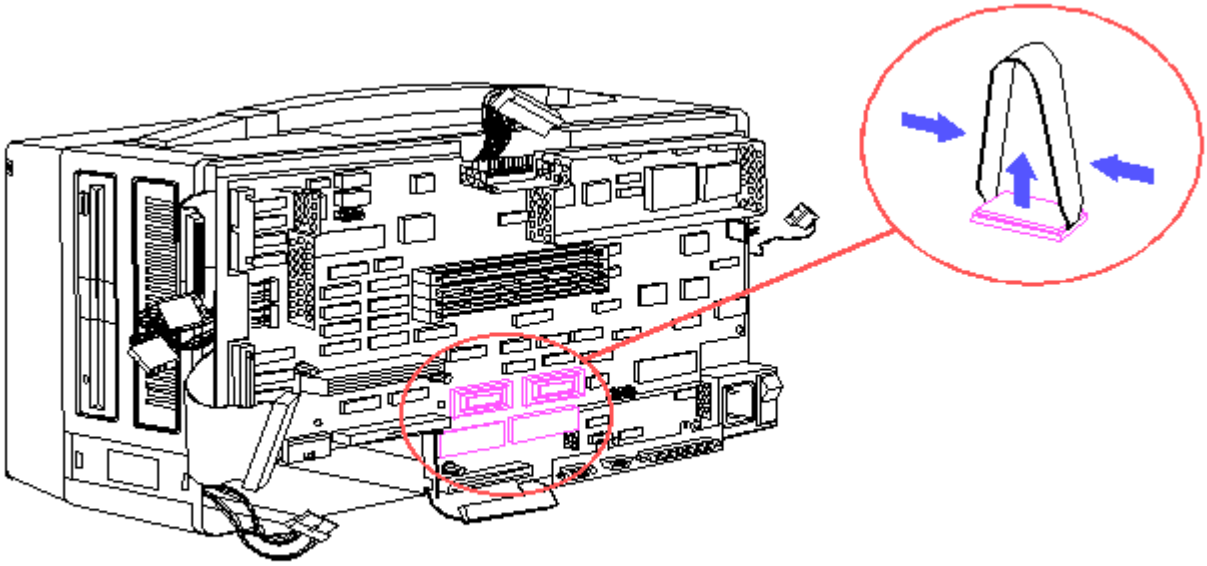

Figure 8-30. Removing the System ROM

9. Using an IC insertion tool, insert the new ROM into the appropriate sockets (Figure 8-31).

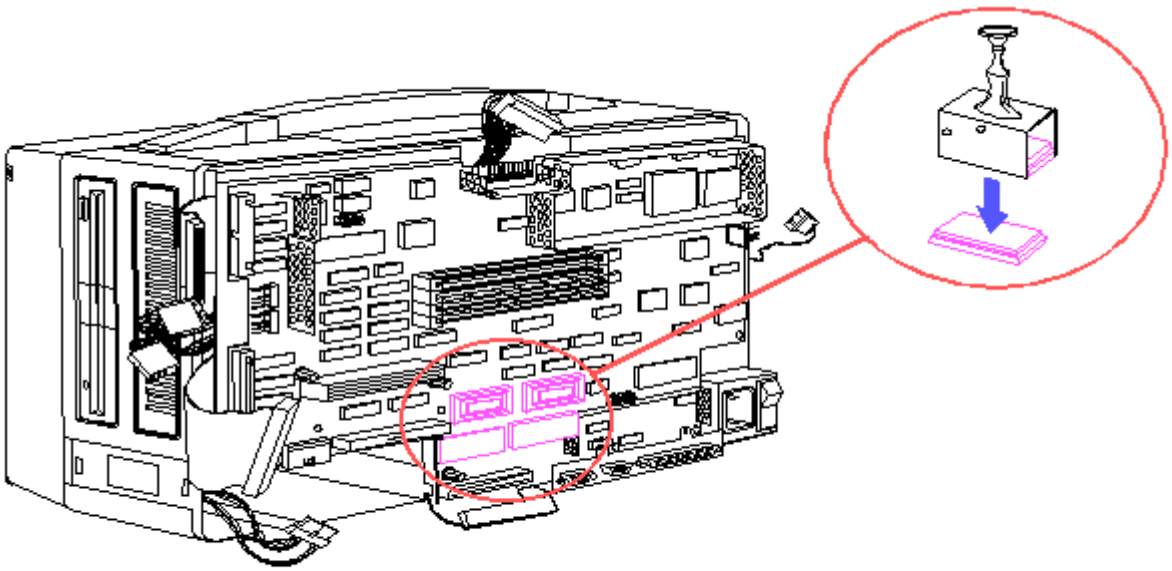

Figure 8-31. Inserting the New System ROM

Chapter 8.14 System Board

NOTE: The system board and the base pan are one assembly and are removed simultaneously.

To remove the system board assembly:

1. Complete the preparation procedure (see Section 8.2).
2. Remove the rear panel (see Section 8.4).
3. Remove the interface connector cover, if installed (see Section 8.5).
4. Remove the 32 bit memory/modem interface board, if installed (see Section 8.8).
5. Remove the microprocessor cover (see Section 8.6).
6. Remove the system board cover (see Section 8.7).
7. Remove the internal modem, if installed (see Section 8.9).
8. Remove the second serial interface board, if installed (see Section 8.10).
9. Remove the memory expansion board, if installed (see Section 8.11).
10. Disconnect the following cables (shown in Figure 8-32) from the system board:

    - o System board power cable
    - o Diskette drive data cable
    - o Diskette drive power cable
    - o Fixed disk drive data cable

- Fixed disk drive power cable
- LED/speaker cable
- Keyboard cable
- Display controller board data cable
- Battery cable

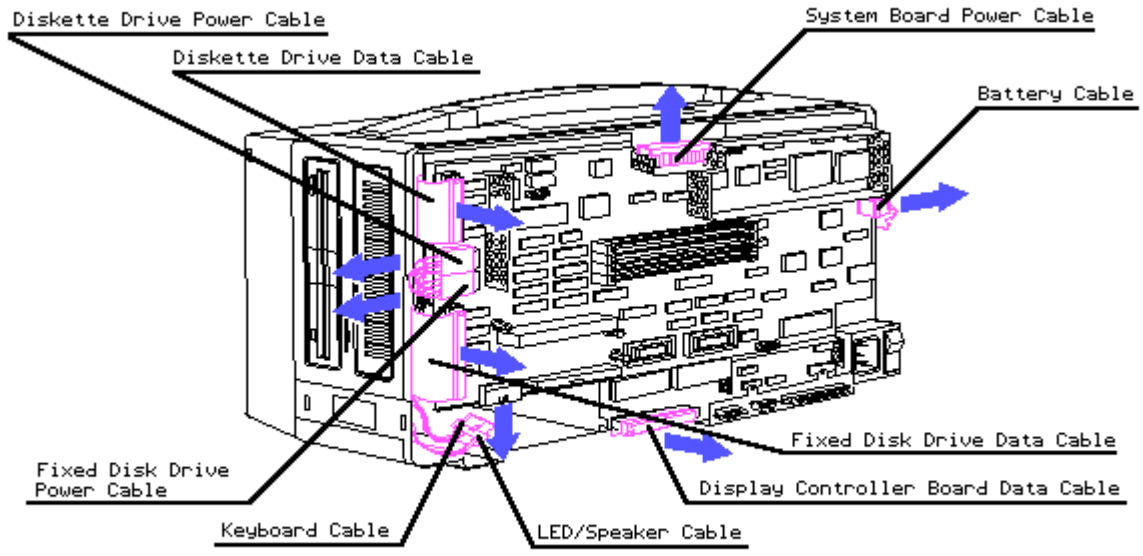

Figure 8-32. Disconnecting System Board Cables

11. Remove the screws that secure the system board assembly to the main enclosure (Figure 8-33).

NOTE: Use a 3/16 inch wrench to remove the standoffs and a Torx screwdriver to remove the screws.

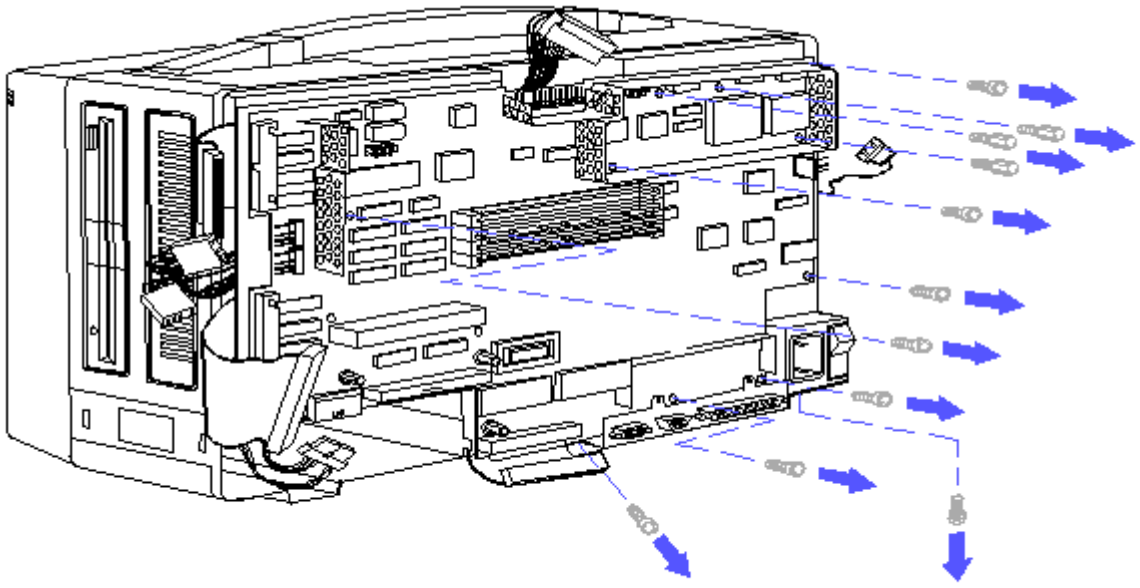

Figure 8-33. Removing System Board Screws

12. Grasp the system board assembly by its edges. Lift it up and away from the main enclosure.

13. Disconnect the RGBI cable assembly from the plasma display controller board (Figure 8-34).

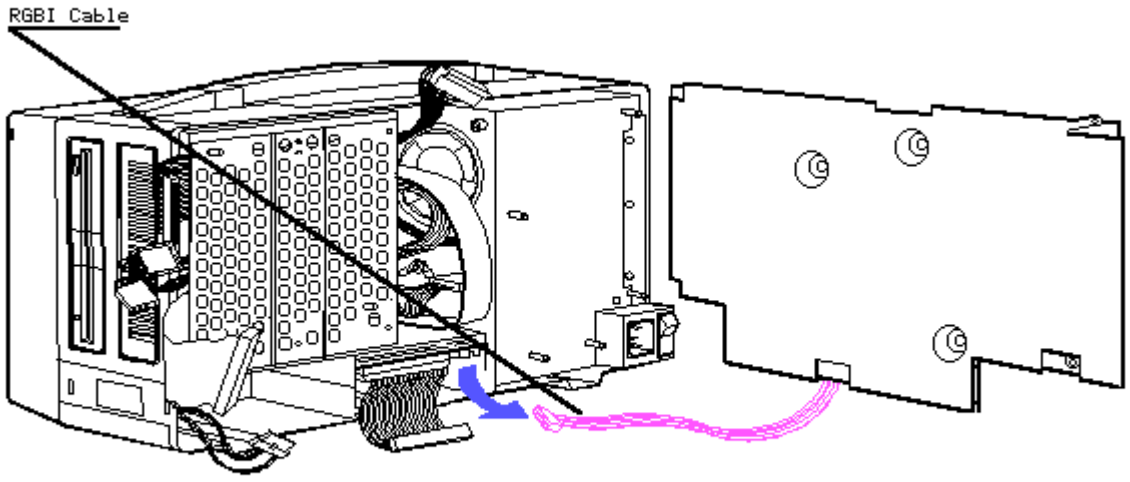

Figure 8-34. Disconnecting the RGBI Cable Assembly

To replace the system board, reverse steps 1 through 13.

Chapter 8.15 Plasma Display Controller Board

To remove the plasma display controller board:

1. Complete the preparation procedure (see Section 8.2).
2. Remove the rear panel (see Section 8.4).
3. Remove the interface connector cover, if installed (see Section 8.5).
4. Remove the 32 bit memory/modem interface board, if installed (see Section 8.8).
5. Remove the microprocessor cover (see Section 8.6).
6. Remove the system board cover (see Section 8.7).
7. Remove the internal modem, if installed (see Section 8.9).
8. Remove the second serial interface board, if installed (see Section 8.10).
9. Remove the memory expansion board, if installed (see Section 8.11).
10. Remove the system board (see Section 8.14).
11. Locate the controller board shown in Figure 8-35.

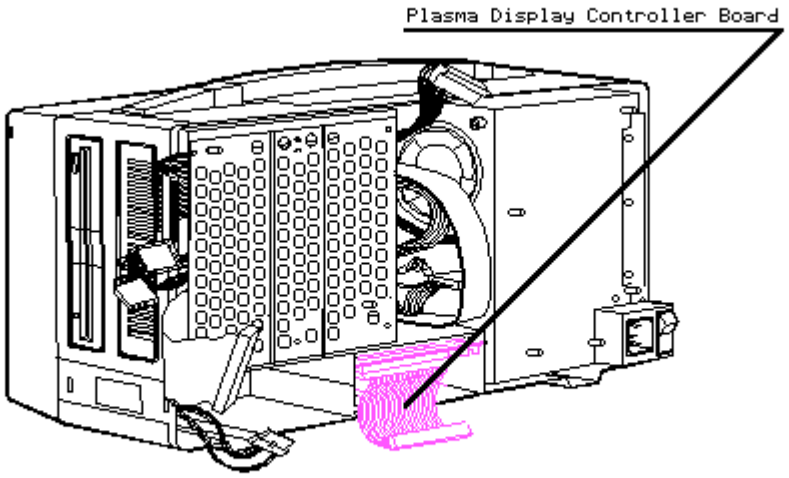

Figure 8-35. Plasma Display Controller Board Location

12. Carefully slide the controller board from its compartment (Figure 8-36).

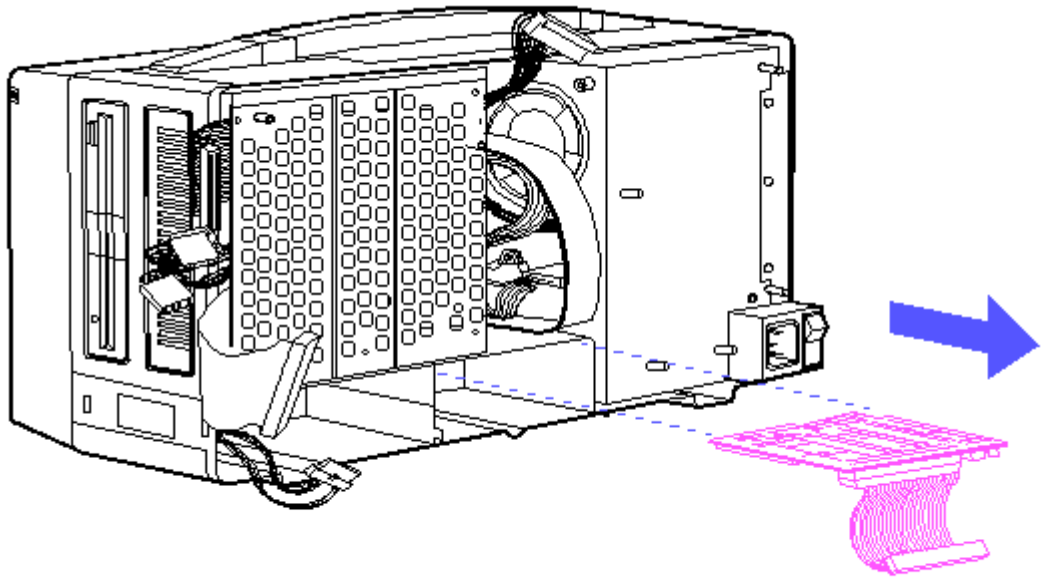

Figure 8-36. Removing the Plasma Display Controller Board

NOTE: Removing the controller board from its compartment also disconnects it from the display data cable.

13. Disconnect the display controller board data cable from the controller board (Figure 8-37).

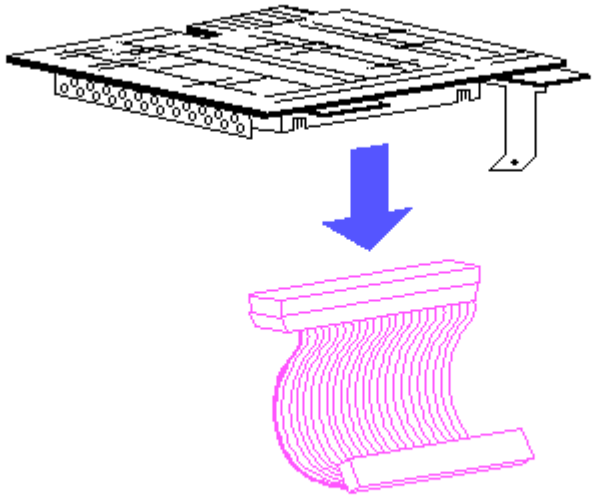

Figure 8-37. Disconnecting the Plasma Display Controller Board Cable

To replace the controller board, reverse steps 1 through 13.

Chapter 8.16 Mass Storage Device Assembly

To remove the mass storage device subassembly:

1. Complete the preparation procedure (see Section 8.2).

2. Remove the rear panel (see Section 8.4).

3. To remove the drive bezel, place your thumb on the rear side of the drive bezel.

4. Pull the drive bezel away from the computer with your thumb. (Figure 8-38).

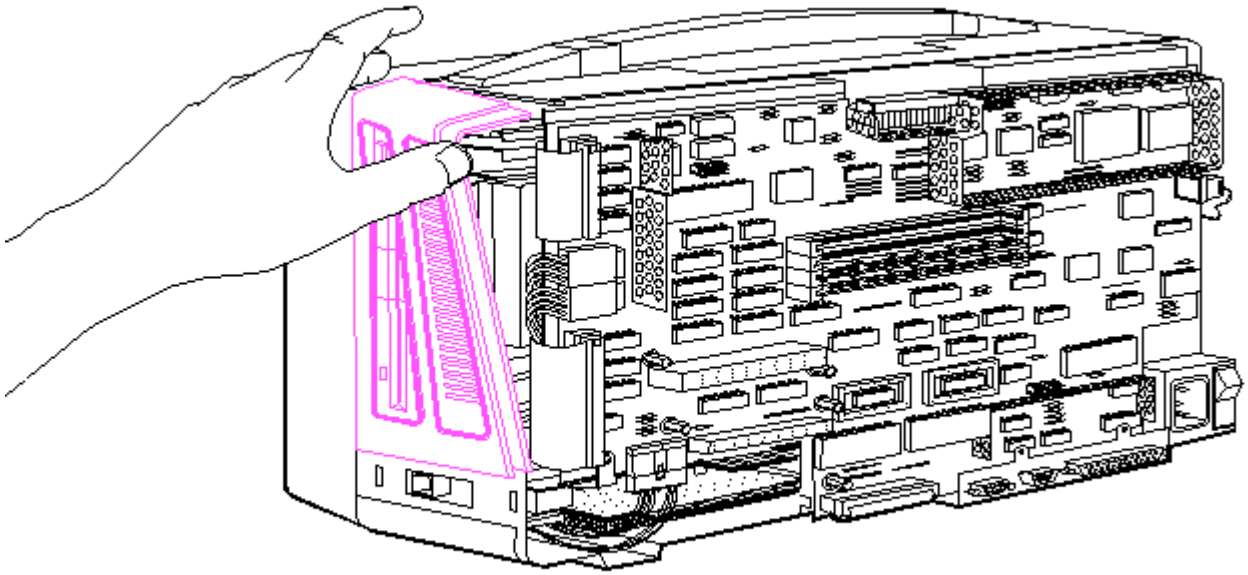

Figure 8-38. Removing the Drive Bezel

5. Disconnect the following cables (shown in Figure 8-39) from the system board:

   - Diskette drive data cable
   - Diskette drive power cable
   - Fixed disk drive data cable
   - Fixed disk drive power cable

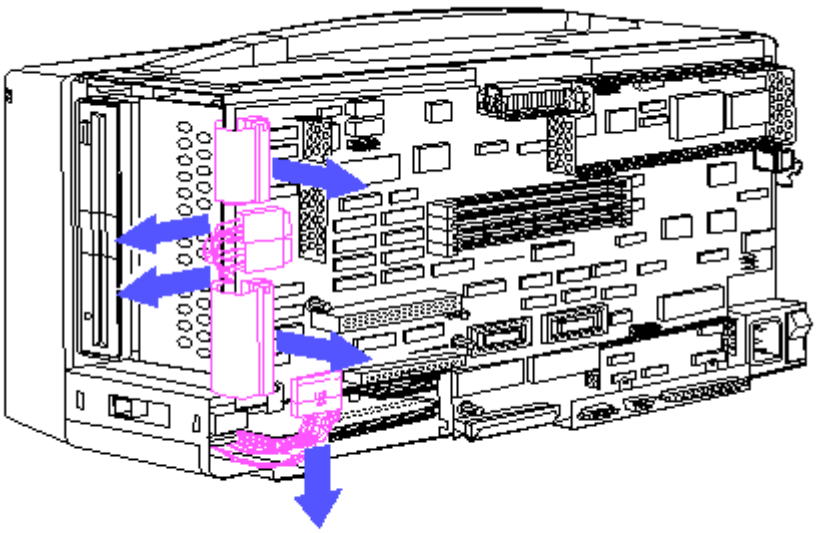

Figure 8-39. Disconnecting the Drive Cables

6. Locate the mass storage device subassembly shown in Figure 8-40.

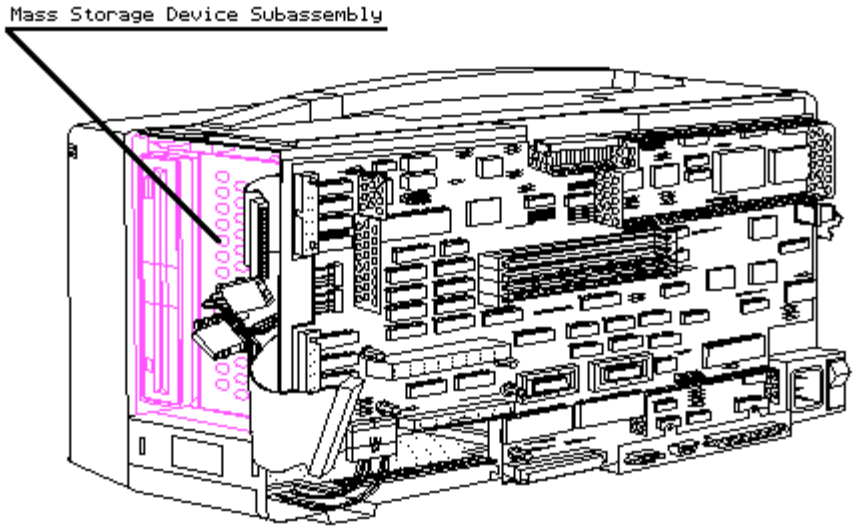

Figure 8-40. Mass Storage Device Subassembly Location

7. Remove the screw that secures the mass storage device subassembly to the mass storage device enclosure (Figure 8-41).

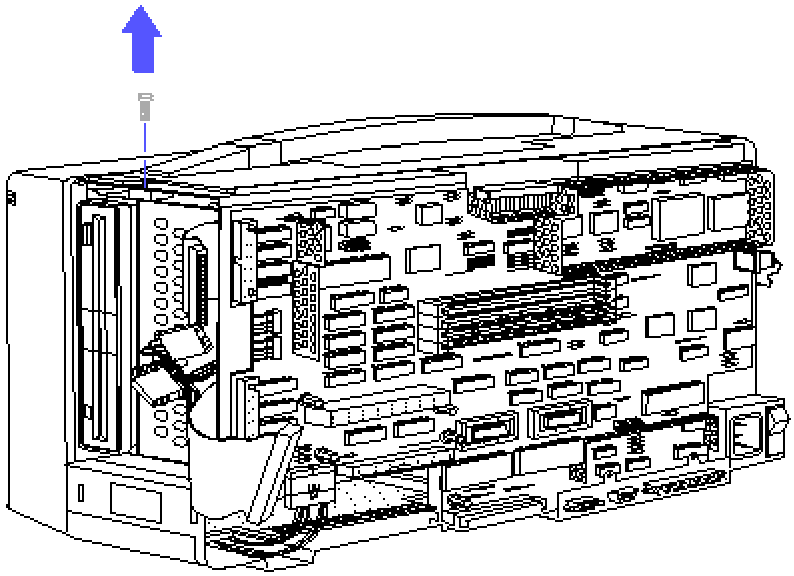

Figure 8-41. Removing the Mass Storage Device Subassembly Screw

8. Slide the mass storage device subassembly out of the mass storage device enclosure (Figure 8-42).

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CAUTION

When removing the mass storage device subassembly, be sure that the cables do not interfere with the mass storage device enclosure.

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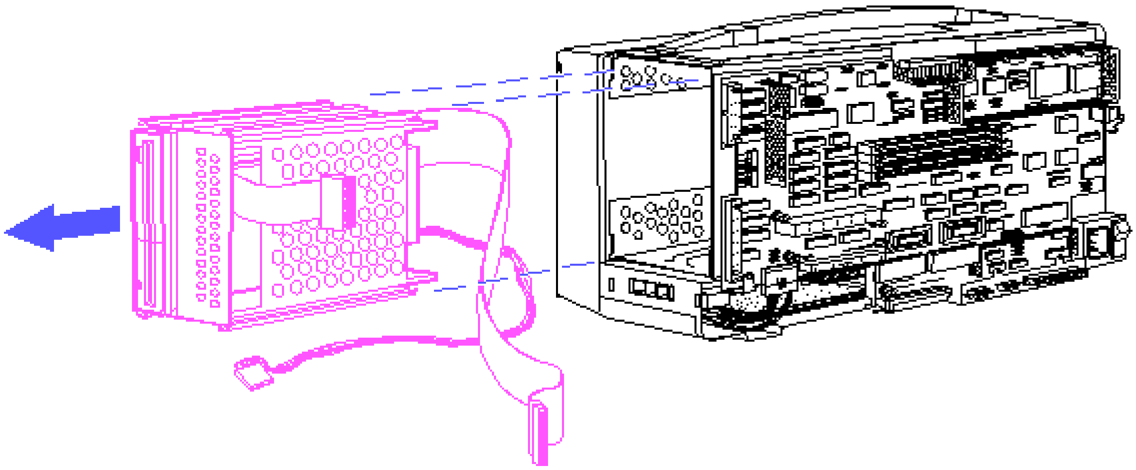

Figure 8-42. Removing the Mass Storage Device Subassembly

To replace the mass storage device subassembly, reverse steps 7 and 8.

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CAUTION

When replacing the mass storage device subassembly, be sure that the cables do not interfere with the mass storage device enclosure.

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Reconnect the cables, listed in step 5, to the system board.

To replace the bezel and rear panel, reverse steps 1 through 4.

