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MAINTENANCE AND SERVICE GUIDE
COMPAQ DESKPRO 386N Personal Computer
COMPAQ DESKPRO 286N Personal Computer

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Compaq Computer Corporation

PREFACE

This Maintenance and Service Guide is a troubleshooting guide that can be used for reference when servicing either the COMPAQ DESKPRO 386N or COMPAQ DESKPRO 286N Personal Computers. Additional information is available in the *Support Software Maintenance and Service Guide, Options and Peripherals Maintenance and Service Guide,* and the *Technical Reference Guide.* Compaq Computer Corporation reserves the right to make changes to either the COMPAQ DESKPRO 386N or COMPAQ DESKPRO 286N Personal Computers without notice.

Symbols

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

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

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

! **IMPORTANT:** Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Technician Notes

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

CAUTION: To properly ventilate your system, you must provide at least 3 inches (7.6 cm) of clearance on the front and back of the computer.

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

Locating Additional Information

The following documentation is available to support these products:

- *Operations Guide*
- *Technical Reference Guide*
- *Maintenance and Service Guide*–Options and Peripherals
- *Maintenance and Service Guide*–Support Software
- *MS-DOS Reference Guide*
- *MS OS/2 Command Reference and User's Guide*
- *Advanced Configuration Reference*
- *BASIC Reference Guide*
- *COMPAQ Service Quick Reference Guide*
- *Service Training Guide*
- *COMPAQ Service Advisories and Bulletins*
- *How To Do Business with Compaq Customer Service*
- *Service Training Video*

CONTENTS

Chapter 1

SPECIFICATIONS

This chapter provides physical, environmental, and performance specifications for the COMPAQ DESKPRO 386N and COMPAQ DESKPRO 286N Personal Computers (Figure 1-1).

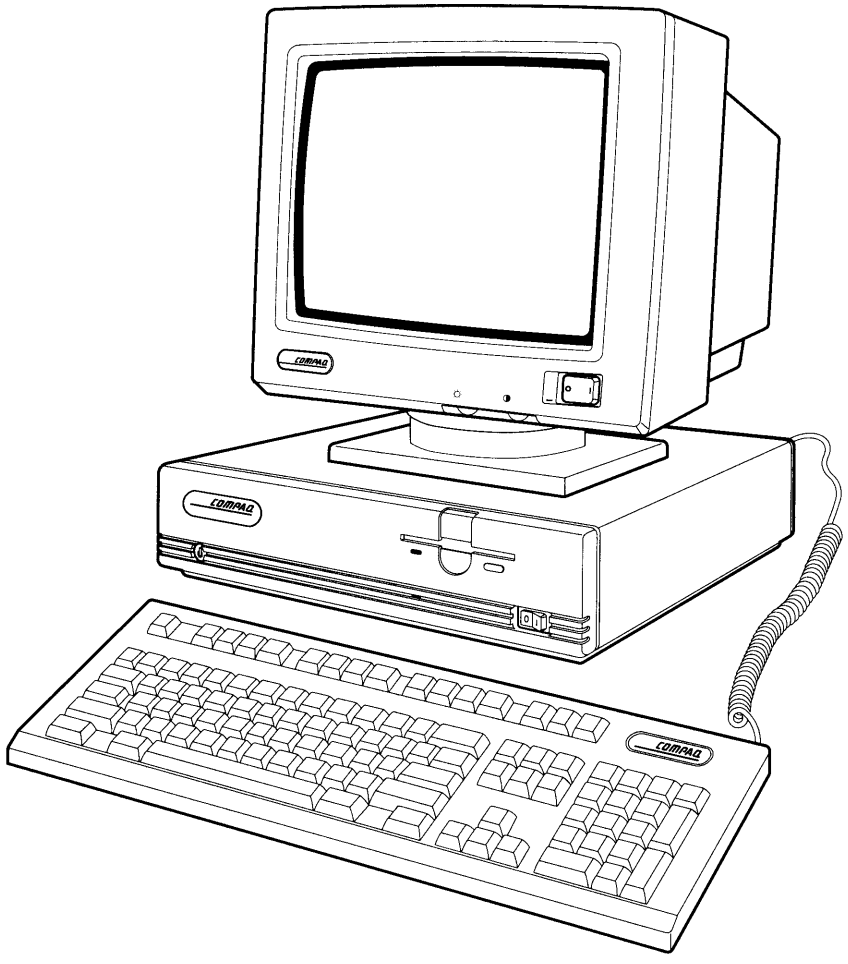


Figure 1-1. COMPAQ DESKPRO 386N Personal Computer

1.1 SYSTEM UNIT

Dimensions		
Height	3.9 in	9.9 cm
Depth	14.9 in	37.8 cm
Width	15.0 in	38.1 cm
Weight		
Model 40	16.75 lb	7.6 kg
Model 1	14.75 lb	6.7 kg
Model 0	13.25 lb	6.0 kg
Input Requirements		
Nominal Line Voltage	120 VAC	220-240 VAC
Range Line Voltage	90 to 120 VAC	180 to 240 VAC
Line Frequency	60 Hz	50 Hz
Current (nominal)	5 A	4 A
Power (watts)		
Steady State	90	
Environmental Requirements		
Temperature		
Operating	50° to 104°F	10° to 40°C
Nonoperating	50° to 140°F	10° to 60°C
Shipping	−22° to 140°F	−30° to 60°C
Shock Rating		
Operating	11g for 11 ms	
Nonoperating	20g for 11 ms	
Humidity (noncondensing)		
Operating	20% to 80%	
Nonoperating	5% to 90%	
Maximum Altitude (unpressurized)		
Operating	10,000 ft	3000 m
Nonoperating	30,000 ft	9000 m
Expansion Slot Size (maximum)		
Slot 1	8-/16-bit full-sized	
Slot 2	8-/16-bit full-sized	
Slot 3	16-bit high-speed (reserved for the Memory Expansion Board)	

1.2 POWER SUPPLY

Input Specifications		
Nominal Line Voltage	120 VAC	220-240 VAC
Range Input Line Voltage	90 to 135 VAC (automatically selected)	180 to 270 VAC
Frequency Range	47 to 63 Hz	
Power Factor	0.59	
Input Power	130 Watts or 440 BTU/hr (111,800 cal/hr)	
Input Current	3.0 A at 120 VAC (1.5 A at 264 VAC)	
Inrush Current	19 A at 132 VAC (cold start) (38 A at 264 VAC)	
SAG Voltage	75 VAC (140 VAC)	
Surge Voltage	319 VAC. In the 110 VAC mode, a surge voltage of 144 VAC will cause the supply to automatically select for 220 V operation. This is a latched state and requires power down for proper 110 VAC operation.	
Holdup Time	11 ms from zero crossing	
General Specifications		
Full Output Rating	to 40°C and 5000 ft to 32°C and 10,000 ft (derate linearly)	
Minimum Load	1.5 A on + 5V Output	
Ambient Temperature Range		
Operating	5°C to 40°C	
Storage	−20°C to 85°C	
Dielectric Voltage Withstand		
Input to Output	3000 VAC/1 minute	
Input to Ground	1250 VAC/1 minute	
Safety Standard	UL478, UL1950, CSA22.2 # 220 IEC950, EN60950	
EMI	FCC Class B, Part 15, Subpart J	
Input Transient Susceptibility		
Common and Differential Mode (superimposed on AC line)	2500 V, 1 µs, damped sinesoid; 600 V, 10 µs pulse	
Differential Mode	20% step change in AC input voltage	

1.3 DISKETTE DRIVE

	1.44-MB
Diskette Size	3½-Inch
Drive Height	Third
Drive Rotation (rpm)	360
Transfer Rate (bps) (high/low)	500K/300K
Bytes Per Sector	512
Sectors Per Track (high/low)	15/9
Tracks Per Side (high/low)	80/40
Access Time Average (ms)	79
Cylinders (high/low)	80/40
Read/Write Heads	2
Motor Start Time (ms)	500

1.4 FIXED DISK DRIVE

	40-MB	
Formatted Capacity Per Drive (MB)	42.6	
Drive Height (with drive frame)	Third	
Transfer Rate (bps)	12 M	
Sector Interleave	1:1	
Access Time (including settling)		
Track-to-Track (ms)	< 8	
Average (ms)	< 29	
Maximum (ms)	< 50	
Physical Configuration		
Cylinders	1053	
Heads	2	
Sectors/Track	40	
Bytes Per Sector	512	
Logical Configuration	**Type 22**	**Type 17**
Cylinders	524	980
Heads	4	5
Sectors/Track	40	17
Bytes Per Sector	512	512

POWER-ON SELF-TEST

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

2.1 POST

POST is a series of diagnostic tests that runs automatically on the COMPAQ DESKPRO 386N and COMPAQ DESKPRO 286N Personal Computers when the system is turned on.

