

# Foreword

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MAINTENANCE AND SERVICE GUIDE  
COMPAQ PORTABLE COMPUTER  
COMPAQ PLUS PERSONAL COMPUTER  
COMPAQ PORTABLE 286 PERSONAL COMPUTER

Second Edition (April 1986)  
Assembly Number 102901-001  
Binder Number 102900-001  
Text Number 102973-001

## Compaq Computer Corporation 90 Day Limited Warranty

Compaq Computer Corporation (Compaq) warrants the products that it manufactures to be free from defects in materials and workmanship for a period of 90 days from the date of purchase from Compaq or an Authorized COMPAQ Computer Dealer. This warranty is limited to the original purchaser (Purchaser) of the product and is not transferable.

During the 90 day (ninety day) warranty period, Compaq will repair or replace with new or refurbished parts, at its option, any defective parts at no additional charge, provided that the product is returned, shipping prepaid, to Compaq or an Authorized COMPAQ Computer Dealer. The Purchaser is responsible for insuring any product so returned and assumes the risk of loss during shipping. All replaced parts and products become the property of Compaq.

Dated proof of purchase must be provided by the Purchaser when requesting that warranty work be performed. The Purchaser may request information on how to obtain warranty service by contacting an Authorized COMPAQ Computer Dealer or writing to Compaq Computer Corporation for further information.





- Chapter 4 "DIAGNOSTIC Procedures" describes the use and function of the' COMPAQ DIAGNOSTIC Program Version 3. The text provides a detailed description of the various diagnostic routines and how to execute them.
- Chapter 5 "Error Messages and Codes" lists and describes the Power On Self Test (POST) and DIAGNOSTICS Error Codes. It also provides required action for resolving each problem described by the corresponding error code.
- Chapter 6 "Illustrated Parts Catalog" contains illustrated parts breakdowns, order numbers, and part names for the COMPAQ Portable, the COMPAQ PLUS, and the COMPAQ PORTABLE 286 Personal Computers.
- Chapter 7 "Removal and Replacement Procedures" describes how to remove and replace subassemblies for the COMPAQ Portable, the COMPAQ PLUS, and the COMPAQ PORTABLE 286 Personal Computers.
- Chapter 8 "Jumper Settings, Switch Settings, and Adjustments" provides detailed information for setting jumpers and switches. It also provides instructions for adjusting the video display unit and the diskette drive speed.

#### Required Tools and Supplies

To service the COMPAQ Portable, COMPAQ PLUS, and COMPAQ PORTABLE 286 Personal Computers, you need:

- o 1/4 inch slotted blade screwdriver (COMPAQ Portable and COMPAQ PLUS Personal Computers only)
- o COMPAQ DIAGNOSTICS Diskette Version 3 (PN 102971-001 \*)
- o Formatted Scratch Diskette(s)
- o Printer loopback plug 25 pin (PN 100755-001)
- o Serial loopback plug 25 pin (PN 100754-001)
- o 9 pin serial loopback plug (PN 102999-001)
- o Torx T-15 screwdriver
- o Torx T-10 screwdriver
- o 1/4 inch nut driver
- o No. 2 Phillips screwdriver
- o 5/16 inch Box end wrench

Optional Tools are:

- o Digital voltmeter
- o Memory chip (integrated circuit) insertion tool
- o Memory chip (integrated circuit) removal tool

- o Diskette drive signal extension cable (PN 100546-001)
- o Diskette drive power extension cable (PN 100545-001)
- o Special Service Tool Kit (PN 101089-001) containing:
  - Power Supply socket adjustment tool
  - T-10 socket
  - 3/16 inch socket
  - 5/16 inch adjustable socket

#### Additional Information

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

#### Associated Documentation:

- o COMPAQ PORTABLE COMPUTER OPERATIONS GUIDE (PN 100001-001)
- o COMPAQ PLUS PERSONAL COMPUTER OPERATIONS GUIDE (PN 100633-001 \*)
- o COMPAQ PORTABLE 286 PERSONAL COMPUTER OPERATIONS GUIDE (PN 101770-001 \*)
- o AUTHORIZED DEALER GUIDE (PN 100003-001)
- o MS-DOS VERSION 2 REFERENCE GUIDE (PN 100631-002 \*)
- o MS-DOS VERSION 3 REFERENCE GUIDE (PN 102631-001 \*)
- o BASIC VERSION 2 REFERENCE GUIDE (PN 100632-001 \*)
- o BASIC VERSION 3 REFERENCE GUIDE (PN 102740-001)
- o 80286 BASED PRODUCTS TECHNICAL REFERENCE GUIDE (PN 102786-001)

\* Part number no longer available.

# Chapter 1. Operating and Performance Specifications

## Chapter 1.1 Introduction

This section provides operating and performance specifications for the COMPAQ Portable and the COMPAQ PLUS in Table 1-1, and the COMPAQ PORTABLE 286 in Table 1-2.

Specifications for the COMPAQ Portable and COMPAQ PLUS Personal Computer are:

- o Electrical and mechanical
- o Environmental
- o Keyboard
- o Video display
- o 360 Kbyte diskette drive
- o 10 megabyte fixed disk drive
- o Power supply

Specifications for the COMPAQ PORTABLE 286 Personal Computer are:

- o Electrical and mechanical
- o Environmental
- o Keyboard
- o Video display
- o 20 megabyte fixed disk drive
- o 10 megabyte tape drive
- o 1.2 megabyte diskette drive
- o 360 Kbyte diskette drive
- o Power supply

Table 1-1. COMPAQ Portable and COMPAQ PLUS Personal Computers Operating and Performance Specifications

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### Electrical and Mechanical Specifications

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#### Dimensions:

Height	8.5 in. (215.9 mm)
Depth	16.0 in. (406.4 mm)
Width	20.0 in. (512.8 mm)

#### Weight:

With one diskette drive	27.5 lb (12.5 kg)
With two diskette drives	30.5 lb (13.5 kg)
With one diskette drive and one fixed disk drive	31 lb (14 kg)

#### Power Requirements:

Line Voltage	115 VAC
Line Frequency	60 Hz

#### Power

Current	3 amps
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Power Cable:  
Length 79 in. (2006.6 mm)  
Gauge 18 AWG

Environmental Requirements:

Temperature:  
Operating 50oF to 104oF (10oC to 40oC)  
Nonoperating 32oF to 140oF (0oC to 60oC)  
Humidity:  
Operating 20% to 80% (noncondensing)  
Nonoperating 5% to 90% (noncondensing)

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Keyboard Specifications  
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Dimensions:  
Height 1.5 in. (38.1 mm)  
Depth 7.06 in. (179.3 mm)  
Width 18.25 in. (463.6 mm)

Number of Keys 83

Keyboard Cable:  
Length 72 in. (1828.8 mm)  
Gauge 28 AWG

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Video Display Specifications  
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- Display:
- o Nine inch diagonal, 90 degree deflection
  - o High persistence green phosphor
  - o Etched surface to reduce glare
  - o 80 character by 25 line screen
  - o 40 character by 25 line screen
  - o 640 x 200 dot resolution, graphics
  - o 320 x 200 dot resolution, graphics
  - o 720 x 350 dot resolution, text

-----  
360 Kbyte Diskette Drive Specifications  
-----

Dimensions:  
Height 1.625 in. (40.625 mm)  
Depth 8.29 in. (210.6 mm)  
Width 5.88 in. (149.4 mm)

Weight 3.2 lb (1.45 kg)

Data Transfer Rate 250 Kb/s

Media 48 TPI Double Sided Double Density Diskettes

Number of Tracks 40

Tracks per Inch 48

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10 Megabyte Fixed Disk Drive Specifications

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Dimensions:

Height	1.69 in. (4.33 cm)
Width	5.875 in. (14.6875 cm)
Depth	8.25 in. (20.625 cm)

Weight 3.5 lb (1.575 kg)

Media Fixed plated media

Tracks per Inch 600

Number of Cylinders 305

Data Transfer Rate 5 Mb/s

Average Access Time 105 ms

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Power Supply Specifications

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Input Requirements:

AC Voltage RMS:	
Domestic	102 - 132 VAC
International	204 - 264 VAC
Line Frequency	47 to 62 Hz
Line Voltage	120 VAC, 60 Hz
Current	2 amps maximum at input (3 amps depending on fuse rating)

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VDC Output:	Nominal Voltage VDC	Current Amps Minimum	Current Amps Maximum *	Regulation Tolerance Percent
	+ 5.0	2.0	10.0	5
	- 5.0	0.0	0.5	5
	+ 12.0	1.0	5.0	5
	- 12.0	0.0	0.5	5

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\* These values are maximum values based on nominal operating conditions for temperature, line voltage, line frequency, and altitude.

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Table 1-2. COMPAQ PORTABLE 286 Personal Computer Operating and Performance Specifications

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Electrical and Mechanical Specifications

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Dimensions:

Height	8.5 in. (215.9 mm)
Depth	16 in. (406.4 mm)
Width	20 in. (508.0 mm)

Weight:

Model 1	30 lb (13.5 kg)
Model 2	33 lb (15.0 kg)
Model 3	34 lb (15.4 kg)

Power Requirements:

Line Voltage	115 VAC
Line Frequency	60 Hz



Power  
Current 4 amps

Power Cable:  
Length 72 in. (1828.8 mm)  
Gauge 18 AWG

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#### Environmental Requirements

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Temperature:  
Operating 50oF to 104oF (10oC to 40oC)  
Nonoperating 32oF to 140oF (0oC to 60oC)

Humidity:  
Operating 20% to 80% (noncondensing)  
Nonoperating 5% to 90% (noncondensing)

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#### Keyboard Specifications

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Dimensions:  
Height 1.5 in. (38.1 mm)  
Depth 7.06 in. (179.3 mm)  
Width 18.25 in. (436.6 mm)

Number of Keys 84

Keyboard Cable:  
Length 72 in. (1828.8 mm)  
Gauge 28 AWG

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#### Video Display Specifications

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Display:  
o Nine inch diagonal, 90 degree deflection  
o High persistence green phosphor  
o Etched surface to reduce glare  
o 80 character by 25 line screen  
o 40 character by 25 line screen  
o 640 x 200 dot resolution, graphics  
o 320 x 200 dot resolution, graphics  
o 720 x 350 dot resolution, text

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#### 20 Megabyte Fixed Disk Drive Specifications

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Dimensions:  
Height 1.7 in. (4.33 cm)  
Depth 4.1 in. (10.41 cm)  
Width 5.75 in. (14.61 cm)

Weight 1.8 lb (0.8 kg)

Media Fixed plated media

Number of Data Heads 4

Number of Cylinders 615

Average Access Time            105 ms (maximum)  
Data Transfer Rate            5 Mb/s

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### 10 Megabyte Tape Drive Specifications

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Dimensions:

Height                    1.65 in. (4.29 cm)  
Depth                    8 in. (20 cm)  
Width                    5.65 in. (14.76 cm)

Weight                    1.7 lb (0.765 kg)

Media                    DC 1000 Manufactured by 3M Corporation or  
equivalent

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### 1.2 Megabyte Diskette Drive Specifications

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Dimensions:

Height                    1.65 in. (4.29 cm)  
Depth                    8.25 in. (20.625 cm)  
Width                    5.88 in. (14.7 cm)

Weight                    3.2 lb (1.44 kg)

Media                    96 and 48 TPI Double Sided High Density Diskettes

Tracks per Inch            96

Number of Tracks            80 (When formatted with MS-DOS)

Data Transfer Rate            300/500 Kb/s

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### 360 Kbyte Diskette Drive Specifications

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Dimensions:

Height                    1.60 in. (4.0625 cm)  
Depth                    8.0 in. (20.625 cm)  
Width                    5.8 in. (14.7 cm)

Weight                    3.2 lb (1.44 kg)

Media                    40 TPI Double Sided Double Density Diskettes

Tracks per Inch            48

Number of Tracks            40 (When formatted with MS-DOS)

Data Transfer Rate            250 Kb/s

Power supply specifications:

Input Requirements:

Line Voltage            102 to 132 VAC, single phase  
Line Fuse                180 to 264 VAC, single phase  
                             3 amps 250V fuse for 115 VAC operation,  
                             2.5 amps for 220 VAC operation  
Line Frequency            47 to 62 Hz

Cooling  
Current

Forced air provided by 16 VDC fan  
2 amps, maximum at input voltage of 120 VAC,  
60 Hz

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VDC Output:	Nominal Voltage VDC	Current Amps Minimum	Current Amps Maximum *	Regulation Tolerance Percent
	+ 5.0	1.5	15.0	2
	- 5.0	0.0	0.5	5
	+ 12.25	1.0	5.0	2
	+ 12.25 (internal monitor)	0.0	1.5	3
	- 12.0	0.0	1.0	5

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\* These values are maximum values based on nominal operating conditions for temperature, line voltage, line frequency, and altitude.

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# Chapter 2. Power On Self Tests (POST)/Problem Isolation

## Chapter 2.1 Introduction

This section provides a list of assemblies checked by the Power On Self Test (POST) and a brief description of the types of error codes. The section also contains preliminary steps to problem isolation of an error condition and a problem isolation flowchart for quick reference.

## Chapter 2.2 Power On Self Test (POST)

A series of diagnostic tests automatically run on every COMPAQ Personal Computer system when the system is turned on. These tests are called the Power On Self Test (POST).

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

- o Keyboard
- o Power Supply
- o System Board
- o Video Display Controller Board
- o Fixed Disk Drive Controller Board
- o Diskette/Printer Controller Board
- o Asynchronous Communications/Clock Board
- o System Board
- o Memory

POST also detects the type(s) of mass storage device(s) installed in the computer.

When the computer is turned on, POST automatically starts and runs. If POST finds an error in the system, error codes (in the form of beeps) are heard or error codes (numbers) are visible on the monitor. See Chapter 5, "Error Messages and Codes," for an explanation of error codes.

## Chapter 2.3 Preliminary Steps to Problem Isolation

If you encounter an error condition, complete the following preliminary steps before starting problem isolation.

1. Place the ON/OFF switch in the OFF position.
2. Disconnect the signal cables of any peripheral devices (printers, modems, and so on) from the computer.
3. Remove the upper access panel and board slots access cover (see Chapter 7, "Removal and Replacement Procedures.")

When the upper access panel is removed, the system LED, located on the

system board between the expansion slots, is visible.

4. Remove all non COMPAQ options (board, drives, and so on) from the computer.
5. Install a loopback plug connector in the parallel port and the asynchronous port and any other location that requires a loopback plug.

NOTE: If you want to test your printer during the printer test or to log errors to a printer, reconnect the printer now.

6. Verify that the AC power cable is connected to a usable power outlet.
7. Insert the latest version of the COMPAQ DIAGNOSTICS Program diskette into drive A and close the drive door.
8. Place the ON/OFF switch in the ON position. See Chapter 4, "DIAGNOSTIC Procedures," for detailed information on problem isolation.

## Chapter 2.4 Problem Isolation Flowchart

The problem isolation flowchart provides a quick reference for identifying and correcting possible problems that may occur during POST. The flowchart gives troubleshooting procedures for identifying malfunctions and replacing major assemblies in the computer and directs you to Chapter 4, "Diagnostic Procedures," and to Chapter 5, "Error Messages and Codes," for more detailed troubleshooting information.

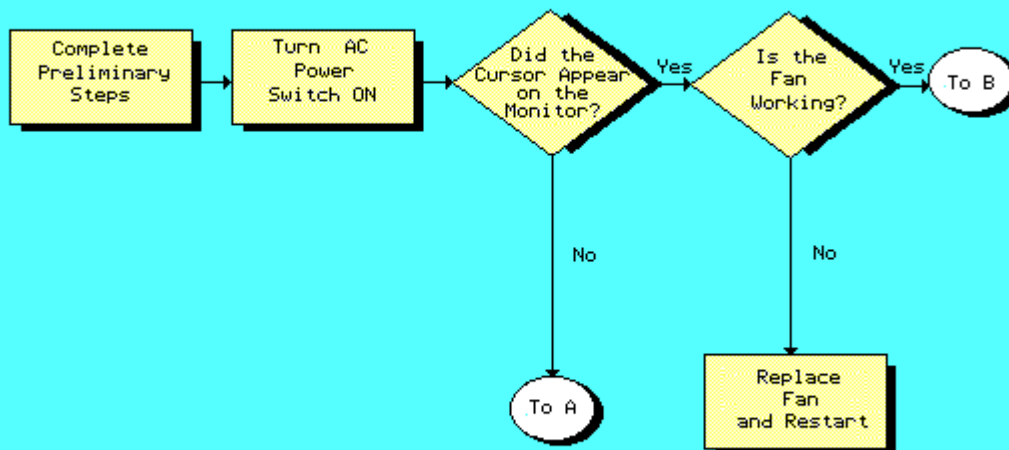


Figure 2-1. Problem Isolation Flowchart - Root

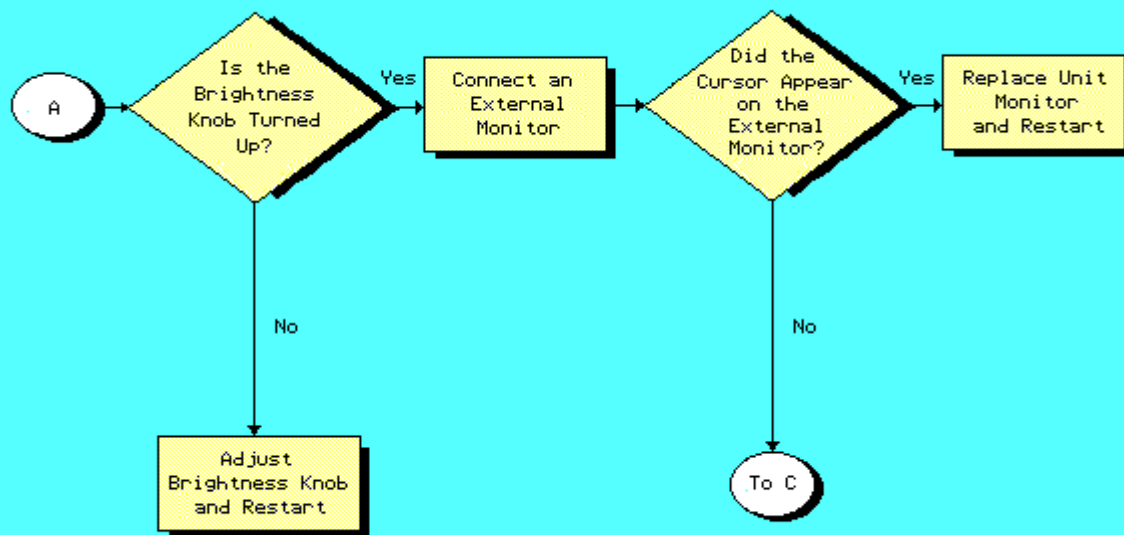


Figure 2-1a. Problem Isolation Flowchart - A

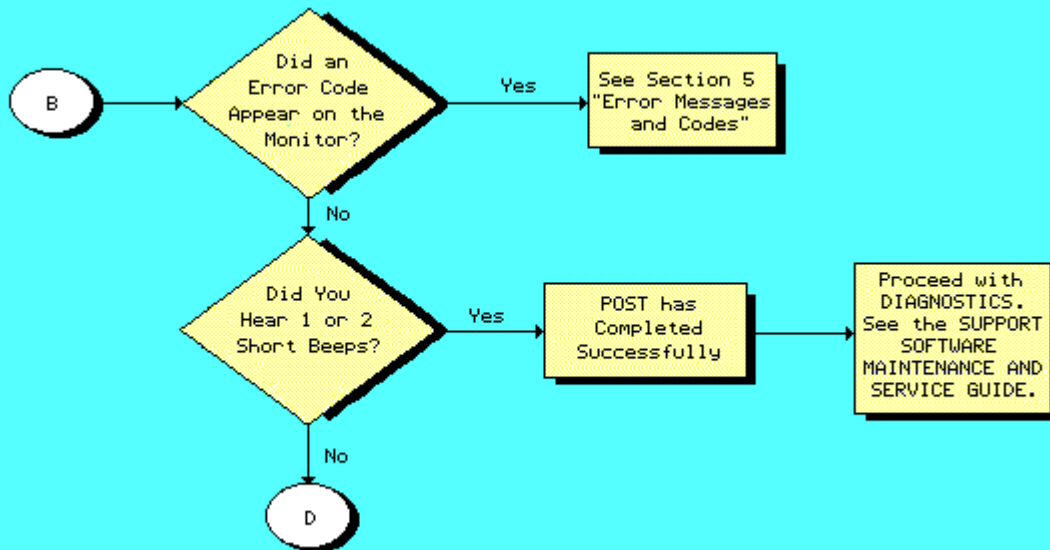


Figure 2-1b. Problem Isolation Flowchart - B

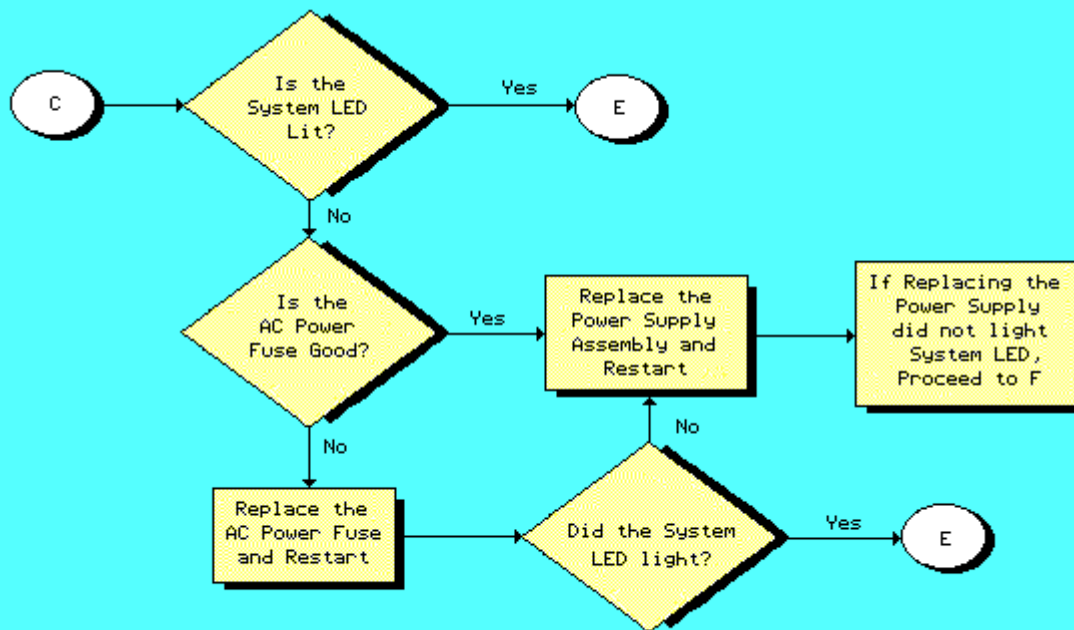


Figure 2-1c. Problem Isolation Flowchart - C

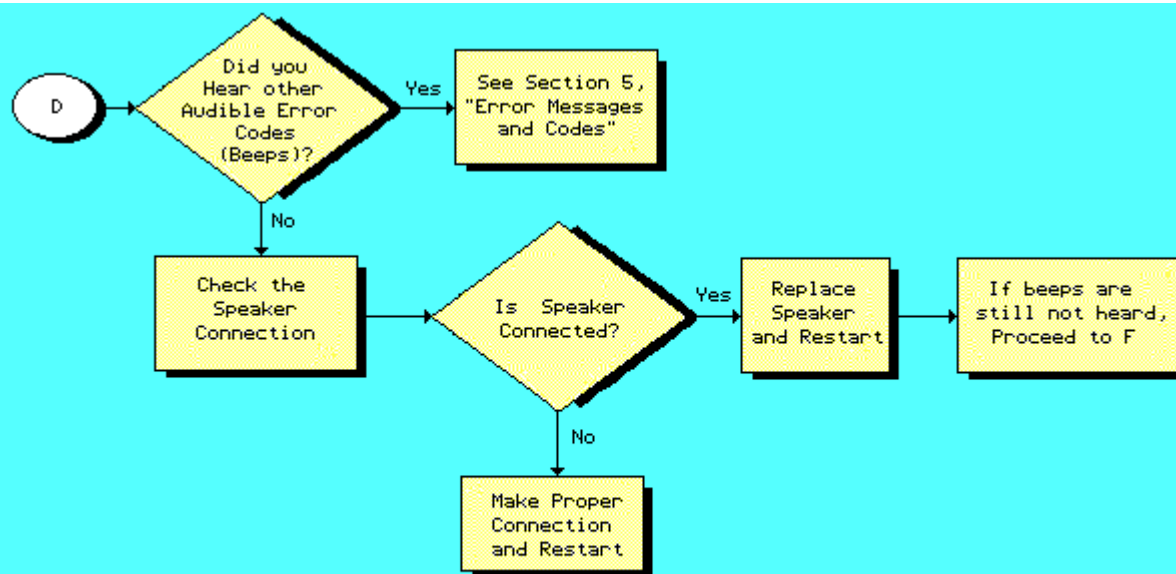


Figure 2-1d. Problem Isolation Flowchart - D

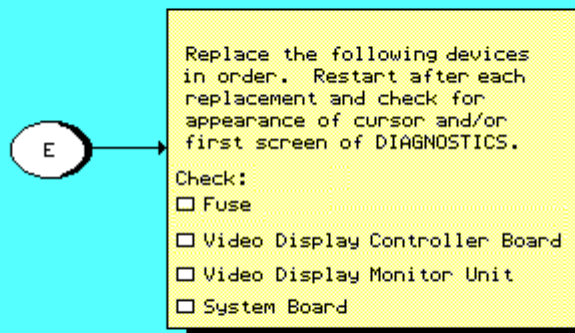


Figure 2-1e. Problem Isolation Flowchart - E

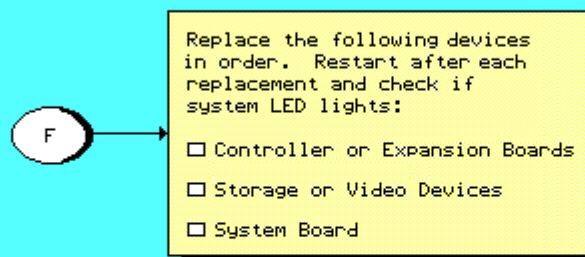


Figure 2-1f. Problem Isolation Flowchart - F



# Chapter 3. Setup

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

# Chapter 4. Diagnostic Procedures

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

# Chapter 5. Error Messages and Codes

## Chapter 5.1 Introduction

This section 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 required action to resolve the error condition.

