



VAIO Notebook

PCG-V505 Series

Troubleshooting and Disassembly

Course: PC-03A

Table of Contents

PC-03A - Introduction.....	1
Chapter 1 - PCG-V505 Series Troubleshooting	2
Overview.....	2
Warranty Policies and Procedures	2
Startup Problems.....	3
No Power.....	3
Failure to Complete POST Sequence	5
Operating System Malfunctions.....	7
Operating System Will Not Load:	7
System Recovery	8
Display Problems.....	9
No Video.....	9
Video Distortion	10
Additional Troubleshooting Information	10
Chapter 2 - PCG-V505 Series Disassembly	11
Preparation	11
Keeping Track of the Screws.....	11
The Workbench Area.....	11
ESD Protection.....	11
Bottom Cover and Palm Rest Disassembly.....	11
Bottom Cover.....	11
Hard Drive	12
Keyboard	14
Front Screw Cover and Retaining Screw	15
Palm-Rest Removal.....	15
Peripheral Hardware Removal	17
Optical Disc Drive	17
Wireless LAN.....	18
LCD Panel	20
PC Card Slot and Shield.....	22
Motherboard Removal	22
Removal From Chassis	22
Modem.....	24
CPU Heat Sink	24
CPU Removal.....	25
Power Supply Heat Sink and Backup Battery	26
VIF-33 and CX192 Boards	26
Cooling Fan	27
MBX and CPU Brackets.....	28

PC-03A - Introduction

This course is designed to aid the technician in servicing the Sony PCGV505 series notebook computers. Although there are several versions of this model, including those built for different countries, the troubleshooting and disassembly procedures remain relatively the same. The product used for reference is a PCG-V505DX.

This manual will be divided into two sections. The first chapter will discuss troubleshooting procedures for analyzing potential failures. The first step in deciding what is causing a failure is to determine if the problem is caused by hardware or software. Knowing where to obtain information about the product is also a key to proper diagnostics and repair.

Topics that will be discussed are:

- Troubleshooting “No Power” conditions
- Locating the cause of a Power On Self Test (POST) failure
- Operating System failures
- Proper identification of major components such as motherboards and drives
- How to order the correct motherboard
- On-line resources for technical assistance
- System recovery procedures, including Configured To Order (CTO) models
- BIOS and software upgrades

The second chapter will cover the proper disassembly and reassembly of each component all the way to a complete teardown. Proper inventory of the screws removed during disassembly is crucial to prevent poorly mounted components and/or damage. Detailed photos and descriptions will aid the technician in returning a properly reassembled unit to the customer.

Chapter 1 - PCG-V505 Series Troubleshooting

Overview

Troubleshooting computers is a unique experience compared to other electronic devices due to their high dependence on software to operate. Missing or corrupted software files can sometimes generate what appears to be a hardware issue. Fortunately, the operating systems on computers have extensive diagnostic capabilities to assist in isolating a hardware or software failure.

The self-help programs embedded within the software, along with the availability of knowledge bases located on the Internet, allows many customers to apply patches and/or manually correct these problems. The use of system recovery discs supplied with the computer is also a convenient tool for the customer to restore or repair corrupted files. Units will still come in for repair with these problems and it is up to the technician to determine if the failure is software related. It is a wise practice to have customers bring their computer in with all of the supplied accessories (especially any recovery discs).

This chapter will cover the different types of failures experienced with computers based on symptoms at initial startup or during operation. Although most common failure symptoms will be covered, there is always that obscure symptom which unexpectedly shows up. These are usually software related. In cases where hardware is the cause, it is wise to visit the Sony ESI website to view the knowledge base. The address is:

<http://service.sel.sony.com/> and you will need a user ID and password to access the site. If you work for a service company, ask for the ID and password.

<http://www.sony.com/pcsupport> can also be accessed for the latest information regarding software and device drivers for each model. This site can scan the computer and prompt for any upgrades. It is also accessible to the customer without the need for a user ID or password.

Warranty Policies and Procedures

Submitting warranty claim forms for Sony VAIO computers differs slightly than other products. Normally, only the product model and serial number is required to be entered on the claim form in the serial number field. VAIO claims must include the 8-digit product code and 7-digit serial number. The model number must also be the correct one. The model number on the bottom of the unit is not the correct one for the claim form. You must use the number that can only be seen by raising the LCD panel and exposing the keyboard. It is located on the right side, on the LCD panel or the hinge cover. Figure 1-1 illustrates the locations of these numbers. Visit the Sony ESI site mentioned above for the latest information regarding warranty policies and procedures.

NOTE: Some electronic warranty programs do not allow more than 14 digits to be entered in the serial number field. If this is the case, the first digit of the product code may be omitted.

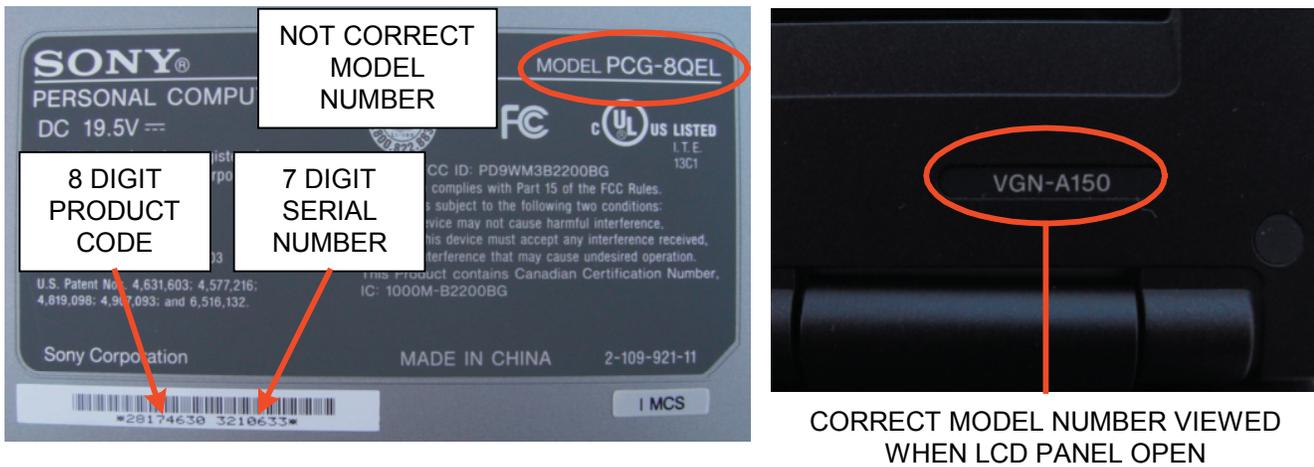


FIGURE 1-1 - DATA REQUIRED FOR WARRANTY CLAIM

Startup Problems

Failure of the computer to boot up to full operating condition can be caused by hardware, firmware, or software failures. In most situations, the cause is apparent. Sometimes it may be obscure. Startup problems can be classified into the following groups:

- No Power
- Power On Self-Test (POST)
- Operating System Software

No Power

Since the regulation circuits required for notebook computers to operate are located on the AC adapter and the motherboard, isolating the cause of a unit that will not power up is relatively simple. If the unit will power up with a known good battery, this helps to determine if the AC adapter may be at fault. If the AC adapter outputs a voltage that is excessively higher or lower than the specified voltage, a protection circuit located on the motherboard will engage and prevent the onboard regulator circuits from applying power to the circuits. It is, therefore, important to verify proper voltage levels generated by the AC adapter. The following voltages were recorded from a properly operating AC adapter supplied with a PCG-V505DX.

- Unloaded: 15.78VDC.
- Connected to unit, power off, with fully charged battery: 15.73VDC.
- Connected to unit, power off, with battery charging: 15.58VDC.
- Connected to unit, power on: 15.25 to 15.45VDC (Varies by CPU and hard drive activity).