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

- Keyboard
- Power supply
- System board
- Memory
- Memory modules
- Controllers
- Diskette drive
- Fixed disk drive

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

If POST finds an error in the system, an error condition is indicated by an audible and/or visual message. See Chapter 3, "Error Messages and Codes," for an explanation of the error codes and a recommended course of action.

2.2 RUNNING QUICKTEST

QUICKTEST is a ROM-resident utility which runs basic tests on key system components.

If you encounter an error condition, first run QUICKTEST, then Disk-based DIAGNOSTICS.

1. Turn on the computer and the monitor. If the computer is already on, reset the system.
2. After the POST beep, the blinking cursor will move to the upper right corner of the screen for approximately two seconds.

   If an error message occurs, see Table 3-1 in Chapter 3, "Error Messages and Codes."
3. Press the **F10** key while the cursor is at the right.
4. Select the language option.
5. Press the **F5** key to run QUICKTEST.
6. Follow the screen prompts for QUICKTEST.

2.3 RUNNING DISK-BASED DIAGNOSTICS

Complete the following steps before starting problem isolation procedures:

1. Turn off the computer.
2. Disconnect any peripheral devices other than the monitor and keyboard. Do not disconnect the printer if you want to test it or use it to log error messages.
3. Delete the power-on password, if set. *You will know that the power-on password is set when a key icon (○─╖) appears on the screen when POST completes. If this occurs, you must enter the password to continue. To delete the password, type the current password/ and press the ENTER key. If you do not have access to the password, you must disable the power-on password.* Refer to Section 2.4 for information on how to disable the power-on password.
4. Ensure proper ventilation. The computer should have a three-inch (7.62 cm) clearance at the back of the system unit.
5. Install loopback and terminating plugs for complete testing.
6. Run the latest version of DIAGNOSTICS.

NOTE: For Model 0, see Section 2.5.

See the DIAGNOSTICS Program for detailed information on problem isolation.

2.4 DISABLING THE POWER-ON PASSWORD

To disable the power-on password, you must reset the appropriate system board switch. To do so, complete the following steps:

1. Turn off and disconnect the computer.
2. Remove the system unit cover (see Chapter 5).
3. Locate the switch on the system board (see the configuration label (Figures 2-1, and 2-2).

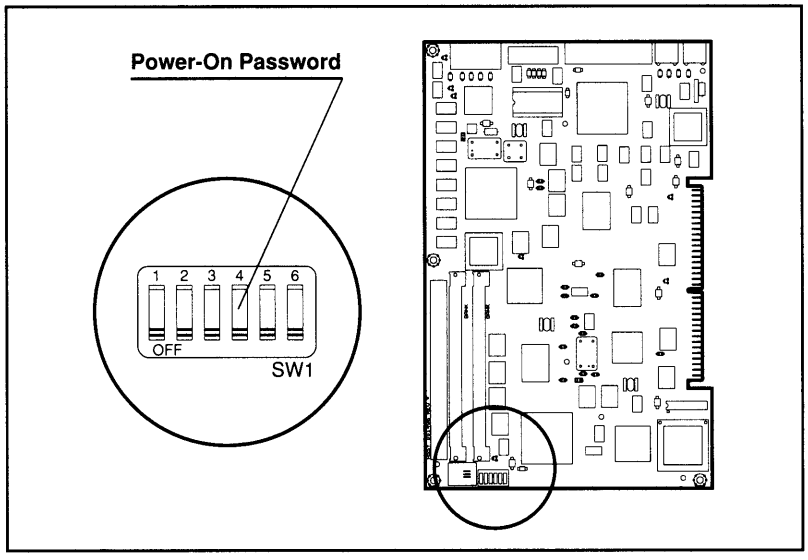


Figure 2-1. Switch for the Power-On Password on the COMPAQ DESKPRO 386N System Board

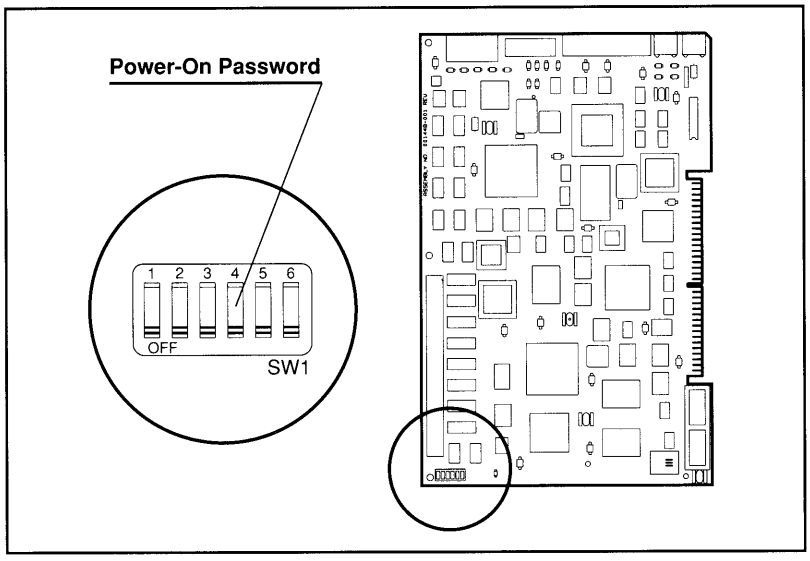


Figure 2-2. Switch for the Power-On Password on the COMPAQ DESKPRO 286N System Board

4. Change the switch setting to the OFF (disabled) position.
5. Replace the system unit cover.
6. Reconnect the AC power cord to the system unit then to the AC outlet.
7. Turn on the computer and allow it to complete POST. If the key icon does not appear when POST completes, the power-on password has been disabled.
8. Turn off the computer.
9. Remove the system unit cover.
10. Reset the switch for the power-on password to its original ON (enabled) position.
11. Replace the system unit cover.

! **IMPORTANT:** If you do not reset the power-on password switch to its original position, the user is unable to reestablish the password.

2.5 RUNNING EXTERNAL DIAGNOSTICS

To run external diagnostics, complete the following steps:

1. Remove the system unit cover (see Chapter 5).
2. Locate the switch on the system board (see the configuration label (Figures 2-3, and 2-4).