## Chapter 5.2 Power On Self Test Error Messages

This section is divided into two tables. The first table contains Power On Self Test error messages for the COMPAQ PORTABLE 286 Personal Computer. The second table contains Power On Self Test error messages for the COMPAQ Portable and COMPAQ PLUS Personal Computers.

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

The tables list the messages, the audible (beep) message, and the probable failure.

Table 5-1. Power On Self Test Error Messages for the COMPAQ PORTABLE 286 Personal Computer

Message	Beeps	Probable Failure
101 - I/O ROM Error	1 Long, 1 Short	Option ROM
101 - ROM Error	1 Long, 1 Short	System ROM
102 - System Board Failure	None	System Board
162 - System Options Error	2 Short	SETUP Utility Incorrect
163 - Time & Date Not Set	2 Short	Invalid time
164 - Memory Size Error Discrepancy	2 Short	SETUP Utility Incorrect
XX000B YZZZ - 201 Memory Error	None	RAM Failure *
301 - Keyboard Error	None	Keyboard
302 - System Unit Security Lock is Locked, Unlock System Unit Security Lock	2 Short	System Lock
303 - Keyboard Controller Error	None	Keyboard

304 - Keyboard or System Unit Error	None	Keyboard
* See Section 5.4, "Memory Error Codes," for the location of the defective memory chip.		
Message	Beeps	Probable Failure
402 - Monochrome Display Controller Failure	1 Long, 2 Short	Monochrome Display Controller Board
501 - Display Controller Failure	1 Long, 2 Short	Video Display or Video Controller Board
601 - Diskette Controller Error	None	Diskette Controller Board
1780 - Disk 0 Failure	None	Fixed Disk Drive
1782 - Disk Controller Failure	None	Fixed Disk Drive
1790 - Disk 0 Error	None	Fixed Disk Drive Recalibration
Parity Check 2 XX000B YYZZ *	None	Expansion RAM (Main Memory on COMPAQ PORTABLE 286)
Audible	1 Short	Power On successful: COMMON (6 MHz) speed
Audible	2 Short	Power On successful: FAST (8 MHz) speed
RESUME = "F1" KEY	None	Any failure
* See Section 5.4, "Memory Error Codes," for the location of the defective memory chip.		

Table 5-2. Power On Self Test Error Messages for the COMPAQ Portable and COMPAQ PLUS Personal Computers

Message	Beeps	Probable Failure
Audible	1 Beep	Power On successful
1XX	1 Long, 1 Short	System ROM or System Board
XXYY 20X	None	Failure
3XX or dd 3XX	None	Keyboard assembly or "stuck" key
4XX	None	Diskette/Printer Board
	1 Long, 2 Short	Video Display Unit or Video Controller Board
5XX	1 Long,	Video Display Unit (VDU) or Video

	2 Short	Controller Board
6XX	None	Disk Drive Assembly
170X	None	Fixed Disk Drive Assembly

### Chapter 5.3 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.

Table 5.3 lists all possible error codes, a description of the error condition, and the action required to resolve the error condition.

In each case, the required action lists prioritized steps necessary to correct the problem. After each step is completed, run DIAGNOSTICS to verify whether the error condition has been corrected. If the error code reappears, perform the next step, then run the DIAGNOSTICS Program. Follow this procedure until the DIAGNOSTICS Program no longer detects an error condition.

For assistance in the removal and replacement of a particular subassembly, see Chapter 7, "Removal and Replacement Procedures."

Table 5-3. DIAGNOSTIC Error Codes

Error Code	Error Description	Required Action
Processor		
lyy - xx		
101 - 01	286 CPU test failed	Replace the system board.
102 - 01	287 Coprocessor initial status word incorrect	The following steps apply to error codes 102 - 01 through 102 - 15:
102 - 02	287 Coprocessor initial control word incorrect	1. Replace the 287 Coprocessor. 2. Replace the system board.
102 - 03	287 Coprocessor tag word not all ones	
102 - 04	287 Coprocessor tag word not all zeros	
102 - 05	287 Coprocessor exchange command failed	
102 - 06	287 Coprocessor masked exception incorrectly handled	
102 - 07	287 Coprocessor unmasked exception codes incorrectly handled	

102 - 08      287 Coprocessor wrong  
mask bit set in status  
register

102 - 15      287 socket is unoccupied,  
or 287 is inoperative

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Error Code	Error Description	Required Action
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103 - 01	8237 DMA page registers test	Replace the system board for error codes 103 - 01 through 113 - 01.
103 - 02	8237 DMA byte controller test failed	
103 - 03	8237 DMA word controller test failed	
104 - 01	8259 interrupt controller master test failed	
104 - 02	8259 interrupt controller slave test failed	
104 - 03	8259 software RTC is inoperative	
105 - 01	Port bit 6 not at zero	
105 - 02	Port bit 5 not at zero	
105 - 03	Port bit 3 not at zero	
105 - 04	Port bit 1 not at zero	
105 - 05	Port bit 0 not at zero	
105 - 06	Port bit 5 not at one	
105 - 07	Port bit 3 not at one	
105 - 08	Port bit 1 not at one	
105 - 09	Port bit 0 not at one	

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Error Code	Error Description	Required Action
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Processor  
lyy - xx

106 - 01	8042 keyboard controller self test failed	Replace the system board for error codes 103 - 01 through 113 - 01.
107 - 01	CMOS RAM test failed	
108 - 02	CMOS interrupt test failed	

109 - 01	CMOS clock load data test failed	
109 - 02	CMOS clock rollover test failed	
110 - 01	8254 load data test failed	
110 - 02	8254 dynamic 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 - 03	Speed test fast mode out of range	
112 - 04	Speed test unable to enter slow mode	
112 - 05	Speed test unable to enter mixed mode	
112 - 06	Speed test unable to enter fast mode	
112 - 07	Speed test system error	
113 - 01	Protected mode test failed	
114 - 01	Speaker test failed	<ol style="list-style-type: none"> <li>1. Replace the speaker.</li> <li>2. Replace the system board.</li> </ol>
Error Code	Error Description	Required Action
Memory *		
2yy - xx		
201 - 01	Memory machine ID test	The following steps apply to error codes 201 - 01 through 202 - 01: (Error during saving test program memory):
201 - 02	Memory machine type test failed	
201 - 03	Memory machine ID & type tests failed	<ol style="list-style-type: none"> <li>1. Replace VDU controller board.</li> <li>2. Replace the system ROM.</li> <li>3. Replace the system board.</li> </ol>
202 - 01	Memory system ROM checksum failed	
203 - 01	Memory write/read test failed	The following steps apply to error codes 203 - 01 through 205 - 03:
203 - 02	Error during saving program memory in write/read test	<ol style="list-style-type: none"> <li>1. Replace the defective memory chip if an error code is accompanied by an XX000B YYZZ</li> </ol>

203 - 03	Error during restore of program in write/read test	code. 2. Replace the system board.
204 - 01	Memory address test failed	
204 - 02	Error during saving program memory in address test	
204 - 03	Error during restore of program memory address test	
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	

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 \* See Section 5.4, "Memory Error Codes."  
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Error Code	Error Description	Required Action
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Keyboard 3yy - xx		
-----		
301 - 01	Keyboard short test, 8042 self test failed	The following steps apply to error codes 301 - 01 through 304 - 01:
301 - 02	Keyboard short test, interface test failed	1. Replace the keyboard. 2. Replace the system board.
301 - 03	Keyboard short test, echo test failed	
301 - 04	Keyboard short test, keyboard reset failed	
302 - 01	Keyboard long test failed	
303 - 01	Keyboard LED test, 8042 self test failed	
303 - 02	Keyboard LED test, reset test failed	
303 - 03	Keyboard LED test, reset test failed	
303 - 04	Keyboard LED test, LED command test failed	
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 typomatic test  
failed

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315 - 01 Security lock is inoperative 1. Replace the security lock.

315 - 02 Security lock sticks in  
locked position

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Error Code	Error Description	Required Action
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Printer  
4yy - xx

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401 - 01	Printer failed or not connected	The following steps apply to error codes 401 - 01 through 403 - 01:
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 controller register failed	2. Check switch 2 on the diskette/tape controller board (see Chapter 8). *
402 - 03	Printer data and controller register failed	3. Replace the printer and/or the printer controller cable.
402 - 04	Printer loopback failed	4. Replace the diskette/tape controller board. *
402 - 05	Printer loopback and data register failed	5. Replace the system board.
402 - 06	Printer loopback and controller register failed	* 286 based COMPAQ Personal Computers only
402 - 07	Printer loopback, data, and controller register failed	
402 - 08	Printer interrupt test failed	
402 - 09	Printer interrupt and data failed	

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Error Code	Error Description	Required Action
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402 - 10	Printer interrupt and controller register failed	The following steps apply to error codes 401 - 01 through 403 - 01:
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402 - 11	Printer interrupt data, and controller register failed	1. If a printer is connected, be sure it is turned ON and in the online mode.
402 - 12	Printer interrupt and loopback failed	2. Check switch 2 on the diskette/tape controller board (see Chapter 8). *
402 - 13	Printer interrupt, loopback, and data register failed	3. Replace the printer and/or the printer controller cable.
402 - 14	Printer interrupt, loopback, and controller register failed	4. Replace the diskette/tape controller board. *
		5. Replace the system board.
402 - 15	Printer interrupt, loopback, data, and controller register failed	* 286 based COMPAQ Personal Computers only
402 - 16	Printer unexpected interrupt received	

403 - 01 Printer pattern test failed

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Error Code	Error Description	Required Action
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Video Display Unit (VDU)  
5yy - xx

501 - 01	VDU controller test failed	The following steps apply to error codes 501 - 01 through 512 - 01:
502 - 01	VDU memory test failed	
503 - 01	VDU attribute test failed	1. Replace the VDU controller board.
504 - 01	VDU character set test failed	2. Replace the VDU signal cable.
		3. Replace VDU subassembly.
		4. Replace the system board.
505 - 01	VDU 9 x 14 character cell test	
506 - 01	VDU 80 x 25 mode 8 x 8 character cell test failed	
507 - 01	VDU 40 x 25 mode test failed	
508 - 01	VDU 320 x 200 mode color set 0 test failed	
509 - 01	VDU 320 x 200 mode color set 1 test failed	
510 - 01	VDU 640 x 200 mode test failed	
511 - 01	VDU screen memory page test failed	
512 - 01	VDU gray scale test failed	

Error Code	Error Description	Required Action
516 - 01	Lightpen text mode test failed - no response	The following steps apply to error codes 516 - 01 through 516 - 04:
516 - 0	Lightpen text mode test failed - invalid response	1. Replace the lightpen. 2. Replace the VDU controller board.
516 - 03	Lightpen medium resolution mode test failed - no response	
516 - 04	Lightpen medium resolution mode test - invalid response	

Diskette Drive

6yy - xx

600 - xx	Diskette drive ID	The following steps apply to all 6yy - xx related error codes.
601 - xx	Diskette drive format	
602 - xx	Diskette drive read	1. Check shunt jumper J2 setting on the diskette/tape controller board (see Chapter 8). *
603 - xx	Diskette drive write/read/compare	2. Replace the diskette/tape controller board. *
604 - xx	Diskette drive random seek drive	3. Replace the diskette drive power and signal cables.
605 - xx	Diskette drive ID media test	4. Replace the diskette drive assembly.
606 - xx	Diskette drive speed test	5. Replace the system board.
607 - xx	Diskette drive wrap test	* 286 based COMPAQ Personal Computers only
608 - xx	Diskette drive write protect test	
609 - xx	Diskette drive reset controller test	

Error Code	Error Description	Required Action
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Diskette Drive

6yy - xx

610 - xx	Diskette drive change line test	The following steps apply to all 6yy - xx related error codes.
610 - 01	Exceeded maximum soft error limit	1. Check shunt jumper J2 setting on the diskette/tape controller board (see Chapter 8). *
610 - 02	Exceeded maximum hard error limit	2. Replace the diskette/tape controller board. *

610 - 03	Previously exceeded max soft error limit	3. Replace the diskette drive power and signal cables.
610 - 04	Previously exceeded max hard error limit	4. Replace the diskette drive assembly. 5. Replace the system board.
610 - 05	Failed to reset controller	* 286 based COMPAQ Personal Computers only
610 - 06	Fatal error while reading	
610 - 07	Fatal error while writing	
610 - 08	Failed compare of write/read/compare	

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Error Code	Error Description	Required Action
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Diskette Drive  
6yy - xx

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6xx - 09	Failed to format a track	The following steps apply to all 6yy - xx related error codes.
610 - 10	Failed sector wrap test	
610 - 20	Failed to get drive type	1. Check shunt jumper J2 setting on the diskette/tape controller board (see Chapter 8). *
610 - 21 **	Failed to get change line status	2. Replace the diskette/tape controller board. *
610 - 22	Failed to clear change	3. Replace the diskette drive power and signal cables.
610 - 23	Failed to set drive type in ID media	4. Replace the diskette drive assembly.
610 - 24	Failed to read media	5. Replace the system board.
610 - 25	Failed to verify media	* 286 based COMPAQ Personal Computers only
610 - 26	Failed to read media in speed test	** The following applies to 286 based computers:
610 - 27	Failed speed limits	For a 1.2 megabyte diskette drive, replace the diskette drive. For a 360 Kbyte diskette drive, a drive modification has not been performed. See Service Bulletin 25.
610 - 28	Failed write protect test	
610 - 29	Failed to read media in file write test	
610 - 40	Cylinder 0 Error	

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Error Code	Error Description	Required Action
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Serial  
11yy - xx

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1101 - 01	Serial Port Test, UART DLAB bit failure	The following steps apply to all 11yy - xx related error codes:
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1101 - 02	Serial Port Test, Line input or UART fault	1. Check diskette/tape controller board for proper shunt jumper settings (see Chapter 8). *
1101 - 03	Serial Port Test, Address line fault	2. Replace the diskette/tape controller board.
1101 - 04	Serial Port Test, Data line fault	3. Replace the system board.
1101 - 05	Serial Port Test, UART control signal	* 286 based COMPAQ Personal Computers only
1101 - 06	Serial Port Test, ART THREE bit failure	
1101 - 07	Serial Port Test, UART DATA READY bit failure	
1101 - 08	Serial Port Test, UART TX/RX buffer failure	
1101 - 09	Serial Port Test, INTERRUPT circuit failure	
1101 - 10	Serial Port Test, COM 1 set to interrupt 3	

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Error Code	Error Description	Required Action
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Serial  
11yy - xx

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1101 - 11	Serial Port Test, COM 2 set to interrupt 4	The following steps apply to all 11yy - xx related error codes:
1101 - 12	Serial Port Test, DRIVER/RECEIVER control signal failure	1. Check diskette/tape controller board for proper shunt jumper settings (see Chapter 8). *
1101 - 13	Serial Port Test, UART control signal interrupt failure	2. Replace the diskette/tape controller board.
1101 - 14	Serial Port Test, DRIVER/RECEIVER data failure	3. Replace the system board.
		* 286 based COMPAQ Personal Computers only
1109 - 01	Serial Clock Test, register initialization failure	
1109 - 02	Serial Clock Test, register rollover failure	
1109 - 03	Serial Clock Test, clock reset failure	
1109 - 04	Serial Clock Test, input line or clock failure	
1109 - 05	Serial Clock Test, address	

line failure

1109 - 06 Serial Clock Test, data  
line failure

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Error Code	Error Description	Required Action
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Fixed Disk Drive

17yy - xx

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1700 - xx	Fixed disk drive ID drive test type	The following steps apply to error codes 1700 - xx through 1716 - 59:
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1701 - xx	Fixed disk drive format test	1. Check the fixed disk drive controller board for the proper switch setting (see Chapter 8). *
1702 - xx	Fixed disk drive read test	2. Replace the fixed disk drive signal and power cables.
1703 - xx	Fixed disk drive write/read/compare test	3. Replace the fixed disk drive controller board. *
1704 - xx	Fixed disk drive random seek test	4. Replace the fixed disk drive assembly.
1705 - xx	Fixed disk drive controller test	5. Replace the system board.

\* 286 based COMPAQ Personal Computers only

1706 - xx Fixed disk drive ready test

1707 - xx Fixed disk drive recalibrate test

1708 - xx Fixed disk drive format bad track test

1709 - xx Fixed disk drive reset controller test

1710 - xx Fixed disk drive park head test

1714 - xx Fixed disk drive file write test

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Error Code	Error Description	Required Action
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Fixed Disk Drive

17yy - xx

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1715 - xx	Fixed disk drive head select test	The following steps apply to error codes 1700 - xx through 1716 - 59:
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1716 - xx	Fixed disk drive conditional format test	1. Check the fixed disk drive controller board for the proper switch setting (see Chapter 8). *
1716 - 01	Exceeded maximum soft error limit	2. Replace the fixed disk drive signal and power cables.

1716 - 02	Exceeded maximum hard error limit	3. Replace the fixed disk drive controller board. *
1716 - 03	Previously exceeded maximum soft error limit	4. Replace the fixed disk drive assembly.
1716 - 04	Previously exceeded maximum hard error limit	5. Replace the system board.
1716 - 05	Failed to reset controller	
1716 - 06	Fatal error while reading	
1716 - 07	Fatal error while writing	
1716 - 08	Failed compare of write/read/compare test	* 286 based COMPAQ Personal Computers only

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Error Code	Error Description	Required Action
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Fixed Disk Drive  
17yy - xx

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1716 - 09	Failed to format a track	The following steps apply to error codes 1700 - xx through 1716 - 59:	
1716 - 10	Failed sector wrap test		
1716 - 40	Failed cylinder 0	<ol style="list-style-type: none"> <li>1. Check the fixed disk drive controller board for the proper switch setting (see Chapter 8). *</li> <li>2. Replace the fixed disk drive signal and power cables.</li> <li>3. Replace the fixed disk drive controller board. *</li> <li>4. Replace the fixed disk drive assembly.</li> <li>5. Replace the system board.</li> </ol>	
1716 - 41	Drive not ready		
1716 - 42	Recalibrate failed fixed disk drive		
1716 - 43	Failed to format bad track		
1716 - 44	Failed fixed disk drive controller diagnostics		
1716 - 45	Failed to get drive parameters from ROM		* 286 based COMPAQ Personal Computers only
1716 - 46	Invalid drive parameters found in ROM		
1716 - 47	Failed to park heads		
1716 - 48	Failed to move disk table to RAM		
1716 - 50	Failed file I/O test in write test		

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Error Code	Error Description	Required Action
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Fixed Disk Drive  
17yy - xx

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1716 - 51	Failed file I/O test in read test	The following steps apply to error codes 1700 - xx through 1716 - 59:
1716 - 52	Failed file I/O test in compare test	1. Check the fixed disk drive controller board for the proper switch setting (see Chapter 8). *
1716 - 53	Failed drive/head register test	2. Replace the fixed disk drive signal and power cables.
1716 - 54	Failed digital input register test	3. Replace the fixed disk drive controller board. *
1716 - 55	Cylinder 1 failed	4. Replace the fixed disk drive assembly.
1716 - 56	Controller RAM failed	5. Replace the system board.
1716 - 57	Controller to drive test failed	* 286 based COMPAQ Personal Computers only
1716 - 58	Failed to write sector buffer	
1716 - 59	Failed to read sector buffer	
1716 - 60	Non COMPAQ fixed disk drive controller ROM	

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Error Code	Error Description	Required Action
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Tape Drive  
19yy - xx

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1901 - xx	* Tape servo write	The following steps apply to all 19yy - xx error codes:
1902 - xx	* Tape format	1. Replace the tape cartridge.
1903 - xx	* Tape drive sensor test	2. Replace the signal cable.
1904 - xx	* Tape BOT/EOT test	3. Replace the diskette/tape controller board.
1905 - xx	* Tape read test	4. Replace the tape drive assembly.
1906 - xx	* Tape write/read/compare test	* 286 based COMPAQ Personal Computers only
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	
1906 - 06	Tape write protected error	



1906 - 07 Tape already servo written

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Error Code	Error Description	Required Action
Tape Drive		
19yy - xx		
1906 - 08	Unable to servo write	The following steps apply to all 19yy - xx error codes:  1. Replace the tape cartridge. 2. Replace the signal cable. 3. Replace the diskette/tape controller board. 4. Replace the tape drive assembly.  * 286 based COMPAQ Personal Computers only
1906 - 09	Unable to format	
1906 - 10	Format mode error	
1906 - 11	Drive recalibration error	
1906 - 12	Tape not servo written	
1906 - 13	Tape not formatted	
1906 - 14	Drive timeout error	
1906 - 15	Sensor error flag	
1906 - 16	Block locate (block ID) error	
1906 - 17	Soft error limit exceeded	
1906 - 18	Fixed error limit exceeded	
1906 - 19	Write error (probably ID error)	
1906 - 20	NEC765 fatal error	
1906 - 21	Got servo pulses 2nd time but not 1st	
1906 - 22	Never got to EOT after servo check	

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## Chapter 5.4 Memory Error Codes

This section is divided into two parts. The first part contains memory error codes for the COMPAQ PORTABLE 286 Personal Computer. The second part contains memory error codes for the COMPAQ Portable and COMPAQ PLUS Personal Computers.

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 specifies which memory chip to replace. In some cases, replacing the memory chip will not solve the problem because: 1) the system may be unable to accurately determine which chip or chips are at fault, or 2) the problem may be due to a failure in the memory support circuitry, not the memory device.

The memory error code points to a specific memory address. The physical location of the memory address depends on the type of system, the number and type of memory boards installed, and the type of memory device used (64 Kbyte RAMs or 256 Kbyte RAMs).

COMPAQ PORTABLE 286 Memory Error Codes

Memory error codes are in the XX000B YYZZ format.

- o XX equals the 128 Kbyte memory segment (bank) in which an error is detected.
- o 000 is always equal to 000 (not used)
- o B identifies whether the defective memory chip is in the high byte or the low byte of the memory bank.
- o When B = 0, YY defines the defective chip row location within the low byte of the memory bank.
- o When B = 1, ZZ defines the defective chip row location within the high byte of the memory bank.

For example, assume error code 020001 0010 appears on the monitor. First determine which table to reference (see COMPAQ PORTABLE 286 Memory Configuration). Next, determine which bank to reference and which byte, high or low. Finally, determine the defective chip row location. In this example, error code 020001 0010 specifies chip U50 in Table 5.4-1. Use the following charts to locate a defective memory chip:

COMPAQ PORTABLE 286 Memory Configuration

RAM Type	Error Code xx Value	Memory Device Location	See Table
64 Kbyte	00 to 02 (0 - 256 Kbytes)	System Board	5.4-1
256 Kbyte	00 to 08 (0 - 640 Kbytes)	System Board	5.4-2
64 Kbyte or 256 Kbyte	10 to 2E (1 - 3 megabytes)	Memory Expansion Board	5.4-3

NOTE: xx codes 0A to 0F represent the memory space for the video memory and system ROMs. Errors in the video memory or system ROM space are not reported in the XX000B YYZZ error message format.

Table 5.4-1. Defective Memory Chip Isolation Map for the COMPAQ PORTABLE 286 System Board Using 64 Kbyte RAMs (0 - 256 Kbytes)

Data Bit YY or ZZ	XX = 00 Bank 0		XX = 02 Bank 1	
	B = 0 Low	B = 1 High	B = 0 Low	B = 1 High

01	U5	U6	U7	U8
02	U20	U21	U22	U23
04	U25	U26	U27	U28
08	U41	U42	U43	U44
10	U47	U48	U49	U50
20	U63	U64	U65	U66
40	U70	U71	U72	U73
80	U81	U82	U83	U84
00	U88	U89	U90	U91

Table 5.4-2. Defective Memory Chip Isolation Map for the COMPAQ PORTABLE 286 System Board Using 256 Kbyte RAMs (0 - 640 Kbytes)

Data Bit YY or ZZ	XX = 00 Bank 0		XX = 02 06, 08 Bank 1	
	B = 0 Low	B = 1 High	B = 0 Low	B = 1 High
01	U5	U6	U7	U8
02	U20	U21	U22	U23
04	U25	U26	U27	U28
08	U41	U42	U43	U44
10	U47	U48	U49	U50
20	U63	U64	U65	U66
40	U70	U71	U72	U73
80	U81	U82	U83	U84
00	U88	U89	U90	U91

Table 5.4-3. Defective Memory Chip Isolation Map for a Memory Expansion Board Mapped into the 1 - 3 Megabyte Memory Space (256 Kbyte RAMs)

Data Bit YY or ZZ	XX = 10, 12, 14, 16 Bank 1		XX = 18, 1A, 1C, 1E Bank 2		XX = 20, 22, 24, 26 Bank 3		XX = 28, 2A, 2C, 2E Bank 4	
	B = 1 High	B = 0 Low	B = 1 High	B = 0 Low	B = 1 High	B = 0 Low	B = 1 High	B = 0 Low
80	U3	U12	U21	U30	U39	U48	U57	U66

40	U4	U13	U22	U31	U40	U49	U58	U67
20	U5	U14	U23	U32	U41	U50	U59	U68
10	U6	U15	U24	U33	U42	U51	U60	U69
08	U7	U16	U25	U34	U43	U52	U61	U70
04	U8	U17	U26	U35	U44	U53	U62	U71
02	U9	U18	U27	U36	U45	U54	U63	U72
01	U10	U19	U28	U37	U46	U55	U64	U73
00	U11	U20	U29	U38	U47	U56	U65	U74

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COMPAQ Portable and COMPAQ PLUS Memory Error Codes

Memory error codes for the COMPAQ Portable and COMPAQ PLUS Personal Computers will appear in an "XXYY 201" format.

XX - Denotes the beginning address of the error code (or the bank in which the error occurred)

YY - Denotes the failed bit

Once all corrections have been completed and all boards have been reinstalled in the system, begin the problem isolation procedure again to verify proper operation of the CPU/memory subsystem.