Chapter 8.17 Fixed Disk Drive

To remove the fixed disk drive assembly:

1. Complete the preparation procedure (see Section 8.2).

2. Remove the rear panel (see Section 8.4).

3. Remove the mass storage device subassembly (see Section 8.12).

4. Locate the fixed disk drive (Figure 8-43) mounted in the rear position of the mass storage device subassembly (Drive Position 2).

5. Disconnect the fixed disk drive power and data cables from the fixed disk drive (Figure 8-44).

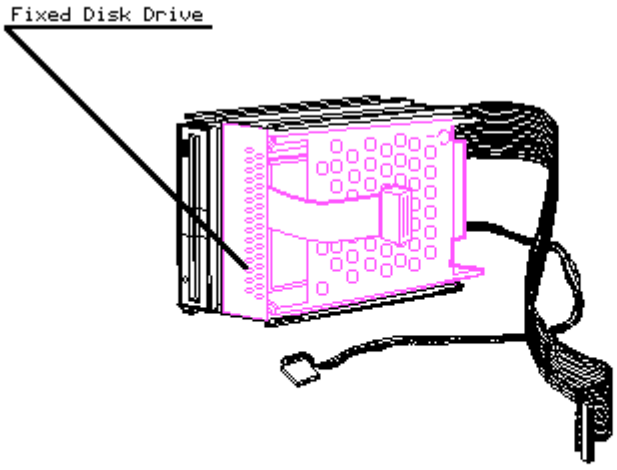

Figure 8-43. Fixed Disk Drive Position 2 Location

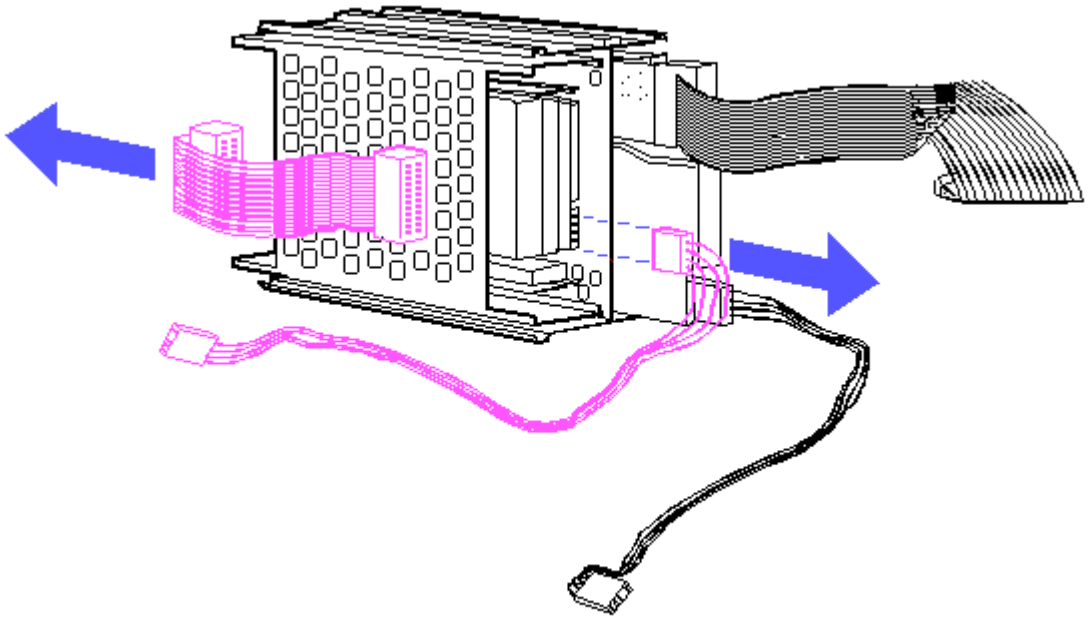

Figure 8-44. Disconnecting the Fixed Disk Drive Cables

6. Remove the two screws that secure the drive cover or metal plate covering the front of Drive Position 2 (Figure 8-45).

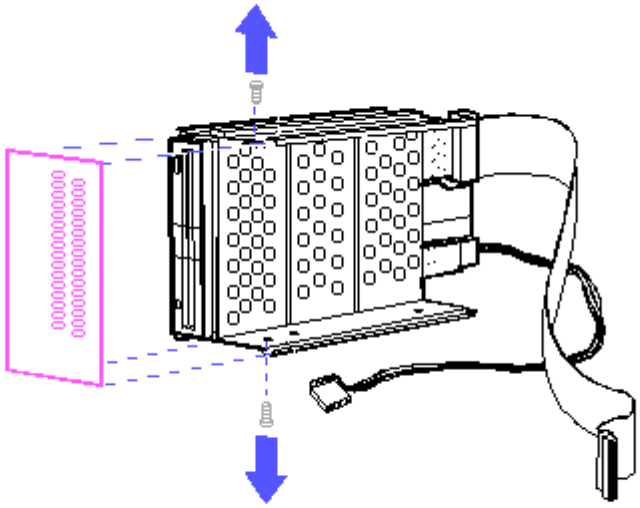

Figure 8-45. Removing the Drive Cover

7. Remove the four screws from the mass storage device subassembly and slide the fixed disk drive assembly out of the mass storage device subassembly (Figure 8-46).

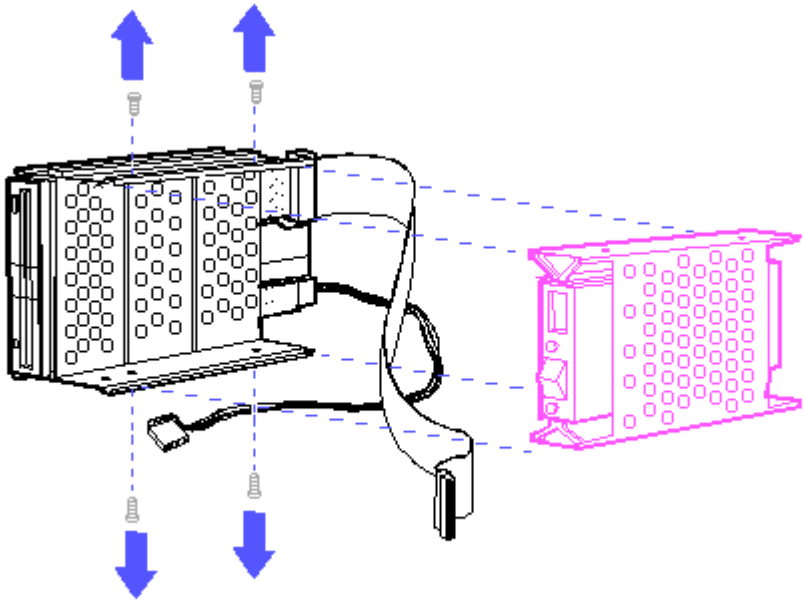

Figure 8-46. Removing the Fixed Disk Drive

To replace the fixed disk drive, reverse steps 1 through 7.

Chapter 8.18 Diskette Drive

To remove the diskette drive assembly:

1. Complete the preparation procedure (see Section 8.2).
2. Remove the rear panel (see Section 8.4).
3. Remove the mass storage device subassembly (see Section 8.12).
4. Locate the diskette drive shown in Figure 8-47.

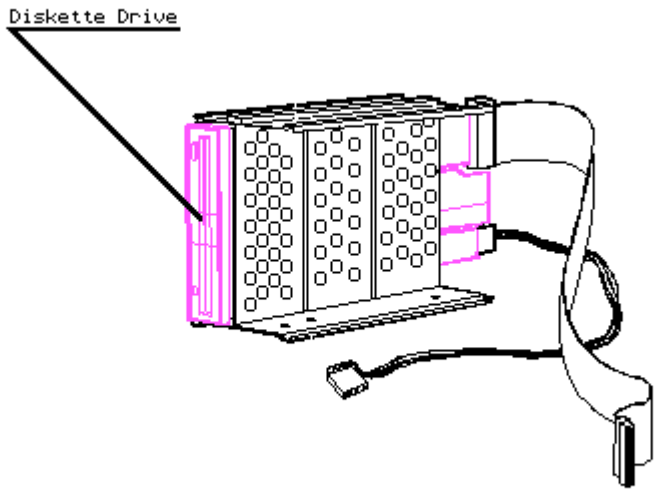

Figure 8-47. Diskette Drive Location

5. Disconnect the diskette drive power and signal cables from the diskette drive (Figure 8-48).

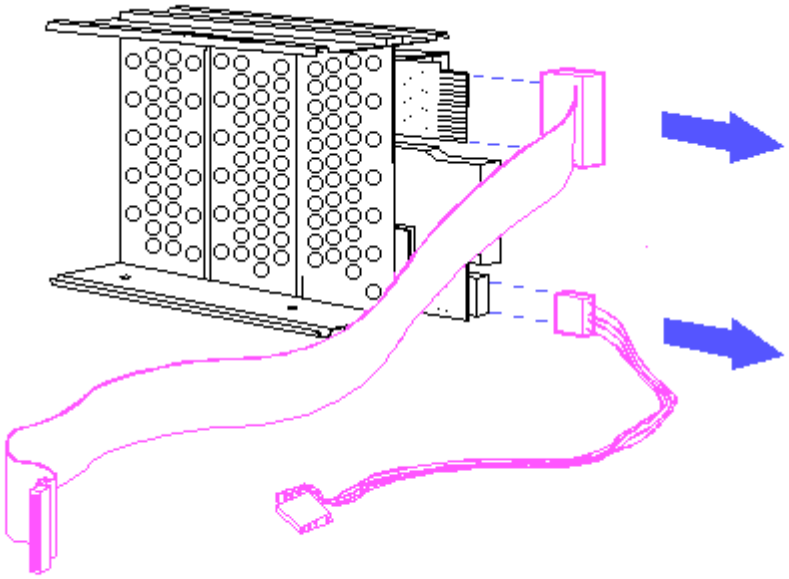

Figure 8-48. Disconnecting the Diskette Drive Cables

6. Remove the four shoulder bolts from the mass storage device subassembly and slide the diskette drive assembly out of the mass storage device subassembly (Figure 8-49).

NOTE: When removing the diskette drive, do not misplace the four vibration isolators shown in Figure 8-49. You must use all four vibration isolators to replace the diskette drive assembly.

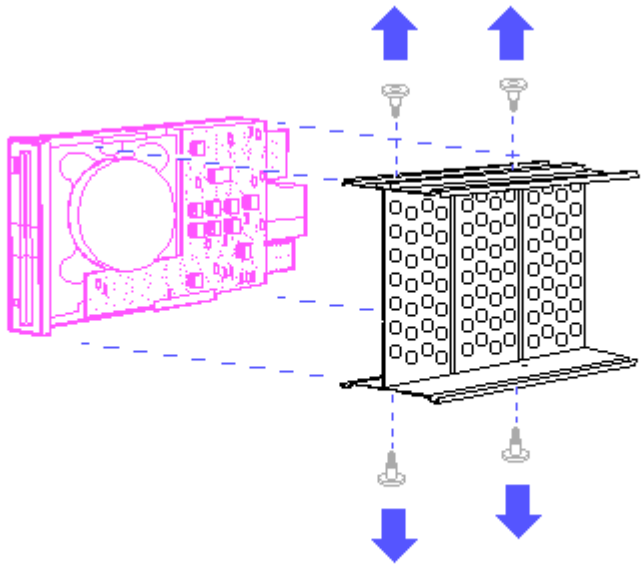

Figure 8-49. Removing the Diskette Drive

To replace the diskette drive, reverse steps 1 through 6.

Chapter 8.19 Power Supply

To remove the power supply:

1. Complete the preparation procedure (see Section 8.2).
2. Remove the rear panel (see Section 8.4).
3. Remove the interface connector cover, if installed (see Section 8.5).
4. Remove the 32 bit memory/modem interface board, if installed (see Section 8.8).
5. Remove the system board cover (see Section 8.6).
6. Remove the microprocessor cover (see Section 8.7).
7. Remove the system board (see Section 8-14).
8. Disconnect the plasma display power connector from the power supply (Figure 8-50).

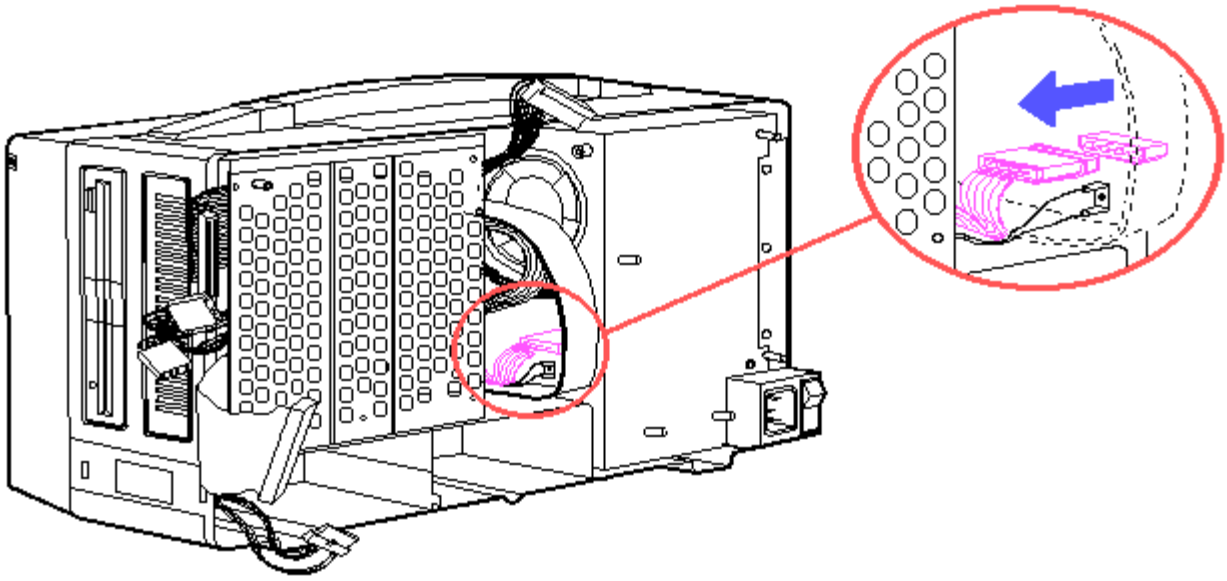

Figure 8-50. Disconnecting the Plasma Display Power Connector

9. Locate the power supply shown in Figure 8-51.

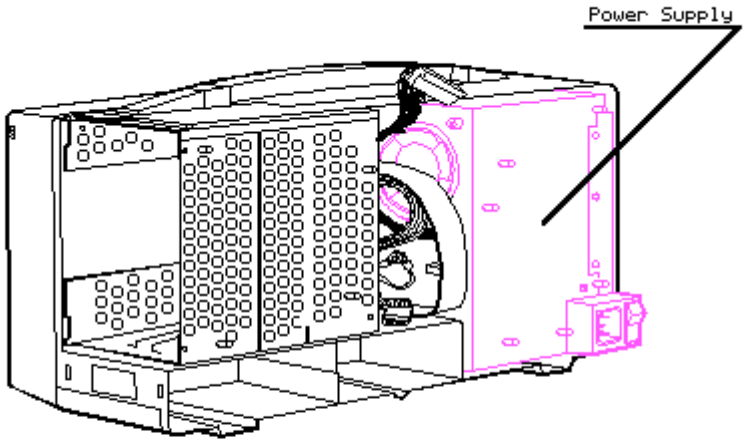

Figure 8-51. Power Supply Location

10. Disconnect the plasma display data cable and the plasma display power cable ground wire from the power supply (Figure 8-52).

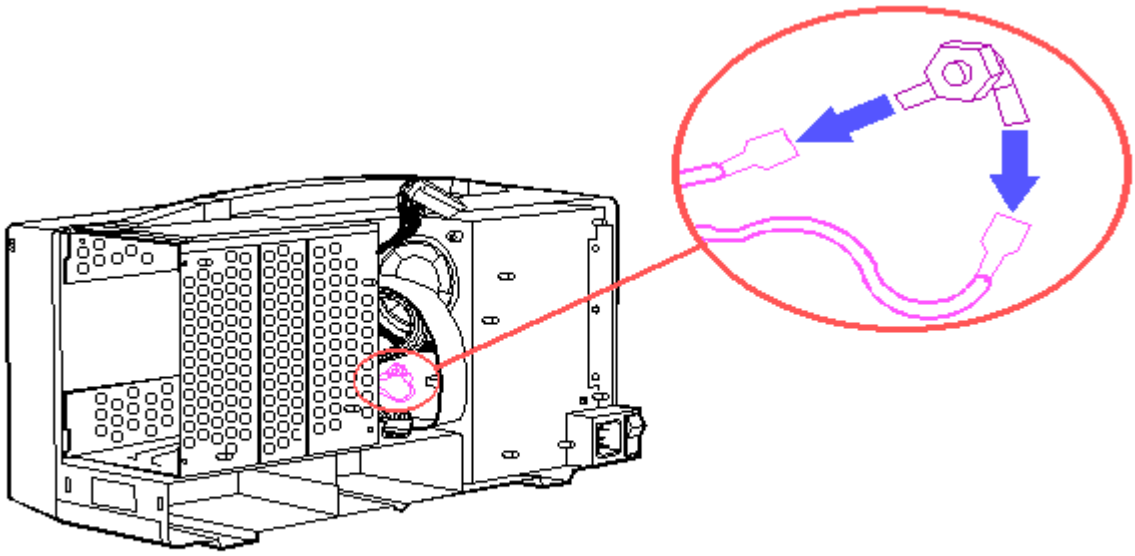

Figure 8-52. Disconnecting the Plasma Display Data Cable and the Plasma Display Power Cable Ground Wire

11. Place the computer in an upright position.

12. Place the plasma display at an outward angle and remove the top two screws and washers with an angle Torx screwdriver (Figure 8-53).

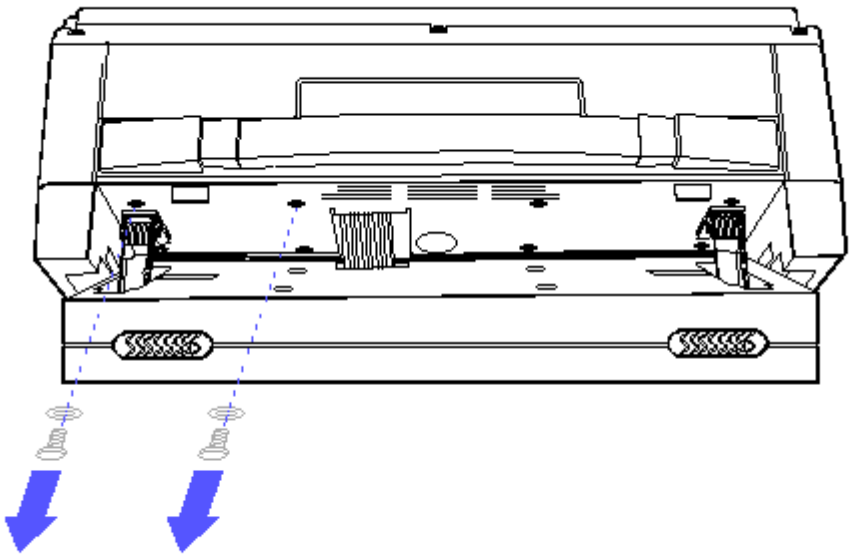

Figure 8-53. Removing the Top Two Screws and Washers from the Power Supply

13. Lift the plasma display into an upright position and remove the bottom two screws and washers with a Torx screw driver (Figure 8-54).

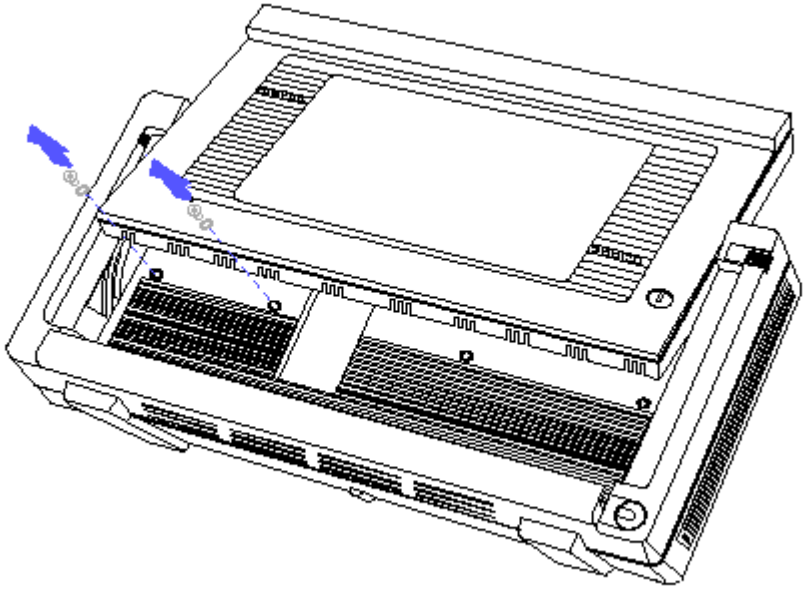

Figure 8-54. Removing the Bottom Two Screws and Washers from the Power Supply

14. Carefully slide the power supply out of the computer chassis (Figure 8-55).

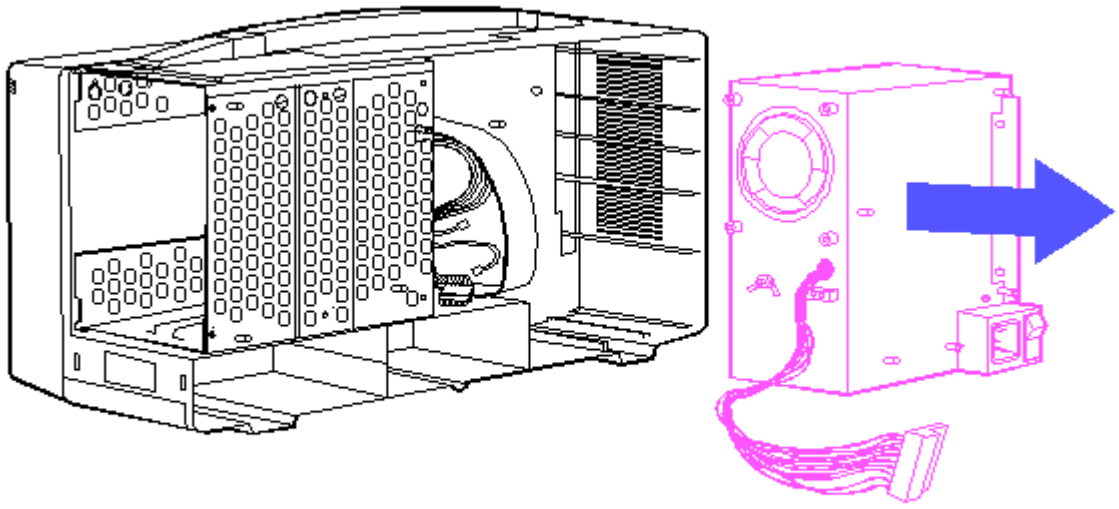

Figure 8-55. Removing the Power Supply

To replace the power supply, reverse steps 1 through 14.

Chapter 8.20 Mass Storage Device Enclosure

To remove the mass storage device enclosure:

1. Complete the preparation procedure (see Section 8.2).
2. Remove the rear panel (see Section 8.4).
3. Remove the interface connector cover, if installed (see Section 8.5).
4. Remove the 32 bit memory/modem interface board, if installed (see Section 8.8).
5. Remove the system board (see Section 8.14).
6. Remove the mass storage device subassembly (see Section 8.16).
7. Place the computer in an upright position.
8. Place the plasma display at an outward angle, and remove the top two screws and washers from the mass storage device enclosure with an angle Torx screwdriver (Figure 8-56).

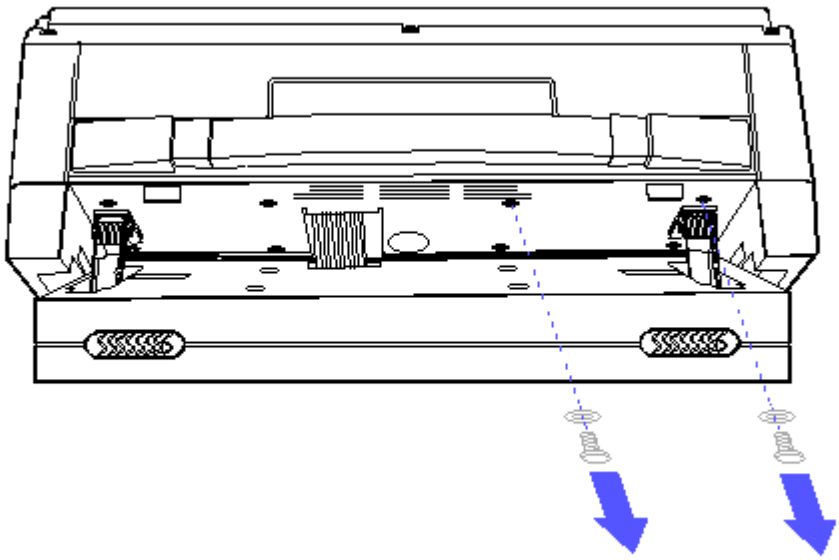

Figure 8-56. Removing the Top Two Screws and Washers from the Mass Storage Device Enclosure

9. Lift the plasma display into an upright position and remove the bottom two screws and washers from the mass storage device enclosure with a Torx screwdriver (Figure 8-57).

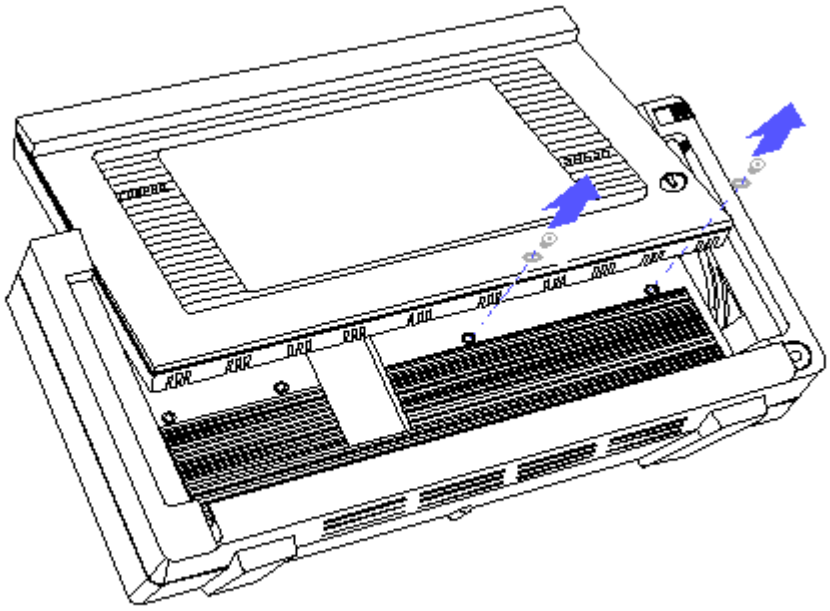

Figure 8-57. Removing the Bottom Two Screws and Washers from the Mass Storage Device Enclosure

10. Carefully slide the mass storage device enclosure out of the computer chassis (Figure 8-58).

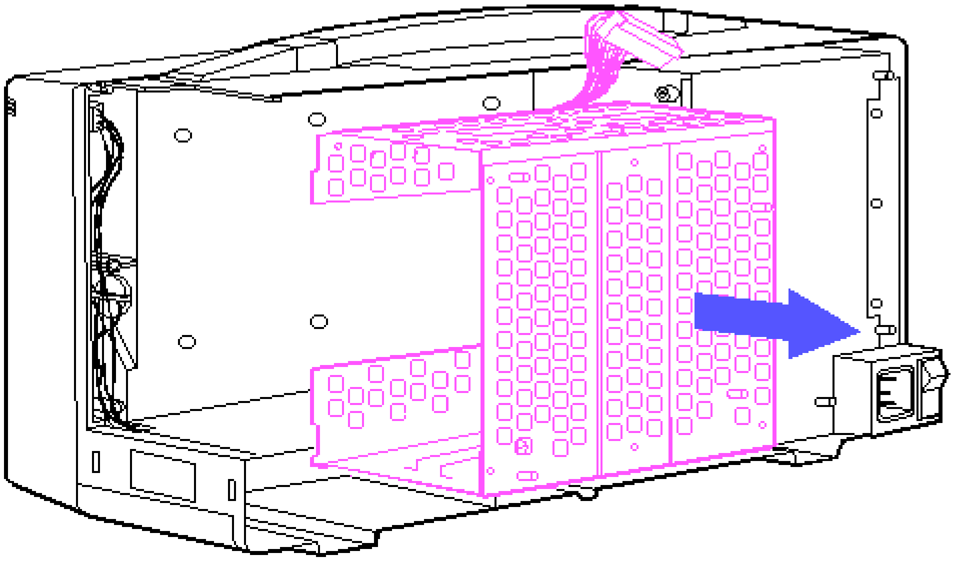

Figure 8-58. Removing the Mass Storage Device Enclosure

To replace the mass storage device enclosure, reverse steps 1 through 10.