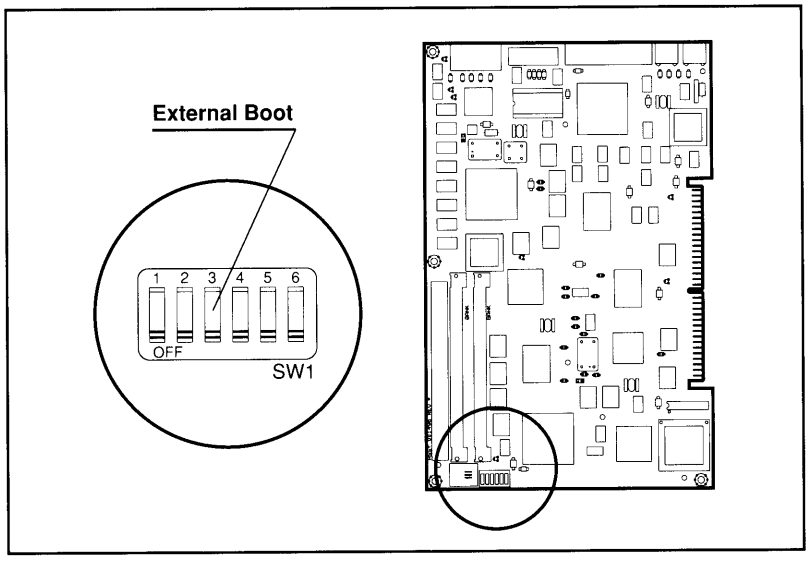


Figure 2-3. Switch for External Boot Control on the COMPAQ DESKPRO 386N System Board

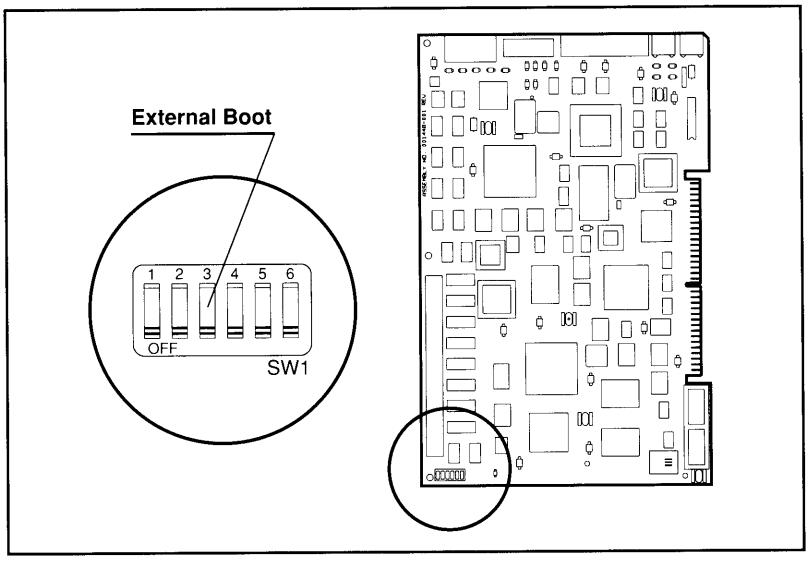


Figure 2-4. Switch for External Boot Control on the COMPAQ DESKPRO 286N System Board

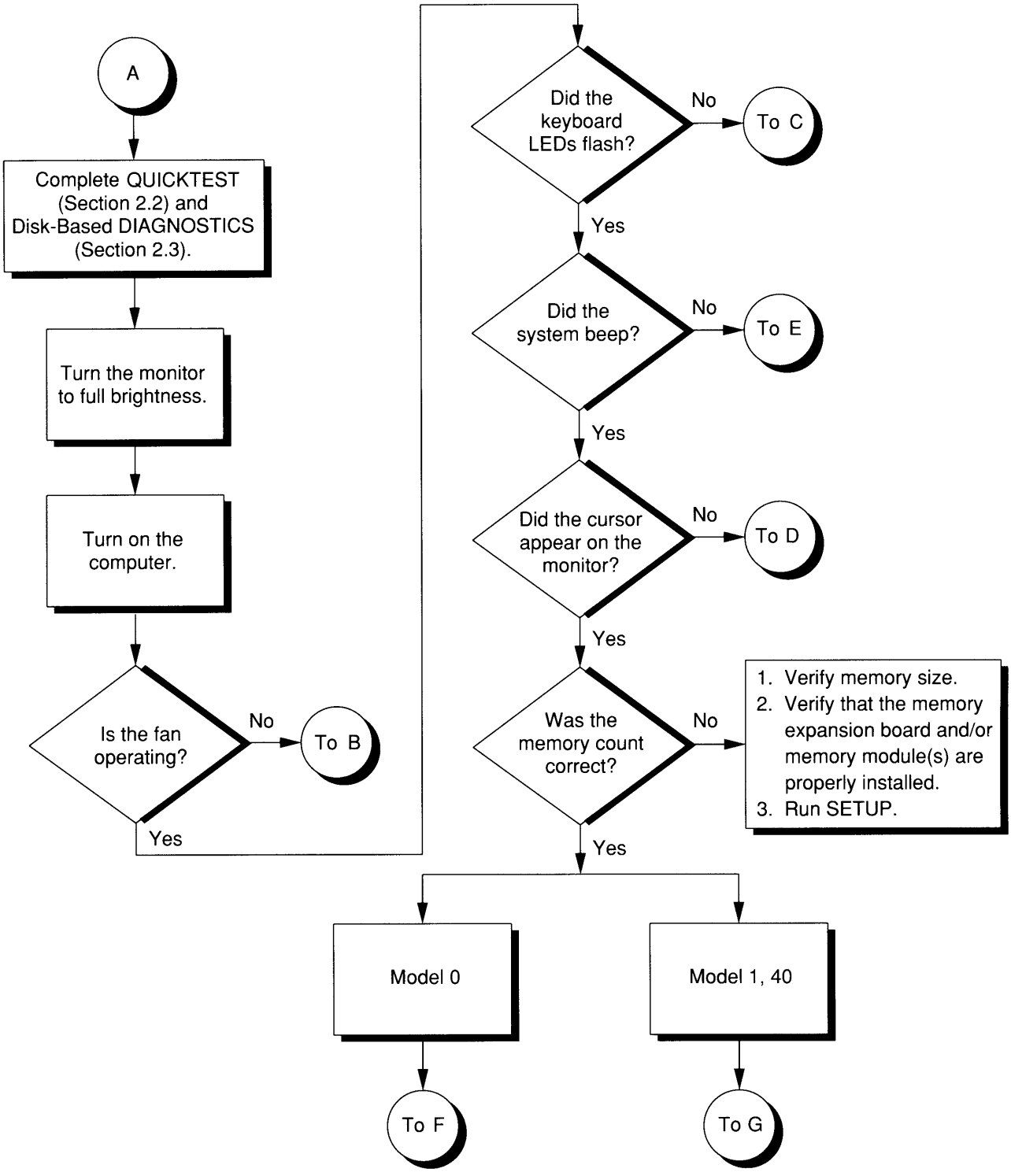
3. Change the switch setting to the ON (enabled) position.
4. Replace the system unit cover.
5. Reconnect the AC power cord to the system unit then to the AC outlet.
6. Connect a remote computer through the serial interface using a null modem serial cable or a Serial Interface Diagnostic Cable (available from Compaq).
7. Turn on the remote computer.
8. Load version 7.03 or higher of the DIAGNOSTICS diskette onto the remote computer.
9. Select Download Diagnostic Utilities from the menu on the remote computer. Follow the instructions on the screen.
10. Turn on the computer to be tested.