NOTE: The loaded voltage of the AC adapter can be checked by removing the keyboard. A white connector located near the top left, having a black and red wire, provides power to the motherboard from the AC adapter.

If the AC adapter voltage is lower than 15 or greater than 16 volts, the UL Protect circuit on the motherboard will latch and prevent the unit from powering up. This generates a symptom of a dead power supply on the

motherboard. Even if a new AC adapter is used, the UL Protect circuit will remain latched. In order to release the latch, the AC adapter, main battery, and backup battery must be removed to allow the CMOS to reset. Wait about 10 seconds before re-applying any power.

If the voltage range of the AC adapter is within specifications, an attempt should be made to release the UL latch to see if the unit powers up. If the unit powers up, the latch may have been triggered by a line surge. Communicating with the customer regarding any recent power line problems or electrical storms will determine if the AC adapter should be replaced. If there is any doubt as to what caused the latch circuit to engage, replace the AC adapter.

If the unit is unable to power up with a charged battery and the AC adapter voltage is within the ranges mentioned above, the motherboard must be replaced. Figure 1-2 contains a simple flowchart to aid in isolating a no power condition.

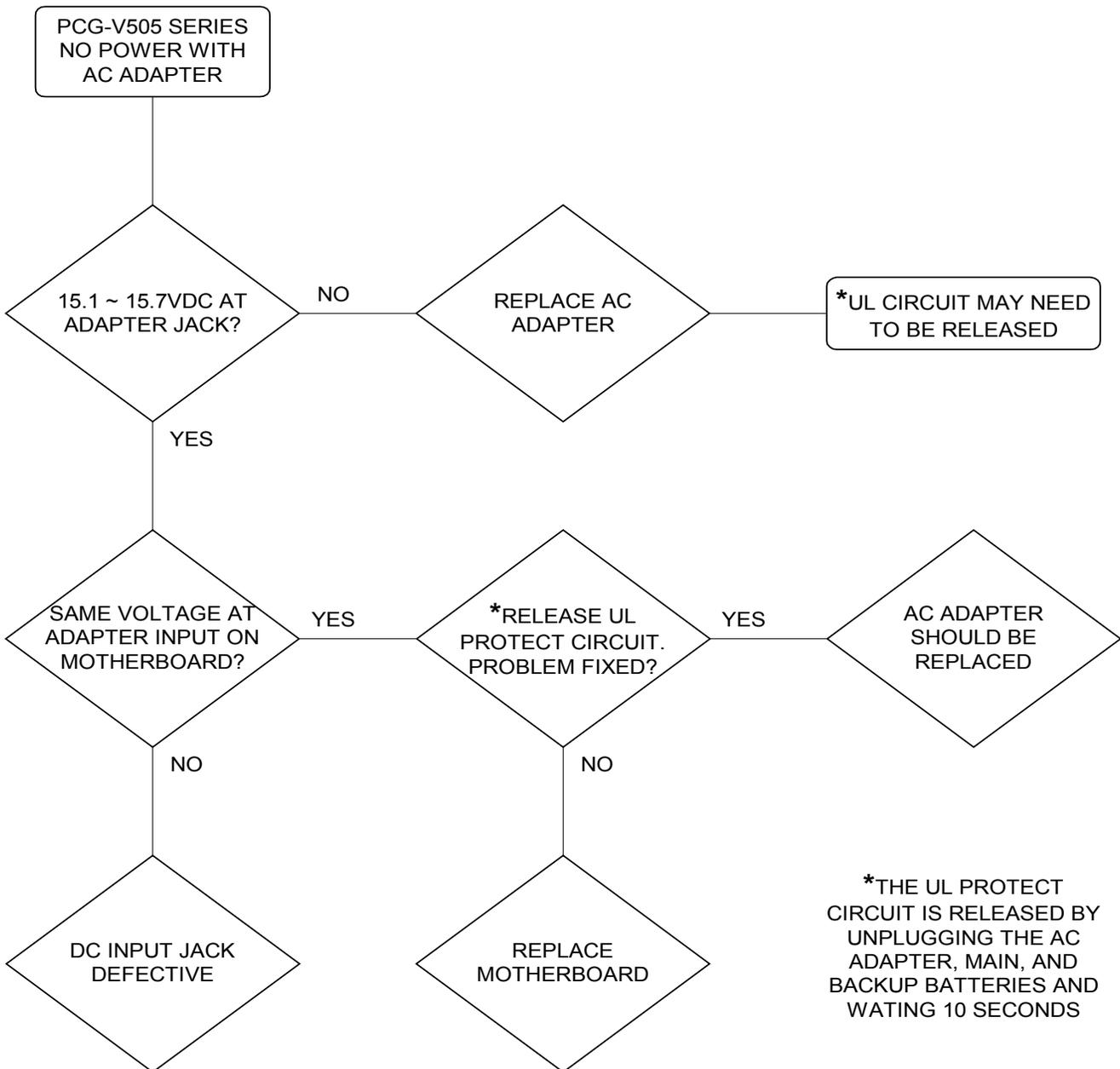


FIGURE 1-2 - NO POWER TROUBLESHOOTING FLOWCHART

Failure to Complete POST Sequence

Unlike desktop computers, Sony notebooks do not produce a series of diagnostic “beeps” to aid in the POST sequence. The only indication of a successful POST is the appearance of the Sony logo on the screen followed by the operating system splash screen. Certain device failures will prevent the Sony logo from appearing while others may allow the display of the logo but prevent the unit from beginning the OS loading. Figure 1-3 illustrates a flowchart to guide you through a POST failure diagnosis.

SONY Logo Does Not Appear:

It is important to verify that a problem does not exist with the LCD display panel. If the hard drive activity LED is active, the unit has passed the POST stage and is loading the operating system. The problem is likely a failure in the LCD panel since a defective video driver would keep the POST routine from completing. This is important to remember because the LCD backlight will not turn on until the end of POST. If it is verified the unit is truly hanging up at POST with no logo appearing, the following items should be checked:

- **RAM:** Defective RAM IC's or sockets are the most common cause of POST failures in any computer. If the unit has dual RAM IC's, remove one of them and see if the unit completes POST. If not, re-insert the first IC and remove the other. If the unit passes POST, the defective RAM has been located. **NOTE:** If either RAM IC is able to complete the POST routine, be certain to try starting the computer with the functioning RAM by putting it into the other socket. This will eliminate the possibility of a defective socket having caused the POST hang up. If the unit has only one RAM IC, a known, good IC will need to be inserted.
- **CPU:** This is the next likely suspect. Check the CPU to be certain it has not come loose. The only way to isolate the CPU is to replace it. Be certain to install a new heat transfer pad whenever the heat sink is removed from the CPU.
- **Motherboard:** Replacement of the motherboard should be attempted next. Check the Sony ESI website for the correct board part number based on the model you are repairing. This number will contain a B prefix instead of an A prefix like most Sony boards. A motherboard with a B prefix will contain the necessary DMI information for that model. ***NOTE: Based on previous repair history, motherboards tend to have a low failure rate. Be certain to double-check any other causes before ordering such an expensive part only to find that the problem still exists.***
- **Hard Drive:** Although the hard drive is technically not part of the POST, it can hang up the routine, especially if it is loading the power supply excessively. The unit will complete the POST with the hard drive removed and will display “Operating System Not Found”.
- **Video Driver:** In many cases the video driver is integrated with the motherboard. In cases where the video driver is contained on a separate board, it can be difficult to discern whether the driver or motherboard is the cause. For units that are under warranty, authorization should be requested for both boards.
- **Any Other Devices:** Modems, LAN cards, Memory Stick®, and any other removable devices should be disengaged to see if the POST completes.

Service Tip: For units with separate video driver circuits, defective drivers can usually be detected by using an external power supply, instead of the AC adapter, to power the unit up. The driver board will usually draw excessive current if defective. A power supply with an amp meter capable of reading up to 8 amps is required due to the higher power consumption of the newer and faster microprocessors and display panels. The procedure below is generic and can be applied to virtually any laptop or notebook computer.