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CAUTION

Be sure the LED/speaker and keyboard cables are not pinched or exposed when replacing the mass storage devices enclosure.

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Chapter 8.21 LED/Speaker Cable, Keyboard Cable, and LED Assembly

To remove the LED/speaker cable, keyboard cable, and LED assembly:

1. Complete the preparation procedure (see Section 8.2).
2. Remove the rear panel (see Section 8.4).
3. Remove the interface connector cover, if installed (see Section 8.5).
4. Remove the 32 bit memory/modem interface board, if installed (see Section 8.8).
5. Remove the system board (see Section 8.14).
6. Remove the mass storage device subassembly (see Section 8.16).
7. Remove the mass storage device enclosure (see Section 8.20).
8. Locate the keyboard cable connector shown in Figure 8-59.

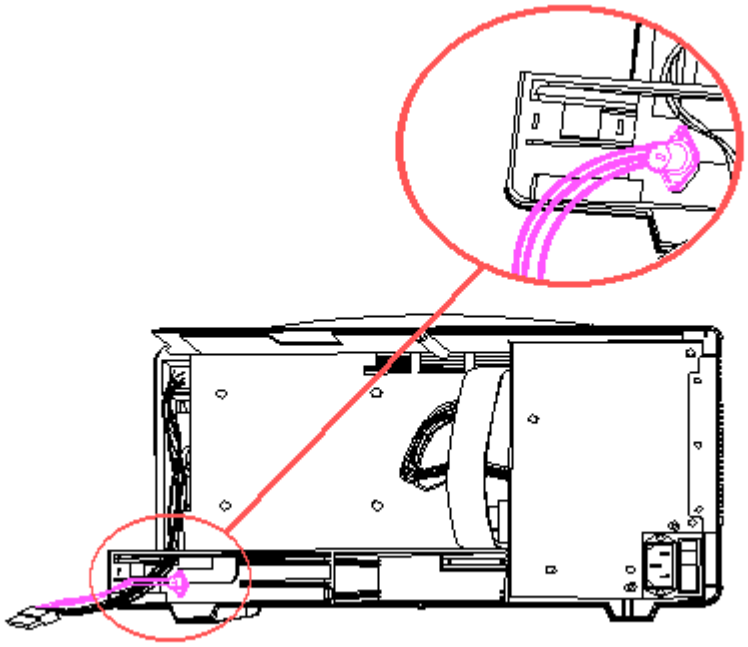

Figure 8-59. Keyboard Cable Connector Location

9. Remove the two screws that secure the keyboard cable connector to the keyboard ground strap and computer chassis (Figure 8-60).

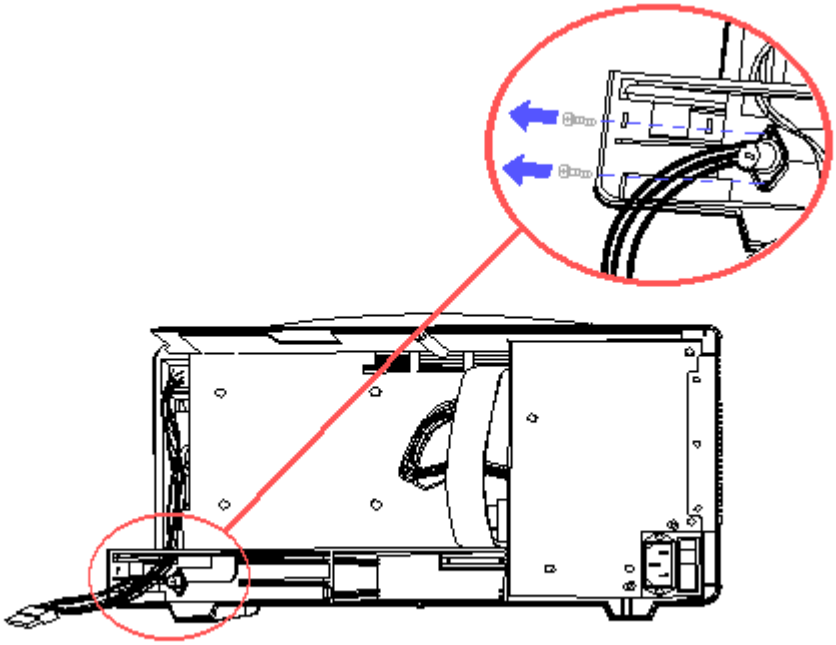

Figure 8-60. Removing the Keyboard Cable Connector Screws

10. Locate the LED/speaker and keyboard cables shown in Figure 8-61.

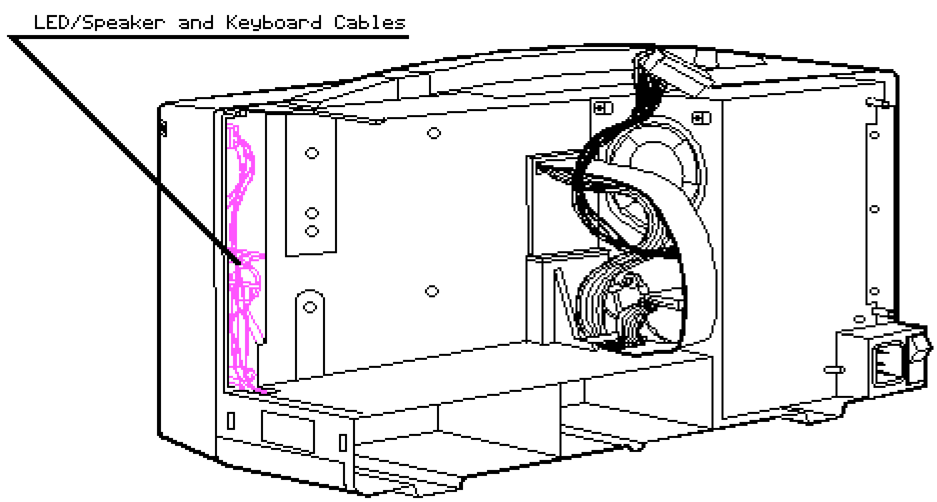

Figure 8-61. LED/Speaker and Keyboard Cables Location

11. Disconnect the LED connector from the LED assembly (Figure 8-62). Be careful not to bend the pins on the LED assembly connector.

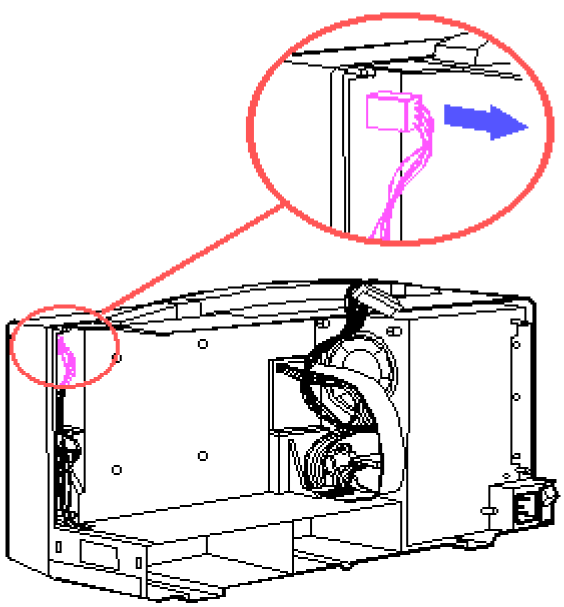

Figure 8-62. Disconnecting the LED Connector

12. Disconnect the speaker from the rail (Figure 8-63).

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CAUTION

When removing the speaker, do not touch the silver speaker surface.

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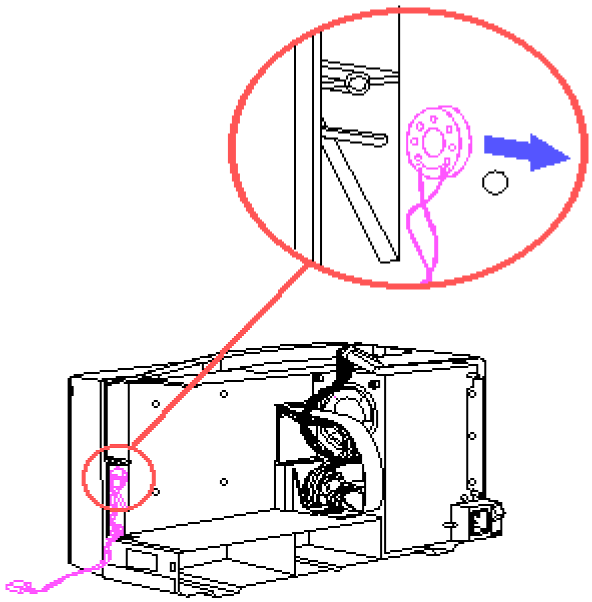

Figure 8-63. Disconnecting the Speaker

13. Slide the speaker and the LED connector through the slot in the options compartment (Figure 8-64).

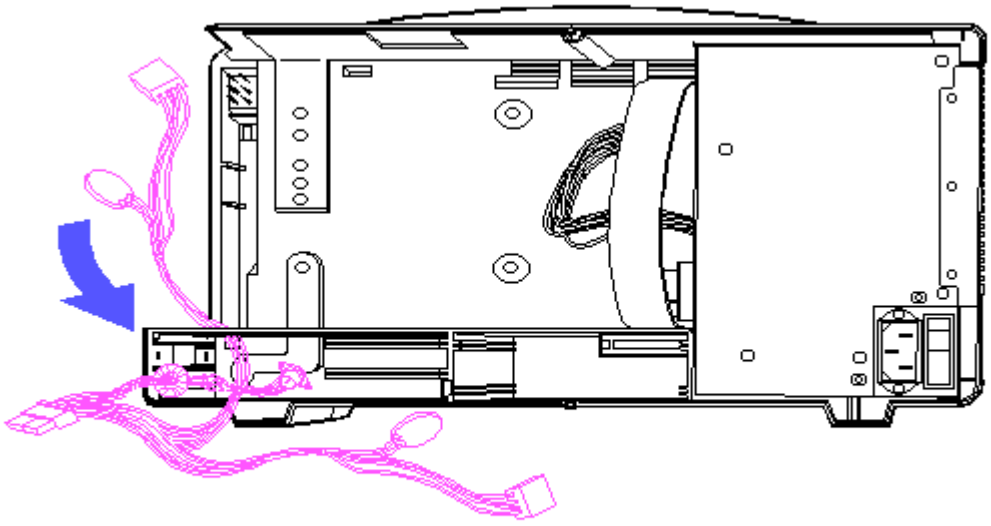

Figure 8-64. Sliding the Speaker and LED Connector through the Slot in the Options Compartment

14. Disconnect the keyboard cable extension from the keyboard cable.

15. Remove the LED/speaker cable and keyboard cable from the options compartment (Figure 8-65).

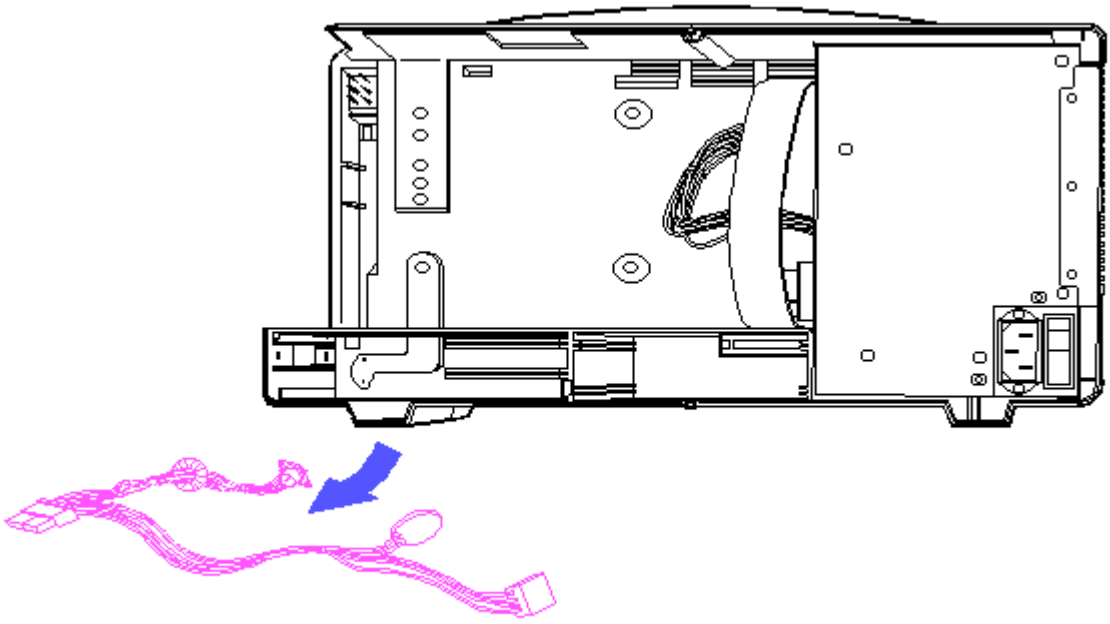

Figure 8-65. Removing the LED/Speaker and Keyboard Cables

16. Remove the eight screws that secure the front main bezel to the main housing enclosure (Figure 8-66).

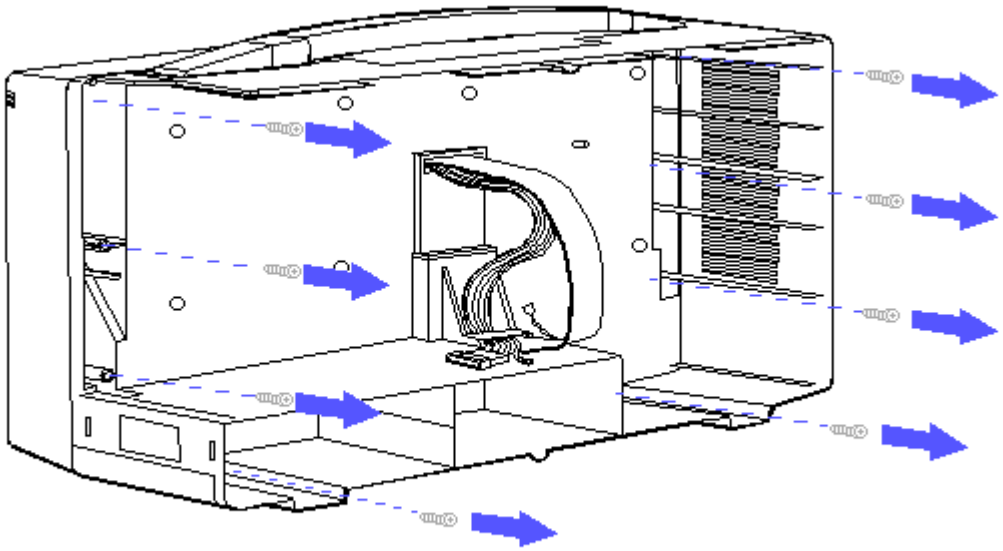

Figure 8-66. Removing the Front Main Bezel Screws

17. Push the LED assembly forward and snap it out (Figure 8-67).

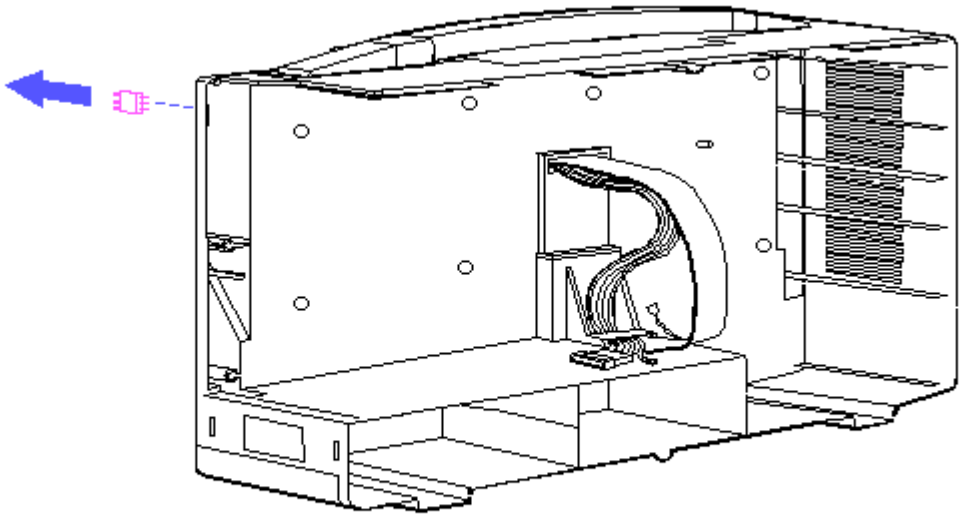

Figure 8-67. Removing the LED Assembly

18. Slide the LED lens out of the computer chassis (Figure 8-68).

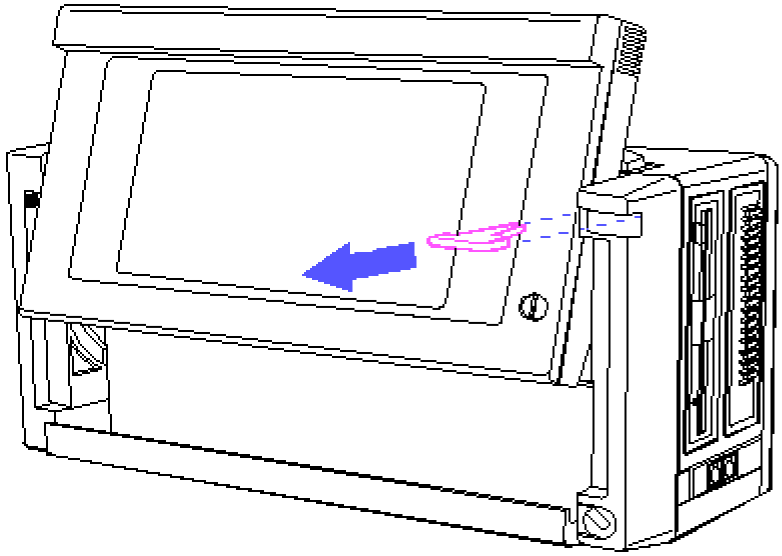

Figure 8-68. Removing the LED Lens

To replace the LED assembly and the LED/speaker and keyboard cables, reverse steps 1 through 17.

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CAUTION

When replacing the speaker, do not touch the silver speaker surface.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Chapter 8.22 Plasma Display

To remove the Plasma Display:

1. Complete the preparation procedure (see Section 8.2).

2. Unlatch the display enclosure by pressing down on the two latches on top of the display enclosure. Pull the display enclosure away from the main enclosure (Figure 8-69).

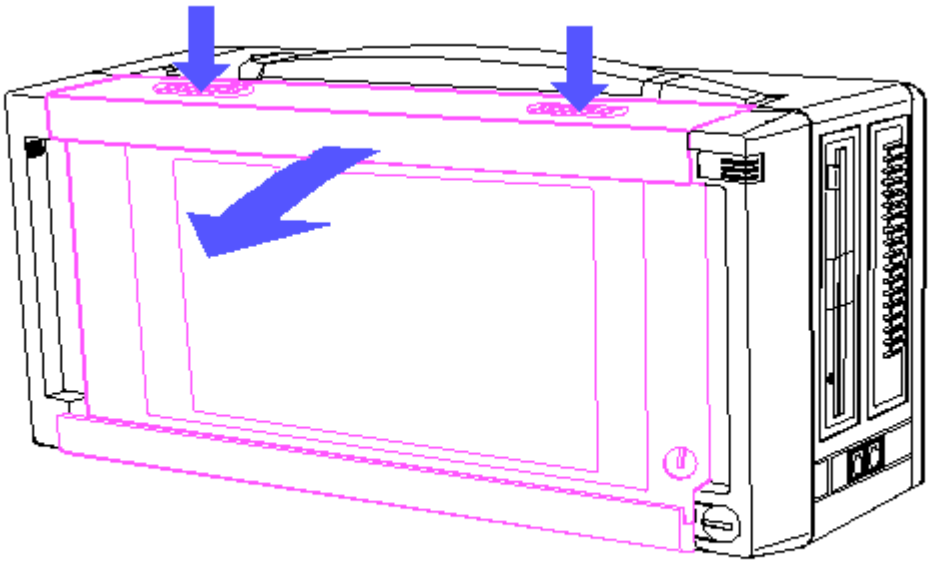

Figure 8-69. Unlatching the Display Enclosure

3. While holding the display bezel in place with one hand, remove the four screws that secure the display bezel to the display enclosure. These screws are located on the back of the display enclosure (Figure 8-70).

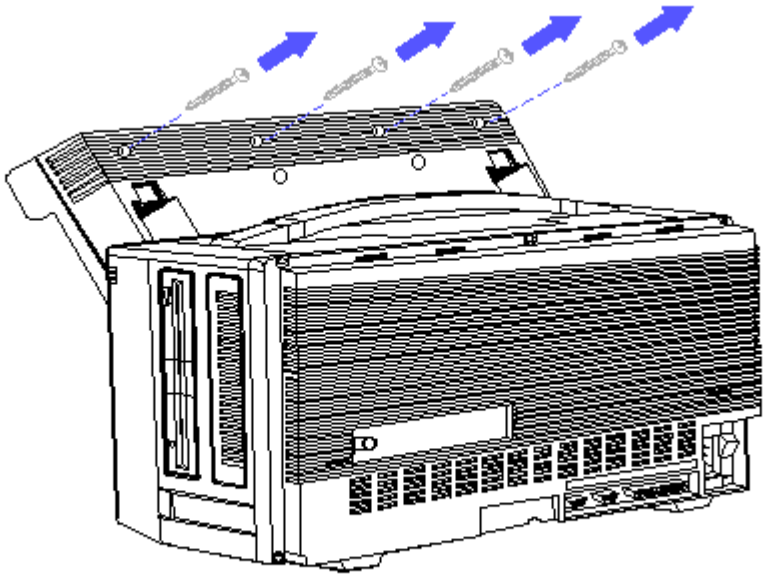

Figure 8-70. Removing the Display Enclosure Screws

4. Alter removing the four screws, lift the display bezel away from the front of the display enclosure. Be careful to catch the brightness control knob as you remove the display bezel (Figure 8-71).

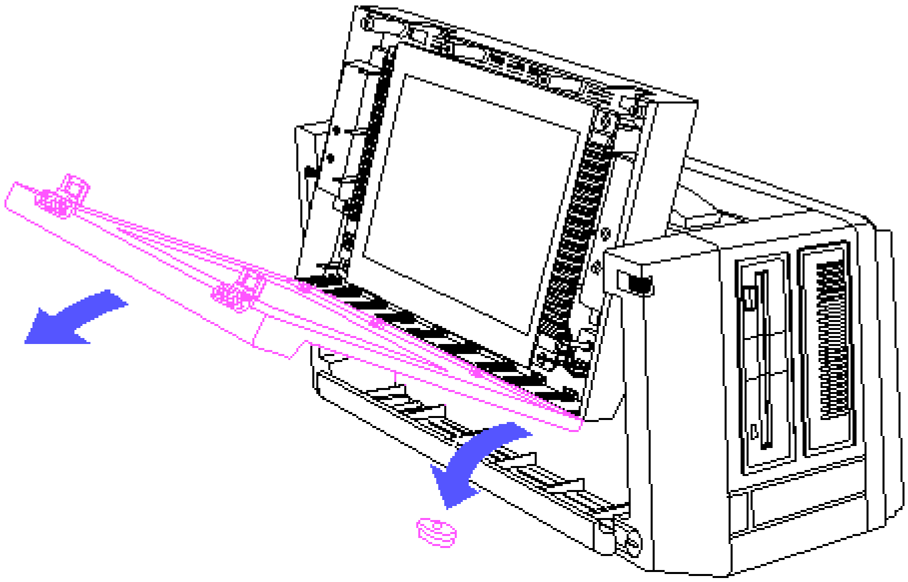

Figure 8-71. Removing the Display Bezel

>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

CAUTION

Grasp the display by its metal frame and do not touch the display panel.

>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

5. Remove the two latches from the display enclosure and set them aside (Figure 8-72).

NOTE: For future replacement, notice how the latches are positioned.

