

☐ Product System (PS)

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JoybookS52 Trouble Shooting Guide

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1.1 Outline

This chapter describes the fault diagnosis procedures for field replaceable units (FRUs) in the computer.

The FRUs covered here are as follows:

- | | | |
|-------------------|-------------------------------------|-----------------|
| 1. System board | 2. 2.5-inch HDD | 3. Keyboard |
| 4. Display | 5. DVD-ROM drive | 6. CD_ROM drive |
| 7. Cooling module | 8. Touch Pad | 10. Audio |
| 11. IR | 12. Battery life (Battery Learning) | |

See Tear Down guide for the procedures to replace FRUs and Diagnostic manual for the procedures to use test programs

The following tools are required to perform the diagnostic procedures:

1. Diagnostics (maintenance test program) bootable CD
2. Screwdrivers
3. Cleaning disk kit (for ODD drive cleaning)
4. Port 80 card
5. Multi-meter
6. Headphone
7. Microphone
8. External FDD attachment

1.2 Basic Flowchart

The basic flowchart in Figure 2-1 serves as a guide for identifying a possibly faulty FRU.

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Before going through the diagnostic flowchart steps, verify the following:

- ☐ Ask the user if a password has been registered and, if so, ask him or her to enter the password. If the user has forgotten the system password, use a jump wire to make a short circuit on pad 10 that's near mini PCI slot, then turn the power on. When booted, the computer overrides password protection and automatically erases the current password. Please remove the short circuit on pad 10 when the password erased.
- ☐ Make sure the BenQ version of Windows® 2000, or XP has been installed on the HDD. Any other operating system can cause the computer to malfunction.
- ☐ Make sure any piece of optional equipment has been installed.

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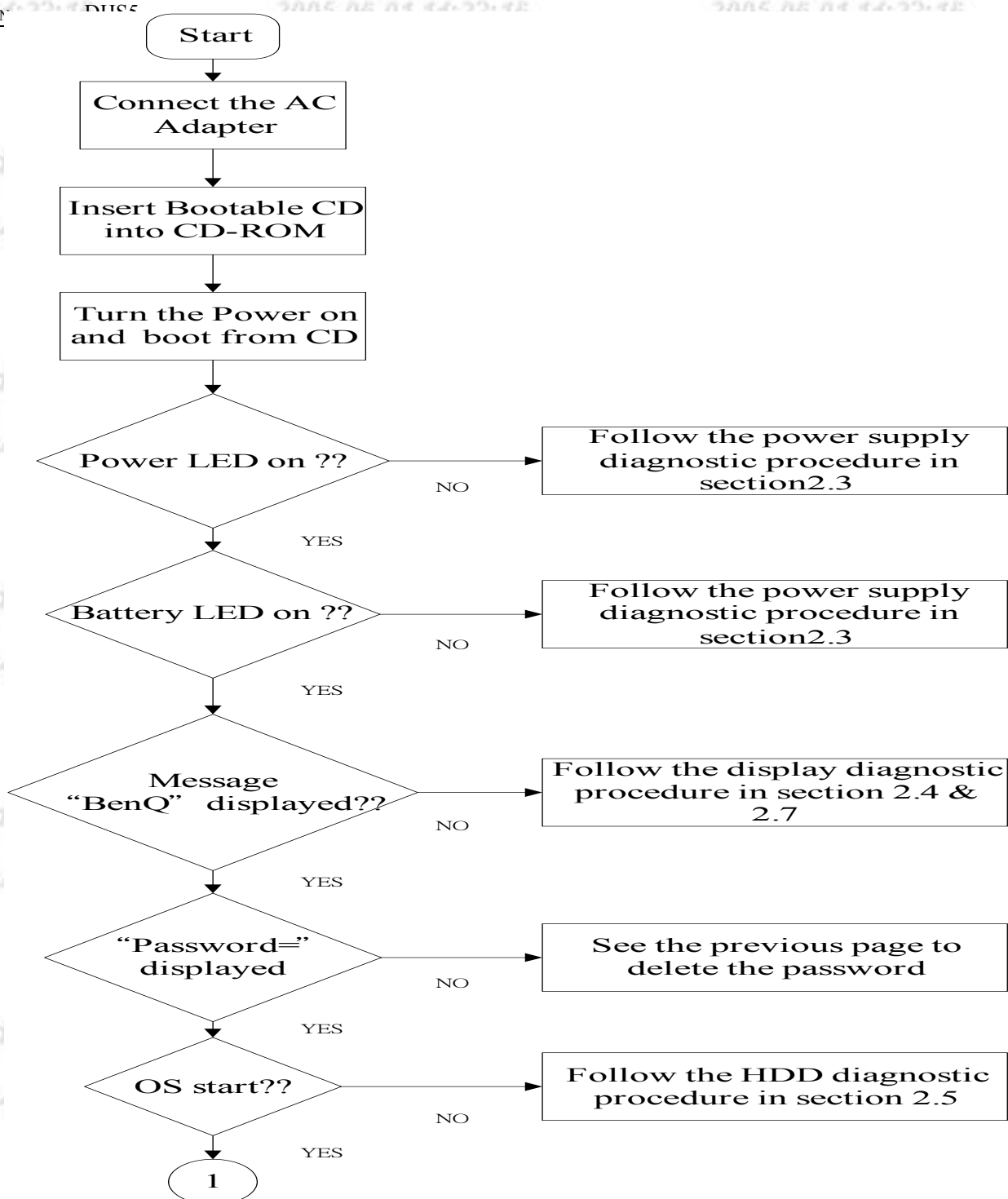


Figure -1 Basic flowchart (1/2)