Apply power with the external supply set to the normal operating voltage of the AC adapter. Note the amount of current being drawn at turn on. Turn the unit off and remove the video driver board. Re-apply power, turn the unit on and note the current draw. If current draw is significantly lower (250ma or more), the video driver is

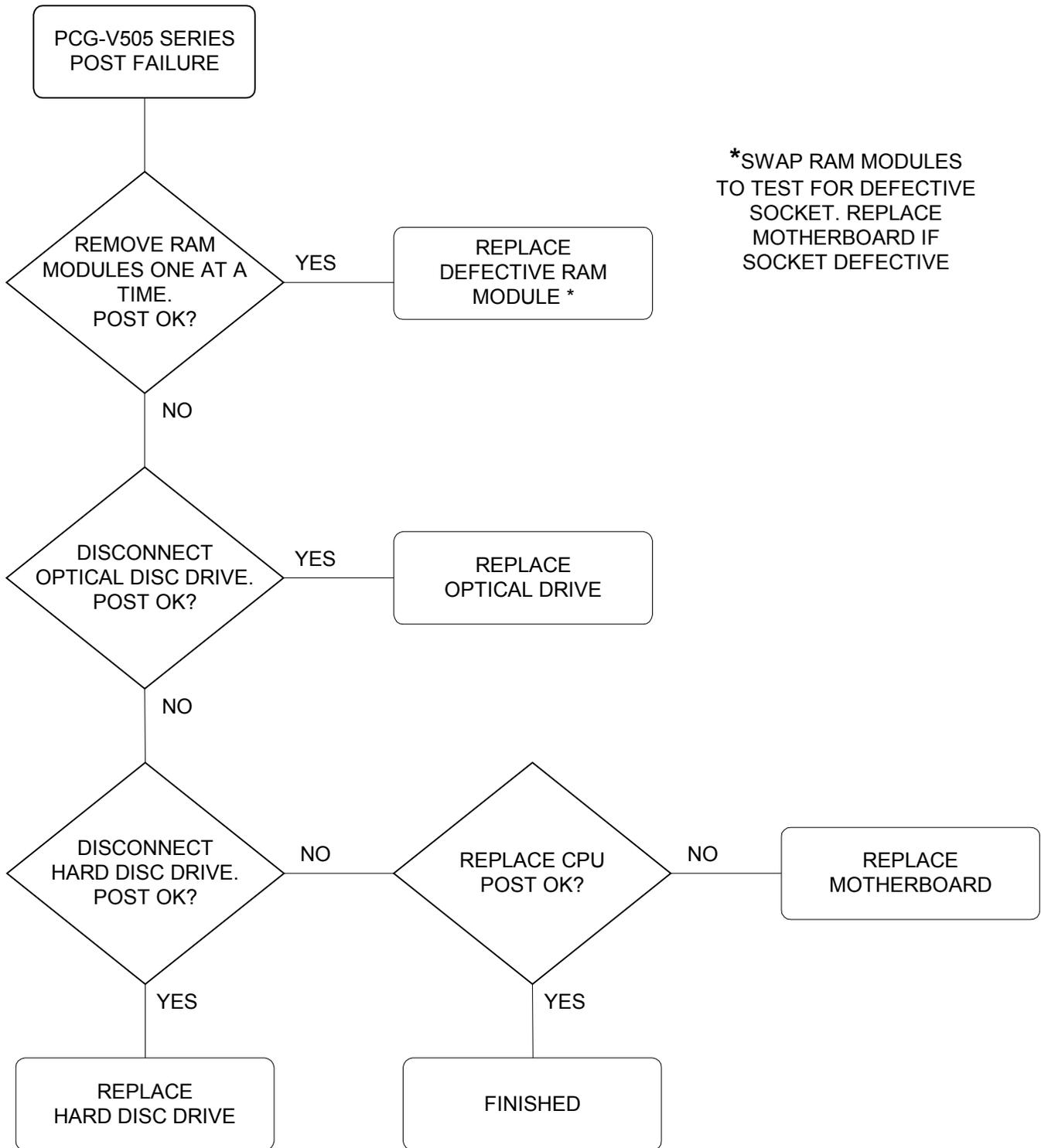


FIGURE 1-3 - POST FAILURE TROUBLESHOOTING FLOWCHART

defective.

Sony Logo Appears:

If the logo appears, most of the hardware has passed the POST and all firmware has loaded. If the unit cannot get past this stage, the optical or hard disc drive is the likely cause. An error message may, or may not, occur on the screen.

- **Hard Disc Drive:** This may, or may not, produce an error message on the display. If the hard disc is suspect, re-boot the computer and enter the BIOS setup by pressing the F2 key to see if it recognizes the drive. If the drive is recognized, turn the computer off and re-start with the hard drive disconnected. If the unit completes POST, the message “Operating System Not Found” should appear. This indicates a hard drive that cannot read any information from its disc and it should be replaced. The best way to eliminate a hard disc is to have a test drive with the correct operating system to see if the computer will load it.
- **Optical Disc Drive:** In most cases the POST sequence will eventually continue after a period of time and begin the OS loading. If this occurs, the optical disc can be checked by seeing if the OS can recognize it by using the “My Computer” or “Windows Explorer” functions.

Operating System Malfunctions

Failure of the operating system to correctly load can be caused by missing or corrupted files, missing or incorrect device drivers, malfunctioning devices, and even corrupted RAM. Missing or corrupted files usually generate error messages on the screen during the boot sequence. Corrupted RAM or device and/or driver failures generally hang the OS loading process.

It is assumed that technicians utilizing this manual are properly trained in the use and maintenance of the Microsoft Windows® XP platform. The operating and diagnostics functions of this OS are quite sophisticated and a training manual many times the size of this one would need to be developed to cover all possible use of the tools. The procedures to follow are very basic and laid out to quickly bring the system to proper working order.

Unlike off-the-shelf versions of the operating system, the OS loaded on Sony computers is customized and placed onto a recovery disc. This disc does not have the utilities to fix corrupted files in the OS without destroying data files. Running the recovery CD will re-image the drive and wipe out all other files, including those, which may be valuable to the customer. ***All attempts should be made to repair the operating system without using the recovery CD.***

The most effective way to narrow down the problem to software is to hook up a test drive with the correct operating system. If the unit is able to load the OS with the test drive, the cause of the OS failure on the original drive must be isolated. The OS has a variety of tools to aid in the isolation of problems.

Operating System Will Not Load:

An attempt should be made to load the operating system using a startup disc. This can be created on any computer with the same OS. Two important steps can be achieved if this is successful:

1. The ability to launch the system into safe-mode and access the internal Systems Restore utility of the OS
2. To *possibly* launch the entire OS to backup files valuable to the customer.

In some cases, the computer may not be able to load the operating system without a startup disc even after the Restore utility is run. This indicates a problem with the hard drive boot sector. Re-imaging the drive is now necessary to see if the problem can be resolved but it is usually caused by a defective hard drive.

System Restore Utility:

Microsoft Windows® XP includes a utility known as System Restore, found in the Program Files/Accessories/Systems Tools folder. This utility creates a “snapshot” of the files and configuration settings of the OS every time a new program is loaded using the Installation Wizard. It can also be set manually at any time. This data uses a considerable amount of hard disc space and is sometimes wiped off the disc when the customer runs the Disc Cleanup utility.

The utility creates “waypoints” going back in time and an attempt can be made to restore the OS to a particular point when the unit was functioning properly. If previous images of the system are present, odds are you should be able to get the computer up and running.