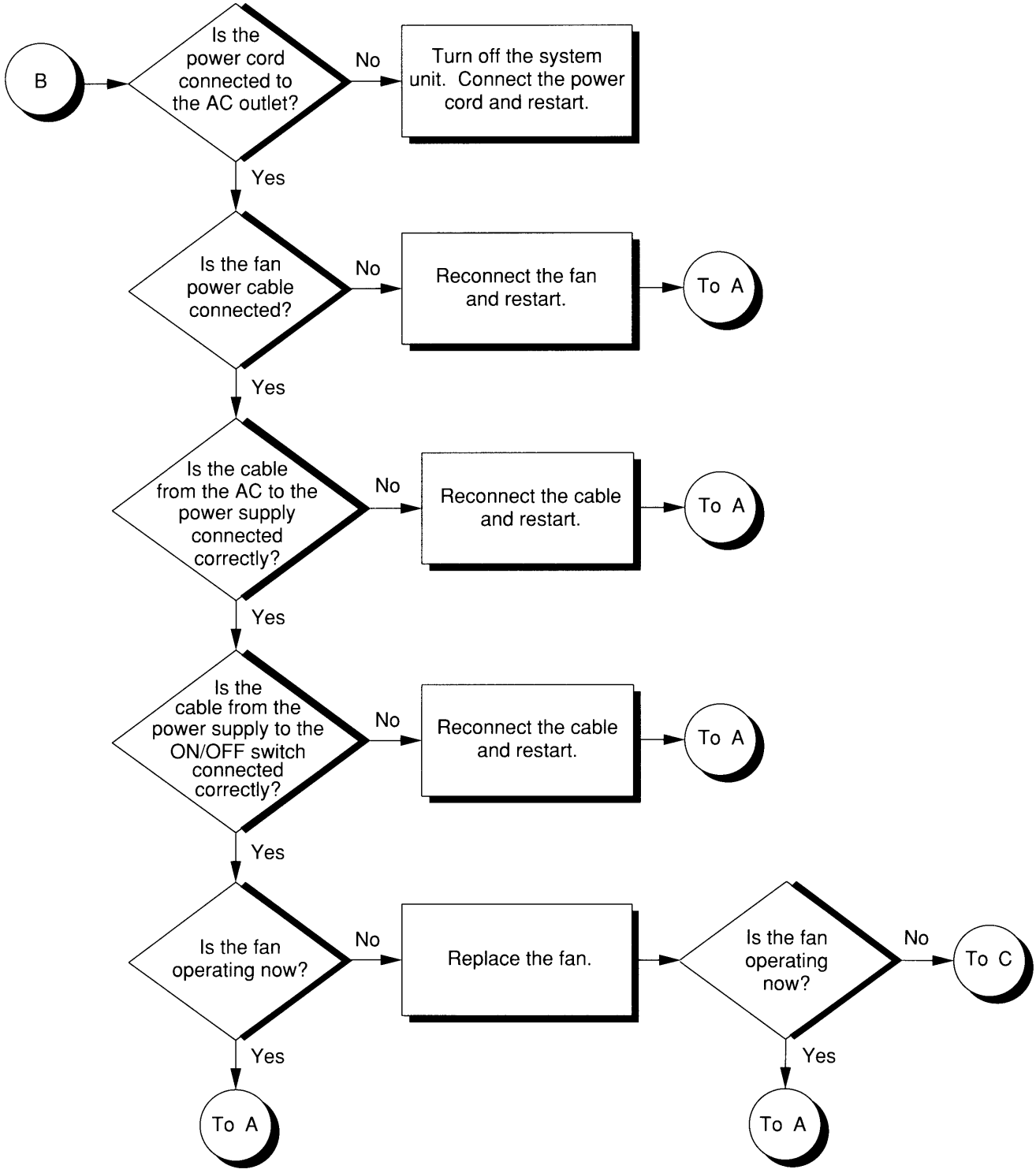
    The remote computer will automatically download the diagnostics to the computer being tested. The diagnostics menu will appear on the screen of the computer being tested.

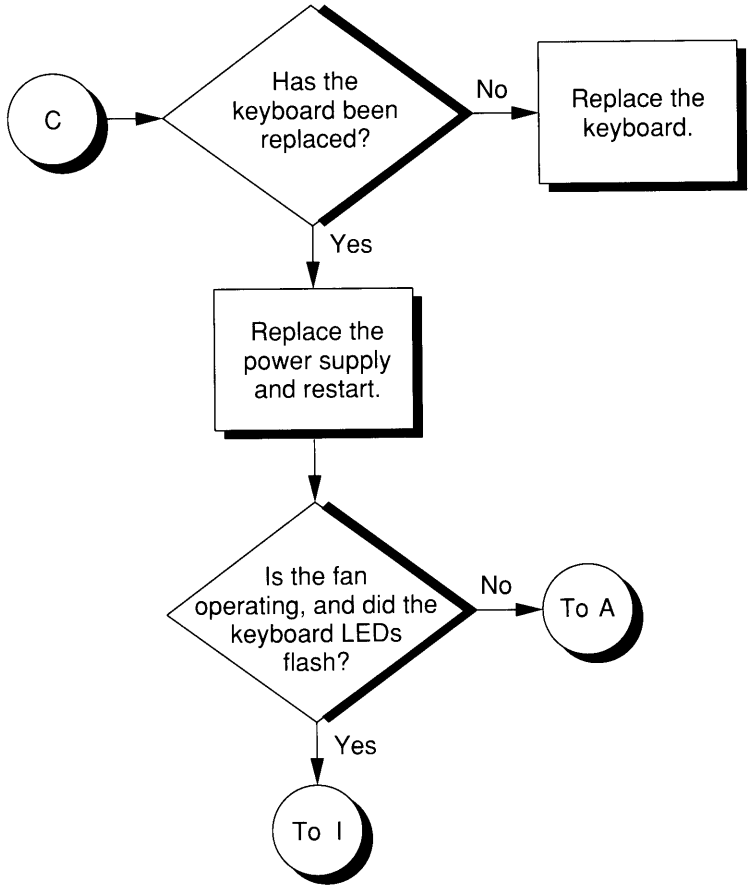
IMPORTANT: When diagnostics has completed, turn off both computers, and disconnect the remote computer. Reset the external boot control switch to the OFF (disabled) position, and re-boot the computer.