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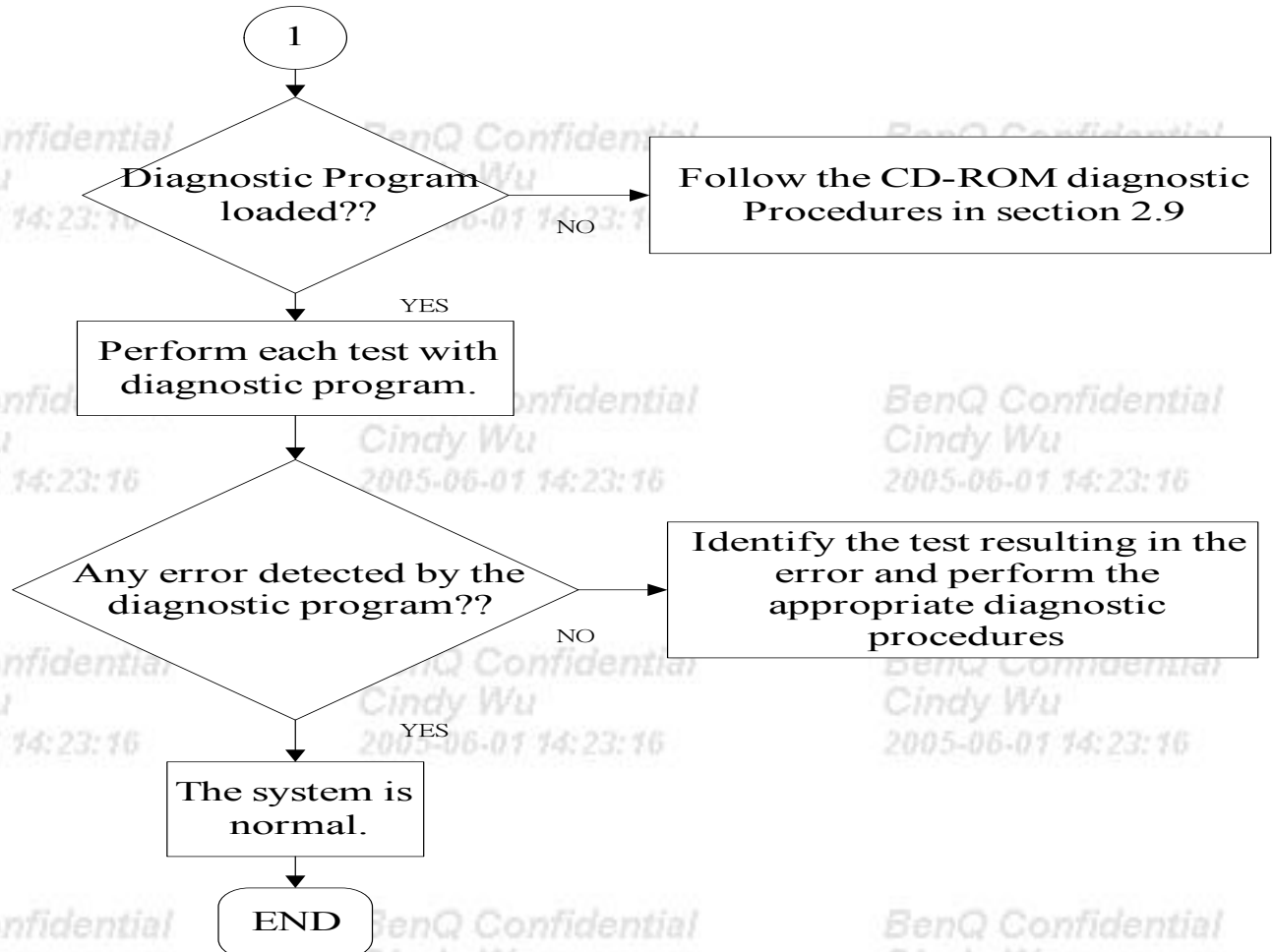


Figure -2 Basic flowchart (2/2)

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If the diagnostic program cannot detect an error, the error may be intermittent. Run the continuous test program repeatedly to isolate the problem. Check the log utilities function to confirm which diagnostic test detected the error, then perform the appropriate troubleshooting procedures as follows:

1. If an error is detected by the System test, Memory test or Real Timer test, follow the system board troubleshooting procedures in Section 1.4.
2. If an error is detected by the Hard Disk test, follow the HDD troubleshooting procedures in Section 1.5.
3. If an error is detected by the Keyboard test, follow the keyboard troubleshooting procedures in Section 1.6.
4. If an error is detected by the Display test, follow the display troubleshooting procedures in Section 1.7.
5. If an error is detected by the DVD-ROM test, follow the DVD-ROM troubleshooting procedures in Section 1.8.
6. If an error is detected by the CD-ROM test, follow the CD-ROM troubleshooting procedures in Section 1.9.
7. If an error is detected by the Fan On/Off test, follow the cooling module troubleshooting procedures in Section 1.10.
8. If an error is detected by the Touch Pad test, follow the Touch Pad troubleshooting procedures in Section 1.11.
9. If an error is detected by the audio function test, follow the Audio function troubleshooting procedures in Section 1.12.
10. If an error is detected by the IR test, follow the IR troubleshooting procedures in Section 1.13.
11. If an error is detected by the Extending Battery life (Battery Learning), follow the Extending Battery life procedures in Section 1.14.

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1.3 Power Supply

The power supply in the computer controls many functions and components. To check if the power supply is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1 Power Icon Check

Procedure 2 Connection Check

Procedure 3 Replacement Check

Procedure 1 Power Icon Check

The following two power LEDs indicate the power supply status:

☐ Battery LED

☐ Power LED

The power supply controller displays the power supply status through the Battery and Power LEDs as in the tables below.

☐ Battery LED

Battery LED	Power supply status
On in orange	Battery being charged
Blinking in orange	battery is abnormal
Blinking in blue	Battery low while driving the computer *1
On in blue	Battery is in use for system on
Off	Battery fully charged, with AC adapter connected

*1: Battery power will run out in just a few minutes.

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☐ POWER LED

Power LED	Power supply status
On in blue	System fully on
On in orange	System in suspend
Off	System in power off

If power LED is on in blue, but nothing appear on screen. Please refer to section 2.4 System Board and section 2.7 Display for troubleshooting.