Operating System Hangs Up While Loading:

This problem usually occurs while the OS “splash screen” is being displayed. Device drivers are the most common cause although corrupted or missing system files can be suspect. Defective RAM or devices can also create this symptom. Try the following steps, in order, to help in isolating the problem:

1. RAM: Remove one RAM module at a time to see if the lockup ceases. If the unit only has one RAM module, it will have to be substituted.
2. Safe Mode: Press the F8 key as soon as the OS begins to load. Select “Safe Mode” from the menu options. If entry into this mode is successful, access the Device Manager to locate any devices that may be the cause. NOTE: If there are problems with devices or drivers, the computer will usually prompt you to enter the Safe Mode.
3. Boot Logging: Also accessed by pressing the F8 key, this feature creates a detailed log of each driver and service that loads. If there is a problem, it will be indicated in the log. The log is saved as a text file known as “NTBTLOG.TXT” in the C:\Winnt folder. Errors are usually displayed as “FAILED” or “NOT LOADED”. The log can be quite long and using the search feature in a text editor or word processor for these words, helps locate problem lines quicker.
4. Last Known Good Configuration: This is another feature on the diagnostics menu. Selecting this option will load the backup copy of the Registry that was created at the last successful boot. It cannot repair missing or corrupted system files and will erase any configuration settings in the current Registry copy.
5. System File Checker: This is a utility program to scan the system files. If any application has overwritten the original system files, it can restore the original. The utility is launched by going to the Start menu and selecting Run. Type in “SFC /SCANNOW”. Be sure to put a space between the SFC and the forward slash. The program will launch and begin scanning the system files. You will be prompted if any problems are found. This is quite a sophisticated program. For more information visit <http://www.updatexp.com/scannow-sfc.html>

System Recovery

The PCG-V505 series are sold with three types of recovery CDs. They are as follows:

1. System Recovery: A bootable CD that re-installs the operating system and all configuration settings present at the time of manufacture. The hard drive can be partitioned and formatted. This process wipes all files from the hard drive. Although it is an effective method to cure operating systems problems, it

should be performed as a last resort since the customer's data files will be lost. Any upgrades and service packs will also need to be downloaded and installed to bring the OS up to date.

2. **Application Recovery:** If any of the application programs originally supplied with the computer are inadvertently removed, or become corrupted, they can be re-installed with this utility. This feature can be run from Windows®.
3. **Drivers:** Contains backup copies of the necessary drivers originally installed on the computer.

Each recovery CD must match the Sony model for which it was made. When the discs are inserted, they match a code embedded on the CD with a reserved area of the BIOS known as DMI. If they do not match, the process will halt and notify you of a mismatch. If the customer is unable to provide the original recover CD set, the correct ones must be ordered. Part numbers for the correct CDs can be found on the ESI Website by searching the particular model.

Once the correct CD is inserted, the installation menu will launch and guide you through the necessary steps to complete the task.

BIOS Password Reset

Unlike previous Sony laptops, the BIOS password cannot be reset by removing the backup battery and all power sources. There are no jumper connectors. The only way to reset the password if the customer has forgotten it is to send the unit to Sony. The password can only be reset with a proprietary utility program and there are no plans to release this to the general customer or service population.

Display Problems

No Video

If the computer powers up and the hard drive indicator shows activity but nothing appears on the display, it is likely that the LCD display is malfunctioning. Plugging an external monitor to check for display is a useful tool to further isolate the LCD panel. If an external monitor cannot generate a display, the problem lies within the video driver circuits. This is rare since a failed video driver will not pass the POST event. There are three possible causes of a LCD panel to not generate a display:

1. The LCD harness has become loose from the video driver board or panel. This may be integrated with the motherboard. Check the cable connection at the driver source and within the LCD panel assembly. Disassembly procedures are covered in Chapter 2 of this manual.
2. The fluorescent backlight is not lighting. Depending upon ambient lighting conditions, it may not be easy to determine if the backlight is lit. The backlight starts as soon as POST is completed when the Sony logo should appear. One trick that usually works quite well is to move the LCD display and view it at various angles. If the LCD pixels are being activated, you will be able to see a faint image of the display caused by the external lighting passing through the pixels and reflecting outward. If this can be seen, the lamp or high-voltage driver is not working.
3. The LCD panel is defective. If no pixel activity can be seen, as mentioned above, the LCD process circuits are not working. This can be further verified by plugging in an external monitor. The panel must be replaced.

SERVICE TIP: The high voltage ballast circuit used to fire the fluorescent lamp generates several thousand volts of electricity. It is too high for most voltmeters to read and is usually loaded by the meter. Holding an oscilloscope probe near the ballast is an effective and safe way to test it. Set the scope gain to high (50mv) and the sweep to around 20us. If the ballast is operating you will be able to see the high voltage pulses on the scope screen. If pulses are present, the lamp is defective.

Video Distortion

Distortion problems in LCD-type displays generally appear in three forms:

- Distinctive horizontal or vertical lines (lit or unlit).
- Overall distortion affecting the entire screen
- Localized distortion

Fixed Horizontal or Vertical Lines:

The digital information sent to the panel from the video driver is supplied with a cable containing several dozen lines. The display panel contains several *thousand* lines intersecting along a horizontal and vertical plane to control each red, green, and blue pixel. The cable feeding the data to the panel contains serial data information. Once received by the panel processing drivers, the serial data is de-multiplexed by shift registers to active several dozens of lines at the panel. If one line is fully lit or missing, the failure definitely lies within the LCD panel and it must be replaced.

Overall Distortion:

This can appear as a loss of a primary color, loss of detail, or pixilated distortion. It is unusual for the pane itself to cause this. The video driver circuits are at fault and can be further verified by viewing with an external monitor.

Localized Distortion:

Usually appears as color “blotches” on the screen. This is a defective area on the panel. It can be caused by a defect in manufacturing or damage due to abuse. If caused by abuse, there is usually evidence of damage to the screen face cover.

Additional Troubleshooting Information

A knowledge base is maintained on the Sony ESI Website (<http://service.sel.sony.com/>) to provide up to date information on tips and service bulletins. The model you are servicing should always be looked up to view any possible sources to assist in repairing the unit. Below are some issues pertaining to the PCG-V505DX:

- [E23082588](#) Notebook PC motherboard Part Number
- [E24252134](#) Erratic Touch-Pad
- [E24447103](#) Missing Hidden Recovery Partition
- [E24728959](#) PC Card isn't recognized
- [E24742567](#) Notebook PC Recovery Media Part Numbers

Chapter 2 - PCG-V505 Series Disassembly

Preparation

Disassembling a notebook computer requires certain precautions be taken to avoid damage to components. Many screws of varying sizes are used. If the wrong screw is installed, damage to a circuit board or the mounting components can occur. This section of the manual will cover disassembly by identifying each screw removed with a number. The number used for each screw is extracted from the parts list in the service manual.

NOTE: The disassembly procedures outlined in this chapter uses the Model PCGV505DX. Variations of this model occur in the US market and, especially, in units manufactured for other countries. Fortunately, the differences are minor, usually involving more or less screws, differences in screw sizes, or screw location variances. Pay close attention to the screw sizes and location when a unit differs slightly from the model being presented.

Keeping Track of the Screws

Once method that works quite well is to utilize a small parts storage tray to place each screw into as the unit is disassembled. By numbering each of the bins, starting with the number "1", each screw size can be organized. It is best to use a tray with at least 24 bins. If a screw identified as B9 is removed, place it into the number 9 bin. An ice cube tray can also be used since there are never more than 8 different screw sizes during a disassembly. You will have to keep numerical track since most ice cube trays have a maximum of 16 bins. As an example: A unit may have 8 different screw sizes but they are labeled as B1, B2, B3, B4, B6, B9, B18, and B22. Keep the order of the screws by installing B1 into the upper left bin and putting the rest into sequential order.

The Workbench Area

A workbench with a surface pad should be utilized to prevent scratching of the cabinet assemblies. There will be a lot of flipping the unit over to remove components and loosening screws. This will cause movement of the unit on the work surface area and possibly scratch the cabinet. A size 000 Phillips screwdriver (preferably with a magnetized head), 3 and 4mm nut drivers, tweezers, long-nose pliers, and a small plastic, flat blade screw driver should suffice for the disassembly procedures.