Table 5.4-4. COMPAQ Portable and COMPAQ PLUS System Board Memory

Error Code	Failure Description	Location of Failed Chip	Required Action
(XXYY 201)			
0000 201	Bank 0, Parity	U39	Replace System Board
0001 201	Bank 0, Data Bit 0	U97 or U53 *	Replace System Board
0002 201	Bank 0, Data Bit 1	U87 or U53 *	Replace System Board
0004 201	Bank 0, Data Bit 2	U80 or U53 *	Replace System Board
0008 201	Bank 0, Data Bit 3	U74 or U53 *	Replace System Board
0010 201	Bank 0, Data Bit 4	U70 or U45 *	Replace System Board
0020 201	Bank 0, Data Bit 5	U63 or U45 *	Replace System Board
0040 201	Bank 0, Data Bit 6	U54 or U45 *	Replace System Board
0080 201	Bank 0, Data Bit 7	U46 or U45 *	Replace System Board

1000	201	Bank 1, Parity Bit	U38	Replace System Board
1001	201	Bank 1, Data Bit 0	U96 or U69 *	Replace System Board
1002	201	Bank 1, Data Bit 1	U86 or U69 *	Replace System Board
1004	201	Bank 1, Data Bit 2	U79 or U69 *	Replace System Board
1008	201	Bank 1, Data Bit 3	U73 or U69 *	Replace System Board

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 \* Location of Failed Chip if using Alternate Bank 2 and 3.  
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Error Code	Failure Description	Location of Failed Chip	Required Action	
(XXYY 201)				
1010	201	Bank 1, Data Bit 4	U69 or U62 *	Replace System Board
1020	201	Bank 1, Data Bit 5	U62 or U62 *	Replace System Board
1040	201	Bank 1, Data Bit 6	U53 or U62 *	Replace System Board
1080	201	Bank 1, Data Bit 7	U45 or U62 *	Replace System Board
2000	201	Bank 2, Parity Bit	U37 or U37 *	Replace Memory Chip
2001	201	Bank 2, Data Bit 0	U95 or U79 *	Replace Memory Chip
2002	201	Bank 2, Data Bit 1	U85 or U79 *	Replace Memory Chip
2004	201	Bank 2, Data Bit 2	U78 or U79 *	Replace Memory Chip
2008	201	Bank 2, Data Bit 3	U72 or U79 *	Replace Memory Chip
2010	201	Bank 2, Data Bit 4	U68 or U73 *	Replace Memory Chip
2020	201	Bank 2, Data Bit 5	U61 or U73 *	Replace Memory Chip
2040	201	Bank 2, Data Bit 6	U52 or U73 *	Replace Memory Chip
2080	201	Bank 2, Data Bit 7	U44 or U73 *	Replace Memory Chip
3000	201	Bank 3, Parity Bit	U36 or U36 *	Replace Memory Chip
3001	201	Bank 3, Data Bit 0	U94 or U96 *	Replace Memory Chip
3002	201	Bank 3, Data Bit 1	U84 or U96 *	Replace Memory Chip
3004	201	Bank 3, Data Bit 2	U77 or U96 *	Replace Memory Chip
3008	201	Bank 3, Data Bit 3	U71 or U96 *	Replace Memory Chip
3010	201	Bank 3, Data Bit 4	U67 or U86 *	Replace Memory Chip
3020	201	Bank 3, Data Bit 5	U60 or U86 *	Replace Memory Chip
3040	201	Bank 3, Data Bit 6	U51 or U86 *	Replace Memory Chip
3080	201	Bank 3, Data Bit 7	U43 or U86 *	Replace Memory Chip

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\* Location of Failed Chip if using Alternate Bank 2 and 3.  
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Table 5.4-5. COMPAQ Portable and COMPAQ PLUS Extended Memory Codes

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xx Code	Beginning Address
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40yy 201	256 Kbytes
48yy 201	288 Kbytes
50yy 201	320 Kbytes
58yy 201	352 Kbytes
60yy 201	384 Kbytes
68yy 201	416 Kbytes
70yy 201	448 Kbytes
78yy 201	480 Kbytes
80yy 201	512 Kbytes

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yy Code	Failed Bit
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xx00	Parity Bit
xx01	Data Bit 0
xx02	Data Bit 1
xx04	Data Bit 2
xx08	Data Bit 3
xx10	Data Bit 4
xx20	Data Bit 5
xx40	Data Bit 6
xx80	Data Bit 7

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# Chapter 6. Illustrated Parts Catalog

## Chapter 6.1 Illustrated Parts List for Compaq Portable and Compaq Plus Personal Computers

Section 6.1 provides a reference for specific COMPAQ Portable and COMPAQ PLUS Computer part (or parts kit) numbers used to place parts orders with Compaq Computer Corporation.

Each parts list has three columns, which are:

- o ITEM NUMBER - A reference number for parts in the list.
- o PART NUMBER - The number to use when ordering parts from COMPAQ Computer Corporation.
- o DESCRIPTION - The name of the particular part or parts kit.

This section is arranged so that every parts list is preceded by its related illustrated parts breakdown.

NOTE: If you request a RUSH shipment, your order is processed and shipped within 24 hours.

For parts descriptions,  
refer to Table 6.1-1.

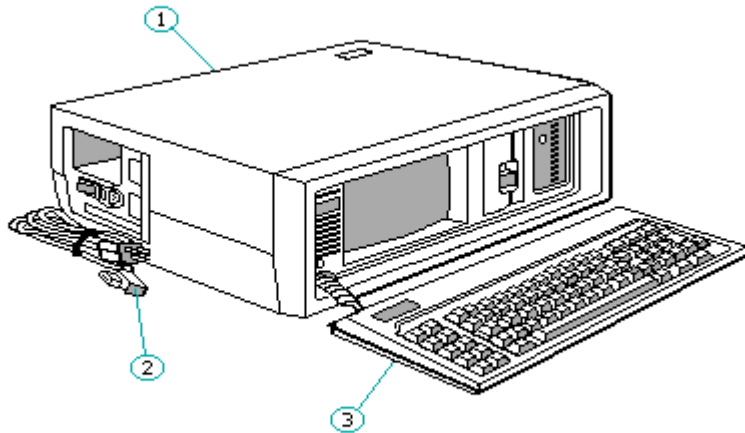


Figure 6.1-1. System (Front)

Table 6.1-1. COMPAQ Portable and COMPAQ PLUS Personal Computers Parts List: System (Front)

Item Number	Part Number	Description
1	101709-001	Enclosed Chassis Assembly

2            100374-001 \*\*            AC Power Cord  
 3            100487-001 \*\*            Keyboard Assembly

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 \*\* Part number no longer available.  
 =====

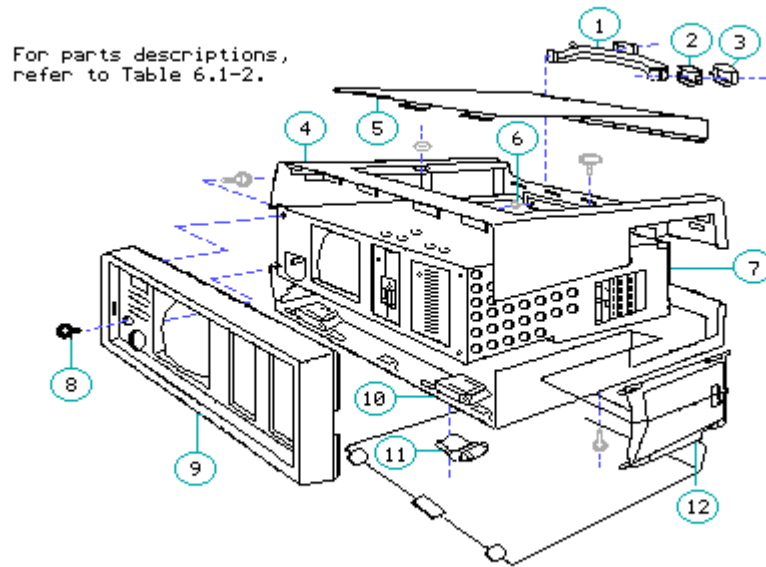


Figure 6.1-2. Chassis (Front)

Table 6.1-2. COMPAQ Portable and COMPAQ PLUS Personal Computers Parts List: Chassis (Front)

Item Number	Part Number	Description
1	100025-001 **	Handle
2	100025-001 **	Handle Bushing
3	100025-001 **	Handle End Cap
4	101097-001 **	Upper Case
5	101098-001 **	Access Panel
6	100025-001 **	Screw, 10-32 x 3/8 T-15 Torx:
7	101750-001 **	Chassis Assembly
8	102709-001 *	Brightness knob
9	101099-001 **	Front Bezel
10	101097-001 **	Lower Case
11	100077-001 **	VDU Foot/Detent



\* This part is included in the Miscellaneous Hardware Kit (PN 102709-001).

\*\* Part number no longer available.

For parts descriptions,  
refer to Table 6.1-3.

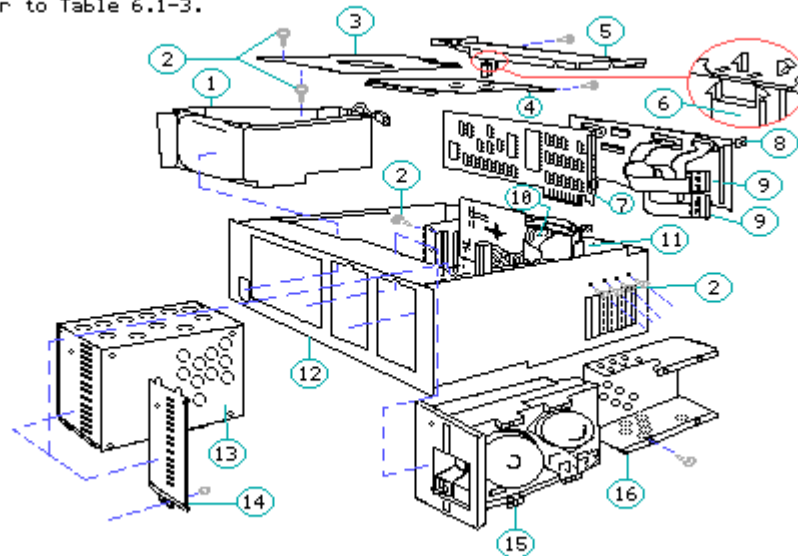


Figure 6.1-3. Common Chassis (Front)

Table 6.1-3. COMPAQ Portable and COMPAQ PLUS Personal Computers Parts  
List: Common Chassis (Front)

Item Number	Part Number	Description
1	105034-001 **	Monitor Assembly
2	102709-001 *	Screw, 4-40 1/4 T-10 Torx
3	100436-002 **	High Voltage Access Plate
4	100330-001 **	Storage Device Access Plate
5	100438-001 **	Board Slots Access Plate
6	102709-001 *	Printed Circuit Board Retainer
7	101340-001 **	VDU Controller Board
8	100644-001 **	Fixed Disk Drive Controller Board
9	100512-001 *** **	Fixed Disk Drive Controller Cables

10	100512-001 *** **	Diskette Drive Controller Cable
11	101341-001 **	Diskette/Printer Controller Board
12	101750-001 **	Chassis Assembly
13	100643-001 **	10 Megabyte Fixed Disk Drive
14	100437-001 **	Blank Drive Plate
15	101421-001 **	360 Kbyte Diskette Drive
16	101031-001 **	Diskette Drive Shield (Half Height)

\* These parts are included in the Miscellaneous Hardware Kit (PN 102709-001).  
 \*\*\* These parts are included in the Cable Kit (PN 100512-001 \*\*).  
 \*\* Part number no longer available.

For parts descriptions, refer to Table 6.1-4.

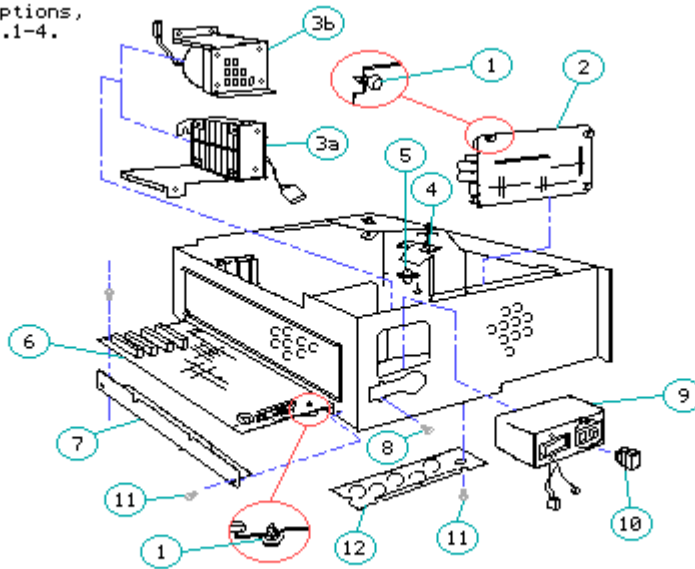


Figure 6.1-4. Mechanical Chassis (Front)

Table 6.1-4. COMPAQ Portable and COMPAQ PLUS Personal Computers Parts List: Mechanical Chassis (Front)

Item Number	Part Number	Description
1	102709-001 *	Printed Circuit Board Standoff
2	100475-001 **	Power Supply Assembly
3a ***	102845-001 **	Fan/Bracket Assembly

3b	□	100482-001	**	Fan/Bracket Assembly
4		102709-001	*	Drive Ground Strap
5		102709-001	*	Drive Shock Mount
6		100478-001	**	System Board Assembly
7		100478-001	**	System Board Support Bracket
8		102709-001	*	Screw, 8-32 x 3/8 T-15 Torx
9		101798-001	**	Power Switch Filter Assembly
10		102930-001		AC Line Fuse
11		102709-001	*	Screw, 4-40 x 1/4 T-10 Torx
12		100439-001	**	System Board Connector Access Plate

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\* These parts are included in the Miscellaneous Hardware Kit (PN 102709-001).  
 \*\* Part number no longer available.  
 \*\*\* For portable computers with serial number 1524020B0001 or above.  
 □ For portable computers with serial numbers below 1524020B0001.

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For parts descriptions,  
refer to Table 6.1-5.

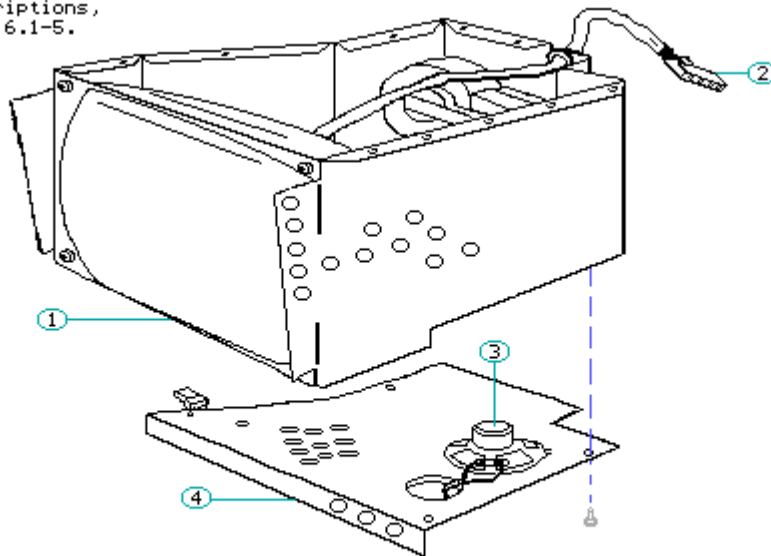


Figure 6.1-5. Monitor Enclosure (Front)

Table 6.1-5. COMPAQ Portable and COMPAQ PLUS Personal Computers Parts  
List: Monitor Enclosure (Front)

Item Number	Part Number	Description
1	105034-001	** Monitor Assembly

2	100512-001 * **	VDU Signal Cable
3	100493-001 **	Speaker Assembly
4	100442-002 **	Monitor Floor

\* This part is contained in the Cable Kit (PN 100512-001 \*\*).

\*\* Part number no longer available.

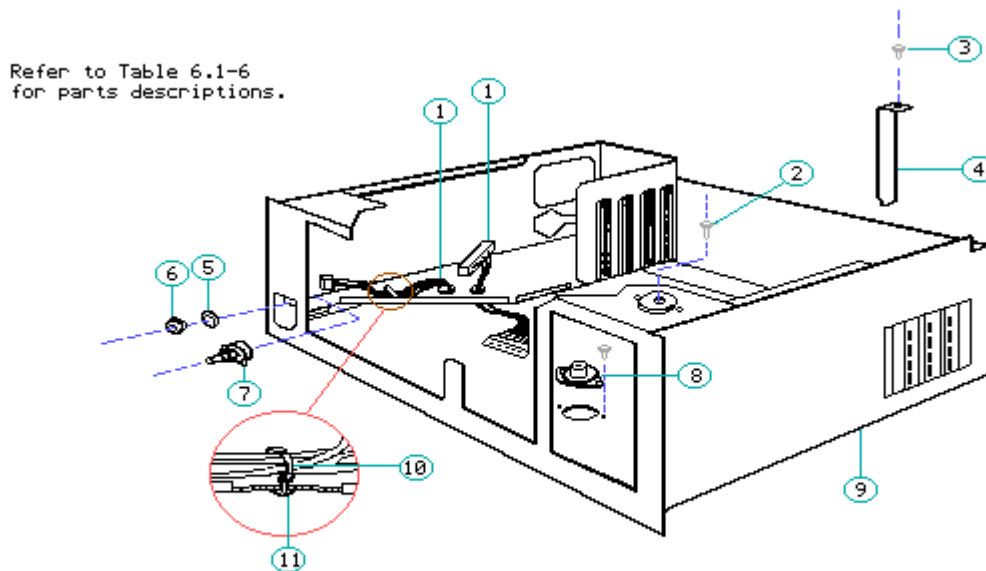


Figure 6.1-6. System Chassis (Front)

Table 6.1-6: COMPAQ Portable and COMPAQ PLUS Personal Computers Parts List: System Chassis (Front)

Item Number	Part Number	Description
1	100260-001	Power Cable Harness Assembly
2	102709-001 *	Screw, 4-40 x 1/4 T-10 Torx
3	102709-001 *	Screw, 6-32 x 1/4 T-14 Torx
4	100429-001 **	Blank, I/O Mounting Bracket
5	102709-001 *	Washer, Internal Tooth
6	102709-001 *	4-40 Hex Nut
7	102709-001 *	Brightness Potentiometer
8	102709-001 *	Drive Shock Mount
9	101750-001 **	System Chassis Assembly

10	102709-001 *	Ty-Wrap
11	102709-001 *	Push Mount

-----  
 \* These parts are included in the Miscellaneous Hardware Kit (PN 102709-001).

\*\* Part number no longer available.  
 =====

## Chapter 6.2 Illustrated Parts List for Compaq Portable 286 Personal Computer

Section 6.2 provides a reference for specific COMPAQ PORTABLE 286 Personal Computer part (or parts kit) numbers used to place part orders with Compaq Computer Corporation.

Each parts list has three columns, which are:

- o ITEM NUMBER - A reference number for parts in the list.
- o PART NUMBER - The number to use when ordering parts from Compaq Computer Corporation.
- o DESCRIPTION - The name of the particular part or parts kit.

This section is arranged so that every parts list is preceded by its related illustrated parts breakdown.

Refer to Table 6.2-1  
 for parts descriptions.

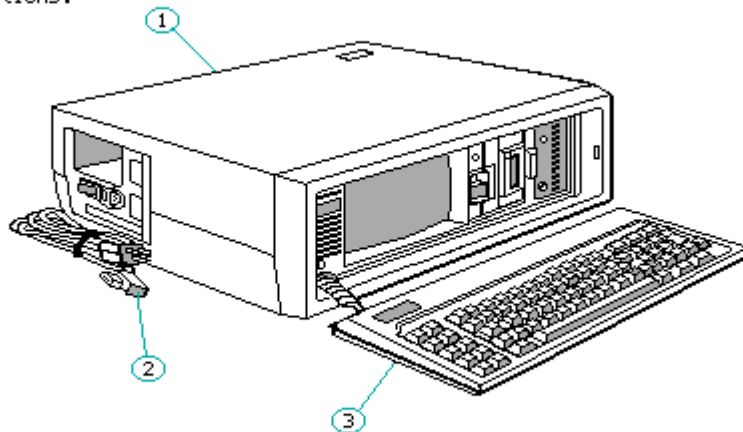


Figure 6.2-1. System (Front)

Table 6.2-1. COMPAQ PORTABLE 286 Personal Computer Parts List:  
 System (Front)  
 =====

Item Number	Part Number	Description
1	101710-001	Assembly, Enclosed Chassis
2	100374-001 **	AC Line Power Cord
3	101790-001 **	Keyboard Assembly

\*\* Part number no longer available.

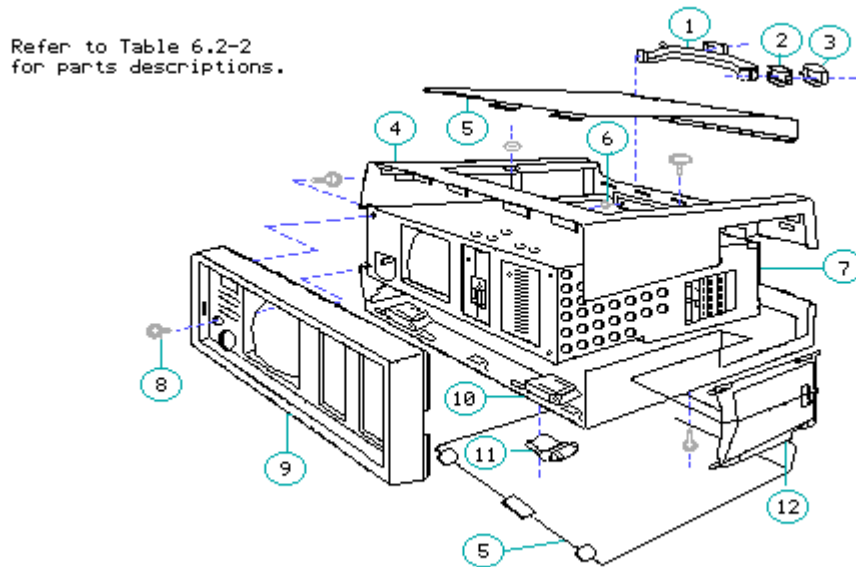


Figure 6.2-2. Chassis (Front)

Table 6.2-2. COMPAQ PORTABLE 286 Personal Computer Parts List: Chassis (Front)

Item Number	Part Number	Description
1	100025-001 **	Handle
2	100025-001 **	Handle Bushing
3	100025-001 **	Handle End Cap
4	101097-001 **	Upper Case
5	101098-001 **	Access Panel
6	100025-001 **	Screw, 10-32 x 3/8 T-15 Torx
7	101750-001 **	Chassis Assembly
8	102709-001 *	Brightness Knob
9	101763-001 **	Front Bezel

10	101097-001 **	Lower Case
11	102709-001 *	VDU Foot/Detent
12	100031-001 **	Sliding Door Panel

\* These parts are included in the Miscellaneous Hardware Kit (PN 102709-001).

\*\* Part number no longer available.

Refer to Table 6.2-3  
for parts descriptions.

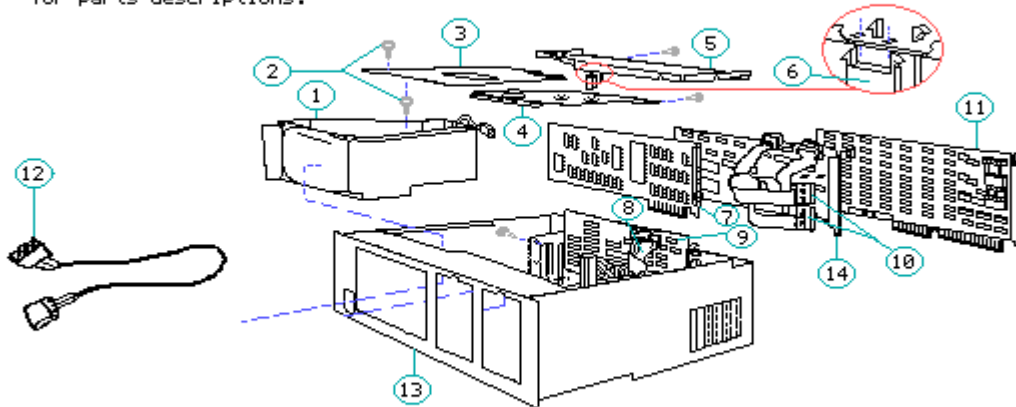


Figure 6.2-3. Common Chassis (Front) - A

Table 6.2-3. COMPAQ PORTABLE 286 Personal Computer Parts List:  
Common Chassis (Front) - A

Item Number	Part Number	Description
1	105034-001 **	Monitor Assembly
2	102709-001 *	Screw, 4-40 1/4 T-10 Torx
3	100436-002 **	High Voltage Access Plate
4	101747-001 **	Storage Drive Access Plate
5	101029-003 **	Board Slots Access Plate
6	102709-001 *	PC Board Retainer
7	101340-001 **	VDU Controller Board
8	102933-001 *** **	Diskette/Tape Controller Cable
9	102705-001 **	Diskette/Tape Controller

			Board
10	102933-001 *** **		Fixed Disk Drive Controller Cables
11	105033-001 **		Memory Expansion Board
12	102933-001 *** **		Mass Storage Power Cable
13	101750-001 **		Chassis Assembly
14	102778-001		Fixed Disk Drive Controller Board

-----  
 \* These parts are all included in the Miscellaneous Hardware Kit  
 (PN 102709-001).

\*\*\* These parts are all included in the Cable Kit (PN 102933-001 \*\*).

\*\* Part number no longer available.  
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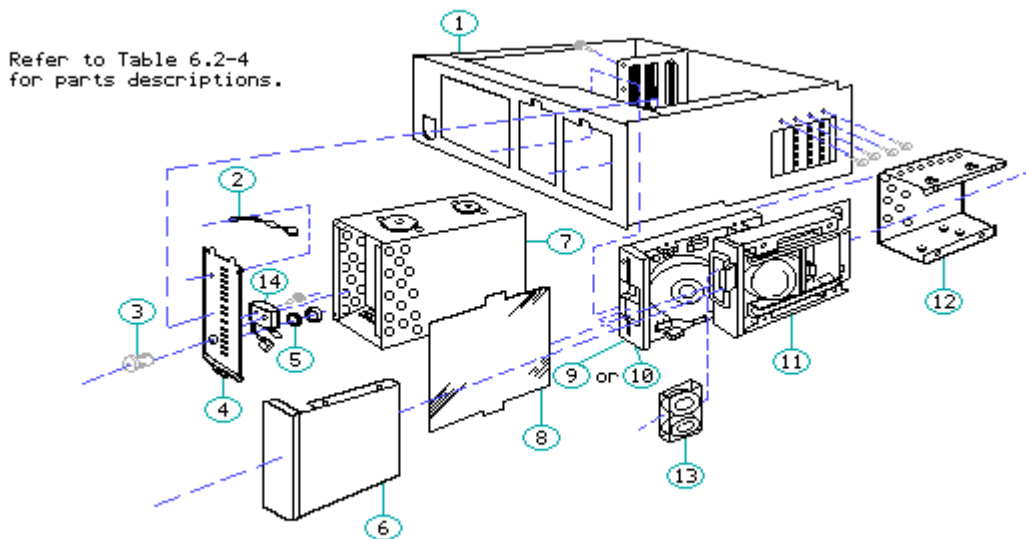


Figure 6.2-4. Common Chassis (Front) - B

Table 6.2-4. COMPAQ PORTABLE 286 Personal Computer Parts List:  
 Common Chassis (Front) - B

Item Number	Part Number	Description
1	101750-001 **	Chassis Assembly
2	102709-001 *	Fixed Disk Drive LED
3	105032-001 **	Security Lock Assembly
4	101767-001 **	Security Lock Bezel
5	105032-001 **	Security Lock Clip



6	101732-001 **	Blank Drive Plate
7	102706-001 **	20 Megabyte Fixed Disk Drive
8	102709-001 *	Dual Drive Insulator
9	102775-001	1.2 Megabyte Diskette Drive
10	102928-001	360 Kbyte Diskette Drive
11	102779-001 **	10 Megabyte Tape Drive
12	101299-001 **	Dual Drive Enclosure
13	101488-001 **	Tape Drive Cartridge
14	102709-001 *	Security Lock Switch

-----  
 \* These parts are all included in the Miscellaneous Hardware Kit  
 (PN 102709-001).

