Foreword

COMPAQ PORTABLE II PERSONAL COMPUTER
MAINTENANCE AND SERVICE GUIDE

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Preface
This publication is intended as a reference for technicians trained to repair
the COMPAQ PORTABLE II Personal Computer.

Summary of Text

This guide contains the following eight chapters:

Chapter 1, "Operating and Performance Specifications," provides physical,
environmental, and performance specifications for the COMPAQ PORTABLE II
Personal Computer.

Chapter 2, "Power On Self Test," describes the internal system diagnostic
programs that execute automatically when the system is turned on. It also
includes a quick reference for identifying and correcting problems that could
occur during the Power On Self Test procedure.

Chapters 3 and 4: Please see the SUPPORT SOFTWARE MAINTENANCE AND SERVICE
GUIDE for information on the SETUP and ADVANCED DIAGNOSTICS programs.

Chapter 5, "Error Messages and Codes," lists the Power On Self Test (POST) and
DIAGNOSTICS Error Codes and provides the course of action necessary to
resolve the problem.

Chapter 6, "Illustrated Parts Catalog," provides an illustrated reference for
COMPAQ PORTABLE II Personal Computer spare parts.

Chapter 7, "Removal and Replacement Procedures," describes how to remove and
replace field replaceable subassemblies.

Chapter 8, "Jumper Settings, Switch Settings, and Adjustments," provides
detailed information for setting jumpers and switches and performing monitor
adjustments.

Tools and Supplies

The following tools and supplies are required to service the COMPAQ PORTABLE
II Personal Computer:

o Torx screwdrivers, sizes T-15 and T-10
o Slotted blade screwdriver, 1/4 inch
o Needlenosed pliers
o 25 pin printer loopback plug
o 25 pin serial loopback plug
o 9 pin serial loopback plug
o DIAGNOSTICS diskette
o Formatted diskette

Optional Tools

o Memory chip insertion tool
o Memory chip removal tool
o Diskette drive signal extension cable (PN 100546-001)
o Diskette drive power extension cable (PN 100545-001)
o Socket/Torx tool kit (PN 101089-001)
   - Torx screwdrivers, sizes T-15 and T-10
   - Adjustable socket tool with hex sockets and one Torx socket (T-10)

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                                CAUTION

Only trained technicians should attempt to repair this equipment. All
troubleshooting and repair procedures are detailed to allow
subassembly/module level repair only.

Because of the complexity of the individual boards and subassemblies, no one
should attempt to make repairs at the component level or make modifications
to any printed wiring board. Improper repairs may create a safety hazard.
Indications of component replacement or printed wiring board modifications
may void any warranty or exchange allowances.

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Additional Reference Information

The following support documentation is available for the COMPAQ PORTABLE II

Personal Computer.

o   Operations Guide
o   MS-DOS VERSION 3 REFERENCE GUIDE
o   Technical Reference Guide
o   HOW TO DO BUSINESS WITH COMPAQ SERVICE
o   COMPAQ SERVICE QUICK REFERENCE GUIDE
o   COMPAQ Service Advisories and Bulletins
o   COMPAQ QuickFind Support Reference Library

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                              WARNING

The computer is designed to be electrically grounded. To ensure proper
operation of the computer, plug the AC power cord only into a properly
grounded AC outlet.

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

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

CONNECTOR HOOD: RFI/EMI metal shield; AMP #7451 7X-X; or equivalent.

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

Chapter 1. Operating and Performance Specifications

Chapter 1.0 Introduction

This chapter contains operating and performance specifications for the COMPAQ
PORTABLE II Personal Computer.

Chapter 1.1 System Unit

```
Table 1-1.  Electrical and Mechanical Specifications
==============================================================================
Dimensions:
  Height                          7.5 in. (19.0 cm)
  Depth                           13.9 in. (35.3 cm)
  Width                           17.7 in. (45.0 cm)
------------------------------------------------------------------------------
Weight                            Model 1 23.6 lb (10.7 kg)
                                  Model 2 25.6 lb (11.6 kg)
                                  Model 3 26.2 lb (11.9 kg)
                                  Model 4 26.3 lb (12.2 kg)
------------------------------------------------------------------------------
Power Requirements:
  Voltage                         120 VAC                      220 - 240 VAC
  Frequency                       60 Hz                        50 Hz
  Current                         3A                           2.5A
------------------------------------------------------------------------------
AC Power Cable:
  Length                          79 in. (2 m)
  Gauge                           18 AWG
------------------------------------------------------------------------------
Environmental Requirements:
  Temperature:
    Operating                     10oC to 40oC (50oF to 104oF)
    Nonoperating                  10oC to 60oC (50oF to 140oF)
    Shipping                      -30oC to 60oC (-22oF to 140oF)

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

  Shock:
    Operating                     5 g, 11 ms, half sine
    Nonoperating                  35 g, 11 ms, half sine

  Vibration:
    Operating                     0.5 g, 5 - 550 Hz
    Nonoperating                  1.0 g, 5 - 550 Hz

  Heat Dissipation:
    Delivered                     410 BTU/hr at 120W
    Total Watts                   615 BTU/hr at 180W

  Maximum Unpressurized Altitude:
    Operating                     10,000 ft (3048 m)
    Nonoperating                  30,000 ft (9144 m)
```

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===============================================================================
```

Chapter 1.2 Keyboard

```
Table 1-2.  Keyboard Specifications
===============================================================================
Dimensions:
  Height                        1.3 in. (3.30 cm)
  Depth                         7.0 in. (17.78 cm)
  Width                         17.1 in. (43.43 cm)

Number of Keys                  84

Keyboard:
  Cable Length                  60.00 in. (152.4 cm)
  Coil Diameter                 0.75 in. (1.9 cm)
  Coil Length                   11.00 in. (27.94 cm)
===============================================================================
```

Chapter 1.3 Video Display Unit

```
Table 1-3.  Video Display Unit Specifications
===============================================================================
Display                         9 in. diagonal
                                90 degree deflection
                                High persistence green phosphor
                                Etched surface to reduce glare

Display Size                    80 character by 25 line screen
                                40 character by 25 line screen

Graphic Resolution              640 x 200 dot resolution
                                320 x 200 dot resolution

Text Resolution                 720 x 350 dot resolution
===============================================================================
```

Chapter 1.4 10 Megabyte Fixed Disk Drive

```
Table 1-4.  10 Megabyte Fixed Disk Drive Specifications
===============================================================================
Dimensions:
  Height                        1.7 in. (4.32 cm)
  Depth                         5.80 in. (14.73 cm)
  Width                         3.75 in. (9.54 cm)

Weight                          2.2 lb (1.0 kg)

Media:                          1 Platter
  Number of Data Heads          4
  Number of Cylinders           306
  Average Access Time           105 ms
```

```
  Data Transfer Rate              5.0 Mb/s
  Type                            1
================================================================================
```

Chapter 1.5 20 Megabyte Fixed Disk Drive

```
Table 1-5.   20 Megabyte Fixed Disk Drive Specifications
================================================================================
Dimensions:
  Height                          1.7 in. (4.32 cm)
  Depth                           4.1 in. (10.41 cm)
  Width                           5.75 in. (14.61 cm)

Weight                            1.8 lb (0.8 kg)

Media:                            2 Platter
  Number of Data Heads            4
  Number of Cylinders             615
  Average Access Time             105 ms
  Data Transfer Rate              5.0 Mb/s
  Type                            2
================================================================================
```

Chapter 1.6 360 KByte Diskette Drive

```
Table 1-6.   360 Kbyte Diskette Drive Specifications
================================================================================
Dimensions:
  Height                          1.1 in. (2.85 cm)
  Depth                           7.9 in. (20.3 cm)
  Width                           5.9 in. (15.0 cm)

Weight                            1.98 lb (0.9 kg)

Media:
  Tracks per inch                 48
  Number of Tracks                40 (when formatted with MS-DOS)
  Data Transfer Rate              250 Kb/s
================================================================================
```

Chapter 1.7 1.2 Megabyte Diskette Drive

```
Table 1-7.   1.2 Megabyte Diskette Drive Specifications
================================================================================
Dimensions:
  Height                          1.1 in. (2.8 cm)
  Depth                           8.0 in. (20.3 cm)
  Width                           5.8 in. (14.6 cm)

Weight                            1.9 lb (0.9 kg)

Media:
```

```
  Tracks per Inch                  96 (1.2 megabyte format)
                                   48 (360 Kbyte format)
  Number of Tracks                 80 (1.2 megabyte format)
                                   40 (360 Kbyte format)
  Data Transfer Rate               500 Kb/s (1.2 megabyte format)
                                   300 Kb/s (360 Kbyte format)
===============================================================================
```

Chapter 1.8 1.44 Megabyte Diskette Drive Specifications

```
Table 1-8.  1.44 Megabyte Diskette Drive Specifications
===============================================================================
Dimensions:
  Height                           0.90 in. (2.3 cm)
  Depth                            6.47 in. (16.42 cm)
  Width                            5.95 in. (11.1 cm)

Weight                             1.98 lb (0.9 kg)

Media:
  Tracks per Inch                  135
  Number of Tracks                 80
  Data Transfer Rate               500 Kb/s (high density)
                                   250 Kb/s (low density)
===============================================================================
```

Chapter 1.9 Power Supply

```
Table 1-9.  Power Supply Specifications
===============================================================================
Input Requirements:
  Line Voltage                     102 to 132 VAC. single phase
                                   180 to 264 VAC. single phase
                                   3.0A fuse, 125 VAC for 120 VAC operations
                                   2.5A fuse, 150 VAC for 220/240 VAC operation
  Line Frequency                   47 - 62 Hz
  Cooling                          Forced air provided by internal 12 VDC fan
-------------------------------------------------------------------------------
Volts Direct Current Output

                          Nominal                Maximum
Nominal      Current      Continuous             Peak         Regulation
Voltage      Amperes      Current                Current      Tolerance
(VDC)        Minimum      (Amperes) Maximum *    (Amperes)    Percentage
-------------------------------------------------------------------------------
+5.0         3.0          13.9                   13.9         ñ2
-5.0         0.0          0.5                    0.5          ñ5
+12.2        1.0          4.0                    7.0          ñ2
-12.0        0.0          0.5                    0.5          ñ5
-------------------------------------------------------------------------------
* These values are maximum values based on nominal operating conditions for
  temperature, line voltage, frequency and altitude.  Also, a minimum load on
  l2 VDC must be maintained for proper power supply operation.
===============================================================================
```

Chapter 2. Power On Self Test/Problem Isolation

2.1 Power On Self Test

The Power On Self Test (POST) is a series of diagnostic tests performed
automatically when the system is turned on. These tests verify that the
computer system is operating properly. If a subassembly fails POST, an error
code appears on the screen.

To start POST, follow these steps.

1. Turn off the computer.

2. Disconnect the signal cables of any peripheral devices (printers, modems,
    and so on) from the computer.

3. Remove the outer access casing to expose the system LED located on the
    system board (see Chapter 7 for this procedure).

4. Install a loopback plug connector at each location from which a
    peripheral signal cable was removed.

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

5. Verify that the AC power cable is connected to a usable, grounded, three
    pronged AC power outlet.

6. Insert the DIAGNOSTICS diskette into drive A.

7. Turn on the computer. The system automatically runs POST. See
    Section 2.2, "System Problem Isolation," for information on handling
    system problems.

Chapter 2.2 System Problem Isolation

This section contains problem isolation procedures for identifying and
correcting system related problems.

To isolate system problems, perform the following steps:

1. Verify that the AC power switch is on.

2. Listen for the sound of the fan. Did you hear the fan?

    YES: Proceed to step 3.

    NO: Turn off the computer and check the condition of the AC power fuse.

    Is the fuse good?

    YES: Return the AC power fuse to its fuse holder and turn on the system.
        Proceed to step 3.

NO: Replace the AC power fuse (refer to Chapter 7 in this guide
           for AC power fuse removal and replacement information). Repeat
           steps 1 and 2.

3. Did you hear an audible beep or see an error code on the screen?

    YES: See Chapter 5, "Error Messages and Codes" for information on how to
         identify and correct either audible or error code related problems.

    NO: Proceed to step 4.

4. Check the system LED on the system board. Is it lit?

    YES: Proceed to step 5. If you did not hear the fan, replace it now.

    NO: Replace the power supply subassembly chassis and repeat the problem
        isolation procedures.

If the problem continues, replace the system board and repeat the problem
isolation procedures.

If the problem has not been corrected, test each controller or option board
by turning off the system, removing a board and turning the power back on.

If the LED is still not on, test each video and storage device by turning off
the system, disconnecting the device power cable and then turning on the
system.

When the system LED lights, power off the system and replace the defective
subassembly.

NOTE: For removal and replacement procedures, refer to Chapter 7.

5. Check the screen for a blinking cursor. Do you see a cursor on the
    screen?

    YES: Proceed to step 6.

    NO: Listen for an audible tone (beep) from the system speaker.

If you hear one or two short beeps, POST is complete. The system now boots
the DIAGNOSTICS program. If the screen remains blank, adjust the brightness
knob.

If the display screen remains blank after adjusting the brightness knob, the
video display unit subsystem is not functioning properly.

o If a color graphics or composite video monitor is available, connect
   either device to the correct video outputs on the video display controller
   board. Using the CTRL + ALT + < command, change the display mode to the
   graphics mode.

   If the first screen of the DIAGNOSTICS program appears on the external
   monitor, replace the internal video display unit.

   If the screen on the external monitor is blank, replace the video display

controller board.

o If a color graphics or composite video monitor is not available, replace
   the video display controller board.

o If a color graphics or composite video monitor is not available and
   replacing the video display controller board does not solve the problem,
   replace the internal video display unit.

If you do not hear a beep, replace the system board. If you hear any other
audible sounds, refer to Chapter 5 for more information on POST related error
messages.

6. Did the cursor disappear from the screen, replaced by the number of Kbytes
    (shown in increments) on the display screen?

    YES: This indicates the memory self test portion of POST. Proceed to
         step 7.

    NO: Replace the system board. Restart the system problem isolation
        procedures.

7. Did the LEDs on the mass storage device flash, followed by one or two
    short beeps?

    YES: This indicates that POST and the SETUP utility have completed
         successfully. The DIAGNOSTICS program should then boot and the
         DIAGNOSTICS menu should appear on the display screen.

         Refer to Chapter 4 for additional information on the COMPAQ
         DIAGNOSTICS program.

     NO: If the cursor reappears and remains on the screen, replace
         the system board.

         If one audible tone is heard and an error message appears, the SETUP
         function was not completed on the system. Press the F1 key and
         proceed to Chapter 3 in this guide for information on the SETUP
         function.

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

5.0 Introduction

This section contains Power On Self Test (POST) 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, the probable
cause of the error, and the action required to resolve the error condition.

Chapter 5.1 Power On Self Test Messages

An error message results if a problem is encountered during the Power On Self
Test. This utility runs automatically when the system is turned on.
Table 5-1 lists the message, audible (beep) message, probable cause, and the
recommended action.

Table 5-1. Power On Self Test Error Messages

Message	Beeps	Probable Cause	Recommended Action
101 - I/O ROM Error	1 Long, 1 Short	Option ROM	1. Inspect ROM placement. 2. Verify correct ROM location.
101 - ROM Error	1 Long, 1 Short	System ROM	3. Replace the ROM.
102 - System Board	None	System board	The following recommended action applies to error codes 102 through 115:
110 - System Failure	None	Timer failure	
111 - System Failure	None	Memory refresh failure	Replace the system board.
112 - System Failure	None	CMOS failure	
113 - System Failure	None	DMA failure	
114 - System Failure	None	Timer interrupt failure	
115 - System Failure	None	Protected mode failure	
Message	Beeps	Probable Cause	Recommended Action
162 - System Options Error	2 Short	SETUP utility incorrect	Run SETUP
163 - Time and Date Not Set	2 Short	Invalid time or date	Run SETUP
164 - Memory Size Error Discrepancy	2 Short	System configuration incorrect	Check the memory configuration and run SETUP

```
XX000B YYZZ 201 -      None      RAM failure          Refer to Section 5.3,
Memory Error                                          "Memory Related Error
                                                      Codes."
------------------------------------------------------------------------------
301 - Keyboard Error   None      Keyboard failure     Replace the keyboard.
------------------------------------------------------------------------------
303 - Keyboard         None      Keyboard             Replace the system board.
Controller Error                 controller failure
------------------------------------------------------------------------------
304 - Keyboard or      None      Keyboard or system   1.  Replace the keyboard.
System Unit Error                board failure        2.  Replace the system
                                                          board.
------------------------------------------------------------------------------
401 - Printer          None      System board         Replace the system board.
Interface Error                  failure
------------------------------------------------------------------------------
402 - Monochrome       1 Long,   System board or      Replace the monochrome
Display Controller     2 Short   display controller   display controller board
Failure                          board                or system board.
------------------------------------------------------------------------------
501 - Display          1 Long,   Video display or     Replace the video board.
Controller Failure     2 Short   controller board
------------------------------------------------------------------------------
Message                Beeps     Probable Cause       Recommended Action
------------------------------------------------------------------------------
601 - Diskette         None      Diskette             1.  Replace multipurpose
Controller Error                 controller board         controller board.
                                                      2.  Replace multipurpose
                                                          fixed disk drive
                                                          controller board.
------------------------------------------------------------------------------
602 - Diskette         None      Diskette in Drive    Replace diskette.
Boot Record Error                A not bootable
------------------------------------------------------------------------------
1780 - Disk 0          None      Fixed disk drive/    Run DIAGNOSTICS.
Failure                          format error
------------------------------------------------------------------------------
1782 - Disk            None      Fixed disk drive/    Run DIAGNOSTICS.
Controller failure               controller error
------------------------------------------------------------------------------
1790 - Disk 0 Error    None      Fixed disk drive     Run SETUP and DIAGNOSTICS.
                                 error or wrong
                                 drive type
------------------------------------------------------------------------------
XX000Y ZZ Parity       None      Expansion RAM        Run DIAGNOSTICS.
Check 2
------------------------------------------------------------------------------
Audible                1 Short   Power on             None
                                 successful
------------------------------------------------------------------------------
Audible                2 Short   Power on             None
                                 successful
------------------------------------------------------------------------------
(RESUME = "F1" KEY)    None      As indicated         Press F1 key to continue
==============================================================================
```

Chapter 5.2 Diagnostics Error Codes

DIAGNOSTICS error codes occur if the system recognizes a problem while
running the DIAGNOSTICS program. These error codes help identify possible
defective subassemblies.

Table 5-2 through 5-12 list possible error codes, a description of the error
condition, and the action required to correct the condition.

In each case, the Recommended Action column lists steps necessary to correct
the problem. After completing each step, run the DIAGNOSTICS program to
verify that the error condition has been corrected. If the error code
reappears, perform the next step, then run the DIAGNOSTICS program. Continue
until the DIAGNOSTICS program no longer detects an error condition.

The error codes are in the form of AYY - XX or AAYY - XX, A or AA denotes the
test or action that failed. XX denotes a specific problem. For example,
error code 603 - 07 indicated that the diskette drive write/read/compare test
failed because of a fatal error while writing.

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

Table 5-2. Processor Test Error Codes

Error Codes	Error Description	Recommended Action
101 - 01	CPU test failed	Replace the system board and retest for error codes 101 - 01 through 101 - 94
102 - 01	Numeric coprocessor initial status word incorrect	The following steps apply to error codes 102 - 01 through 102 - 15:
102 - 02	Numeric coprocessor initial control word incorrect	1. Replace the numeric coprocessor and retest.
		2. Replace the system board and retest.
102 - 03	Numeric coprocessor tag word not all ones	
102 - 04	Numeric coprocessor tag word not all zeros	
102 - 05	Numeric coprocessor exchange command failed	
102 - 06	Numeric coprocessor masked exception incorrectly handled	
102 - 07	Numeric coprocessor unmasked exception incorrectly handled	
102 - 08	Numeric coprocessor wrong mask bit set in status register	
102 - 09	Numeric coprocessor unable to store real number	

Error

```
Codes     Error Description                        Recommended Action
-----------------------------------------------------------------------------
102 - 10  Numeric coprocessor real                 The following steps apply
          number calculation test failed           to error codes 102 - 01
                                                    through 102 - 15:
102 - 11  Numeric coprocessor speed test
          failed                                   1.  Replace the numeric
                                                       coprocessor and retest.
102 - 12  Numeric coprocessor pattern             2.  Replace the system
          test failed                                 board and retest.

102 - 15  Numeric coprocessor inoperative
          or socket  unoccupied
-----------------------------------------------------------------------------
103 - 01  DMA page registers test failed          Replace the system board
                                                    and retest for error codes
103 - 02  DMA byte controller test failed          103 - 01 through 113 - 01.


103 - 03  DMA word controller test failed


104 - 01  Interrupt controller master test
          failed

104 - 02  Interrupt controller slave test
          failed

104 - 03  Interrupt controller software RTC
          inoperative
-----------------------------------------------------------------------------
Error
Codes     Error Description                        Recommended Action
-----------------------------------------------------------------------------
105 - 01  Port 61 bit 6 not at zero               Replace the system board
                                                    and retest for error codes
105 - 02  Port 61 bit 5 not at zero                103 - 01 through 113 - 01.


105 - 03  Port 61 bit 3 not at zero

105 - 04  Port 61 bit 1 not at zero

105 - 05  Port 61 bit 0 not at zero

105 - 06  Port 61 bit 5 not at one

105 - 07  Port 61 bit 3 not at one

105 - 08  Port 61 bit 1 not at one

105 - 09  Port 61 bit 0 not at one

105 - 10  Port 61 I/O test failed

105 - 11  Port 61 bit 7 not at zero

105 - 12  Port 61 bit 2 not at zero

106 - 01  Keyboard controller self test failed
```

```
107 - 01  CMOS RAM test failed


108 - 02  CMOS interrupt test failed
-------------------------------------------------------------------------------
Error
Codes     Error Description                       Recommended Action
-------------------------------------------------------------------------------
108 - 03  CMOS interrupt test, CMOS not          Replace the system board
          properly initialized                   and retest for error codes
                                                  103 - 01 through 113 - 01.
109 - 01  CMOS clock load data test failed.


109 - 02  CMOS clock rollover test failed


109 - 03  CMOS clock test, CMOS not properly
          initialized

110 - 01  Programmable timer load data test
          failed

110 - 02  Programmable timer dynamic test
          failed


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
-------------------------------------------------------------------------------
Error
Codes     Error Description                       Recommended Action
-------------------------------------------------------------------------------
112 - 07  Speed test system error                Replace the system board
                                                  and retest for error codes
112 - 08  Speed test unable to enter AUTO mode   103 - 01 through 113 - 01.


112 - 09  Speed test unable to enter HIGH mode

112 - 10  Speed test HIGH mode out of range

112 - 11  Speed test AUTO mode out of range


113 - 01  Protected mode test failed
-------------------------------------------------------------------------------
```

```
114 - 01  Speaker test failed                        1.  Verify speaker
                                                          connection.
                                                      2.  Replace the speaker and
                                                          retest.
                                                      3.  Replace the system
                                                          board and retest.
==========================================================================

Table 5-3.  Memory Test Error Codes
==========================================================================
Error
Codes     Error Description                           Recommended Action
--------------------------------------------------------------------------
201 - 01  Memory machine ID test failed               The following steps apply
                                                      to error codes 201 - 01
201 - 02  Memory machine type test failed             through 202 - 03:

201 - 03  Memory machine ID and type tests            1.  Replace VDU controller
          failed                                          board and retest.
                                                      2.  Replace the system ROM
202 - 01  Memory system ROM checksum failed               and retest.
                                                      3.  Replace the system
202 - 02  Failed RAM/ROM map test                         board and retest.

202 - 03  Failed RAM/ROM protect test
--------------------------------------------------------------------------
203 - 01  Memory write/read test failed               The following steps apply
                                                      to error codes 203 -01
203 - 02  Error during saving program memory          through 211 - 03:
          write/read test
                                                      1.  Replace the defective
203 - 03  Error during restore of program memory          memory chip (or
          in write/read test                              option memory if
                                                          installed, error
204 - 01  Memory address test failed                      code 208) if an error
                                                          code is accompanied
204 - 02  Error during saving program memory in           by an XX000 BYYZZ
          address test                                    code and retest.
                                                      2.  Replace the system
204 - 03  Error during restore of program memory          memory board or the
          in address test                                 system board.


204 - 04  A20 address test failed

205 - 01  Walking I/O test failed


205 - 02  Error during saving program memory in
          walking I/O test

205 - 03  Error during restore of program memory
          in walking I/O test

205 - 04  Insufficient memory to perform test
--------------------------------------------------------------------------
Error
Codes     Error Description                           Recommended Action
--------------------------------------------------------------------------
208 - 01  Memory refresh test failed                  The following steps apply
```

```
208 - 02  Error during saving program memory in     to error codes 203 - 01
          refresh test                              through 211 - 03:

208 - 03  Error during restore program memory       1.  Replace the defective
          in refresh test                               memory chip (or
                                                        option memory if
210 - xx  Incrementing pattern test failed              installed, error code
          (expanded memory test)                        208) if an error code is
                                                        accompanied by an
210 - 01  Data read from block did not match            XX000 BYYZZ code and
          data written                                  retest.
                                                    2.  Replace the system
210 - 02  Scan of test block prior to testing           memory board or the
                                                        system board.

210 - 03  Error while restoring block under test


210 - 05  Inverted pattern compare, but RAM was
          correct


210 - 06  Error while restoring block under test

210 - 07  Main memory update failure

211 - xx  Random data pattern test

211 - 01  Memory random pattern test failed


211 - 02  Error during saving program memory and
          random pattern in write/read test

211 - 03  Error during restore of program memory
          and random pattern in write/read test
===============================================================================

Table 5-4.  Keyboard Test Error Code
===============================================================================
Error
Codes     Error Description                         Recommended Action
-------------------------------------------------------------------------------
301 - 01  Keyboard short test, 8042 self test       The following steps apply
          failed                                    to error codes 301 - 01
                                                    through 304 - 06:
301 - 02  Keyboard short test. interface test
          failed                                    1.  Check the keyboard
                                                        cable connector.  If
301 - 03  Keyboard short test. echo test                disconnected, turn
          failed                                        off computer and
                                                        connect keyboard.
301 - 04  Keyboard short test failed                2.  Check internal keyboard
                                                        connections to system
302 - 01  Keyboard long test failed                     board.
                                                    3.  Replace the keyboard
303 - 01  Keyboard LED test, 8042 self test             and retest.
          failed                                    4.  Replace the system
                                                        board and retest.
```

```
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
-------------------------------------------------------------------------
Error
Codes      Error Description                      Recommended Action
-------------------------------------------------------------------------
303 - 08  Keyboard LED test, command byte       The following steps apply
          restore test failed                   to error codes 301 - 01
                                                through 304 - 06:
303 - 09  Keyboard LED test, LEDs failed to
          light                                 1.  Check the keyboard
                                                    cable connector.  If
304 - 01  Keyboard typematic test failed            disconnected, turn
                                                    off computer and
304 - 02  Unable to enter mode 3                    connect keyboard.
                                                2.  Check internal keyboard
304 - 03  Incorrect scan code from keyboard         connections to system
                                                    board.
304 - 04  No keyboard make code observed        3.  Replace the keyboard
                                                    and retest.
304 - 05  Unable to disable typematic feature   4.  Replace the system
                                                    board and retest.
304 - 06  Unable to return to normal mode
=========================================================================

Table 5-5.  Parallel Printer Interface Test Error Codes
=========================================================================
Error
Codes      Error Description                      Recommended Action
-------------------------------------------------------------------------
401 - 01  Printer failed or not connected       The following steps apply
                                                to error codes 401 - 01
402 - 01  Printer data register failed          through 498 - 00:

402 - 02  Printer control register failed       1.  If a printer is
                                                    connected, be sure it
402 - 03  Printer data and control register         is turned on and in the
          failed                                    online mode.
                                                2.  Check the switch
402 - 04  Printer loopback failed                   settings on the
                                                    multipurpose fixed disk
402 - 05  Printer loopback and data failed          drive controller board
                                                    or the multipurpose
402 - 06  Printer loopback and control registers    controller board (see
          failed                                    Chapter 8, "Jumper
```

```
402 - 07  Printer loopback, data, and control          Positions and Switch
          registers failed                             Settings and
                                                       Adjustments").
402 - 08  Printer interrupt test failed          3.    Replace the printer
                                                       and/or the printer
                                                       cable and retest.
402 - 09  Printer interrupt and data register    4.    Replace the multipurpose
          failed                                       fixed disk drive
                                                       controller board or the
402 - 10  Printer interrupt and control register       multipurpose controller
          failed                                       board and retest.
                                                 5.    Replace the system board
402 - 11  Printer interrupt, data, and control         and retest.
          register failed


402 - 12  Printer interrupt and loopback failed


402 - 13  Printer interrupt, loopback and data
          register failed

402 - 14  Printer interrupt, loopback and control
          register failed

402 - 15  Printer interrupt, loopback, data, and
          control register failed


402 - 16  Printer unexpected interrupt received

403 - 01  Printer pattern test failed

498 - 00  Printer failed or not connected
===============================================================================


Table 5-6.  Video Display Unit Test Error Codes
===============================================================================
Error
Codes     Error Description                            Recommended Action
-------------------------------------------------------------------------------
501 - 01  Video controller test failed                 The following steps apply
                                                        to error codes 501 - 01
502 - 01  Video memory test failed                     through 516 - 01:

503 - 01  Video attribute test failed            1.    Replace the video
                                                        display controller
504 - 01  Video character set test failed               board and retest.
                                                 2.    Replace the monitor and
505 - 01  Video 80 x 25 mode 9 x 14 character           retest.
          cell test failed                       3.    Check the VDU fuse on
                                                        the system board and
506 - 01  Video 80 x 25 mode 8 x 8 character            retest.
          cell test failed                       4.    Replace the system
                                                        board and retest.
507 - 01  Video 40 x 25 mode test failed

508 - 01  Video 320 x 200 mode color set 0 test
          failed
```

```
509 - 01  Video 320 x 200 mode color set 1 test
          failed


510 - 01  Video 640 x 200 mode test failed

511 - 01  Video screen memory page test failed

512 - 01  Video gray scale test failed

514 - 0l  Video white screen test failed


516 - 01  Video noise pattern test failed
-----------------------------------------------------------------------------
517 - 01  Lightpen text mode test failed - no        The following steps apply
          response                                    to error codes 517 - 01
                                                      through 517 - 04:
517 - 02  Lightpen text mode test failed -
          invalid response                         1.  Replace the lightpen
                                                       and retest.
517 - 03  Lightpen medium resolution mode test     2.  Replace the display
          failed - no response                         controller board
                                                       and retest.
517 - 04  Lightpen medium resolution modes test    3.  Replace the system
          failed - invalid response                    board and retest.
=============================================================================

Table 5-7.  Diskette Drive Test Error Codes
=============================================================================
Error
Codes     Error Description                          Recommended Action
-----------------------------------------------------------------------------
600 - xx  Diskette ID drive types test failed     The following steps apply
                                                  to error codes 600 - xx
601 - xx  Diskette format failed                  through 614 - xx:

602 - xx  Diskette read test failed               NOTE: If the COMPAQ
                                                  Enhanced Color Graphics
603 - xx  Diskette write/read/compare test        Board is installed, check
          failed                                  the interrupt setting.