ESD Protection

Although many technicians have been fortunate to have successfully serviced other electronic devices without utilizing safeguards for Electrostatic Discharge, it should not be ignored when working on computers. They utilize millions of CMOS transistors and are extremely susceptible to ESD damage. ***Always wear an approved and properly grounded ESD wristband when servicing computer products.***

Bottom Cover and Palm Rest Disassembly

Bottom Cover

In Figure 2-1, the removal of the bottom cover is shown. Release the battery latches and remove it. Remove

8 screws (B3) and 3 screws (B8) and place them into an appropriate organizing bin. Remove the large access panel to expose the hard drive and cooling fan. Note the keyboard retaining screw labeled in the diagram. If only the keyboard needs to be removed, this is the only screw you will have to remove.

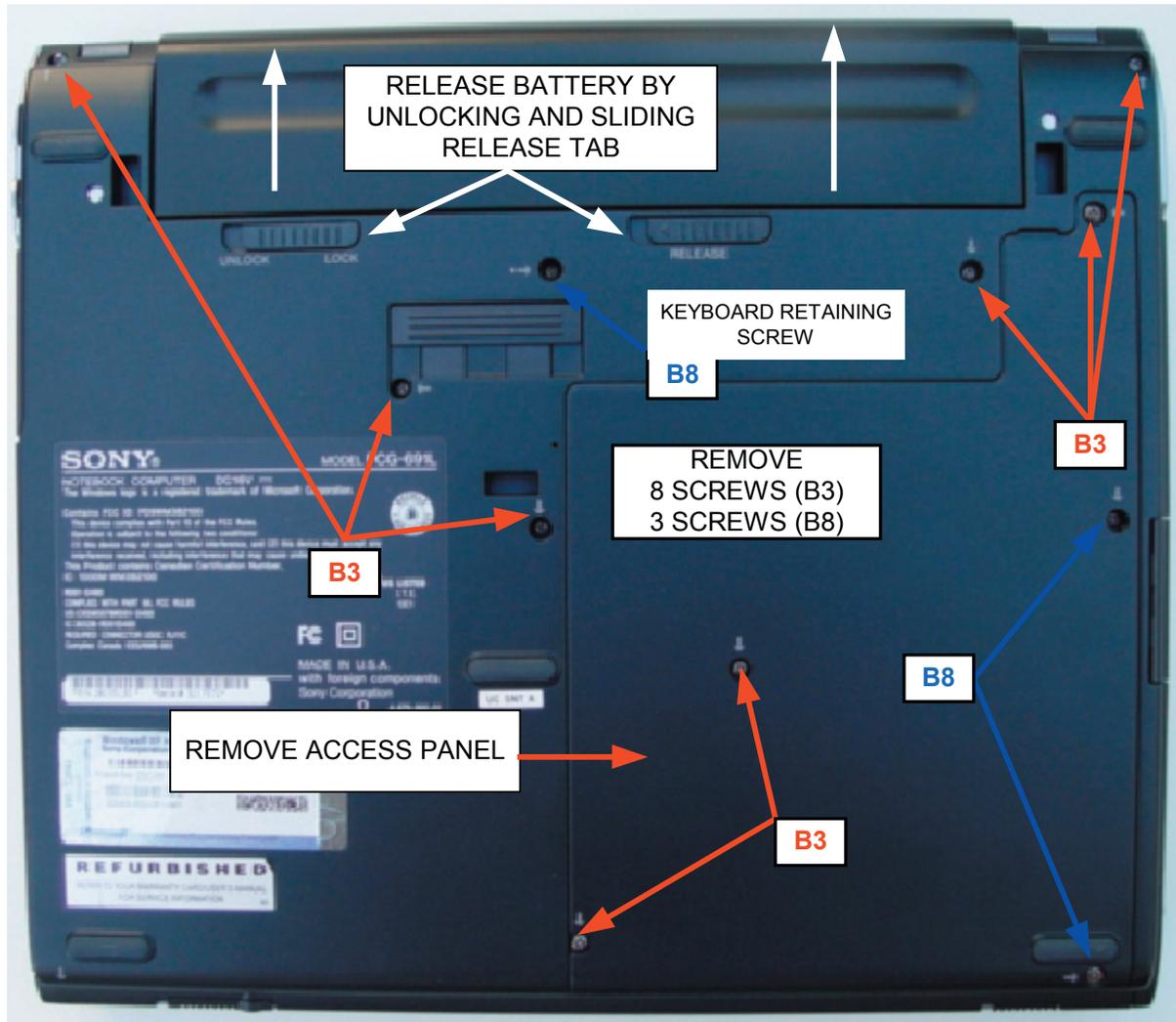


FIGURE 2-1 - BOTTOM COVER REMOVAL

Hard Drive

Referring to Figure 2-2, remove the 2 screws (B16) securing the hard drive. Earlier models may use a (B3) screw size. Unplug the interface cable by lifting straight up and remove the drive. Remove the 3 screws (B3) as shown to complete the un-securing of the palm rest. Flip the unit over to expose the keyboard.