\*\* Part number no longer available.

Refer to Table 6.2-5  
 for parts descriptions.

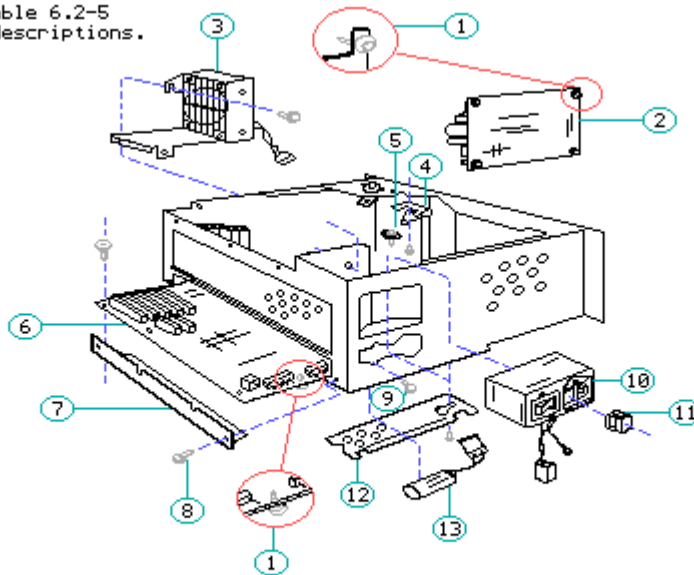


Figure 6.2-5. Mechanical Chassis (Rear)

Table 6.2-5. COMPAQ PORTABLE 286 Personal Computer Parts List:  
 Mechanical Chassis (Rear)

Item Number	Part Number	Description
1	102709-001 *	Printed Circuit Board Standoff
2	102818-001 **	Power Supply Board Assembly

3	101796-001 **	Fan/Bracket Assembly
4	102709-001 *	Drive Ground Strap
5	102709-001 *	Drive Shock Mount
6	101795-001 **	System Board Assembly
7	101795-001 **	System Board Support Bracket
8	102709-001 *	Screw, 4-40 1/4 T-10 Torx
9	102709-001 *	Screw, 8-32 x 3/8 T-15 Torx
10	101798-001 **	Power Switch Filter Assembly
11	102930-001	AC Line Fuse
12	100439-001 **	System Board Connector Access Plate
13	102929-001 (replaced by 160272-001)	Lithium Battery

\* These parts are all included in the Miscellaneous Hardware Kit (PN 102709-001).

\*\* Part number no longer available.

Refer to Table 6.2-6 for parts descriptions.

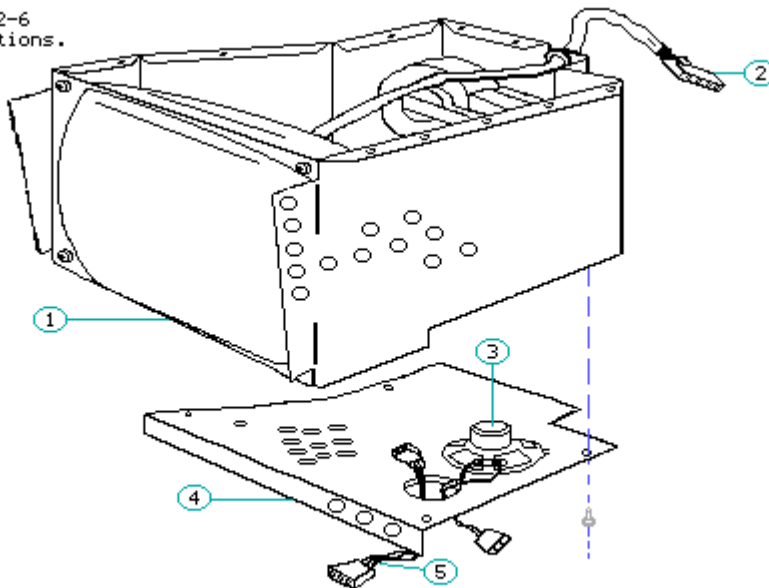


Figure 6.2-6. Monitor Enclosure (Front)

Table 6.2-6. COMPAQ PORTABLE 286 Personal Computer Parts List:  
Monitor Enclosure (Front)

Item Number	Part Number	Description
-------------	-------------	-------------

1	105034-001 **	Monitor Assembly
2	102933-001 * **	VDU Signal Cable
3	100493-001 **	Speaker Assembly
4	100442-002 **	Monitor Floor
5	102933-001 * **	Monitor Power Cable

\* These parts are all included in the Cable Kit (PN 102933-001 \*\*).

\*\* Part number no longer available.

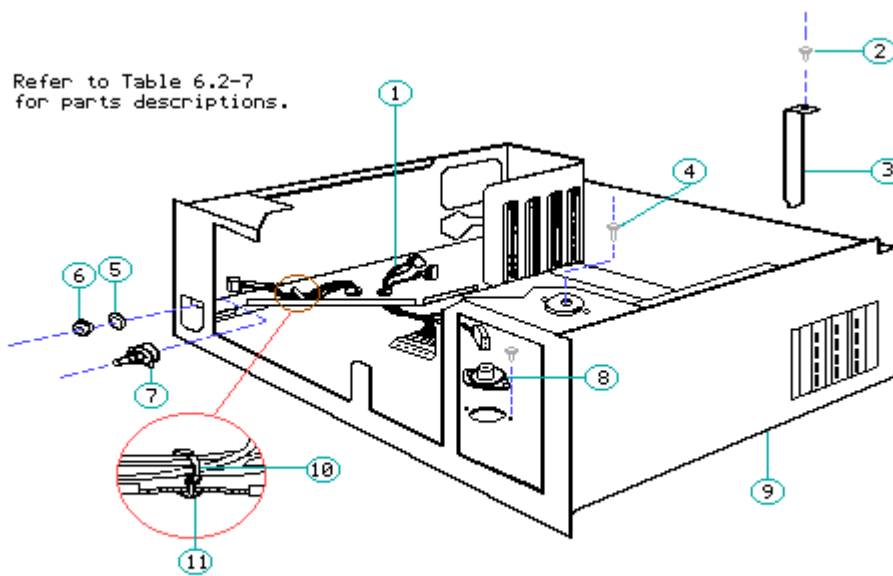


Figure 6.2-7. System Chassis (Front)

Table 6.2-7. COMPAQ PORTABLE 286 Personal Computer Parts List: System Chassis (Front)

Item Number	Part Number	Description
1	102933-001 *** **	System Power Cable
2	102709-001 *	Screw, 6-32 x 1/4 T-15 Torx
3	100429-001 **	Blank I/O Mounting Bracket
4	102709-001 *	Screw, 4-40 x 1/4 T-10 Torx
5	102709-001 *	Washer, Internal Tooth
6	102709-001 *	4-40 Hex Nut
7	102709-001 *	Brightness Potentiometer

8	102709-001 *	Drive Shock Mount
9	101750-001 **	System Chassis Assembly
10	102709-001 *	Tie Wrap
11	102709-001 *	Push Mount

-----  
\* These parts are all included in the Miscellaneous Hardware Kit  
(PN 102709-001).

\*\*\* This part is included in the Cable Kit (PN 102933-001 \*\*).

\*\* Part number no longer available.

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# Chapter 7. Removal and Replacement Procedures

## Chapter 7.1 Introduction

Before starting removal procedures, review Chapter 6, "Illustrated Parts Catalog," to become familiar with the various part names and locations.

Removal and replacement procedures in this section are written generically for all COMPAQ Portable Computers, except in cases where procedures differ because of design differences. These differences affect the removal and replacement procedures for the power supply subsystem and the monitor enclosure. When procedures differ, specific instructions are given.

Also note that when you are instructed to cut a tie wrap for removal of an assembly, you should also replace the tie wrap for reassembly.

NOTE: Run the latest version of COMPAQ DIAGNOSTICS to verify the proper operation of the replaced component.

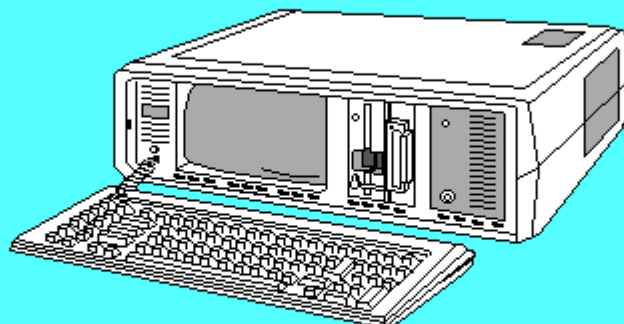


Figure 7.1-1. COMPAQ PORTABLE 286 Personal Computer

## Chapter 7.2 Preparation Procedure

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

1. Place the ON/OFF switch (on the side of the computer) in the OFF position.
2. Close the keyboard and secure it in place by sliding the latches to the LOCK position. Fold the keyboard feet in place. (Figure 7.2-1).

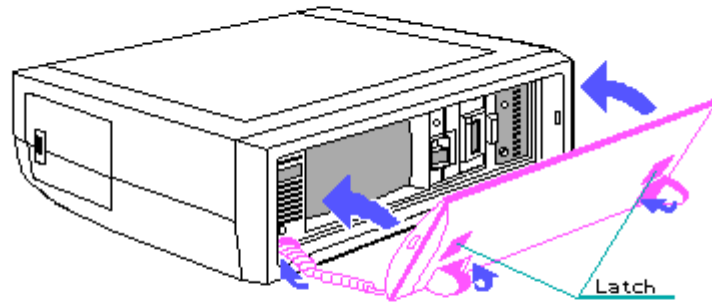


Figure 7.2-1. Closing and Locking the Keyboard

3. Disconnect any peripheral devices (printer, monitors, and so on) from the computer.
4. Disconnect the AC power cord from its power source and from the computer (Figure 7.2-2).

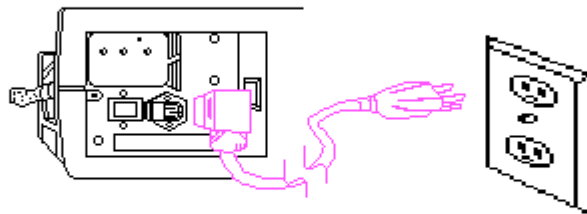


Figure 7.2-2. Disconnecting the Power Cord from the Computer and AC Power Source

## Chapter 7.3 Access Cover Removal and Replacement











2. Place the computer so that the display is facing downward against the work surface.
3. Locate and loosen (DO NOT REMOVE) the two screws that secure the system board connector access plate.
4. Remove the access plate by sliding it slightly down and away from the chassis (Figure 7.7-1).

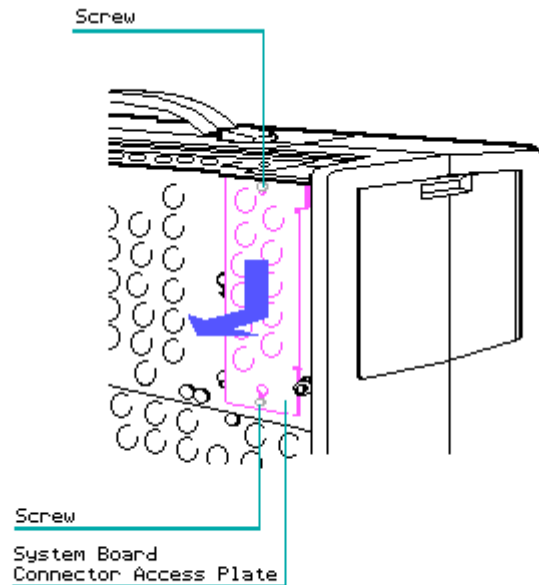


Figure 7.7-1. Removing the System Board Connector Access Plate

To replace the system board connector access plate, reverse Steps 1 through 4.

## Chapter 7.8 Power Supply Subsystem Removal and Replacement

For COMPAQ Portable or COMPAQ PLUS Personal Computers with a serial number 1524020B0001 or above and for COMPAQ PORTABLE 286 Personal Computers, follow the procedures beginning in the COMPAQ PORTABLE 286 Power Supply Subassembly Removal and Replacement section.

If the COMPAQ Portable or COMPAQ PLUS Personal Computer has a serial number below 1524020B0001, follow the procedures below.

Figure 7.8-1 shows the location of the power supply subsystem.

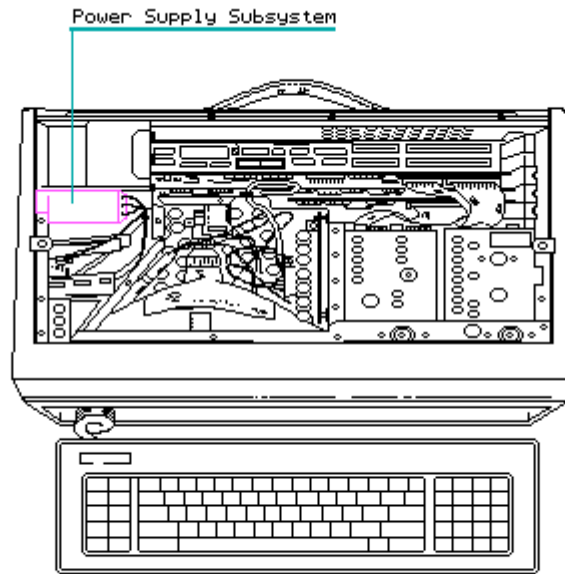


Figure 7.8-1. Location of the Power Supply Subsystem

COMPAQ Portable Power Supply Subsystem Removal and Replacement (for COMPAQ Portable and COMPAQ PLUS Personal Computers with serial numbers below 1524020B0001)

This power supply subsystem consists of the AC line fuse, the power switch filter assembly, the power supply assembly, and the fan/bracket assembly.

#### COMPAQ Portable AC Line Fuse Removal and Replacement

To remove and replace the COMPAQ Portable AC line fuse:

1. Complete the Preparation Procedure (see Section 7.2).
2. Insert a flat bladed screwdriver along the bottom edge of the fuse box. Pry outward with enough pressure to force the fuse box out of the casing (Figure 7.8-2).

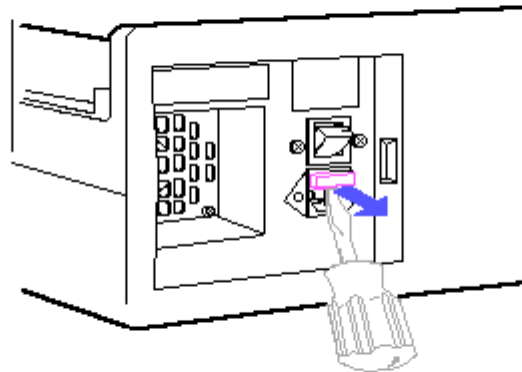


Figure 7.8-2. Prying Out the Fuse Box

3. Once the fuse box is out, you will see a spare fuse in a holding area in the fuse box (Figure 7.8-3). Lift out the defective fuse and replace it with the spare fuse.

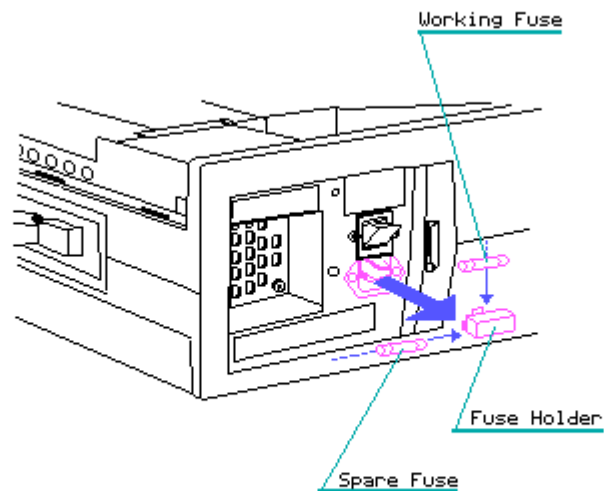


Figure 7.8-3. Removing the COMPAQ Portable Power Fuse

4. Slide the fuse box back into the case. With your thumb, press the cover in until you feel it snap into place.
5. Reconnect all cables removed earlier.

NOTE: If the fuse has been replaced a number of times, the fuse clips may lose their tension and not make good contact with the fuse. Check the fuse clips and, if necessary, squeeze them gently with needlenosed pliers or replace the assembly.

#### COMPAQ Portable Power Switch Filter Assembly Removal and Replacement

To remove the COMPAQ Portable power switch filter assembly:

1. Complete the High Voltage Access Plate Removal procedure (see Section 7.5).
2. Remove the two screws that are holding the power switch filter assembly (Figure 7.8-4).

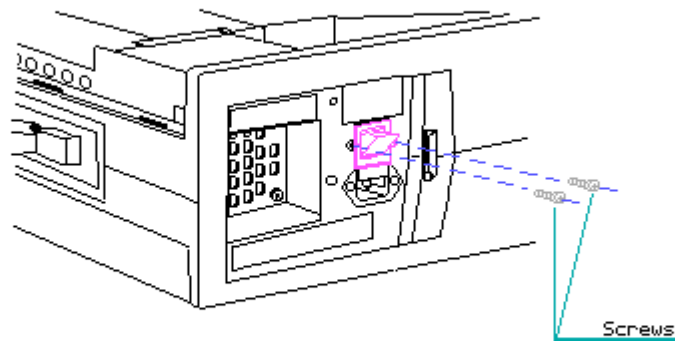


Figure 7.8-4. Removing the COMPAQ Portable Power Switch Filter Assembly

3. Lift the assembly out and place it on the chassis.
4. Disconnect the power switch filter assembly connector from the power supply assembly (Figure 7.8-5).



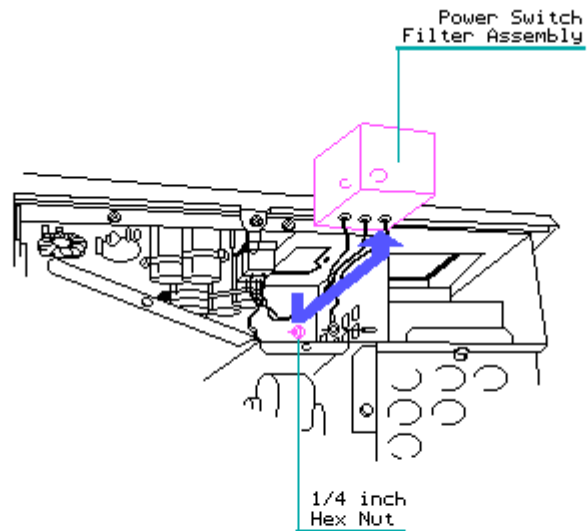


Figure 7.8-6. Removing the COMPAQ Portable Power Switch Filter Assembly

To replace the power switch filter assembly, reverse Steps 1 through 5.

#### COMPAQ Portable Power Supply Assembly Removal and Replacement

To remove the COMPAQ Portable power supply assembly:

1. Complete the High Voltage Access Plate Removal procedure (see Section 7.5).
2. Remove the power switch filter assembly.
3. Disconnect the remaining fan connector from the power supply assembly (Figure 7.8-7).



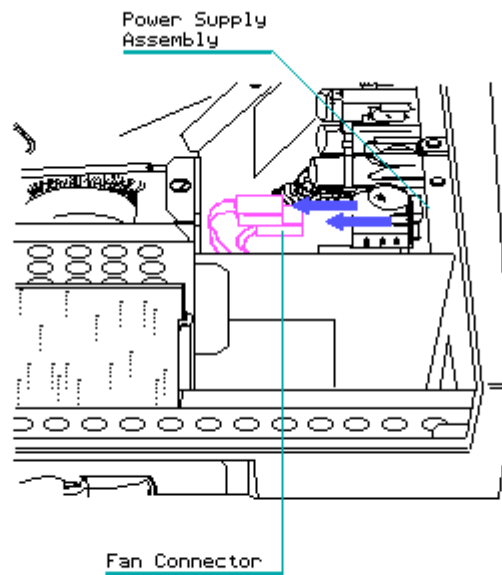


Figure 7.8-7. Disconnecting the Fan Connector from the Power Supply Assembly

4. Using the two piece socket tool and the socket or a 5/16 inch box end wrench, unscrew the spring loaded hexhead screw that is on the lower corner of the power supply assembly (Figure 7.8-8).

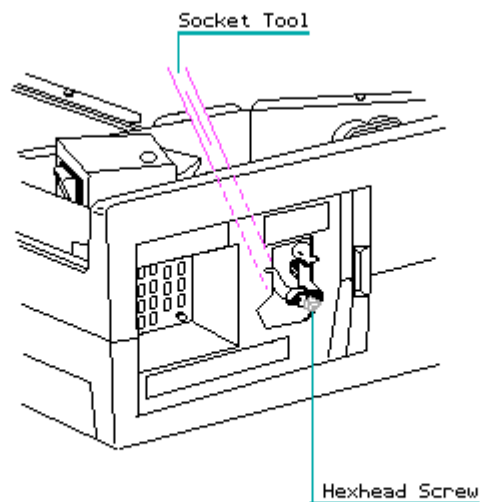


Figure 7.8-8. Removing the Hexhead Screw

5. Partially close the access door panel to allow the standoffs to disengage the chassis.
6. Slide the power supply assembly toward the rear of the computer to disengage the three standoffs from the slots in the chassis. This

releases the power supply assembly from the chassis.

7. Carefully lift the power supply assembly out of the chassis and gently remove all remaining connectors from the board (Figure 7.8-9).

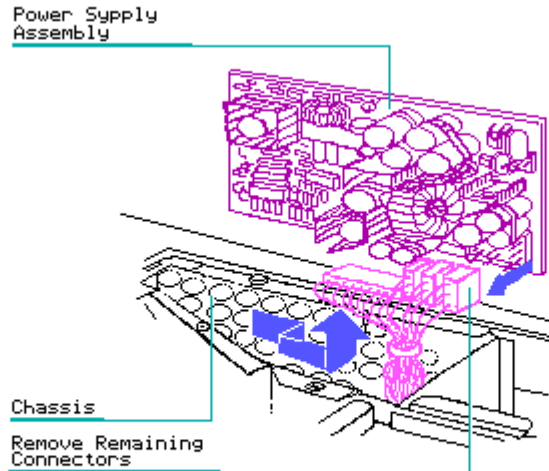


Figure 7.8-9. Removing the COMPAQ Portable Power Supply Assembly

To replace the power supply assembly, reverse Steps 1 through 7.

NOTE: Be sure to securely tighten the mounting screw with the 5/16 inch box end wrench because using only the socket extension wrench may not securely tighten the mounting screw (thereby causing grounding problems).

#### COMPAQ Portable Fan/Bracket Assembly Removal and Replacement

To remove the fan/bracket assembly:

1. Complete the High Voltage Access Plate Removal Procedure (see Section 7.5).
2. Disconnect the fan power connector from the power supply (Figure 7.8-10).



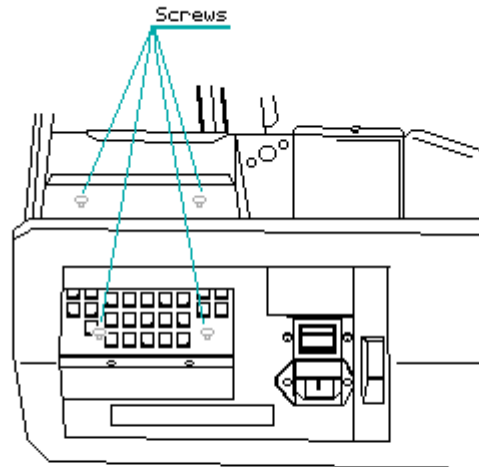


Figure 7.8-11. Removing Four Screws from the Fan/Bracket Assembly

5. Carefully lift the fan/bracket assembly out and away from the chassis (Figure 7.8-12). Route the fan cable through the access hole and chassis.

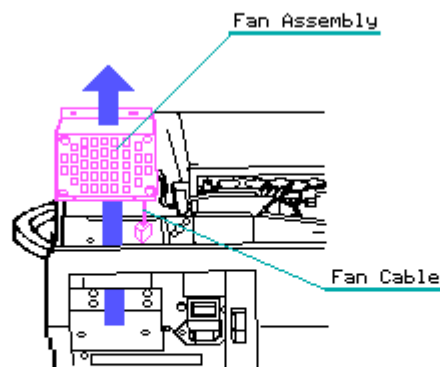


Figure 7.8-12. Removing the Fan/Bracket Assembly

To replace the fan/bracket assembly, reverse Steps 1 through 5.

COMPAQ PORTABLE 286 Power Supply Subsystem Removal and Replacement (also for COMPAQ Portable and COMPAQ PLUS Personal Computers with serial number 1524020B0001 or above)

The power supply subsystem consists of the AC line fuse, the fan/bracket

assembly, the power supply assembly, and the power switch filter assembly.

#### COMPAQ PORTABLE 286 AC Line Fuse Removal and Replacement

To remove the AC line fuse:

1. Complete the Preparation Procedure (see Section 7.2).
2. Slide the access door panel open to expose the power switch filter assembly (Figure 7.8-13).

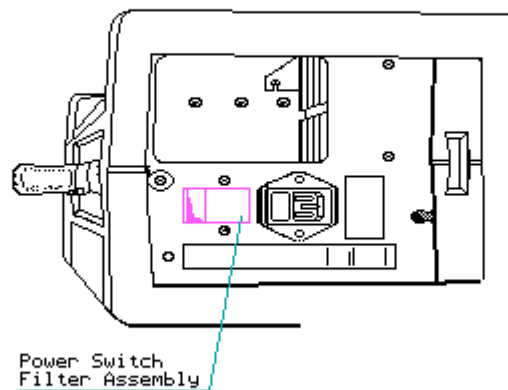


Figure 7.8-13. Power Switch Filter Assembly

3. Insert a flat bladed screwdriver along the bottom edge of the fuse box. Pry outward with enough pressure to force the fuse box out of the casing (Figure 7.8-14).