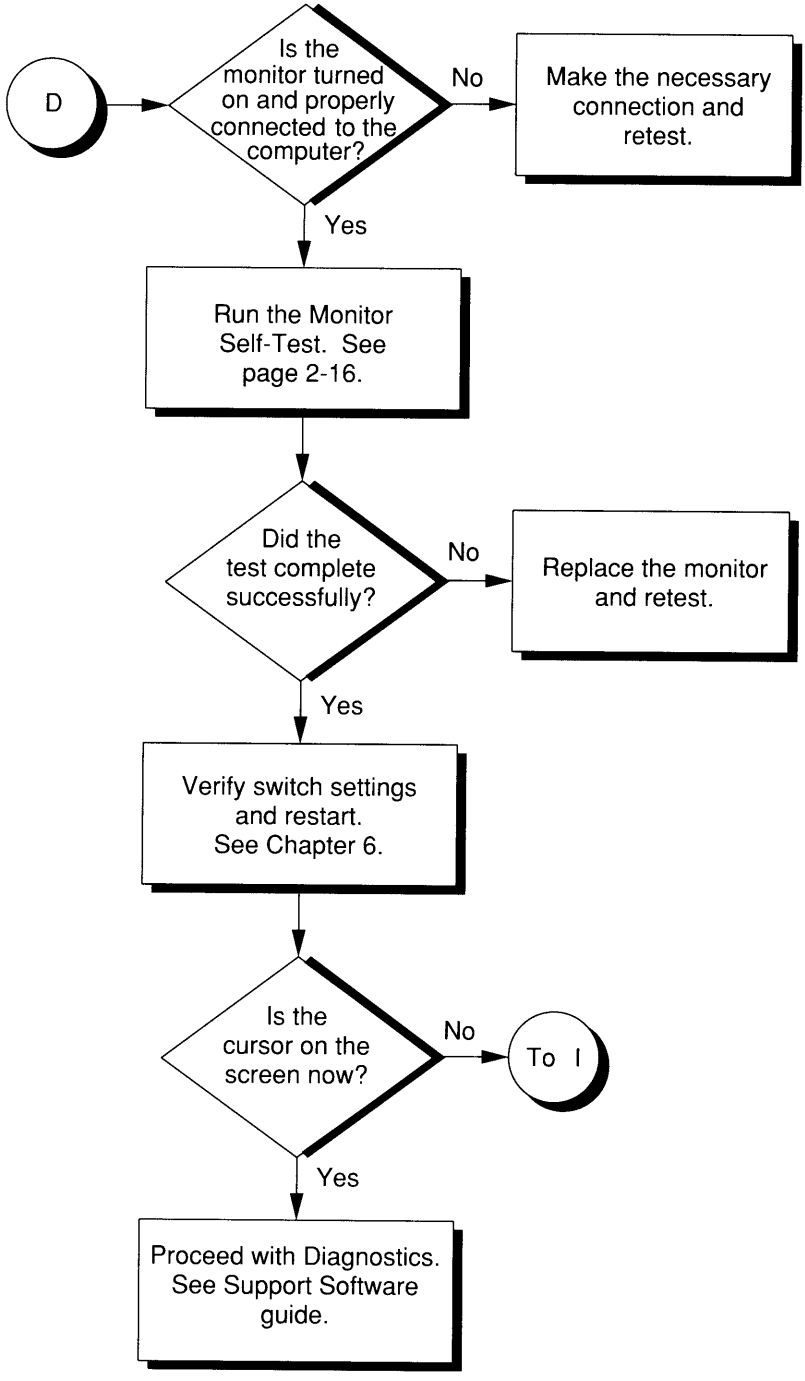
2.6 PROBLEM ISOLATION FLOWCHART

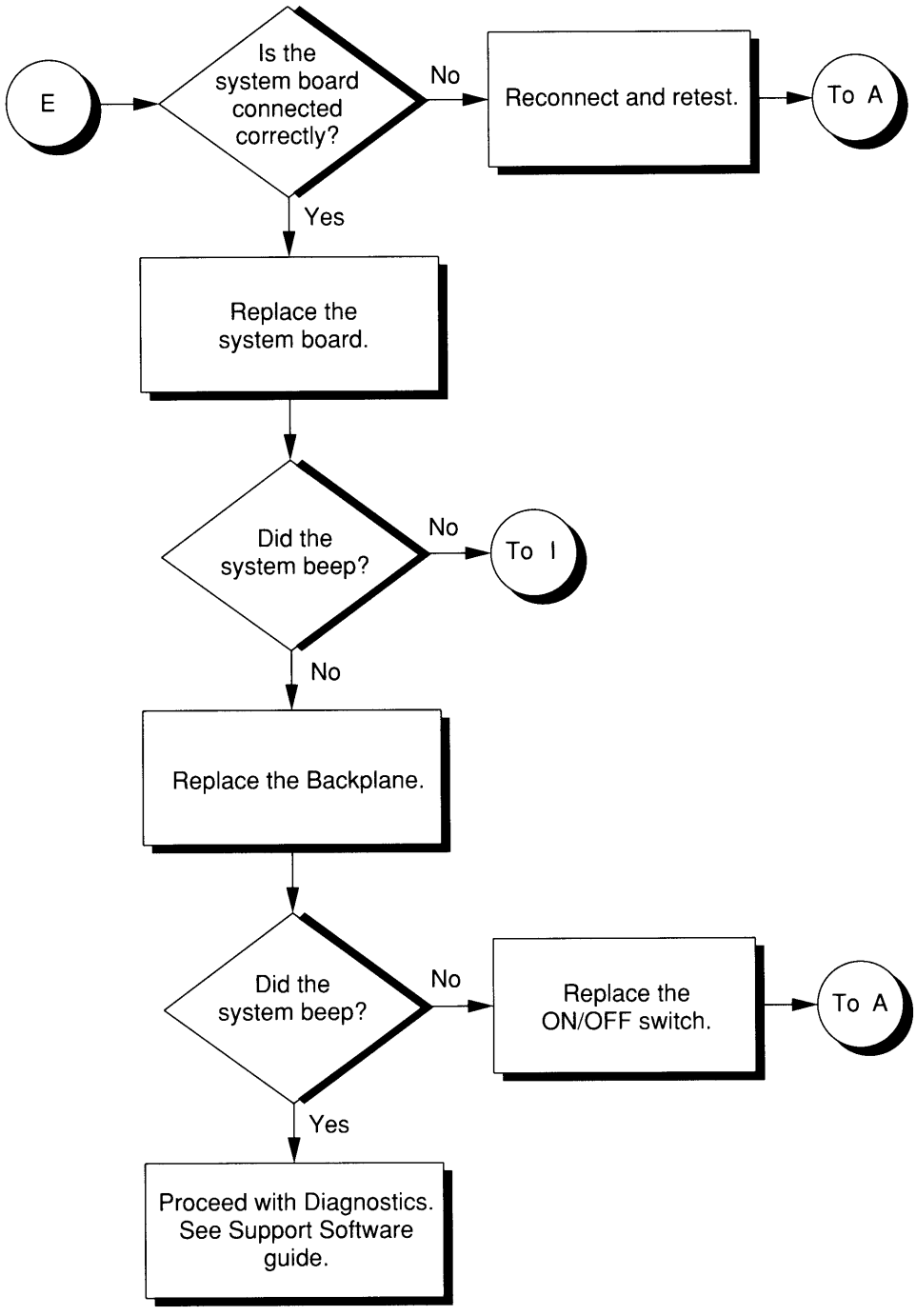
The problem isolation flowchart provides a quick reference for identifying and correcting problems that may occur during POST. The flowchart gives troubleshooting procedures for identifying malfunctions. It also directs you to Chapter 3, "Error Messages and Codes," and Chapter 6, "Switch Information," for more detailed troubleshooting information.

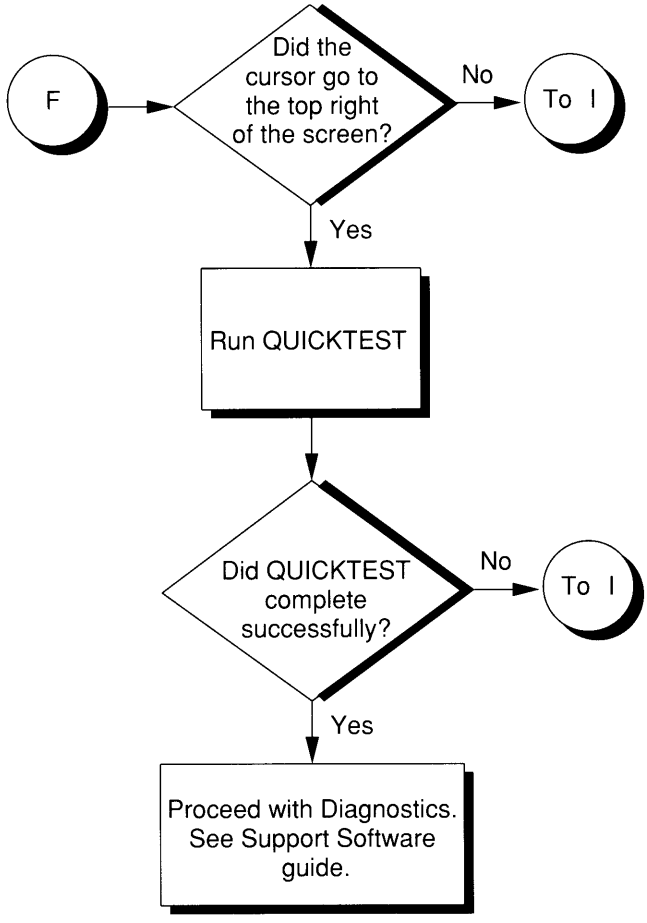

A
Complete QUICKTEST (Section 2.2) and Disk-Based DIAGNOSTICS (Section 2.3).
Turn the monitor to full brightness.
Turn on the computer.
Is the fan operating?
No
To B
Yes
Did the keyboard LEDs flash?
No
To C
Yes
Did the system beep?
No
To E
Yes
Did the cursor appear on the monitor?
No
To D
Yes
Was the memory count correct?
No
1. Verify memory size.
2. Verify that the memory expansion board and/or memory module(s) are properly installed.
3. Run SETUP.
Yes
Model 0
Model 1, 40
To F
To G