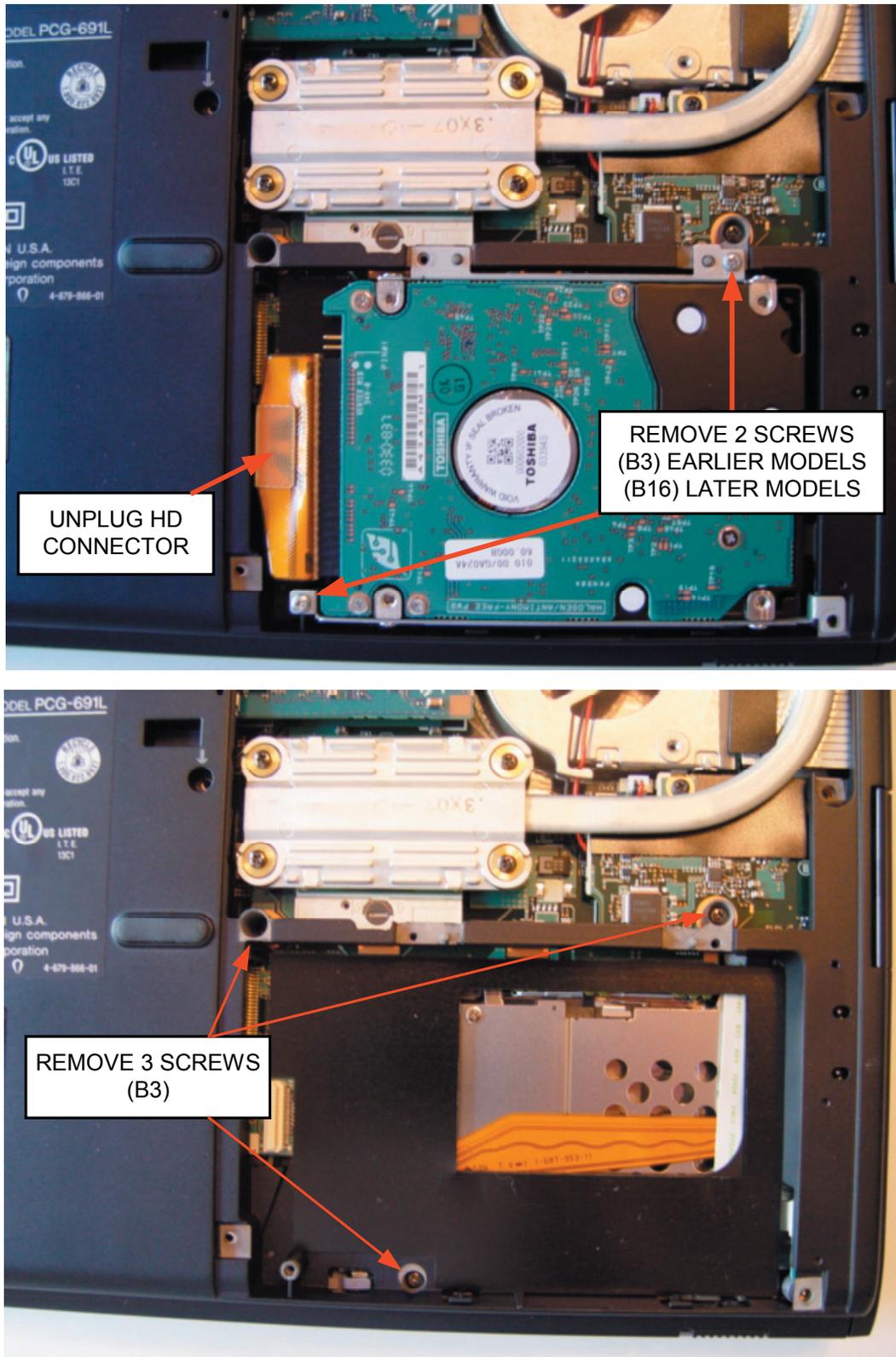


FIGURE 2-2 - HARD DRIVE REMOVAL

Keyboard

There are 2 release tabs located on the upper left and right side of the keyboard. The left tab is to the right of the backspace key and the right tab is to the left of the bottom corner of the ESC key. Carefully press the release tabs as shown in Figure 2-3 using a non-metallic device with a flat blade to avoid scratches and nicks to the palm rest cover. Lift the keyboard from the rear and slide it back to release the front mounting tabs. Be careful to lift the keyboard slightly since there is a flexible cable connecting it to the motherboard.

Once the keyboard is loose, lift it from the front to expose the FPC cable. Unlock the cable by pushing down on the lock tab. Pull the cable out and set the keyboard aside.

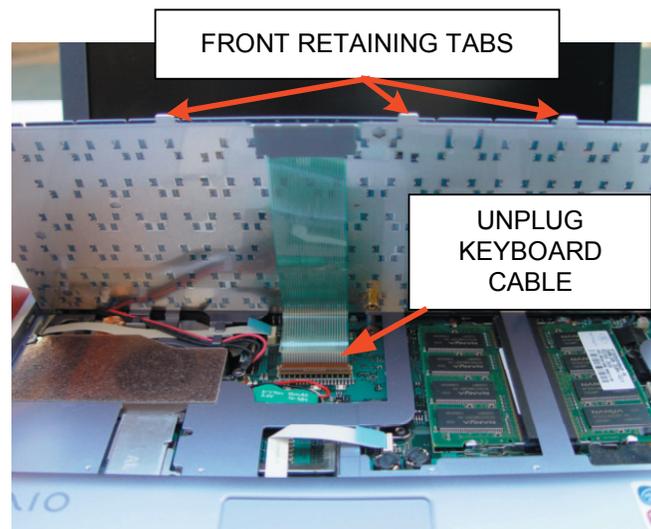


FIGURE 2-3 - KEYBOARD REMOVAL

Front Screw Cover and Retaining Screw

Carefully peel off the screw cover located at the front right corner of the unit as shown in Figure 2-4. Remove the screw (B12).



FIGURE 2-4 - SCREW COVER AND REATINING SCREW

Palm-Rest Removal

Step 1: Referring to Figure 2-5, *carefully* (to avoid tearing the FPC cable) remove the cloth tape located over the FPC cable on the lower right side of the opening. Unplug the 3 FPC cables and 2 harness connectors as shown. **CAUTION:** The speaker wire connector located at the upper right corner must be lifted straight up. Remove 1 screw (B2) and 2 screws (B3).

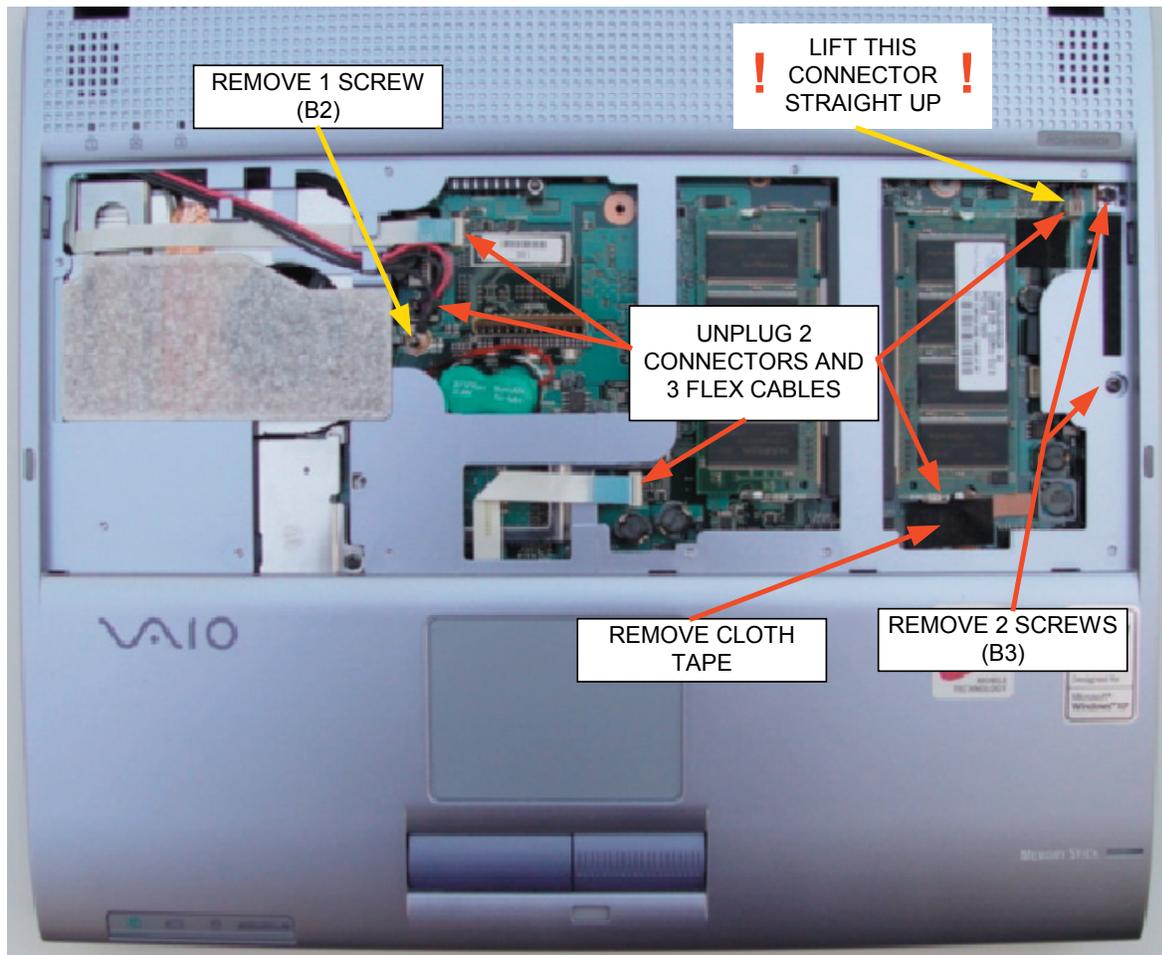


FIGURE 2-5 - PALM REST REMOVAL (PART 1)

Step 2: Grasp the notebook with both hands as shown in Figure 2-6. Using your middle fingers, press on the inside walls of the battery compartment to release the retaining latches. Once the latches release, **do not attempt to lift the palm-rest assembly completely off**. Set the unit on the workbench and continue to the next step.