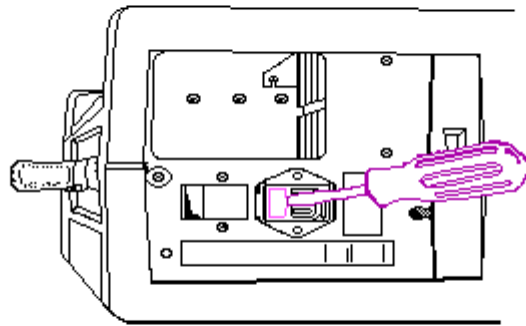


Figure 7.8-14. Inserting a Screwdriver and Prying Out the Fuse Box

4. Once the fuse box is out, you will see a spare fuse in a holding area in the fuse box (Figure 7.8-15). Lift out the defective fuse, and replace it with the spare one.

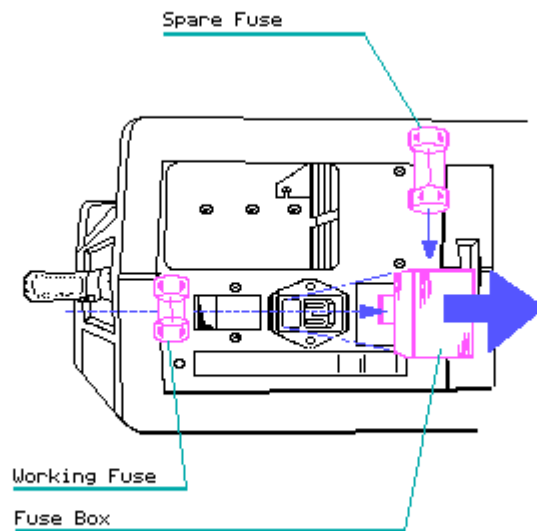


Figure 7.8-15. Locating the Spare Fuse

NOTE: If the fuse has been replaced a number of times, the fuse clips may lose their tension and not make good contact with the fuse. Check the fuse clips and, if necessary, squeeze them with needlenosed pliers, or replace the assembly.

5. Slide the fuse box back into place. Press the cover until you feel it snap into place.

#### COMPAQ PORTABLE 286 Fan/Bracket Assembly Removal and Replacement

To remove the fan/bracket assembly:

1. Complete the High Voltage Access Plate Removal procedure (see Section 7.5).
2. Open the access door panel.
3. Loosen (DO NOT REMOVE) the screw that secures the fan/bracket assembly to the chassis (at the rear of the monitor).
4. Now remove the remaining three screws that secure the fan/bracket assembly in place (Figure 7.8-16).

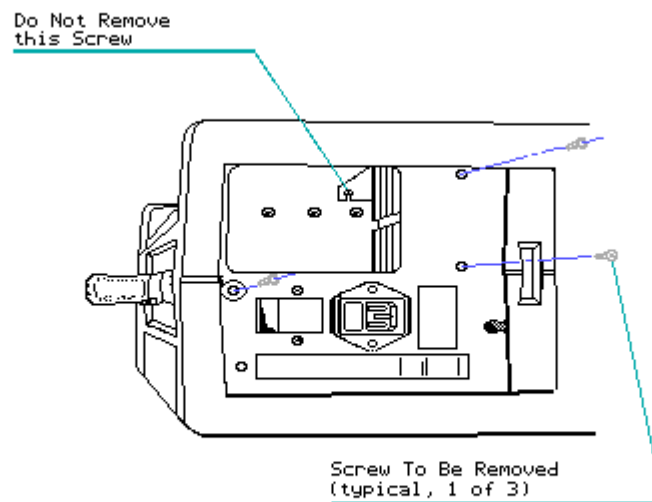


Figure 7.8-16. Fan/Bracket Assembly Screws

5. Disconnect the fan/bracket assembly power connector from the power supply assembly (Figure 7.8-17). Cut the tie wrap that holds the fan power cord to the monitor enclosure.





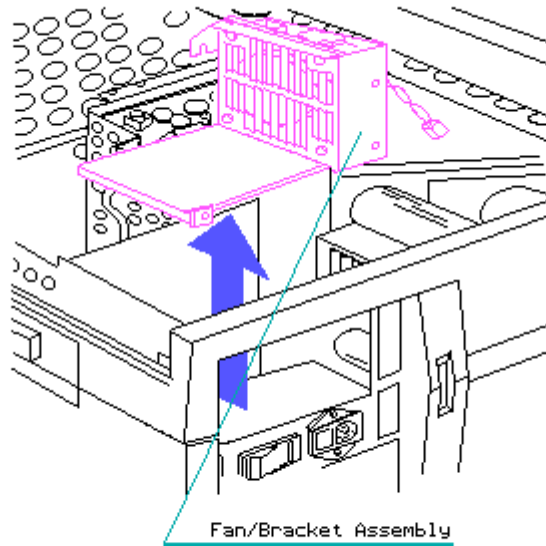


Figure 7.8-18. Removing the Fan/Bracket Assembly

To replace the fan/bracket assembly, reverse Steps 1 through 6.

#### COMPAQ PORTABLE 286 Power Supply Assembly Removal and Replacement

To remove the Power Supply Assembly:

1. Complete the Fan/Bracket Assembly Removal procedure.
2. Carefully disconnect the power switch filter assembly connector from the power supply assembly (Figure 7.8-19).

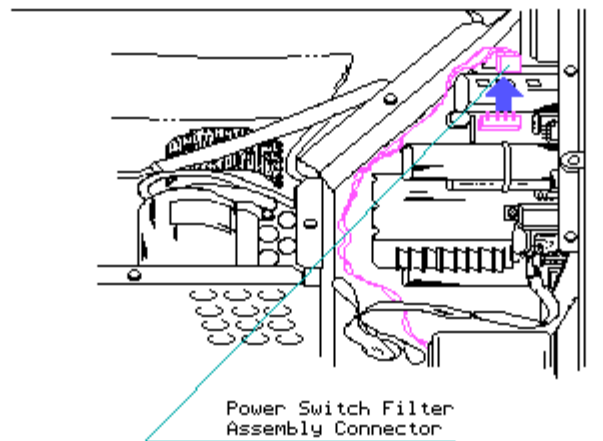


Figure 7.8-19. Disconnecting the Power Switch Filter Assembly Connector





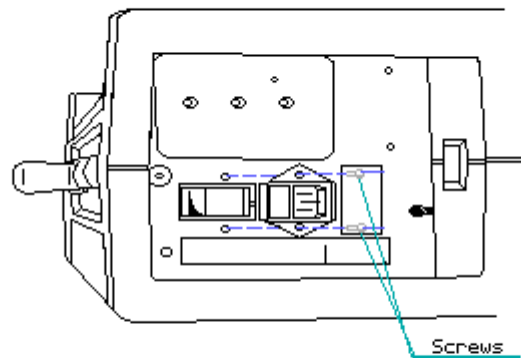


Figure 7.8-22. Removing the Power Switch Filter Assembly Mounting Screws

3. Remove the 1/4 inch hex nut and the tie wrap that hold the power switch ground cable.
4. Lift the power switch filter assembly out and place it on the chassis (Figure 7.8-23).

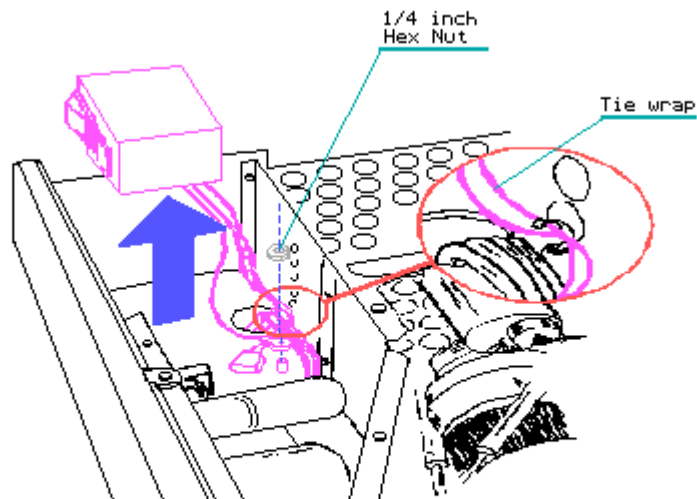


Figure 7.8-23. Disconnecting the Power Switch Ground Cable and Removing the Power Switch Filter Assembly

5. Disconnect the power switch filter assembly connector from the power supply assembly (Figure 7.8-24).

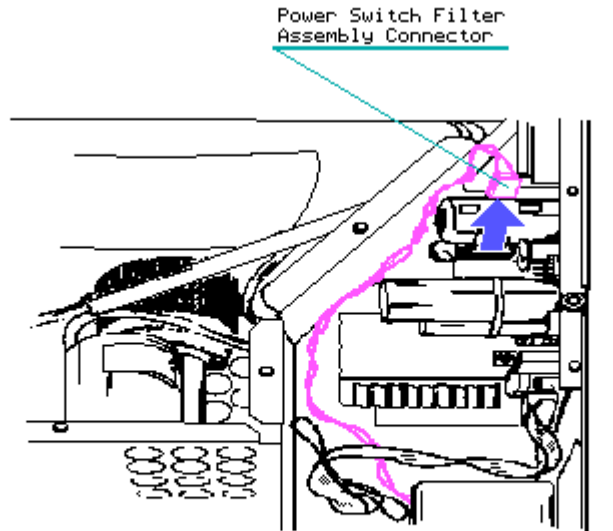


Figure 7.8-24. Disconnecting the Power Switch Filter Assembly Connector from the Power Supply Assembly

To replace the power switch filter assembly, reverse Steps 1 through 5.

## Chapter 7.9 Controller and Expansion Board Removal and Replacement

Before beginning this procedure, become familiar with the locations of controller and Controller Board expansion boards and their specific signal cables, if applicable (Figure 7.9-1).

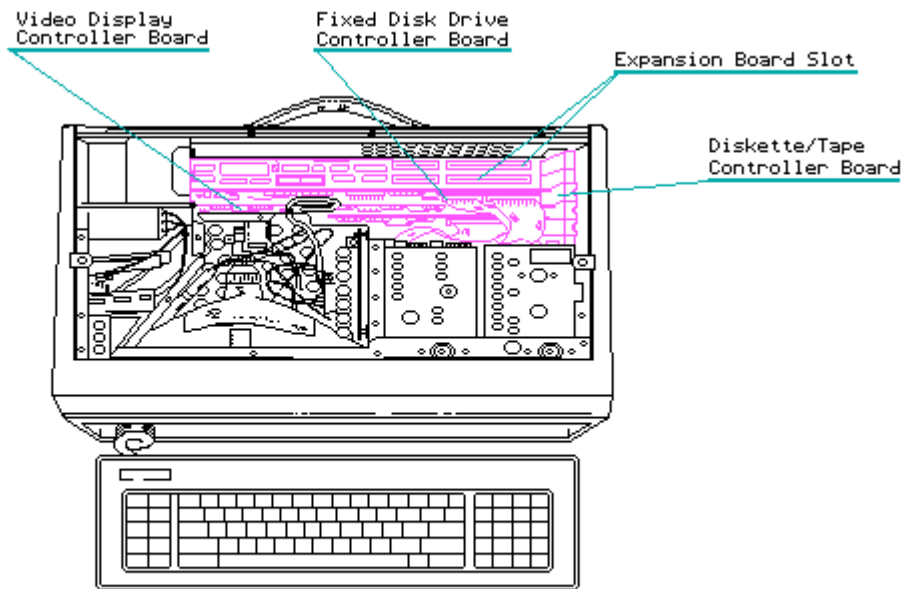


Figure 7.9-1. Locations of Controller and Expansion Boards

Fixed Disk Drive Controller Board Removal and Replacement





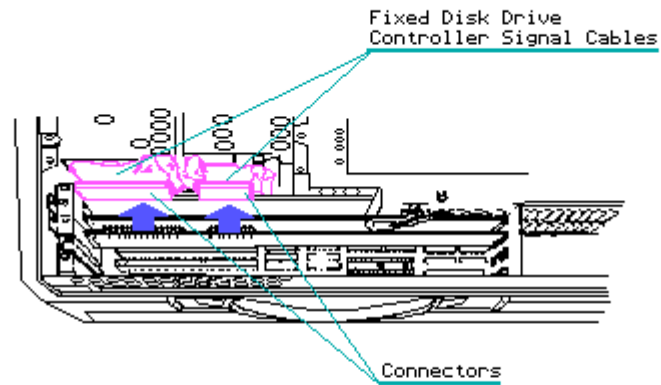


Figure 7.9-2. Disconnecting the Fixed Disk Drive Controller Signal Cables

3. Remove the retaining screw that secures the video display controller board and disconnects the video display signal cable (Figure 7.9-4).

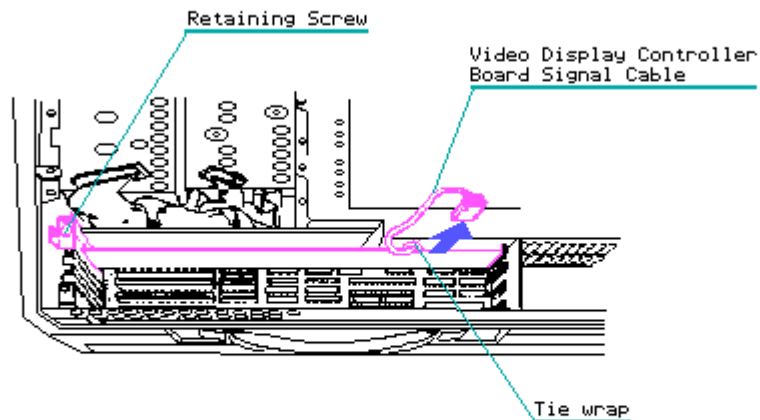


Figure 7.9-4. Removing the Video Display Controller Board Retaining Screw and Signal Cable

NOTE: Controller and expansion board retaining screws may be located either inside or outside the chassis.

A tie wrap secures the video display signal cable. Remove this tie wrap before disconnecting the signal cable from the video display controller board.





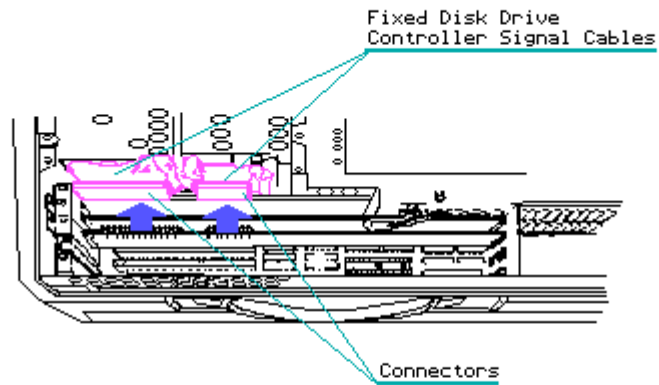


Figure 7.9-2. Disconnecting the Fixed Disk Drive Controller Signal Cables

3. Disconnect the diskette/tape controller board signal cable by pressing the finger tabs (if available) that are located on both sides of the connector (Figure 7.9-6).

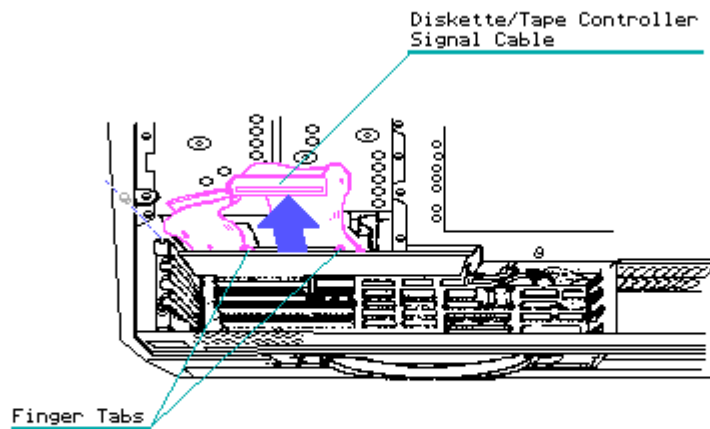


Figure 7.9-6. Disconnecting the Diskette/Tape Controller Board Signal Cable

4. Remove the retaining screw that secures the diskette/tape controller board.
5. Gently pull the board up and out of its socket (J101 on COMPAQ PORTABLE 286 Personal Computers; J105 on COMPAQ Portable and COMPAQ PLUS Personal

Computers) on the system board. (Figure 7.9-7).

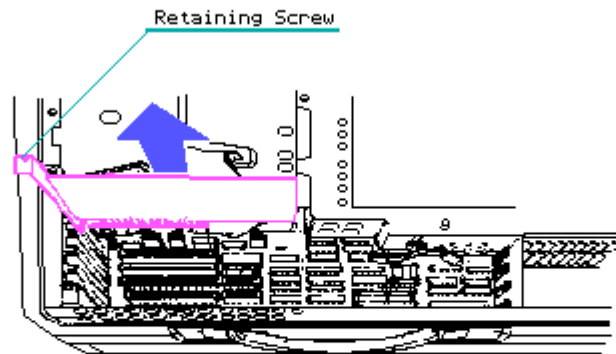


Figure 7.9-7. Removing the Diskette/Tape Controller Board

NOTE: Controller and expansion board retaining screws may be located either inside or outside the chassis.

To replace the diskette/tape controller board, reverse Steps 1 through 5.

NOTE: Ensure that the retainers on the bottom side of the board slots access plate fit securely onto each board installed in the computer. Also be sure that the board is in the board guide on the left.

#### Expansion Board Removal and Replacement

To remove COMPAQ memory expansion boards or any other expansion boards installed in the computer:

1. Complete the Board Slots Access Plate Removal procedure (see Section 7.4).
2. Remove any signal cables attached to the board.
3. Remove the retaining screw that secures the board to the system chassis.
4. Gently pull the particular expansion board up and out of its socket on the system board. Remove the board from the computer. (Figure 7.9-8).

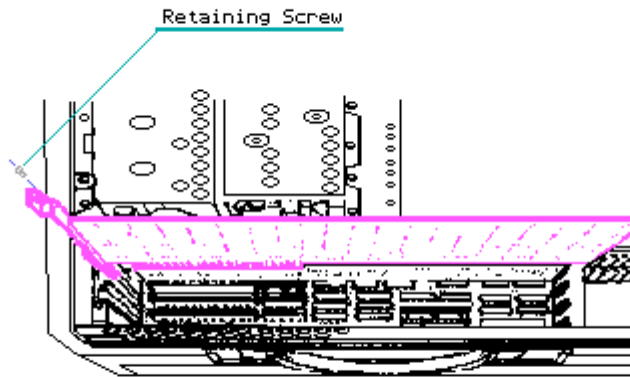


Figure 7.9-8. Removing an Expansion Board

To replace the expansion board, reverse Steps 1 through 4.

NOTE: Ensure that the retainers on the bottom side of the board slots access plate fit securely onto each board installed in the computer. If you changed to a board of a different height, rotate the retainers to match the height of the board.

## Chapter 7.10 System Board and Memory Option Removal and Replacement

Removal and replacement procedures for both the system board and associated COMPAQ memory options (including ROMs) are included in this section.

Although it is possible to remove and replace memory options in a COMPAQ Portable and COMPAQ PLUS Personal Computer without removing the system board, it is not recommended because of the limited amount of space inside the chassis. Removing the system board allows close examination of memory chips.

### System Board Removal and Replacement

To remove the system board:

1. Complete removal procedures for all installed controller and expansion boards (see Section 7.9).
2. Remove the bottom access cover (see Section 7.3).
3. If you are removing a COMPAQ PORTABLE 286 system board, disconnect the security lock switch connector and storage device power cables (see Sections 7.11 and 7.14).
4. Remove the following system board connectors:
  - o Keyboard connector
  - o System power connector

- o Monitor power connector (COMPAQ PORTABLE 286 only)
- o Battery connector (COMPAQ PORTABLE 286 only)
- o Speaker connector

See Figure 7.10-1 for the location of each of these connectors.

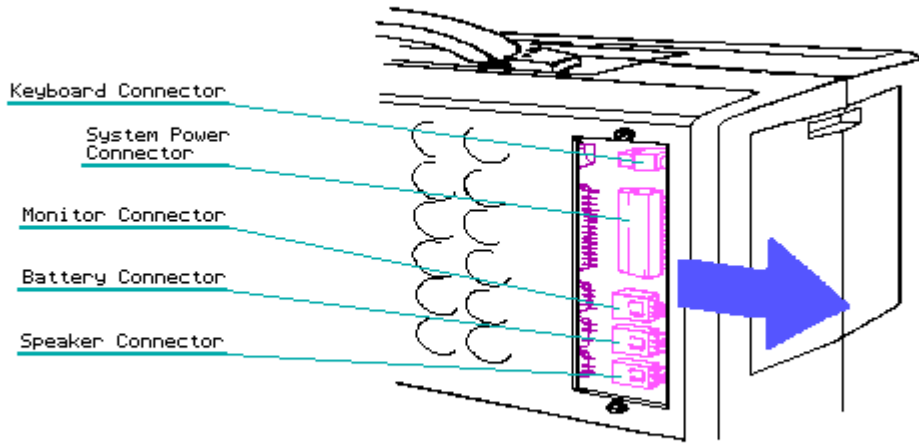


Figure 7.10-1. Location and Removal of System Board Connectors

NOTE: Once the battery connector has been disconnected from the COMPAQ PORTABLE 286 system board, reset the time function found in MS-DOS or in SETUP. SETUP is found on both the USER PROGRAMS Diskette and the latest version of the DIAGNOSTICS Diskette.

5. Locate and remove the four screws that secure the system board mounting bracket to the system chassis (Figure 7.10-2).

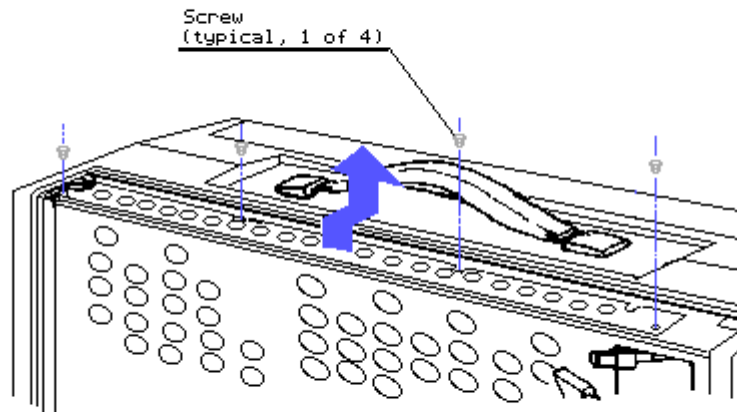


Figure 7.10-2. Removing the Four System Board Mounting Screws

6. Slide the system board to the rear, lifting it slightly upward, so that the six nylon standoffs (attached to the bottom of the system board) clear the mounting holes. Carefully lift the system board out of the chassis (Figure 7.10-3).

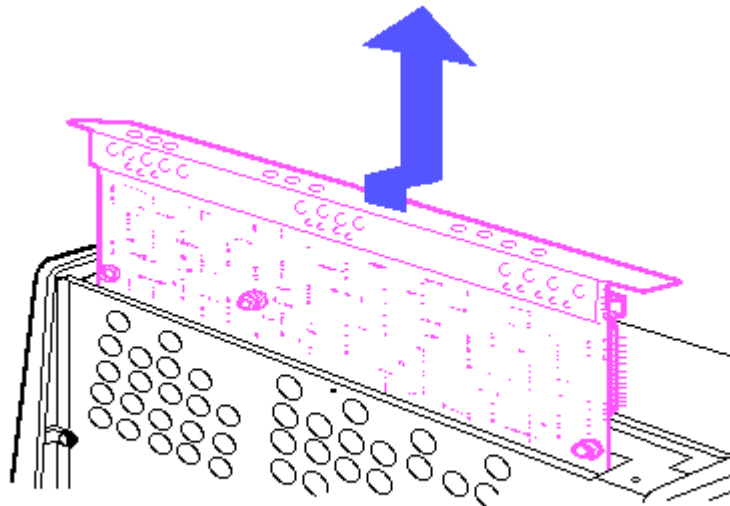


Figure 7.10-3. Removing the System Board

To replace the system board, reverse Steps 1 through 6.

Memory Option Removal and Replacement

To remove an optional memory or ROM:



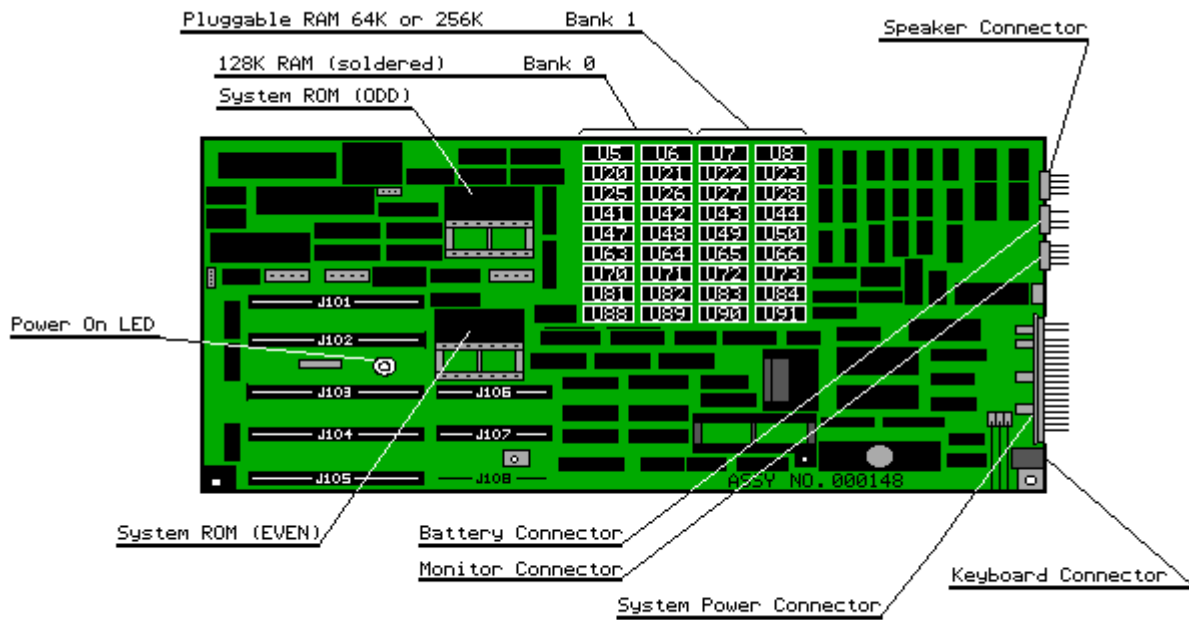


Figure 7.10-5. COMPAQ PORTABLE 286 System Board (Assy No. 000148)

2. Using the special IC removal tool, remove the defective memory or ROM chip(s) (Figure 7.10-6).

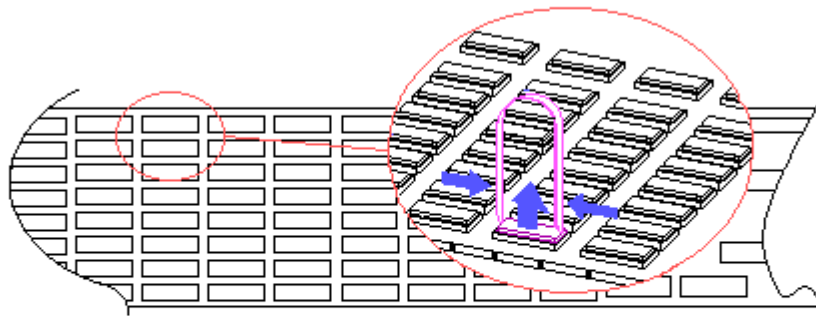


Figure 7.10-6. Removing a Defective Memory Chip

3. Using the special IC insertion tool, replace the defective memory or ROM chip(s) (Figure 7.10-7).



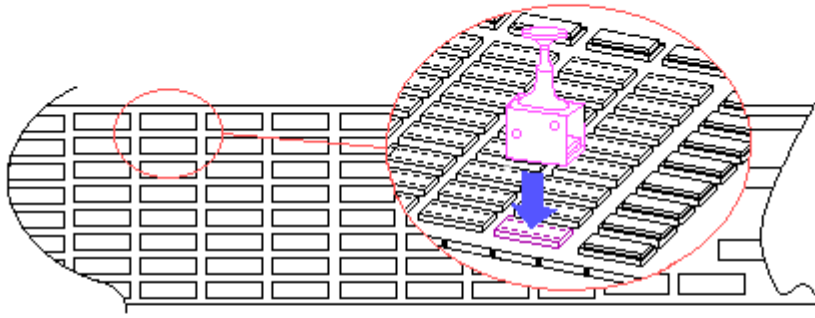


Figure 7.10-7. Replacing a Defective Memory Chip

4. To replace the system board, reverse Steps 1 through 6, which are presented at the beginning of this section.

NOTE: After replacing any defective component, run the latest version of DIAGNOSTICS to verify that the replaced component functions properly.