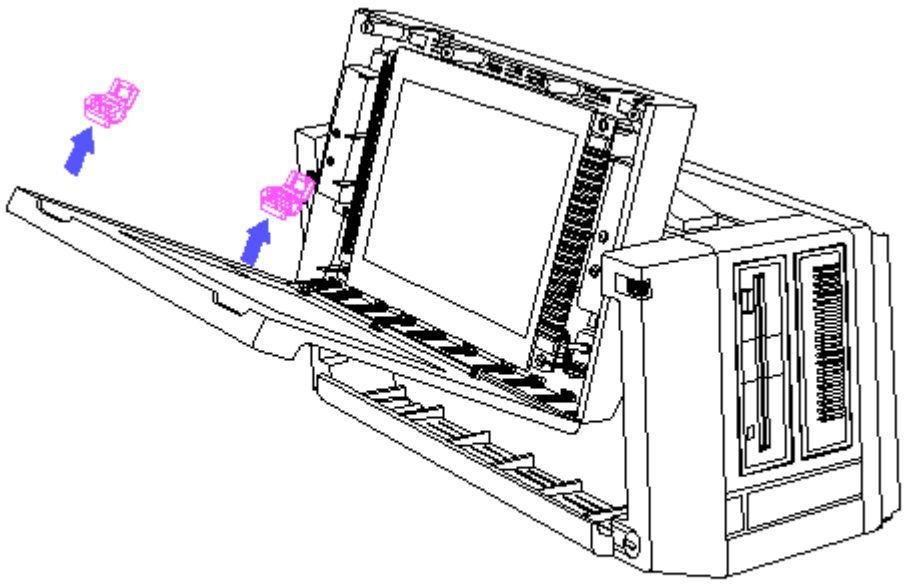

Figure 8-72. Removing the Latches

6. Locate the plasma display shown in Figure 8-73.

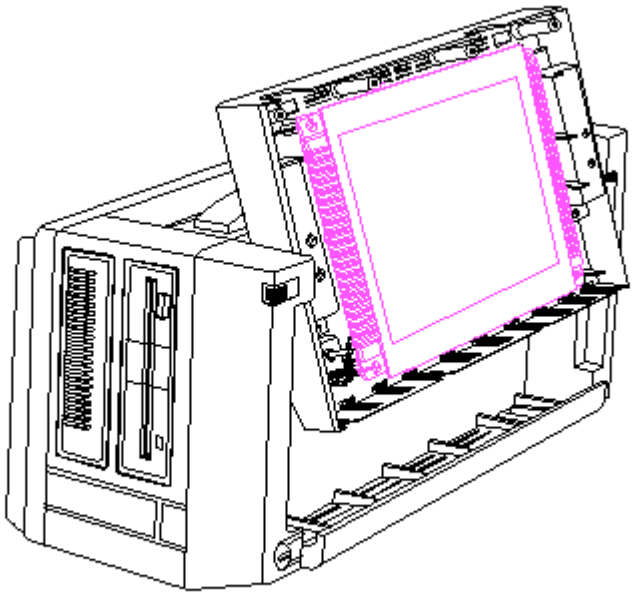

Figure 8-73. Plasma Display Location

7. Remove the four screws and washers that secure the plasma display to the display enclosure (Figure 8-74).

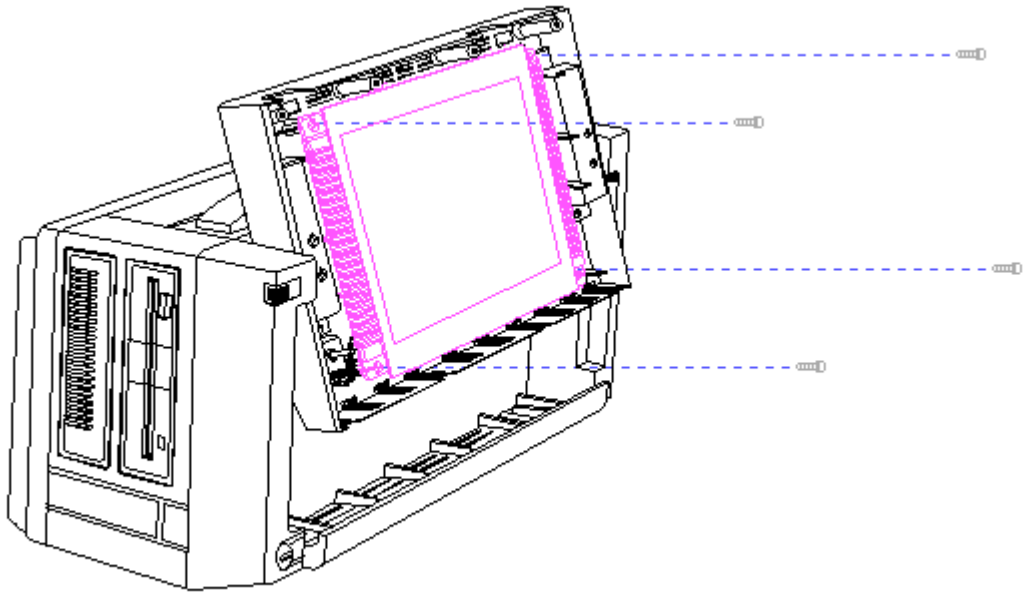

Figure 8-74. Removing the Screws

NOTE: The ground plate comes loose and may hang from the ground wires when the plasma display is removed.

8. Lift the plasma display away from the display ground bracket and tilt it forward to expose the cables.

9. Disconnect the ground plate from the ground wires and remove the grounding foil.

10. Disconnect the display cable, display power cable, and the brightness control knob assembly from the plasma display (Figure 8-75).

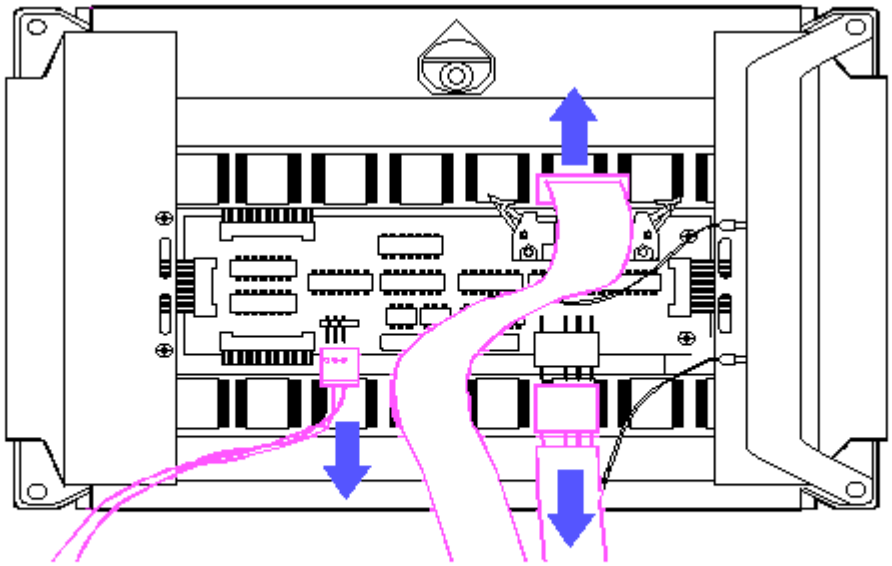

Figure 8-75. Disconnecting the Display Data Cable, Display Power Cable, and the Brightness Control Knob Assembly

11. Disconnect the display power cable ground wires from the plasma display (Figure 8-76).

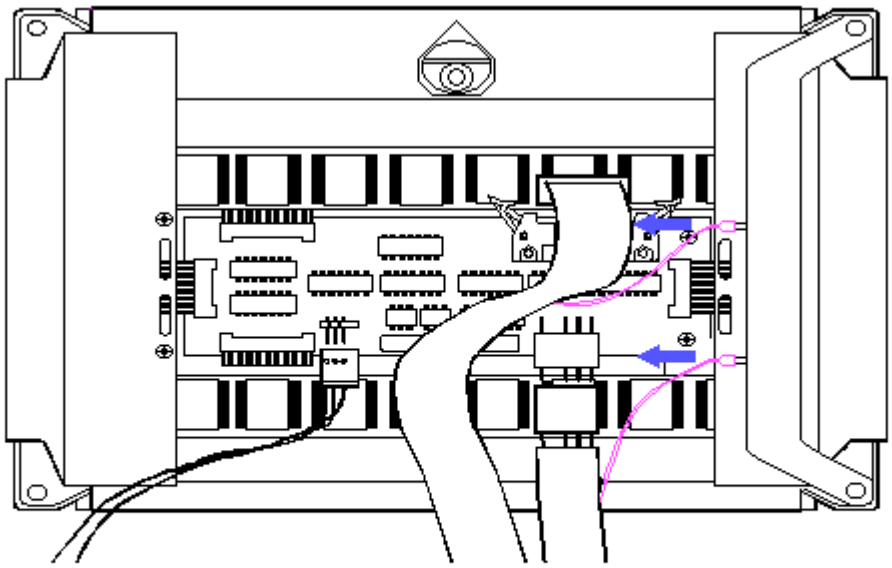

Figure 8-76. Disconnecting the Ground Wires

To replace the plasma display, reverse steps 1 through 11. As you replace the display bezel, replace the brightness control knob.

NOTE: If cleaning is required, use isopropyl alcohol.

Chapter 8.23 Plasma Display Filter

To remove the plasma display filter:

1. Complete the preparation procedure (see Section 8.2).
2. Complete steps 2 through 4 of Section 8.22.
3. Remove the filter by lifting it up and out of the plasma display enclosure as shown in Figure 8-77.

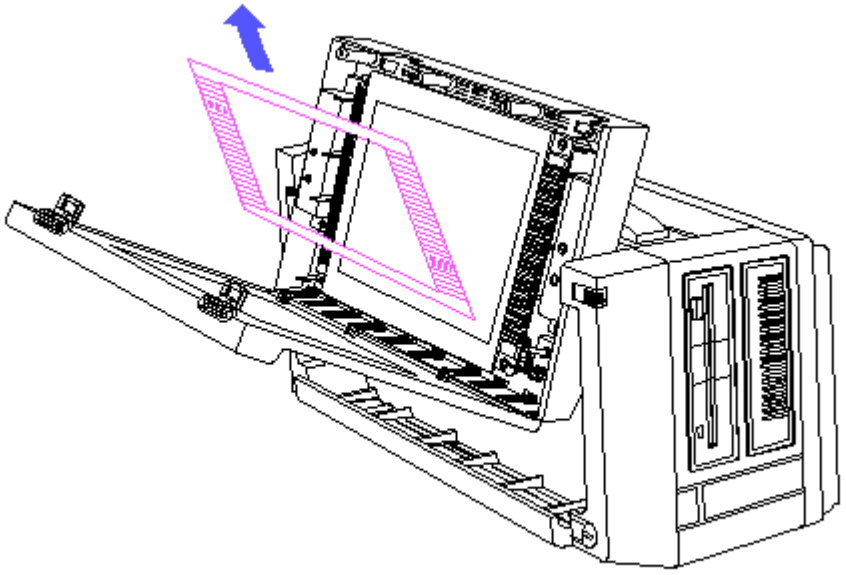

Figure 8-77. Removing the Plasma Display Filter

To replace the plasma display filter, reverse steps 1 through 3.

Chapter 8.24 Brightness Control Assembly

To remove the brightness control assembly:

1. Complete the preparation procedure (see Section 8.2).
2. Remove the plasma display (see Section 8.22).
3. Locate the brightness control assembly shown in Figure 8-78.

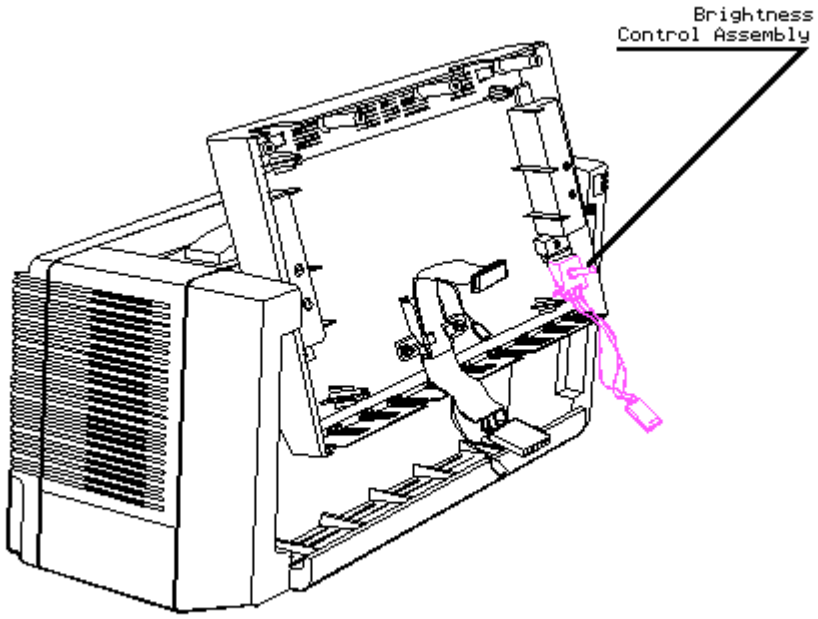

Figure 8-78. Brightness Control Assembly Location

4. Push the lower legs of the brightness control assembly upward, and snap the assembly out (Figure 8-79).

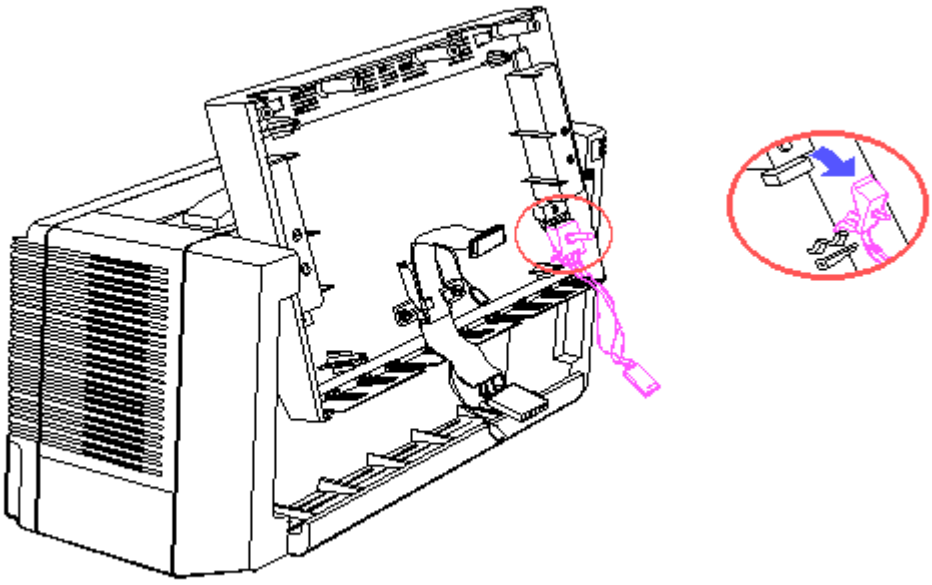

Figure 8-79. Removing the Brightness Control Assembly

To replace the brightness control assembly, reverse steps 1 through 4.

Chapter 8.25 Display Enclosure

To remove the display enclosure:

1. Complete the preparation procedure (see Section 8.2).

2. Remove the plasma display (see Section 8.22).

3. Remove the two screws that secure the strain relief clip to the display enclosure (Figure 8-80).

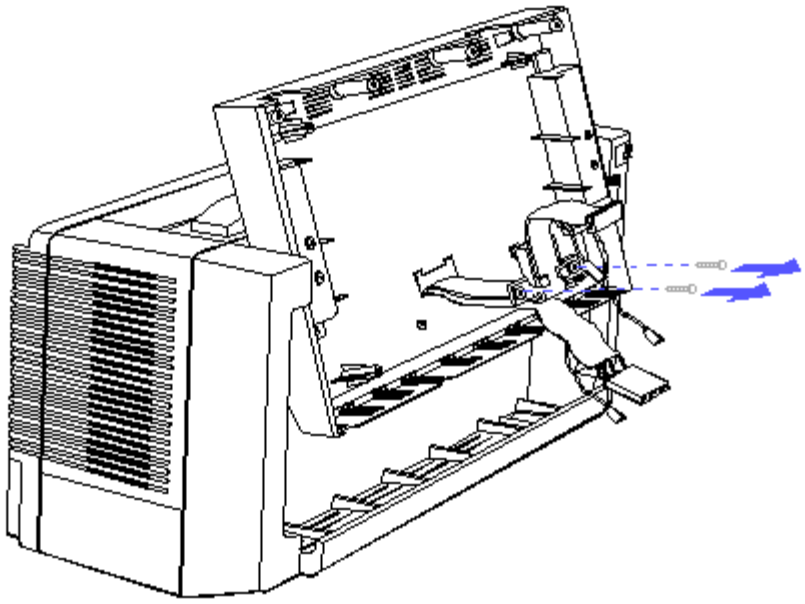

Figure 8-80. Removing the Strain Relief Clip Screws

4. Remove the display power cable and the display data cable from the strain relief clip (Figure 8-81).

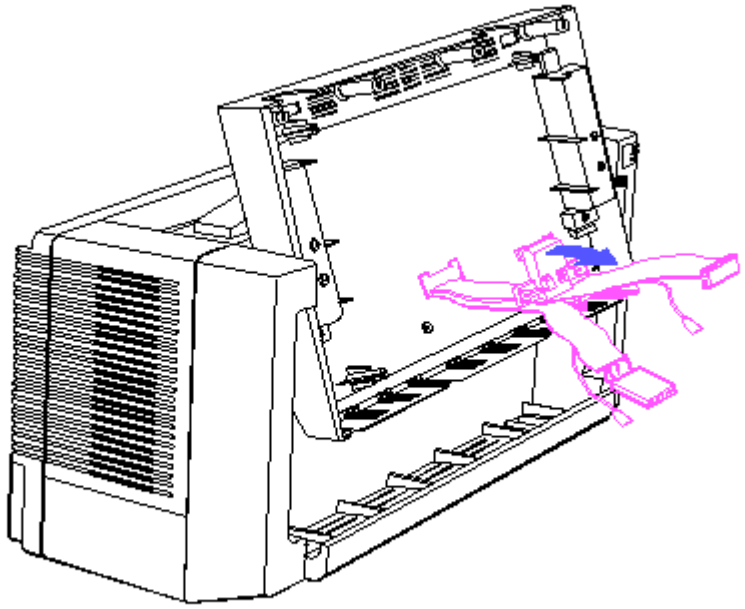

Figure 8-81. Removing the Display Cables

5. Observe that the display enclosure is attached to the main enclosure by two mandrels and two plasma display hinges (Figure 8-82).

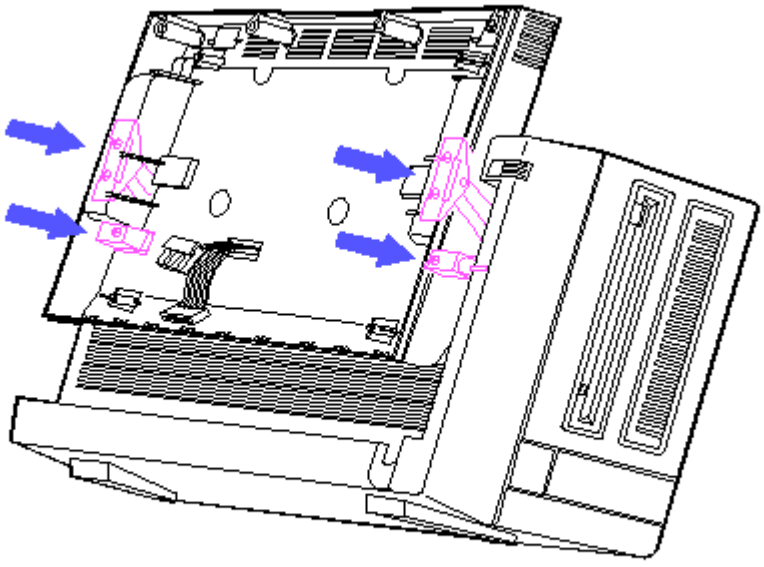

Figure 8-82. Mandrels and Plasma Display Hinges

6. Remove the one screw that secures each mandrel to the display enclosure (Figure 8-83).

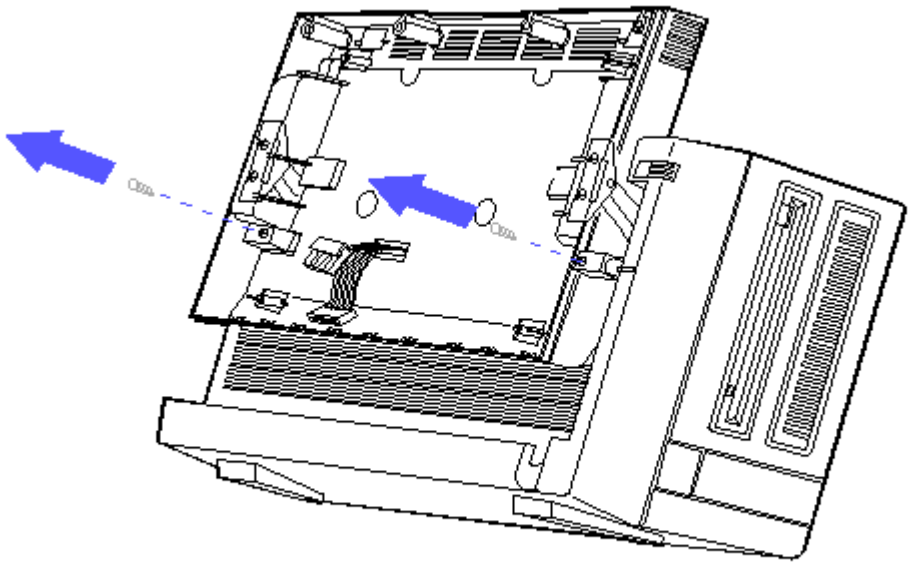

Figure 8-83. Removing the Mandrel Screws

7. Remove each mandrel from the display enclosure by pushing the mandrel toward the plasma display and lifting it out (Figure 8-84).

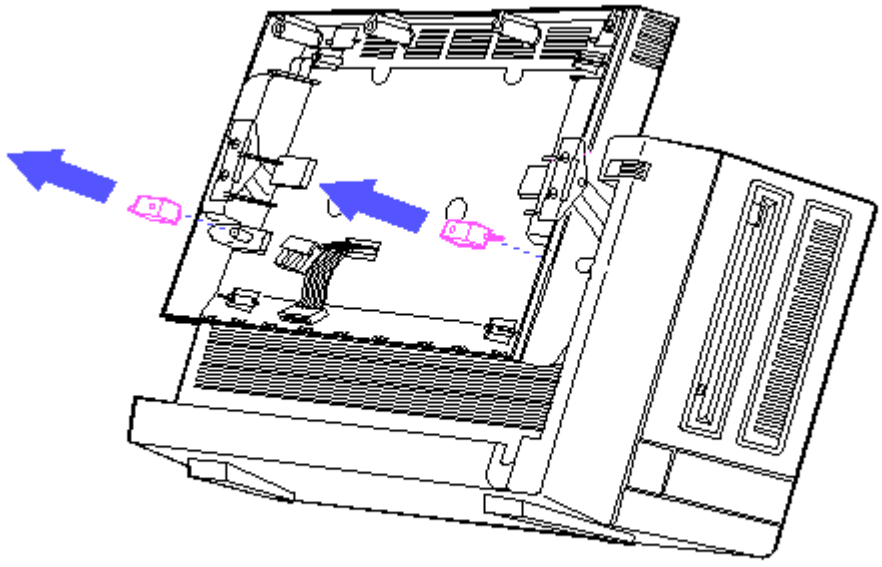

Figure 8-84. Removing the Mandrels

8. Remove the four screws that secure the display enclosure to the plasma display hinges (Figure 8-85).

NOTE: Removing the two screws from the left side of the display enclosure (as

you face the display enclosure) will also remove the display ground (Figure 8-85).

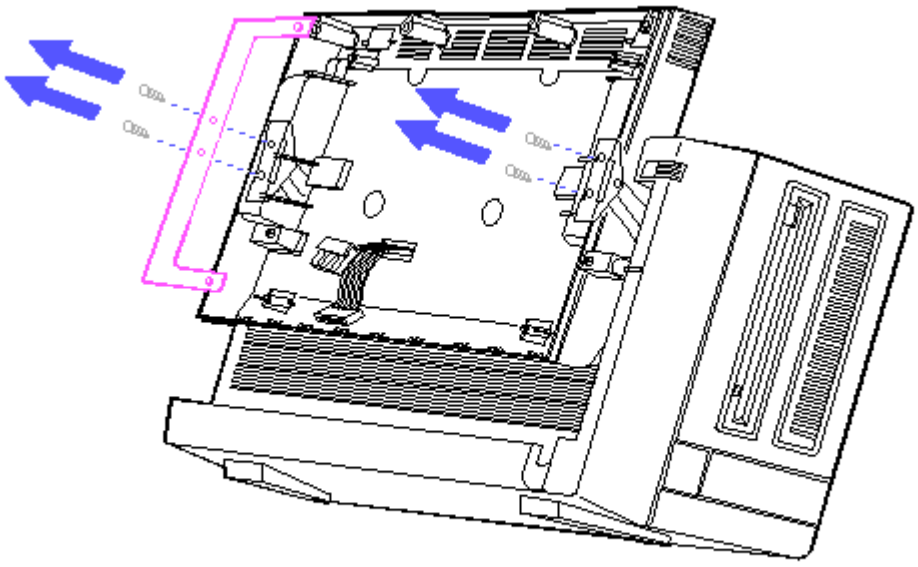

Figure 8-85. Removing the Plasma Display Hinge Screws and Display Ground Bracket

9. Lift the display enclosure away from the main enclosure, being careful to guide the display power cable and display data cable through the slot in the display enclosure (Figure 8-86).

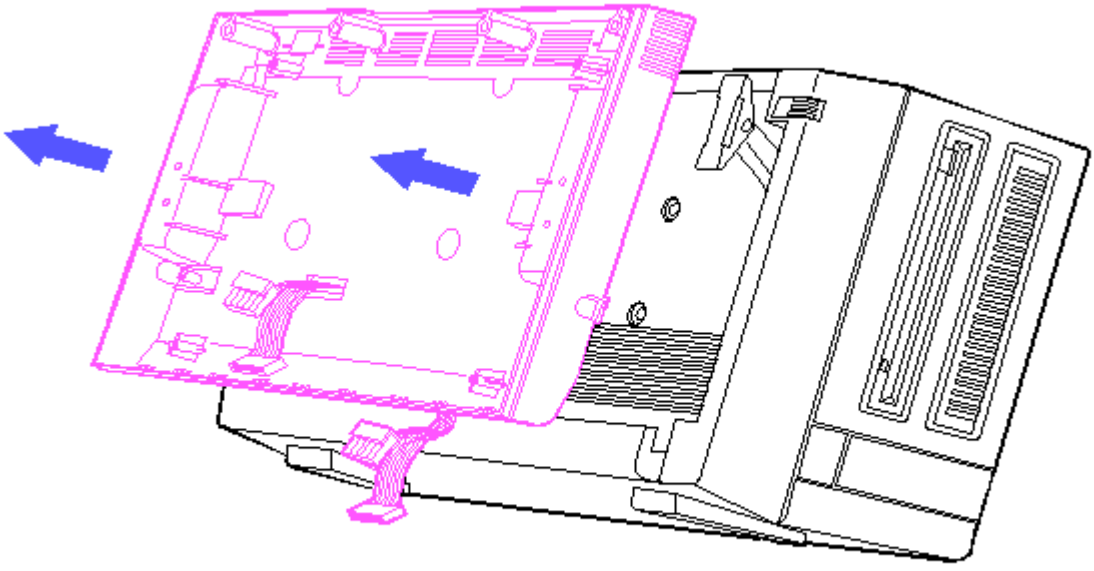

Figure 8-86. Lifting the Display Enclosure Away from the Main Enclosure

10. Notice that the rollers are still located in the grooves (Figure 8-87).

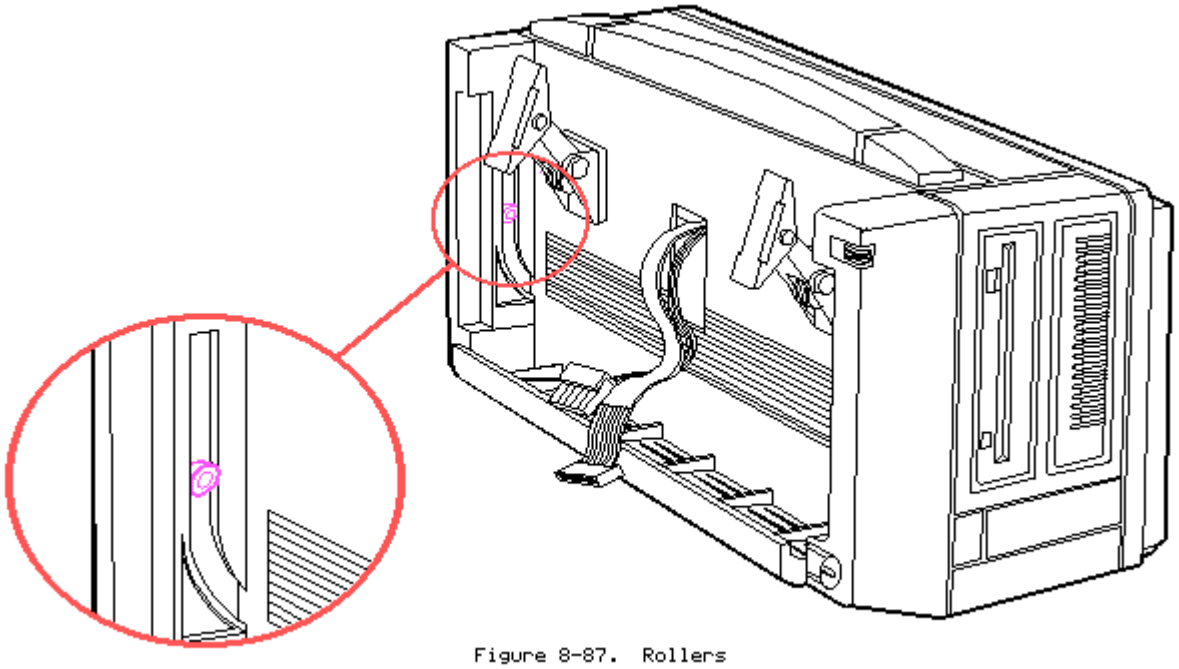

Figure 8-87. Rollers

11. Remove the rollers from the grooves, place them on the mandrels, and set them aside.

To replace the display enclosure:

1. Guide the display cable assembly back through the slot in the main enclosure.

2. With the display enclosure in the down position, guide each roller and mandrel back into position and replace the screw.