604 - xx  Diskette random seek test failed        1.  Replace the diskette
                                                      and retest.
605 - xx  Diskette ID media failed                2.  Check the switch and
                                                      jumper settings on the
606 - xx  Diskette speed test failed                  multipurpose fixed disk
                                                      drive controller board
607 - xx  Diskette wrap test failed                   or the multipurpose
                                                      controller board.
608 - xx  Diskette write protect test failed      3.  Replace the diskette
                                                      power and signal cables
609 - xx  Diskette reset controller failed            and retest.
                                                  4.  Replace the multipurpose
610 - xx  Diskette change line test failed            fixed disk drive
                                                      controller board or
614 - xx  Diskette drive file write test              multipurpose controller
                                                      board and retest.
614 - 01  Exceeded maximum soft error limit       5.  Replace the diskette
```

```
                                                    drive and retest.
614 - 02  Exceeded maximum hard error limit    6.  Replace the system
                                                    board and retest.
614 - 03  Previously exceeded maximum soft error
          limit

614 - 04  Previously exceeded maximum hard error
          limit
-------------------------------------------------------------------------------
Error
Codes     Error Description                         Recommended Action
-------------------------------------------------------------------------------
614 - 05  Failed to reset controller                The following steps apply to
                                                    error codes 600 - xx through
614 - 06  Fatal error while reading                 614 - xx:

614 - 07  Fatal error while writing                 NOTE: If the COMPAQ
                                                    Enhanced Color Graphics
614 - 08  Failed compare of write/read buffers      Board is installed, check
                                                    the interrupt setting.
614 - 09  Failed to format a track
                                                1.  Replace the diskette and
614 - 10  Failed sector wrap test                   retest.
                                                2.  Check the switch and
614 - 20  Failed to get drive type                  jumper settings on the
                                                    multipurpose fixed disk
614 - 21  Failed to get change line status          drive controller board
                                                    or the multipurpose
614 - 22  Failed to clear change line status        controller board.
                                                3.  Replace the diskette
614 - 23  Failed to set drive type in ID media      power and signal cables
                                                    and retest.
614 - 24  Failed to read diskette media         4.  Replace the multipurpose
                                                    fixed disk drive
614 - 25  Failed to verify diskette media           controller board or
                                                    multipurpose controller
614 - 26  Failed to read media in speed test        board and retest.
                                                5.  Replace the diskette
614 - 27  Failed speed limits                       drive and retest.
                                                6.  Replace the system
614 - 28  Failed write protect test                 board and retest.

614 - 29  Failed to read media in file write
          test

614 - 40  Cylinder 0 error
-------------------------------------------------------------------------------
Error
Codes     Error Description                         Recommended Action
-------------------------------------------------------------------------------
694 - 00  Pin 34 is not cut on 360 KB diskette      See Service Bulletin 25,
          drive                                     Modification of 360 Kbyte
                                                    Diskette Drives.
697 - 00  Diskette type error
                                                1.  Replace the diskette
698 - 00  Diskette drive speed not within              and retest.
          limits                                 2.  Check the switch and
                                                    jumper settings on the
                                                    multipurpose fixed disk
                                                    drive controller board
```

```
                                             or the multipurpose
                                             controller board.
                                          3. Replace the diskette
                                             power and signal cables
                                             and retest.
                                          4. Replace the
                                             multipurpose fixed disk
                                             drive controller board
                                             or multipurpose
                                             controller board and
                                             retest.
                                          5. Replace the diskette
                                             drive and retest
                                          6. Replace the system
                                             board and retest.
-------------------------------------------------------------------------
699 - 00  Diskette drive/media ID error          Rerun the SETUP program.
=========================================================================

Table 5-8.  Serial Interface Test Error Codes
=========================================================================
Error
Codes      Error Description                      Recommended Action
-------------------------------------------------------------------------
1101 - 01  Serial port test, UART DLAB bit        The following steps apply
           failure                                to error codes 101 - 01
                                                  through 1101 - 14;
1101 - 02  Serial port test, line input or UART
           fault                                  1. Check jumper and switch
                                                     settings on the
1101 - 03  Serial port test, address line fault      serial/parallel
                                                     interface board,
1101 - 04  Serial port test, data line fault         multipurpose fixed disk
                                                     drive controller board,
1101 - 05  Serial port test, UART control signal     or the multipurpose
           failure                                   controller board and
                                                     retest.
1101 - 06  Serial port test, UART THRE bit       2. Replace the
           failure                                  serial/parallel
                                                    interface board,
1101 - 07  Serial port test, UART DATA READY        multipurpose fixed disk
           bit failure                              drive controller board
                                                    or multipurpose
1101 - 08  Serial port test, UART TX/RX buffer      controller board and
           failure                                  retest.

1101 - 09  Serial port test, INTERRUPT circuit
           failure

1101 - 10  Serial port test, COM1 set to invalid
           interrupt

1101 - 11  Serial port test, COM2 set to invalid
           interrupt

1101 - 12  Serial port test, DRIVER/RECEIVER
           control signal failure

1101 - 13  Serial port test, UART control signal
           interrupt failure
```

```
1101 - 14   Serial port test, DRIVER/RECEIVER data
            failure
--------------------------------------------------------------------------------
1102 - 58   Serial Port COM1 set to INTR 3


1102 - 60   Serial Port COM2 set to INTR 4

1102 - 64   Serial Port data compare error

1102 - 72   Serial Port no TX RDY

1102 - 88   Serial Port no RX RDY
================================================================================
```

Table 5-9. Modem Communications Test Error Codes

```
================================================================================
Error
Codes       Error Description                       Recommended Action
--------------------------------------------------------------------------------
1201 - xx   Modem Internal Loopback test            The following apply to
                                                    error codes 120l - xx
1201 - 01   UART DLAB bit failure                   through 1210 - xx:

1201 - 02   Line input or UART failure              1.   Refer to modem
                                                         documentation for
1201 - 03   Address line fault                           correct setup
                                                         procedures.
1201 - 04   Data line fault                         2.   Check the modem line.
                                                    3.   Replace the modem and
1201 - 05   UART control signal failure                  retest.


1201 - 07   UART DATA READY bit failure

1201 - 08   UART TX/RX buffer failure

1201 - 09   INTERRUPT circuit failure

1201 - 10   COM1 set to invalid interrupt

1201 - 11   COM2 set to invalid interrupt


1201 - 12   DRIVER/RECEIVER control signal
            failure


1201 - 13   UART control signal interrupt failure


1201 - 14   DRIVER/RECEIVER data failure
--------------------------------------------------------------------------------
Error
Codes       Error Description                       Recommended Action
--------------------------------------------------------------------------------
1201 - 15   Modem detection failure                 The following apply to
                                                    error codes 120l - xx
```

```
1201 - 16  Modem ROM, checksum failure          through 1210 - xx:

1201 - 17  Tone detection failure               1.  Refer to modem
                                                     documentation for
1202 - xx  Modem Internal Loopback test             correct setup
                                                     procedures.
1202 - 01  Timed out waiting for SYNC           2.  Check the modem line.
           (local loopback mode)                3.  Replace the modem and
                                                     retest.
1202 - 02  Timed out waiting for modem response
           (local loopback mode)

1202 - 03  Exceeded data block retry limit
           (local loopback mode)

1202 - 11  Timed out waiting for SYNC
            (analog loopback originate mode)

1202 - 12  Timed out waiting for modem response
           (analog loopback originate mode)

1202 - 13  Exceeded data block retry limit
           (analog loopback originate mode)

1202 - 21  Timed out waiting for SYNC
           (analog loopback answer mode)

1202 - 22  Timed out waiting for modem response
           (analog loopback answer mode)

1202 - 23  Exceeded data block retry limit
           (analog loopback answer mode)
--------------------------------------------------------------------------
Error
Codes     Error Description                    Recommended Action
--------------------------------------------------------------------------
1203 - xx  Modem External Termination test      The following apply to
                                                 error codes 1201 - xx
1203 - 01  Modem external TIP/RING failure       through 1210 - xx:

1203 - 02  Modem external DATA TIP/RING failure  1.  Refer to modem
                                                     documentation for
1203 - 03  Modem line termination failure            correct setup
                                                     procedures.
1204 - xx  Modem auto originate test             2.  Check the modem line.
                                                 3.  Replace the modem and
1205 - xx  Modem auto answer test                    retest.

1206 - xx  Dial multifrequency tone test

1210 - xx  Modem direct connect test

1210 - 01  Modem timed out waiting for SYNC

1210 - 02  Modem timed out waiting for response

1210 - 03  Modem exceeded data block retry limit

1210 - 04  RCV exceeded carrier lost limit
```

```
1210 - 05   XMIT exceeded carrier lost limit

1210 - 06   Timed out waiting for dial tone


1210 - 07   Dial number string too long
-------------------------------------------------------------------------------
Error
Codes       Error Description                     Recommended Action
-------------------------------------------------------------------------------
1210 - 08   Modem timed out waiting for remote    The following apply to
            response                              error codes 1201 - xx
                                                  through 1210 - xx:
1210 - 09   Modem exceeded maximum redial limit
                                                  1.  Refer to modem
1210 - 10   Line quality prevented remote             documentation for
            connection                                correct setup
                                                      procedures.
1210 - 11   Modem timed out waiting for remote    2.  Check the modem line.
            connection                            3.  Replace the modem and
                                                      retest.
1210 - 12   Modem timed out waiting for modem
            response (analog loopback originate
            mode)

1210 - 13   Modem exceeded data block retry limit
            (analog loopback originate mode)


1210 - 14   DRIVER/RECEIVER data failure

1210 - 15   Modem detection failure

1210 - 16   Modem ROM, checksum failed

1210 - 17   Tone detection failure


1210 - 21   Modem timed out waiting SYNC
            (analog loopback answer mode)

1210 - 23   Modem exceeded data block for retry
            limit (analog loopback answer mode)
===============================================================================

Table 5-10.   Fixed Disk Drive Test Error Codes
===============================================================================
Error
Codes       Error Description                     Recommended Action
-------------------------------------------------------------------------------
1700 - xx   Fixed disk ID drive types test failed The following steps apply
                                                  to error codes 1700 - xx
1701 - xx   Fixed disk drive format test failed   through 1716 - xx.

1702 - xx   Fixed disk drive read test failed     1.  Check switch and jumper
                                                      settings on the fixed
1703 - xx   Fixed disk drive write/read/compare       disk drive controller
            test failed                               board, multipurpose
                                                      fixed disk drive
```

```
1704 - xx  Fixed disk drive random seek test         controller board, or
           failed                                    multipurpose controller
                                                     board and retest.
1705 - xx  Fixed disk drive controller test     2.   Replace the fixed disk
           failed                                    drive signal and power
                                                     cables and retest.
1706 - xx  Fixed disk drive ready test failed   3.   Replace the fixed disk
                                                     drive controller
1707 - xx  Fixed disk drive recalibrate test         board, multipurpose
           failed                                    fixed disk drive
                                                     controller board, or
1708 - xx  Fixed disk drive format bad track         multipurpose controller
           test failed                               controller board and
                                                     retest.
1709 - xx  Fixed disk drive reset controller    4.   Replace the fixed disk
           test failed                               drive and retest.
                                                5.   Replace the system
1710 - xx  Fixed disk drive park head test           board and retest.
           failed

1714 - xx  Fixed disk drive file write test
           failed

1715 - xx  Fixed disk drive head select test
           failed

1716 - xx  Fixed disk drive conditional format
           test failed
-------------------------------------------------------------------------------
Error
Codes      Error Description                    Recommended Action
-------------------------------------------------------------------------------
17yy - xx  Invalid fixed disk drive type failed The following steps apply
                                                to error codes 1700 - xx
17yy - 01  Exceeded maximum soft error limit    through 1716 - xx.

17yy - 02  Exceeded maximum hard error limit   1.   Check switch and jumper
                                                     settings on the fixed
17yy - 03  Previously exceeded maximum soft error    disk drive controller
           limit                                     board, multipurpose
                                                     fixed disk drive
17yy - 04  Previously exceeded maximum hard error    controller board, or
           limit                                     multipurpose controller
                                                     board and retest.
17yy - 05  Failed to reset controller          2.   Replace the fixed disk
                                                     drive signal and power
17yy - 06  Fatal error while reading                cables and retest.
                                                3.   Replace the fixed disk
17yy - 07  Fatal error while writing                drive controller
                                                     board, multipurpose
17yy - 08  Failed compare of write/read/compare     fixed disk drive
                                                     controller board, or
17yy - 09  Failed to format a track                 multipurpose controller
                                                     controller board and
17yy - 10  Failed sector wrap test                  retest.
                                                4.   Replace the fixed disk
17yy - 19  Controller failed to deallocate bad      drive and retest.
           sector                               5.   Replace the system
                                                     board and retest.
17yy - 40  Failed cylinder 0
```

```
17yy - 4l  Drive not ready


17yy - 42  Recalibration failed
------------------------------------------------------------------------------
Error
Codes      Error Description                    Recommended Action
------------------------------------------------------------------------------
17yy - 43  Failed to format bad track           The following steps apply
                                                to error codes 1700 - xx
17yy - 44  Failed fixed disk drive controller   through 1716 - xx:
           board diagnostics
                                                1.  Check switch and jumper
17yy - 45  Failed to get drive parameters from      settings on the fixed
           ROM                                      disk drive controller
                                                    board, multipurpose
17yy - 46  Invalid drive parameters found in ROM    fixed disk drive
                                                    controller board, or
17yy - 47  Failed to park heads                     multipurpose controller
                                                    board and retest.
17yy - 48  Failed to move disk table to RAM     2.  Replace the fixed disk
                                                    drive signal and power
17yy - 49  Failed to read media in file write       cables and retest.
           test                                 3.  Replace the fixed disk
                                                    drive controller
17yy - 50  Failed file I/O write test               board, multipurpose
                                                    fixed disk drive
17yy - 5l  Failed file I/O read test                controller board, or
                                                    multipurpose controller
17yy - 52  Failed file I/O compare test             board and retest.
                                                4.  Replace the fixed disk
                                                    drive and retest.
                                                5.  Replace the system
                                                    board and retest.


17yy - 53  Failed drive/head register test


17yy - 54  Failed digital input register test
------------------------------------------------------------------------------
Error
Codes      Error Description                    Recommended Action
------------------------------------------------------------------------------
17yy - 55  Failed cylinder 1 test               The following steps apply
                                                to error codes 1700 - xx
17yy - 56  Fixed disk drive controller board    through 1716 - xx:
           RAM diagnostics failed
                                                1.  Check switch and jumper
17yy - 57  Fixed disk drive controller board        settings on the fixed
           to drive test failed                     disk drive controller
                                                    board, multipurpose
17yy - 58  Failed to write sector buffer            fixed disk drive
                                                    controller board, or
17yy - 59  Failed to read sector buffer             multipurpose controller
                                                    board and retest.
17yy - 60  Failed to compare sector buffer      2.  Replace the fixed disk
                                                    drive signal and power
```

```
17yy - 63  Failed soft error rate                          cables and retest.
                                                        3.  Replace the fixed disk
17yy - 65  Exceeded maximum bad sector per track             drive controller
                                                            board, multipurpose
17yy - 66  Failed initial drive parameter                   fixed disk drive
                                                            controller board, or
17yy - 67  Failed to write long                             multipurpose controller
                                                            board and retest.
17yy - 68  Failed to read long                          4.  Replace the fixed disk
                                                            drive and retest.
17yy - 69  Failed to read drive size from               5.  Replace the system
           controller                                       board and retest.


17yy - 70  Failed translate mode

17yy - 71  Failed nontranslated mode

17yy - 72  Bad track limit exceeded

17yy - 73  Previously exceeded bad track limit
===============================================================================


Table 5-11.  Enhanced Color Graphics Test Error Codes
===============================================================================
Error
Codes      Error Description                            Recommended Action
-------------------------------------------------------------------------------
2402 - 01  Video memory test failed                     The following steps apply
                                                        to error codes 2402 - 01
2403 - 01  Video attribute test failed                  through 2416 - 01:

2404 - 01  Video character set test failed          1.  Verify the switch
                                                        settings.
2405 - 01  Video 80 x 25 mode 9 x 14 character       2.  Replace the COMPAQ
           cell test failed                             Enhanced Color Graphics
                                                        Board ROM and retest.
2406 - 01  Video 80 x 25 mode 8 x 8 character       3.  Replace the COMPAQ
           cell test failed                             Enhanced Color Graphics
                                                        Board and retest.
2407 - 01  Video 40 x 25 mode test failed           4.  Replace the system
                                                        board and retest.
2408 - 01  Video 320 x 200 mode color set 0 test
           failed

2409 - 01  Video 320 x 200 mode color set 1 test
           failed


2410 - 01  Video 640 x 200 mode test failed

2411 - 01  Video screen memory page test failed

2412 - 01  Video gray scale test failed

2414 - 01  Video white screen test failed


2416 - 01  Video noise pattern test failed
```

```
-------------------------------------------------------------------------
Error
Codes       Error Description                  Recommended Action
-------------------------------------------------------------------------
2417 - 01   Lightpen text mode failed - no     The following steps apply
            response                           to error codes 2417 - 01
                                               through 2417 - 04:
2417 - 02   Lightpen text mode test failed -
            invalid response                   1.  Replace the lightpen
                                                   and retest.
2417 - 03   Lightpen medium resolution mode test  2.  Replace the COMPAQ
            failed - no response                   Enhanced Color Graphics
                                                   Board ROM and retest.
2417 - 04   Lightpen medium resolution mode test  3.  Replace the COMPAQ
            failed - invalid response              Enhanced Color Graphics
                                                   Board and retest.
                                               4.  Replace the  system
                                                   board and retest.


-------------------------------------------------------------------------
2418 - 01   ECG memory test failed             The following steps apply
                                               to error codes 2418 - 01
2418 - 02   ECG shadow RAM test failed         through 2425 - 01:

2419 - 01   ECG ROM checksum test failed       1.  Verify switch settings.
                                               2.  Replace the COMPAQ
2420 - 01   ECG attribute test failed              Enhanced Color Graphics
                                                   Board ROM.
2421 - 01   ECG 640 x 200 graphics mode test   3.  Replace the COMPAQ
            failed                                 Enhanced Color Graphics
                                                   Board and retest.
2422 - 01   ECG 640 x 350 16 Color Set test    4.  Replace the system
            failed                                 board and retest.


2423 - 01   ECG 640 x 350 64 Color Set test failed

2424 - 01   ECG Monochrome Text Mode test failed


2425 - 01   ECG Monochrome Graphics Mode test
            failed
=========================================================================

Table 5-12.   Pointing Device Interface Test Error Codes
=========================================================================
Error
Codes       Error Description                  Recommended Action
-------------------------------------------------------------------------
8601 - xx   Pointing device test              l.  Verify switch settings
                                                   on Multipurpose
8601 - 02   Left button is inoperative             Controller Board,
                                                   Multipurpose Fixed Disk
8601 - 03   Left button is stuck closed            Drive Controller Board,
                                                   or Serial/Parallel
8601 - 04   Right button is inoperative            Interface Board.
                                               2.  Replace the pointing
8601 - 05   Right button is stuck closed           device with a working
                                                   pointing device and
8601 - 06   Left block not selected                retest.
```

```
8601 - 07  Right block not selected                     3.   Replace the
                                                              Multipurpose Controller
8601 - 08  Timeout occurred                                   Board, Multipurpose
                                                              Fixed Disk Drive
                                                              Controller Board, or
8601 - 10  Pointing device inoperative                        Serial/Parallel
                                                              Interface Board and
                                                              retest.
                                                         4.   Replace the system
                                                              board and retest.
===============================================================================
```

Chapter 5.3 Memory Related Error Codes

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

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

o The system may not be able to accurately determine which chip or chips are
   at fault.

o The problem may be caused by to a failure in the memory support circuitry,
   not the memory.

The memory error code points to a specific memory address. The physical
location of the memory address depends on the type of system, the number and
type of memory boards installed, and the type of memory device used
(64K x 1 Bit RAMs or 256K x 1 Bit RAMs).

Tables 5-14 through 5-17 identify which memory device to replace when the
system shows a memory error. Table 5-13 indicates the table to reference to
locate the defective chip.

```
Table 5-13.   Memory Configurations
===============================================================================
System Board        Error Code          Memory Device
RAM Type            XX Value            Configuration            Tables
-------------------------------------------------------------------------------
64K                 00 to 02            System Board             5-14, 5-15
                    (0 - 256 Kbyte)
-------------------------------------------------------------------------------
                    10 to 26            System Memory Board      5-17
                    (1 - 2.5 megabyte)  (512/1536 Kbyte)
-------------------------------------------------------------------------------
256K                00 to 08            System Board             5-16
                    (0 - 640 Kbyte)
-------------------------------------------------------------------------------
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.
===============================================================================
```
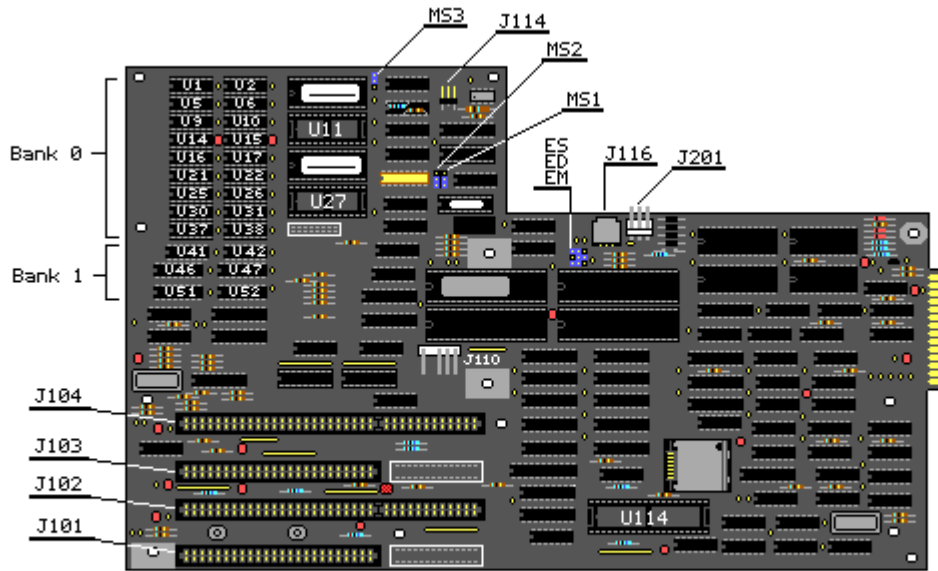
Figure 5-1. Memory Chip Locations on the COMPAQ PORTABLE II Personal
Computer System Board Version 1 (Assy No. 000318)
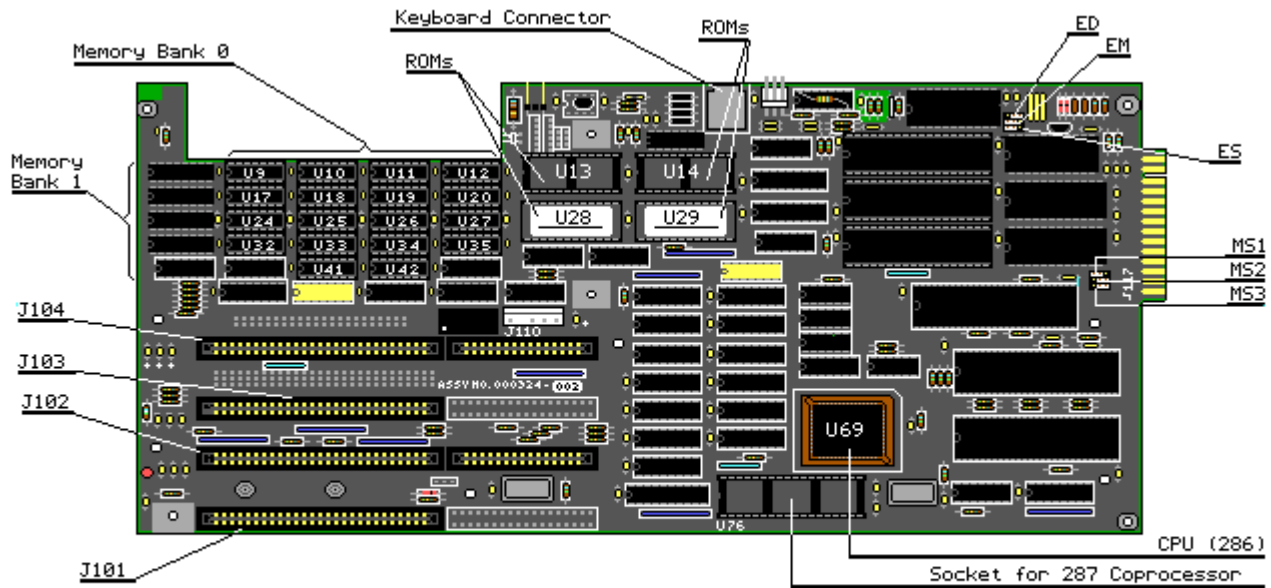
Figure 5-2. Memory Chip Locations on the COMPAQ PORTABLE II
Personal Computer System Board Version 2 (Assy No. 000324)

Defective Memory Chip Isolation Map for System Boards using 64K RAMs and
256K RAMs

Memory error codes are in the format XX000B YYZZ.

XX is the memory segment of detected error.

000 is always equal to 000 (not used)

B Byte bank location (Low: B = 0, High: B = 1)

YY Bit location of the low byte (B = 0)

ZZ Bit location of the high byte (B =1)

For example, for the Version 1 system board, memory error message
"02000 10010" specifies chip U47.

Use Tables 5-14 through 5-17 to locate the defective chip and determine the
required action.

NOTE: If XX or YY is not documented in the following tables, this may mean
that more than one area contributed to the error condition. If this is the
case, the system adds the values of the failed data bits and displays the sum
in the XX or YY location.

Figures 5-1 and 5-2 show the memory chip locations for the COMPAQ PORTABLE II
Personal Computer System Boards - Version 1 and 2. For information on
removing and replacing memory chips contained on the system board, refer to
Chapter 7 in this guide.

Table 5-14. Version 1 System Board using 64K RAMs (0 - 256 Kbytes)
===
XX = 00 (Bank 0)

Data Bit YY or ZZ	B = 0 Low	B = 1 High	Required Action
00	U37	U38	Replace memory chip
01	U30	U31	Replace memory chip
02	U25	U26	Replace memory chip
04	U21	U22	Replace memory chip
08	U16	U17	Replace memory chip
10	U14	U15	Replace memory chip
20	U9	U10	Replace memory chip
40	U5	U6	Replace memory chip
80	U1	U2	Replace memory chip

XX = 02 (Bank 1)

Data Bit YY or ZZ	B = 0 Low	B = 1 High	Required Action
00	U41	U42	Replace system board
01	U51	U52	Replace system board
02	U51	U52	Replace system board
04	U51	U52	Replace system board
08	U51	U52	Replace system board

```
10              U46                 U47                 Replace system board

20              U46                 U47                 Replace system board

40              U46                 U47                 Replace system board

80              U46                 U47                 Replace system board
===========================================================================
```

Table 5-15. Version 2 System Board using 64K RAMs (0 - 256 Kbytes)

```
===========================================================================
XX = 00 (Bank 0)
---------------------------------------------------------------------------
Data Bit        B = 0               B = 1
YY or ZZ        Low                 High                Required Action
---------------------------------------------------------------------------
00              U32                 U35                 Replace memory chip

01              U24                 U27                 Replace memory chip

02              U17                 U20                 Replace memory chip

04              U9                  U12                 Replace memory chip

08              U41                 U42                 Replace memory chip

10              U33                 U34                 Replace memory chip

20              U25                 U26                 Replace memory chip

40              U18                 U19                 Replace memory chip

80              U10                 U11                 Replace memory chip
---------------------------------------------------------------------------
XX = 02 (Bank 1)
---------------------------------------------------------------------------
Data Bit        B = 0               B = 1
YY or ZZ        Low                 High                Required Action
---------------------------------------------------------------------------
00              U40                 U43                 Replace system board

01              U31                 U16                 Replace system board

02              U31                 U16                 Replace system board

04              U31                 U16                 Replace system board

08              U31                 U16                 Replace system board

10              U23                 U8                  Replace system board

20              U23                 U8                  Replace system board

40              U23                 U8                  Replace system board

80              U23                 U8                  Replace system board
===========================================================================
```

Table 5-16. Version 1 System Board using 256K RAMs (0 - 640 Kbytes)

```
================================================================================
XX = 00, 02, 04, 06 (Bank 0)
--------------------------------------------------------------------------------
Data Bit        B = 0               B = 1
YY or ZZ        Low                 High                Required Action
--------------------------------------------------------------------------------
00              U37                 U38                 Replace memory chip

01              U30                 U31                 Replace memory chip

02              U25                 U26                 Replace memory chip

04              U21                 U22                 Replace memory chip

08              U16                 U17                 Replace memory chip

10              U14                 U15                 Replace memory chip

20              U9                  U10                 Replace memory chip

40              U5                  U6                  Replace memory chip

80              U1                  U2                  Replace memory chip
--------------------------------------------------------------------------------
XX = 08 (Bank 1)
--------------------------------------------------------------------------------
Data Bit        B = 0               B = 1
YY or ZZ        Low                 High                Required Action
--------------------------------------------------------------------------------
00              U41                 U42                 Replace system board

01              U51                 U52                 Replace system board

02              U51                 U52                 Replace system board

04              U51                 U52                 Replace system board

08              U51                 U52                 Replace system board

10              U46                 U47                 Replace system board

20              U46                 U47                 Replace system board

40              U46                 U47                 Replace system board

80              U46                 U47                 Replace system board
================================================================================

Table 5-17.  Version 2 System Board using 256K RAMs (0 - 640 Kbytes)
================================================================================
XX = 00, 02, 04, 06 (Bank 0)
--------------------------------------------------------------------------------
Data Bit        B = 0               B = 1
YY or ZZ        Low                 High                Required Action
--------------------------------------------------------------------------------
00              U32                 U35                 Replace memory chip

01              U24                 U27                 Replace memory chip

02              U17                 U20                 Replace memory chip
```

```
04                 U9              U12              Replace memory chip

08                 U41             U42              Replace memory chip

10                 U33             U34              Replace memory chip

20                 U25             U26              Replace memory chip

40                 U18             U19              Replace memory chip

80                 U10             U11              Replace memory chip
-----------------------------------------------------------------------------
XX = 08 (Bank 1)
-----------------------------------------------------------------------------
Data Bit           B = 0           B = 1
YY or ZZ           Low             High             Required Action
-----------------------------------------------------------------------------
00                 U40             U43              Replace system board