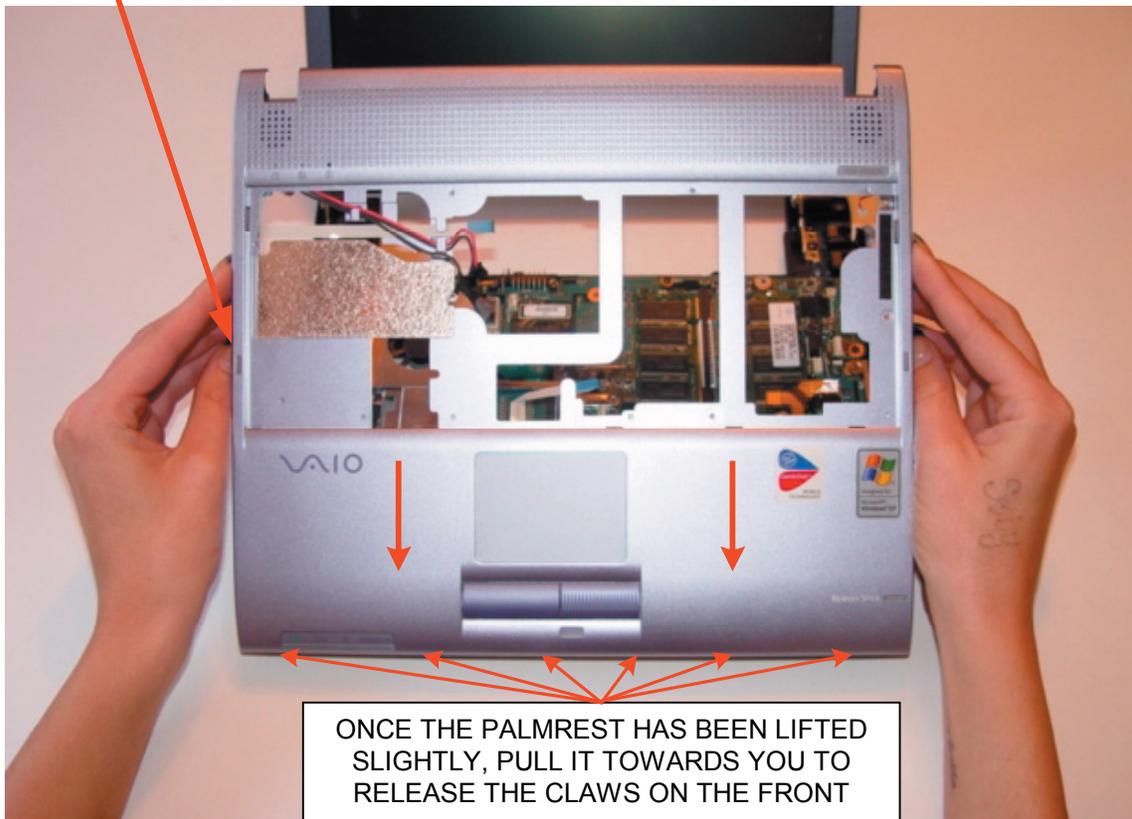


FIGURE 2-6 - PALMREST REMOVAL (step 2)

Step 3: Press the PC card release knob inward while lifting the rear of the palm-rest just enough to clear the knob as shown in Figure 2-7. While holding rear up slightly, pull the palm-rest towards you to release the front locking claws. Carefully checking to make sure all cables are loose, lift the assembly and set aside.



BE CERTAIN TO PUSH IN THE PC
CARD RELEASE KNOB WHILE
LIFTING TO PREVENT BREKAGE OF
THE KNOB



ONCE THE PALMREST HAS BEEN LIFTED
SLIGHTLY, PULL IT TOWARDS YOU
TO RELEASE THE CLAWS ON THE FRONT

FIGURE 2-7 - PALMREST REMOVAL (step 3)

Peripheral Hardware Removal

Optical Disc Drive

The optical disc drive is secured by 2 screws that were removed during the bottom cover disassembly. It is only held in place by its interface connector to the motherboard. Place your finger in the location shown in Figure 2-8 and push the drive to the right to disengage the connector. Grab the front cover of the drive and pull it out completely.

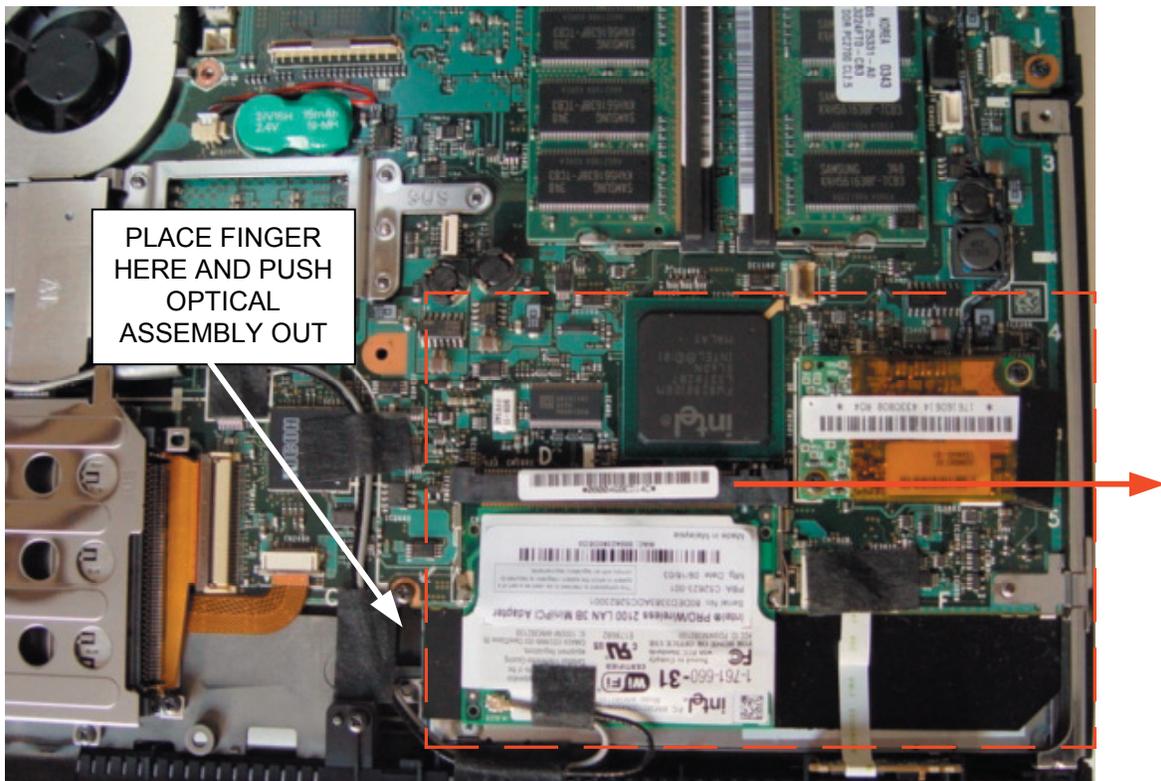


FIGURE 2-8 - OPTICAL DISC DRIVE ASSEMBLY

Wireless LAN

Step 1: Lift one side of each of the 5 pieces of cloth tape securing the two wireless LAN antenna cables as shown in Figure 2-9. Lift one side of the copper tape securing the cables to the cooling fan assembly. NOTE: If you are going to replace the motherboard, remove the tape pieces completely as they will have to be transferred to the replacement board. Some models may only have 4 pieces of cloth tape. It depends on what type of wireless LAN assembly is used.

Step 2: Spread the locking tabs as shown in Figure 2-10. It is the same procedure as removing memory modules. Unplug the two antenna cables noting the location of the gray and black cables.

Step 3: Undress the cables from the motherboard and fan. Note the slots in the lower cabinet and markings on the motherboard indicating the proper routing of the cable when it is re-installed later. This is important to minimize interference. Also note the positioning of the cables inside the hinge assembly of the LCD panel as illustrated in Figure 2-11. This is important to prevent pinching the cables when re-assembling the unit.