3. While aligning the display enclosure with the plasma display hinges with one hand, replace the four screws that secure the display enclosure to the plasma display hinges.

NOTE: Slight movement of the display enclosure may be required to align the roller with the groove.

4. Reverse steps 2 through 4 in the removal part of this procedure.

5. Replace the brightness control knob.

Chapter 8.26 Display Power Cable Assembly and Display Data Cable Assembly

To remove the display power cable assembly or the display data cable assembly, or both:

1. Complete the preparation procedure (see Section 8.2).

2. Remove the rear panel (see Section 8.4).

3. Remove the 32 bit memory/modem interface board, if installed (see Section 8.5).

4. Remove the system board (see Section 8.10).

5. Remove the plasma display controller board (see Section 8.11).

6. Remove the plasma display (see Section 8.18).

7. Remove the display enclosure (see Section 8.20)

8. Locate the display power cable assembly and the display data cable assembly shown in Figure 8-88.

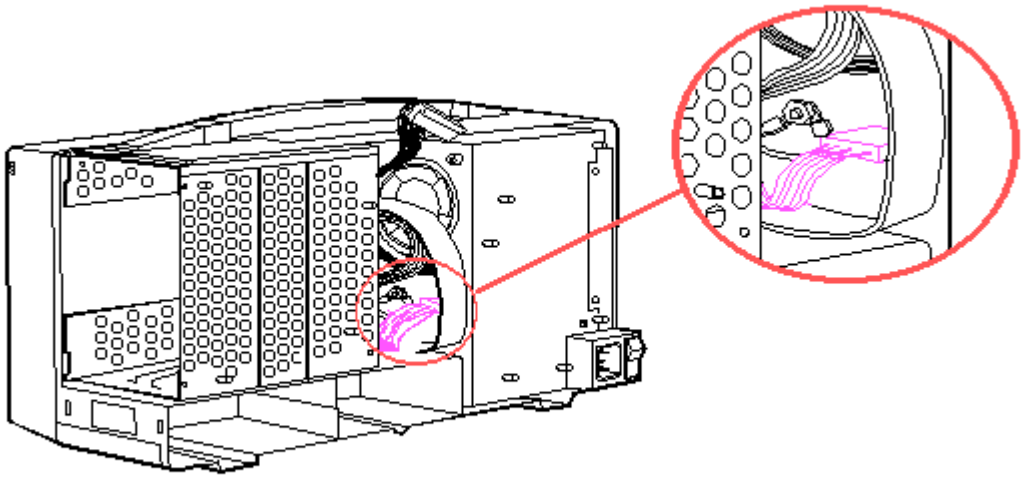

Figure 8-88. Display Cables Location

9. Disconnect the plasma display power cable from the power supply (Figure 8-89).

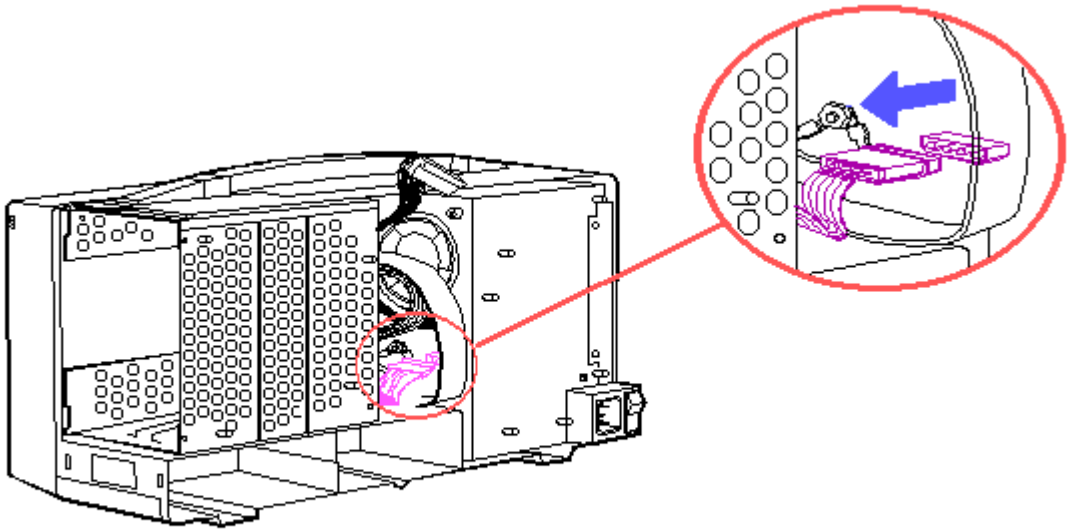

Figure 8-89. Disconnecting the Plasma Display Power Cable

10. Disconnect the display data cable and display power cable ground wires from the power supply (Figure 8-90).

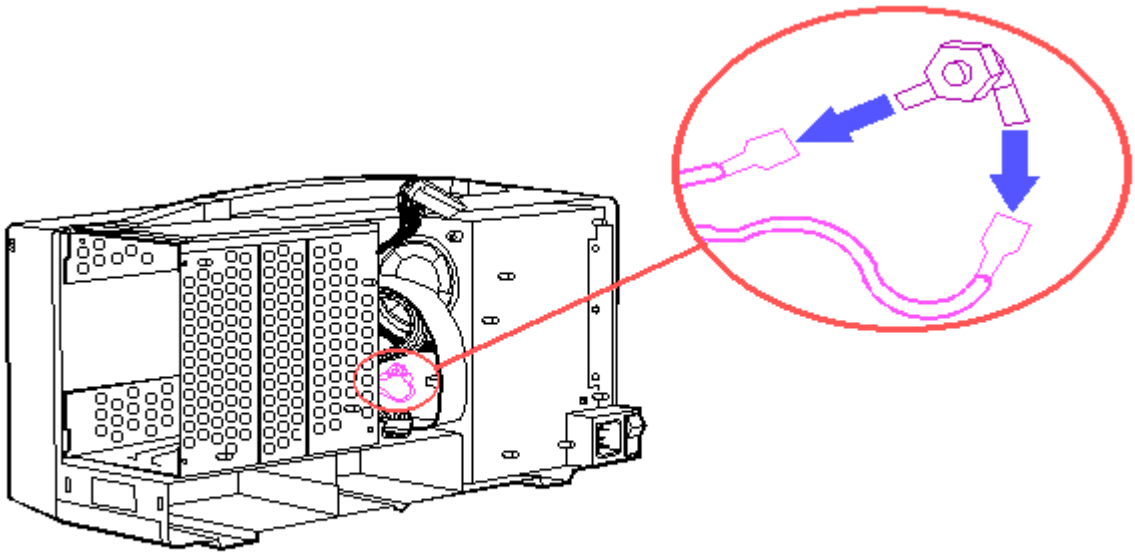

Figure 8-90. Disconnecting the Ground Wires

11. Remove the screw that secures the strain relief bracket to the main enclosure (Figure 8-91).

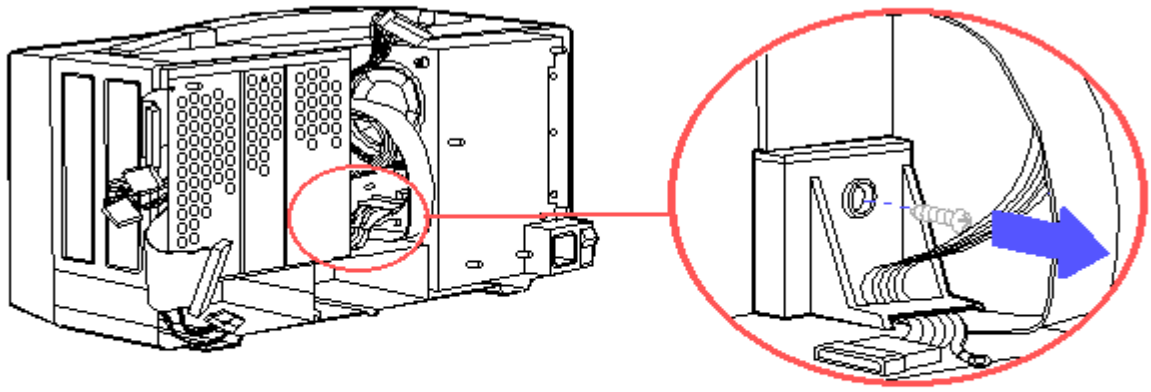

Figure 8-91. Removing the Strain Relief Bracket Screw

12. Remove the display data cable connector from the plasma display controller board compartment (Figure 8-92).

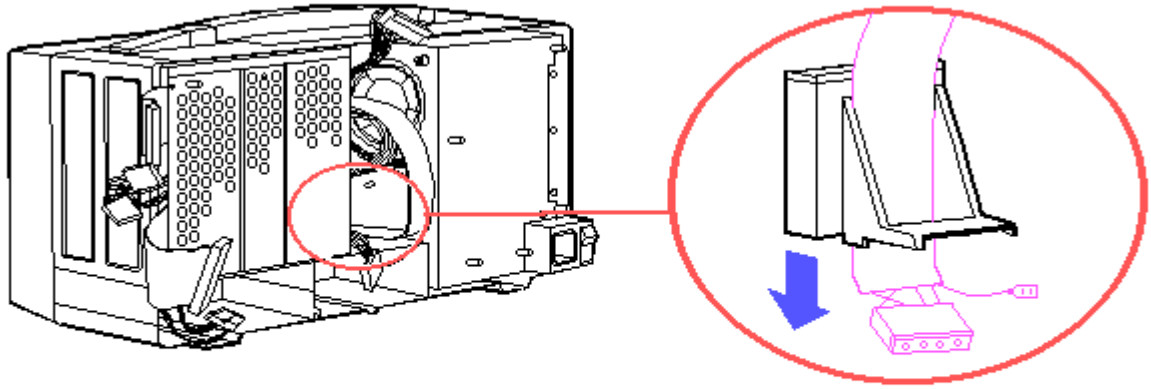

Figure 8-92. Removing the Display Data Cable Connector

13. Guide the display power cable assembly and the display data cable assembly through the opening in the main enclosure wall (Figure 8-93).

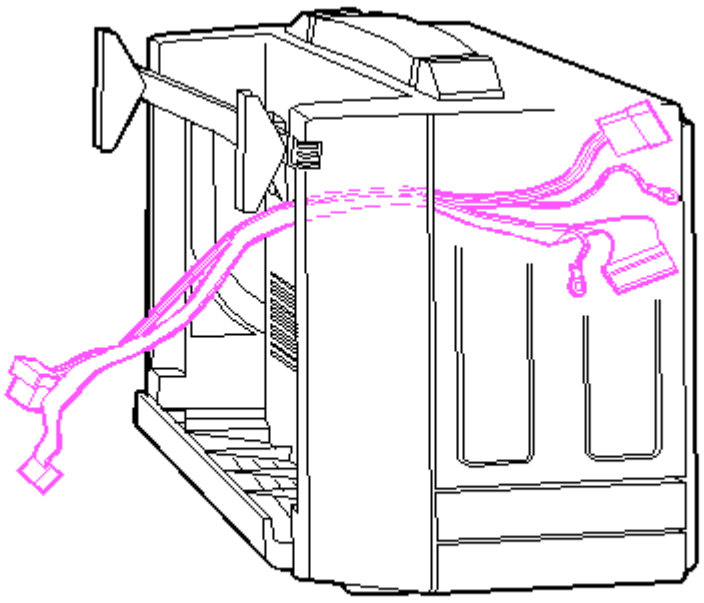

Figure 8-93. Guiding the Display Cables Through the Main Enclosure Openings

NOTE: For future replacement, notice the proper orientation of the display power cable assembly and the display data cable assembly.

To replace the display data cable assembly, reverse steps 1 through 13.

Chapter 8.27 Handle and Spreader Plate

To remove the handle and spreader plate:

1. Complete the preparation procedure (see Section 8.2).
2. Remove the rear panel (see Section 8.4).
3. Remove the interface connector cover, if installed (see Section 8.5).
4. Remove the 32 bit memory/modem interface board, if installed (see Section 8.8).
5. Remove the system board assembly (see Section 8.14).
6. Remove the mass storage device subassembly (see Section 8.16).
7. Remove the mass storage device enclosure (see Section 8.20).

NOTE: The handle can be removed at this point. To remove the handle and spreader plate, proceed with the following steps.

8. Remove the display enclosure (see Section 8.25).
9. Locate the plasma display hinges shown in Figure 8-94.

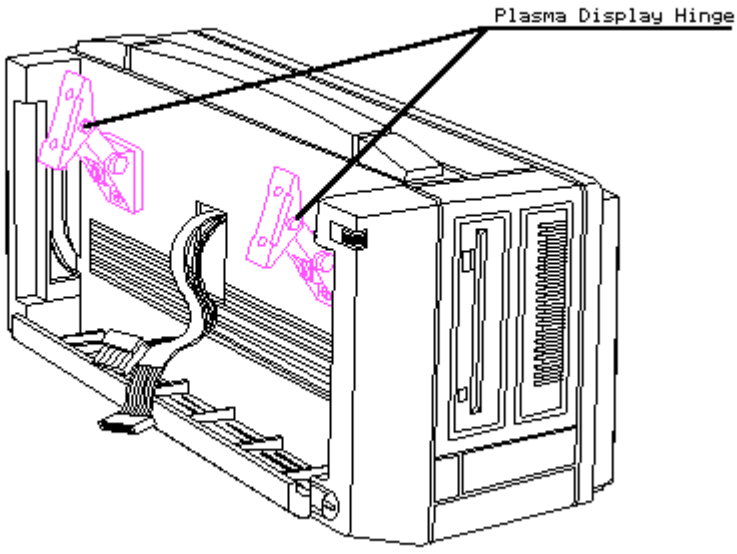

Figure 8-94. Plasma Display Hinge Location

10. Remove the four screws that secure the plasma display hinges to the main enclosure (Figure 8-95).

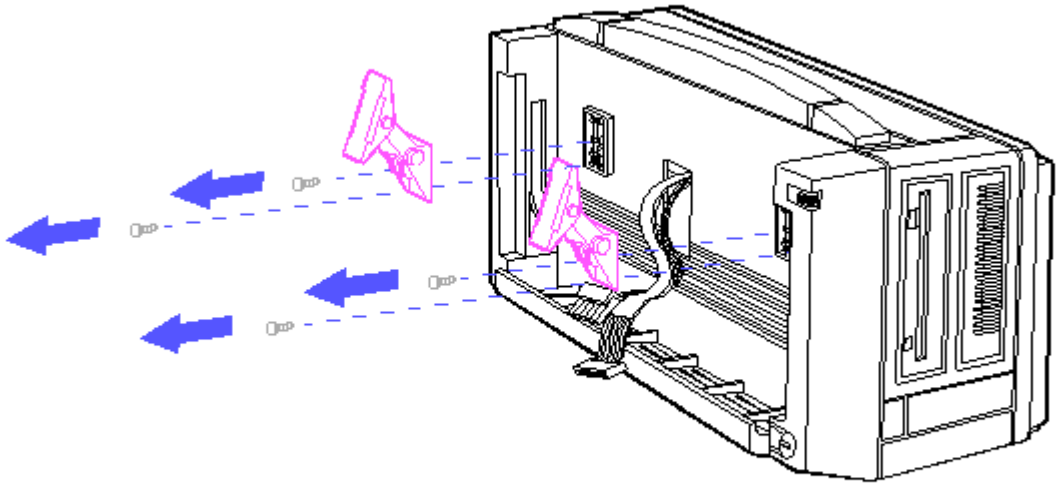

Figure 8-95. Removing the Plasma Display Hinge Screws

11. Locate the handle and spreader plate shown in Figure 8-96.

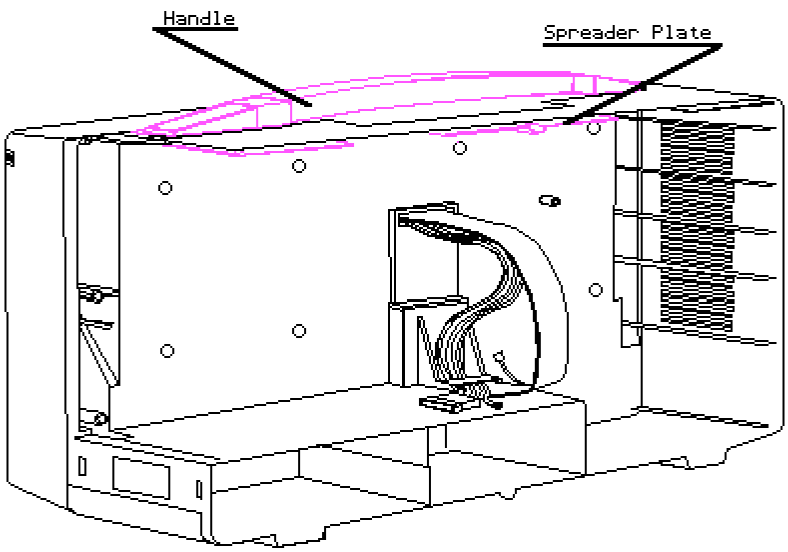

Figure 8-96. Handle and Spreader Plate Location

12. Remove the two screws that secure the handle and spreader plate to the computer chassis. Remove the handle and spreader plate (Figure 8-97).

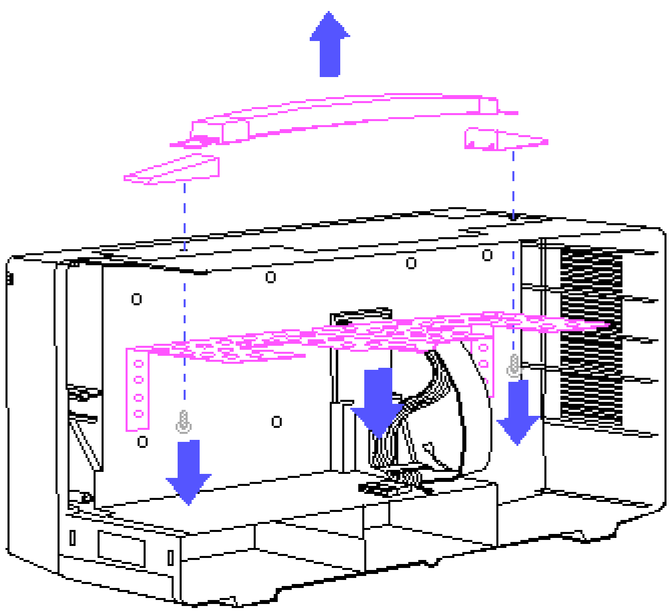

Figure 8-97. Removing the Handle and Spreader Plate

To replace the handle and spreader plate, reverse steps 1 through 12.

Chapter 8.28 Battery

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WARNING

This computer contains a lithium battery that may explode if mistreated. Do not abuse, disassemble, or dispose of in fire.

Use only replacement batteries supplied by Compaq Computer Corporation (PN 107786-001)

Disposal of the lithium battery should be accomplished within compliance of local regulations or returned to Compaq Computer Corporation by established parts return methods.

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To remove the battery:

1. Complete the preparation procedure (see Section 8.2).

2. Remove the rear panel (see Section 8.4).

3. Remove the interface connector cover, if installed (see Section 8.5).

4. Remove the 32 bit memory/modem interface board, if installed (see Section 8.8).

5. Remove the system board assembly (see Section 8.14).

6. Locate the battery shown in Figure 8-98.

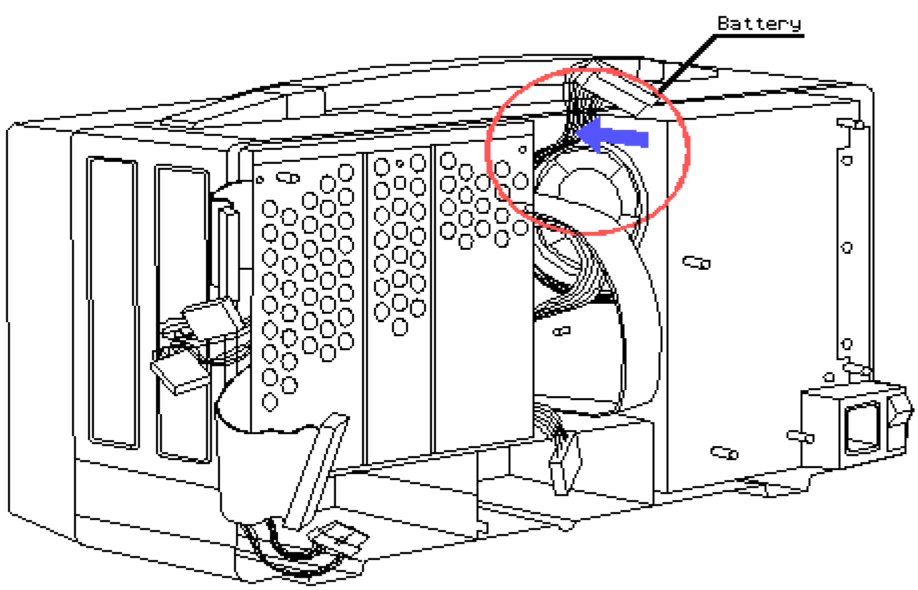

Figure 8-98. Battery Location

7. Remove the battery as shown in Figure 8-99.

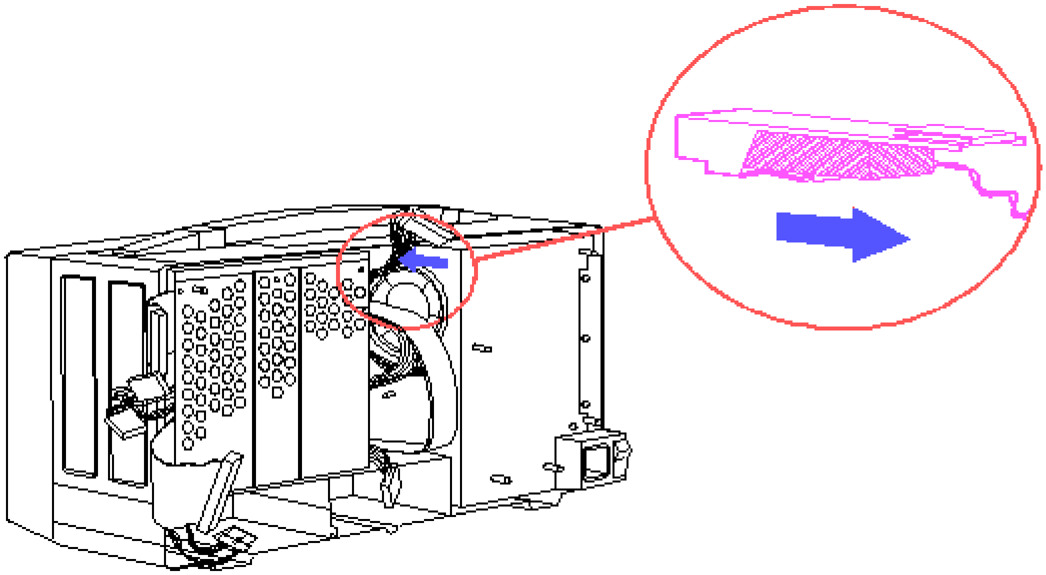

Figure 8-99. Removing the Battery

To replace the battery, reverse steps 1 through 7.

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WARNING

Use caution when replacing the lithium battery. Be sure the replacement battery is supplied by Compaq Computer Corporation and identified by PN 107786-001.

>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

NOTE: UPS will not airship (UPS blue label) lithium batteries.

Chapter 8.29 Expansion Unit

To remove the expansion unit from the computer:

1. Complete the preparation procedure (see Section 8.2).

2. Locate the expansion unit shown in Figure 8-100.

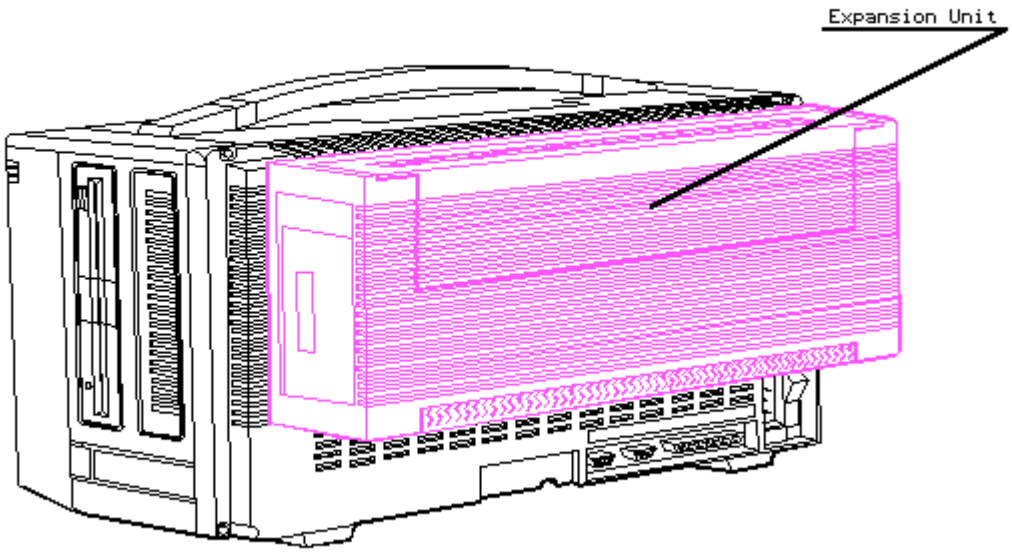

Figure 8-100. Expansion Unit Location

3. Place the computer, keyboard side down, on a level surface with the rear panel facing up and the handle facing away from you.