01                 U31             U16              Replace system board

02                 U31             U16              Replace system board

04                 U31             U16              Replace system board

08                 U31             U16              Replace system board

10                 U23             U8               Replace system board

20                 U23             U8               Replace system board

40                 U23             U8               Replace system board

80                 U23             U8               Replace system board
=============================================================================
```

Defective Memory Chip Isolation Map for the 512/1536 Kbyte System Memory
Board Mapped into the 1 to 2.5 Megabyte Memory Space (256K x 1 Bit RAMs)

NOTE: This isolation map is valid for a system memory board that uses
256K x 1 bit RAMs.

Memory error codes are in the format XX000B YYZZ.

XX equals the 128 Kbyte memory segment where an error is detected.

000 is always equal to 000 (not used).

B Byte bank location (Low: B = 0, High: B = 1)

YY Bit location of the low byte (B = 0)

ZZ Bit location of the high byte (B = 1)

Use the following table to locate the defective memory chip and the required
action. Figure 5-3 shows the memory chip locations for the COMPAQ
PORTABLE II Personal Computer System Memory Board (512/1536 Kbyte). For
information on removing and replacing memory chips contained on this board,

refer to Chapter 7.
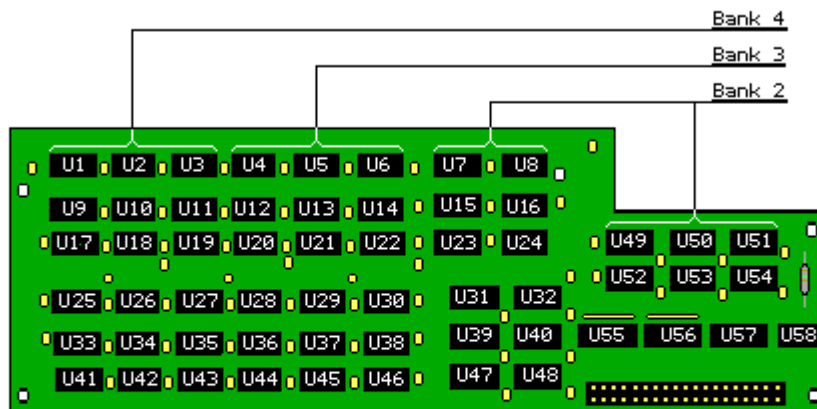
Figure 5-3. Memory Locations on the 512/1536 Kbyte Memory Board (Assy No. 000330)

Table 5-18. Memory Locations/Required Action for 512/1536 Kbyte System Memory
Board Mapped to the 1 to 2.5 Megabyte Memory Space (256K x 1 Bit RAMs)
===
XX = 10, 12, 14, 16 (Bank 2)

Data Bit YY or ZZ	B = 0 Low	B = 1 High	Required Action
00	U47	U23	Replace system memory board
01	U31	U7	Replace system memory board
02	U32	U8	Replace system memory board
04	U54	U51	Replace system memory board
08	U39	U15	Replace system memory board
10	U40	U16	Replace system memory board
20	U53	U50	Replace system memory board
40	U48	U24	Replace system memory board
80	U52	U49	Replace system memory board

XX = 18, 1A, 1C, 1E, (Bank 3)

Data Bit YY or ZZ	B = 0 Low	B = 1 High	Required Action
00	U44	U20	Replace memory chip

Data Bit YY or ZZ	B = 0 Low	B = 1 High	Required Action
01	U28	U4	Replace memory chip
02	U29	U5	Replace memory chip
04	U30	U6	Replace memory chip
08	U36	U12	Replace memory chip
10	U37	U13	Replace memory chip
20	U38	U14	Replace memory chip
40	U45	U21	Replace memory chip
80	U46	U22	Replace memory chip

XX = 20, 22, 24, 26 (Bank 4)

Data Bit YY or ZZ	B = 0 Low	B = 1 High	Required Action
00	U41	U17	Replace memory chip
01	U25	U1	Replace memory chip
02	U26	U2	Replace memory chip
04	U27	U3	Replace memory chip
08	U33	U9	Replace memory chip
10	U34	U10	Replace memory chip
20	U35	U11	Replace memory chip
40	U42	U18	Replace memory chip
80	U43	U19	Replace memory chip

==

Chapter 6. Illustrated Parts Catalog

6.0 Introduction

This section provides a spare parts reference for the COMPAQ PORTABLE II
Personal Computer.

Each table in this section contains the following information:

o Item - reference number keyed to an illustration.

o Part Number - to be used when ordering parts from Compaq Computer
   Corporation.

o Description - name of the particular part or parts kit.

NOTE: When several parts have the same part number, the parts are available
only as part of a kit.

Chapter 6.1 Compaq Portable II Personal Computer
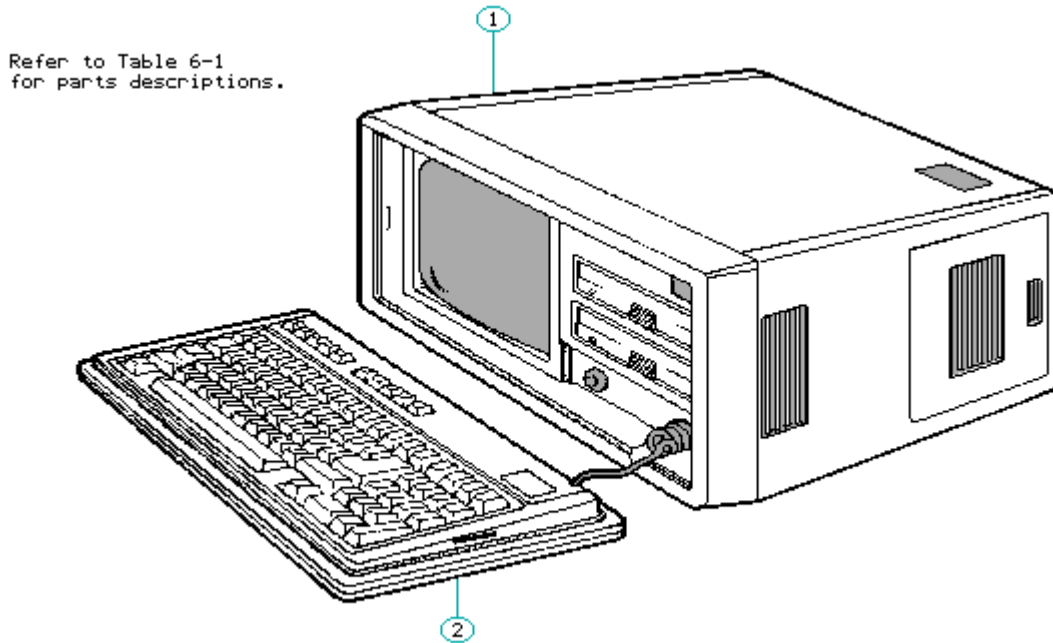
Figure 6-1. COMPAQ PORTABLE II Personal Computer

Table 6-1. COMPAQ PORTABLE II Personal Computer

Item	Part Number	Description
1	107899-001 **	Chassis Cover
2	104179-001 **	Keyboard Assembly

```
          107678-001                          Spanish Enhanced Keyboard
                                              Assembly
---------------------------------------------------------------------------
** Part number no longer available.
===========================================================================
```

Chapter 6.2 Chassis
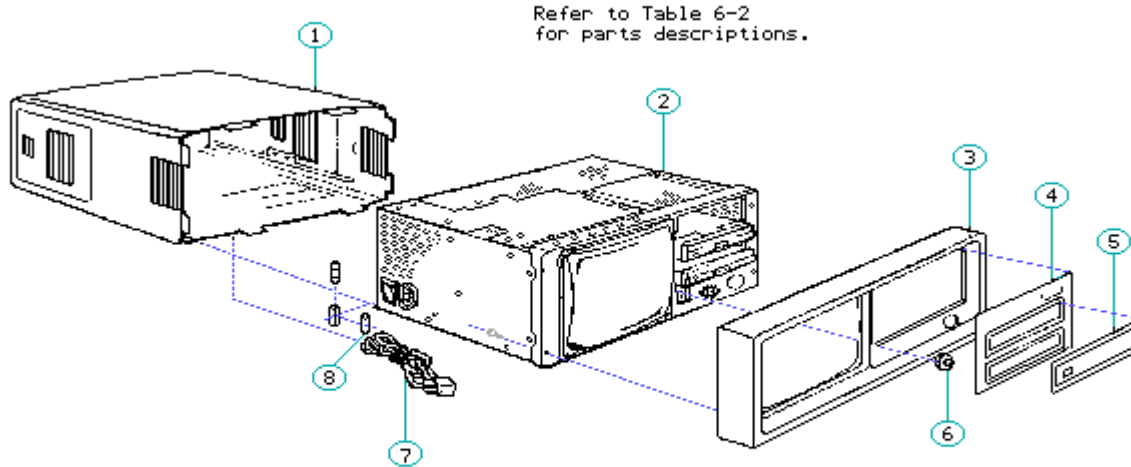
Figure 6-2. COMPAQ PORTABLE II Personal Computer Chassis

```
Table 6-2.  COMPAQ PORTABLE II Personal Computer Chassis
===========================================================================
Item                 Part Number             Description
---------------------------------------------------------------------------
1                    107899-001 **           Chassis Cover

2                    104081-001 **           Chassis Assembly

3                    104198-001 **           Front Bezel

4                    104059-001 **           Drive Bezel

5                    104050-001              Blank Drive Bezel (third height)

6                    *                       Brightness Knob Assembly

7                    101155-001              AC Power Cord

8                    102930-001              3-A AC Line Fuse (Quantity = 40)
                     100228-002 **           3-A AC Line Fuse (Quantity = 1)
---------------------------------------------------------------------------
 * Contained in the Miscellaneous Hardware Kit (Spare PN 104270-001 **).
   See Table 6-7.
```

Chapter 6.3 Common Chassis

Refer to Table 6-3
for parts descriptions.

Figure 6-3. COMPAQ PORTABLE II Personal Computer Common Chassis
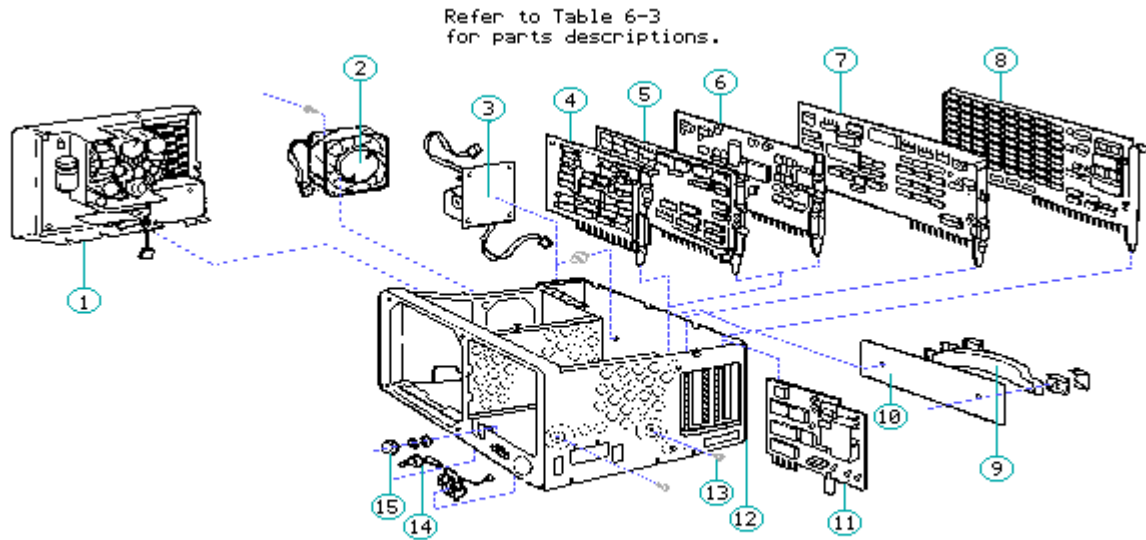
Refer to Table 6-3
for parts descriptions.
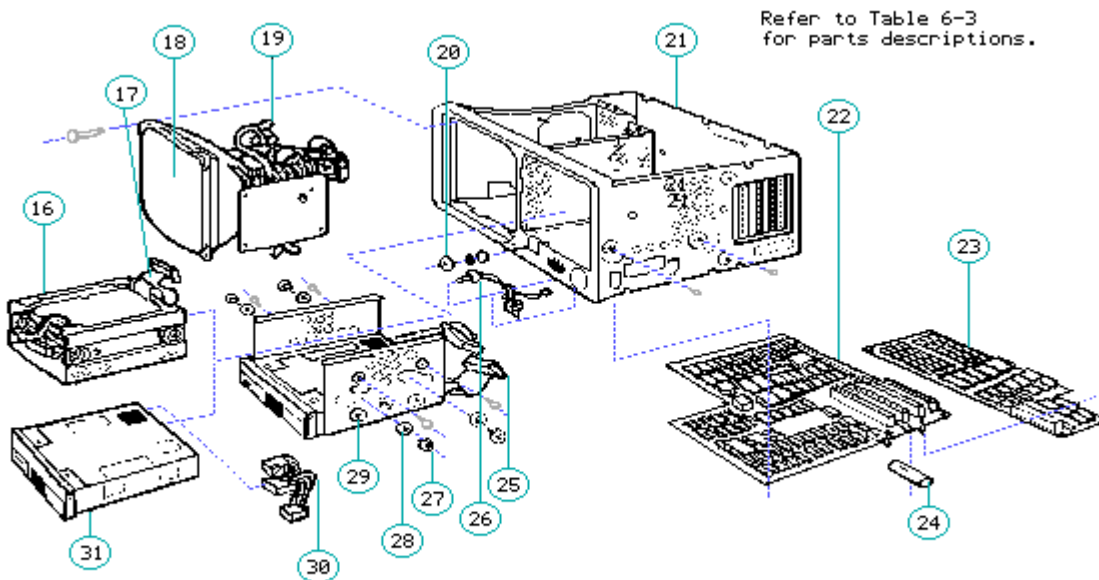
Figure 6-4. COMPAQ PORTABLE II Personal Computer Common Chassis

Table 6-3. COMPAQ PORTABLE II Personal Computer Common Chassis
==
Item   Part Number   Description

```
--------------------------------------------------------------------------------
1          104180-001 **    Power Supply Chassis

2          104178-001 **    Fan Assembly

3          104273-001 **    Automatic Power Switching (APS) Board

4          106886-001       Serial/Parallel Interface Board

5          104174-001       Multipurpose Fixed Disk Drive Controller Board
           102705-001 **    Multipurpose Controller Board

6          109196-001 **    Enhanced Color Graphics Board
           106686-001       Enhanced Color Graphics ROM

7          101340-001 **    Video Display Controller Board

8          105033-001 **    512/2048 Kbyte Memory Expansion Board

9          100025-001 **    Handle

10         104067-001 **    Handle Underlay

11         112693-001
           (replaced by
           197458-001)      2400 Baud Internal Modem

12         104081-001 **    Chassis Assembly

13         *                Torx 6-32 x 3/8 Screw

14         104185-001 **    Speaker/Brightness Potentiometer Assembly

15         *                Brightness Knob
--------------------------------------------------------------------------------
 * Contained in the Miscellaneous Hardware Kit (Spare PN 104270-001 **).
   See Table 6-7.

** Part number no longer available.
--------------------------------------------------------------------------------
Item      Part Number      Description
--------------------------------------------------------------------------------
16         104183-001 **    10 Megabyte Fixed Disk Drive

           104405-001 ***   20 Megabyte Fixed Disk Drive

17         104093-001  **   Fixed Disk Drive Signal Cable

18         104182-001  **   Monitor Assembly

19         104007-001  **   Video Display Signal Cable

20         *                Brightness Knob

21         104081-001 **    Chassis Assembly

22         104175-001 **    System Board (Assy No. 000318)

           104444-001 **    System Board (Assy No. 000324)
```

```
23         104176-001 **    512/1536 Kbyte System Memory Board

24         104186-001 **    Battery

25         104008-002  **   Diskette Drive Signal Cable

26         104185-001 **    Speaker/Brightness Potentiometer Assembly

27         *                Drive Shoulder Bolt

28         *                Vibration Isolators

29         104048-001 **    Storage Device Enclosure
--------------------------------------------------------------------------------
  * Contained in the Miscellaneous Hardware Kit (Spare PN 104270-001 **).
    See Table 6-7.

    Contained in the Cable Kit, Spare PN 104191-001 **.
    See Table 6-6.


 ** Part number no longer available.


*** Part number 104405-001 was replaced by 142365-001.
--------------------------------------------------------------------------------
Item      Part Number     Description
--------------------------------------------------------------------------------
30        104092-002  **  Mass Storage Power Cable (Fixed Disk Drive)
          104006-001  **  Mass Storage Power Cable (Diskette Drive)
          101741-001      Mass Storage Power Cable (Diskette Drive C, 6 Inch)

31        104184-001 **   360 Kbyte (flip door) Diskette Drive %
          107360-001      360 Kbyte (push button) Diskette Drive
          104479-001 **   1.2 Megabyte (flip door) Diskette Drive
          107359-001      1.2 Megabyte (push button) Diskette Drive
          109595-001      1.44 Megabyte Diskette Drive ****

          106558-001      Weitek 287 Coprocessor (8 MHz)

          105151-001 **   150 ns DRAM Chips (256K x 1)
          105152-001 **   150 ns DRAM Chips (64K x 1)
          105035-001      System ROM
--------------------------------------------------------------------------------
     Contained in the Cable Kit, Spare PN 104191-001 **.  See Table 6-6.

%    When replacing a flip door style diskette drive with a push button
     style diskette drive, order a replacement drive bezel
     (PN 104059-001 **) for a better fit.

**** Requires system ROM N3 or later for use with MS-DOS and ROM P.1 or later
     for use with MS OS/2 Version 1.1.
     Requires MS-DOS Version 3.31 Revision A if installed as Drive B, and
     MS-DOS Version 3.31 Revision B if installed as Drive A.

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

Chapter 6.4 Mechanical Chassis
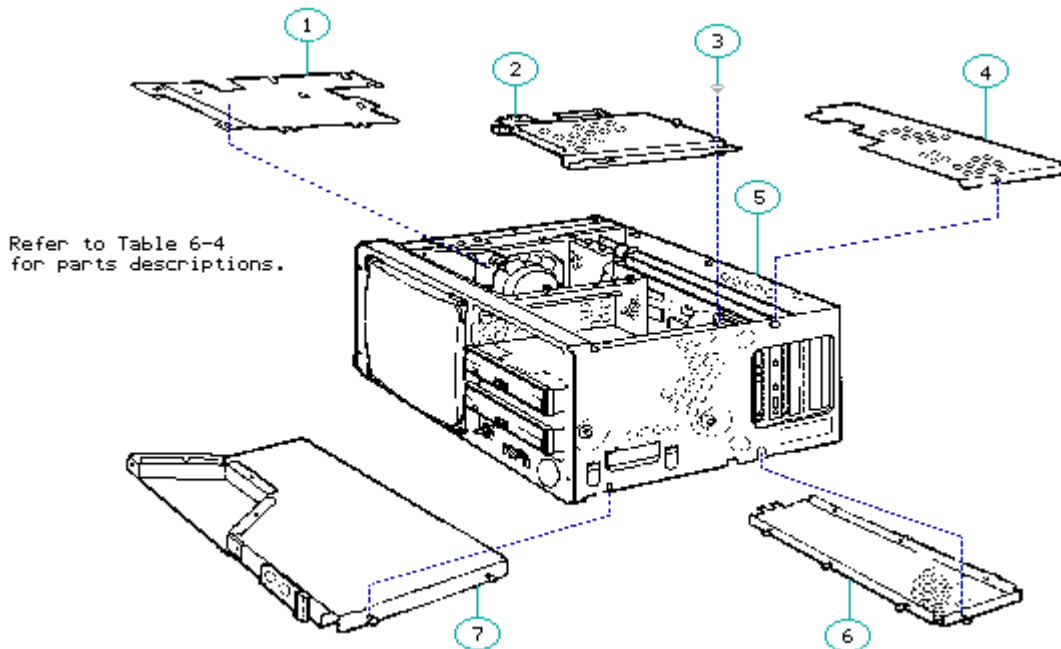
Figure 6-5. COMPAQ PORTABLE II Personal Computer Mechanical Chassis

```
Table 6-4.  COMPAQ PORTABLE II Personal Computer Mechanical Chassis
=============================================================================
Item       Part Number        Description
-----------------------------------------------------------------------------
1          104052-001 **      High Voltage Device Access Plate

2          104079-001 **      Mass Storage Device Access Plate

3          *                  Torx 4-40 x 1/4 Screw

4          130770-001 **      Board Slots Access Plate

5          104081-001 **      Chassis Assembly

6          104098-001 **      Memory Expansion Access Plate

7          104099-001 **      Cable Tray Access Plate
-----------------------------------------------------------------------------
 * Contained in Miscellaneous Hardware Kit, Spare PN 104270-001 **.


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

Chapter 6.5 Monitor
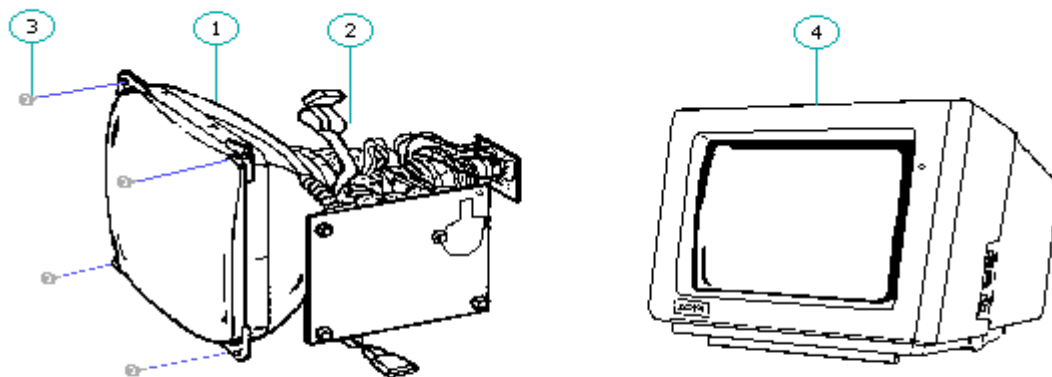
Refer to Table 6-5
for parts descriptions.

Figure 6-6. COMPAQ PORTABLE II Personal Computer Monitor

```
Table 6-5.  COMPAQ PORTABLE II Personal Computer Monitor
===============================================================================
Item      Part Number      Description
-------------------------------------------------------------------------------
1         104182-001
          (No longer
          available)       Monitor Assembly

2         104007-001 *
          (No longer
          available)       Video Display Signal Cable

3         **               Mounting Screws (4)

4         106568-001       Color Monitor (external)
          -------------------------------------------------------------------
*    Included in the Cable Kit.  See Table 6.6.
**   Included in the Miscellaneous Hardware Kit, Spare PN 104270-001 (No
     longer available).  Refer to Table 6-7.
===============================================================================
```

Chapter 6.6 Cable Kit

```
Table 6-6.  COMPAQ PORTABLE II Personal Computer Cable Kit (PN 104191-001
(No longer available))
===============================================================================
Description                                                     Quantity
-------------------------------------------------------------------------------
1.  Diskette Drive Power Cable                                  1

2.  Video Display Signal Cable                                  1
```

```
3.  Fixed Disk Drive Controller Signal Cable              1

4.  Speaker/Potentiometer Cable                           1

5.  Diskette Drive Signal Cable                           1

6.  Fixed Disk Drive Power Cable                          1
==============================================================================
```

Chapter 6.7 Miscellaneous Hardware Kit

```
Table 6-7.  COMPAQ PORTABLE II Personal Computer Miscellaneous Hardware Kit
(PN 104270-001 (No longer available))
==============================================================================
Description                                         Quantity
------------------------------------------------------------------------------
Monitor/Drive Enclosure Screw                       25