## Chapter 7.11 Mass Storage Device Removal and Replacement

Mass storage devices are installed in two drive enclosures. The device next to the monitor assembly is referred to as Enclosure A, and the other is referred to as Enclosure B (Figure 7.11-1).

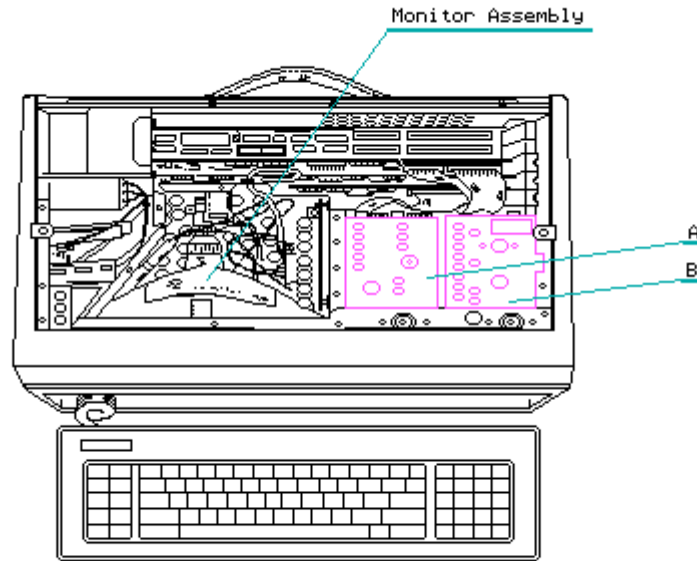


Figure 7.11-1. Drive Enclosures A and B

The mass storage devices have different configurations depending on the computer model. Determine the configuration of the mass storage devices.

COMPAQ Portable and COMPAQ PLUS Personal Computers

- o Enclosure A contains: diskette drive ONLY.
- o Enclosure B contains: diskette drive or fixed disk drive.

COMPAQ PORTABLE 286 Personal Computers

- o Enclosure A contains: diskette drive and blank panel or diskette drive and tape drive or two diskette drives
- o Enclosure B contains: fixed disk drive ONLY.

Mass Storage Device Enclosure B Removal and Replacement

To remove Enclosure B:

1. Complete the removal procedures for all installed controller and expansion boards (see Section 7.9).
2. Remove the mass storage device access plate (see Section 7.6).
3. Disconnect the power cable(s) from the mass storage device.
4. Disconnect the fixed disk drive power connector from its J113 socket on the COMPAQ PORTABLE 286 system board (Figure 7.11-2).



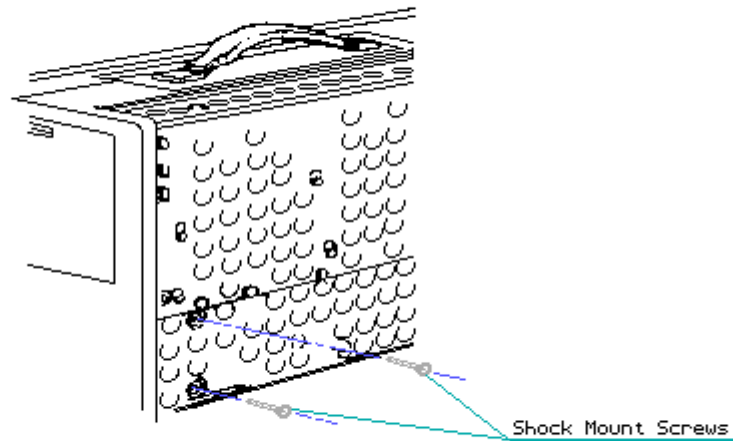


Figure 7.11-3. Removing the Bottom Two Shock Mount Screws

6. Remove the two shock mount screws.
7. Return the computer to its flat position on the work surface.
8. Remove the top mounting screw from Enclosure B (Figure 7.11-4).

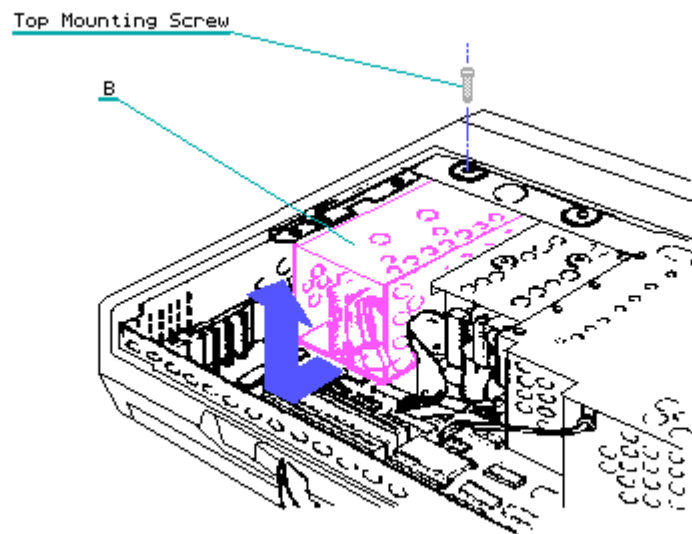


Figure 7.11-4. Removing Enclosure B from the Chassis

9. Slide Enclosure B towards the rear of the system chassis, lift it from the chassis, and let it rest on the side of the chassis.













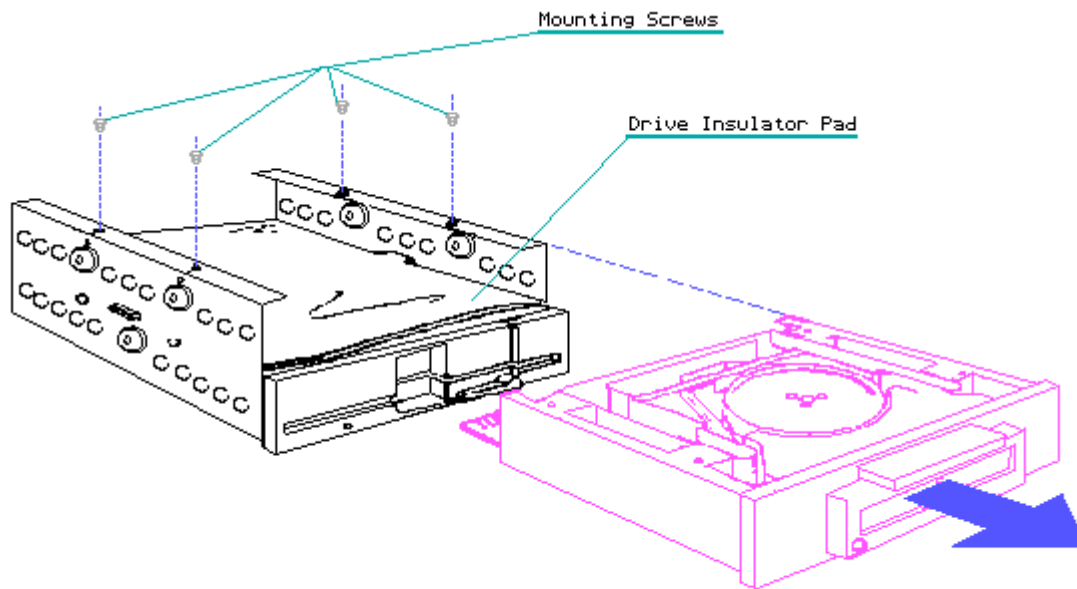


Figure 7.11-11. Removing Device 2A from the Enclosure

To replace Device 2A, reverse Step 9.

NOTE: Replace the drive insulator pad if it was removed when replacing devices in this enclosure.

To remove Device 1A from the enclosure:

10. Remove the two mounting screws from each side of Enclosure A and slide the device out of the enclosure (Figure 7.11-12).

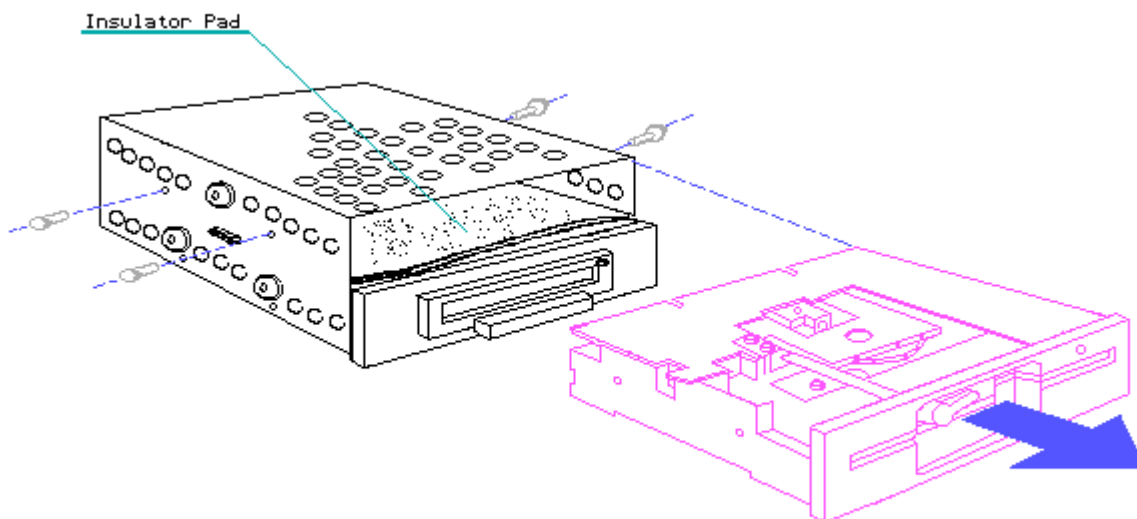


Figure 7.11-12. Removing Device 1A from the Enclosure



To remove the monitor enclosure assembly:

1. Complete the removal procedures for all installed controller and option boards (see Section 7.9).
2. Remove mass storage device Enclosure A (see Section 7.11).
3. Remove the fan/bracket assembly (see Section 7.8).

NOTE: For COMPAQ Portable and COMPAQ PLUS Personal Computers with serial numbers below 1524020B0001, it is necessary to remove the power switch filter assembly INSTEAD of the fan/bracket assembly. You do not have to remove the power supply.

4. Using the special two piece socket power supply removal tool or box end wrench, remove the two screws that secure the monitor enclosure to the wall of the power supply subsystem area (Figure 7.12-2).

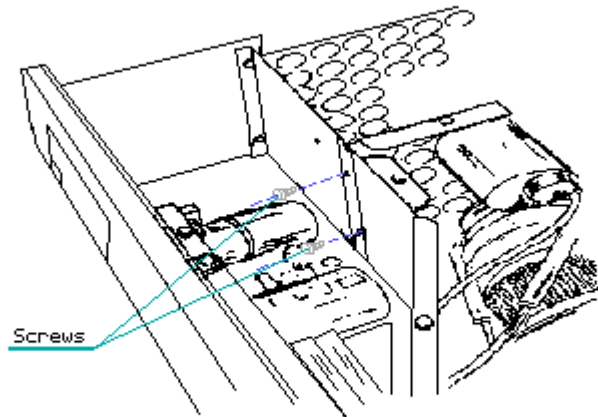


Figure 7.12-2. Removing the Monitor Enclosure Screws from the Power Supply Subsystem Area

5. Place the computer on the work surface so that the handle is facing up and the side of the computer with feet is facing you.
6. Remove the system board connector access plate (see Section 7.7).
7. Disconnect the speaker connector from the system board. Cut any cable ties that hold the speaker cable in place (Figure 7.12-3).

NOTE: On the COMPAQ PORTABLE 286, remove the monitor power connector from the system board.

8. Locate and remove the two screws that secure the monitor enclosure to the

bottom of the chassis (Figure 7.12-3).

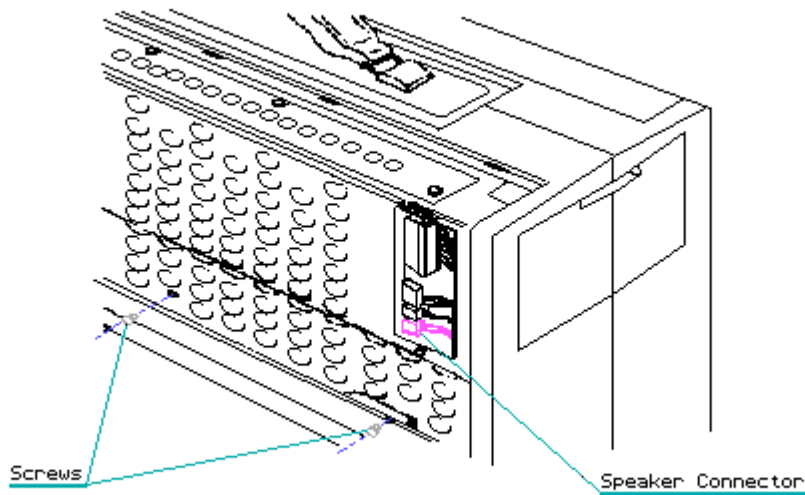


Figure 7.12-3. Disconnecting the Speaker Connector and Removing the Two Bottom Chassis Monitor Enclosure Screws

9. Return the computer to its flat position on the work surface.
10. Remove the last two screws that secure the monitor enclosure to the top front of the chassis (Figure 7.12-4)
11. Disconnect the monitor power signal connector from the monitor sweep board (Figure 7.12-4)

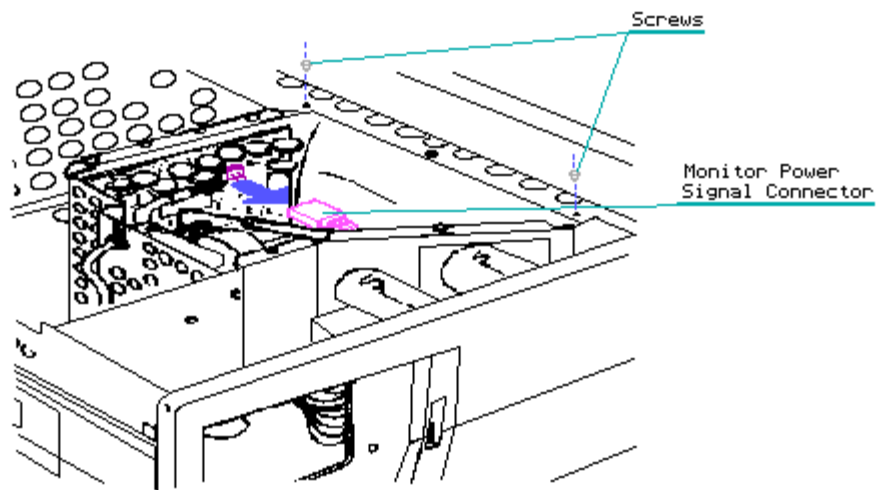


Figure 7.12-4. Removing the Screws that Secure the Monitor Enclosure to the Top Front of the Chassis

12. For the COMPAQ Portable and COMPAQ PLUS Personal Computers, disconnect the power cable connector from the sweep board.
13. To remove the monitor enclosure from the chassis:
  - a. Carefully slide the monitor enclosure away from the power supply subsystem until the enclosure clears the tab in the back corner of the monitor. Then slide the enclosure back until the front of the enclosure clears the chassis (Figure 7.12-5).

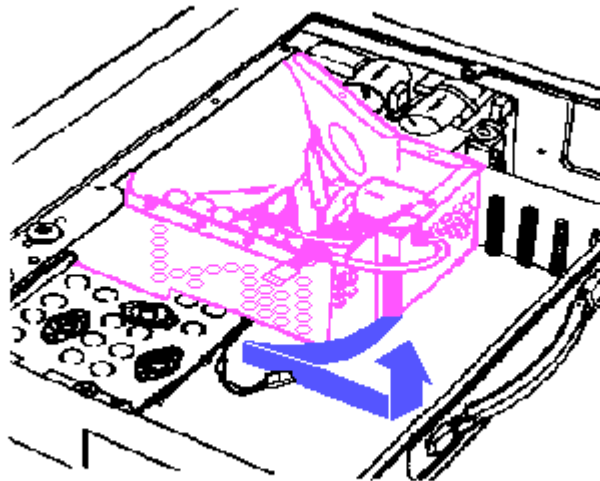


Figure 7.12-5. Positioning the Monitor Enclosure for Removal

- b. Lift the monitor enclosure up and out of the chassis and rest one edge on the chassis. Carefully pull the monitor power cable through the hole in the floor of the monitor assembly. Lift the monitor enclosure away from the computer and set it aside.

To replace the monitor enclosure, reverse Steps 1 through 13.

### **Chapter 7.13 Keyboard Assembly Removal and Replacement**

To remove the keyboard assembly:

1. Complete the removal procedure for the system board connector access plate (see Section 7.7).
2. Cut the tie wrap that secures the keyboard cable to the chassis and disconnect the keyboard cable from the system board (Figure 7.13-1).



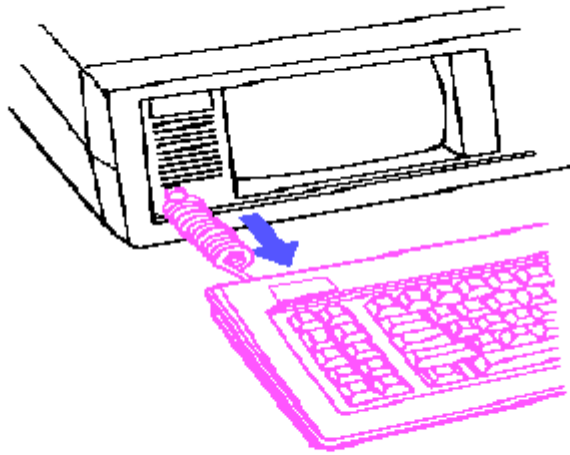


Figure 7.13-2. Removing the Keyboard and Cable from the Computer

To replace the keyboard assembly, reverse Steps 1 through 3.

## **Chapter 7.14 Security Lock Switch Assembly Removal and Replacement**

The following procedures are for the COMPAQ PORTABLE 286 Personal Computer ONLY.

The security lock switch assembly consists of the lock and a lock switch.

To remove the security lock switch assembly:

1. Complete removal procedures for all installed controller and expansion boards (see Section 7.9).
2. Disconnect the security lock switch connector from its J117 socket on the system board (Figure 7.14-1).



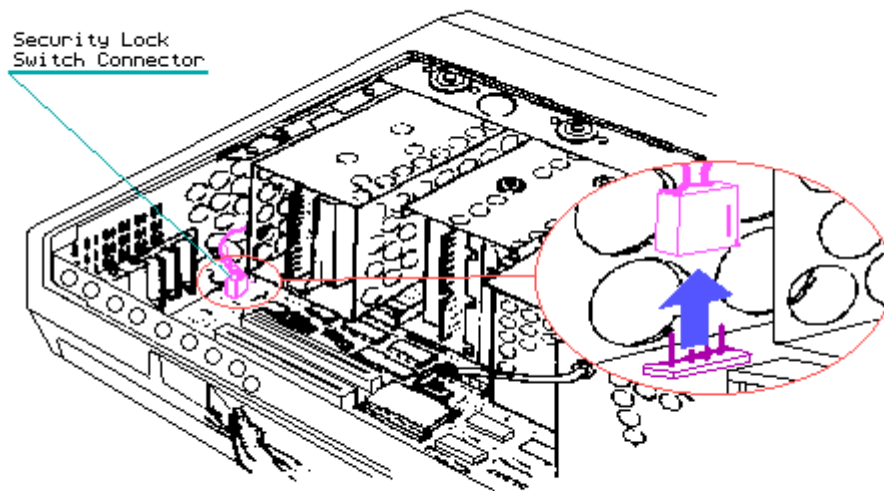


Figure 7.14-1. Disconnecting the Security Lock Switch Connector from the System Board

3. Remove mass storage device Enclosure B (See Section 7.11).
4. Unlock the keyboard from the front of the computer.
5. Locate the security lock switch assembly on the Enclosure B front plate.
6. Remove the security lock switch assembly by removing the speed clip that secures the assembly in place on the Enclosure B front plate (Figure 7.14-2).

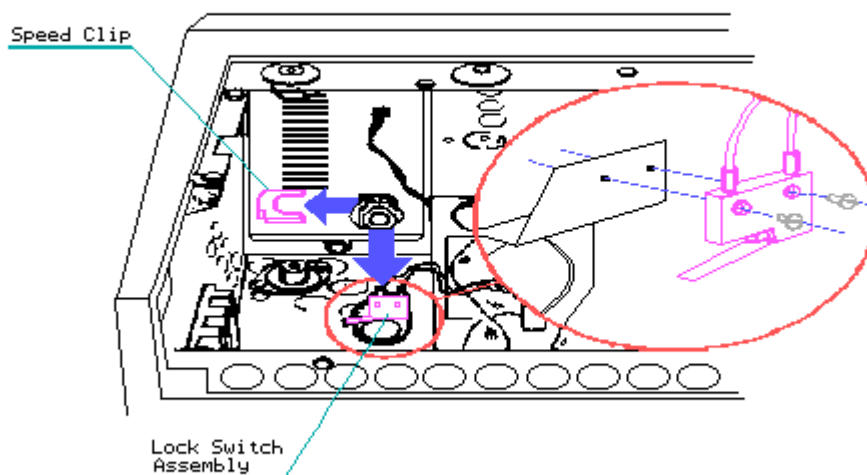


Figure 7.14-2. Removing the Security Lock Switch from the Security Lock Switch Assembly

7. Cut all tie wraps that secure the switch cable to the chassis.

To replace the security lock switch assembly, reverse Steps 1 through 7.

## Chapter 7.15 Battery Removal and Replacement

NOTE: This procedure is to be performed by Authorized COMPAQ Dealers ONLY.

To remove the battery:

1. Complete the system board removal procedure (see Section 7.10 and Figure 7.15-1).

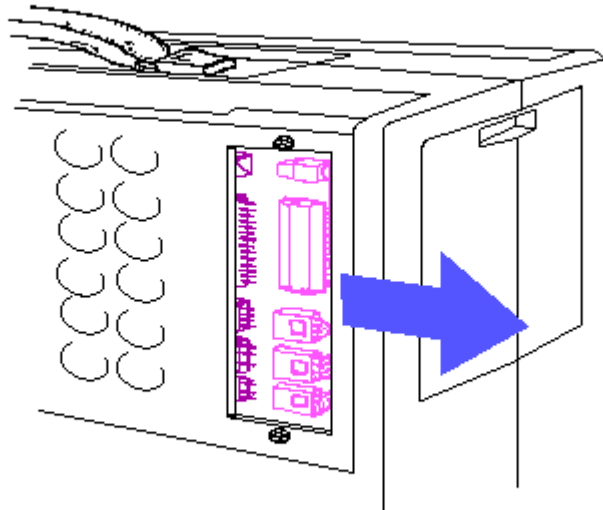


Figure 7.15-1. Removing the System Board Connectors

2. Cut the tie wrap that holds the battery in place.
3. Carefully lift the battery from its velcro mounting and out of the chassis (Figure 7.15-2).

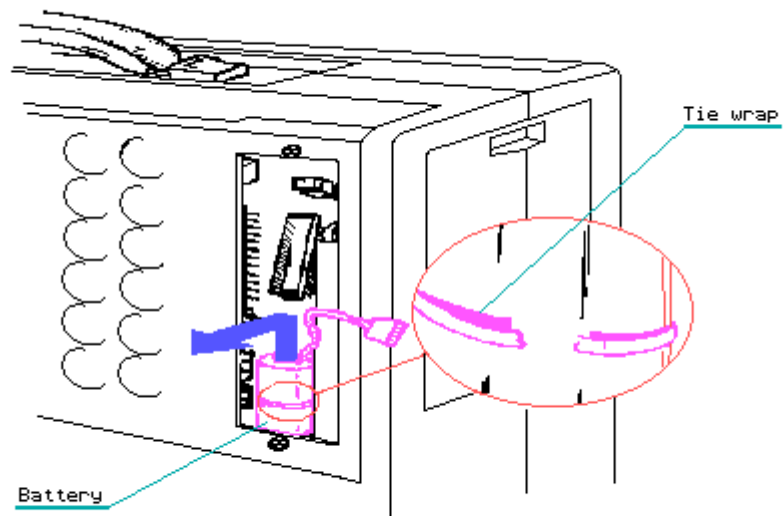


Figure 7.15-2. Removing the Battery

NOTE: When the battery is disconnected, rerun SETUP when the battery is replaced if CMOS memory has not retained the information entered during SETUP.

To replace the battery, reverse Steps 1 through 3.