If the Power LED off while turn on the power, follow the steps below:

1. Remove the battery pack and the AC adapter to shut off power supply to the computer.
2. Attach the battery and AC adapter back and turn on the power again. If the LED still off, follow the steps below:

Check 1 Make sure the Power LED goes on in blue. If it does not, go to Procedure 2.

Check 2 Make sure the Battery LED goes on in blue without AC adapter. If it does not, go to Procedure 4.

Check 3 Make sure the Battery LED goes on in orange when battery gauge is not full. If it does not, go to Procedure 4.

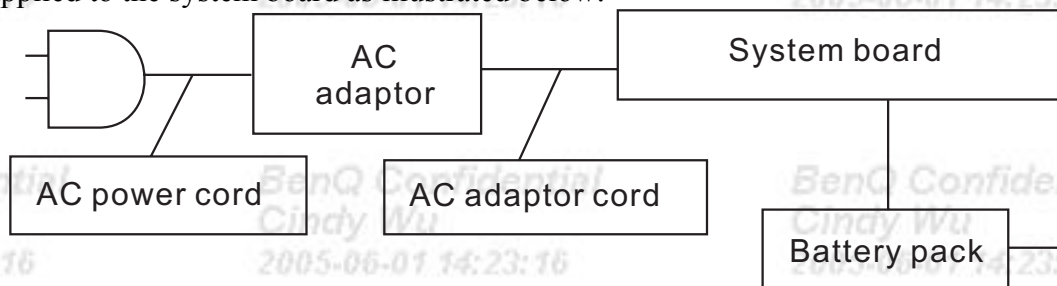
Check 4 Make sure the Battery LED blinks in orange, go to Procedure 3.

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Procedure 2 Connection Check

Power is supplied to the system board as illustrated below:



Follow the steps below to check whether each connector has been connected correctly:

Check 1 Make sure the AC adaptor and AC power cord have been firmly plugged into the DC IN 18V socket and wall outlet, respectively. When they have been connected correctly, perform Check 2.

Check 2 Connect a new AC adaptor and AC power cord.

- If the Power LED does not go on while turn on the power, go to Procedure 4.
- Disconnect AC adaptor and turn on the power. If the battery LED does not go on, perform Check 3.

Check 3 Make sure the battery pack has been correctly installed in the computer. If the battery LED does not go on while the battery pack has been installed correctly, go to Procedure 4.

Procedure 3 Battery Replacement Check

The Battery may be faulty. Replace the battery pack with a new one following Tear Down guide. If the battery LED does not go on in blue or orange, go to Procedure 4.

Procedure 4 Replacement Check

The system board, charger board, or CPU may be faulty. Disassemble the computer according to Tear Down guide and follow the steps below:

Check 1 Replace the charger board with a new one. If the battery pack is still not working properly, perform Check 2.

Check 2 Replace the system board with a new one. If the battery pack is still not working properly, perform Check 3.

Check 3 Replace the CPU with a new one

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1.4 System Board

To check if the system board is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1 Port 80 Check (in Boot Mode)

Procedure 2 Port 80 Check (in Resume Mode)

Procedure 3 Test Program Check

Procedure 4 Replacement Check

Procedure 1 Port 80 Check (in Boot Mode)

The port 80 card LED displays the POST status and error status by turning lights on and off as 2 hexadecimal value obtained in the boot mode after the system unit is switched on.

Follow the steps below to use the printer port LED:

1. Turn on the computer and set the boot mode.
2. Turn off the computer.
3. Plug the port 80 card into the computer's mini PCI slot.
4. If the 7 segments LED show us FFh (normal status), go to Procedure 3.
5. If the digit shown on 7 segments LED matches any other status in Table 2-1, go to Procedure 4.

NOTE: The 7 segments LED displays each status upon completion of the corresponding POST test item. If the POST terminates with 21h displayed on the 7 segments LED, for example, the POST has completed KBC initialization and detected an error

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Table -1 Port 80 LED boot mode status (1/3)

LED Status (Hexadecimal)	Test Item	Description
0H	DIAG_SYSTEM_INIT	Boot started,read the cmos data for makesure
		main board power is stable
1H	DIAG_A20_DISABLE	Disable A20 through A20
2H	DIAG_INIT_CHIPSET	Initialize Chipset,load chipset default
		size chache RAM
3H	DIAG_TEST_RAM	send patten for test the basic 640k RAM
4H	DIAG_MOVE_BB_LOADER	Move boot load segment into the RAM
5H	DIAG_EXECUTE_IN_DRAM	program execution from DRAM
6H	DIAG_USER_FLASH_CHECK	Test print port for check
		crisis option is enable or not
7H	DIAG_SHADOW_BIOS	Decompress the system BIOS, and
		Shadow System BIOS to RAM
8H	DIAG_CHECKSUM_BIOS	Checksum System BIOS ROM
9H	DIAG_NORMAL_BOOT	Jump to the reset point
AH	DIAG_CRISIS_BOOT	Proceed with Crisis Boot,first initial
		superio and boot device
FH	DIAG_FATAL_ERROR	Fatal Error,like the RAM error or ROM error
CCH	DIAG_CRISIS_BEGIN	Start process the Crisis recovery procedure
99H	DIAG_RESUME_RAM_ERROR	Resume SMRAM not Found
10H	DEBUG_MISC_RESET	Disable internal cache ram,and
		reset cpu
11H	DEBUG_CS_FAST_A20_RESET	Turn off FASTA20 for post,and check have keyboard
		controllor
12H	DEBUG_POST_SIGNAL_POR	Initial PIC enable INT and Signal Power On Reset
13H	DEBUG_CS_CHIP_INIT	Initialize the Chipset and hook PCI BIOS
14H	DEBUG_OEM_ISA_VGA_SEARCH	Search For ISA Bus VGA Adapter, from address c000
		to e000
15H	DEBUG_HWIO_SETUP CTC1	Initialize Counter and Timer chip
16H	DEBUG_OEM_SET_CMOS_REGS	User register config through CMOS
17H	DEBUG_CS_MEMORY_SIZE	Size Memory, and detect memory timing,
		setup memory controllor
18H	DEBUG_POST_TEST_RAM	Initialize and test the first 64k memory
19H	DEBUG_GEN_TEST_ROMS	checksum the system ROM
1AH	DEBUG_HWIO_RESET_INTS	Reset PIC's status
1BH	DEBUG_VIDEO_VIDEO_INIT	Initialize Video Adapter(s),and check vga rom and
		vga ram
1CH	DEBUG_VIDEO_EQUIP_INIT	Initialize Video (6845 Regs),set display mode
1DH	DEBUG_VIDEO_COLOR_INIT	Initialize Color Adapter,and setup display reg.
1EH	DEBUG_VIDEO_BW_INIT	Initialize Monochrome Adapter,and setup display
		reg.
1FH	DEBUG_HWIO_TEST_DMA_PAG	Send out some value,to test 8237A Page Registers