Screw Covers                                        25

Drive Shoulder Bolt                                 10

Drive Vibration Isolators                           5

Ty-Wrap, 3/4 in. wide, 3 7/8 in. long, #18          100

PCB Board Guide                                     5

Fixed Disk Drive LED Cable                          2

Brightness Knob                                     5

PCB Board Retainers                                 2

Push Mount Fasteners                                5

Fan Well Nuts                                       5

High Voltage Monitor Grommet                        2

System Board Connector Grommet                      5

Keyboard Rubber Foot                                10

Option Board Locking Standoffs                      5

Monitor Sweep Board Standoffs                       5

T-15 8/32 x 5/16 Screw                              10

6-32 x 9/16 Screw                                   10

Power Grommet                                       2
==============================================================================
```

Chapter 7. Removal and Replacement Procedures

7.1 Preparation

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

1. Turn off the computer.

2. Close the keyboard and secure it by sliding the latches to the LOCK
    position (Figure 7-1) and folding the keyboard feet in place.

Keyboard Assembly

Keyboard Latch (2)

Keyboard Foot (2)
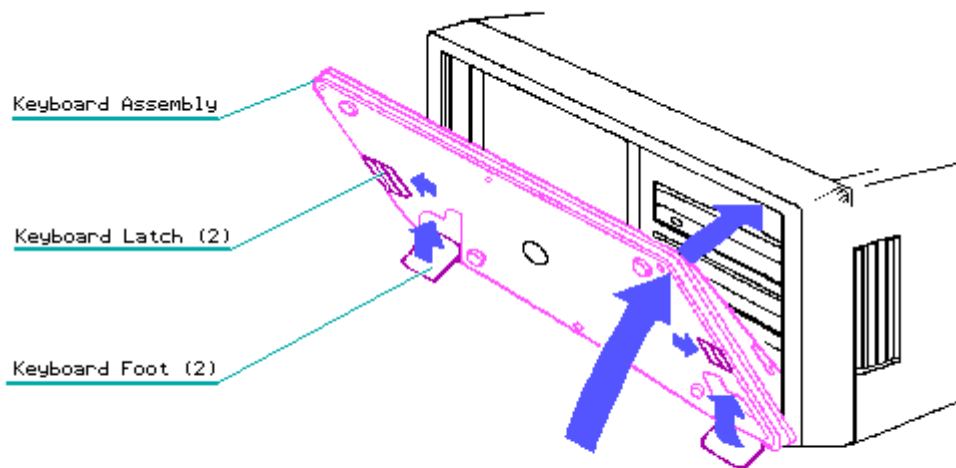
Figure 7-1. Closing and Locking the Keyboard

3. Disconnect any peripheral devices (printers, monitors, and so on) from the
    computer.

4. Disconnect the AC power cord from the AC outlet and from the computer
    (Figure 7-2).
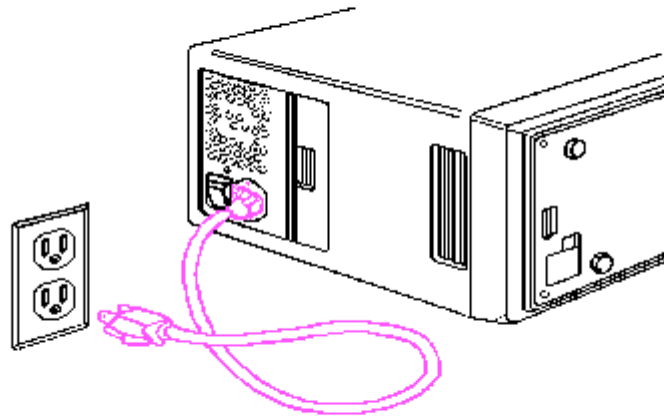
Figure 7-2. Disconnecting the AC Power Cord

Chapter 7.2 AC Power Fuse

To remove the AC power fuse, complete the following steps:

1. Complete the preparation procedures (see Section 7.1).

2. Slide open the AC power compartment to expose the line filter ON/OFF switch (Figure 7-3).

Line Filter
ON/OFF Switch
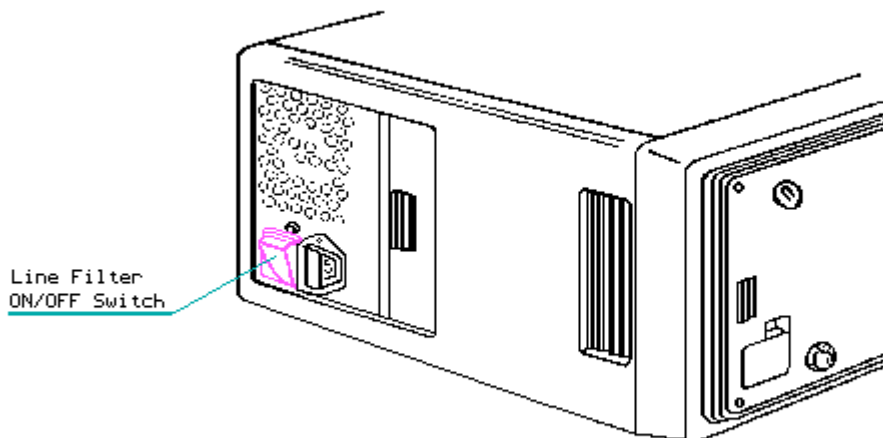
Figure 7-3. Locating the Line Filter ON/OFF Switch Assembly

3. Insert a flat bladed screwdriver along the bottom edge of the fuse box. Lift outward with enough pressure to force the fuse box out of the casing (Figure 7-4).
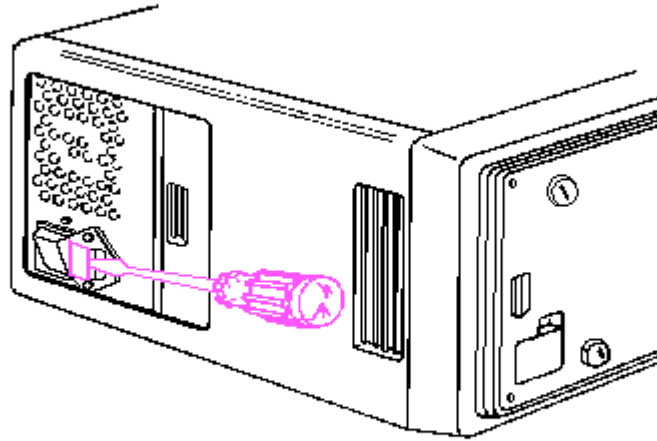
Figure 7-4. Removing the AC Power Fuse

4. When the fuse box is removed, locate the spare fuse provided in the holding area in the fuse box (Figure 7-5). Lift the fuse out and replace it with the spare fuse.

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

   NOTE: Use only a fuse with a 3 Ampere current rating.
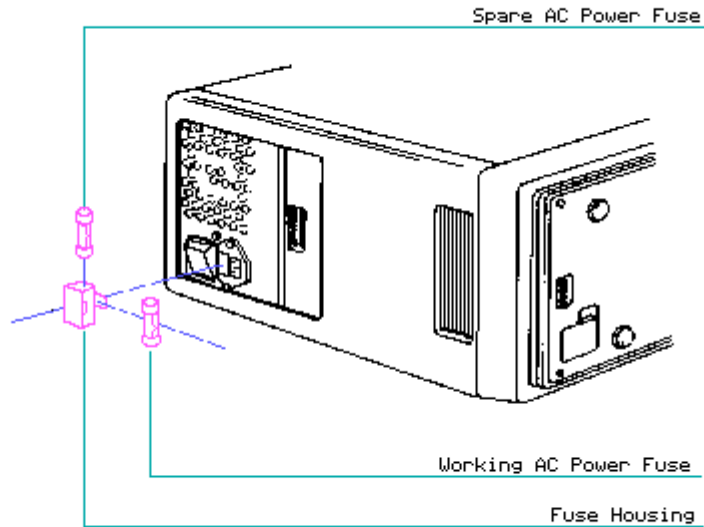
Figure 7-5. Replacing the AC Power Fuse

Chapter 7.3 Outer Access Casing

To remove the outer access casing from the computer, complete the following
steps:

1. Complete the preparation procedure (see Section 7.1).

2. Place the computer keyboard side down on a level work surface. Slide open
    the AC power access panel and the peripheral connector access panels.
    Using a Torx screwdriver, remove the mounting screws from the AC power
    and peripheral connector access areas (Figures 7-6 and 7-7).
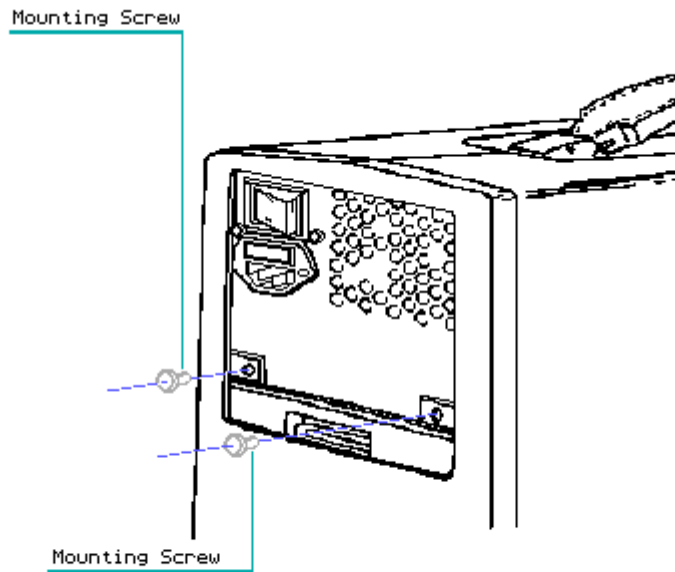
Mounting Screw

Figure 7-6. Locating and Removing the Outer Access Casing
Mounting Screws (Switch Side)
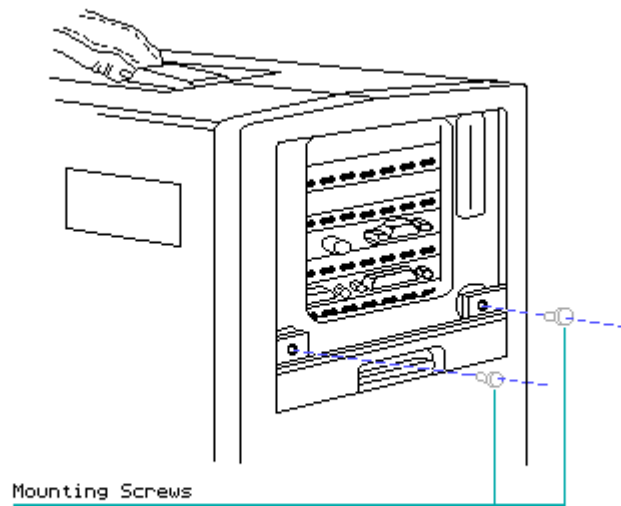
Mounting Screws

Figure 7-7. Locating and Removing the Outer Access Casing
Mounting Screws (Connector Side)

3. Remove the outer access casing by grasping it close to the AC power and
    peripheral connector access panels and sliding the cover towards you.
    Slide it completely off the system chassis (Figure 7-8) and set it aside.

    NOTE: The outer access casing is flexible and will bend as needed.
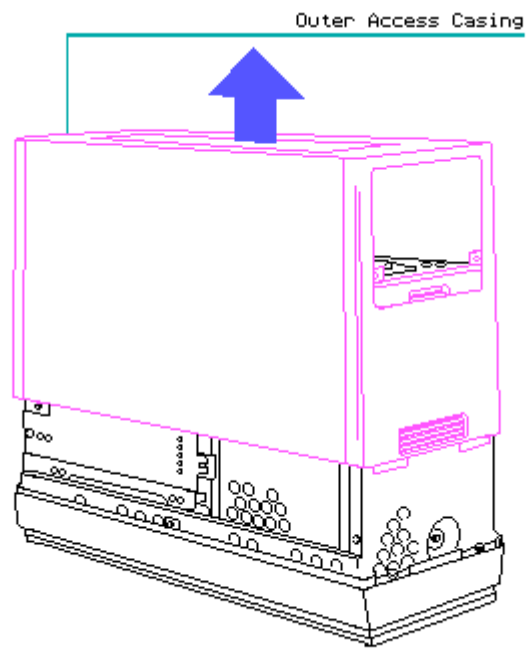
Figure 7-8. Removing the Outer Access Casing

To replace the outer access casing, reverse steps 2 and 3.

Chapter 7.4 Keyboard Assembly

To remove the keyboard assembly, complete the following steps:

1. Remove the cable tray access plate (see Section 7.13).

2. Disconnect the keyboard cable connector from the J116 socket connector on the system board (Figure 7-9).
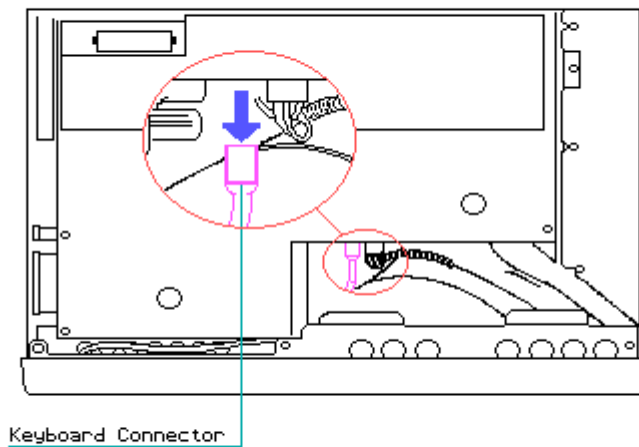
Figure 7-9. Disconnecting the Keyboard Connector from the System Board

3. Lower the rear portion of the computer so that it rests flatly against the work surface (Figure 7-10).
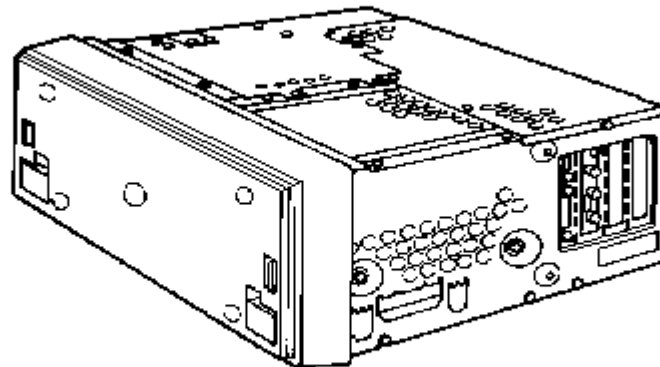
Figure 7-10. Returning the Computer to a Flat Position on the Work Surface

4. Unlock the keyboard latches and gently slide the keyboard cable from inside the computer system chassis (Figure 7-11). Remove the keyboard from the computer system chassis.
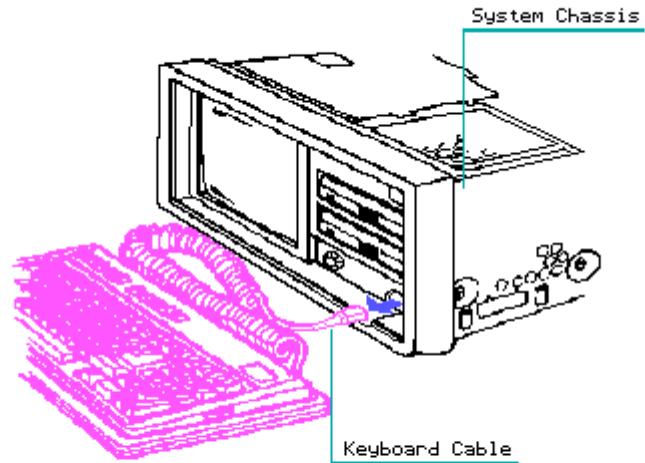
Figure 7-11. Removing the Keyboard

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

Chapter 7.5 Front Bezel

To remove the front bezel, complete the following steps:

1. Remove the keyboard assembly (see Section 7.4).

2. Remove the brightness control knob by gently pulling it from the front bezel (Figure 7-12).
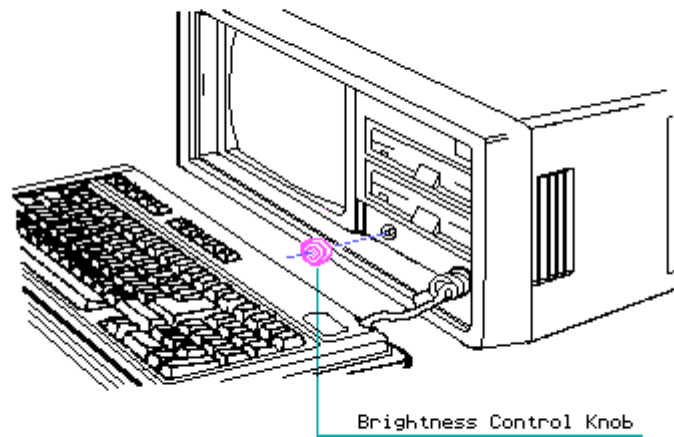
Figure 7-12. Removing the Brightness Control Knob

3. Lift the rear portion of the computer so that it rests firmly on the front
    bezel (Figure 7-13).
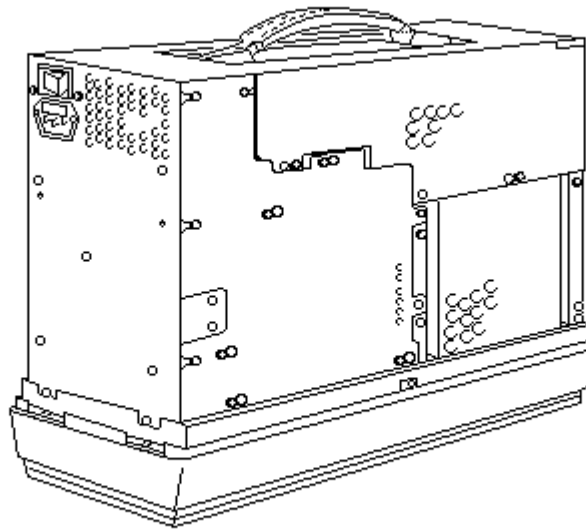
Figure 7-13. Placing the Computer in an Upward Position

4. Using a Torx screwdriver, remove the six screws that secure the front
    bezel to the system chassis (Figure 7-14).

NOTE: Arrows indicate screws to remove.
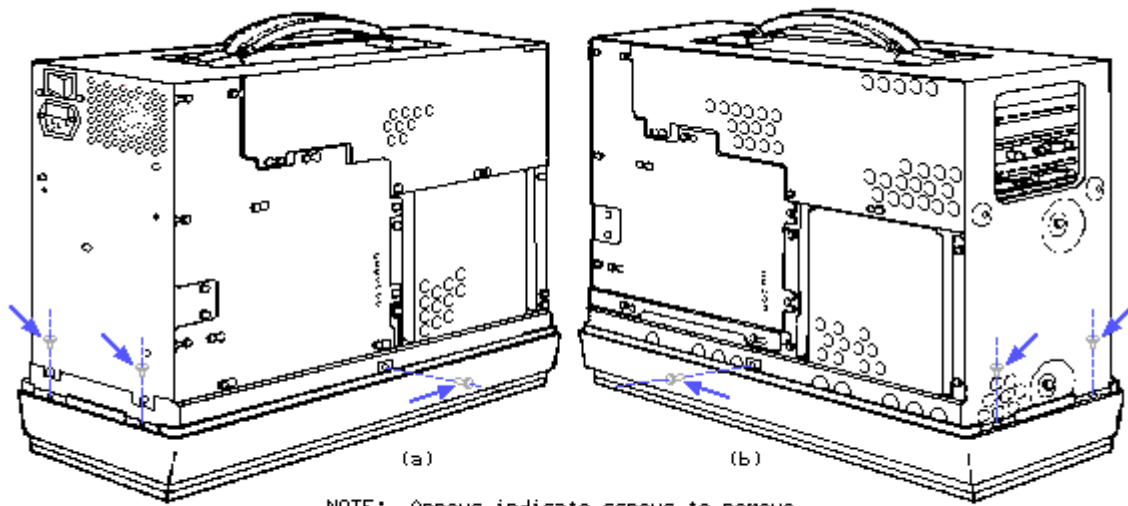
Figure 7-14. Removing the Six Front Bezel Mounting Screws

5. Lower the system chassis and gently pull the front bezel from the system chassis (Figure 7-15).
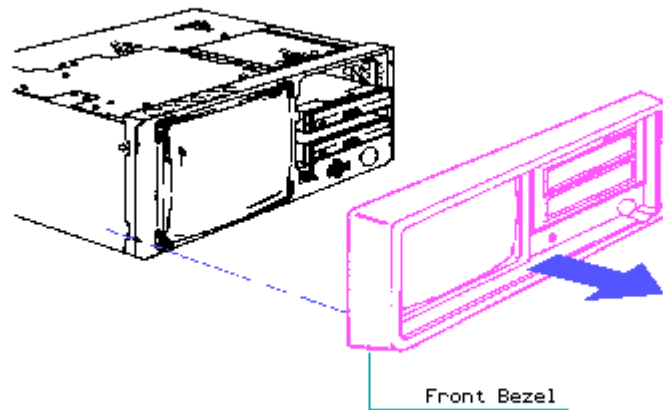
Front Bezel

Figure 7-15. Removing the Front Bezel

To replace the front bezel, reverse steps 1 through 5.

Chapter 7.6 Power Supply Subassembly Chassis

The power supply subassembly chassis consists of the following assemblies:

o Line filter ON/OFF switch assembly
o Power supply assembly board
o Power supply insulating paper

To remove the power supply subassembly chassis, complete the following steps:

1. Remove the outer access casing (see Section 7.3).

2. Place the computer on its side (see Figure 7-16).
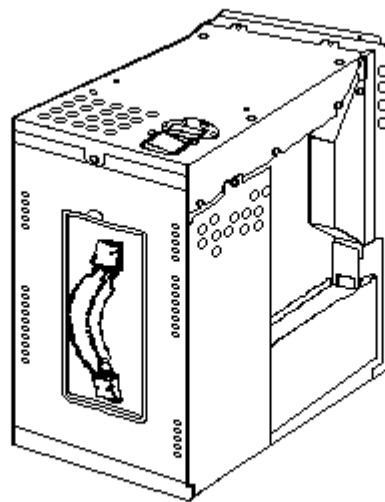
Figure 7-16. Positioning the Computer

3. Using a Torx screwdriver, loosen (DO NOT REMOVE) the nine mounting screws
    that secure the power supply chassis to the system chassis (Figure 7-17).
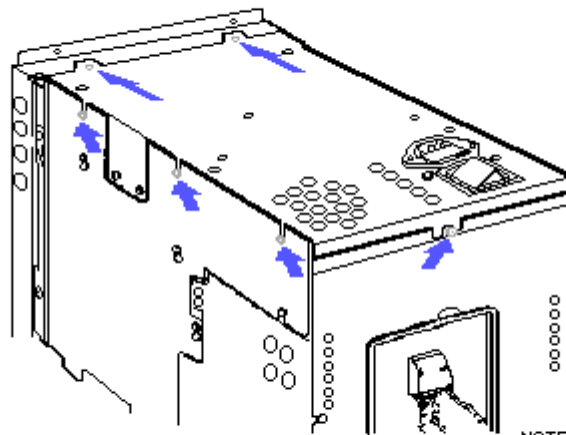
NOTE: Arrows indicate
screws to loosen.

Figure 7-17a. Loosening the Nine Power Supply Mounting Screws (Part 1 of 2)
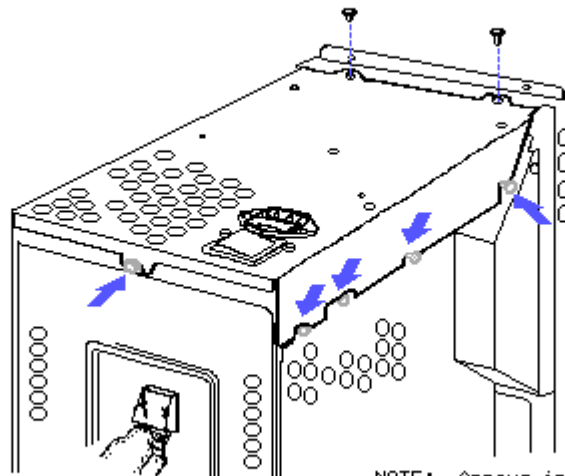
NOTE: Arrows indicate
screws to loosen.

Figure 7-17b. Loosening the Nine Power Supply Mounting Screws (Part 2 of 2)

4. Remove only the two screws indicated in Figure 7-18.
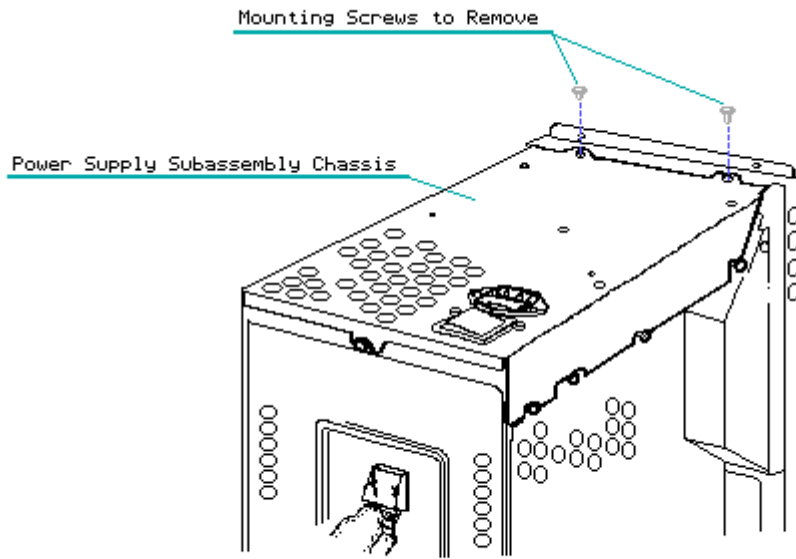
Figure 7-18. Removing the Power Supply Mounting Screws

5. Remove the power supply subassembly chassis by lifting the rear portion of
    the chassis upward. As this end is raised, lift the front portion of the
    chassis until the entire power supply chassis is free of the system
    chassis (Figure 7-19).

    NOTE: Because the power supply connects directly to the system board, be
    careful when removing the power supply subassembly chassis.
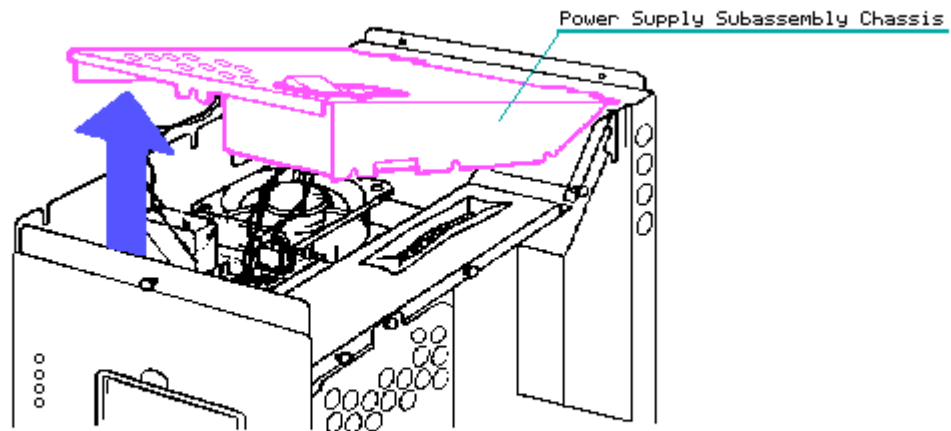
Figure 7-19. Removing the Power Supply

6. To completely remove the power supply subassembly chassis from the

computer system chassis, disconnect the fan assembly and the automatic power switching board (Figure 7-20).

Fan Assembly Connector

Automatic Power Switching Board Connectors
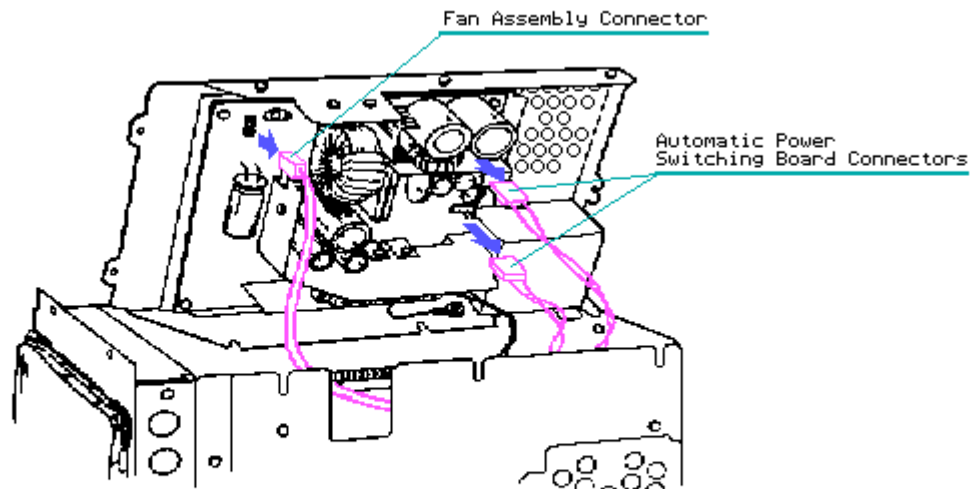
Figure 7-20. Disconnecting the Fan Assembly and Automatic Power Switching Connectors

7. Gently lift and remove the power supply subassembly from the system chassis.

To replace the power supply subassembly chassis, reverse steps 1 through 6.

Chapter 7.7 Fan Assembly

To remove the fan assembly, complete the following steps:

1. Remove the power supply subassembly chassis (see Section 7.6).

2. Cut the two cable ties that secure the fan assembly power cable to the system chassis.

3. Using a Phillips screwdriver, remove the two mounting screws and lift the fan assembly from the system chassis (Figure 7-21).
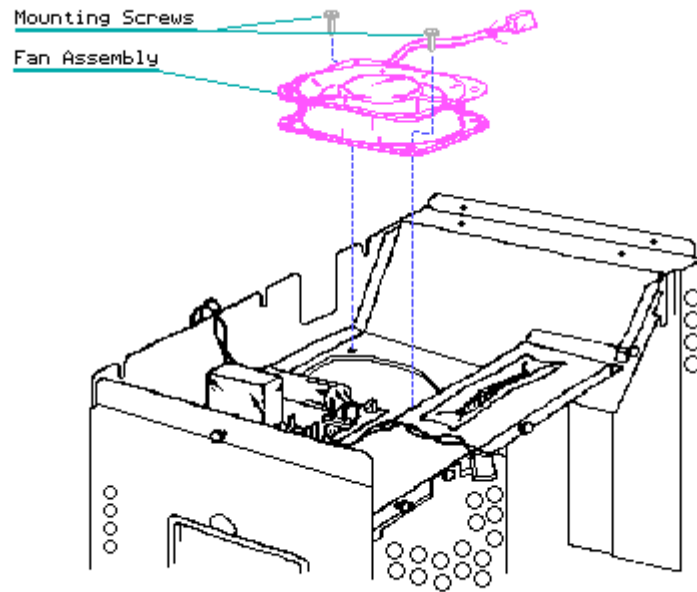
Figure 7-21. Removing the Fan Assembly

To replace the fan assembly, reverse steps 1 through 3.

Chapter 7.8 Automatic Power Switching Board (APS)

1. Remove the power supply subassembly chassis (see Section 7.6).

    NOTE: Carefully remove all three connections to the APS board when
    removing the power supply chassis. Refer to Figure 7-22 for an
    illustration of the APS board.

To J202 Connector on Power Supply Board

To Line Filter ON/OFF Switch Connector

To J201 Connector on Power Supply Board
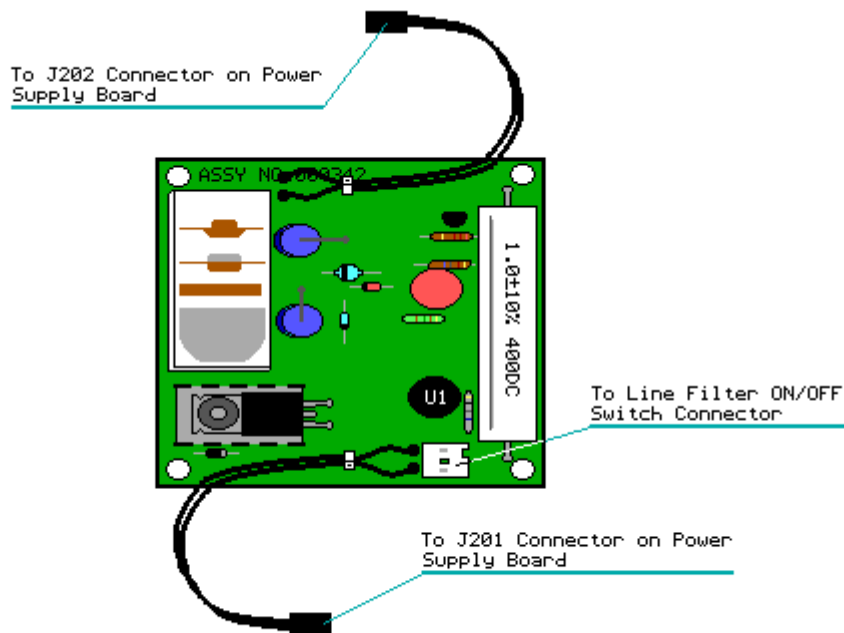
Figure 7-22. Automatic Power Switching (APS) Board (Assy No. 000342)

2. To remove the APS board, which is secured to the system chassis by four
    PCB standoffs, press the top of each PCB standoff together, one at a time.
    At the same time, carefully lift that portion of the APS board from the
    system chassis.

    Repeat this procedure until all board standoffs have been disconnected
    from the APS board, then lift and remove the APS board from the system
    chassis (Figure 7-23).

Automatic Power Switching Board

PCB Standoffs (4)

PRESS IN HERE
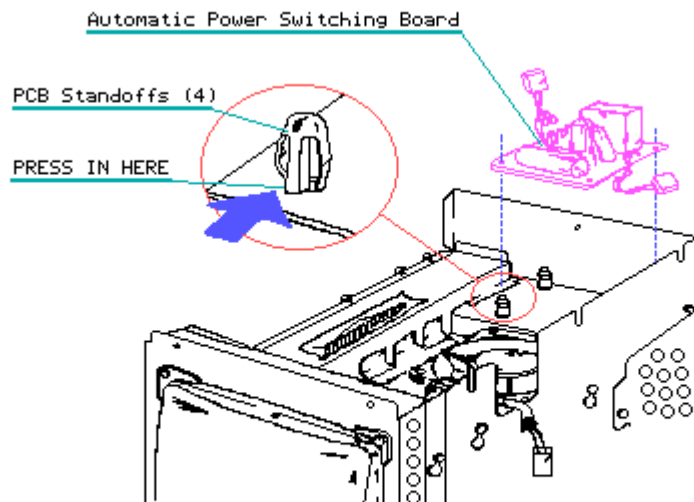
Figure 7-23. Disconnecting and Removing the Automatic Power Switching Board (Assy No. 000342)

To replace the APS Board, complete the following steps:

1. Slide the APS Board into place on the system

2. Press the four PCB standoffs into the holes in the board.

3. Hold the power supply subassembly at a 30 to 45 degree angle as shown in Figure 7-24, and tie the three wire harnesses together with a ty-wrap.

Figure 7-24. Tying Together the Harness Wires

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

CAUTION

When reassembling the APS board, be sure to reconnect the fan. Do not "pinch" the harness wires between the power supply subassembly and the chassis; this could interfere with the cooling system and result in overheating.

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

4. Reinstall the power supply subassembly chassis (see Section 7-6).

Chapter 7.9 High Voltage Access Plate

The high voltage access plate is located just above the video monitor and power supply assemblies.

To remove the high voltage access plate, complete the following steps:

1. Remove the outer access casing (see Section 7.3).

2. Using a Torx screwdriver, loosen (DO NOT REMOVE) the 11 mounting screws
    that secure the high voltage monitor access plate to the system chassis.
    Remove only the three mounting screws indicated in Figure 7-25.

Mounting Screws
to remove (3)

NOTE: Arrows indicate
       screws to loosen.
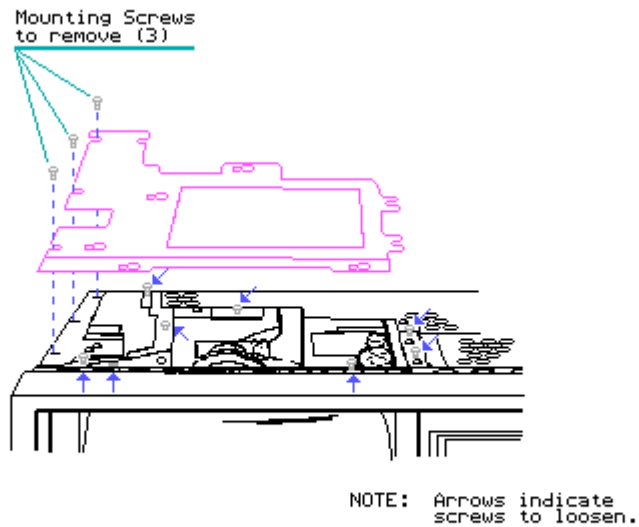
Figure 7-25. Removing High Voltage Access Plate

3. Gently slide the high voltage access plate towards the power supply