# Chapter 8. Jumper Settings, Switch Settings, and Adjustments

## Chapter 8.1 Introduction

This section details the switch and jumper settings for the COMPAQ Portable, COMPAQ PLUS, and COMPAQ PORTABLE 286 Personal Computers.

This section contains external pin assignments for the COMPAQ PORTABLE 286 Diskette/Tape Controller Board and the COMPAQ Asynchronous Communications/Clock Board.

Also contained in this section are procedures for diskette drive speed adjustment and video display unit adjustments.

When using the tables in this section, remember that the default settings shown are set for the system as configured by COMPAQ. These settings only need to be changed when the system configuration is changed.

Any time jumpers are changed in a COMPAQ PORTABLE 286 Personal Computer, the SETUP program must be run on the system to change the system configuration information stored in CMOS memory. Failure to run SETUP may result in Power On Self Test errors.

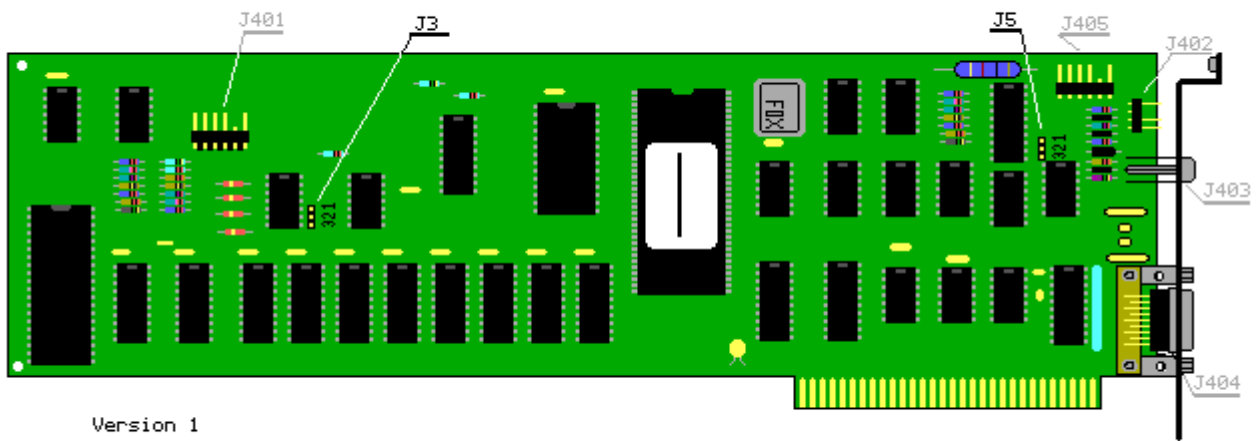
## Chapter 8.2 Compaq Portable and Compaq Plus Video Display Controller Board Jumper Settings

There are three versions of the video display controller board. Determine which version is installed by referencing Figure 8.2-1.

Table 8.2 lists the various combinations of jumper settings for all versions of the COMPAQ video display controller board.

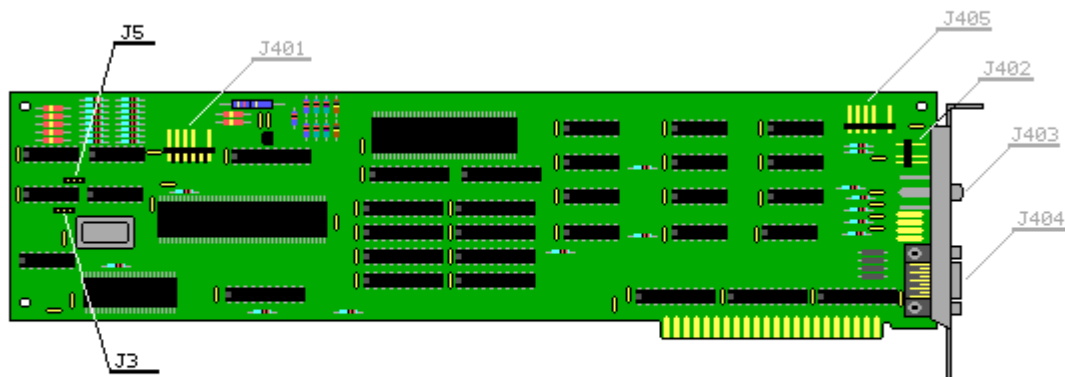
This board supports only those monitors that require positive vertical and positive horizontal synchronization pulses.

For the locations of the video display controller board jumpers, see Figure 8.2-1.



Version 1

Figure 8.2-1a. Locations of COMPAQ Video Display Controller Board Jumpers (Assy No. 000031)  
(Part 1 of 3)



Version 2

Figure 8.2-1b. Locations of COMPAQ Video Display Controller Board Jumpers (Assy No. 000345)  
(Part 2 of 3)

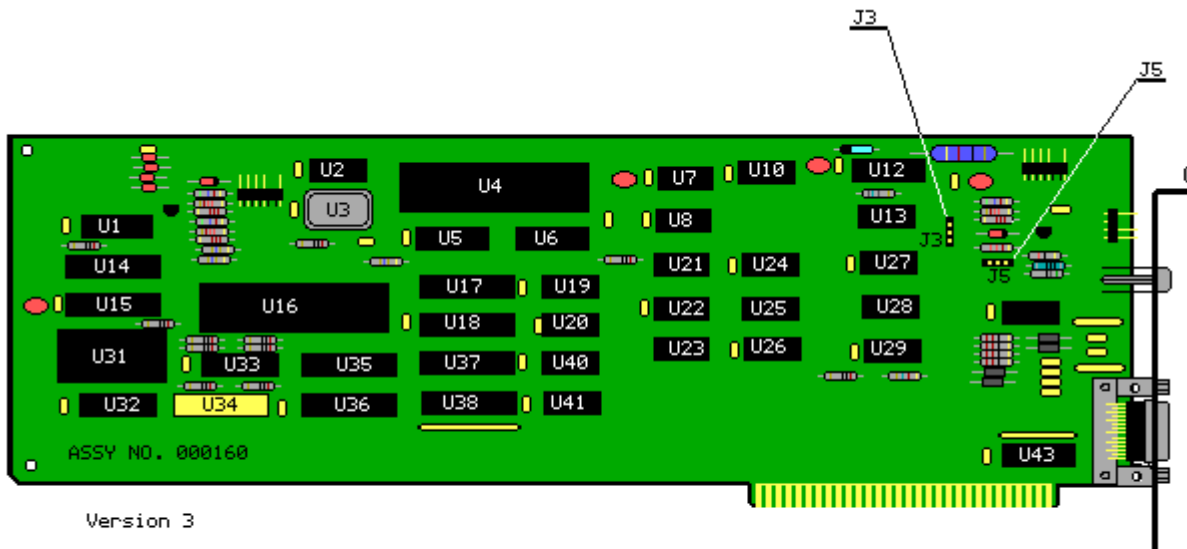


Figure 8.2-1c. Locations of COMPAQ Video Display Controller Board Jumpers (Assy No. 000160) (Part 3 of 3)

Table 8-2. COMPAQ Portable and COMPAQ PLUS Video Display Controller Board Jumper Settings

Jumper Location	Function	Pin to Pin 2	Pin 2 to Pin 3
J3, J5	Enables/disables RGB and composite video outputs in high resolution	Disables RGB and composite video output when in high scan (default settings for COMPAQ Portable, COMPAQ PLUS and COMPAQ PORTABLE 286)	RGB and composite video output always enabled (default setting for COMPAQ DESKPRO 286)

NOTE: Jumpers J3 and J5 must both be changed at the same time or the video display controller board will malfunction.

### Chapter 8.3 Compaq Portable 286 Fixed Disk Drive Controller Board Jumper Settings

The COMPAQ PORTABLE 286 fixed disk drive controller board jumpers are set at the factory and should not be changed.

W1 is the fixed disk drive base address select. It is always set on pin 1 to pin 2.

W2 is the fixed disk drive LED operation. It is always set on pin 1 to pin 2.

For the locations of the COMPAQ PORTABLE 286 fixed disk drive controller board jumpers, see Figure 8.3-1.

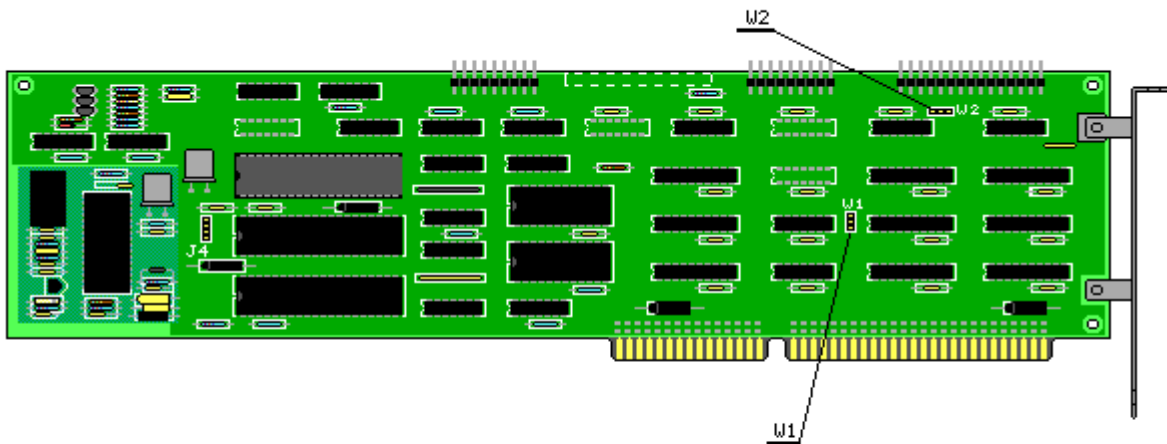


Figure 8.3-1. Locations of COMPAQ PORTABLE 286 Fixed Disk Drive Controller Board Jumpers

## Chapter 8.4 Compaq Portable 286 System Board Jumper Settings

Table 8.4 lists the various combinations of jumper settings for the COMPAQ PORTABLE 286 board. For the location of the COMPAQ PORTABLE 286 system board jumpers, see Figure 8.4-1.

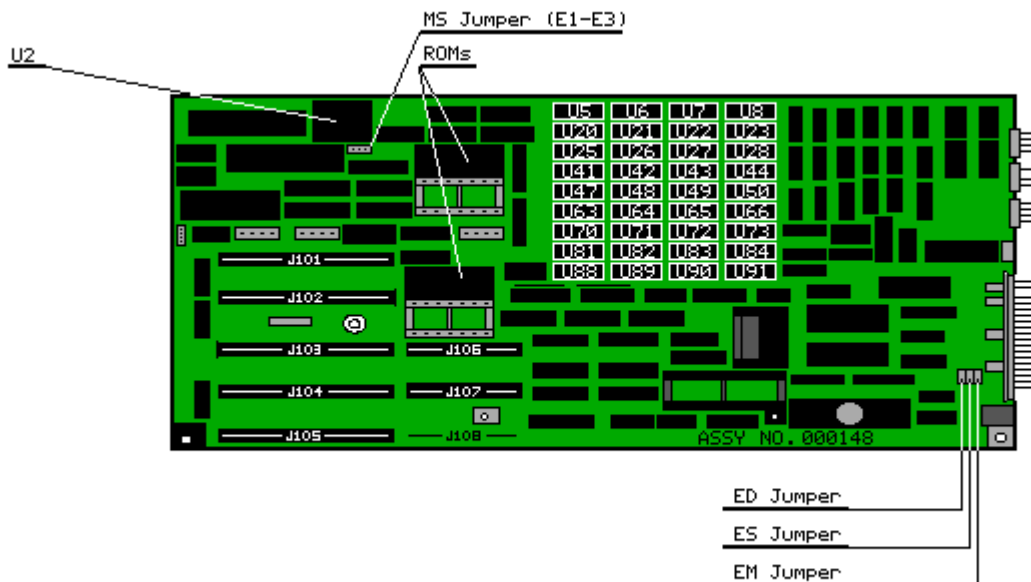


Figure 8.4-1. Location of COMPAQ PORTABLE 286 System Board Jumpers (Assy No. 000148)

If the speed select jumper (ES) is changed to the 6 MHz speed (pin 2 to pin 3), the system will operate only at a 6 MHz clock speed and will not respond to speed change requests from the keyboard when the CTRL + ALT + \ keys are pressed.

If both a monochrome video display controller board (with external monochrome display) and a COMPAQ video display controller board are installed, the monochrome video display will be active during power on if the display select jumper (ED) is set on pin 1 to pin 2.

Table 8.4. COMPAQ PORTABLE 286 System Board Jumper Settings

=====			
Jumper			
Location	Function	Pin to Pin 2	Pin 2 to Pin 3
-----			
ED	Display select	Monochrome video display controller	COMPAQ dual mode video display controller, non COMPAQ extended graphics controller, non COMPAQ RGB controllers (default setting)
-----			
ES	Speed select	Primary or fast speed (8 MHz)	Secondary or common speed (default setting)
-----			
EM	Future Use	Do not change (default setting)	Do not change
-----			
E1 - E3 or "MS"	System Board Memory	128 Kbytes, 256 Kbytes, or 512 Kbytes *	640 Kbytes
-----			
* For optional 512 Kbyte configuration, PAL (PN 105045-001) must be installed in U2 if not already present.			
=====			

## Chapter 8.5 Compaq Portable 286 Diskette/Tape Controller Board Switch and Jumper Settings

Two different versions of the board may be used in the COMPAQ PORTABLE 286 for control of the diskette/tape controller. Version 1 contains jumpers J1, J2, J3, and J4; Version 2 contains Switch SW1 and shunt jumpers J1 and J2, which replace jumpers J1 through J4. Determine which board is installed by referencing Figure 8.5-1 and 8.5-2 before changing the settings.



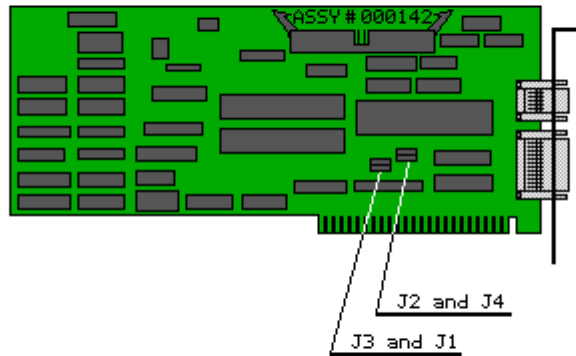


Figure 8.5-1. Locations of COMPAQ PORTABLE 286 Diskette/Tape Controller Board Jumper Settings, Version 1 (Assy No. 000142)

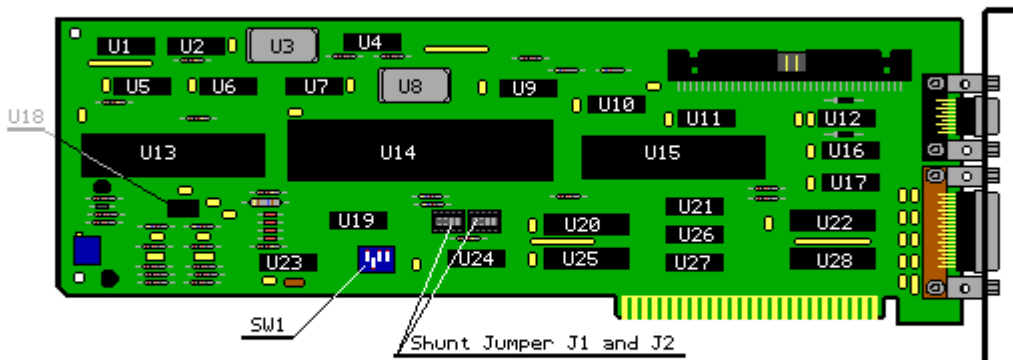


Figure 8.5-2. Locations of COMPAQ PORTABLE 286 Diskette/Tape Controller Board Jumper and Switch Settings, Version 2 (Assy No. 000181)

Table 8.5 lists the various combinations of switch and jumper settings for both versions of the COMPAQ PORTABLE 286 diskette/tape controller board.

For the locations of the COMPAQ PORTABLE 286 diskette/tape controller board jumpers and switch, see Figure 8.5-1.

Table 8.5. COMPAQ PORTABLE 286 Diskette/Tape Controller Board Jumper and Switch Settings

=====

Jumper Location	Function	Pin to Pin 2	Pin 2 to Pin 3
-----------------	----------	--------------	----------------

J1	Diskette/tape controller board base address select	Secondary address (370h)	Primary address (3F0h) (default setting)
J2	COM1/COM2 select	Serial port set to COM1 (default setting)	Serial port set to COM2
J3	Printer enabled	Parallel printer port disabled	Parallel printer port enabled (default setting)
J4	Communications Interrupt select	Serial Port IRQ4 selected (default setting)	Serial port IRQ3 selected

When changing the asynchronous communications port, both the COM1/COM2 address select (J2) and the IRQ3/IRQ4 interrupt select (J4) must be changed. If COM 1 is selected, the interrupt IRQ4 must be selected. If COM2 is selected, the interrupt IRQ3 must be selected.

Shunt Jumper Switch Position	Function	Switch Setting
J1 * (Shunt Jumper)	Serial communications	- open connectors = COM1 on left side IRQ4 - open connectors = COM2 on right side IRQ3
J2 * (Shunt Jumper)	Controller address select	- open connectors on left = primary controller - open connectors on right = secondary controller

\* To change the setting, remove the shunt jumper from its socket, rotate it 180 degrees, then reinstall it into the socket.

SW1		
Switch 1	Fixed disk drive enabled	- ON = enabled OFF = disabled
Switch 2	Printer port enabled	- ON = enabled OFF = disabled
Switch 3 and Switch 4	Not used	

## Chapter 8.6 Compaq Portable 286 512/2048 KByte Memory Expansion Board Jumper Settings

The total system memory for the COMPAQ PORTABLE 286 Personal Computer can be expanded to the 1.0 to 3.0 megabyte address range by using the 512/2048 Kbyte memory expansion board.

The base memory size depends on the type of RAM chips installed in Bank 1 of

the COMPAQ PORTABLE 286 system board.

- 64 Kbyte RAM Chips - BASE 256 Kbytes
- 256 Kbyte RAM Chips - BASE 640 Kbytes or \* 512 Kbytes

\* For optional 512 Kbyte configuration, a PAL (PN 105045-001) must be installed in U2, if not already present.

Table 8.6 lists the jumper settings and the banks for memory expansion.

Table 8.6. Memory Expansion Board (1.0 to 3.0 Megabyte Address Range)

=====

Jumper Setting E1 - E1 and E5 - E6

-----

Banks Installed	Resulting Expansion Memory
1	512 Kbytes
1, 2	1024 Kbytes
1, 2, 3	1536 Kbytes
1, 2, 3, 4	2048 Kbytes

=====

### Chapter 8.7 Compaq Portable and Compaq Plus System Jumper Settings

There are two versions of the COMPAQ Portable and COMPAQ PLUS system board. See Figure 8.7-1 to determine which version you are servicing.

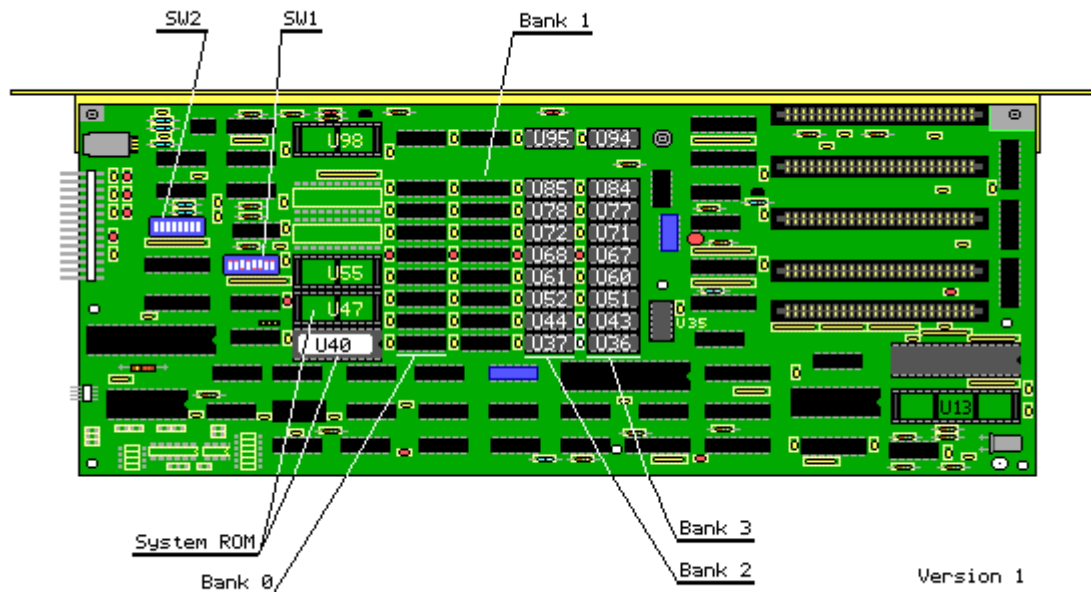


Figure 8.7-1a. COMPAQ Portable and COMPAQ PLUS System Boards (Assy No. 00004) (Part 1 of 2)

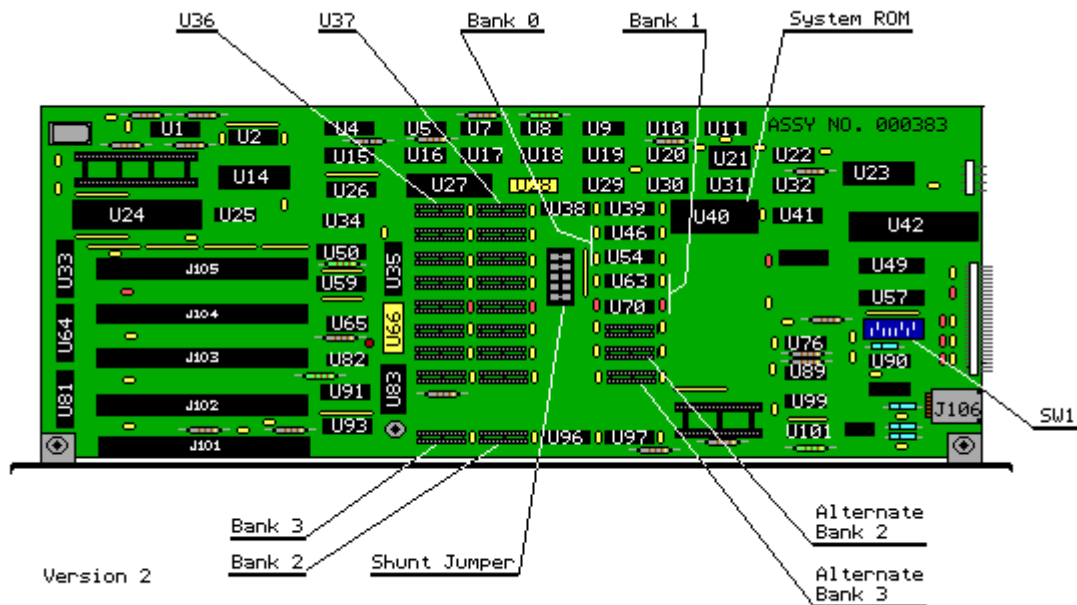


Figure 8.7-1b. COMPAQ Portable and COMPAQ PLUS System Boards (Assy No. 000383) (Part 2 of 2)

#### Board Version 1

Bank 0 contains 64 Kbytes of soldered in memory in nine, 64K x 1 RAM chips. Bank 1 also contains 64 Kbytes of soldered in memory in nine, 64K x 1 RAM chips, for a system total of 128 Kbytes.

Bank 2 consists of nine sockets that can be populated with either 64K x 1 RAM chips or 256K x 1 RAM chips.

Bank 3 also consists of nine sockets that can be populated either with 64K x 1 RAM chips or 256K x 1 RAM chips.

The following chart shows the possible memory configuration on the board:

Bank Number	Filled With	System Total
0	64K x 1 RAM	
1	64K x 1 RAM	128 Kbytes
Additional Memory Options:		
2	64K x 1 RAM	192 Kbytes
2 and 3	64K x 1 RAM	256 Kbytes
2	64K x 1 RAM	
3	256K x 1 RAM	448 Kbytes
2 and 3	256K x 1 RAM	640 Kbytes

The SW1 and SW2 switch settings on the system and define the configuration for the computer system. See Figure 8.7-2 for the switch functions and Tables 8.7-1 and 8.7-2 for the switch position settings.

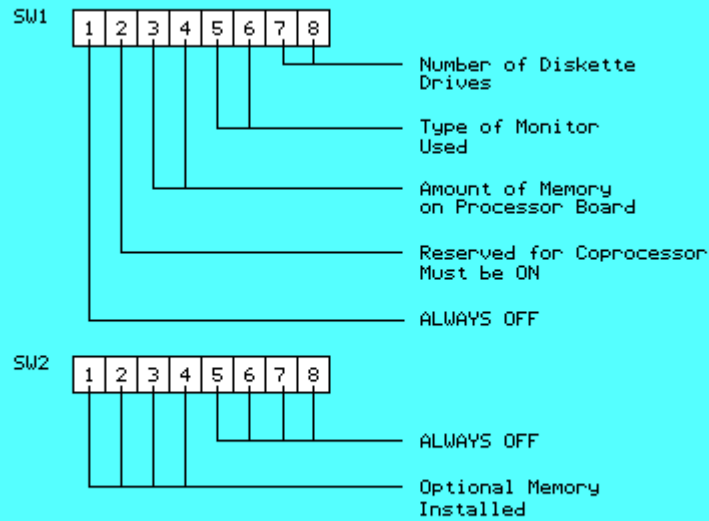


Figure 8.7-2. COMPAQ Portable System Board Switches SW1 and SW2

Table 8.7-1. SW1 Switch Position Settings

Position								Description of Function
1	2	3	4	5	6	7	8	
OFF								Not Used Always OFF (default setting)
	ON							Coprocessor Always ON (default setting)
		OFF	OFF					Processor Board Memory Always OFF (default setting)
				ON	OFF			COMPAQ Video Display Controller Board (default setting)
				OFF	OFF			Optional Video Monochrome Board
						ON	ON	1 Diskette Drive (default)
						OFF	ON	2 Diskette Drives
						ON	OFF	3 Diskette Drives
						OFF	OFF	4 Diskette Drives

-----  
NOTE: Do not use a graphite pencil to change the switch setting.  
=====

Table 8.7-2. SW2 Switch Position Settings  
=====

Position  
-----

1	2	3	4	5	6	7	8	Description of Function
ON	OFF	ON	ON	OFF	OFF	OFF	OFF	128 Kbyte Total Memory
ON	ON	OFF	ON	OFF	OFF	OFF	OFF	192 Kbyte Total Memory
ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	256 Kbyte Total Memory
ON	ON	ON	OFF	OFF	OFF	OFF	OFF	320 Kbyte Total Memory
ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	384 Kbyte Total Memory
ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	448 Kbyte Total Memory
ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	512 Kbyte Total Memory
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	544 Kbyte Total Memory

-----

NOTE: Do not use a graphite pencil to change the switch setting.  
=====

SW1 tells the system the number of diskette drives available, the type of display to be expected, and whether an 8087 coprocessor is used in the system.