Table 2-2 Port 80 LED boot mode status (2/3)

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LED Status (Hexadecimal)	Test Item	Description
20H	DEBUG_KEYB_SELFTEST_CTLR	Send selftest command (AAH) to test Keyboard controller if o.k. return (55h)
21H	DEBUG_KEYB_RESET_KEYBOARD	Test Keyboard Controller and initialize keyboard controller
22H	DEBUG_POST_CHECK_CMOS_RAM	Send test petten to Check CMOS Ram
23H	DEBUG_POST_TEST_BATT_CMOS_S	Test Battery Fail & check CMOS X-SUM
24H	DEBUG_HWIO_TEST_DMA_CTLRS	Use DMA to copy data for Test the DMA controllers
25H	DEBUG_HWIO_INIT_8237	Initialize 8237A Controller
26H	DEBUG_POST_INIT_VECS	Install and Initialize interrupt Vectors
27H	DEBUG_RAM_QUICK_SIZE	Enter memory protect mode,use change RAM bank to do RAM Quick Sizing
28H	DEBUG_RAM_PROT_ENTRY_1	Memory protected mode entered safely
29H	DEBUG_RAM_SIZE_DONE	Test the basic 640k ram,RAM test completed
2AH	DEBUG_RAM_PROT_EXIT	Protected mode exit successful
2BH	DEBUG_CS_SHADOW_SETUP	Shadow system and video BIOS to RAM if CMOS requests shadowSetup Shadow
2CH	DEBUG_VIDEO_EQUIP_INIT_INIT	Going To Initialize 6845 CRT controller
2DH	DEBUG_VIDEO_BW_SEARCH	Search For Monochrome Adapter
2EH	DEBUG_VIDEO_COLOR_SEARCH	Search For Color Adapter
2FH	DEBUG_VIDEO_SIGNON	Signon messages displayed
30H	DEBUG_OEM_CONFIG_KBD_CTL	For special initialize of keyboard controller
31H	DEBUG_KEYB_PRESENT_TEST	Test the keyboard controller ,If Keyboard Present
32H	DEBUG_KEYB_TEST_IRQ1	Clear keyboard buffer and sen keyboard command to test Keyboard Interrupt
33H	DEBUG_KEYB_TEST_CMD	Send keyboard command to turn off keyboard LED and Test some Keyboard Command Byte
34H	DEBUG_RAM_FULL_TEST	TEST memory procedure, for test,blank and count all RAM
35H	DEBUG_RAM_PROT_ENTRY_2	Eneter the memory protected mode for test all expand memory
36H	DEBUG_RAM_TEST_DONE	Test and blank all memory complete
37H	DEBUG_RAM_PROT_EXIT_2	Switch the memory from Protected mode to real mode
38H	DEBUG_KEYB_OUTPUT_PORT	Disable A20 status for memory test finish
39H	DEBUG_CS_CACHE_SETUP	Setup Cache Controller
3AH	DEBUG_HWIO_TEST_PERIODIC	Check and test the timer 0 interrupt function is Working
3BH	DEBUG_GEN_CHECK_RTC	test for RTC ticking
3CH	DEBUG_GEN_INIT_HARD_VECS	Install and initialize the hardware vectors
3DH	DEBUG_MOUSE_INIT	Clear keyboard buffer for search and Init the Mouse
3EH	DEBUG_KEYB_SET_LEDS_1	Send keyboard command to Update keyboard NUMLOCK status
3FH	DEBUG_OEM_DEVICE_CONFIG	special init of COMM and LPT ports

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Table 2-2 Port80 LED boot mode status (3/3)

LED Status (Hexadecimal)	Test Item	Description
40H	DEBUG_CS_CONFIG_PORTS	Configure the COMM and LPT ports
41H	DEBUG_FLOP_INIT	According cmos data to initialize the floppies
42H	DEBUG_WINI_INIT	Scan and initialize the hard disk, and display the result on crt
43H	DEBUG_HWIO_ROM_INIT	Search option rom from c800 to e000 and to Initialize option ROMs
44H	DEBUG_OEM_INIT_POWER_MAN	Check special device initial power management function
45H	DEBUG_KEYB_SET_LEDS_2	Clear keyboard buffer and Update NUMLOCK status
46H	DEBUG_HWIO_FIND_80X87	Test For Coprocessor Installed,and enable coprocessor interrupt
47H	DEBUG_OEM_LAST_MINUTE_INIT	Run OEM functions before boot, and enable L1,L2 cache
48H	DEBUG_MISC_LAUNCH_INT19	Post code will finish,ready to run int19 and load OS
49H	DEBUG_BEGIN_BOOT_CODE	Into Int19, to boot from floppy or other boot device
50H	DEBUG_ACPI_INIT	Initialize the ACPI function
51H	DEBUG_PM_CPU_INIT	Power manager initial & GEYSERVILLE CPU initialize
52H	DEBUG_USB_HC_INIT	Clear USB status register and Initiallize the USB Hub controllor

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Procedure 2 Port 80 Check (in Resume Mode)

The 7 segments LED displays the POST status and error status by turning lights on and off as a hexadecimal value obtained in the resume or suspend mode after the system unit is switched on.