    chassis assembly and lift it up and away from the system chassis.

To replace the high voltage access plate, reverse steps 1 through 3.

Chapter 7.10 Board Slots Access Plate

The board slots access plate is located at the rear of the computer and covers
all installed controller and option boards.

To remove the board slots access plate, complete the following steps:

1. Remove the outer access casing (see Section 7.3).

2. Using a Torx screwdriver, loosen (DO NOT REMOVE) the seven mounting screws
    that secure the board slots access plate to the system chassis. Remove
    only the one screw indicated in Figure 7-26.
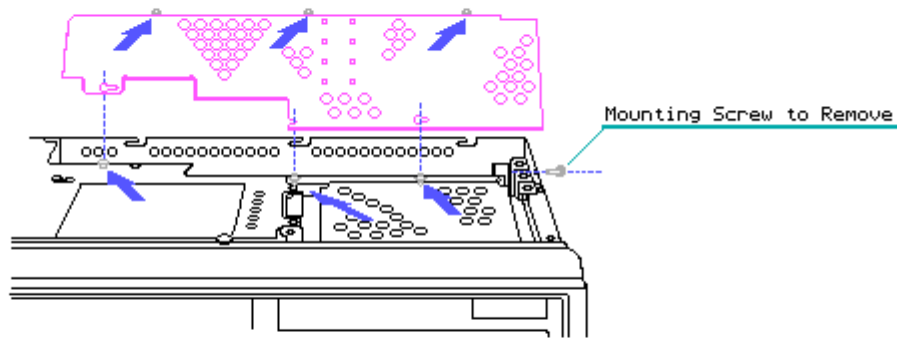
NOTE: Arrows indicate screws to loosen.

Figure 7-26. Removing the Board Slots Access Plate

3. Gently slide the board slots access plate to the right of the computer and
    lift it up and away from the system chassis.

To replace the board slots access plate, reverse steps 1 through 3.

Chapter 7.11 Mass Storage Device Access Plate

The mass storage device access plate is located at the front of the system
chassis and covers all installed mass storage devices.

To remove the mass storage device access plate, complete the following steps:

1. Remove the outer access cover (See Section 7.3).

    NOTE: It is not necessary to remove the mass storage device access plate
    before removing the mass storage device enclosure.

2. Using a Torx screwdriver, remove the eight mounting screws that secure the
    mass storage device access plate to the system chassis and the mass
    storage device enclosure (Figure 7-27).
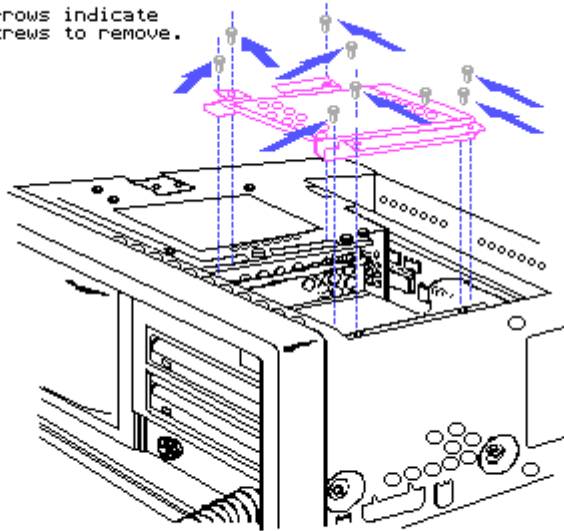
Figure 7-27. Removing the Mass Storage Device Access Plate

3. Carefully lift the mass storage device access plate away from the system chassis.

To replace the mass storage device access plate, reverse steps 1 through 3.

Chapter 7.12 System Memory Board Access Plate

To remove the system memory board access plate, complete the following steps:

1. Remove the outer access casing (see Section 7.3).

2. Turn over the system chassis as illustrated in Figure 7-28.

System Memory Board
Access Plate
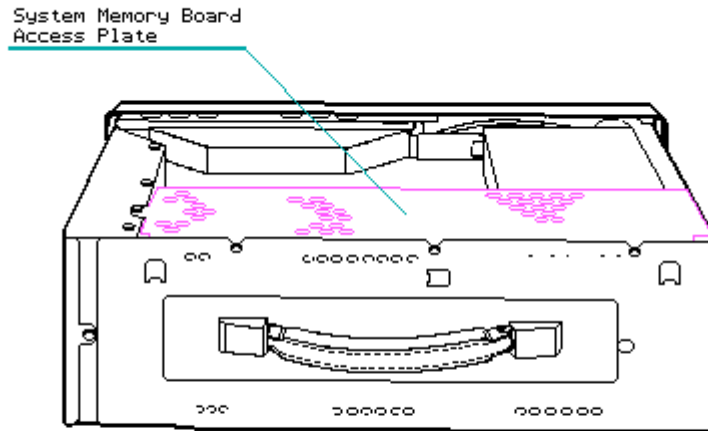
Figure 7-28. Exposing the System Memory Board Access Plate

3. Using a Torx screwdriver, loosen (DO NOT REMOVE) the seven mounting screws
    that secure the system memory board access plate to the system chassis.
    Remove only the one mounting screw indicated in Figure 7-29.

4. Carefully lift and remove the system memory board access plate from the
    system chassis (Figure 7-29).

Mounting Screw
To Remove

System Memory Board
Access Plate
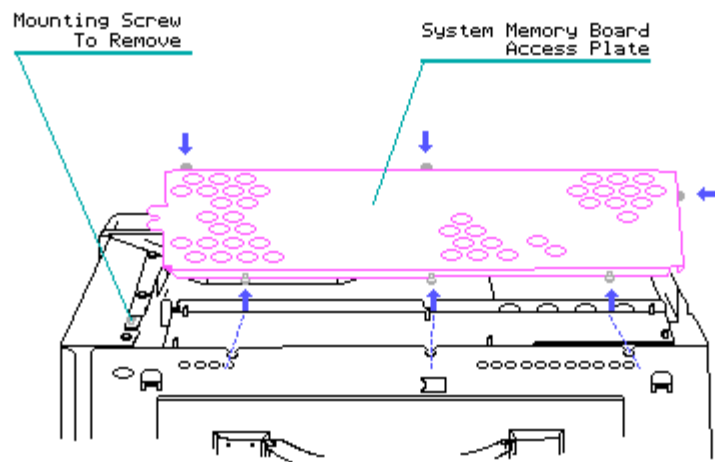
NOTE: Arrows indicate screws to loosen.

Figure 7-29. Removing the System Memory Board Access Plate

To replace the system memory board access plate, reverse steps 1 through 4.

Chapter 7.13 Cable Tray Access Plate

To remove the cable tray access plate, complete the following steps:

1. Remove the outer access casing (see Section 7.3).

2. Remove the system memory board access plate (see Section 7.12).

3. Turn over the system chassis as illustrated in Figure 7-30.
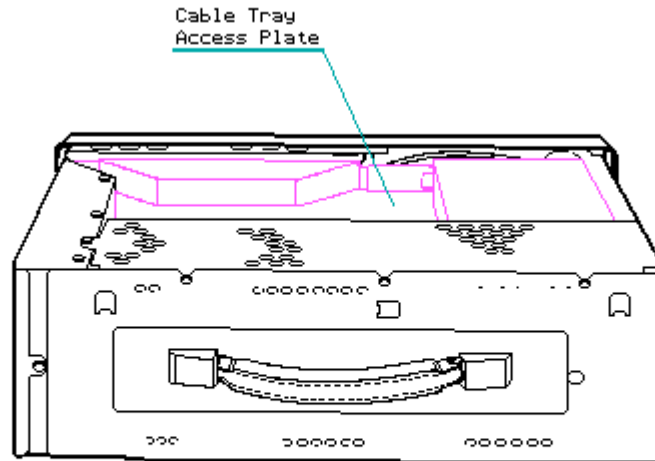
Figure 7-30. Exposing the Cable Tray Access Plate

4. Using a Torx screwdriver, loosen (DO NOT REMOVE) the seven Torx screws that secure the cable tray access plate to the system chassis. Remove only the two mounting screws noted in Figure 7-31.
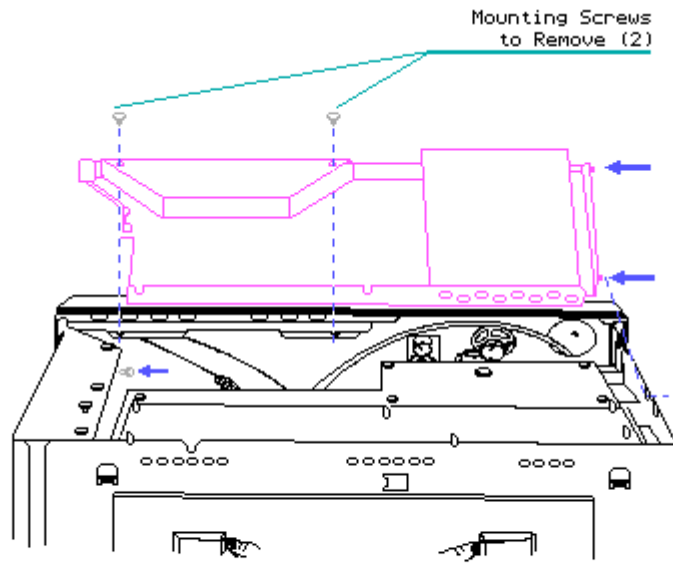
Figure 7-31. Removing the Cable Tray Access Plate

5. Carefully lift and remove the cable tray access plate from the system
    chassis.

To replace the cable tray access plate, reverse steps 1 through 5.

Chapter 7.14 Multipurpose Controller Board

The Multipurpose Controller Board is located in slot J104 on the system board
(Figure 7-32). To remove the multipurpose controller board, complete the
following steps.
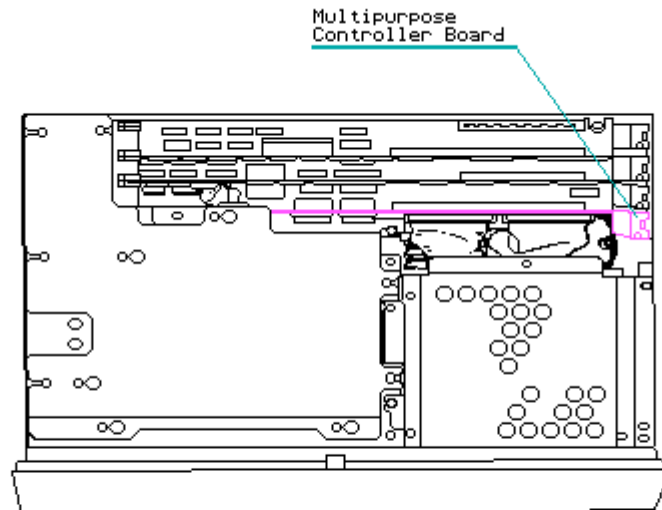
Figure 7-32. Locating the Multipurpose Controller Board

1. Remove the board slots access plate (see Section 7.10).

2. Disconnect the mass storage device signal cable(s) as shown in Figure 7-33.

   NOTE: If a fixed disk drive is installed in the system chassis, you must disconnect two signal cables.
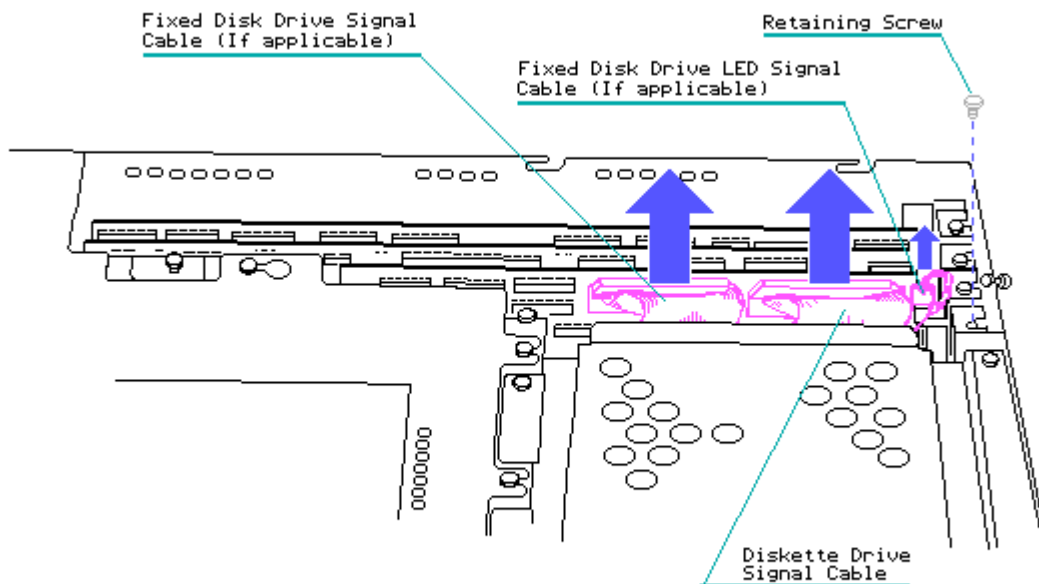
Figure 7-33. Disconnecting the Mass Storage Device Signal Cables from the Multipurpose Controller Board

3. Using a Torx screwdriver, remove the board retaining screw. Carefully

lift the controller board up and out of the system board (Figure 7-34).
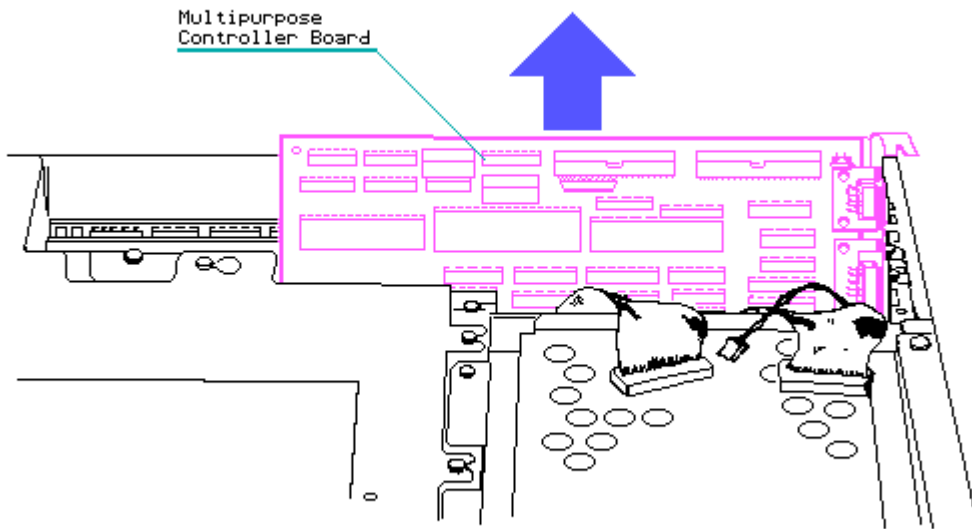
Figure 7-34. Removing the Multipurpose Controller Board

To replace the Multipurpose Controller Board, reverse steps 1 through 3.

Chapter 7.15 Video Display Controller Board

The Video Display Controller Board is located in slot J103 on the system board (Figure 7-35).
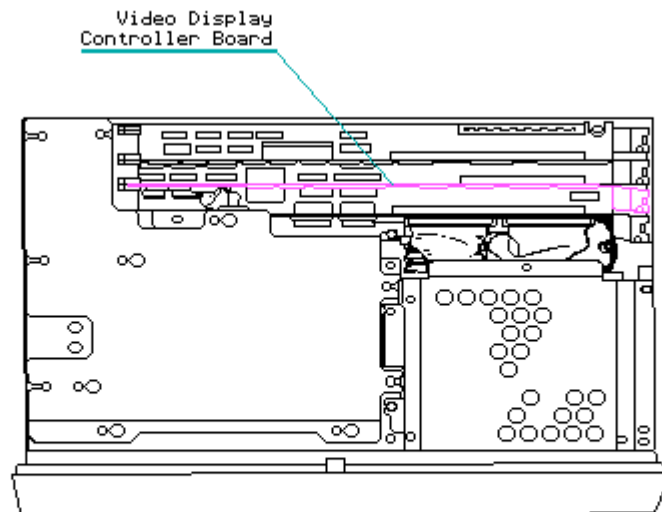
Figure 7-35. Locating the Video Display Controller Board

To remove the Video Display Controller Board, complete the following steps:

1. Remove the board slots access plate (see Section 7.10).

2. Remove the retaining screw that secures the Video Display Controller
    Board. Then disconnect the video display signal cable (Figure 7-36).
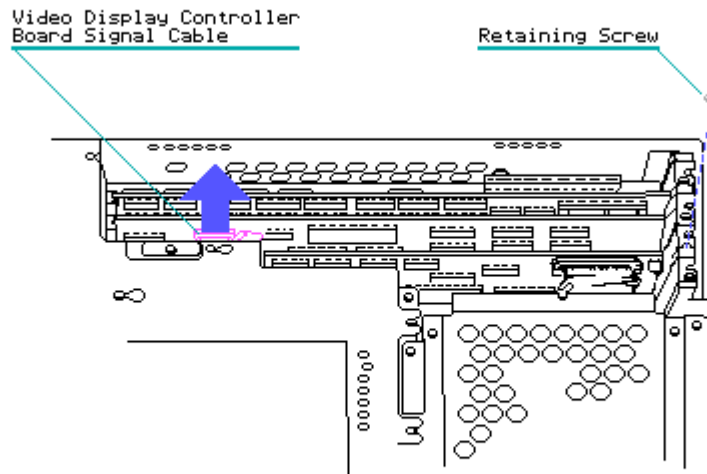
Figure 7-36. Removing the Video Display Controller Board
              Retaining Screw and Signal Cable

3. Carefully lift the board up and out of its J103 connector location on the
    system board (Figure 7-37).
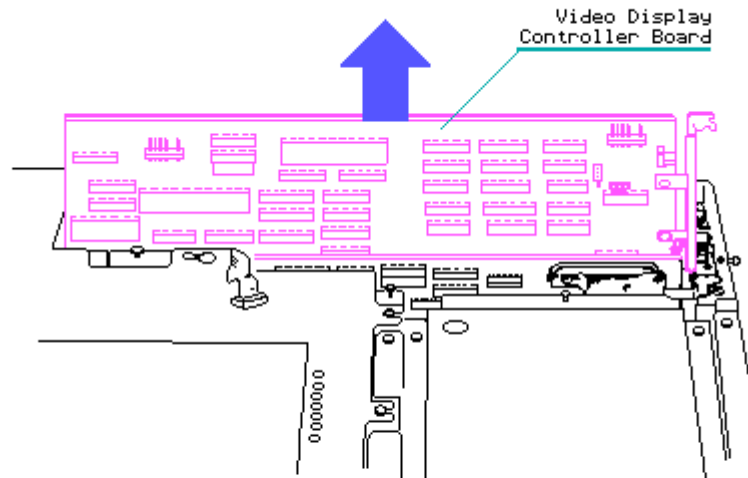
Figure 7-37. Removing the Video Display Controller Board

To replace the Video Display Controller Board, reverse steps 1 through 3.

Chapter 7.16 512/2048 KByte Memory Expansion Board

The COMPAQ PORTABLE II Personal Computer may contain up to two option boards.
Option boards are always installed in the back two slots of the system
chassis. To remove a COMPAQ 512/2048 Kbyte Memory Expansion Board or any
other option board installed in the computer, complete the following steps:

1. Remove the outer access casing (See Section 7.3).

2. Disconnect any signal cables connected to the board.

3. Remove the retaining screw that secures the board to the system chassis.

4. Carefully lift the board up and out of its connector on the system board
    (Figure 7-38).
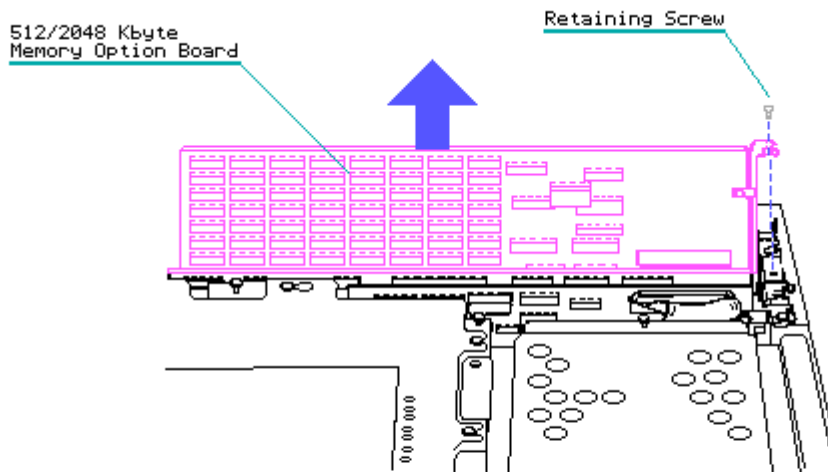
Figure 7-38. Removing the 512/2048 Kbyte Memory Expansion Board or Other Option Boards

To replace the 512/2048 Kbyte Memory Expansion Board or other option boards, reverse steps 1 through 4.

Chapter 7.17 Handle

To remove the handle from the computer, complete the following steps:

1. Remove the outer access casing (see Section 7.3).

2. Remove the board slots access plate (see Section 7.10).

3. Remove all controller and option boards installed (see Sections 7.14 through 7.16).

4. Using a Torx screwdriver, remove the two mounting screws that secure the handle to the system chassis, and remove the handle system chassis (Figure 7-39).
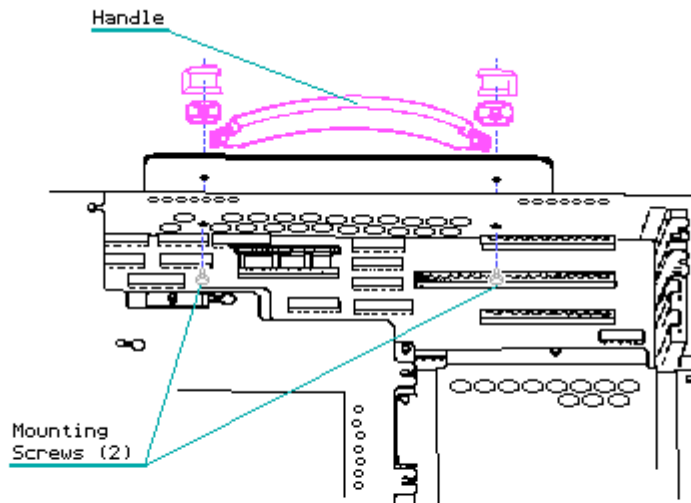
Figure 7-39. Removing the Handle

To replace the handle, reverse steps 1 through 4.

Chapter 7.18 System Board

There are two versions of the system board for the COMPAQ PORTABLE II:
version 1 (Assy No. 000318) and version 2 (Assy No. 000324). The two system
boards differ in shape, memory chip locations, and jumper locations
(Figures 7-40 and 7-41).

Functionally both versions are identical; however, the version 2 system board
contains three gate array devices that consolidate the functions of several
devices from the earlier version making a smaller system board possible.
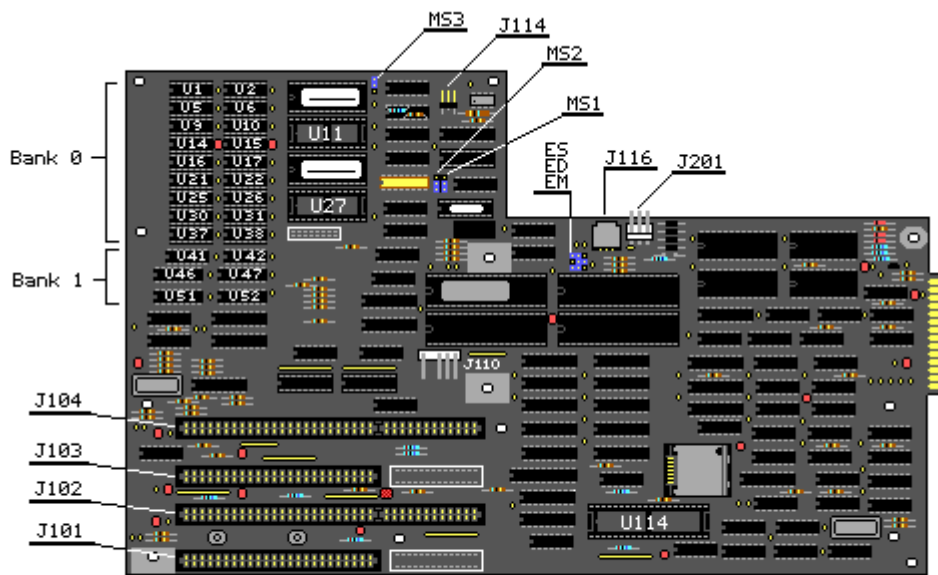
Figure 7-40. COMPAQ PORTABLE II Personal Computer System Board Version 1 (Assy No. 000318)
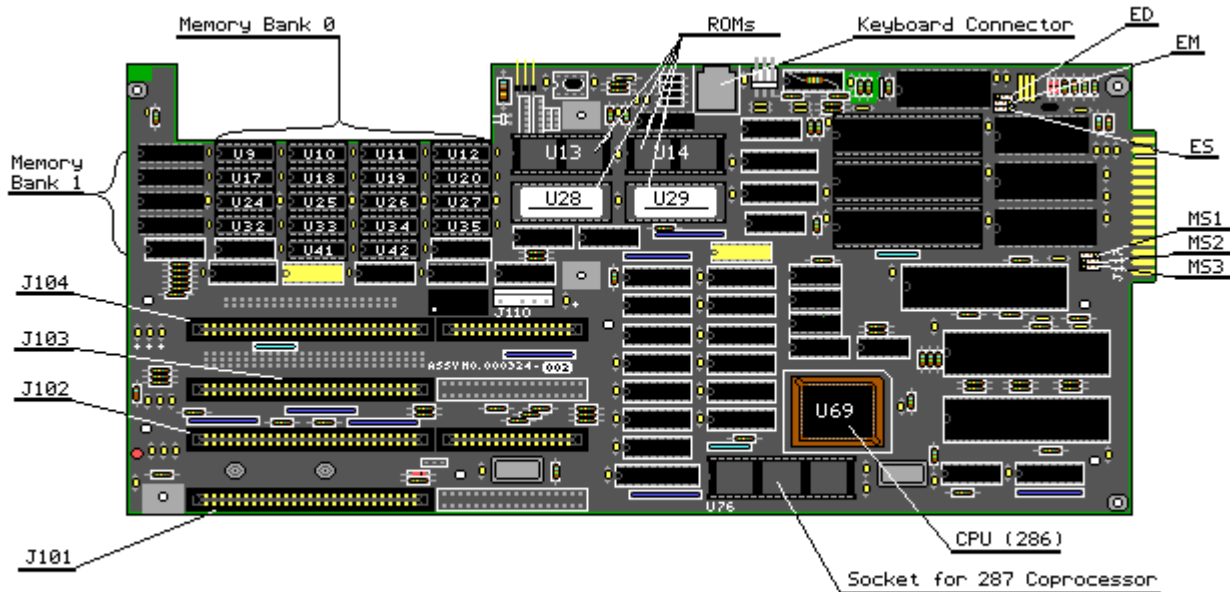
Figure 7-41. COMPAQ PORTABLE II Personal Computer System Board Version 2 (Assy No. 000324)

To remove either system board, complete the following steps:

1. Remove the power supply subassembly chassis (see Section 7.6).

2. Remove the board slots access plate (see Section 7.10).

3. Remove all controller and option boards installed (see Sections 7.14 through 7.16).

4. Using Figure 7-42 as a reference, disconnect the mass storage device power cable.

Mass Storage Device
Power Cable
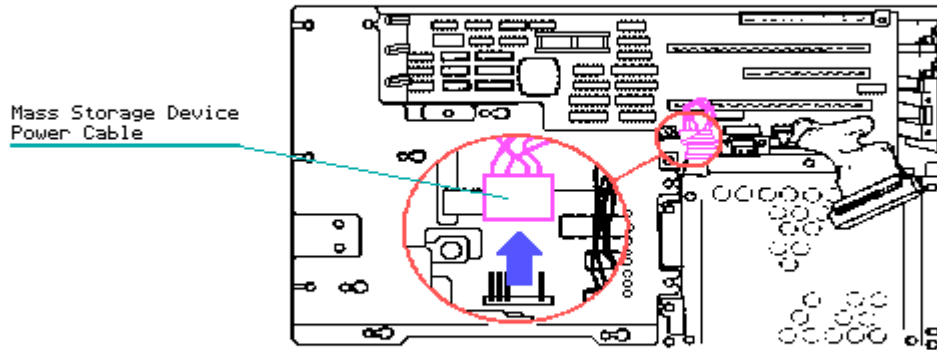
Figure 7-42. Disconnecting the Mass Storage Device Power Cable

5. Remove the system memory board access plate (see Section 7.12).

6. Remove the cable tray access plate (see Section 7.13).

7. Using Figure 7-43 as a reference, disconnect the keyboard power cable,
    the video display unit power cable, and the speaker/brightness control
    cable.

Video Display Power
Cable Connector

Keyboard Cable
Connector

Speaker/Brightness
Potentiometer
Cable Connector

Figure 7-43. Disconnecting the Keyboard Power, VDU Power, and Speaker/Brightness Control Cables

8. Using a Torx screwdriver, remove the eight mounting screws that secure
    the system board to the system chassis.

9. Carefully lift the system board from the System chassis (Figure 7-44).

NOTE: Arrows indicate screws to remove.

Figure 7-44. Removing the System Board

To replace the system board, reverse steps 1 through 9.

If replacing a Version 1 board with a Version 2 board, the
speaker/brightness potentiometer assembly (PN 104185-001 no longer
available) should be replaced with an assembly containing a longer wiring
harness. Spare part kits containing version 2 boards include a
speaker/brightness potentiometer assembly.

NOTE: Be sure to pay special attention to the system board guide/clamp at the
rear of the chassis.

Chapter 7.19 Battery

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

                              WARNING

The lithium battery may explode if mishandled or stored improperly. Do not
abuse, disassemble, or incinerate. Use only replacement batteries supplied by
Compaq Computer Corporation (PN 104186-001).

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

To remove the battery, complete the following steps:

1. Remove the 512/1536 Kbyte System Memory Board access plate (see Section 7.12).

2. The battery is secured to the bottom of the system board by a snap in connector and cable tie. Remove the battery by first cutting the cable tie then lifting the battery from its snap in connector (Figure 7-45).

Figure 7-45. Removing the Battery

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

                                 CAUTION

Make sure the polarity is correct when replacing the battery. Improper installation of the battery can cause damage to the computer.

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

To replace the battery, complete the following steps:

1. Replace the battery in the snap in connector.

2. Replace the cable tie.

3. Replace the 512/1536 Kbyte System Memory Board access plate (see Section 7.12).

Chapter 7.20 512/1536 KByte System Memory Board

To remove the 512/1536 Kbyte System Memory Board, complete the following

steps:

1. Remove the outer access casing (see Section 7.3).

2. Remove the Memory Expansion Board access plate (see Section 7.12).

3. The memory board is secured to the system board by six PCB standoffs. To
    remove the memory board from the system board, press the top of each PCB