SW2 tells the system the amount of available RAM.

NOTE: If the ROMs installed in socket(s) U40 (and U47 if available) are Revision C or above, SW2 is ignored. Therefore, on system boards of Revision J or above, SW2 has been removed.

If Revision C ROMs or above are installed, 256K x 1 RAM chips may be used instead of 64K x 1 bit RAM chips in banks 2 and 3 of the system board. To do this, however, a new decoder PROM must be used in socket U35:

- o PN 101257-001 (No longer available) if banks 2 and 3 are filled with 256K x 1 RAM chips for a total of 640 Kbytes.
- o PN 101256-001 if only bank 3 is filled with 256K x 1 RAM chips for a total of 448 Kbytes.

#### Board Version 2

Bank 0 contains 64 Kbytes of soldered in memory in two, 64K x 4 RAM chips. Bank 1 also contains 64 Kbytes of soldered in memory in two, 64K x 4 RAM chips, for a system total of 128 Kbytes. A chip for the parity bit is installed for each bank.

Bank 2 consists of eight sockets that can be populated with either 64K x 1 RAM chips or 256K x 1 RAM chips.

Bank 3 also consists of eight sockets that can be populated either with 64K x 1 RAM chips or 256K x 1 RAM chips.

In addition to Banks 2 and 3, Version 2 also contains Alternate Bank 2 and Alternate Bank 3. Sockets in both Alternate Bank 2 and 3 can each be populated with two 64K x 4 RAM chips. Bank 2 and Alternate Bank 2 use a common chip for the parity bit (U37). Bank 3 and Alternate Bank 3 also use a common chip for the parity bit (U36).

If Banks 2 and 3 are used, Alternate Banks 2 and 3 are not used. If Alternate Banks 2 and 3 are used, Banks 2 and 3 are not used.

Version 2 contains a shunt jumper that is used for selecting either Banks 2 and 3 or Alternate Banks 2 and 3. The banks are selected as follows:

To enable Banks 2 and 3, insert the shunt jumper so that pins 5-12, 6-11, 7-10, and 8-9 are connected.

To enable Alternate Banks 2 and 3, insert the shunt jumper so that pins 1-16, 2-15, 3-14, and 4-13 are connected.

The banks are selected by removing the shunt jumper, rotating it 180 degrees and reinserting it. The shunt jumper must be installed for the system board to operate.

The following chart shows the possible memory configuration on the board:

Bank Number	Filled With	System Total
0	64K x 4 RAM	
1	64K x 4 RAM	128 Kbytes
-----		
Additional Memory Options:		
2 or 3	64K x 1 RAM	192 Kbytes
2 and 3	64K x 1 RAM	256 Kbytes
2	64K x 1 RAM	
3	256K x 1 RAM	448 Kbytes
Alternate 2 or Alternate 3	64K x 4 RAM	192 Kbytes
Alternate 2 and Alternate 3	64K x 4 RAM	256 Kbytes
-----		
Banks 2 and 3 and Alternate Banks 2 and 3 require one additional 64K x 1 RAM chip for the parity bit per bank.		
=====		

Because all version 2 boards contain Revision C or higher ROMs, only one switch, SW1, is installed.

Switch SW2 is not installed. See Table 8.7-1 above.

## Chapter 8.8 Compaq Portable and Compaq Plus Asynchronous Communications/Clock Board Jumper Settings

Jumpers on the COMPAQ Portable and COMPAQ PLUS asynchronous communications/clock board determine the communications address and the interrupt selection on the board. Device U13 allows the selection of a 20 mA current loop operation rather than the standard RS-232-C voltage operation.

DO NOT attempt to install two asynchronous communications/clock boards in one system. If two boards are installed, incorrect operation will result.

For locations of the COMPAQ Portable and COMPAQ PLUS asynchronous communications/clock board jumper settings, see Figure 8.8-1.

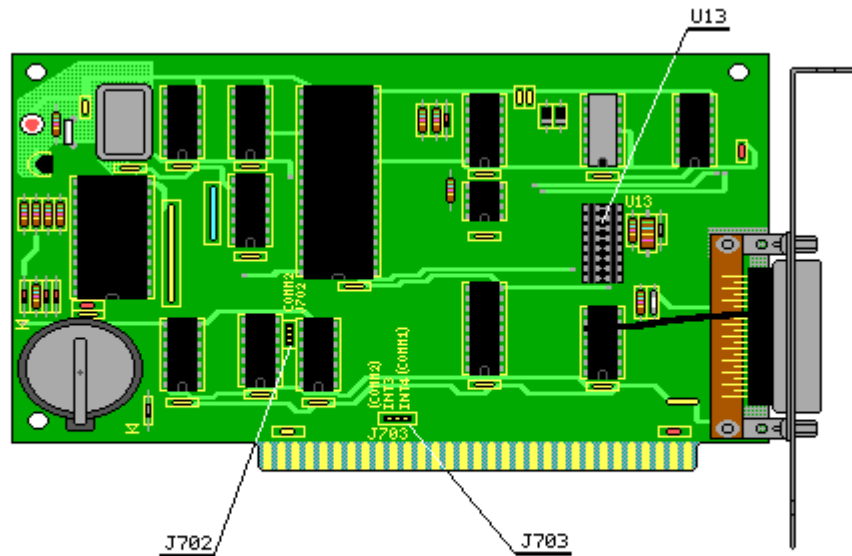


Figure 8.8-1. Location of Jumpers and U13 on the COMPAQ Asynchronous Communications/Clock Board (Assy No. 000061)

See Table 8.8 for jumper setting information for the asynchronous communications/clock board.

Table 8.8. COMPAQ Portable and COMPAQ PLUS Asynchronous Communications/Clock Board Jumper Settings

Jumper Location	Function	Pin 1 to Pin 2	Pin 2 to Pin 3
J702	COM1/COM2 select	COM2 Address	COM1 Address (default setting)
J703	Interrupt select	IRQ3	IRQ4 (default setting)
U13	Current or voltage operation (shunt module)	Pins 5-12, 6-11, 7-10, 8-9: Serial RS-232-C operation	Pins 1-16, 2-15,



3-14, 4-13:  
20 mA current loop  
operation

=====

When changing the COM1/COM2 address of the serial port, both jumpers J702 and J703 must be changed to correctly select the option desired. If COM1 is selected, the IRQ4 must be selected. If COM2 is selected, the IRQ3 must be selected.

## Chapter 8.9 Output Connector Pin

The following tables provide the output connector pin assignments:

- o Table 8.9-1: 25 pin asynchronous connector
- o Table 8.9 2: 25 pin parallel connector
- o Table 8.9-3: 9 pin serial connector

Figure 8.9-1 shows the locations of the output connectors on the COMPAQ Portable and COMPAQ PLUS Video Display Controller Board.

Figure 8.9-2 shows the location of the output connectors on the COMPAQ PORTABLE 286 Diskette/Tape Controller Board.

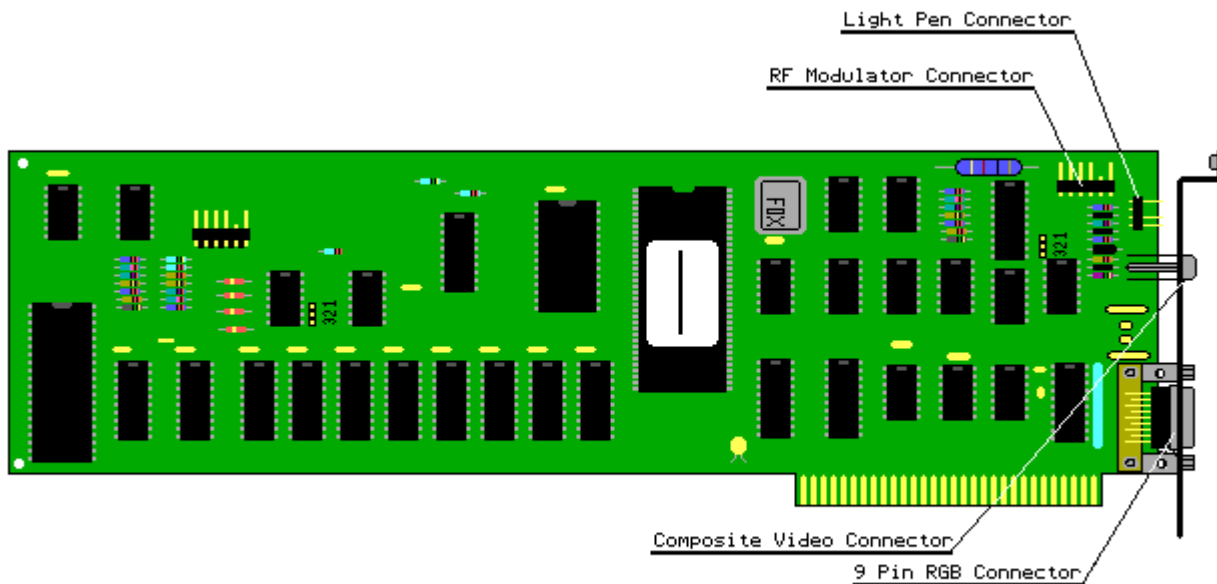


Figure 8.9-1. Locations of Output Connectors on All Versions of the COMPAQ Portable and COMPAQ PLUS Video Display Controller Board (Assy Nos. 000007, 000031, 000160, 000345, 000525)

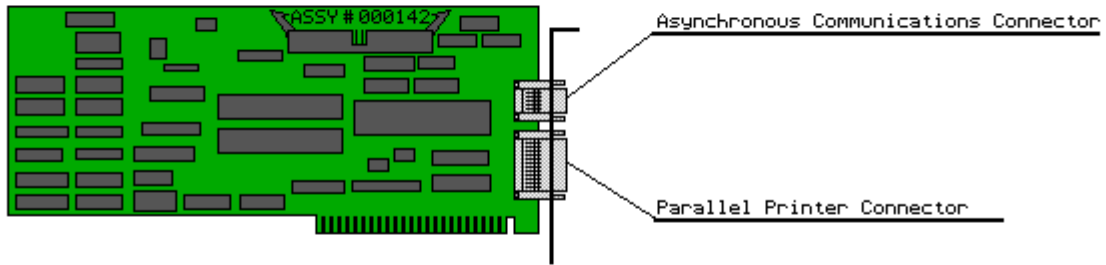


Figure 8.9-2. Locations of Output Connectors on All Versions of the COMPAQ PORTABLE 286 Diskette/Tape Controller Board (Assy No. 000142)

Table 8.9-1. 25 Pin Asynchronous Connector

Signal Names and Description	Pin Number
Protective Ground	1
Transmit Data (TX)	2
Receive Data (RX)	3
Request To Send (RTS)	4
Clear To Send (CTS)	5
Data Set Ready (DSR)	6
Signal Ground (GND)	7
Carrier Detect (CD)	8
+ Transmit current loop data (20 mA)	9
+ 5 VDC 200 mA (fuse on board)	10
- Transmit current loop return (20 mA)	11
Reverse Channel Option	12
No Connection	13
No Connection	14
No Connection	15
No Connection	16

+ Receive current loop data (20 mA)	17
No Connection	18
Data Terminal Ready (DTR)	19
No Connection	20
Ring Indicator (RI)	21
* EIA ON + 12V Option	22
* EIA OFF - 12V Option	23
- Receive current loop return (20 mA)	24

-----  
\* Pins 23 and 24 - No connection on the full height Serial Interface Board.  
-----

Table 8.9-2. 25 Pin Parallel Connector

Signal Names and Description	Pin Number
Strobe	1
Data Bit 0	2
Data Bit 1	3
Data Bit 2	4
Data Bit 3	5
Data Bit 4	6
Data Bit 5	7
Data Bit 6	8
Data Bit 7	9
Acknowledge	10
Busy	11
Paper End	12
Select	13
Auto Feed	14
Error	15
Initialize Printer	16
Select Input	17
Signal Ground	18 - 25

=====

Table 8.9-3. 9 Pin Serial Connector

Signal Names and Description	Pin Number
Carrier Detect (CD)	1
Receive Data (RX)	2
Transmit Data (TX)	3
Data Terminal Ready (DTR)	4
Signal Ground (GND)	5
Data Set Ready (DSR)	6
Request To Send (RTS)	7
Clear To Send (CTS)	8
Ring Indicator (RI)	9

## Chapter 8.10 Diskette Drive Speed Adjustment Procedure

This step by step procedure provides an orderly, easy to follow method of performing any required speed adjustment to the 5 1/4 inch diskette drive(s) contained in the COMPAQ Portable, COMPAQ PLUS, or the COMPAQ PORTABLE 286 Personal Computers. Read this entire procedure before you begin any work. After you begin the adjustment procedure, be sure to complete each step before beginning the next one.

To complete the adjustment procedures, you need the following equipment:

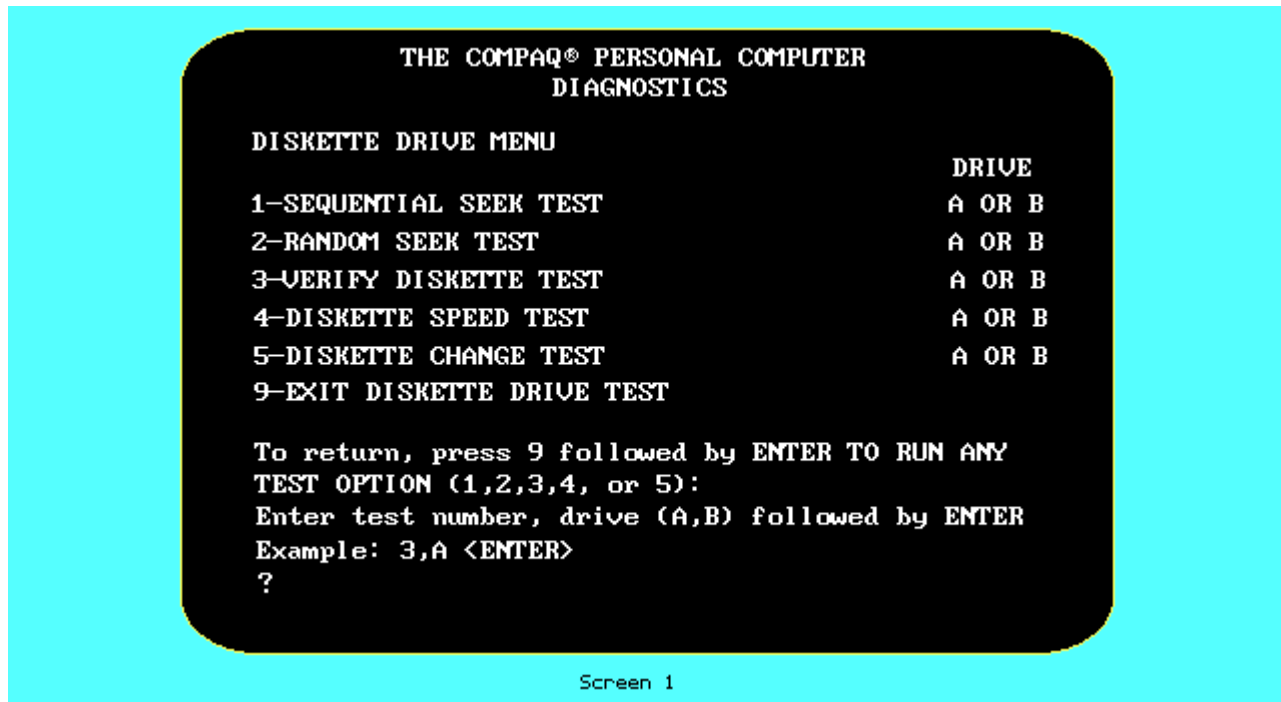
- o All tools required to service COMPAQ Portable, COMPAQ PLUS, and COMPAQ PORTABLE 286 Personal Computers. For a listing of these tools, see the "Foreword" of this guide.
- o COMPAQ DIAGNOSTICS Diskette latest version.
- o Diskette drive signal extension cable (PN 100546-001).
- o Diskette drive power extension cable (PN 100545-001).

### Preliminary Steps

1. Be sure that you have a clean, dry, nonconductive surface on which to work.
2. Remove the diskette drive you wish to test from the system unit and lay it on its side, next to the computer. See Chapter 7, "Removal and Replacement Procedures," for information.
3. Connect the original power cable on the diskette drive and the diskette

drive controller board to the diskette drive power and signal connectors of the drive being tested (See Chapter 7, "Removal and Replacement Procedures").

4. Insert the DIAGNOSTICS diskette into drive A and turn on the system power. Follow the procedures given in Chapter 4, "Diagnostic Procedures," to bring up the menu similar to the one in Screen 1.



5. To select the SPEED TEST, type "4" followed by a comma and the drive designator (4, A), then press the ENTER key. A caution message similar to the following appears:

\*\*\*\* CAUTION \*\*\*\*

DATA WILL BE DESTROYED

INSERT A BLANK FORMATTED DISKETTE IN DRIVE A.

Press the ENTER key when ready

6. Remove the DIAGNOSTICS diskette from the drive. Insert a blank, formatted diskette that is not write protected, then press the ENTER key.

NOTE: If you use a scratch diskette that was formatted by DIAGNOSTICS, you cannot use this diskette in an MS-DOS environment until you reformat it using MS-DOS.

If you are testing a COMPAQ PORTABLE 286, the DIAGNOSTICS routine checks the format on the diskette before each test. You see a prompt similar to:

DISKETTE IN DRIVE IS FORMATTED  
FOR 360K (OR 1.2 MEG)

IS THIS THE CORRECT FORMAT (Y/N)

The number of tracks for a 320 Kbyte diskette is 40 and the number of sectors is 8. For a 360 Kbyte diskette, the number of tracks is 40 and the number of sectors is 9. For a 1.2 megabyte diskette, the number of tracks is 80 and the number of sectors is 15.

#### Adjusting the Speed

Each time the index hole of a soft sectored diskette passes the index detector circuitry, this circuitry automatically generates a signal pulse. As the diskette rotates, the diskette drive speed stabilizes (usually within 5 to 6 seconds), and the speed test program can calculate the time span between these index pulses.

1. If you followed the preliminary steps to the point of selecting the diskette speed test from the diskette diagnostic menu, you see a message showing the current rotation speed of the diskette drive being tested. A display similar to the following appears:

```
THE DISKETTE DRIVE SPEED IS 1667
THE SPEED SHOULD BE IN THE RANGE 1640 TO 1690
PRESS ANY KEY TO EXIT THE TEST
```

NOTE: The rotational speed value is sometimes displayed in two formats. Both formats express the same value, but in different terms. The speed adjustment procedure usually refers to the value in parentheses (that is, the value expressed in ms).

2. Wait approximately 5 to 6 seconds, or until you see the displayed value stabilize. Remember that this is a continuously cycling test on a COMPAQ Portable or COMPAQ PLUS. The values will continue to scroll up the display. If you are testing a COMPAQ PORTABLE 286, the speed will not scroll after it has stabilized.
3. Check the value for diskette rotational speed. The optimum speed range for the COMPAQ Portable or COMPAQ PLUS Personal Computers 360 Kbyte Diskette Drive is from 196.0 to 204.0 ms. The optimum speed range for a COMPAQ PORTABLE 286 Personal Computer 1.2 Megabyte Diskette Drive is from 164 ms to 170 ms.
4. If the displayed value is out of the specified parameters, locate the speed adjustment potentiometer on the printed circuit board attached to the diskette drive. See Chapter 7, "Removal and Replacement Procedures," for the location of the 360 Kbyte diskette drive and the 1.2 megabyte diskette drive.
5. Use a small, flat bladed screwdriver and turn the adjustment screw slightly.

If the displayed value is greater than the specified parameters, turn the adjustment screw clockwise; if the displayed value is less than the specified parameters, turn the adjustment screw counterclockwise.

Keep turning the speed adjustment screw in small increments until the speed of the diskette drive is within plus or minus 1 percent of the specified value.

NOTE: The diskette drive(s) in the COMPAQ Portable, COMPAQ PLUS, and the

COMPAQ PORTABLE 286 Personal Computers will operate properly at a speed within plus or minus 2 percent of the specified value. However, it is good practice to adjust the speed to within plus or minus 1 percent of the specified value.

6. After you adjust the diskette drive speed, press any key to exit from the test program.
7. Turn off the system power, remove the diskette drive power and signal extension cables, and reinstall the diskette drive.

## **Chapter 8.11 Video Display Unit Adjustment Procedure**

The video display unit adjustment (also referred to as CRT adjustment) provides the method for performing any required video display adjustment. To complete the adjustment procedure, the following equipment is required.

- o All tools required to service a COMPAQ Portable, COMPAQ PLUS, or COMPAQ PORTABLE 286 Personal Computer. For a listing of these tools, see the "Foreword" of this guide.
- o COMPAQ DIAGNOSTICS Diskette latest version.
- o Set of standard television adjustment tools.
- o Personal Computer Display Template (PN 100686-001 (No longer available)).

Read the entire procedure carefully and completely before starting any work. Be sure to complete each step before continuing to the next step.

1. Remove the outer access cover. See Chapter 7, "Removal and Replacement Procedures."
2. Place your computer in a standard working position with the outer access cover removed.
3. Insert the DIAGNOSTICS diskette in the computer and load the DIAGNOSTICS program. (See Chapter 4, "DIAGNOSTIC Procedures," for more information on the Advanced Diagnostics program.)

4. Select the video display alignment procedure from the video display unit test menu and press ENTER.

After you select the video display adjustment procedure, the screen will appear completely blank. This is normal program operation.

5. Turn the external BRIGHTNESS knob (located on the front bezel) fully clockwise.
6. Before making any adjustments, become familiar with Figure 8.11-1, which shows the locations of controls on the high voltage access plate.

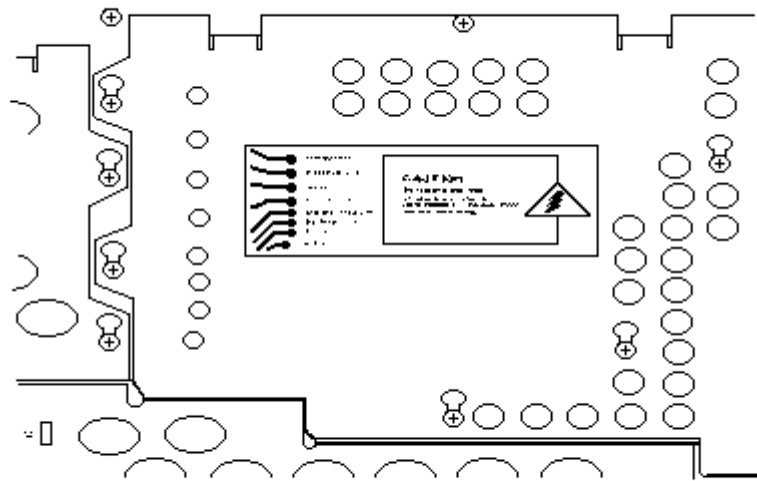


Figure 8.11-1. Adjustment Control Locations

7. Using the label on the high voltage access plate as a guide, locate and adjust the BRITE control until the screen raster appears on the display. Check this display to make sure it is not tilted in any way.

NOTE: Do not use excessive force when making adjustments on the video display unit.

8. Turn the BRIGHTNESS control knob until the raster disappears.
9. Using the VDU alignment procedure contained in the DIAGNOSTICS program, fill the display screen with a character (see Chapter 4, "DIAGNOSTIC Procedures," for more information on the VDU alignment test screen).
10. Using a plastic adjustment tool, turn the WIDTH adjustment potentiometer (pot) until the left and right edges of the display screen fall within the range specified on the adjustment template. Width may change between high and low resolution mode and should be adjusted for a good compromise.

NOTE: When making adjustments on the video display unit do not use excessive force.

11. If the characters on your display appear blurry or fuzzy, a focus adjustment is necessary. Using a plastic adjustment tool, adjust the pot labeled FOCUS until all characters are clear and sharp.
12. If the characters on your display appear too short or too tall, a character height adjustment is necessary. Using the VDU adjustment diagnostic program, fill the screen with capital Es.
13. Two adjustments control the character height. The first is the MASTER HT control pot, which controls the height of characters in both the high and low resolution text mode.

NOTE: Do not use excessive force when making adjustments on the video



display unit.

14. Use the CTRL + ALT + < command to place the display in the low resolution graphics mode. Press and hold down the CTRL and the ALT key and press the less than (<)key. Then release all three keys. Using the adjustment tool, adjust the MASTER HT control pot so that all characters appear at the desired height.

NOTE: Do not use excessive force when making adjustments on the video display unit.

15. Use the CTRL + ALT + > command to place the display in the high resolution mode. Press and hold down the CTRL key and the ALT key. Press the greater than (>) key. Then release all three keys. Using the adjustment tool, adjust the HI SCAN HT control pot so that all characters appear at the desired height.
16. If characters on your display appear taller or shorter near the top of the display than those near the bottom, a vertical linearity adjustment is necessary. Using the VDU adjustment diagnostic, see Chapter 4, "DIAGNOSTIC Procedures," for more information on the VDU adjustment program.
17. Using a plastic adjustment tool, turn the VERTICAL LIN control pot until all characters appear equal in height.

NOTE: 1. This adjustment may affect the character height enough to warrant a readjustment for character height.

2. If the vertical linearity control does not exist on your video display unit, it is preset and controlled by the video display unit.

3. Steps 13 and 14 should be repeated after each adjustment until the display is equal.

18. If your display is shifted to the right or left, a horizontal display centering adjustment is necessary. Two pots control the centering of the display. One is the MASTER VID CTR pot, which shifts the display in both a high and low resolution mode. The other one is the HI SCAN CTR pot, which affects the display in high resolution mode.

NOTE: Do not use excessive force when making adjustments on the video display unit.

19. Use the CTRL + ALT + < command to place the display in the low resolution graphics mode. Using the adjustment tool, adjust the MASTER VID CTR pot so that the display is in the center of the screen.
20. Use the CTRL + ALT + > command to place the display in the high resolution mode. Using the adjustment tool, adjust the HI SCAN CTR pot so that the display is in the center of the screen.

If your display experiences a problem other than those covered in the previous 20 steps, replace the video display unit.

For video display unit removal and replacement procedures, see Chapter 7, "Removal and Replacement Procedures."