Follow the steps below to use the port 80 debug card:

1. Turn on the computer and set the resume or suspend mode.
2. Turn off the computer.
3. Plug the port 80 debug card into the computer's mini PCI slot.
4. If the 7 segments show you FFh (normal status), go to Procedure 3.
5. If the digit on 7 segments LED matches any other status in Table 2-2, go to Procedure 4.

Table -2 Port 80 LED resume mode status

< Resume mode >

LED Status (Hexadecimal)	Test Item	Description
0H	DIAG_SYSTEM_INIT	Boot started, read the CMOS data for measure
		main board power is stable
1H	DIAG_A20_DISABLE	Disable A20 through A20
2H	DIAG_INIT_CHIPSET	Initialize Chipset, load chipset default
		size cache RAM
3H	DIAG_TEST_RAM	send pattern for test the basic 640k RAM
4H	DIAG_MOVE_BB_LOADER	Move boot load segment into the RAM
5H	DIAG_EXECUTE_IN_DRAM	program execution from DRAM
6H	DIAG_USER_FLASH_CHECK	Test print port for check
		crisis option is enable or not
7H	DIAG_SHADOW_BIOS	Decompress the system BIOS, and
		Shadow System BIOS to RAM
8H	DIAG_CHECKSUM_BIOS	Checksum System BIOS ROM
9H	DIAG_NORMAL_BOOT	Jump to the reset point
AH	DIAG_CRISIS_BOOT	Proceed with Crisis Boot, first initial
		superio and boot device
FH	DIAG_FATAL_ERROR	Fatal Error, like the RAM error or ROM error
CCH	DIAG_CRISIS_BEGIN	Start process the Crisis recovery procedure
99H	DIAG_RESUME_RAM_ERROR	Resume SMRAM not Found

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Procedure 3 Test Program Check

The maintenance test program contains several programs for diagnosing the system board and CPU.

Execute the following test programs using the procedures described in Diagnostic user guide.

1. System test
1. Memory test
2. Keyboard test
3. Display test
4. Hard Disk test
5. Touch Pad test
6. IrDA test
7. SD Card test
8. CD-ROM/DVD-ROM test
9. Audio test
10. IR test

Procedure 4 Replacement Check

The system board, memory, or CPU may be defective. Disassemble the computer following the steps described in Tear Down guide and replace the system board, memory module or CPU with a new one.

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1.5 2.5-inch HDD

To check if the 2.5-inch HDD is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

- Procedure 1 Message Check
- Procedure 2 Partition Check
- Procedure 3 Format Check
- Procedure 4 Test Program Check
- Procedure 5 Connector Check and Replacement Check

CAUTION: The contents of the 2.5-inch HDD will be erased when the HDD 2.5-inch HDD diagnostic test or formatting is executed. Save the required contents of the HDD to floppy disks or other storage drive in advance.

Procedure 1 Message Check

When the computer's HDD does not function properly, some of the following error messages may appear on the display. Follow the steps below to check the HDD.

Check 1 If either of the following messages appears, go to Procedure 2. If the following messages do not appear, perform Check 2.

Insert system disk in drive
Press any key when ready
or
Non-System disk or disk error
Replace and press any key

Check 2 Check BIOS SETUP to see if the Hard Disk option has been set correctly. If not, choose correct setting and restart the computer. If the problem persists, go to Procedure 2.

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Procedure 2 Partition Check

Enter the MS-DOS system. Perform the following checks:

- Check 1 Type **C:** and press the **Enter** key. If you cannot change to drive C, perform Check 2. If you can change to drive C, perform Check 3.
- Check 2 Type **FDISK** and press the **Enter** key. Choose "Display partition information" from the FDISK menu. If drive C is listed, perform Check 3. If drive C is not listed, return to the FDISK menu and choose the option to create a DOS partition on drive C. Then restart the computer. If the problem persists, go to Procedure 3.
- Check 3 If drive C is listed as active in the FDISK menu, perform Check 4. If drive C is not listed as active, return to the FDISK menu and choose the option to set the active partition for drive C. Then restart the computer. If the problem persists, perform Check 4.
- Check 4 Enter **DIR C:** and press the **Enter** key. If the following message is displayed, go to Procedure 3. If contents of drive C are listed on the display, perform Check 5.
- Invalid media type reading drive C
Abort, Retry, Fail?
- Check 5 Use the SYS command in the MS-DOS system to install system files. If the following message appears on the display, the system files have been transferred to the HDD. Restart the computer. If the problem persists, go to Procedure 3.
- System transferred

NOTE: If the computer is running Windows 95 OSR 2 or higher or Windows 98/2000 and the hard disk capacity is more than 512 MB, the FDISK program will ask if you need support for a partition larger than 2 GB. Select Y for large partition support; however, be sure to read the precaution regarding access by other operating systems.

Procedure 3 Format Check

The 2.5-inch HDD is formatted using the low-level format program and the MS-DOS FORMAT program. Using these programs, follow the steps below to format the HDD.

- Check 1 Enter **FORMAT C:/S/U** to format the HDD and transfer system files. If the following message appears on the display, the HDD has been formatted.
- Format complete

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If an error message appears on the display, refer to the MS-DOS Manual for more information and perform Check 2.

Check 2 Run the test program to format the 2.5-inch HDD with a low-level format option. See Diagnostic user guide for details on how to use the test program.
If the following message appears on the display, the HDD low-level format is complete. Partition and format the HDD using the MS-DOS FORMAT command.

Format complete

If you cannot format the HDD using the test program, go to Procedure 4.

Procedure 4 Test Program Check

Run the HDD test program stored on the maintenance test program disk for all test items. See

Diagnostic user guide for details on how to use the test program.

If an error is detected during the HDD test, an error code and status will be displayed. The error codes and their status names are listed in Table 2-3. If an error code is not generated and the problem still exists, go to Procedure 5.