    stand off together, one at a time. At the same time, gently lift that
    portion of the memory board from the stand off. Repeat this procedure
    until all PCB standoffs have been disconnected from the system memory
    board.

4. Lift the disconnected memory board from the system board (Figure 7-46).
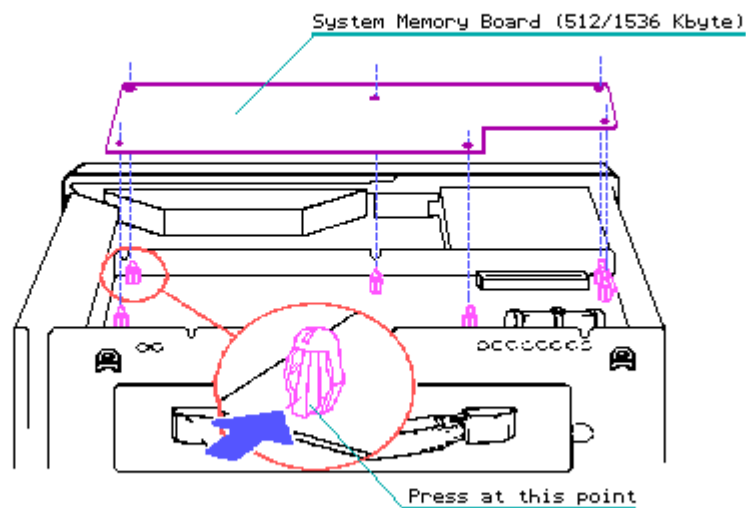
Figure 7-46. Disconnecting and Removing the 512/1536 Kbyte System Memory Board

To replace the memory board, reverse steps 1 through 4.

Chapter 7.21 Memory Option

COMPAQ PORTABLE II Personal Computer memory chips can be installed on the
system board, the 512/2048 Kbyte Memory Expansion Board, or the 512/1536 Kbyte
System Memory Board.

To remove a memory chip, complete the following steps:

1. Remove the board that contains the memory chip to be replaced. For board
    removal procedures, refer to one of the following sections.

    o   For the 512/2048 Kbyte Memory Expansion Board removal and replacement
        procedure refer to Section 7.16.

o For the system board removal and replacement procedure refer to
   Section 7.18.

o For the 512/1536 Kbyte System Memory Board removal and replacement
   procedure, refer to Section 7.20.

NOTE: The RAM and ROM chip locations on the system boards differ from
those on the memory boards (See Figures 7-47 through 7-50).
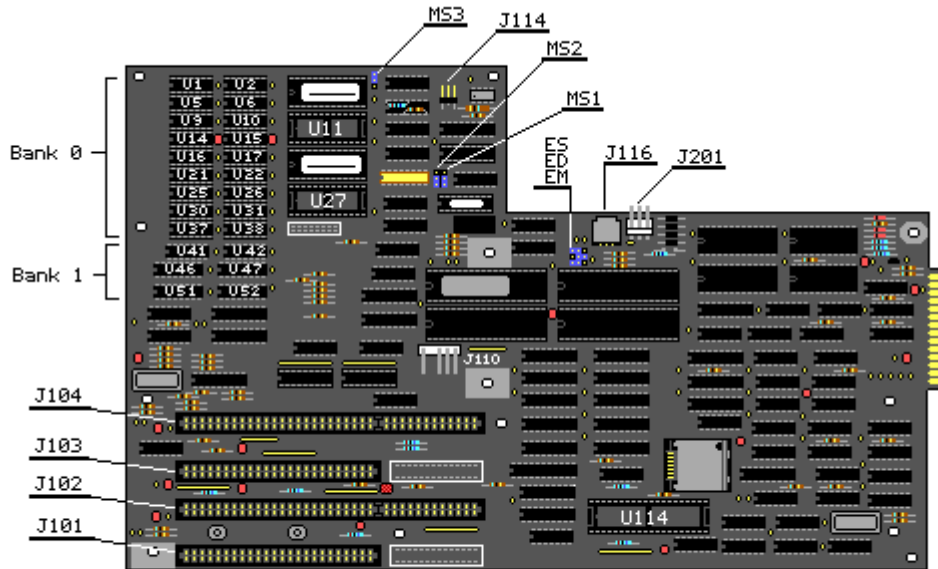
Figure 7-47. COMPAQ PORTABLE II Personal Computer System Board Version 1 (Assy No. 000318)
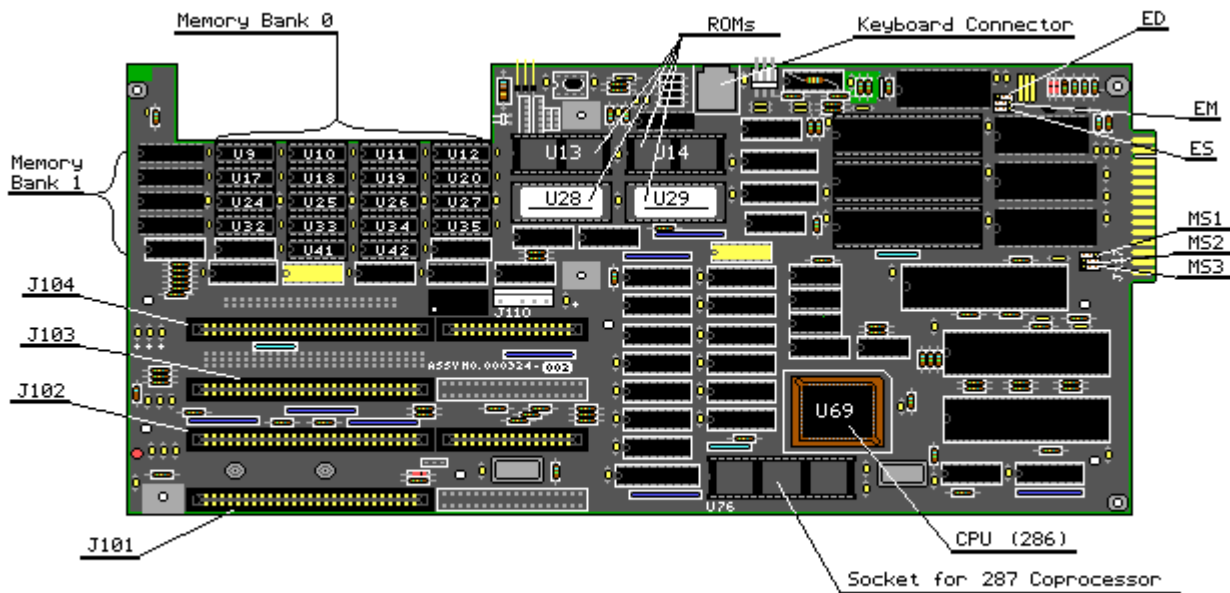
Figure 7-48. COMPAQ PORTABLE II Personal Computer System Board Version 2 (Assy No. 000324)
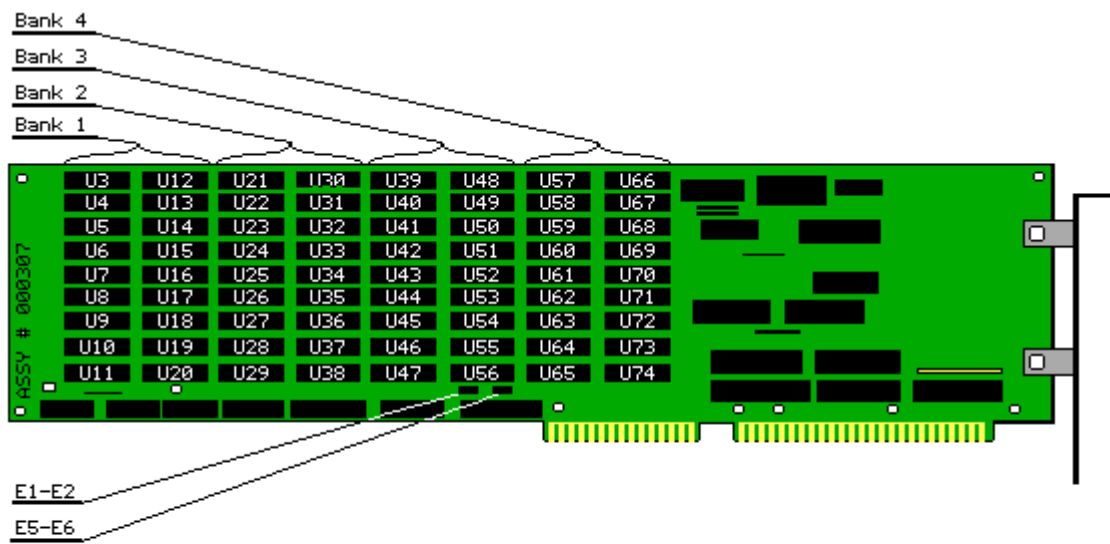
Figure 7-49a. 512/2048 Kbyte Memory Expansion Board (Assy No. 000307) (Part 1 of 2)
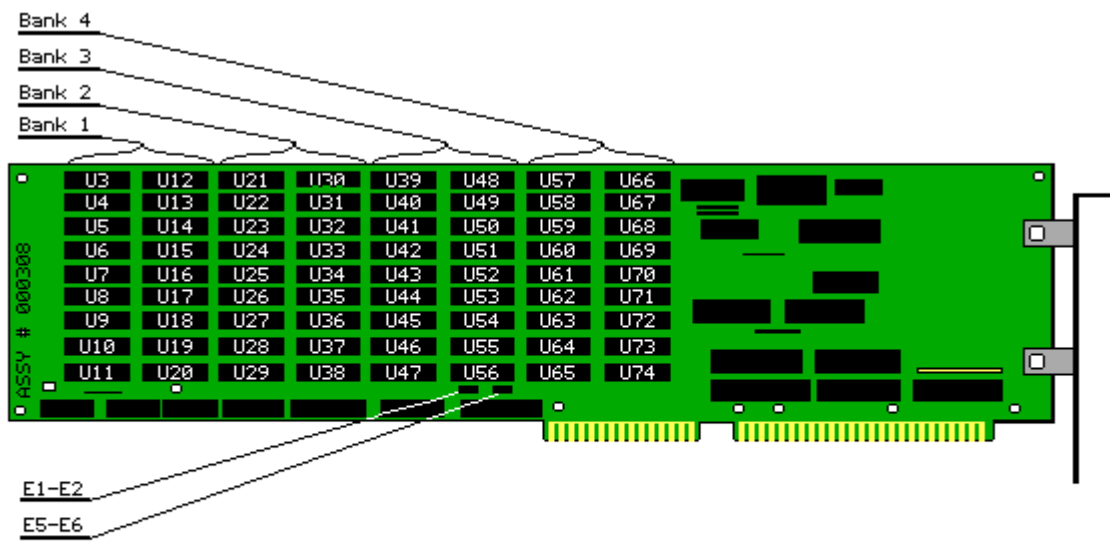
Figure 7-49b. 512/2048 Kbyte Memory Expansion Board (Assy No. 000308) (Part 2 of 2)
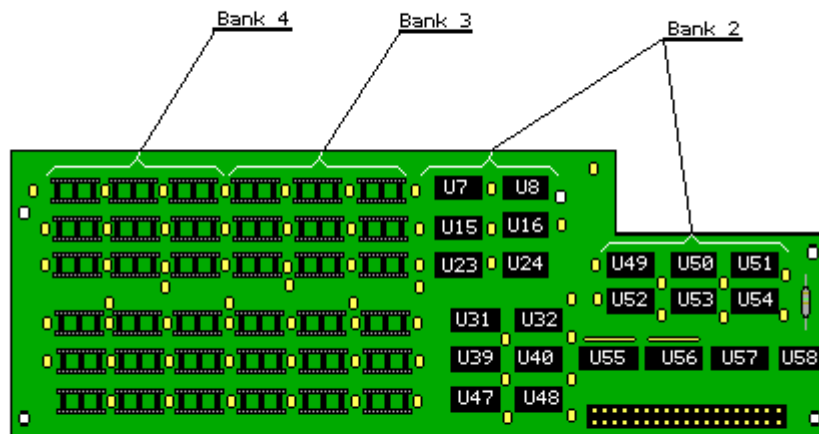
Figure 7-50.   512/1536 Kbyte System Memory Board (Assy No. 000330)

2.   Using an IC removal tool, remove the defective RAM or ROM chip(s) (Figure 7-51).
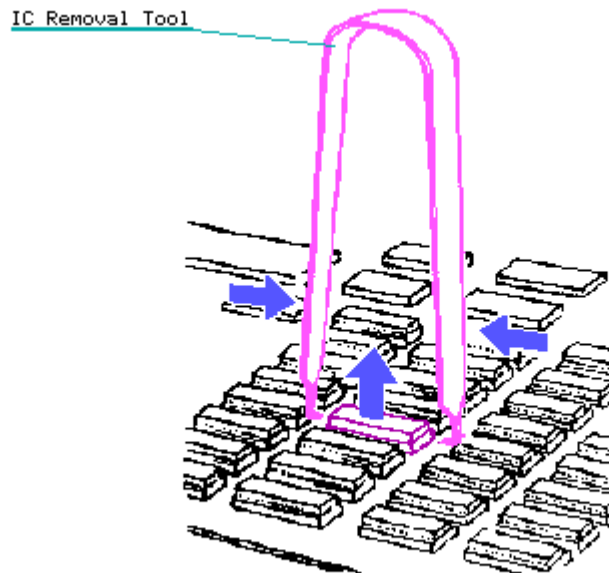
Figure 7-51.   Removing a Memory Chip

3.   Using a special IC insertion tool, replace the defective RAM or ROM chip(s) (Figure 7-52).
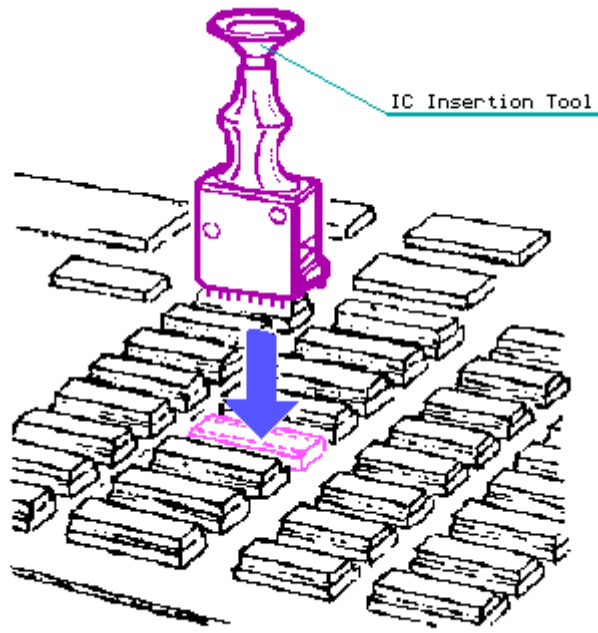
Figure 7-52. Replacing a Memory Chip

4. Replace the memory board.

NOTE: After replacing the defective component, run DIAGNOSTICS to verify
proper operation of the computer. (Please consult the SUPPORT SOFTWARE
MAINTENANCE AND SERVICE GUIDE for current information on DIAGNOSTICS.)

Chapter 7.22 Mass Storage Device Subassembly

Mass storage device subassemblies for the COMPAQ PORTABLE II Personal
Computer consist of fixed disk drives and diskette drives. Refer to
Figure 7-53 for the location of each type of mass storage device subassembly.
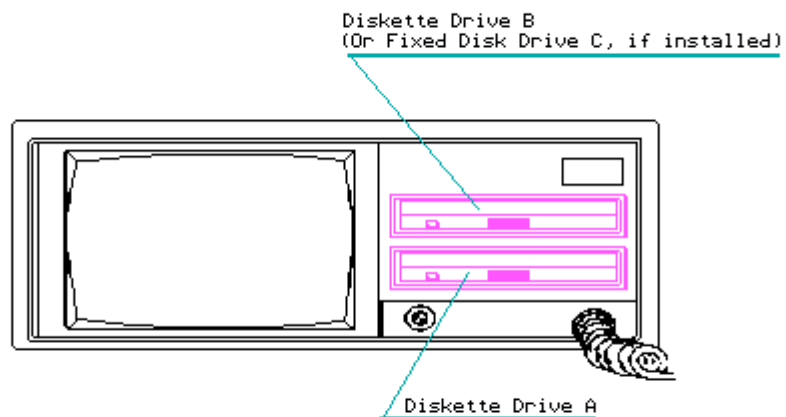
Figure 7-53. Reference Designators for the Mass Storage Device Subassemblies

Mass Storage Device Subassembly Enclosure

To remove the mass storage device subassembly enclosure, complete the
following steps:

1. Remove the outer access casing (see Section 7.3).

2. Remove all installed controller and option boards (see
    Sections 7.14 through 7.16).

3. Using a screwdriver, gently pry the drive bezel from the front bezel
    (Figure 7-54). This exposes the installed mass storage devices.
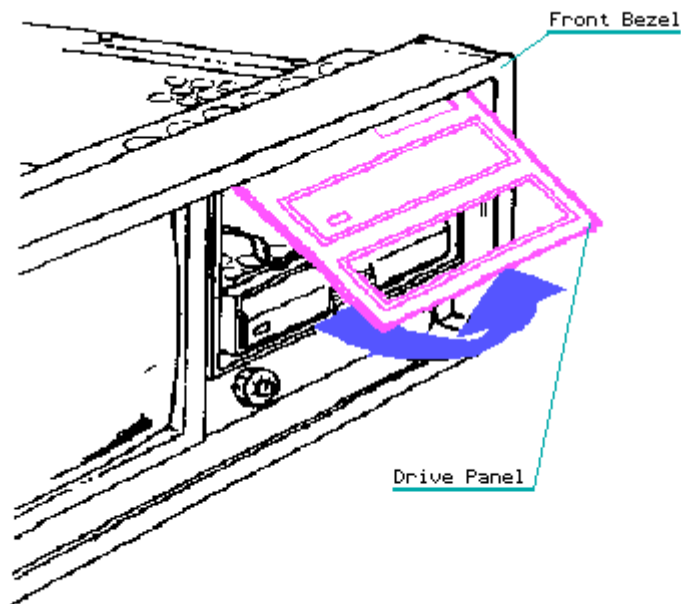
Figure 7-54. Removing the Drive Bezel from the Front Bezel

4. Using a Torx screwdriver, remove the two screws on the right side of the
    system chassis and the four screws on the top of the mass storage device
    enclosure. These screws secure the mass storage device subassembly
    enclosure to the system chassis (Figure 7-55).
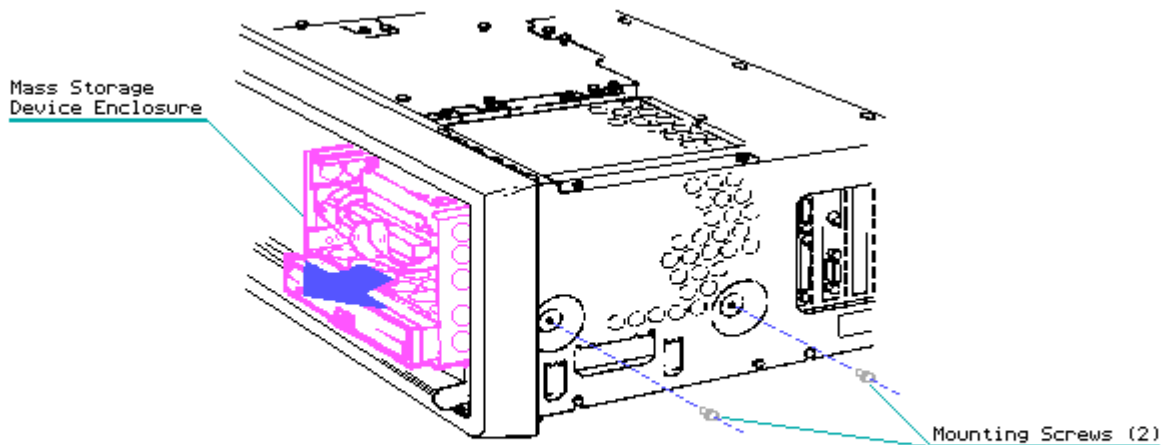
Figure 7-55. Removing the Mass Storage Device Subassembly
              Enclosure Mounting Screws

5. Slide the mass storage device subassembly enclosure forward a few inches
    by reaching into the open system chassis area and pushing the enclosure
    forward. This action will expose the mass storage power cables
    (Figure 7-56).
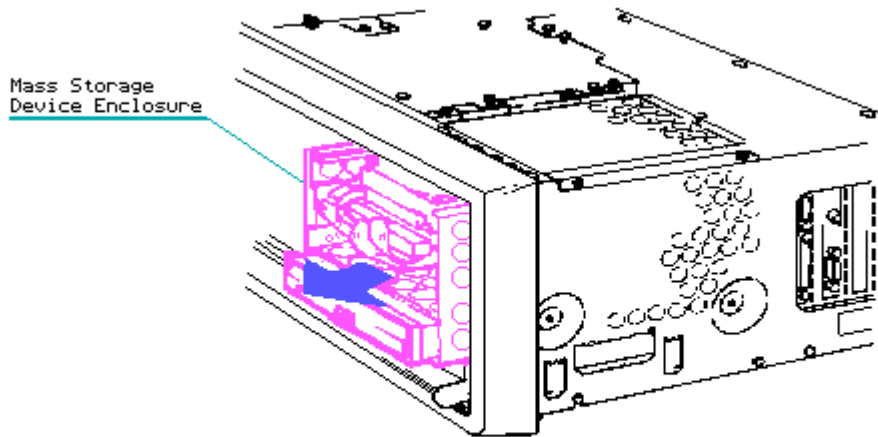
Figure 7-56.   Accessing the Diskette Drive and Fixed
Disk Drive Power Cable

6.   Disconnect the diskette drive and fixed disk drive power cable from the
system board (Figure 7-57).
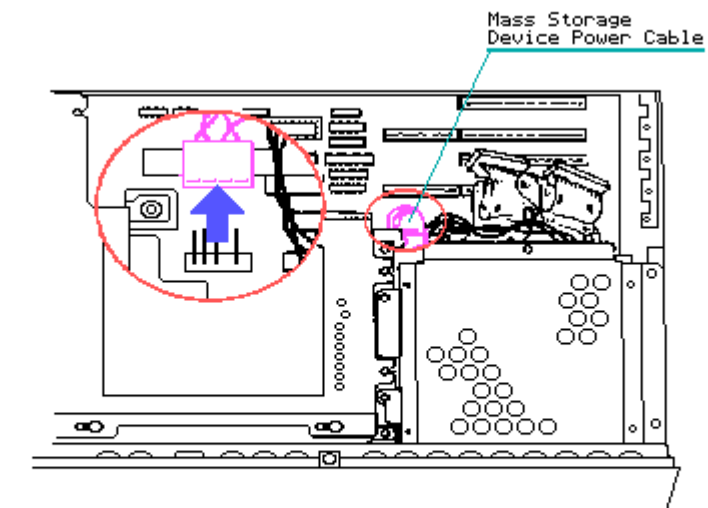
Figure 7-57.   Disconnecting the Mass Storage Device Power
Cables from the System Board

7.   Grasp the sides of the mass storage device subassembly enclosure firmly
and slide the enclosure out of the system chassis (Figure 7-58).
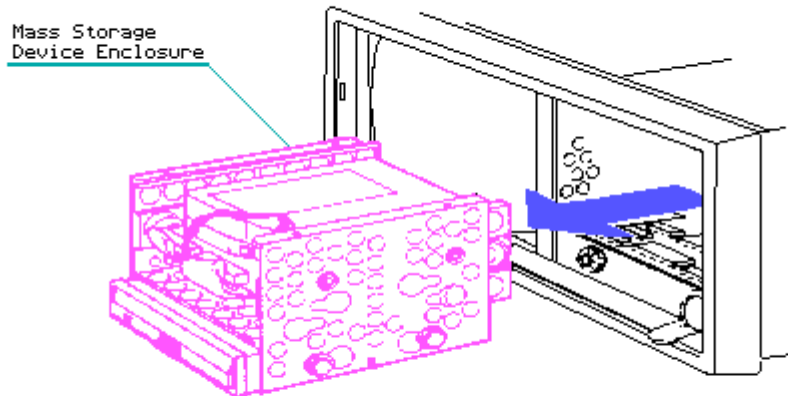
Figure 7-58.   Removing the Mass Storage Device
Subassembly Enclosure

To replace the mass storage device subassembly enclosure, reverse
steps 1 through 7.

Fixed Disk Drive

To remove the fixed disk drive assembly:

1.   Remove the mass storage device subassembly enclosure (see
     Section 7.22).

2.   Using a Torx screwdriver, remove the two shoulder bolts and vibration
     isolators from either side of the mass storage device subassembly
     enclosure. Slide the fixed disk drive assembly enclosure out of the mass
     storage device subassembly (Figure 7-59).
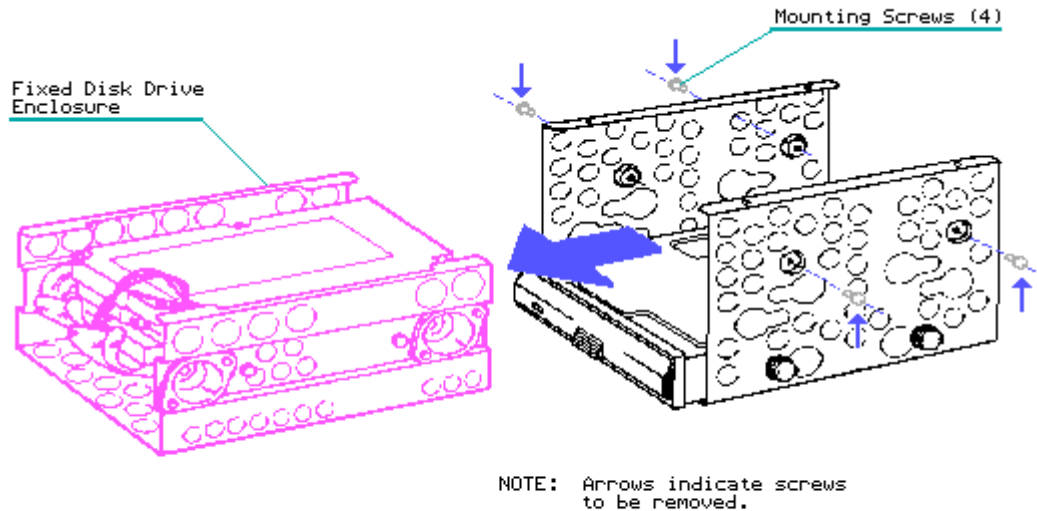
Figure 7-59. Removing the Fixed Disk Drive

NOTE: The fixed disk drive is mounted above the diskette drive.

To replace the fixed disk drive assembly, reverse steps 1 and 2.

Diskette Drive

To remove the diskette drive assembly, complete the following steps:

1. Remove the mass storage device subassembly enclosure (see
    Section 7.22).

2. Using a Torx screwdriver, remove the two shoulder bolts that secure the
    diskette disk drive assembly from either side of the mass storage device
    subassembly enclosure (Figure 7-60).

3. Slide the diskette drive assembly out of the mass storage device
    subassembly enclosure (Figure 7-60).
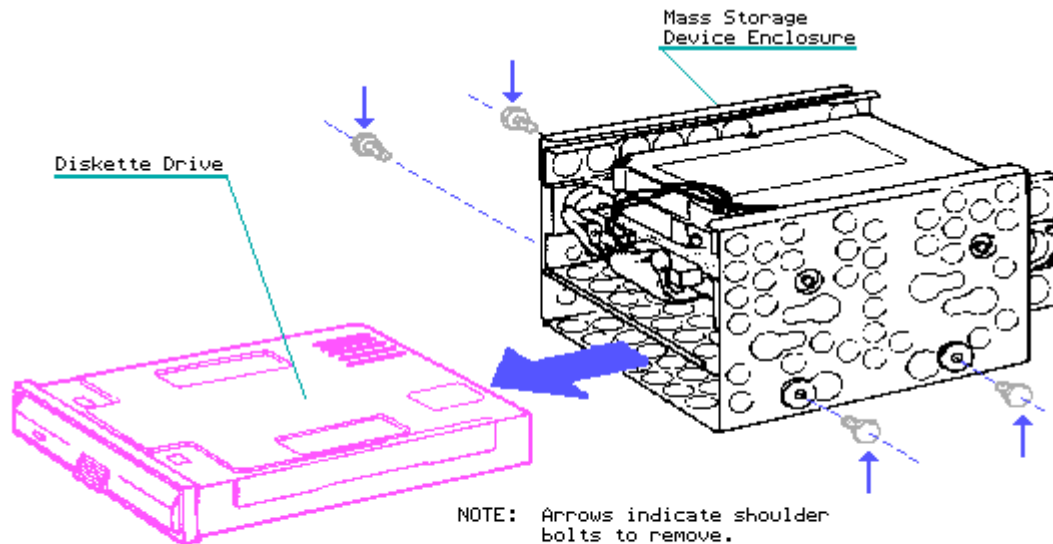
Figure 7-60. Removing the Diskette Drive

  NOTE: When removing the diskette drive, make sure the vibration isolators
  are not lost. You need to reinstall all four isolators when replacing the
  diskette drive assembly.

To replace the diskette drive assembly, reverse steps 1 through 3.

NOTE: When replacing a flip door style diskette drive with a push button
style diskette drive, you should also order a replacement drive bezel (PN
104059-001 (No longer available)) to provide a better fit for the new
diskette drive assembly.

Chapter 7.23 Speaker and Brightness Potentiometer

To remove the speaker and brightness potentiometer:

1. Remove the cable tray access plate (see Section 7.13).

2. Remove the mass store device enclosure (see Section 7.22).

3. Remove the front bezel (see Section 7.5).

4. The speaker is secured to the system chassis by a snap in mount and a
    toe in mount that extend through the system chassis. Remove the speaker
    by first disconnecting the speaker/brightness control connector from the
    J114 position on the system board, then pressing the snap in mount
    inward. At the same time, push the speaker out of the system chassis
    (Figure 7-61).
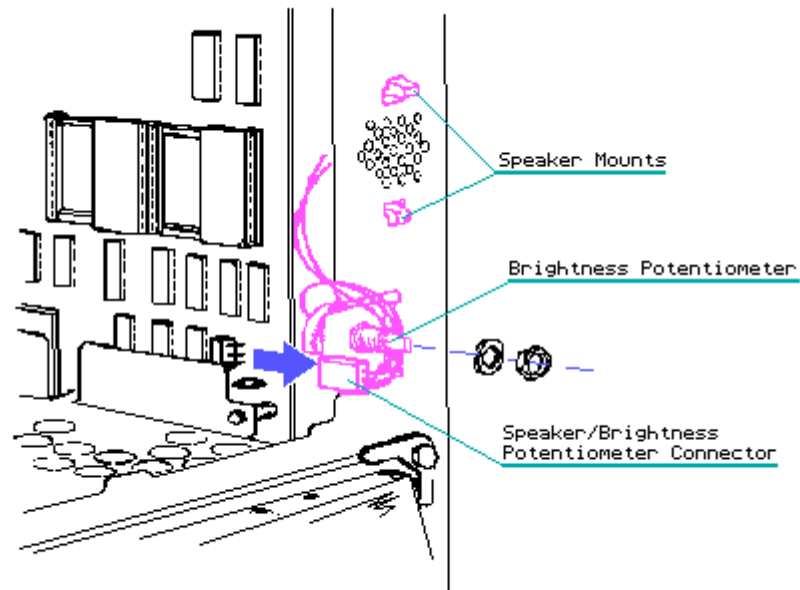
Figure 7-61. Disconnecting the Speaker/Brightness Control
Connector and Removing the Speaker

5. Remove the brightness potentiometer by first unscrewing the nut that
    secures it to the system chassis, then push the brightness potentiometer
    out of the system chassis (Figure 7-62).
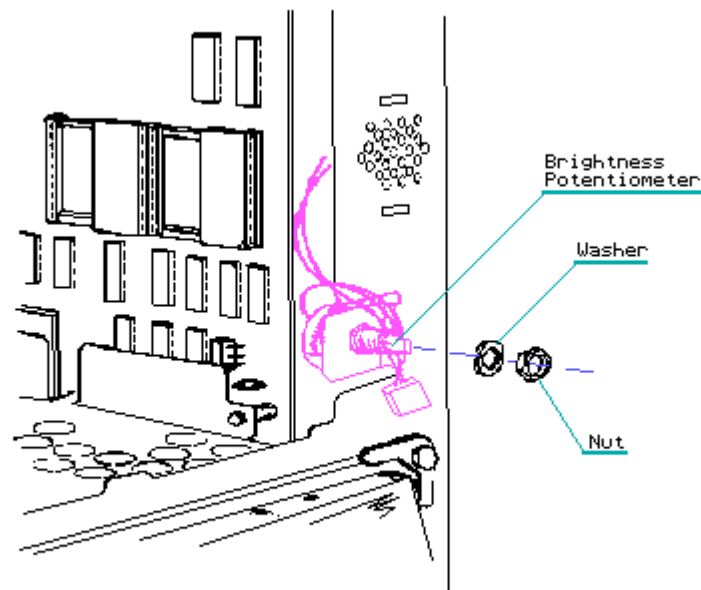
Figure 7-62. Removing the Brightness Potentiometer

To replace the speaker and the brightness potentiometer, reverse
steps 1 through 5.

Chapter 7.24 Video Display Unit

To remove the video display unit (VDU), complete the following steps:

1. Remove the keyboard assembly (see Section 7.4).

2. Disconnect the VDU power cable (Figure 7-63).
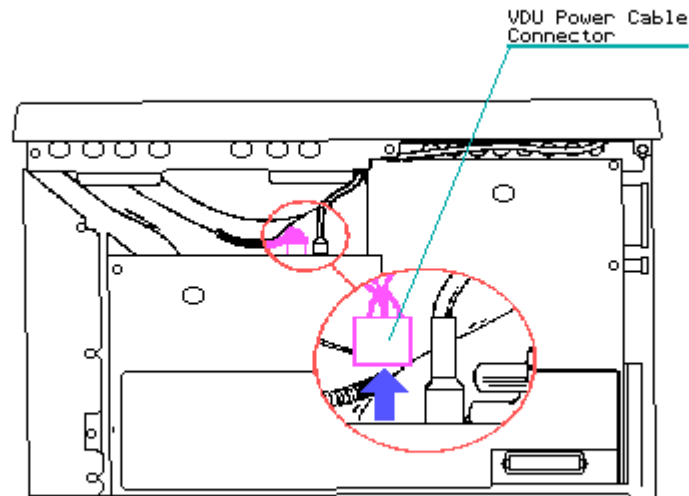
Figure 7-63. Disconnecting the VDU Power Cable

3. Lower the computer so that it appears as illustrated Figure 7-64.
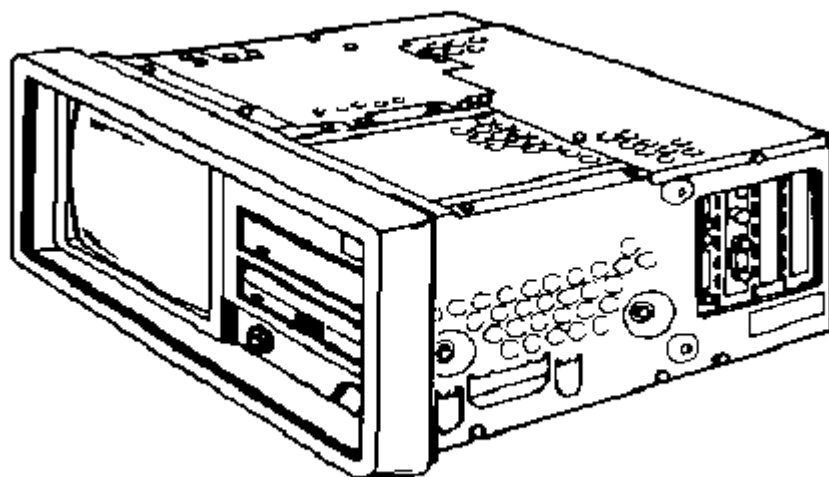
Figure 7-64. Returning the Computer to a Flat Position on the Work Surface

4. Remove the high voltage access plate (see Section 7.9).

5. Remove the front bezel (see Section 7.5)

6. Disconnect the VDU signal cable from the VDU (Figure 7-65).
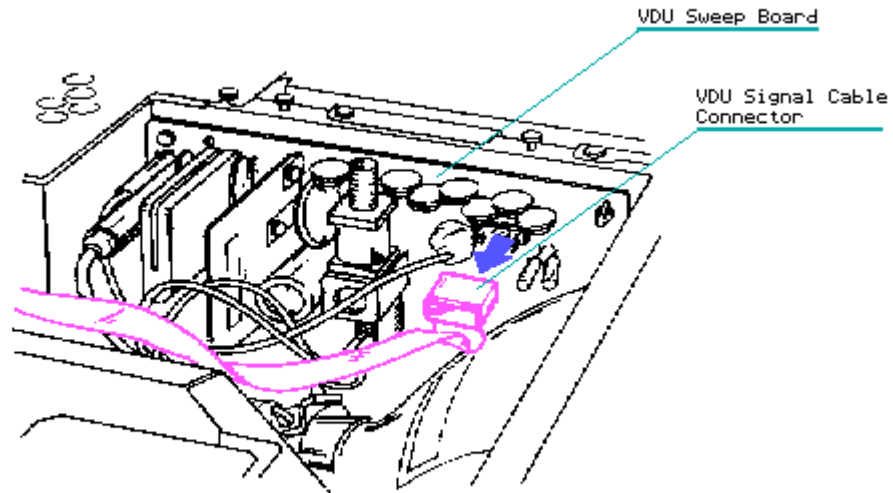
Figure 7-65. Disconnecting the VDU Signal Cable

7. The VDU high voltage cable is secured to the system chassis by a
    push mount with a snap connector at the end. Disconnect the VDU
    high voltage cable by first unsnapping the push mount and then removing
    the cable from its place inside the connector (Figure 7-66).
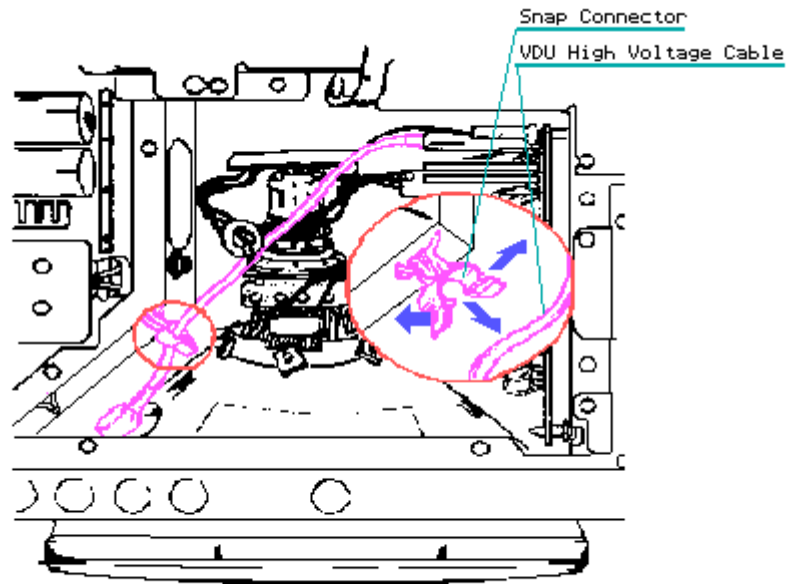
Figure 7-66. Disconnecting and Removing the VDU High Voltage Cable

8. The VDU sweep board is secured to the system chassis by five PCB stand off
    mounts and one screw. Using a Torx screwdriver, remove the grounding
    screw in the upper left corner of the VDU sweep board. To remove the VDU
    sweep, grasp the board and gently slide it upward until the standoffs
    clear the mounting holes. Once the VDU sweep board clears all standoffs,
    slide the board out of the mounting holes and let it come to rest on the
    side of the VDU (Figure 7-67).
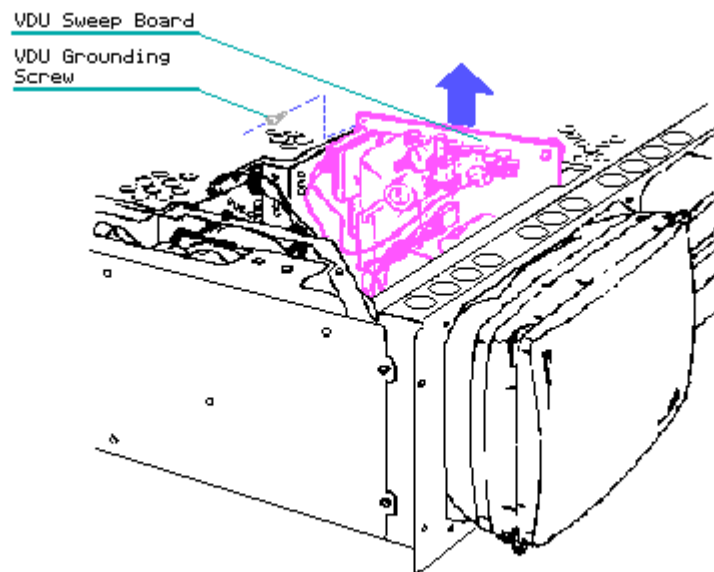
Figure 7-67. Removing the VDU Sweep Board

9. Remove the four screws from the front of the video display unit (Figure 7-68).

NOTE: Small arrows indicate
screws to remove.
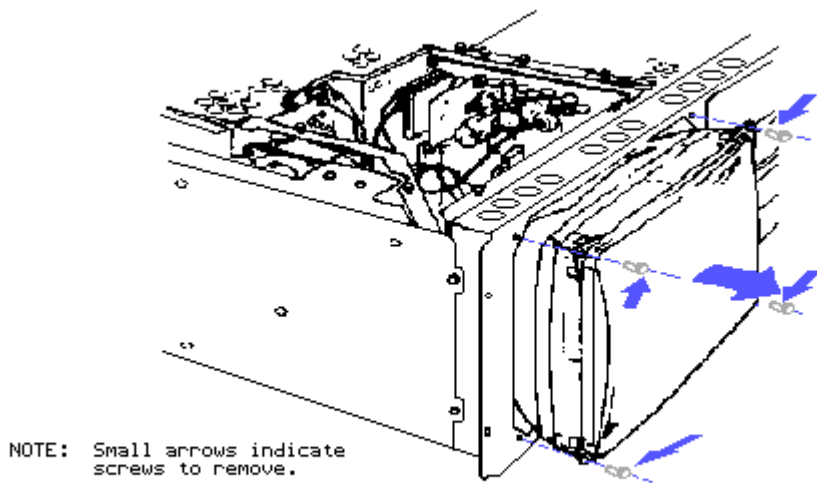
Figure 7-68. Removing the Four VDU Mounting Screws

10. Remove the VDU from the system chassis by grasping the display screen and
     the VDU sweep board and then sliding the unit until it is out of the
     system chassis (Figure 7-69).

Video Display Unit Assembly
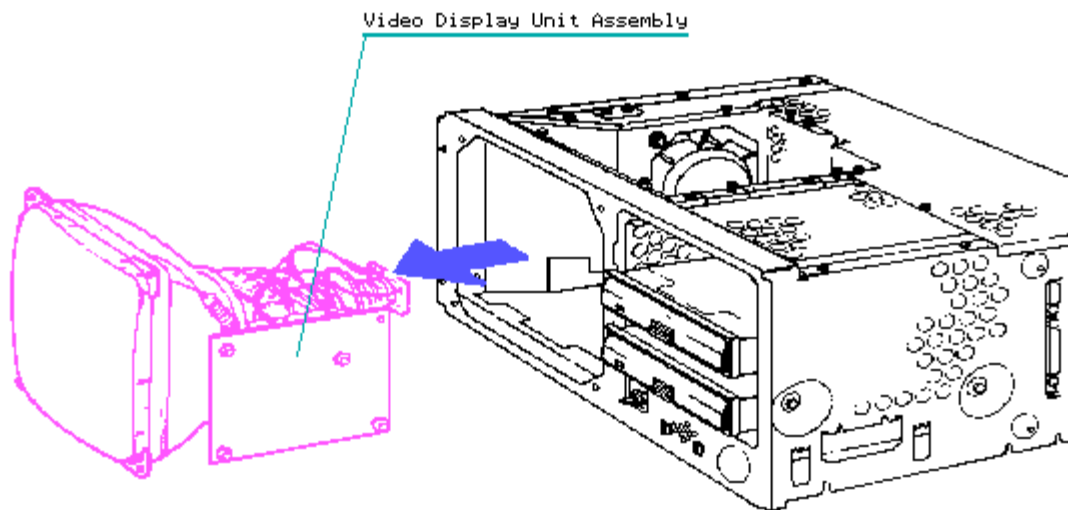
Figure 7-69. Removing the Video Display Unit from the System Chassis

If replacement is necessary, this unit may be shipped back to Compaq Computer
Corporation packed only in a Compaq Spare VDU box.

To replace the video display unit, reverse steps 1 through 10.

NOTE: When replacing the VDU assembly, replace the two top front mounting
screws first. This helps align the screen correctly.

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

                                   CAUTION

The video display unit is fragile; be careful when handling it. Be careful
not to disturb the VDU adjustment potentiometers on the VDU sweep board and
not to break the display tube.

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

Chapter 8. Jumper Settings, Switch Settings, and Adjustments

8.1 System Board Jumper Settings

Figure 8-1 shows the jumper locations on the COMPAQ PORTABLE II Version 1
system board. Refer to Table 8-1 when setting the jumpers on this board.

Figure 8-2 shows the jumper locations on the COMPAQ PORTABLE II Version 2
system board. Refer to Table 8-1 when setting the jumpers on this board.
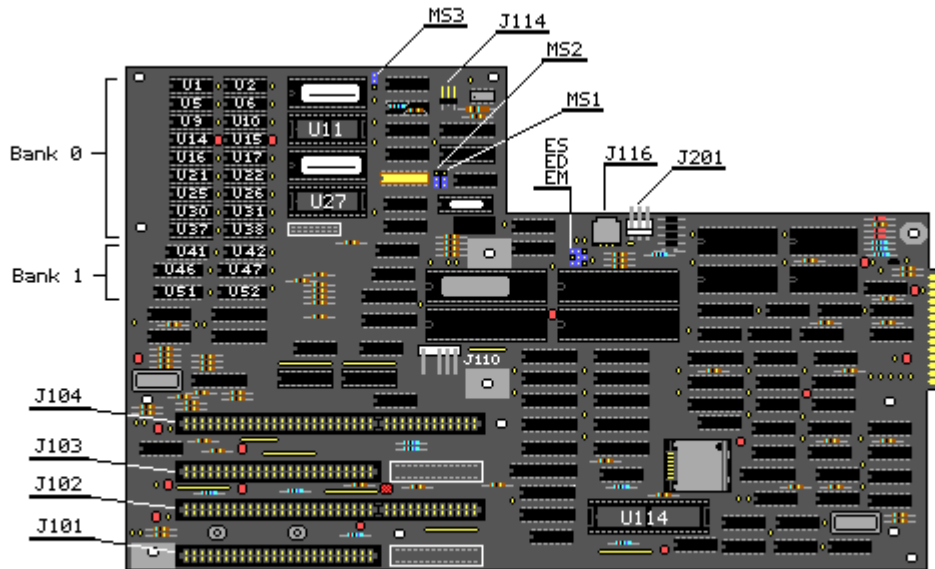
Figure 8-1. COMPAQ PORTABLE II Personal Computer System Board - Version 1   (Assy No. 000318)
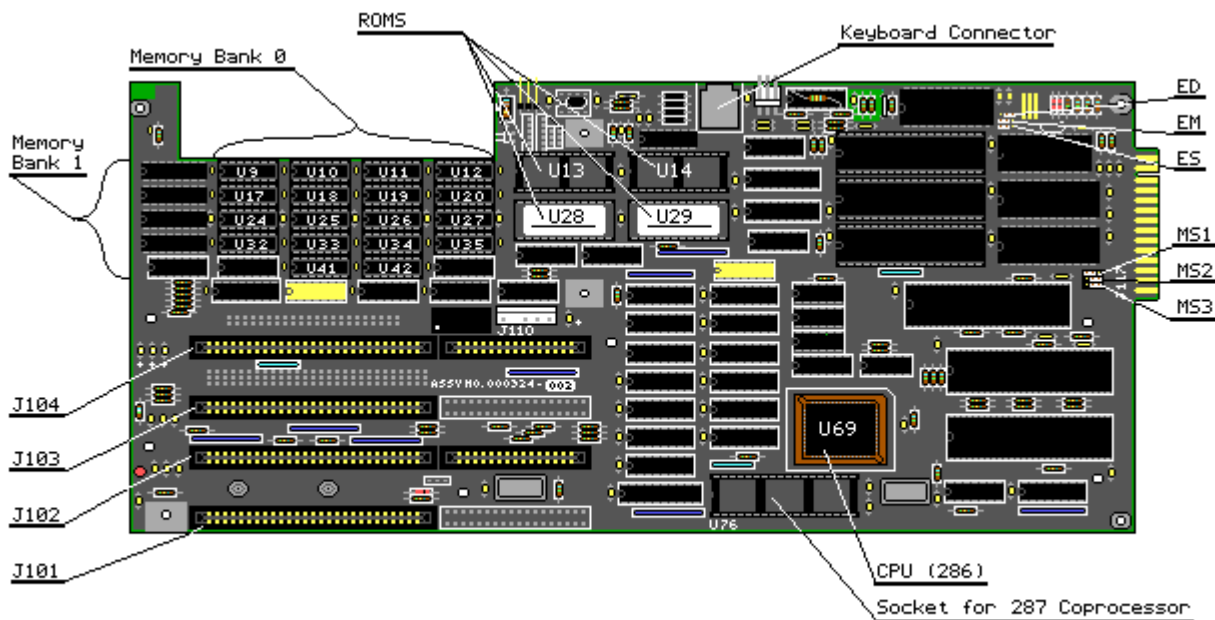
Figure 8-2. COMPAQ PORTABLE II System Board Version 2   (Assy No. 000324)