4. Pull out on the locking bar that secures the expansion unit to the computer chassis (Figure 8-101).

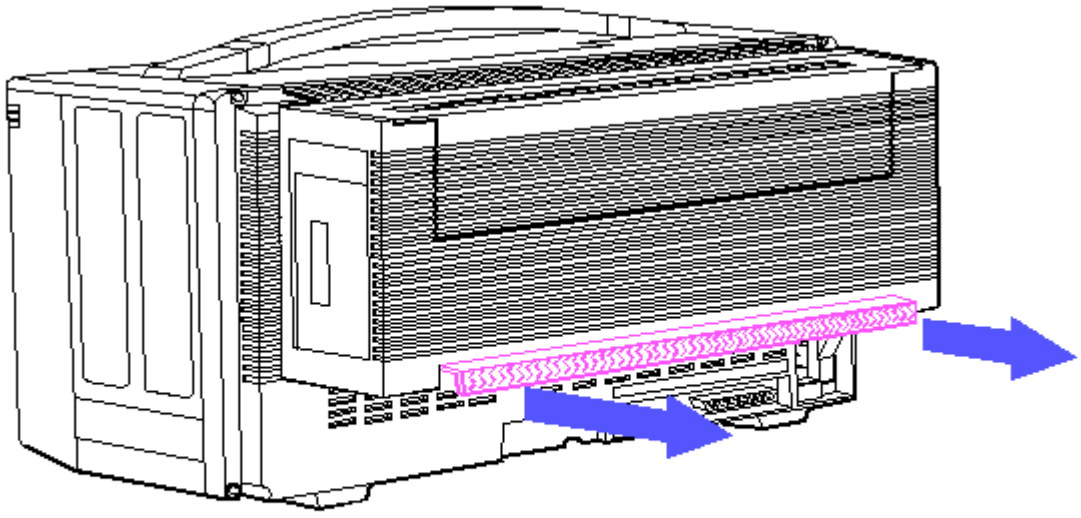

Figure 8-101. Pulling the Locking Bar on the Expansion Unit

5. Grasp the expansion unit on each side.

6. Pull the expansion unit up and away from the computer (Figure 8-102).

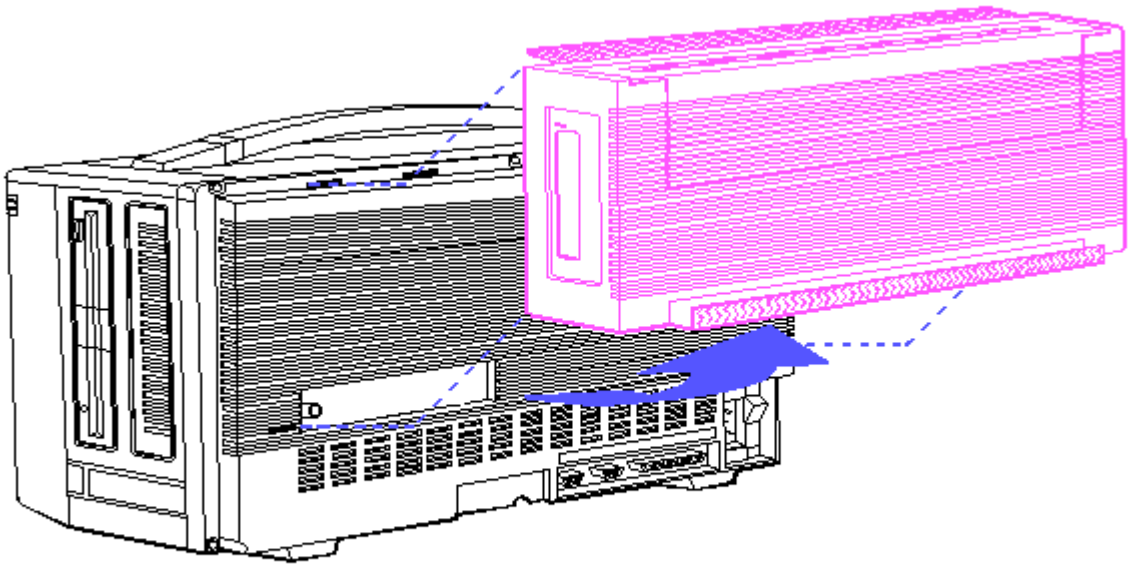

Figure 8-102. Removing the Expansion Unit

7. Insert a flat blade screwdriver in each of the four notches on the expansion unit and gently pop up the expansion unit cover (Figure 8-103).

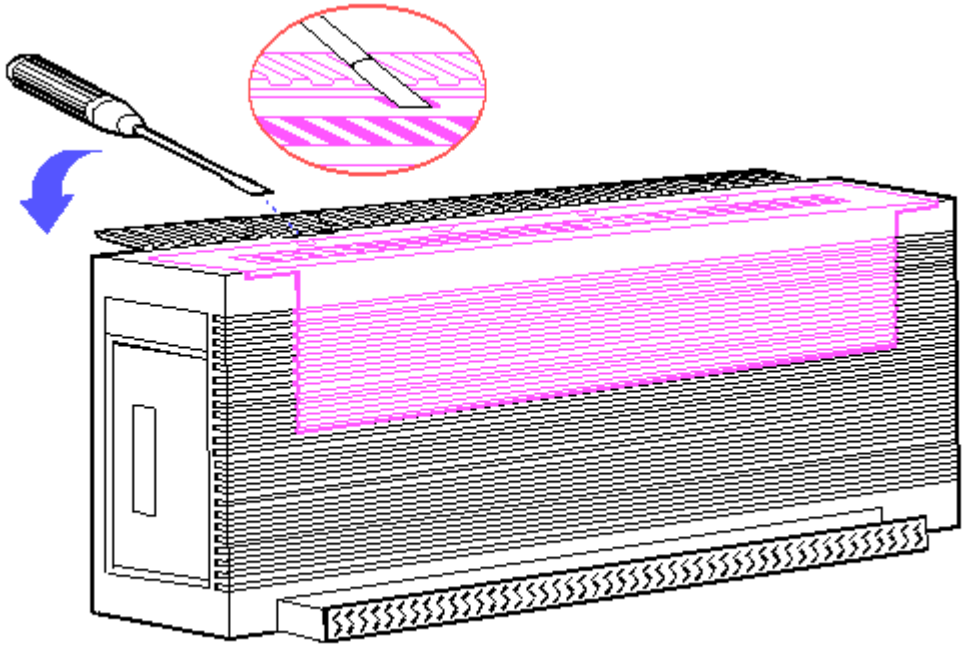

Figure 8-103. Popping Up the Expansion Unit Cover

8. Remove the expansion unit cover (Figure 8-104).

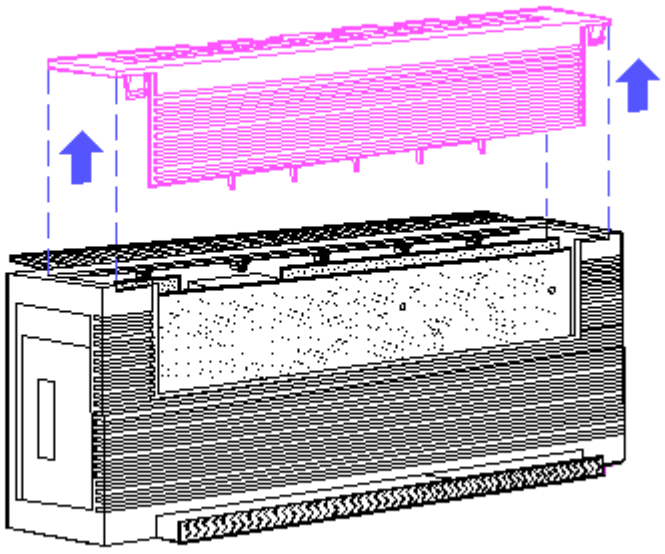

Figure 8-104. Opening the Expansion Unit Cover

9. Remove the retaining screw that secures each optional expansion board to the expansion unit. Gently lift the board(s) up and out of its connector on the circuit board (Figure 8-105).

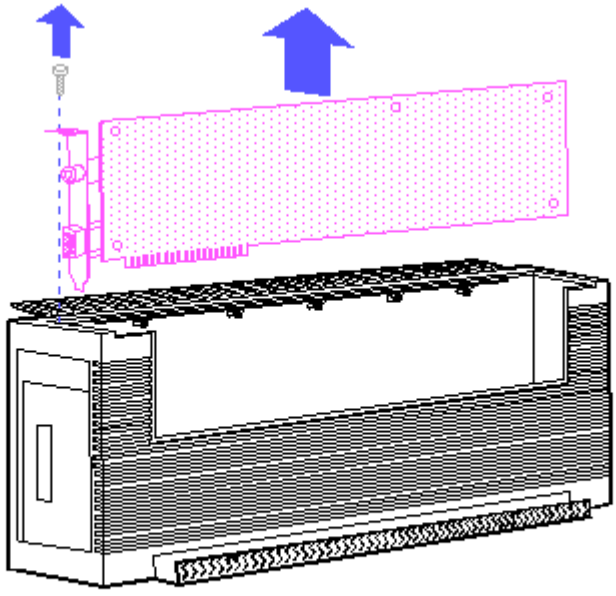

Figure 8-105. Removing the Optional Expansion Board Screws

To replace the expansion unit, reverse steps 1 through 9.

Chapter 8.30 300/600 Megabyte Fixed Disk Drive Expansion Unit

Preparation Procedures

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

1. Turn off the computer.
2. Turn off the 300/600 Megabyte Fixed Disk Drive Expansion Unit (hereafter referred to as the fixed disk drive expansion unit).
3. Disconnect all power to the computer and the fixed disk drive expansion unit.
4. Disconnect the signal cable from the fixed disk drive expansion unit to the computer.
5. Place the fixed disk drive expansion unit on a flat surface with the back of the unit facing you.
6. Remove the retaining screws from the rear of the unit (Figure 8-106).

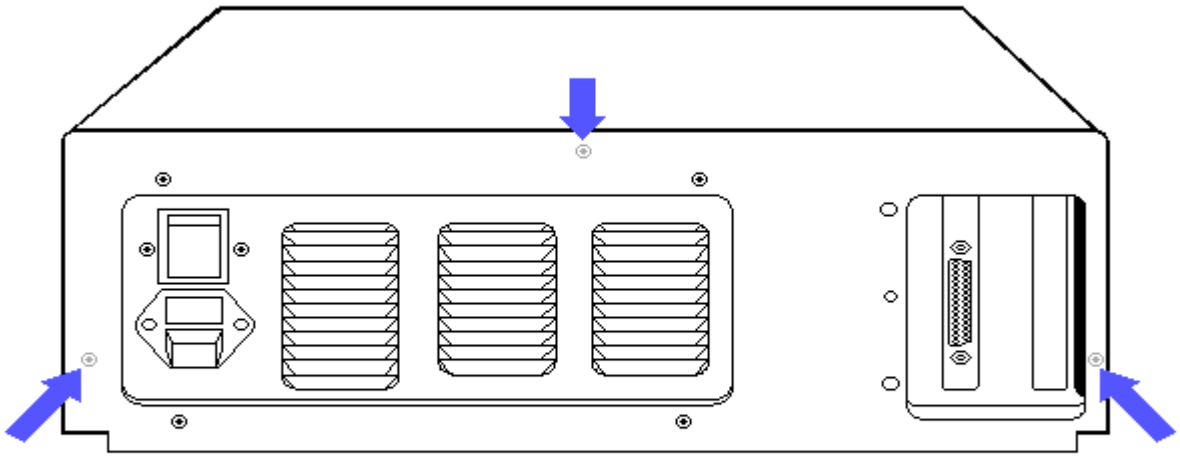

Figure 8-106. Removing the Retaining Screws

7. Facing the front of the fixed disk drive expansion unit, slide the cover forward until it stops. Then lift the cover up and away from the unit.

Fixed Disk Drive

To remove the fixed disk drive from the fixed disk drive expansion unit, complete the following steps.

1. Complete the preparation procedures at the beginning of Section 8-30.

2. Disconnect the 20 pin and 34 pin signal cables from the external interface adapter board in the fixed disk drive expansion unit (Figure 8-107).

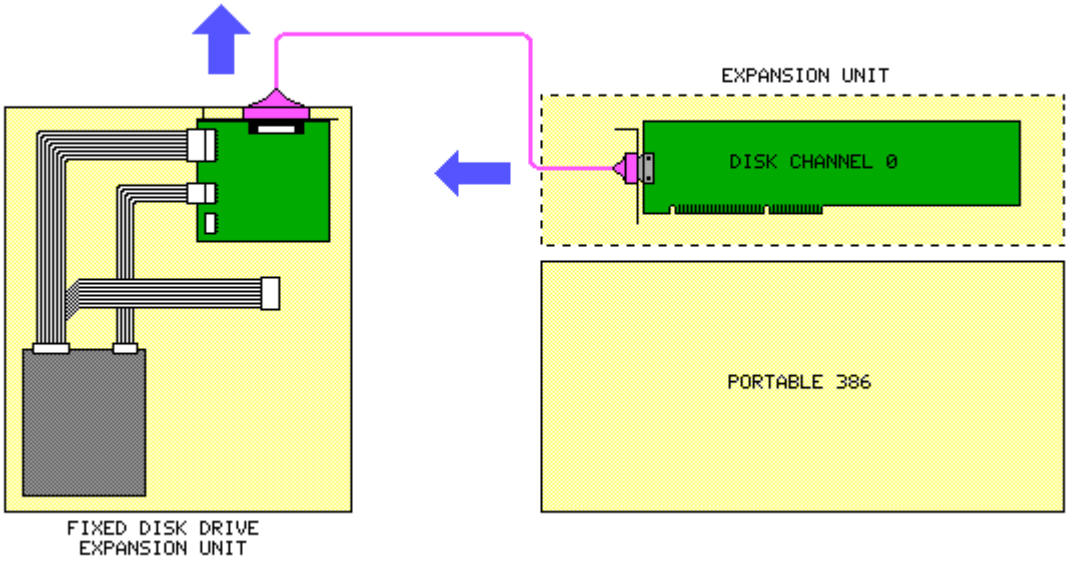

Figure 8-107. Removing the Signal Cables from the External Interface Adapter Board

3. Disconnect the universal drive power cable from the external interface adapter board in the fixed disk drive expansion unit (Figure 8-108).

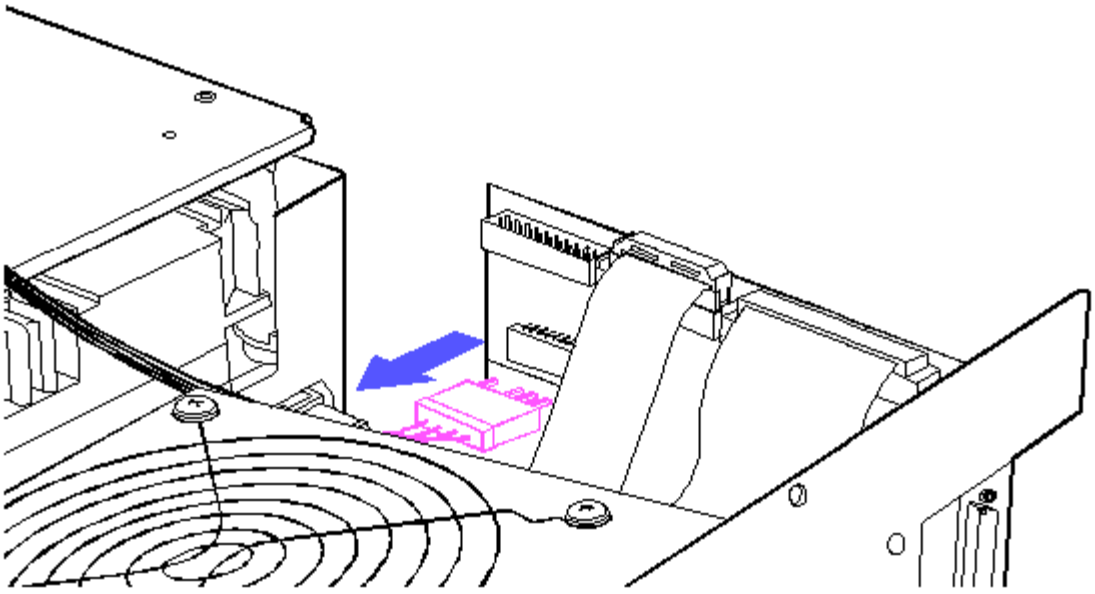

Figure 8-108. Disconnecting the Universal Drive Power Cable

4. Remove the three retaining screws securing the fixed disk drive to the fixed disk drive expansion unit (Figure 8-109).

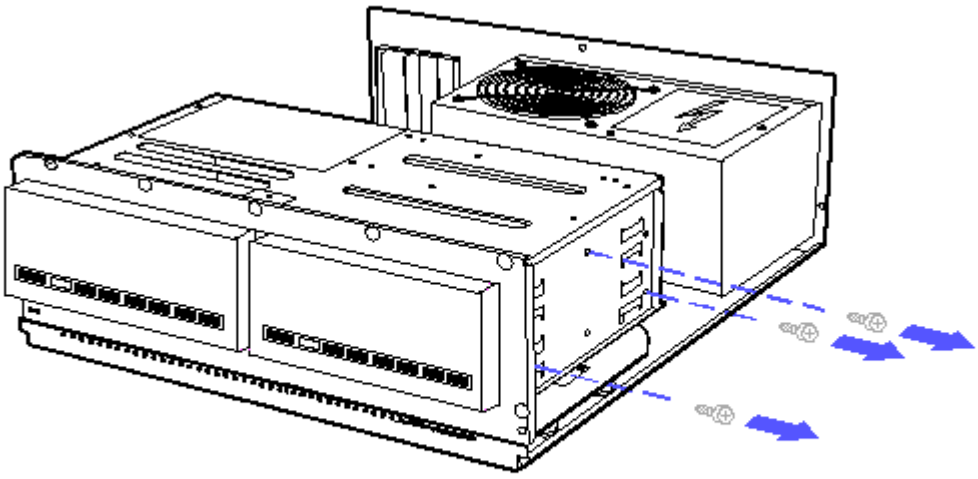

Figure 8-109. Removing the Retaining Screws

5. Carefully slide the fixed disk drive out of the fixed disk drive expansion unit housing.

NOTE: A terminating resistor must be installed on a 300 megabyte fixed disk drive if:

- The fixed disk drive is in a 300 Megabyte Fixed Disk Drive Expansion Unit.
- The fixed disk drive is the secondary drive in a 600 Megabyte Fixed Disk Drive Expansion Unit.

To remove the terminating resistor, complete the following steps:

1. Locate and remove the terminating resistor from the fixed disk drive using needlenosed pliers (Figure 8-110).

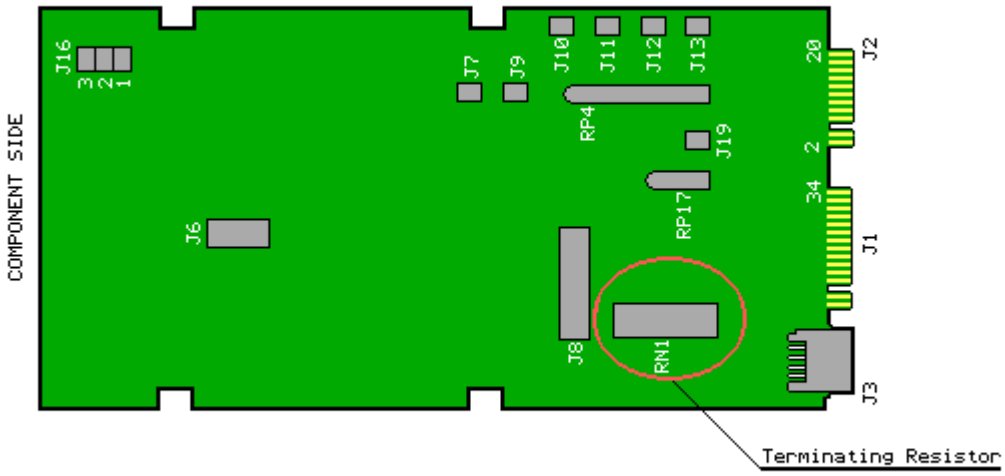

Figure 8-110. Terminating Resistors

NOTE: Terminating resistors are located in different positions on the drive depending on the manufacturer.

To replace the fixed disk drive in the fixed disk drive expansion unit, reverse steps 1 through 5.

Power Supply

To remove the power supply from the fixed disk drive expansion unit, complete the following steps.

1. Complete the preparation procedures at the beginning of Section 8.30.

2. Remove the four screws securing the power supply assembly to the fixed disk drive expansion unit chassis (Figure 8-111).

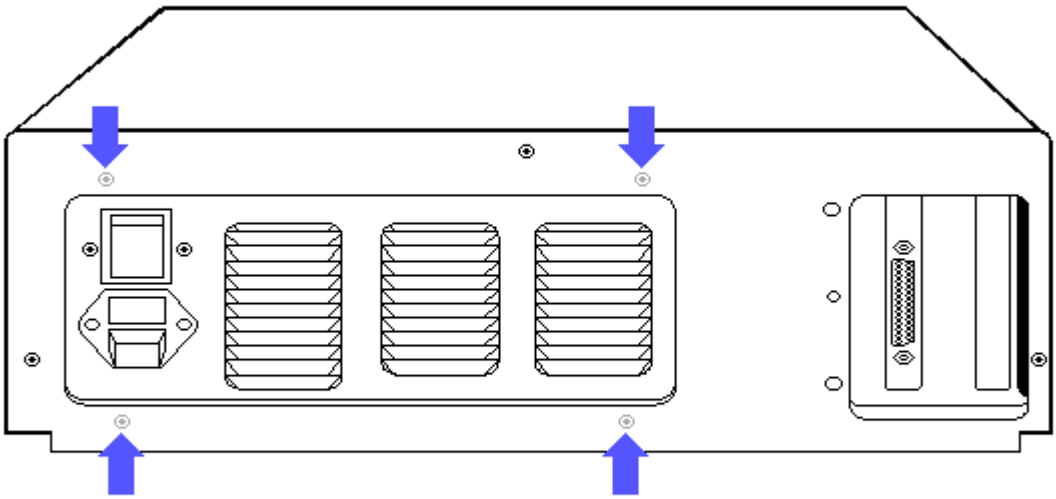

Figure 8-111. Removing the Power Supply Screws

3. Slide the power supply assembly 1/2 inch to 1 inch (1.27 to 2.54 cm) toward the fixed disk drive housing (Figure 8-112). Be sure to clear the tabs on the bottom chassis. These tabs hold the power supply assembly in place.

4. Shift the power supply assembly away from the external adapter board to access the connector on the board.

5. Disconnect the power supply connector from the external interface adapter board and lift the power supply assembly out of the chassis.

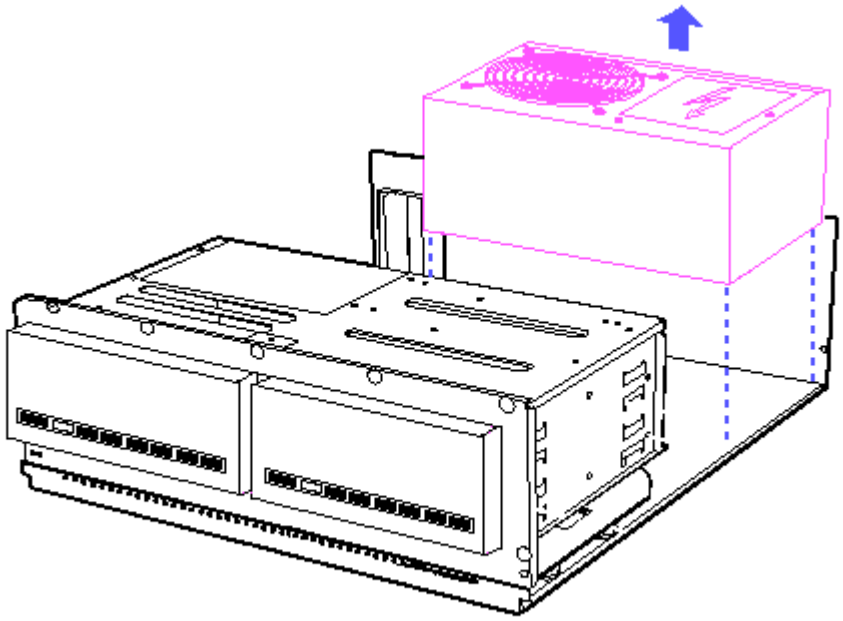

Figure 8-112. Removing the Power Supply Assembly

To replace the power supply assembly, reverse steps 1 through 5.

External Interface Adapter Board

To remove the external interface adapter board from the fixed disk drive expansion unit, complete the following steps:

1. Complete the preparation procedures at the beginning of Section 8.30.

2. Disconnect the 20 pin and 34 pin signal cables from the external interface adapter board (Figure 8-113).

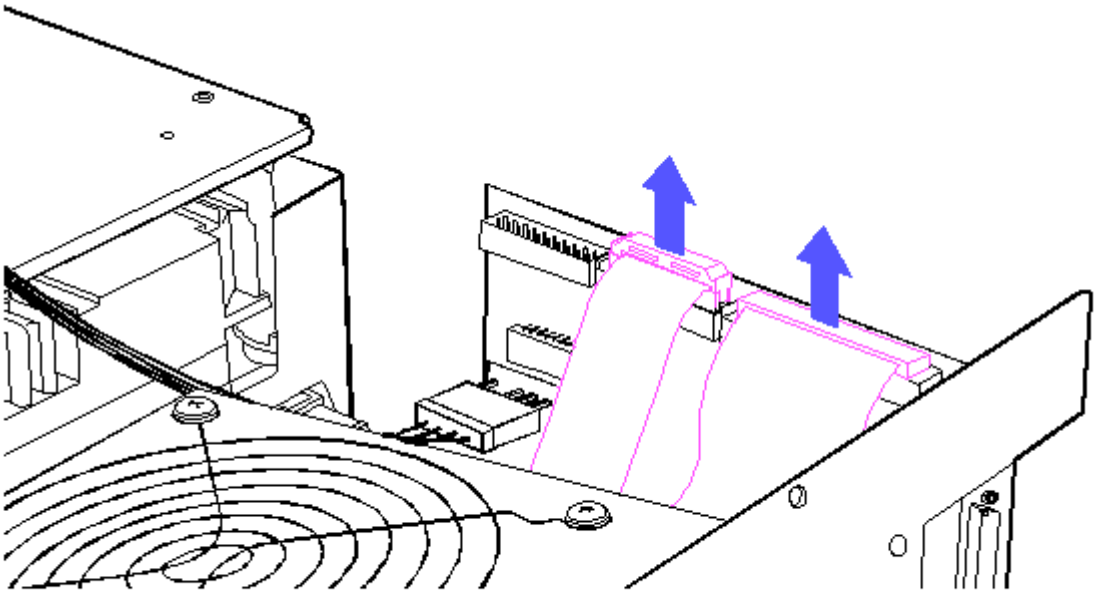

Figure 8-113. Disconnecting the Signal Cables

3. Disconnect the universal drive power and power supply cables from the external interface adapter board (Figure 8-114).