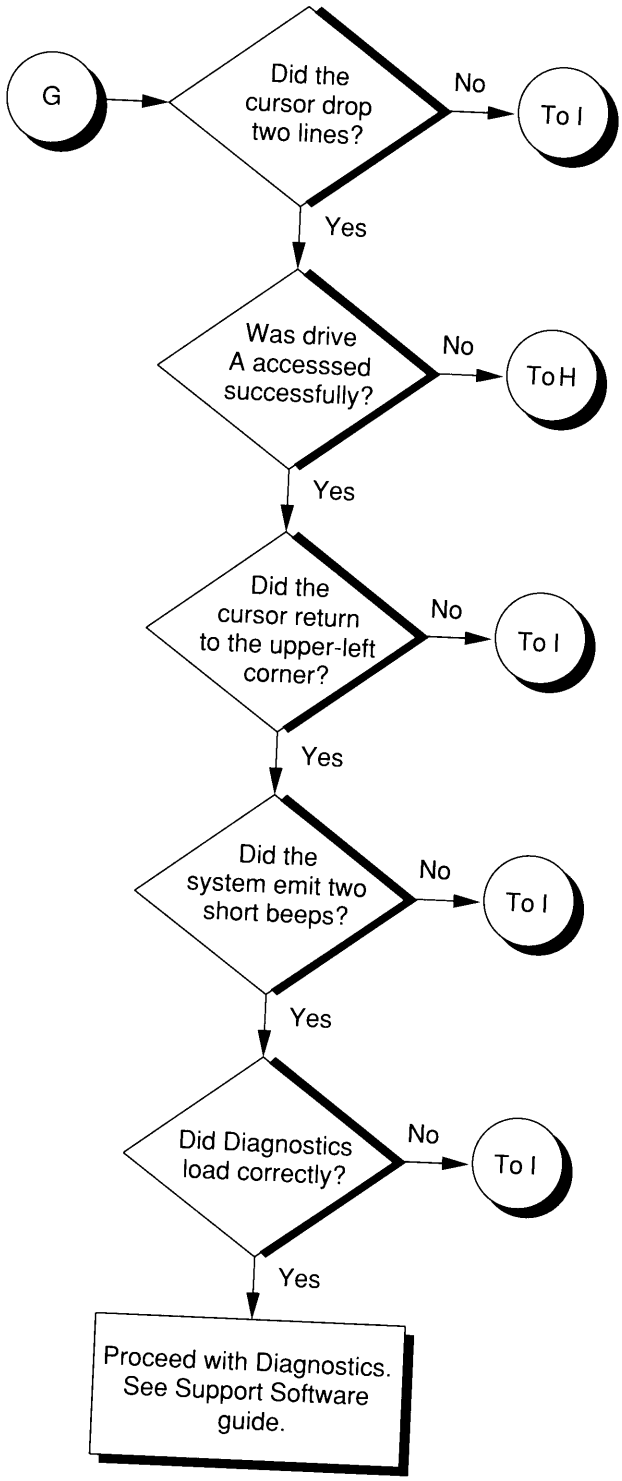

B
Is the power cord connected to the AC outlet?
No
Turn off the system unit. Connect the power cord and restart.
Yes
Is the fan power cable connected?
No
Reconnect the fan and restart.
To A
Yes
Is the cable from the AC to the power supply connected correctly?
No
Reconnect the cable and restart.
To A
Yes
Is the cable from the power supply to the ON/OFF switch connected correctly?
No
Reconnect the cable and restart.
To A
Yes
Is the fan operating now?
No
Replace the fan.
Is the fan operating now?
No
To C
Yes
To A
Yes
To A

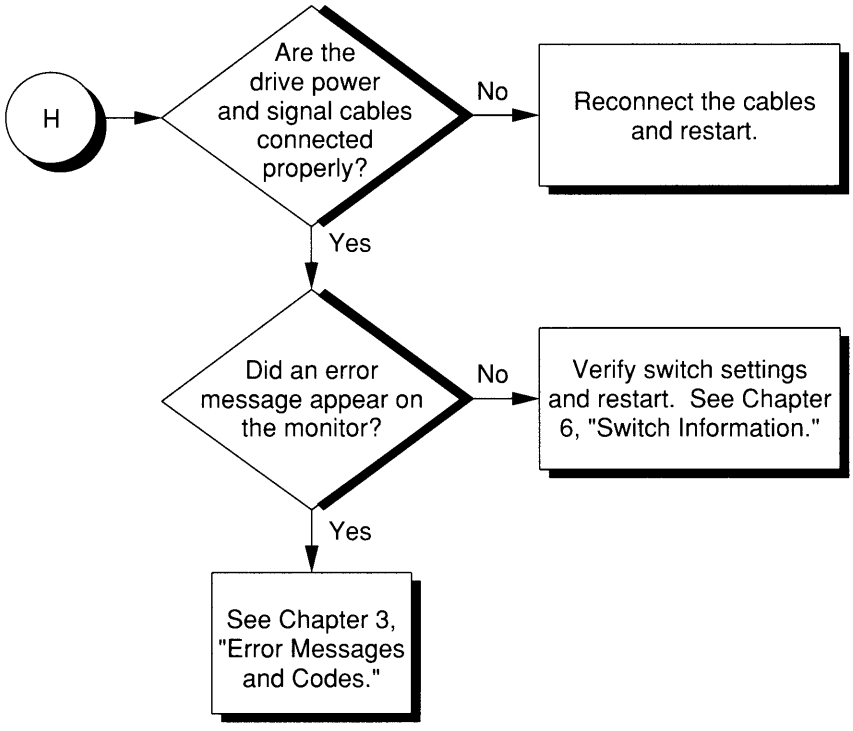

C
Has the keyboard been replaced?
No
Replace the keyboard.
Yes
Replace the power supply and restart.
Is the fan operating, and did the keyboard LEDs flash?
No
To A
Yes
To I

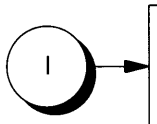

D
Is the monitor turned on and properly connected to the computer?
No
Make the necessary connection and retest.
Yes
Run the Monitor Self-Test. See page 2-16.
Did the test complete successfully?
No
Replace the monitor and retest.
Yes
Verify switch settings and restart. See Chapter 6.
Is the cursor on the screen now?
No
To I
Yes
Proceed with Diagnostics. See Support Software guide.


E
Is the system board connected correctly?
No
Reconnect and retest.
To A
Yes
Replace the system board.
Did the system beep?
No
To I
No
Replace the Backplane.
Did the system beep?
No
Replace the ON/OFF switch.
To A
Yes
Proceed with Diagnostics. See Support Software guide.


F
Did the cursor go to the top right of the screen?
No
To I
Yes
Run QUICKTEST
Did QUICKTEST complete successfully?
No
To I
Yes
Proceed with Diagnostics. See Support Software guide.


G
Did the cursor drop two lines?
No
To I
Yes
Was drive A accesssed successfully?
No
To H
Yes
Did the cursor return to the upper-left corner?
No
To I
Yes
Did the system emit two short beeps?
No
To I
Yes
Did Diagnostics load correctly?
No
To I
Yes
Proceed with Diagnostics. See Support Software guide.


H
Are the drive power and signal cables connected properly?
No
Reconnect the cables and restart.
Yes
Did an error message appear on the monitor?
No
Verify switch settings and restart. See Chapter 6, "Switch Information."
Yes
See Chapter 3, "Error Messages and Codes."



Remove all expansion boards.

Restart the system unit and allow POST to run again.

If POST completes successfully, reinstall the expansion boards one at a time until the problem reoccurs. Replace the appropriate board and restart.

If POST does not complete successfully:

1. Verify that all signal cables are connected.
2. Replace the following devices in order as approprate:
   - Keyboard
   - Monitor
   - Diskette Drive
   - Fixed Disk Drive
   - Memory Modules
   - Memory Expansion Board
   - Backplane
   - System Board
3. Restart after each replacement and check for the appearance of the cursor and/or the first screen of DIAGNOSTICS.