Code	Status
1	Get Parameter Fail !
2	Read Old Data Error
3	Write Pattern Error
4	Read Back Data Error
5	Data Compare Error
6	Restore Data Error
7	Read Verify Error
9	Seek Error
10	Disk Controller Self Test Failed
11	Disk Controller Test unexpected interrupt Failed
12	Disk Controller action Test Failed
13	disk dos not support SMART
14	disk read attribute threshold error
15	disk read attribute value error
16	disk SMART attribute value error

Procedure 5 Connector Check and Replacement Check

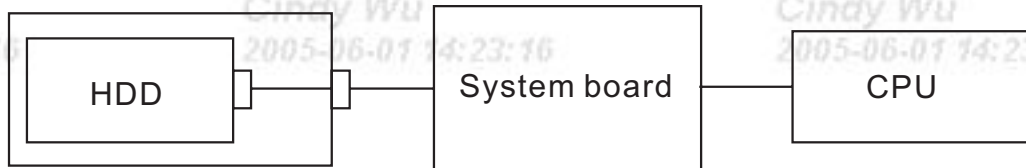
The HDD or system board may be faulty. Disassemble the computer following the steps described in

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Tear Down guide and perform the following checks:

Check 1 Make sure the following connectors have been firmly connected to the HDD, system board and CPU.



If any connector is loose or off, reconnect it firmly and return to Procedure 1.
If there is still an error, perform Check 2.

Check 2 The HDD may be damaged. Replace it with a new one following the disassembling instructions in Tear Down guide. If the problem persists, perform Check 3.

Check 3 The System board may be damaged. Replace it with a new one following the disassembling instructions in Tear Down guide.

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1.6 Keyboard

To check if the computer's keyboard is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1 Test Program Check

Procedure 2 Connector Check and Replacement Check

Procedure 1 Test Program Check

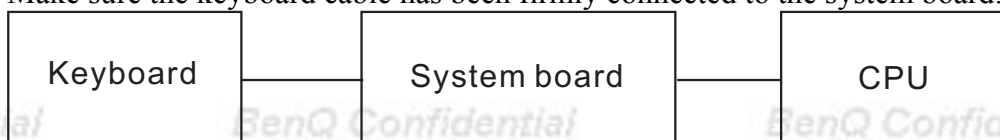
Execute the Keyboard test available as part of the maintenance test program. See Diagnostic user guide for information on how to perform the test.

If an error is detected in the test, go to Procedure 2. If no error is detected, the keyboard itself is normal.

Procedure 2 Connector Check and Replacement Check

The keyboard or system board may be disconnected or faulty. Disassemble the computer following the steps described in Tear Down guide and perform the following checks:

Check 1 Make sure the keyboard cable has been firmly connected to the system board.



If the cable is loose or off, reconnect it firmly and return to Procedure 2. If there is still an error, perform Check 2.

Check 2 The keyboard may be faulty. Replace it with a new one following the instructions in Tear down guide. If the problem persists, perform Check 3.

Check 3 The System board may be faulty. Replace it with a new one following the instructions in Tear Down guide.

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1.7 Display

To check if the computer's display is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1 Test Program Check

Procedure 2 Connector Check and Replacement Check

Procedure 1 Test Program Check

Insert the diagnostics bootable CD in the computer's CD ROM, turn on the computer and run the test.

See Diagnostic user guide for information on how to perform the test.

If an error is detected in the test, go to Procedure 2. If no error is detected, the display itself is normal.

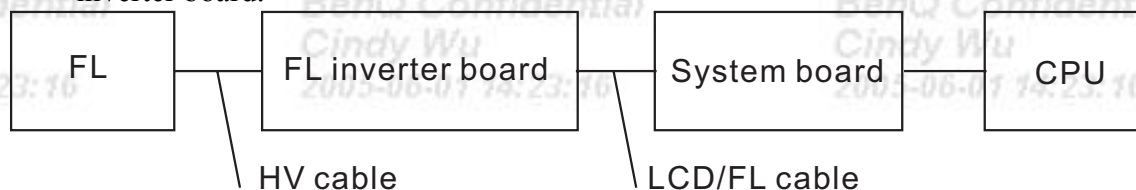
Procedure 2 Connector Check and Replacement Check

The display unit has an LCD module, Fluorescent lamp (FL), panel close switch and FL inverter board.

Any of the components or their connections may be defective. Disassemble the computer following the steps described in Tear Down guide, then perform the following checks:

- (1) If the FL does not light, perform Check 1.
- (2) If characters or graphics are not displayed normally, perform Check 5.
- (3) If the FL remains lit when the display is closed, the panel close switch may be defective. Perform Check 8.

Check 1 Make sure the following cables have been firmly connected to the system board and FL inverter board.



If any of the cables is loose or off, reconnect it firmly and return to Procedure 3. If there is still an error, perform Check 2.

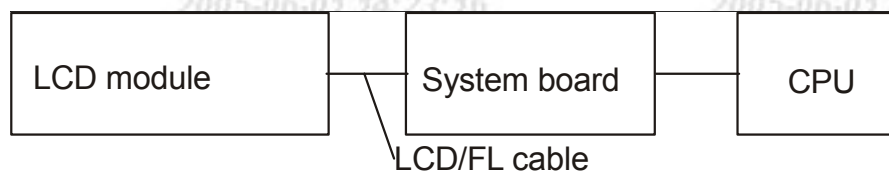
Check 2 The HV cable may be faulty. Replace it with a new one and return to Procedure 2. If there is still an error, perform Check 3.

Check 3 The FL may be faulty. Replace it with a new one and return to Procedure 3. If there is

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- still an error, perform Check 4.
- Check 4 The FL inverter board may be faulty. Replace it with a new one and return to Procedure 2. If there is still an error, perform Check 5.
- Check 5 Make sure the LCD/FL cable has been firmly connected to the system board and LCD module.



- If the cable is loose or off, reconnect it firmly and return to Procedure 2. If there is still an error, perform Check 6.
- Check 6 The LCD/FL inverter cable may be faulty. Replace it with a new one and return to Procedure 2. If there is still an error, perform Check 7.
- Check 7 The LCD module may be faulty. Replace it with a new one and return to Procedure 2. If there is still an error, perform Check 8.
- Check 8 The System board may be faulty. Replace it with a new one.