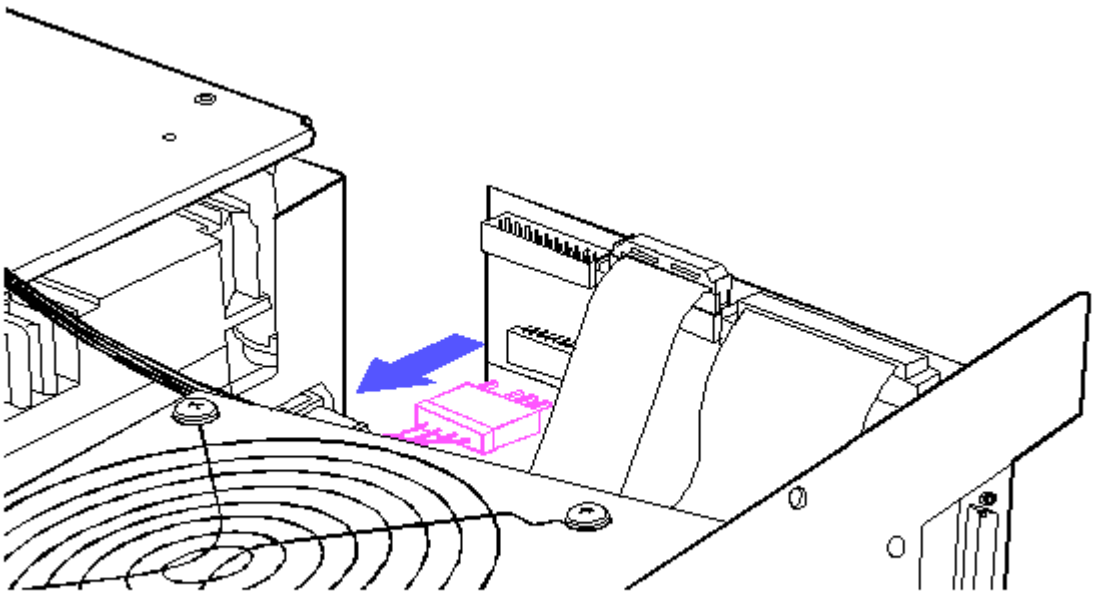

Figure 8-114. Disconnecting the Power Cables

4. Remove the external interface adapter board.

NOTE: Inspect the new external interface adapter board for shipping damage before installing.

To replace the external interface adapter board, reverse steps 1 through 4.

NOTE: For internal and external switch settings for the 300/600 Megabyte Fixed Disk Drive Expansion Unit, refer to Chapter 9, "Jumper and Switch Settings."

Chapter 9. Jumper and Switch Settings

Chapter 9.1 Introduction

This chapter provides jumper and switch settings for the COMPAQ PORTABLE 386 Personal Computer. When using the tables in this chapter, remember that the default settings shown are set for the system as configured by Compaq Computer Corporation. These settings need to be changed only when the system configuration is changed.

If the jumpers are changed in a COMPAQ PORTABLE 386 Personal Computer, the SETUP program must be run to change the system configuration information stored in CMOS memory. Failure to run this procedure may result in Power On Self Test errors.

The COMPAQ PORTABLE 386 Personal Computer has a configuration label, located on the inside of the rear panel, that shows the computers jumper settings.

Chapter 9.2 System Board

The COMPAQ PORTABLE 386 Personal Computer system board is a multifunctional board that provides configuration capability selections including:

- Parallel Interface Options
- Memory Size
- System Operating Speed
- Plasma Display Mode
- Serial Interface Options

The system board jumper settings are factory set for compatibility with most system applications. The functional capability of each jumper operates as follows:

- E1, E2, and E7 set the parallel interface options.
- E3, E4, E8, and E9 set asynchronous communications (serial) interface options.
- E5 and E6 enable or disable the fixed disk drive and indicate whether the primary or secondary I/O address is used.
- E13, E14, E15, E16, and E17 indicate the total amount of 32 bit RAM installed and determine how much RAM is to be used as base memory.
- E19 enables or disables the fail safe timer.
- E20 indicates whether or not an 80387 coprocessor is installed.
- E21 selects either the AUTO or HIGH speed mode at power on.
- E23 selects the plasma display mode at power on.

NOTE: The following jumper settings are reserved:

E12, Pins 1 and 2
E18, Pins 2 and 3
E22, Pins 2 and 3
E24, Pins 1 and 2
E25, Pins 1 and 2

Figure 9-1 shows the jumper locations on the COMPAQ PORTABLE 386 system board.

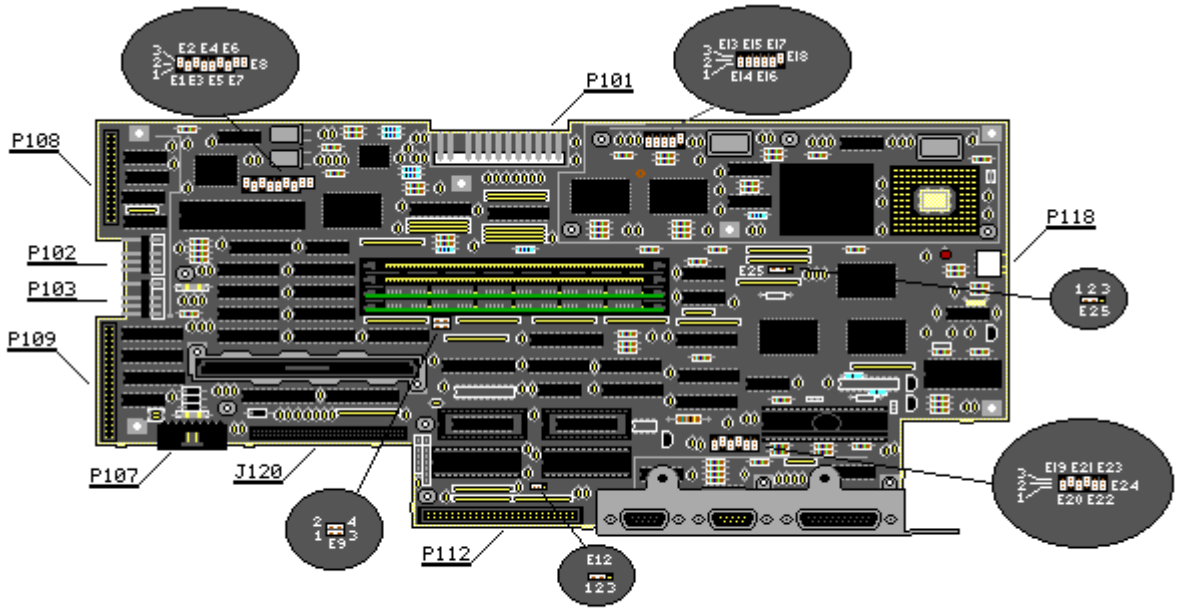

Figure 9-1. System Board Jumper Locations (Assy No. 000510)

Chapter 9.3 System Board Jumper Settings

Refer to Figure 9-1 for the system board jumper locations. Use Tables 9-1 through 9-9 as references for setting each jumper.

NOTE: Refer to the configuration label, located on the inside of the computers rear panel, for the default jumper settings and locations.

Table 9-1. Jumpers E1, E2, and E7 - Select Parallel Port Options

Jumper Setting	Function
E1, Pins 2 and 3 E2, Pins 1 and 2	Select first port address (3BX) (default) LPT1 (default)
E1, Pins 1 and 2 E2, Pins 2 and 3	Select second port address (37X) LPT2
E1, Pins 1 and 2 E2, Pins 1 and 2	Select third port address (27X) LPT3
E1, Pins 2 and 3 E2, Pins 2 and 3	Disable internal parallel port

E7, Pins 1 and 2	Select primary interrupt (IRQ7) (default)
E7, Pins 2 and 3	Select alternate interrupt (IRQ5)

Table 9-2. Jumpers E3, E4, E8, and E9 - Select Serial Communications Interface Options

Jumper Setting	Function
E3, Pins 2 and 3 E4, Pins 1 and 2 E8, Pins 1 and 2 E8, Pins 3 and 4 E9, Pins 1 and 3 E9, Pins 2 and 4	Select serial interface as COM1 (3FX, IRQ4), and modem or second serial interface as COM2 (2FX, IRQ3) (default)
E3, Pins 2 and 3 E4, Pins 1 and 2 E8, Pins 1 and 3 E8, Pins 2 and 4 E9, Pins 1 and 2 E9, Pins 2 and 4	Select serial interface as COM2 (2FX, IRQ3) and modem or second serial interface as COM1 (3FX, IRQ4).
E3, Pins 2 and 3 E4, Pins 1 and 1 E8, Pins 1 and 3 E8, Pins 3 and 4 E9, Pins 1 and 3 E9, Pins 2 and 4	Select serial interface as COM1 (3FX, IRQ4), disable internal COM2.
E3, Pins 1 and 2 E4, Pins 2 and 3 E8, Pins 1 and 2 E8, Pins 3 and 4 E9, Pins 1 and 2 E9, Pins 3 and 4	Select serial interface as COM2 (2FX, IRQ3), disable internal COM1.
E3, Pins 2 and 3 E4, Pins 2 and 3 E8, Pins 1 and 3 E8, Pins 2 and 4 E9, Pins 1 and 2 E9, Pins 3 and 4	Select modem or second serial interface as COM1 (3FX, IRQ4), disable internal COM2.
E3, Pins 1 and 2 E4, Pins 2 and 3 E8, Pins 1 and 3 E8, Pins 2 and 4 E9, Pins l and 3 E9, Pins 3 and 4	Select modem or second serial interface as COM2 (2FX, IRQ3), disable internal COM1.
E3, Pins 1 and 2 E4, Pins 1 and 2 E8, Pins 1 and 2 E8, Pins 3 and 4 E9, Pins 1 and 3 E9, Pins 2 and 4	Disable both internal serial ports.

Table 9-3. Jumpers E5 and E6 - Select Drive Options

Jumper Setting	Function
E5, Pins 1 and 2	Enables fixed disk drive (default).
E5, Pins 2 and 3	Disables fixed disk drive.
E6, Pins 2 and 3	Selects primary drive addresses (1FX, 3FX) (default).
E6, Pins 1 and 2	Selects secondary drive addresses (17X, 37X)

Table 9-4. Jumpers E13 and E14 - Select Amount of 32 Bit Memory to be Used as Base Memory

Jumper Setting	Function
E13, Pins 1 and 2 E14, Pins 1 and 2	640 Kbytes (default)
E13, Pins 1 and 2 E14, Pins 2 and 3	512 Kbytes
E13, Pins 2 and 3 E14, Pins 2 and 3	256 Kbytes

Table 9-5. Jumpers E15, E16, and E17 - Select Total 32 Bit Memory Installed

Jumper Setting	Function
E15, Pins 1 and 2 E16, Pins 1 and 2 E17, Pins 1 and 2	1 megabyte (default)
E15, Pins 2 and 3 E16, Pins 1 and 2 E17, Pins 1 and 2	2 megabytes
E15, Pins 1 and 2 E16, Pins 2 and 3 E17, Pins 1 and 2	3 megabytes
E15, Pins 2 and 3 E16, Pins 2 and 3 E17, Pins 1 and 2	4 megabytes
E15, Pins 1 and 2 E16, Pins 2 and 3 E17, Pins 2 and 3	6 megabytes
E15, Pins 2 and 3 E16, Pins 2 and 3 E17, Pins 2 and 3	10 megabytes

Table 9-6. Jumper E19 - Enables/Disables Fail Safe Timer

Jumper Setting	Function

E19, Pins 1 and 2	Fail safe timer enabled (default).
E19, Pins 2 and 3	Fail safe timer disabled.

Table 9-7. Jumper E20 - Selects 20 MHz 80387 Coprocessor Installation

Jumper Setting	Function
E20, Pins 2 and 3	Selects 20 MHz 80387 coprocessor not installed or Weitek 3167 coprocessor installed (default).
E20, Pins 1 and 2	Selects 20 MHz 80387 coprocessor installed or Weitek 3167 coprocessor not installed.

Table 9-8. Jumper E21 - Selects System Speed at Power On

Jumper Setting	Function
E21, Pins 1 and 2	Selects power on in AUTO mode (20 MHz/8 MHz when accessing diskette drive) (default).
E21, Pins 2 and 3	Selects power on in HIGH mode (always 20 MHz).

Table 9-9. Jumper E23 - Selects Plasma Display Mode at Power On

Jumper Setting	Function
E23, Pins 1 and 2	Selects power on with plasma display in dual (CGA) mode (3DX, B800) (default).
E23, Pins 2 and 3	Selects power on with plasma display in monochrome (MDA) mode (3BX, B000).

Chapter 9.4 Compaq Enhanced Color Graphics Board Jumper and Switch Settings

COMPAQ Enhanced Color Graphics Boards have two banks of configuration switches. Version 1 (Assy No. 000410), shown in Figure 9-2, has two jumpers that must be set for the board to work properly with the computer system. Version 2 (Assy No. 000471), shown in Figure 9-3, has three jumpers.

The monitor used with either COMPAQ Enhanced Color Graphics Board determines the correct setting for one of the jumpers and one bank of configuration switches. The other configuration switch bank setting indicates whether the COMPAQ Enhanced Color Graphics Board is the primary (or only) display controller board or the secondary display controller board in the computer. This configuration switch bank also selects the power on mode and character format of the COMPAQ Enhanced Color Graphics Board when the computer is turned on or restarted.

The following sections provide jumper and configuration switch locations and instructions on how to set them.

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CAUTION

Use care when setting the configuration switches on the COMPAQ Enhanced Color Graphics Board. Many of the components on the board are sensitive to static electricity. Be sure that you are discharged of static electricity by briefly touching a metal object.

Also, the correct setting of the configuration switches is vital to the operation of the COMPAQ Enhanced Color Graphics Board. Be sure that you set them correctly for your computer system before installing the board.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

NOTE: When using a COMPAQ Enhanced Color Graphics Board with a COMPAQ PORTABLE 386 Personal Computer, you must:

1. Use MODE.COM Version 3.2 or later. Type MODE at the DOS prompt to determine the MODE.COM Version.

2. Connect pin 2 to pin 3 of jumper E23 on the system board.

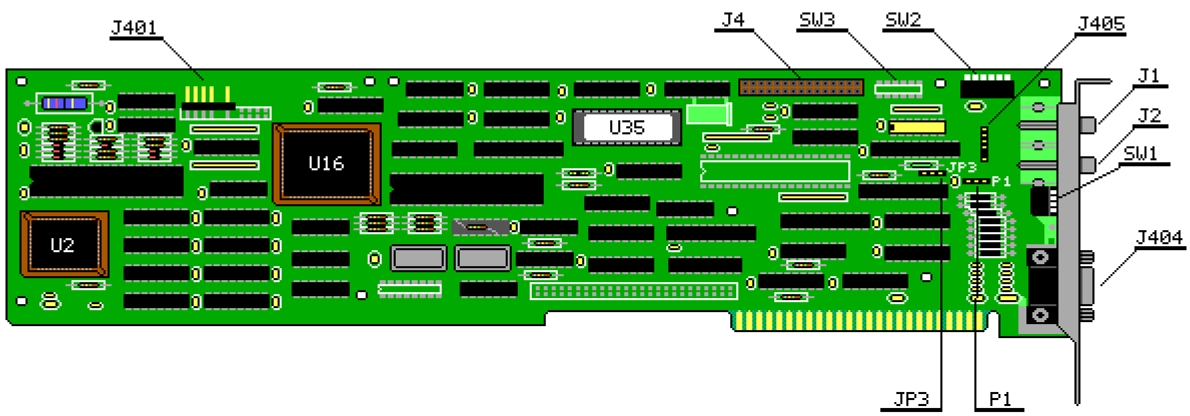

Figure 9-2. COMPAQ Enhanced Color Graphics Board (Assy No. 000410)

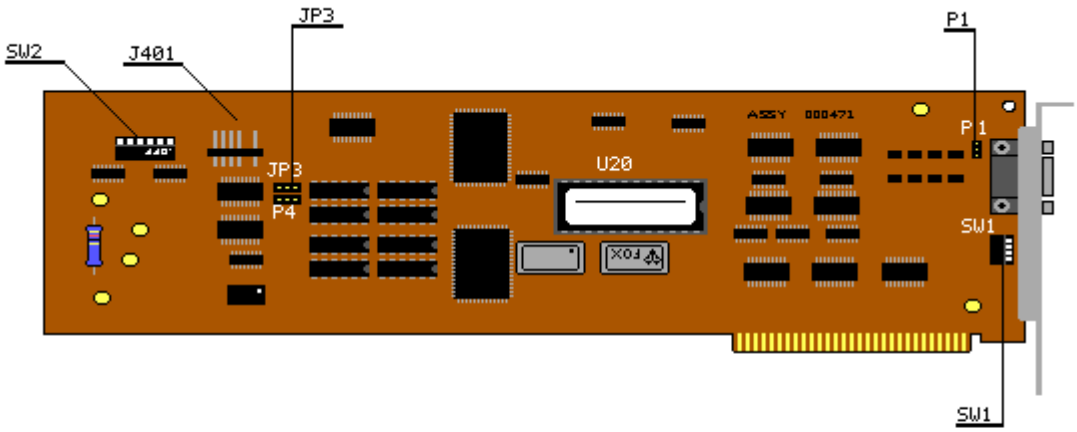

Figure 9-3. COMPAQ Enhanced Color Graphics Board (Assy No. 000471)

Configuration Switch Bank SW1

How the COMPAQ Enhanced Color Graphics Board is to be used determines the setting for configuration switch bank SW1. The board can be used as either the only or primary display controller board (the one active at power on or reboot) or secondary display controller board.

Refer to Figure 9-2 or 9-3 for the location of configuration switch bank SW1. Table 9-10 shows the correct settings for configuration switch bank SW1 if the COMPAQ Enhanced Color Graphics Board is the only or primary display controller board in the system.

Table 9-11 shows the correct settings for configuration switch bank SW1 if the COMPAQ Enhanced Color Graphics Board is the secondary display controller board in the system.

To change settings, use the end of a ball point pen to toggle the switch to the correct position.

Table 9-10. COMPAQ Enhanced Color Graphics Board as the Primary/Only Display Controller Board Switch Settings

Monitor Type	SW1 Power On Mode (Character Format)	Allowable Switches 1	2	3	4	Secondary Board Type
COMPAQ Color Monitor or Compatible Enhanced Color Monitor or COMPAQ Dual Mode Monitor	80 x 25 (640 x 350 resolution)	OFF	ON	ON	OFF	Monochrome Display Adapter 80 x 25
COMPAQ Color Monitor or Compatible Enhanced Color Monitor or COMPAQ Dual Mode Monitor	80 x 25 (640 x 200 resolution)	ON	ON	ON	OFF	Monochrome Display Adapter 80 x 25

Monitor Type	SW1 Power On Mode (Character Format)	SW1 Switches 1	2	3	4	Allowable Primary Board Type
COMPAQ Color Monitor or Compatible Enhanced Color Monitor or COMPAQ Dual Mode Monitor or RGB Color Monitor	80 x 25 (640 x 200 resolution)	OFF	OFF	OFF	ON	Monochrome Display Adapter 80 x 25
COMPAQ Color Monitor or Compatible Enhanced Color Monitor or COMPAQ Dual Mode Monitor or RGB Color Monitor	40 x 25 (320 x 200 resolution)	ON	OFF	OFF	ON	Monochrome Display Adapter 80 x 25
COMPAQ Dual Mode Monitor	80 x 25 (720 x 350 resolution)	OFF	OFF	ON	OFF	COMPAQ Video Display Controller or Color Graphics Adapter 80 x 25
COMPAQ Dual Mode Monitor	80 x 25 (720 x 350 resolution)	ON	OFF	ON	OFF	COMPAQ Video Display Controller or Color Graphics Adapter 40 x 25

Table 9-11. COMPAQ Enhanced Color Graphics Board as the Secondary Display Controller Board Switch Settings

Monitor Type	SW1 Power On Mode (Character Format)	SW1 Switches 1	2	3	4	Allowable Primary Board Type
COMPAQ Color Monitor or Compatible Enhanced Color Monitor or COMPAQ Dual Mode Monitor	80 x 25 (640 x 350 resolution)	OFF	OFF	ON	ON	Monochrome Display Adapter 80 x 25
COMPAQ Color Monitor or Compatible Enhanced Color Monitor or COMPAQ Dual Mode Monitor	80 x 25 (640 x 200 resolution)	ON	OFF	ON	ON	Monochrome Display Adapter 80 x 25
COMPAQ Color Monitor or Compatible Enhanced Color Monitor or COMPAQ Dual Mode Monitor or RGB Color Monitor	80 x 25 (640 x 200 resolution)	OFF	ON	ON	ON	Monochrome Display Adapter 80 x 25
COMPAQ Color Monitor or Compatible Enhanced Color Monitor or COMPAQ Dual Mode Monitor or RGB Color Monitor	40 x 25 (320 x 200 resolution)	ON	ON	ON	ON	Monochrome Display Adapter 80 x 25

COMPAQ Dual Mode Monitor	80 x 25 (720 x 350 resolution)	OFF	ON	OFF	ON	COMPAQ Video Display Controller or Color Graphics Adapter 80 x 25
COMPAQ Dual Mode Monitor	80 x 25 (720 x 350 resolution	ON	ON	OFF	ON	COMPAQ Video Display Controller or Color Graphics Adapter 40 x 25

Configuration Switch Bank SW2

The monitor type used with the COMPAQ Enhanced Color Graphics Board determines the settings for configuration switch bank SW2.

Configuration switch bank SW2 is located at the top of the board, near the board slot bracket, as shown in Figure 9-2 or 9-3. Table 9-12 shows the correct settings for configuration switch bank SW2.

Table 9-12. Configuration Switch Bank SW2 Settings

	SW2 Switches					
Monitor Type	1	2	3	4	5	6
COMPAQ Color Monitor or Compatible Enhanced Color Monitor	OFF	OFF	ON	ON	OFF	ON
RGB Color Monitor	ON	OFF	ON	ON	OFF	ON

Configuration Switch Bank SW3

Configuration Switch Bank SW3 is found on the COMPAQ Enhanced Color Graphics Board (Assy No. 000410 only). If it is installed, all switch settings are OFF.

Jumper P1

The type of external monitor used with the COMPAQ Enhanced Color Graphics Board determines the setting for Jumper P1. The location of Jumper P1 is shown in both Figures 9-2 and 9-3.

Jumper P1 is preconfigured for the COMPAQ Color Monitor or a compatible enhanced color monitor. Table 9-13 shows the correct settings for Jumper P1. If you need to reset the jumper, remove it from its current position and press it into place on the correct pins.

Jumper JP3

Jumper JP3 is shown in both Figures 9-2 and 9-3. Table 9-14 provides the correct setting for Jumper JP3.

Table 9-13. Jumper P1 - Selects Monitor Type

Jumper Setting	Function
P1, Pins 1 and 2	Selects a COMPAQ Color Monitor or compatible enhanced color monitor (default).
P1, Pins 2 and 3	Selects an external COMPAQ Dual Mode Monitor or an RGB color monitor.

Table 9-14. Jumper JP3 - Selects RGB or COMPAQ Dual Mode Monitor

Jumper Setting	Function
JP3, Pins 1 and 2	Selects COMPAQ Dual Mode Monitor (3xxh) (default).
JP3, Pins 2 and 3	Selects RGB color monitor. (2xxh)

Chapter 9.5 Serial/Parallel Interface Board Switch Settings

Figure 9-4 shows the Serial/Parallel Interface Board and Table 9-15 lists appropriate switch settings for each board.

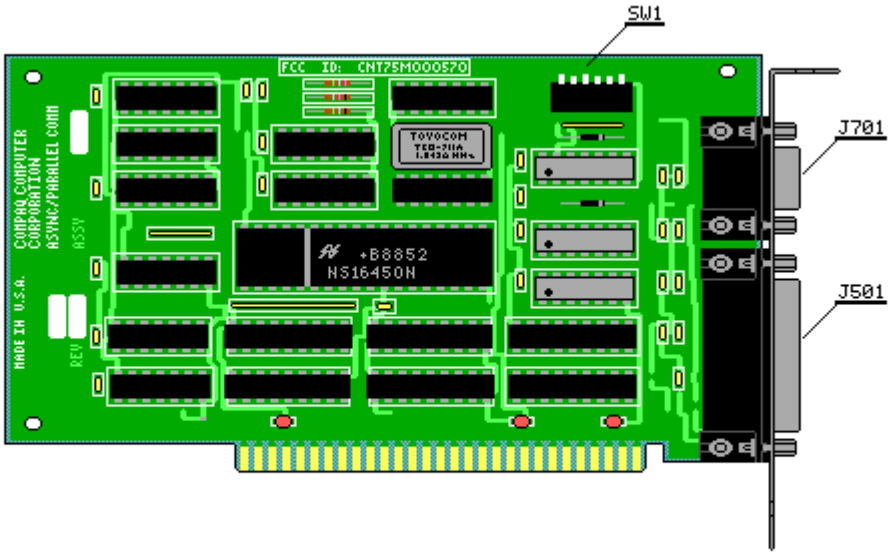

Figure 9-4. Serial/Parallel Interface Board (Assy Nos. 000570 and 000990)

Table 9-15. Serial/Parallel Interface Board Switch Settings

(Assy No. 000570)

Switch	Function		
1	Reserved - Always OFF		
2	Serial Port Enable/Disable		
	2 = ON	Enabled	
	2 = OFF	Disabled	
3, 4	Parallel Port Select/Disable		
	3 = ON	4 = ON	LPT1 Selected
	3 = OFF	4 = ON	LPT2 Selected
	3 = ON	4 = OFF	LPT3 Selected
	3 = OFF	4 = OFF	LPT Disabled
5, 6	Serial Port Select		
	5 = ON	6 = ON	COM1 Selected
	5 = OFF	6 = ON	COM2 Selected

(Assy No. 000990)

Switch	Function		
1	Reserved - Always OFF		
2	Reserved - Always OFF		
3, 4	Parallel Port Select/Disable		
	3 = ON	4 = ON	LPT1 Selected
	3 = OFF	4 = ON	LPT2 Selected
	3 = ON	4 = OFF	LPT3 Selected
	3 = OFF	4 = OFF	LPT Disabled
5, 6	Serial Port Select/Disable		
	5 = ON	6 = ON	COM1 Selected
	5 = OFF	6 = ON	COM2 Selected
	5 = OFF	6 = OFF	Serial Port Disabled

Chapter 9.6 Video Graphics Controller Board

Figures 9-5 and 9-6 show the Video Graphics Controller Boards and Table 9-16 lists approximate jumper settings.