Monitor Self-Test

You can perform a self-test on the COMPAQ Video Graphics Color or Video Graphics Monochrome Monitors by following these instructions:

1. Turn off the monitor.

2. Turn off the computer.

3. Disconnect the monitor signal cable from the computer.

4. Turn on the monitor and allow it to warm up for at least one minute.

   On the color monitor, the screen should appear white. A narrow black border may also appear on the left and right sides of the display. Either of these displays indicates that the monitor is working properly.

   The same pattern should appear on the monochrome monitor but in shades characteristic of the particular monitor.

ERROR MESSAGES AND CODES

This chapter contains Power-On Self-Test (POST) messages, DIAGNOSTICS error codes, and memory error codes.

The messages and codes appear in tables that include a description of the error, the probable cause, and the recommended action that should be taken to resolve the error condition.

3.1 POWER-ON SELF-TEST MESSAGES

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

Table 3-1 lists the messages, the audible (beep) message, probable cause, and recommended action.

Table 3-1
Power-On Self-Test Messages

Message	Beeps	Probable Cause	Recommended Action
101-ROM Error	1L,1S	System ROM checksum	1. Inspect the ROM placement. 2. Verify the correct ROM. 3. Replace the ROM.
101-I/0 ROM Error	1L,1S	ROM checksum option	1. Inspect the ROM placement. 2. Verify the correct ROM. 3. Replace the ROM.
102-System Board Failure	None	DMA, timers, etc.	Replace the system board.
162-System Options Error	2S	Diskette drive not connected properly or mismatch in drive type	Run SETUP.
162-System Options Not Set	2S	Configuration memory incorrect	Run SETUP.
163-Time & Date Not Set	2S	Invalid time or date in configuration memory	Run SETUP.
164-Memory Size Error	2S	Configuration memory incorrect	Run SETUP.

L = Long
S = Short

Continued

Table 3-1 *Continued*

Message	Beeps	Probable Cause	Recommended Action
XX000Y ZZ 201-Memory Error Socket 1, 2, 3 (see Figure 3-1)	None	Memory failure	1. Replace the memory expansion board. 2. Replace the memory module. 3. Replace the system board.
XX000Y ZZ 203-Memory Address Error Socket 1, 2, 3 (see Figure 3-1)	None	Memory failure	1. Replace the memory expansion board. 2. Replace the memory module. 3. Replace the system board.

Continued

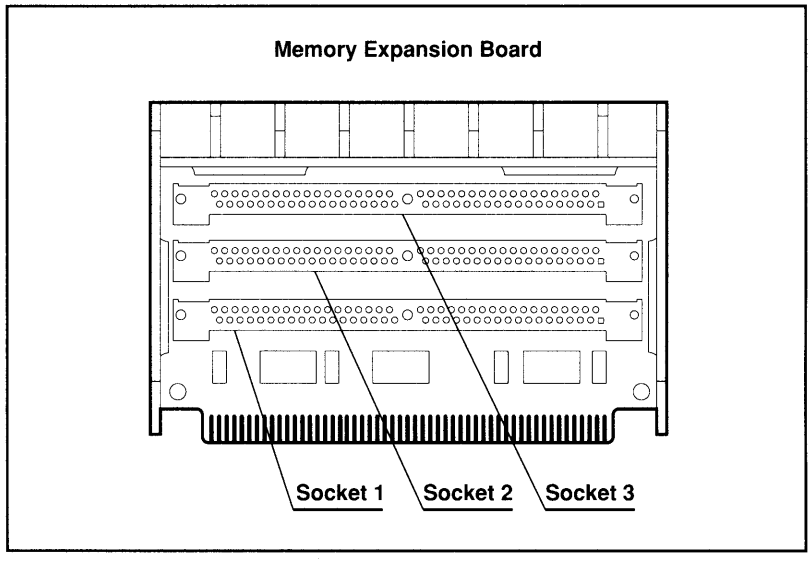


Figure 3-1. Memory Socket Identification

Table 3-1 *Continued*

Message	Beeps	Probable Cause	Recommended Action
208-Invalid Memory Module in Socket x	None	Memory modules installed incorrectly	Reinsert memory modules in correct location. See Figure 3-1.
301-Keyboard Error	None	Keyboard	Replace the keyboard.
301-Keyboard Error or Test Fixture Installed	None	Keyboard	Replace the keyboard.
303-Keyboard Controller Error	None	System board keyboard controller	Replace the system board.
304-Keyboard or System Unit Error	None	Keyboard	1. Replace the keyboard. 2. Replace the system board.
401-Parallel Port Address Assignment Conflict	2S	Configuration error	Run SETUP.
501-Display Adapter Failure	1L,2S	Video display controller	Replace the system board.
601-Diskette Controller Error	None	Diskette controller circuitry	1. Check and/or replace cables. 2. Replace system board. 3. Run DIAGNOSTICS.
602-Diskette Boot Recorder Error	None	Diskette in drive A not bootable	Replace the diskette.
605-Diskette Drive Error	2S	Mismatch in drive type	Run SETUP.
607-No Response Received at Primary Address From External Floppy Controller. Internal Floppy Controller Has Been Enabled	2S	Configuration error	Run SETUP.
611-Primary Floppy Port Address Assignment Conflict	2S	Configuration error	Run SETUP.
612-Secondary Floppy Port Address Assignment Conflict	2S	Configuration error	Run SETUP.

L = Long
S = Short

Continued

Table 3-1 *Continued*

Message	Beeps	Probable Cause	Recommended Action
1125-Internal Serial Port Failure	2S	Defective internal serial port	1. Run SETUP. 2. Replace the system board.
1151-Comm Port 1 Address Assignment Conflict	2S	Configuration error	Run SETUP.
1771-Primary Disk Port Address Assignment Conflict	2S	Configuration error	Run SETUP.
1772-Secondary Disk Port Address Assignment Conflict	2S	Configuration error	Run SETUP.
1780-Disk 0 Failure	None	Fixed disk drive/format error on primary controller	Run SETUP.
1781-Disk 1 Failure	None	Fixed disk drive/format error on primary controller	Run SETUP.
1782-Disk Controller Failure	None	Fixed disk drive circuitry error on primary controller	Run SETUP.
1790-Disk 0 Error	None	Fixed disk drive or wrong drive type on primary controller	Run SETUP.
1791-Disk 1 Error	None	Fixed disk drive or wrong drive type on primary controller	Run SETUP.
XX000Y ZZ Parity Check 2	None	Parity RAM failure	Run DIAGNOSTICS.
Audible	1S	Power-on successful	None.
Audible	2S	Power-on successful	None.
(RESUME = "F1" KEY)	None	As indicated to continue	Press the **F1** key.

L = Long
S = Short

3.2 DIAGNOSTIC ERROR CODES

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

Tables 3-2 through 3-13 list possible error codes, a description of the error condition, and the action required to resolve the error condition.

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

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

Table 3-2
Processor Test Error Codes

Error Code	Description	Recommended Action
101-xx	CPU test failed	Replace the system board and retest for 101-xx error codes.
102-xx	Numeric Coprocessor or error	The following steps apply for 102-xx error codes: 1. Run SETUP. 2. Replace the coprocessor and retest. 3. Replace the system board and retest.
103-xx	DMA page registers test	Replace the system board and retest for error codes 103-xx through 106-xx.
104-xx	Interrupt controller master test failed	
105-xx	Port 61 error	
106-xx	Keyboard controller self-test failed	

Continued

Table 3-2 *Continued*

Error Code	Description	Recommended Action
107-xx	CMOS RAM test failed	The following steps apply for error codes 107-xx through 109-xx: 1. Replace the battery/clock module and retest. 2. Replace the system board and retest.
108-xx	CMOS interrupt test failed	
109-xx	CMOS clock load data test failed	
110-xx	Programmable timer load data test failed	Replace the system board and retest for error codes 110-xx through 113-xx.
111-xx	Refresh detect test failed	
112-xx	Speed test slow mode out of range	
113-01	Protected mode test failed	
114-01	Speaker test failed	The following steps apply for 114-01 error codes: 1. Verify the speaker connection. 2. Replace the speaker and retest. 3. Replace the system board and retest.
199-00	Installed devices test failed	The following steps apply for 199-00 error codes: 1. Run SETUP. 2. Check system configuration. 3. Verify cable connections. 4. Check switch settings. 5. Replace the system board and retest.