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1.8 DVD-ROM Drive

To check if the internal DVD-ROM drive is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1 DVD-ROM Cleaning Check

Procedure 2 Test Program Check

Procedure 3 Connector Check and Replacement Check

Procedure 1 DVD-ROM Cleaning Check

1. Turn off the power to the computer.
2. Open the DVD tray by inserting a slender object such as a straightened paper clip into the eject hole. The object must be long enough to activate the eject mechanism.
3. Clean the laser pickup lens with a lens cleaner. Apply the cleaner to a cloth and wipe the lens.
4. If the DVD-ROM drive still does not function properly after cleaning, go to Procedure 2.

Procedure 2 Test Program Check

Execute the CD-ROM/DVD-ROM drive test program available as part of the maintenance test program. Insert the diagnostics CD in the computer's CD-ROM, turn on the computer and run the test. Then insert a test DVD into the DVD-ROM drive. See Diagnostic user guide for information on how to perform the test.

If any error is detected by the test, go to Procedure 3.

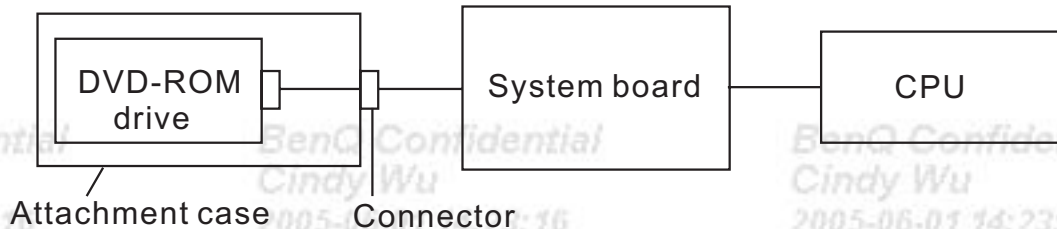
Procedure 3 Connector Check and Replacement Check

The DVD-ROM drive is connected to the system board by the connector. The connector may be disconnected from the system board or faulty. Disassemble the computer following the steps described in Tear Down guide and perform the following checks:

Check 1 Make sure the following connector has been firmly connected to the DVD-ROM drive and the system board.

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If the connector is loose or off, reconnect it firmly and return to Procedure 2.

If there is still an error, perform Check 2.

Check 2 The connector may be faulty. Replace the connector with a new one following the steps in Tear Down guide. If the DVD-ROM drive is still not functioning properly, perform Check

3. Check 3 The DVD-ROM drive may be faulty. Replace the DVD-ROM drive with a new one following the steps in Tear Down guide. If the DVD-ROM drive is still not functioning properly, perform Check 4.

Check 4 The system board may be faulty. Replace it with new one following the instructions in Tear Down guide.

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1.9 Combo Drive

To check if the internal Combo drive is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

- Procedure 1 Combo Cleaning Check
- Procedure 2 Test Program Check
- Procedure 3 Connector Check and Replacement Check

Procedure 1 Combo Cleaning Check

1. Turn off the power to the computer.
2. Open the CD tray by inserting a slender object such as a straightened paper clip into the eject hole. The object must be long enough to activate the eject mechanism.
3. Clean the laser pickup lens with a lens cleaner. Apply the cleaner to a cloth and wipe the lens.
4. If the Combo drive still does not function properly after cleaning, go to Procedure 2.

Procedure 2 Test Program Check

Execute the CD-ROM/DVD-ROM drive test program available as part of the maintenance test program. Insert the diagnostics CD in the computer's CD-ROM, turn on the computer and run the test. Then insert a test CD into the CD-ROM drive. See Diagnostic user guide for information on how to perform the test. If any error is detected by the test, go to Procedure 3.

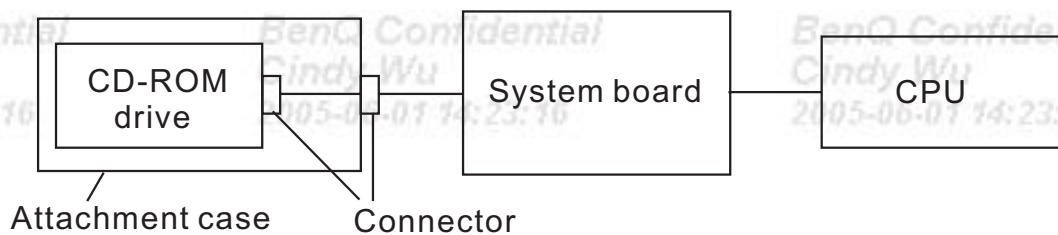
Procedure 3 Connector Check and Replacement Check

The Combo drive is connected to the system board by the Combo connector. The connector may be disconnected from the system board or faulty. Disassemble the computer following the steps described in Tear Down guide and perform the following checks:

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- Check 1 Make sure the following connector has been firmly connected to the Combo drive and the system board.



- If the connector is loose or off, reconnect it firmly and return to Procedure 2. If there is still an error, perform Check 2.
- Check 2 The connector may be faulty. Replace the connector with a new one following the steps in Tear Down guide. If the Combo drive is still not functioning properly, perform Check 3.
- Check 3 The Combo drive may be faulty. Replace the Combo drive with a new one following the steps in Tear Down guide. If the Combo drive is still not functioning properly, perform Check 4.
- Check 4 The system board may be faulty. Replace it with new one following the instructions in Tear Down guide.

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1.10 Cooling Module

To check if the computer's cooling module is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1 Test Program Check

Procedure 2 Connector Check and Replacement Check

Procedure 1 Test Program Check

Execute the Fan On/Off test program available as part of the maintenance test program. This test program checks the cooling module. Insert the diagnostics bootable CD in the computer's CD-ROM, turn on the computer and run the test. See Diagnostic user guide for information on how to perform the test.

If any error is detected by the test, go to Procedure 2.

Procedure 2 Connector Check and Replacement Check

The cooling module is connected to the system board. If the cooling module malfunctions, there may be a bad connection between the cooling module and the system board or either might be faulty.