```
Table 8-1.  System Board Jumper Settings
================================================================================
Jumper                          Jumper
Location    Function            Setting
--------------------------------------------------------------------------------
ED          Video Display       Pins 1-2   Third party monochrome monitor
            Unit selection                 (MDA) installed
                                Pins 2-3   COMPAQ VDU, EGA, or RGBI installed
                                           (default)
--------------------------------------------------------------------------------
ES          Speed selection     Pins 1-2   Primary or fast speed, 8 MHz
                                           (default)
                                Pins 2-3   Secondary or common speed, 6 MHz
--------------------------------------------------------------------------------
EM          Reserved            DO NOT CHANGE SETTINGS
--------------------------------------------------------------------------------
MS1, MS2    System board        MS1 = G    disable memory and ROM
            memory selection    MS2 = G

                                MS1 = V    256 Kbyte memory installed
                                MS2 = G

                                MS1 = G    512 Kbyte memory installed
                                MS2 = V

                                MS1 = V    640 Kbyte memory installed (default)
                                MS2 = V
--------------------------------------------------------------------------------
MS3         Memory Board        MS3 = 1.0  1 Megabyte memory recognized
                                or V

            512/1536 Kbyte      MS3 = 1.5  1.5 Megabytes memory recognized
            memory selection    or G       (default)
================================================================================
```

Chapter 8.2 512/2048 KByte Memory Expansion Board Jumper Settings

```
The jumper settings on the 512/2048 Kbyte Memory Expansion Board correspond
to the amount of random access memory installed in the four banks on the
option board.  There are four possible memory configurations that expand the
memory address range from 1.0 megabyte to 3.0 megabytes.  Figure 8-3 shows
the component layout for the 512/2048 Kbyte Memory Expansion Board.
```
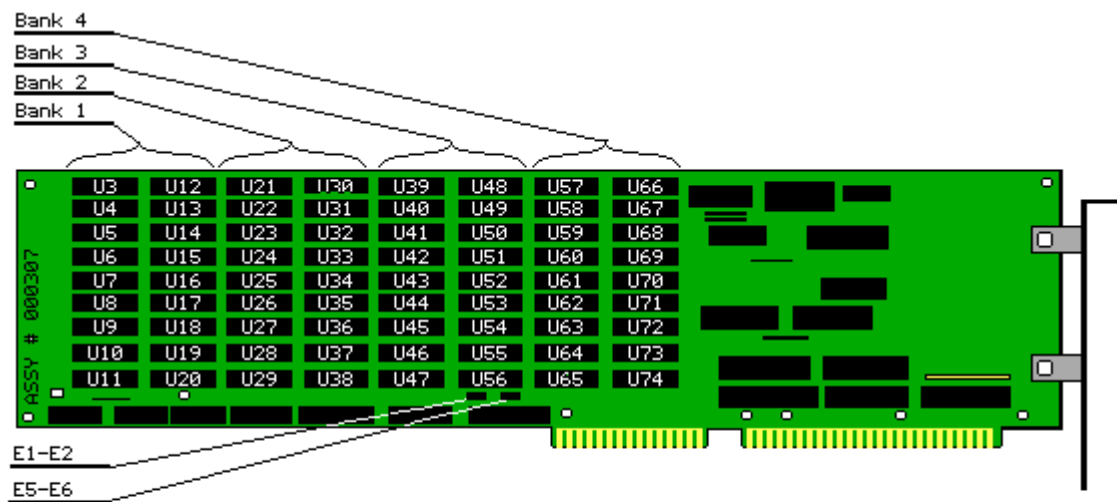
Figure 8-3a. 512/2048 Kbyte Memory Expansion Board (Assy No. 000307) (Part 1 of 2)
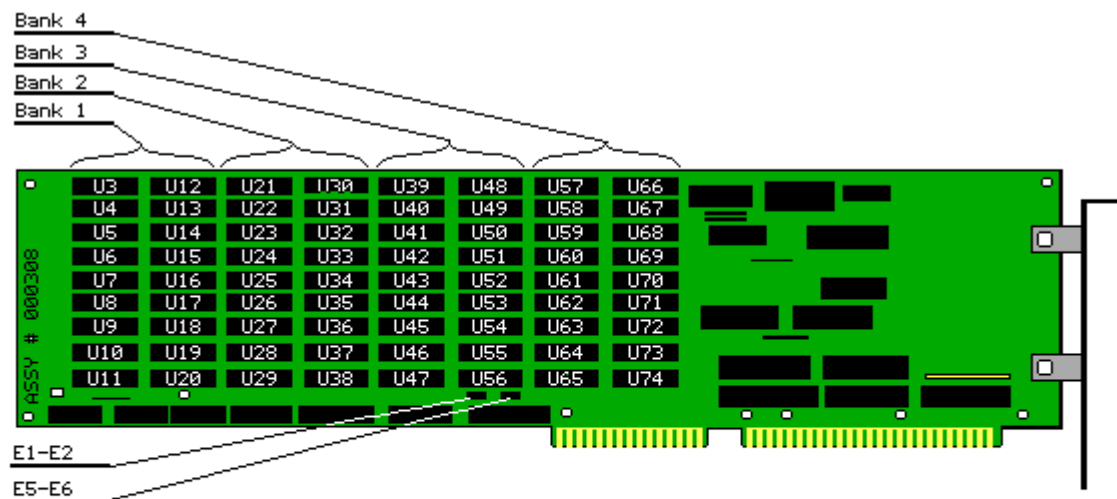
Figure 8-3b. 512/2048 Kbyte Memory Expansion Board (Assy No. 000308) (Part 2 of 2)

Refer to Tables 8-2 and 8-3 when setting the jumpers on the 512/2048 Kbyte Memory Expansion Board.

Table 8-2. 512/2048 Kbyte Memory Expansion Board Jumper Settings
==
Settings   Address Range *

E1 to E2, E5 to E6   1 to 3 megabyte
E1 to E2, E4 to E5   2.5 to 4.5 megabyte
----
* Memory address range is dependent on system memory board configuration.

```
==============================================================================
Table 8-3.  512/2048 Kbyte Memory Expansion Board Memory Configuration for
Jumper Settings
==============================================================================
Banks Installed                            Resulting Expansion Memory
------------------------------------------------------------------------------
Bank 1                                     512 Kbytes
Banks 1 and 2                              1024 Kbytes
Banks 1,2 and 3                            1536 Kbytes
Banks 1, 2, 3, and 4                       2048 Kbytes
==============================================================================
```

Chapter 8.3 360 KByte Diskette Drive Switch Settings

```
Figure 8-4 shows the COMPAQ PORTABLE II 360 Kbyte Diskette Drive.  This
diskette drive contains an 8 position switch.  Refer to Table 8-4 when
setting switch positions.
```
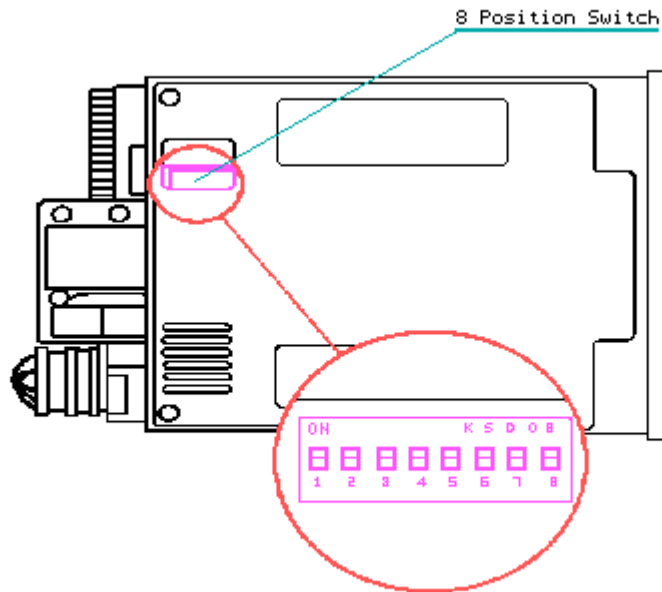

Figure 8-4. 360 Kbyte Diskette Drive

```
Table 8-4.  360 Kbyte Diskette Drive Switch Settings
==============================================================================
Switch Position           Function      Switch Setting
------------------------------------------------------------------------------
1                         Reserved      ON

2                         Reserved      OFF

3                         Reserved      ON

4                         Reserved      OFF

5                         Reserved      OFF
```

```
6                              Reserved    OFF

7                              Reserved    OFF

8                              Reserved    ON
================================================================================
```

Chapter 8.4 Multipurpose Controller Board Switch Settings

```
Figures 8-5 through 8-9 show the switch and jumper locations on the
Multipurpose Controller Boards and the Multipurpose Fixed Disk Drive
Controller Boards.  Refer to Tables 8-5 through 8-7 when setting the switches
and jumpers.


Table 8-5.  Multipurpose Controller Board Switch and Jumper Settings
================================================================================
Jumper    Pin 1 to Pin 2                      Pin 2 to Pin 3
================================================================================
J1        Secondary diskette controller address   Primary diskette controller
                                                   address (default)

J2 *      Serial interface COM1               Serial interface COM2

J4 *      Serial interface IRQ4               Serial interface IRQ3

J3        Disable parallel interface          Enable parallel interface
--------------------------------------------------------------------------------
* J2 and J4 must be changed together.
================================================================================
```
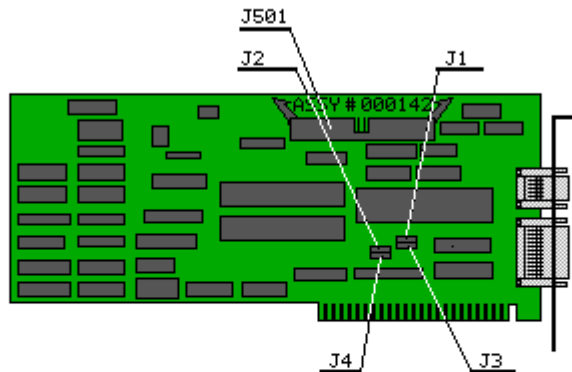

Figure 8-5. Multipurpose Controller Board Switch
and Jumper Settings (Assy No. 000142)

```
Table 8-6.  Multipurpose Fixed Disk Drive Controller Board Switch and Jumper
```

```
Settings (Assy Nos. 000181-001, 000181-021, 000336-001, and 000336-021)
==============================================================================
Jumper/Switch  Setting                   Function
------------------------------------------------------------------------------
J1             Open connectors on left   Serial interface COM1 IRQ4 (default)
               Open connectors on right  Serial interface COM2 IRQ3

J2             Open connectors on left   Primary diskette controller address
                                          (default)
               Open connectors on right  Secondary diskette controller address

SW1-1 *        ON                        Enable fixed disk drive
               OFF                       Disable fixed disk drive

SW1-2          ON                        Enable parallel interface (default)
               OFF                       Disable parallel interface

SW1-3 **       ON                        Enable serial interface (default)
               OFF                       Disable serial interface

SW1-4          OFF                       Reserved
------------------------------------------------------------------------------
*  SW1-1 reserved on Assy No. 000181 boards.
** SW1-3 reserved on Assy No. 000181-001 (all Revisions) and
   Assy No. 000336-001 Revision P or earlier boards.
==============================================================================
```
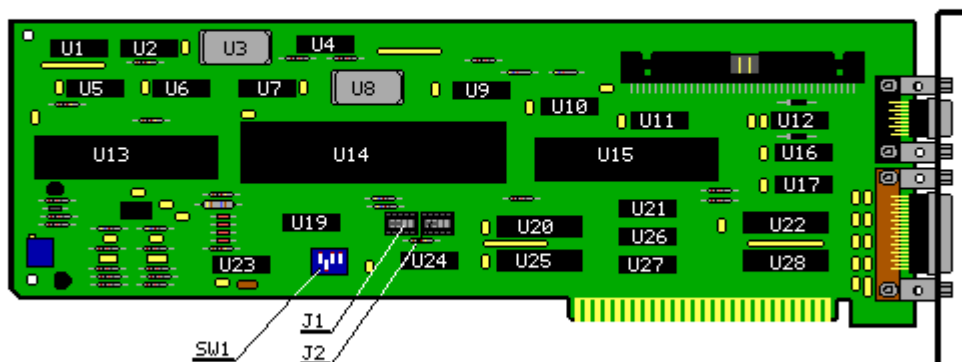

Figure 8-6. Multipurpose Controller Board Switch and
             Jumper Locations (Assy Nos. 000181-001 and 000181-021)
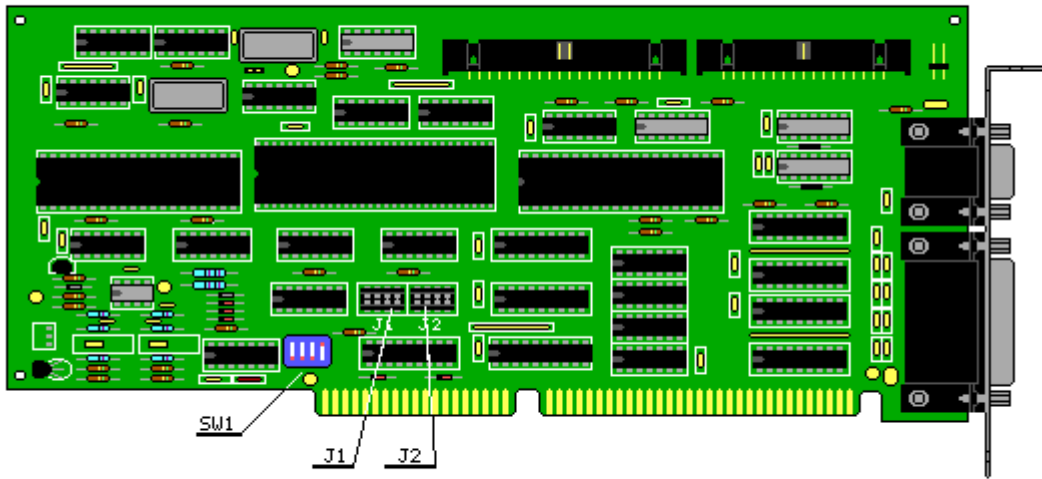
Figure 8-7. Multipurpose Fixed Disk Drive Controller Board Switch and Jumper Locations (Assy No. 000336)

Table 8-7. Multipurpose Fixed Disk Drive Controller Boards Switch and Jumper Settings (Assy Nos. 000519 and 000815)

```
===============================================================================
Switch     Setting    Function
-------------------------------------------------------------------------------
SW500-1    OFF        Primary diskette and fixed disk drive address select
                         (default)
           ON         Secondary diskette and fixed disk drive address select

SW500-2    OFF        Disable high speed transfer rates for systems without
                         1.2 megabyte diskette drive
           ON         Enable high speed transfer rates for systems with
                         1.2 megabyte diskette drive (default)

SW500-3    OFF        Enable fixed disk drive (default)
           ON         Disable fixed disk drive

SW500-4    OFF        Serial interface COM1 IRQ4 (default)
           ON         Serial interface COM2 IRQ3

SW500-5    OFF        Enable serial interface (default)
           ON         Disable serial interface

SW500-6    OFF        Enable printer interface (default)
           ON         Disable printer interface
===============================================================================
```
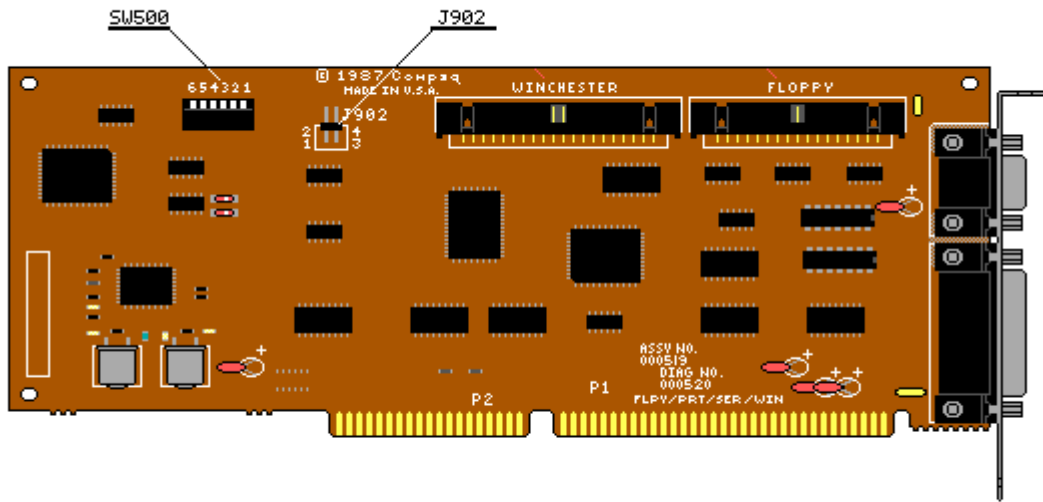
Figure 8-8. Multipurpose Fixed Disk Drive Controller Board Switch and Jumper Locations (Assy No. 000519)
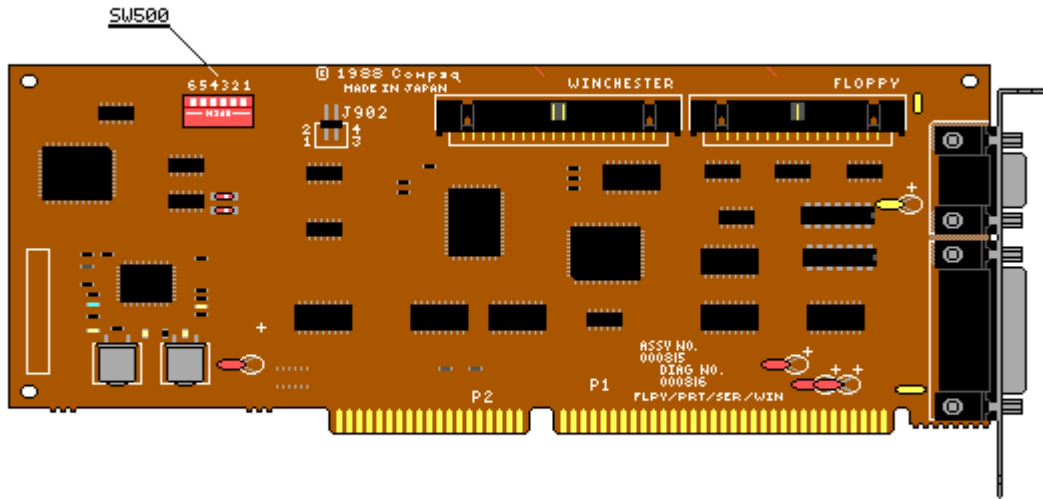
Figure 8-9. Multipurpose Fixed Disk Drive Controller Board Switch and Jumper Locations (Assy No. 000815)

Chapter 8.5 Fixed Disk Drive Controller Board

Figure 8-10 shows the jumper locations for the Fixed Disk Drive Controller
Board (Assy No. WD1003IWH). Refer to Table 8-8 when setting the jumpers.

Table 8-8. Fixed Disk Drive Controller Board Jumper Settings
(Assy No. WD1003IWH)
===
Jumper   Pin   Function

```
--------------------------------------------------------------------------
W1                                Reserved

W2                                Reserved

W3                   1-2          20 Megabyte Fixed Disk Drive
                     2-3          10 Megabyte Fixed Disk Drive

W4                                Reserved
==========================================================================
```
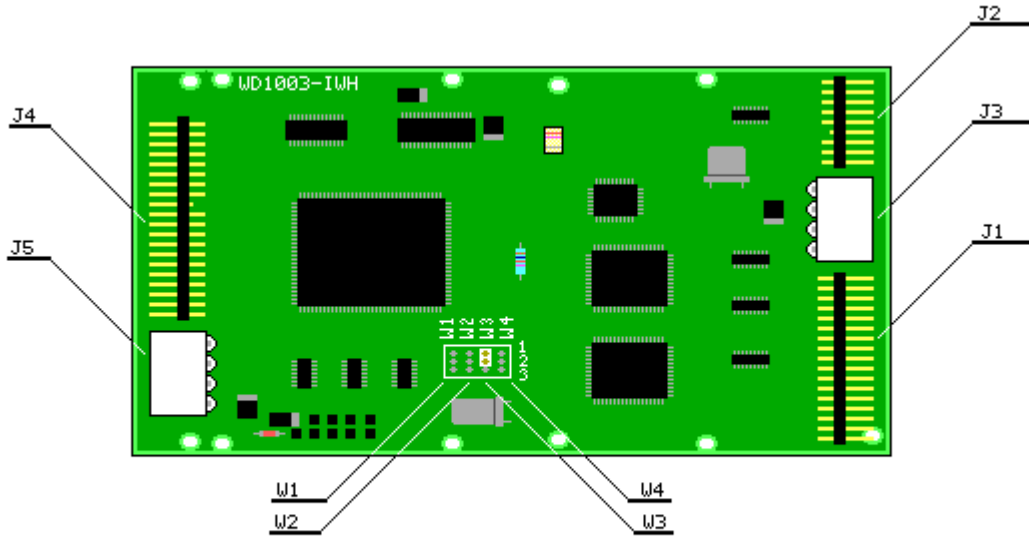
Figure 8-10. Fixed Disk Drive Controller Board Jumper Locations (Assy No. WD1003IWH)

Chapter 8.6 Video Display Controller Board Jumper Settings

```
Figures 8-11 through 8-14 show the jumper locations on the Video Display
Controller Board.  Refer to Tables 8-9 and 8-10 when setting the jumpers.