Table 3-3
Memory Test Error Codes

Error Code	Description	Recommended Action
200-xx	Invalid memory configuration	Reinsert memory modules in correct location. See Figure 3-1.
201-xx	Memory machine ID test failed	The following steps apply to error codes 201-xx and 202-xx: 1. Replace the system ROM and retest. 2. Replace the system board and retest.
202-xx	Memory system ROM checksum failed	
203-xx	Memory write/read test failed	The following steps apply to error codes 203-xx through 210-xx: 1. Reinsert the memory modules and retest. 2. Reinsert the memory expansion board and retest. 3. Replace the memory expansion board and retest. 4. Replace the memory module and retest.
204-xx	Memory address test failed	
205-xx	Walking 1/0 test failed	
206-xx	Increment pattern test failed	
210-xx	Random pattern test failed	

Table 3-4
Keyboard Test Error Codes

Error Code	Description	Recommended Action
301-xx	Keyboard short-test, controller self-test failed	The following steps apply to error codes 301-xx through 304-xx: 1. Check the keyboard connection. If disconnected, turn off the computer and connect the keyboard. 2. Replace the keyboard and retest. 3. Replace the system board and retest.
302-xx	Keyboard long-test failed	
303-xx	Keyboard LED test, controller self-test failed	
304-xx	Keyboard typematic test failed	

Table 3-5
Parallel Printer Test Error Codes

Error Code	Description	Recommended Action
401-xx	Printer failed or not connected	The following steps apply to error codes 401-xx through 498-xx: 1. Connect the printer. 2. Check power to the printer. 3. Install the loopback connector and retest. 4. Check the switch on the Serial/Parallel Interface board, if applicable. 5. Replace the Serial/Parallel Interface board, if applicable. 6. Replace the system board.
402-xx	Printer data register failed	
403-xx	Printer pattern test failed	
498-xx	Printer failed or not connected	

Table 3-6
Video Display Unit Test Error Codes

Error Code	Description	Recommended Action
501-xx	Video controller test failed	The following error codes apply to error codes 501-xx through 516-xx: 1. Replace the monitor and retest. 2. Replace the system board and retest.
502-xx	Video memory test failed	
503-xx	Video attribute test failed	
504-xx	Video character set test failed	
505-xx	Video 80 x 25 mode 9 x 14 character cell test failed	
506-xx	Video 80 x 25 mode 8 x 8 character cell test failed	
507-xx	Video 40 x 25 mode test failed	
508-xx	Video 320 x 200 mode color set 0 test failed	
509-xx	Video 320 x 200 mode color set 1 test failed	
510-xx	Video 640 x 200 mode test failed	
511-xx	Video screen memory page test failed	
512-xx	Video gray scale test failed	
514-xx	Video white screen test failed	
516-xx	Video noise pattern test failed	
517-xx	Lightpen text mode test failed, no response	The following steps apply for 517-xx error codes: 1. Replace the lightpen and retest. 2. Replace the video display controller board and retest. 3. Replace the system board and retest.

Table 3-7
Diskette Drive Test Error Codes

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

Table 3-8
Monochrome Video Board Test Error Codes

Error Code	Description	Recommended Action
802-xx	Video memory test failed	The following steps apply to error codes 802-xx through 824-xx: 1. Replace monitor and retest. 2. Replace monochrome board and retest. 3. Replace the system board and retest.
824-xx	Monochrome video text mode test failed	

Table 3-9
Serial Test Error Codes

Error Code	Description	Recommended Action
1101-xx	Serial port test failed	The following steps apply to error codes 1101-xx through 1109-xx: 1. Check switch settings on the Serial/Parallel Interface board, if applicable. 2. Replace the Serial/Parallel Interface board, if applicable. 3. Replace the system board and retest.
1109-xx	Clock register test failed	

Table 3-10
Modem Communications Test Error Codes

Error Code	Description	Recommended Action
1201-xx	Modem internal loopback test failed	The following steps apply to error codes 1201-xx through 1210-xx: 1. Refer to modem documentation for correct setup procedures. 2. Check the modem line. 3. Replace the modem and retest.
1202-xx	Modem time-out test failed	
1203-xx	Modem external termination test failed	
1204-xx	Modem auto originate test failed	
1205-xx	Modem auto answer test failed	
1206-xx	Dial multifrequency tone test failed	
1210-xx	Modem direct connect test failed	

Table 3-11
Fixed Disk Drive Test Error Codes

Error Code	Description	Recommended Action
1700-xx	Fixed disk ID drive types test failed	The following steps apply to error codes 1700-xx through 1799-xx: 1. Run setup and verify drive type. 2. Replace the fixed disk drive signal and power cables and retest. 3. Replace the fixed disk drive controller and retest. 4. Replace the fixed disk drive and retest. 5. Replace the system board and retest.
1701-xx	Fixed disk format test failed	
1702-xx	Fixed disk read test failed	
1703-xx	Fixed disk write/read/compare test failed	
1704-xx	Fixed disk random seek test failed	
1705-xx	Fixed disk controller test failed	
1706-xx	Fixed disk drive ready test failed	
1707-xx	Fixed disk drive recalibration test failed	
1708-xx	Fixed disk format bad track test failed	
1709-xx	Fixed disk reset controller test failed	
1710-xx	Fixed disk park head test failed	
1714-xx	Fixed disk file write test failed	
1715-xx	Fixed disk head select test failed	
1716-xx	Fixed disk conditional format test failed	
1717-xx	Fixed disk ECC* test failed	
1719-xx	Fixed disk power mode test failed	
1799-xx	Invalid fixed disk drive type failed	

*Error Correction Code

Table 3-12
Integrated Video Graphics Controller Test Error Codes

Error Code	Description	Recommended Action
2402-xx	Video memory test failed	The following steps apply to error codes 2402-xx through 2451-01: 1. Replace the monitor and retest. 2. Replace the system board and retest.
2403-xx	Video attribute test failed	
2404-xx	Video character set test failed	
2405-xx	Video 80 x 25 mode 9 x 14 character cell test failed	
2406-xx	Video 80 x 25 mode 8 x 8 character cell test failed	
2407-xx	Video 40 x 25 mode test failed	
2408-xx	Video 320 x 200 mode color set 0 test failed	
2409-xx	Video 320 x 200 mode color set 1 test failed	
2410-xx	Video 640 x 200 mode test failed	

Table 3-12 *Continued*

Error Code	Description	Recommended Action
2411-xx	Video screen memory page test failed	The following steps apply to error codes 2402-xx through 2451-01: 1. Replace the monitor and retest. 2. Replace the system board and retest.
2412-xx	Video gray scale test failed	
2414-xx	Video white screen test failed	
2416-xx	Video noise pattern test failed	
2417-xx	Lightpen text mode test failed, no response	
2418-xx	ECG/VGC memory test failed	
2419-xx	ECG/VGC ROM checksum test failed	
2420-xx	ECG/VGC attribute test failed	
2421-xx	ECG/VGC 640 x 200 graphics mode test failed	
2422-xx	ECG/VGC 640 x 350 16 color set test failed	
2423-xx	ECG/VGC 640 x 350 64 color set test failed	
2424-xx	ECG/VGC monochrome text mode test failed	
2425-xx	ECG/VGC monochrome graphics mode test failed	
2431-xx	640 x 480 graphics test failed	
2432-xx	320 x 200 graphics (256 color mode) test failed	
2451-01	132-column mode test failed	

Table 3-13
Pointing Device Interface Test Error Codes

Error Code	Description	Recommended Action
8601-xx	Pointing Device Interface test failed	The following steps apply for 8601-xx error codes: 1. Replace with a working pointing device and retest. 2. Replace the system board and retest.