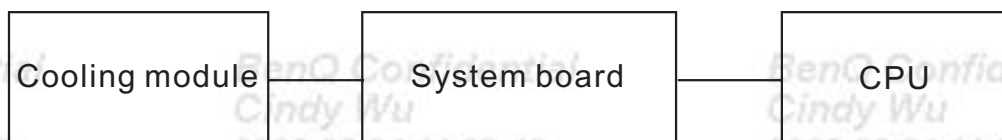
Disassemble the computer following the steps described in Tear Down guide and perform the following checks:

Check 1 Make sure the cooling module has been firmly connected to the connector on the system board. Also make sure that the tape is not stuck to any part of the fan and that the fan is

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free of foreign matter.



If the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If the tape is stuck to any part of the fan, stick it back to the specified point.

If a foreign matter is found in the fan, remove it and then return to Procedure 1. If there is still an error, perform Check 2.

Check 2 The cooling module may be faulty. Replace it with a new one following the steps in Tear Down guide.

1.11 Touch Pad

Procedure 1 Test Program Check

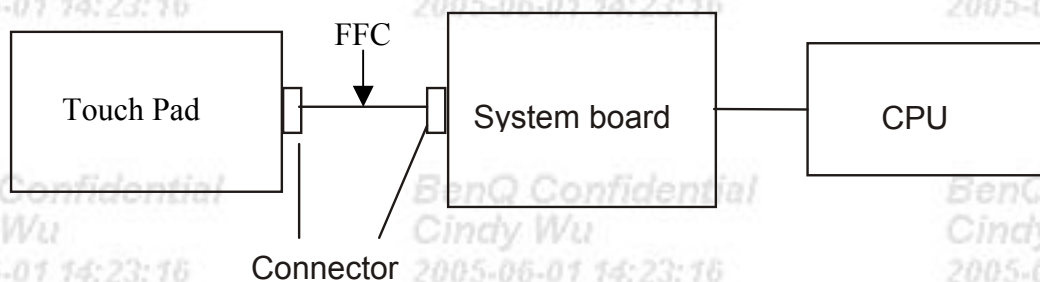
Execute the Touch Pad test program available as part of the maintenance test program. Insert the diagnostics CD in the computer's CD-ROM, turn on the computer and run the test. See Diagnostic user guide for information on how to perform the test.

If any error is detected by the test, go to Procedure 2.

Procedure 2 Connector and FFC Check and Replacement Check

The Touch Pad is connected to the system board by the FFC. The cable may be disconnected from the system board or faulty. Disassemble the computer following the steps described in Tear down guide and perform the following checks:

Check 1 Make sure the following connector and FFC have been firmly connected to the Touch Pad and the system board



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- Check 2 The FFC or connector may be faulty. Replace the FFC or connector with a new one following the steps in Tear Down guide. If the Touch Pad is still not functioning properly, perform Check 3.
- Check 3 The Touch Pad may be faulty. Replace the Touch Pad with a new one following the steps in Tear Down guide. If the Touch Pad is still not functioning properly, perform Check 4.
- Check 4 The system board may be faulty. Replace it with new one following the instructions in Tear down guide.

1.12 Audio

To check if the audio function is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1 Test Program Check

Procedure 2 Connector Check and Replacement Check

Procedure 1 Test Program Check

Execute the Audio test program available as part of the maintenance test program. This program checks the audio. Insert the bootable diagnostic CD into the ODD drive. Turn on the computer and run the test. See Diagnostic user guide for information on how to perform the test.

If any error is detected by the test, go to Procedure 2

Procedure 2 Connector Check and Replacement Check

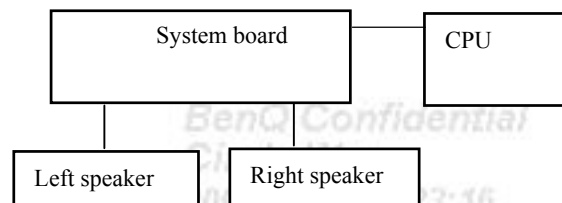
The audio codec and amplifier is on system board. If the audio malfunctions, there may be a bad connection between the speaker and the system board.

Disassemble the computer following the steps described in Tear Down guide and perform the following checks:

- Check 1 Make sure the cable of speaker connect to the system board has been firmly plugged into the connectors.

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If the cable of speaker is disconnected, connect it firmly and return to Procedure 1. If there is still an error, perform Check 2.

- Check 2 The system board may be faulty. Replace it with a new one following the instructions in Tear Down guide. If the problem persists, perform Check 3.
- Check 3 The speaker may be faulty. Replace it with a new one following the steps in Tear Down guide.

1.13 IR

To check if the IR function is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1 Test Program Check

Procedure 2 Replacement Check

Procedure 1 Test Program Check

Execute the IR test program available as part of the maintenance test program. This program checks the IR. Insert the bootable diagnostic CD into the CD-ROM drive. Turn on the computer and run the test. See diagnostic user guide for information on how to perform the test. If any error is detected by the test, go to Procedure 2

Procedure 2 Replacement Check

The IR module is mounted on system board. If the IR malfunctions, please replace system board with a new one following the steps in Tear Down guide, and then go to Procedure 1.

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1.14 Battery life (Battery Learning)

To maximize the life of your battery pack:

. At least once a month, disconnect the computer from a power source and operate it on battery power until the battery pack fully discharges. Before doing so, follow the steps below.

1. Turn off the computer's power.
2. Disconnect the AC adaptor and turn on the computer's power. If it does not turn on go to step 4.
3. Operate the computer on battery power for five minutes. If the battery pack has at least five minutes of operating time, continue operating until the battery pack is fully discharged. If the battery LED flashes in blue or there is some other warning to indicate a low battery, go to step 4.
4. Connect the AC adaptor to the computer and the power cord to a power outlet. The Battery LED should glow orange to indicate that the battery pack is being charged. If the Battery LED indicator does not glow, power is not being supplied. Check the connections for the AC adaptor and power cord.
5. Charge the battery pack until the Battery LED is OFF

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