Table 8-9.  Video Display Controller Board Switch and Jumper Settings
(Assy Nos. 000031, 000160, and 000345)
==========================================================================
J3               J5         Function
--------------------------------------------------------------------------
2-3              2-3        Enable RGBI and composite video - high scan

1-2              1-2        Disable RGBI and composite video - high scan
                           (default)
==========================================================================

Table 8-10.  Video Display Controller Board Jumper Settings
(Assy No. 000525)
==========================================================================
Jumper
Location    Function                                Jumper Setting
```

```
--------------------------------------------------------------------------------
J3/J5          RGB enable/disable (high scan)    Pin 1 to Pin 2 - Disables RGB
                                                 and composite video

                                                 Pin 2 to Pin 3 - RGB and
                                                 composite video enable
================================================================================
```
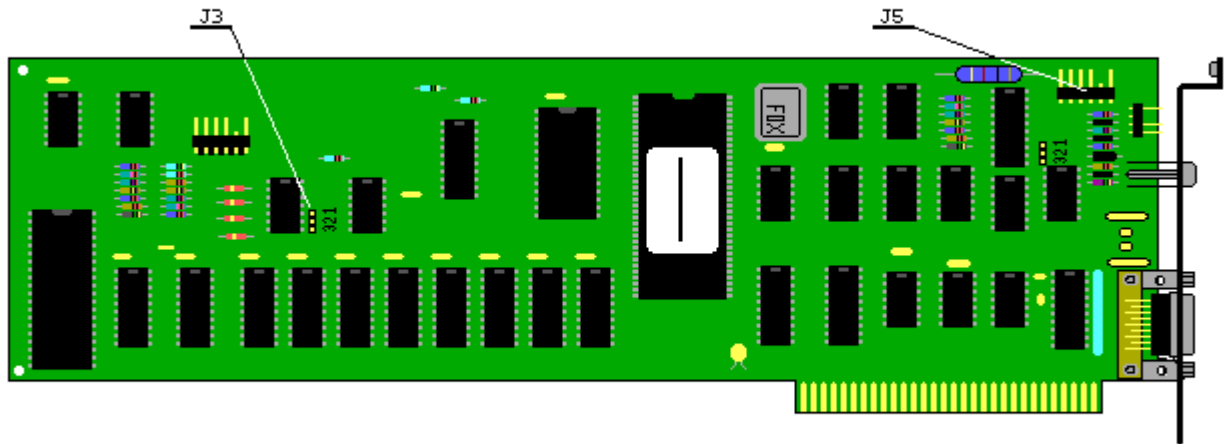

Figure 8-11. Video Display Controller Board Jumper Locations (Assy No. 000031)
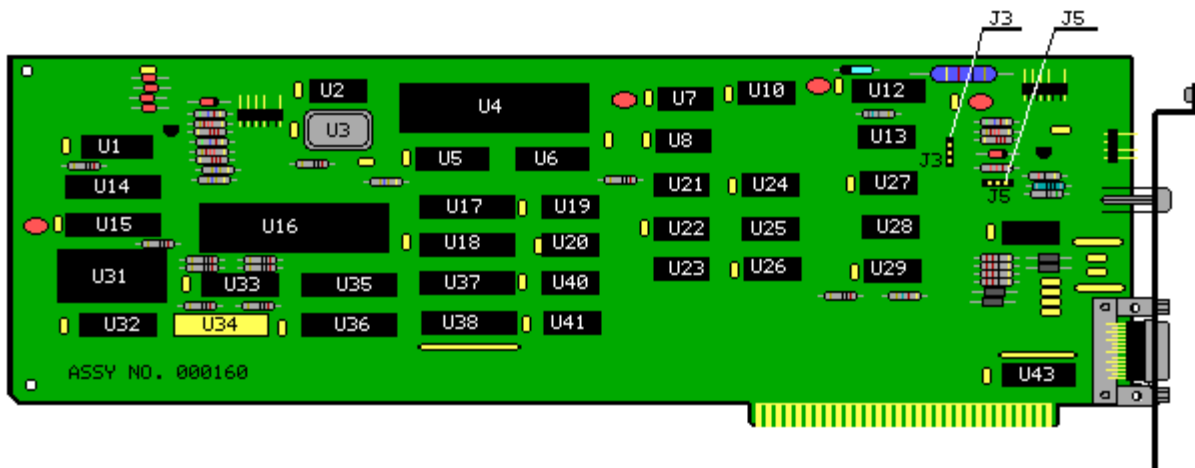
Figure 8-12. Video Display Controller Board Jumper Locations (Assy No. 000160)
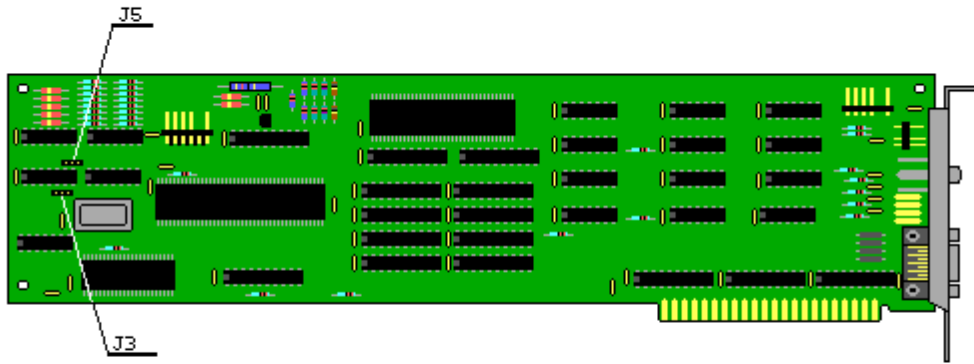
Figure 8-13. Video Display Controller Board Jumper Locations (Assy No. 000345)
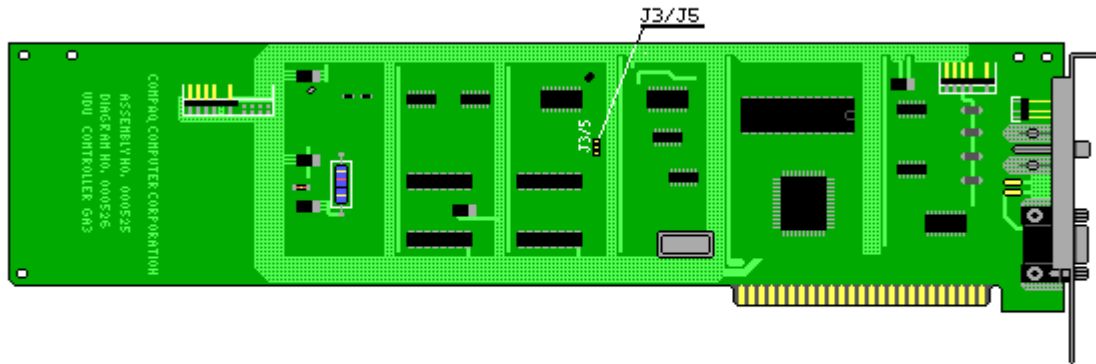
Figure 8-14. Video Display Controller Board Jumper Locations (Assy No. 000525)

Chapter 8.7 Enhanced Color Graphics Board Switch and Jumper Settings

Figures 8-15 and 8-16 show the switch and jumper locations on the Enhanced
Color Graphics Boards. Refer to Table 8-11 when setting the switches and
jumpers.

Table 8-11. Enhanced Color Graphics Board Switch Settings
(Assy Nos. 000410 and 000471)
==

```
SW1 Settings (As the Only or Primary Video Display Controller Board)
1    2    3    4      Monitor Type                    Power On Mode   Mode
-------------------------------------------------------------------------------
OFF  ON   ON   OFF    COMPAQ Color, Compatible        80 x 25         Color
                      Enhanced Color or COMPAQ        (640 x 350)
                      Dual Mode

ON   ON   ON   OFF    COMPAQ Color, Compatible        80 x 25         Color
                      Enhanced Color or COMPAQ        (640 x 200)
                      Dual Mode

OFF  OFF  OFF  ON     RGBI Color or COMPAQ Dual       80 x 25         Color
                      Mode                            (640 x 200)

ON   OFF  OFF  ON     RGBI Color or COMPAQ Dual       40 x 25         Color
                      Mode                            (320 x 200)

OFF  OFF  ON   OFF    COMPAQ Dual Mode                80 x 25         Monochrome
                                                      (720 x 350)

OFF  OFF  ON   ON     COMPAQ Color, Compatible        80 x 25         Color
                      Enhanced Color or COMPAQ        (640 x 350)
                      Dual Mode

ON   OFF  ON   ON     COMPAQ Color, Compatible        80 x 25         Color
                      Enhanced Color or COMPAQ        (640 x 200)
                      Dual Mode

OFF  ON   ON   ON     RGBI Color or COMPAQ Dual       80 x 25         Color
                      Mode                            (640 x 200)

ON   ON   ON   ON     RGBI Color or COMPAQ Dual       40 x 25         Color
                      Mode                            (320 x 200)

OFF  ON   OFF  ON     COMPAQ Dual Mode                80 x 25         Monochrome
                                                      (720 x 350)
-------------------------------------------------------------------------------
SW2 Settings
1    2    3    4    5    6    Monitor Type
-------------------------------------------------------------------------------
OFF  OFF                      COMPAQ Color or Compatible Enhanced Color
                              (external)
ON   OFF                      RGBI Color (external)
OFF  ON                       COMPAQ Dual Mode (external)
ON   ON                       No external (Portables)

          OFF                 COMPAQ Dual Mode internal
          ON                  No internal (Desktops)

               ON   OFF  ON   Reserved
-------------------------------------------------------------------------------
NOTE: SW3 Settings (Assy No. 000410 only): If installed, all OFF (Reserved)
-------------------------------------------------------------------------------
Jumper P1 (External Monitor)
-------------------------------------------------------------------------------
Pins                    Monitor Type
----                    ------------
1 - 2                   COMPAQ Color or Enhanced Color

2 - 3                   RGBI Color or COMPAQ Dual Mode
```

```
------------------------------------------------------------------------
Jumper JP3
------------------------------------------------------------------------
Pins                    Address Select
----                    --------------
1 - 2                   3xxh (default)

2 - 3                   2xxh
========================================================================
```
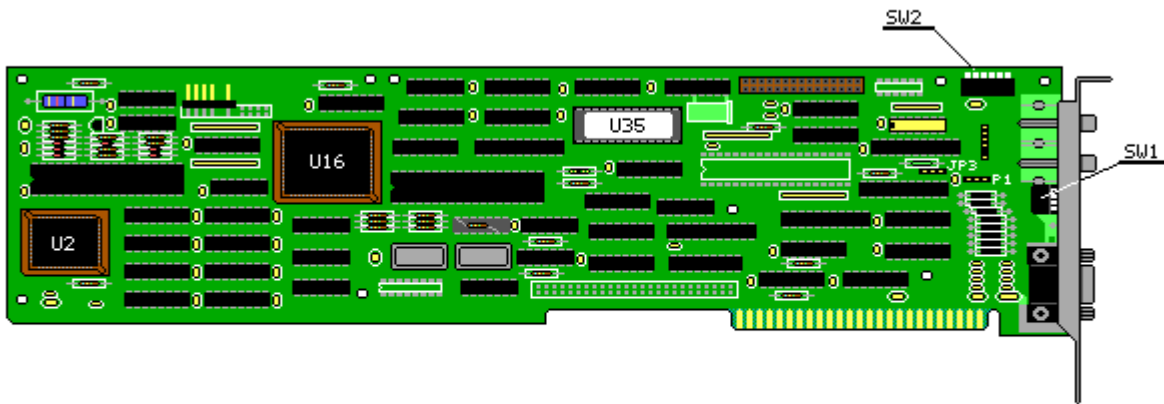

Figure 8-15. Enhanced Color Graphics Board Switch and Jumper Locations (Assy No. 000410)
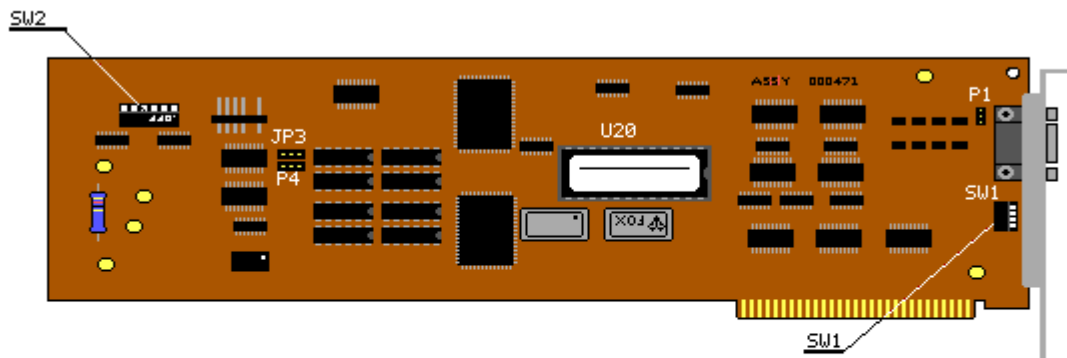
Figure 8-16. Enhanced Color Graphics Board Switch and Jumper Locations (Assy No. 000471)

Chapter 8.8 Serial/Parallel Interface Board Switch Settings

Figures 8-17 and 8-18 show the switch locations on the Serial/Parallel
Interface Board. Refer to Tables 8-12 and 8-13 when setting the switches.

Table 8-12. Serial/Parallel Interface Board Switch Settings (Assy No. 000570)
===
1	2	3	4	5	6	Function
OFF						Reserved
	ON					Enable asynchronous interface
	OFF					Disable asynchronous interface
		ON	ON			Parallel printer interface LPT1
		OFF	ON			Parallel printer interface LPT2
		ON	OFF			Parallel printer interface LPT3
		OFF	OFF			Disable parallel printer interface
				ON	ON	Asynchronous interface COM1
				OFF	ON	Asynchronous interface COM2
===
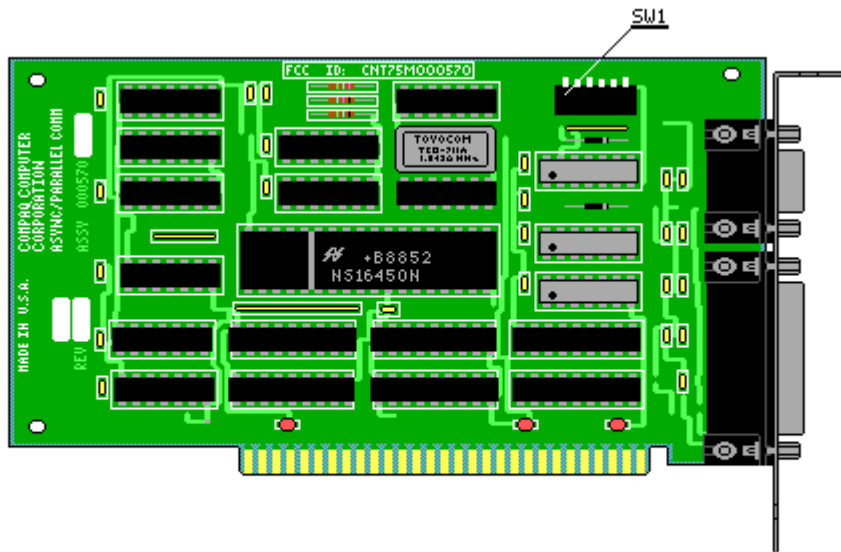
Figure 8-17. Serial/Parallel Interface Board Switch Location (Assy No. 000570)

Table 8-13. Serial/Parallel Interface Board Switch Settings (Assy No. 000990)
===
1	2	3	4	5	6	Function
OFF						Reserved
	OFF					Reserved
		ON	ON			Parallel printer interface LPT1

```
                   OFF     ON                         Parallel printer interface LPT2
                   ON      OFF                        Parallel printer interface LPT3
                   OFF     OFF                        Disable  parallel printer interface

                                    ON      ON        Asynchronous interface COM1
                                    OFF     ON        Asynchronous interface COM2
                                    OFF     OFF       Disable asynchronous interface
================================================================================
```
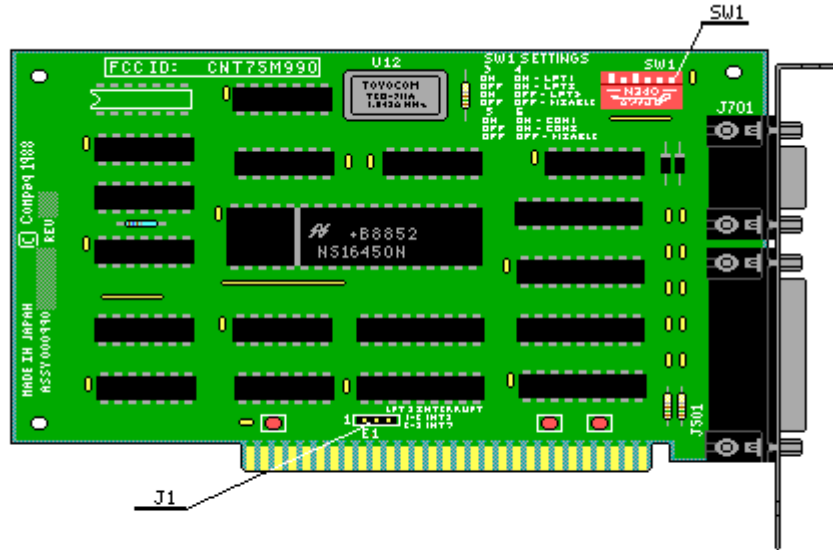

Figure 8-18.   Serial/Parallel Interface Board Switch
               and Jumper Locations (Assy No. 000990)

Chapter 8.9 Video Display Unit Adjustments

The video display unit adjustment (also referred to as CRT adjustment)
provides the method for performing any required video display adjustment on
your COMPAQ PORTABLE II Personal Computer. To complete the adjustment
procedure, the following equipment is required:

o All tools normally required to service a COMPAQ PORTABLE II Personal
   Computer (see Preface)

o DIAGNOSTICS diskette

o Set of standard television adjustment tools

o COMPAQ PORTABLE II Personal Computer display template (PN 100686-003)

The video display adjustment procedure is arranged in a step by step outline.
Read the entire procedure carefully before starting the procedure. Complete
each step before continuing to the next step.

CRT Adjustment Procedure:

1. Remove the outer access casing. See Chapter 7 in this guide for the
   procedure.

2. Place your COMPAQ PORTABLE II Personal Computer in a standard working
   position with the outer access casing removed (Figure 8-19).
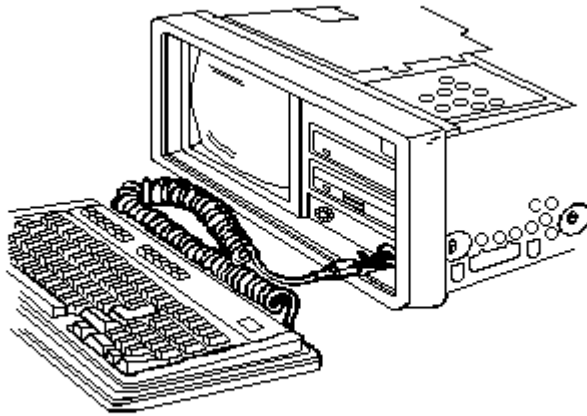
Figure 8-19. Standard Working Position

3. Insert the DIAGNOSTICS diskette in the COMPAQ PORTABLE II Personal
   Computer and load the DIAGNOSTICS program. (Refer to Chapter 4 in this
   guide for more information on the COMPAQ PORTABLE II Personal Computer
   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 (Figure 8-20.)
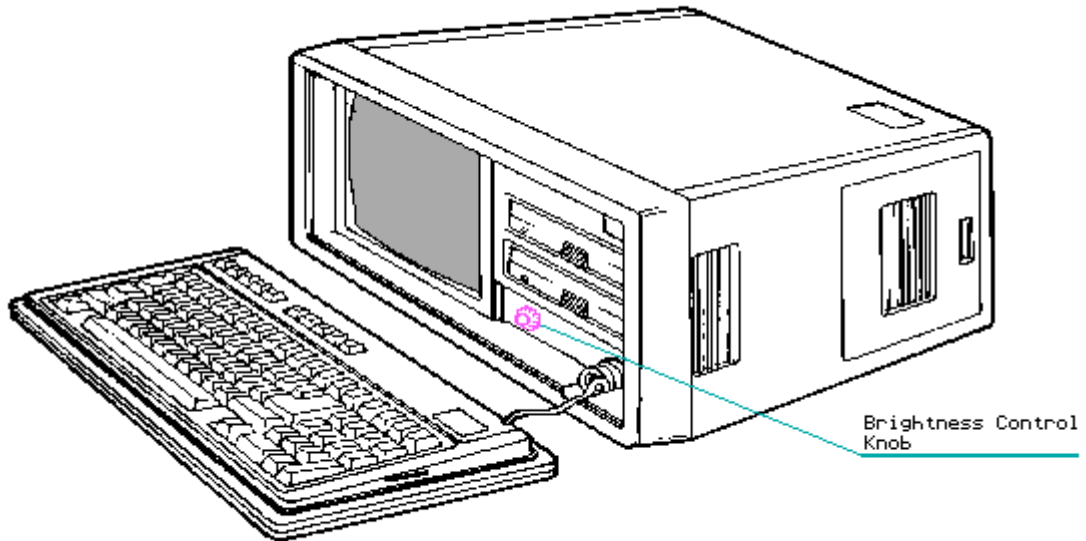
Figure 8-20. Location of Brightness Control Knob

6. 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 (Figure 8-21.)

   NOTE: Do not use excessive force when making adjustments on the video display unit.
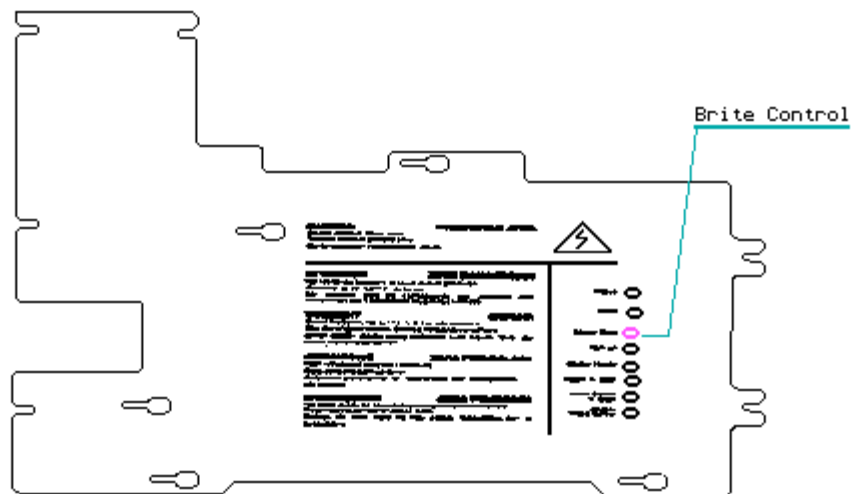
Figure 8-21. Adjusting the CRT BRITE Control

7. Turn the brightness control knob until the raster disappears.

8. Using the VDU adjustment procedure contained in the DIAGNOSTICS program, fill the display screen with a character (refer to Chapter 4 in this guide for more information on the VDU alignment test screen).

9. Using a plastic adjustment tool, turn the WIDTH adjustment potentiometer 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 appropriately (Figure 8-22).

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

Figure 8-22. Adjusting the CRT Width Control

10. If the characters on your display are not sharp and clear, a focus adjustment is necessary. Using a plastic adjustment tool, adjust the potentiometer labeled FOCUS until all characters are clear and sharp (Figure 8-23).

    NOTE: Do not use excessive force when making adjustments on the video display unit.
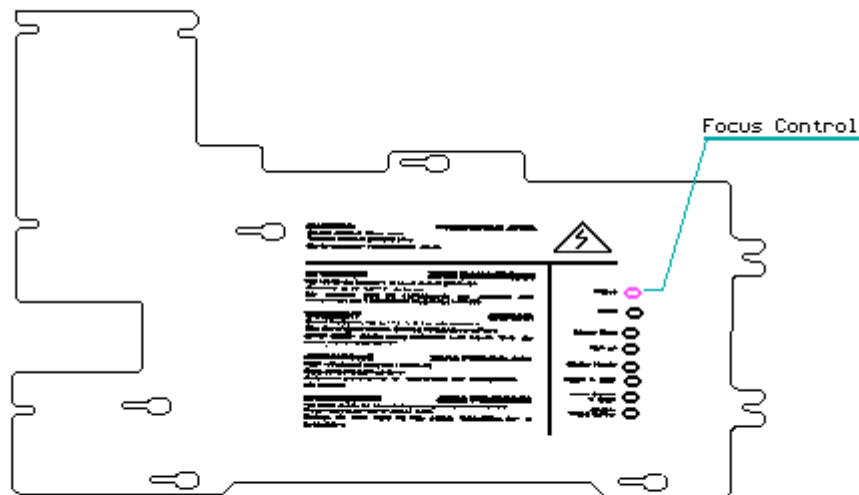
Figure 8-23. Adjusting the Focus Control

11. If the characters on your display appear too short or too tall, adjust
     the character height. Using the VDU adjustment DIAGNOSTIC program, fill
     the screen with capital Es (Figure 8-24). See Chapter 4 in this guide
     for more information on the VDU adjustment program.
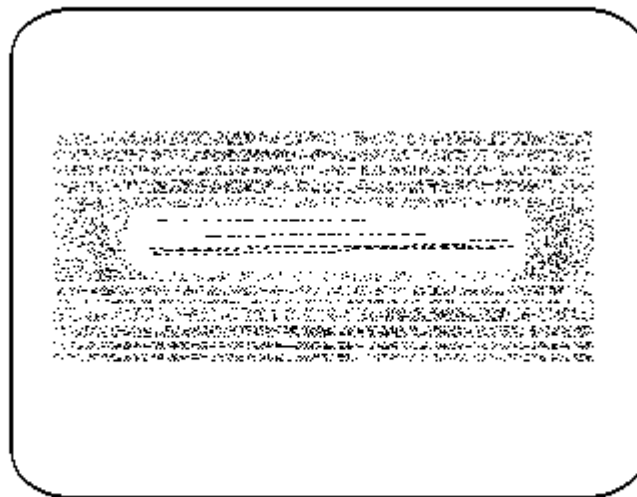
Figure 8-24. Character Height Adjustment

12. Two adjustments control the character height. The first is the master
     height control potentiometer, which controls the height of characters in
     both the high and low resolution modes. The second is the high scan
     height control potentiometer, which controls the height of characters

only while the computer is in a high resolution text mode. (Refer to Figure 8-25 for the location of both control potentiometers.)
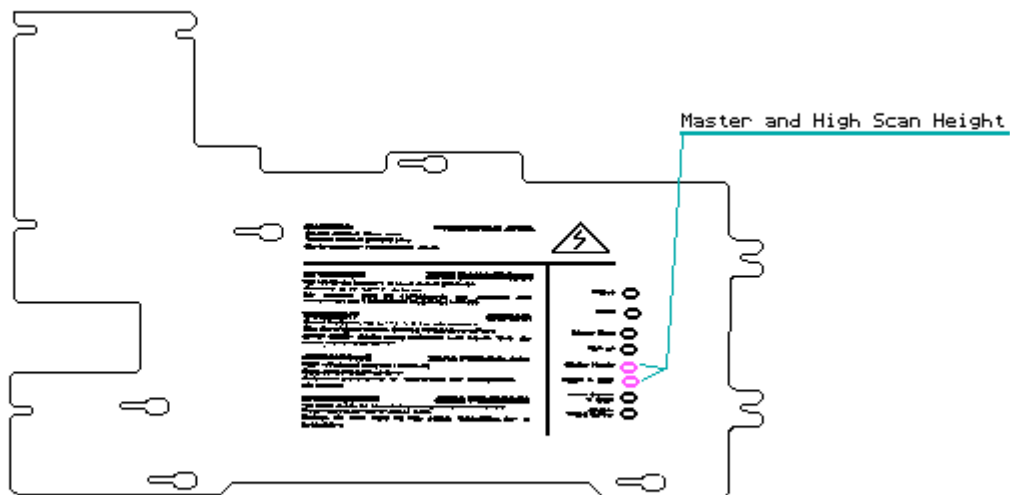
Figure 8-25. Location of Master Height and High Scan Height Control Potentiometers

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

13. Use the CTRL + ALT + < command to place the display in the low resolution graphics mode. Press and hold the CTRL and ALT keys while pressing the less than (<) key. Then release all three keys. Using the adjustment tool, adjust the master height control potentiometer so that all characters appear at the desired height.

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 high resolution mode. Press and hold the CTRL and ALT keys while pressing the greater than (>) key. Then release all three keys. Using the adjustment tool, adjust the high scan height control potentiometer so that all characters appear at the desired height.

15. If characters near the top of the display appear taller or shorter than those near the bottom of the display, a linearity adjustment is necessary. Using the VDU adjustment DIAGNOSTIC program, fill the screen with capital Es (Figure 8-24 above). See Chapter 4 in this guide for more information on the VDU adjustment program.

16. Using a plastic adjustment tool, turn the vertical linearity control potentiometer until all characters appear equal in height.

NOTE:

o This adjustment may affect the character height enough to warrant a readjustment for character height.

> o If the vertical linearity control does not exist on your video display
>   unit, it is preset and controlled by the video display unit.
>
> o Step 13 and 14 should be repeated after each adjustment until the
>   character height are equal.

17. If your display is shifted to the right or left, a horizontal display
     centering adjustment is necessary. Two potentiometers control the
     centering of the display. One is the master video center potentiometer,
     which shifts the display in both a high and low resolution mode. The
     other one is the high scan video center potentiometer, which affects the
     display in high resolution mode. (Refer to Figure 8-26 for the locations
     of both the master video center and high scan video center control
     potentiometers.)

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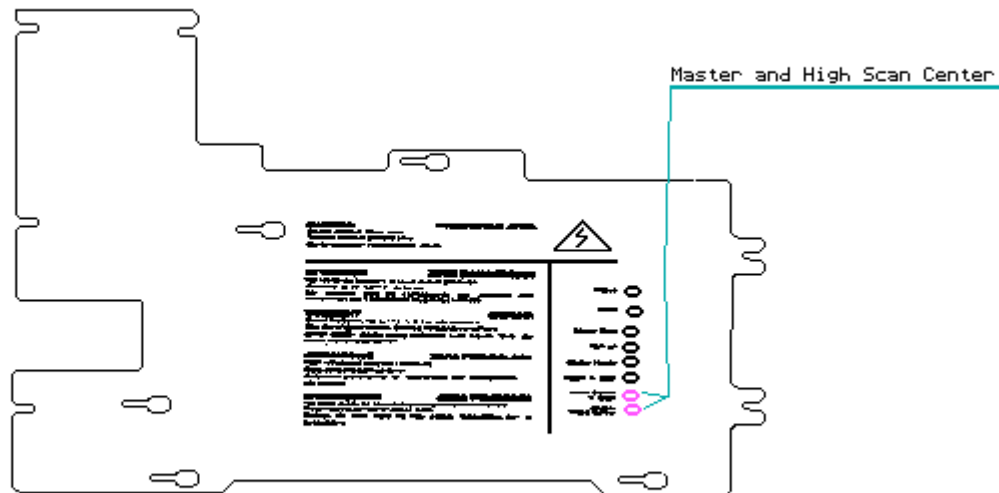   display unit.

Figure 8-26.   Location of the Master Video Center and
               High Scan Video Center Control Potentiometers

18. Use the CTRL + ALT + < command to place the display in the low
     resolution graphics mode. Use the adjustment tool, and adjust the master
     video center control potentiometer so that the display is in the center
     of the screen.

19. Use the CTRL + ALT + > command to place the display in the high
     resolution mode. Using the adjustment tool, adjust the high scan video
     center control potentiometer so that the display is in the center of the
     screen.

If your display experiences a problem other than those covered in the
previous 19 steps, replace the video display unit.

For video display unit removal and replacement procedures, refer to Chapter 7
in this guide.