Table 9-16. Video Graphics Controller Board Jumper Settings

(Assy No. 109360)

Jumper	Function
J1	Video RAM
	1-2 16 bit (default)
	2-3 8 bit
J2	Video ROM
	2-3 8 bit (default)
	1-2 16 bit

(Assy No. 000806)

Jumper	Function

J1	Video RAM 1-2 8 bit 2-3 16 bit (default)
J2	Video ROM 1-2 8 bit (default) 2-3 16 bit

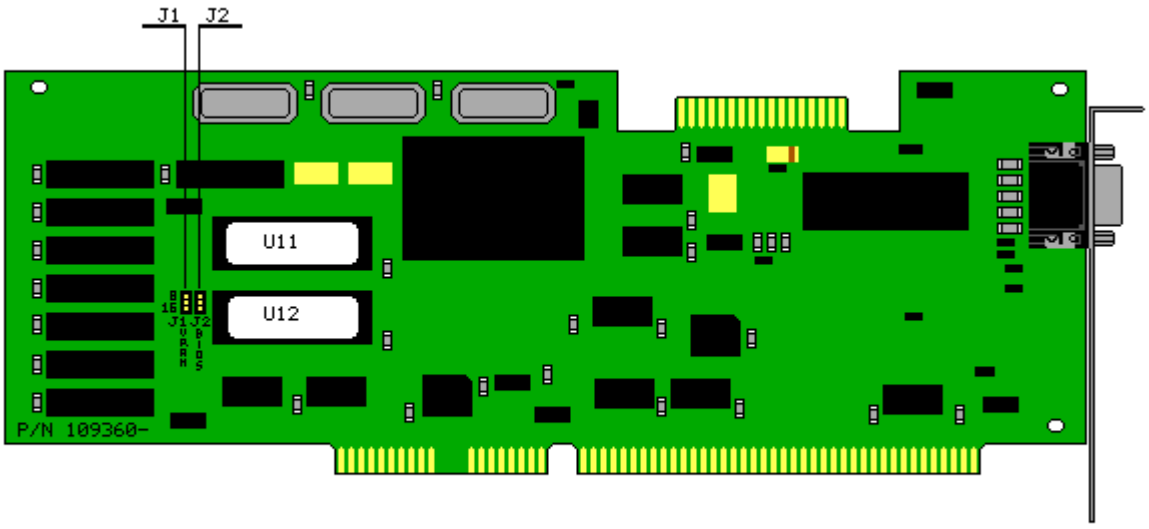

Figure 9-5. Video Graphics Controller Board (Assy No. 109360)

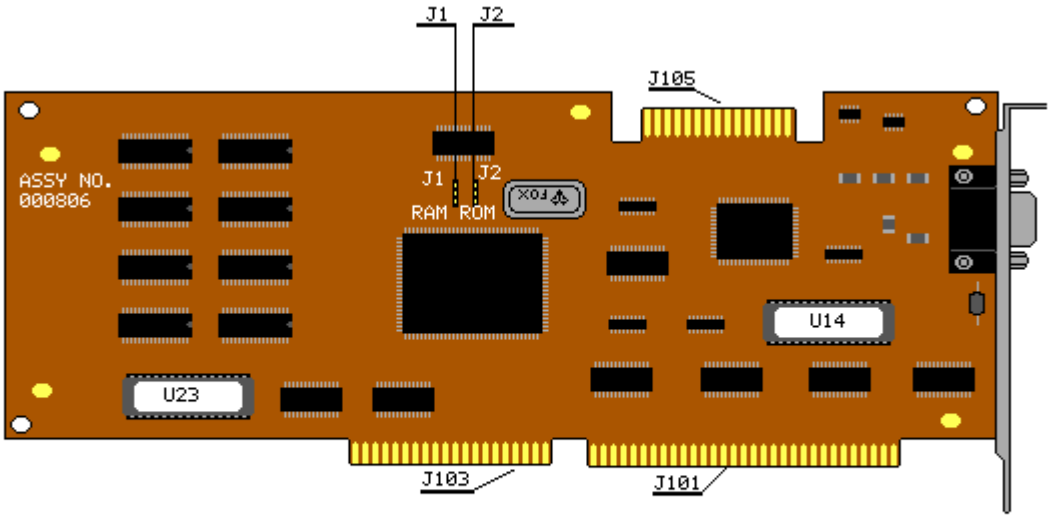

Figure 9-6. Video Graphics Controller Board (Assy No. 000806)

Chapter 9.7 ESDI External Fixed Disk Drive Controller Board

Switch settings for the 1:1 Interleave Buffered ESDI External Fixed Disk Drive Controller Board are listed in Table 9-17. The board is shown in Figure 9-7.

Table 9-17. 1:1 Interleave Buffered ESDI External Fixed Disk Drive Controller Board (Assy No. 001091)

Switch	Setting	Status	Function
1	ON	Secondary Address	Selects controller address.
2	OFF (default)	Primary Address	
2 and 3	OFF/OFF	IRQ15 Selected	Selects power up default interrupt for the board.
	ON/OFF	IRQ14 Selected	
	OFF/ON	IRQ12 Selected	
	ON/ON	IRQ11 Selected	

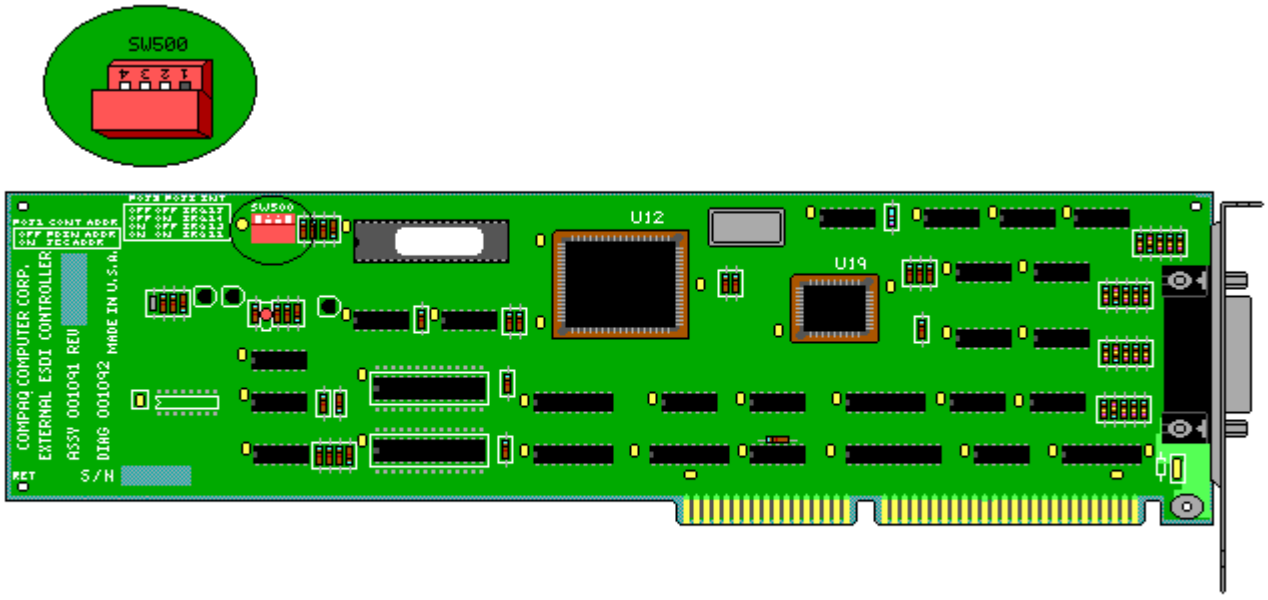

Figure 9-7. ESDI External Fixed Disk Drive Controller Board (Assy No. 001091)

Chapter 10. Mass Storage Configurations

Chapter 10.1 Introduction

The 300/600 Megabyte Fixed Disk Drive Expansion Unit (hereafter referred to as the fixed disk drive expansion unit) can be used with the COMPAQ PORTABLE 386 Personal Computer with system ROM revision K.0P or later. The fixed disk drive expansion unit can be used as a normal external fixed disk drive for maximum storage or in a mirroring or duplexing mode. The options are described below:

- Maximum storage. This gives you the maximum storage space available in the drives.

  Example: With two 300 megabyte fixed disk drives installed in the fixed disk drive expansion unit, you have a total storage capability of 600 megabytes of information. Two fixed disk drive expansion units configured this way give you a maximum of 1.2 gigabytes of storage.

- Mirroring. In mirroring, two identical fixed disk drives are connected to a single fixed disk drive controller. Special software causes both drives to read and write the same information.

  Example: In this case the same two 300 megabyte fixed disk drives have a total storage capability of 300 megabytes, since the two fixed disk drives contain exactly the same information. However, this keeps the system operational and the stored data intact if the hardware for one fixed disk drive fails.

- Duplexing. In duplexing, the two identical fixed disk drives operate using two controllers. An advantage of using dual controllers for duplexing is that the data retrieval speed is increased and the redundant controller provides additional protection if the system fails.

  Example: In a system where two fixed disk drives are duplexed, one drive may be reading data while the other drive is seeking the next block of data. The information on both fixed disk drives is the same.

NOTE: For information on removal and replacement, see Chapter 8, "Removal and Replacement Procedures." For information on switch settings, see Chapter 9, "Jumper and Switch Settings."

Chapter 10.2 System Configuration

NOTE: Internal cables are not interchangeable between the COMPAQ PORTABLE 386 and the fixed disk drive expansion unit.

Maximum Storage

The EXTDISK software that came with the fixed disk drive expansion unit contains several software utilities. Use the device driver EXTDISK.SYS, and an operating system such as MS-DOS Version 3.31 or later to access the capabilities of the fixed disk drive expansion unit.

To use MS-DOS and the device driver with two fixed disk drives and one fixed disk drive expansion unit:

- A maximum of two controllers can be plugged into the system bus.
- Each controller can support only two fixed disk drives.

Example: With the use of two fixed disk drive expansion units, a total of 1.2 gigabytes of fixed disk drive storage is available, divided into four 300 megabyte volumes. This configuration is shown in Figure 10-1.

NOTE: For maximum storage, the system is connected in the same way as for duplexing or mirroring. The only difference between maximum storage and mirroring or duplexing is that the Novell NetWare software does not need to be used when the system is configured for maximum storage.

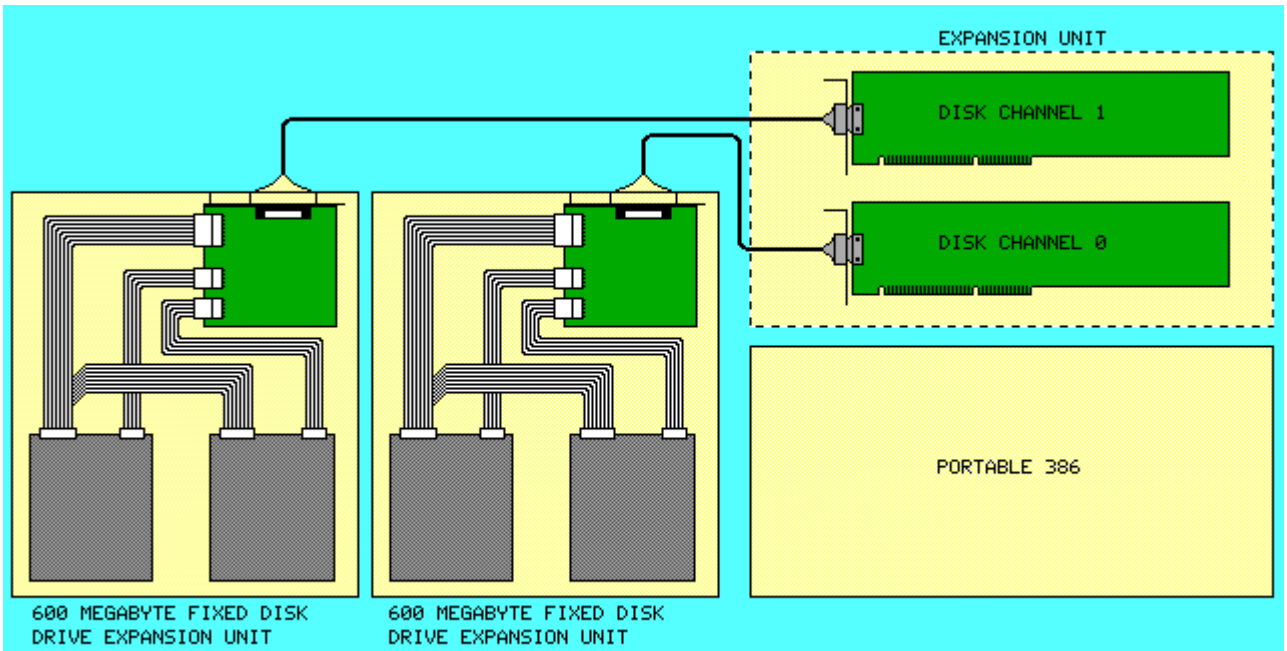

Figure 10-1. System Configured for 1.2 Gigabytes

Mirroring

IMPORTANT: Novell NetWare software must be used when setting up the system for proper operation of the mirroring function.

A possible mirroring configuration currently supported by Compaq Computer Corporation uses one fixed disk drive expansion unit with two 300 megabyte fixed disk drives. A single external fixed disk drive controller, plugged into the system bus and connected with a cable to an external interface adapter mounted in the fixed disk drive expansion unit complete this implementation (Figure 10-2). Data written to one fixed disk drive is exactly duplicated in the other.

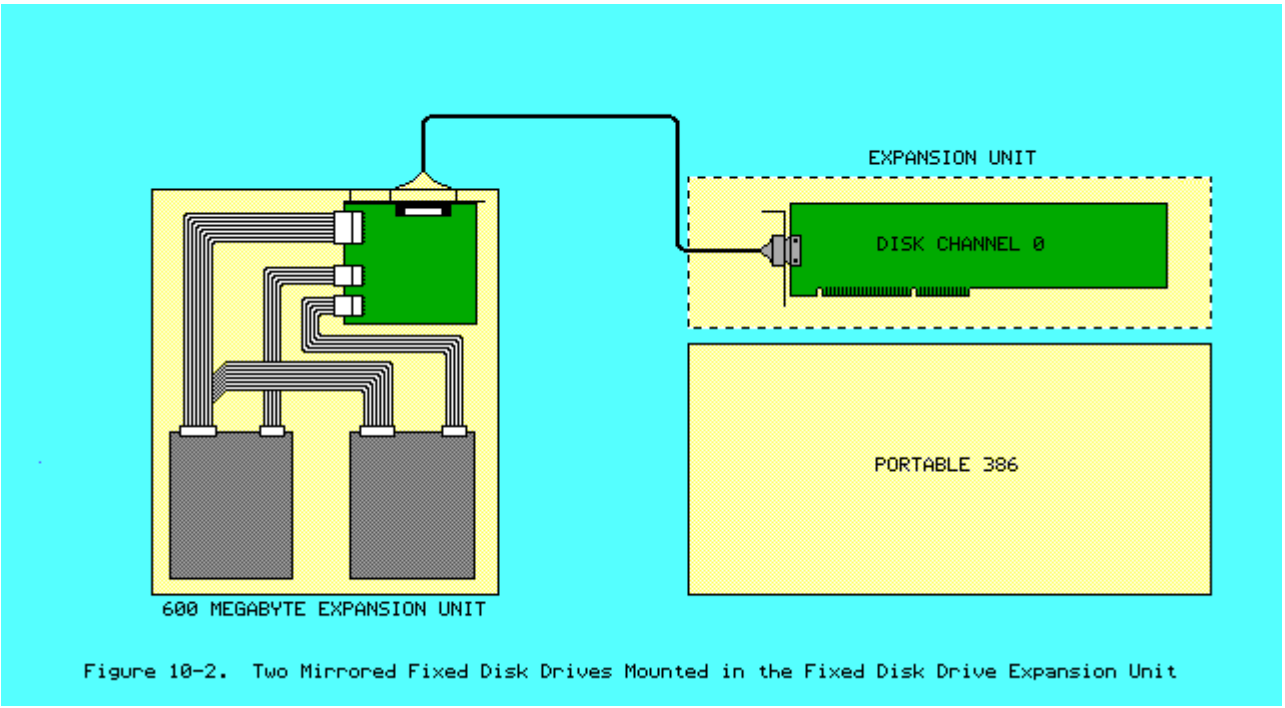

Figure 10-2. Two Mirrored Fixed Disk Drives Mounted in the Fixed Disk Drive Expansion Unit

Duplexing

IMPORTANT: Novell NetWare software must be used when setting up the system for the duplexing function to work.

Compaq Computer Corporation also supports duplexing configuration using two fixed disk drive expansion units, each equipped with two 300 megabyte fixed disk drives. The two 300 megabyte fixed disk drives in each unit connect to a single external interface adapter by a single cable. This configuration would have two fixed disk drive expansion units, four 300 megabyte fixed disk drives, and two external fixed disk drive controllers plugged into the system bus. In this setup, each fixed disk drive would duplex (and duplicate) a drive in the other unit (Figure 10-3).

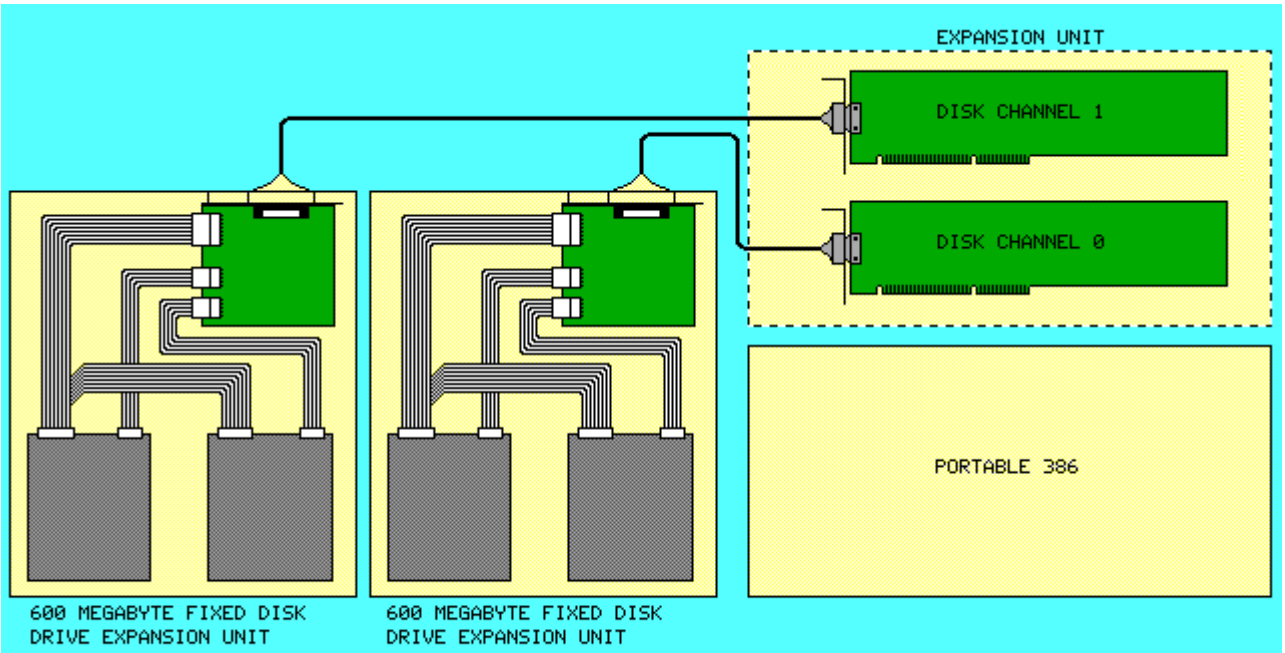

Figure 10-3. Duplexing with Four 300 Megabyte Fixed Disk Drives

Chapter 10.3 Setting Up the Fixed Disk Drive Expansion Unit

The EXTDISK.SYS Device Driver

If you are running the fixed disk drive expansion unit at the secondary address, you must install the EXTDISK.SYS device driver in the CONFIG.SYS file. However, if you are running the fixed disk drive expansion unit at the primary address, you do not need to use the EXTDISK.SYS device driver.

NOTE: The EXTDISK.SYS device driver is for use only with MS-DOS Version 3.31 or later.

After you run SETUP, insert the EXTDISK diskette into drive A and copy the EXTDISK.SYS file to the directory that contains the MS-DOS files.

You must then modify the CONFIG.SYS file to install the device driver. After modifying the CONFIG.SYS file, restart the computer to load the EXTDISK.SYS device driver in memory.

The FDISK Utility

You must install the EXTDISK.SYS device driver in the CONFIG.SYS file before you can use FDISK with the fixed disk drive expansion unit. For information about FDISK, refer to the MS-DOS Reference Guide.

NOTE: Each time you use the FDISK utility with your fixed disk drive expansion unit, you must insert the EXTDISK diskette in drive A and restart the computer. Then use the version of FDISK contained on that diskette.

Use the FDISK utility to partition each fixed disk drive that is used with the fixed disk drive expansion unit. Each fixed disk drive can have up to four partitions. Any fixed disk drive included with the fixed disk drive expansion unit must be partitioned before you can use it.

If the fixed disk drive expansion unit is configured at the primary address, that fixed disk drive must contain a primary DOS partition. The primary partition is created with the menu driven FDISK utility which contains an extended partition. The total number or logical drives on your system may not exceed 24.

The FORMAT Command

After using the FDISK to partition the fixed disk drive, use the FORMAT command on the EXTDISK diskette to format each logical drive on the fixed disk drive. For information on using the FORMAT command, refer to your MS-DOS Reference Guide.

Novell Netware Configuration Information

A key feature of the fixed disk drive expansion unit is disk driver software that supports Novell System Fault Tolerant (SFT) NetWare operation (SFT I and SFT II). SFT LAN operation helps ensure data integrity by duplicating data files on a second fixed disk drive and by performing a write verification. Three disk configurations that achieve fault tolerant operation are SFT I, SFT II (disk mirroring), and SFT II (disk duplexing).

- SFT I (write verification with "Hot Fix") confirms each write and automatically corrects erroneous writes by relocating data to another portion of the fixed disk drive.

- SFT II (disk mirroring) helps ensure uninterrupted system operation without data loss if a fixed disk drive fails. Disk mirroring requires a single fixed disk drive controller and two identical fixed disk drives. The Novell ATDISK driver supports SFT II (disk mirroring) for a single disk controller system. The COMPAQ CPQDSK and NVCPQDSK drivers support SFT II (disk mirroring) for a single or dual disk controller system.

- SFT II (disk duplexing) goes beyond disk mirroring in both fault tolerance and performance. It helps ensure continuous system operation if either a fixed disk drive or a controller fails. It improves performance by simultaneously servicing two disk write or read requests and by selecting the fixed disk drive that is best able to service a given read request. Duplexed drives typically perform write and read operations twice as quickly as mirrored drives. Disk duplexing requires two fixed disk drive controllers and two identical fixed disk drives.

The EXTDISK diskette contains two versions of the Value Added Disk Driver (VADD) for Novell NetWare: CPQDSK and NVCPQDSK. Both versions operate in all servers running Novell NetWare (V2.1x). The two versions are identical except that CPQDSK performs a write verification and NVCPQDSK does not.

NVCPQDSK executes fixed disk drive write operations over two times faster than CPQDSK because it does not perform read after write verification. The probability of unrecoverable disk write errors with mirrored or duplexed drives is very low, since erroneous data on one fixed disk drive can usually be recovered from the second. Disk configurations that do not use mirroring or duplexing depend on the inherent reliability of the fixed disk drive and tape drives as the only protection against disk errors. Use NVCPQDSK with mirrored or duplexed fixed disk drive configurations that require maximum performance.

NOTE: Execution of the NetWare UNMIRROR console command terminates the use of

one of a mirrored or duplexed pair of drives. The UNMIRROR command has no effect on the disk driver that is in use. NetWare must be reinstalled to change from one driver to another.

While the disks are UNMIRRORED, only the primary fixed disk drive of the mirrored pair will be read from and written to. The REMIRROR command reenables fixed disk drive mirroring and copies all changed data on the primary fixed disk drive of the mirrored pair to the secondary fixed disk drive. Refer to your NetWare reference manual for more information.

To prepare the 1:1 Interleave Buffered ESDI External Fixed Disk Drive Controller Board, complete the following steps:

1. Select the primary or alternate disk controller address and the IRQ level using the appropriate switches.

   Select IRQ11, IRQ12, or IRQ15 for the external fixed disk drive controller board operating as a secondary channel. If you are using the external fixed disk drive controller board and have the internal fixed disk drive controller disabled, select IRQ14. If you are using two external fixed disk drive controller boards, one must be defined as IRQ14 and the other can be IRQ11, IRQ12, or IRQ15.

   (Most other COMPAQ fixed disk drive controllers use the primary address and IRQ14.) Verify that the interrupt level chosen does not conflict with interrupts for other installed devices.

2. Install the external fixed disk drive controller board.

3. Run the SETUP program to initialize the CMOS memory to reflect the number and type of fixed disk drives currently installed.

4. Insert the EXTDISK diskette into drive A and restart the computer.

5. Copy the files with .DSK extensions from the root directory of the EXTDISK diskette to your working copy of the NetWare AUXGEN diskette.

6. If you are running the Novell NETGEN program from a fixed disk drive or network drive, you may want to create a subdirectory for the files with .OBJ extensions found in the root directory of the EXTDISK diskette. If so, create a directory named "DSK_DRV_.203" and copy the files with .OBJ extensions into this directory.

If you are running the Novell NETGEN program from diskettes, the program prompts you to "Insert the disk DSK_DRV_203 in any drive." At this point, insert the EXTDISK diskette into your diskette drive.

7. If you are installing NetWare V2.1, you must apply the COMP21 patch to several files. Copy the following files to a separate workspace:

   COMPSURF.OBJ (From the UTILOBJ-1 diskette)
   DISKED.OBJ (From the UTILOBJ-1 diskette)
   INSTOVL.OBJ (From the UTILOBJ-2 diskette)
   VREPAIR.OBJ (From the UTILOBJ-2 diskette)

   The following files should appear in the root directory of the EXTDISK diskette:

COMP21.BAT	Batch file to run patch
COMP21.DOC	Documentation for patch
PATCH.EXE	Main patch program

8. If you applied any patches, place the patched files on the working copies of the appropriate NetWare diskettes. Use the NETGEN program to generate and link the NetWare operating system and utilities.

9. Run COMPSURF to perform a surface analysis on the server fixed disk drives. Following are appropriate responses to COMPSURF prompts:

Format the disk?	N
Retain the bad block list?	N
Enter bad blocks?	N
Number of sequential passes	At least 1 (one) pass
Random I/O operations	Take the default number

10. Use the "NetWare Installation" option from the NETGEN Main Menu to install NetWare. It may be necessary to apply an additional patch to the COMPSURF.OBJ file. The following files should also appear in the root directory of the EXTDISK diskette:

    HCDCMPSF.BAT
    HCDCMPSF.DOC

NOTE: When installing NetWare on high capacity fixed disk drives, the NETGEN program may halt and display the following message:

  ABEND : Not enough memory for disk FAT tables.

There are two methods of installing software if this occurs:

1) by limiting the SYS: volume size to less than 200 megabytes when running the installation program to avoid the memory error, or

2) by avoiding the "NetWare Installation" choice on the NETGEN Main Menu and installing the software manually.

To install the software manually, follow these procedures:

From the A> prompt, enter the following commands:

A> INSTOVL 1 x	Where x is SUPPORT for 5 1/4 inch diskettes
	NETGEN for 3 1/2 inch diskettes
A> NINSTALL -ox -pr	Where x is 1 - Advanced NetWare 2 - SFT NetWare 3 - SFT NetWare with TTS
A> INSTOVL 2 x	Where x is SUPPORT for 5 1/4 inch diskettes
	NETGEN for 3 1/2 inch diskettes