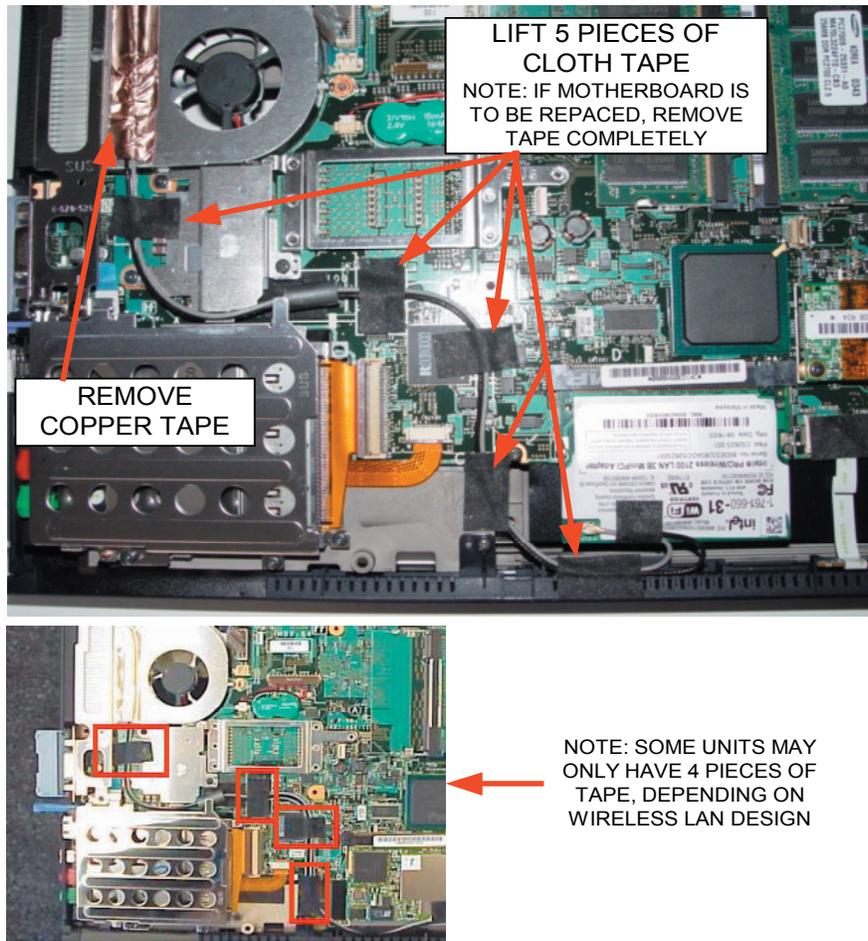


FIGURE 2-9 - WIRELESS LAN REMOVAL (step 1)

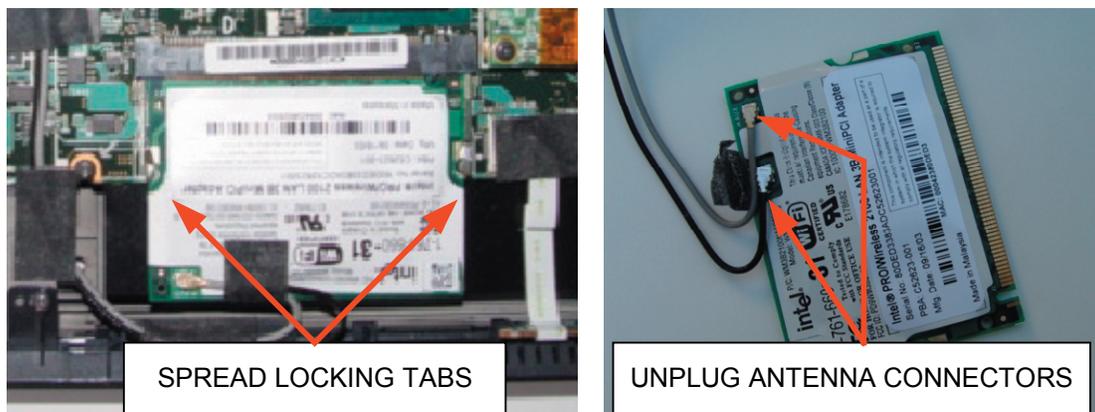


FIGURE 2-10 - WIRELESS LAN REMOVAL (step 2)

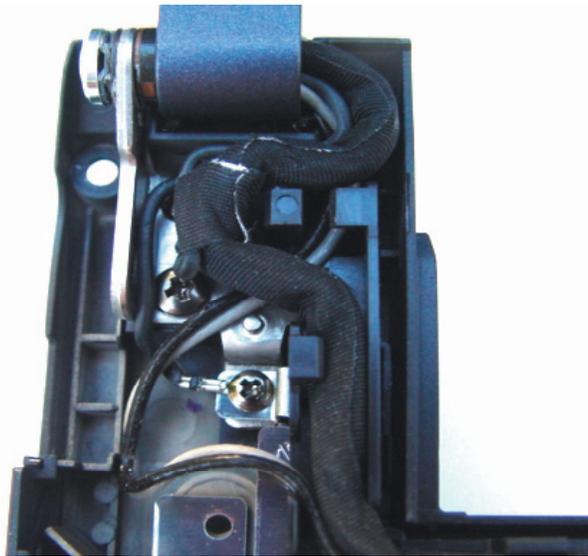


FIGURE 2-11 - PROPER DRESSING OF LAN AND LCD CABLES

LCD Panel

Step 1: Unplug the LCD harness from the motherboard as shown in Figure 2-12. Pull the cable out from the retaining clips and dress aside.

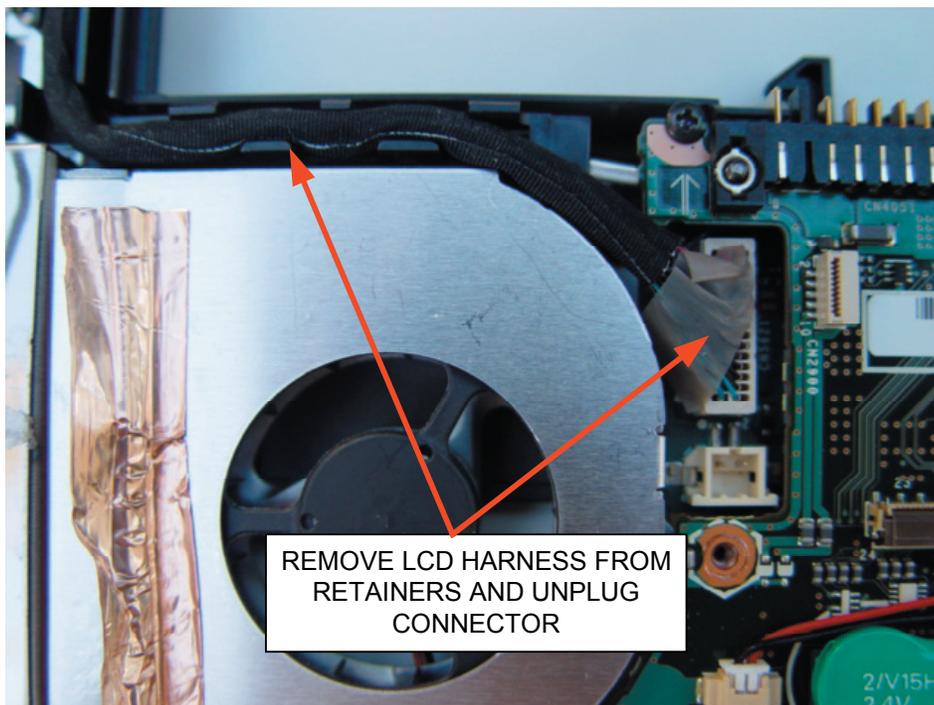


FIGURE 2-12 LCD PANEL REMOVAL (step 1)

Step 2: Remove the 4 screws (B3) securing the ground cable at the LCD hinge and the plastic and metal brackets as shown in Figure 2-13. Lift the plastic bracket out first (the one that secured the LCD harness) and then the metal bracket.

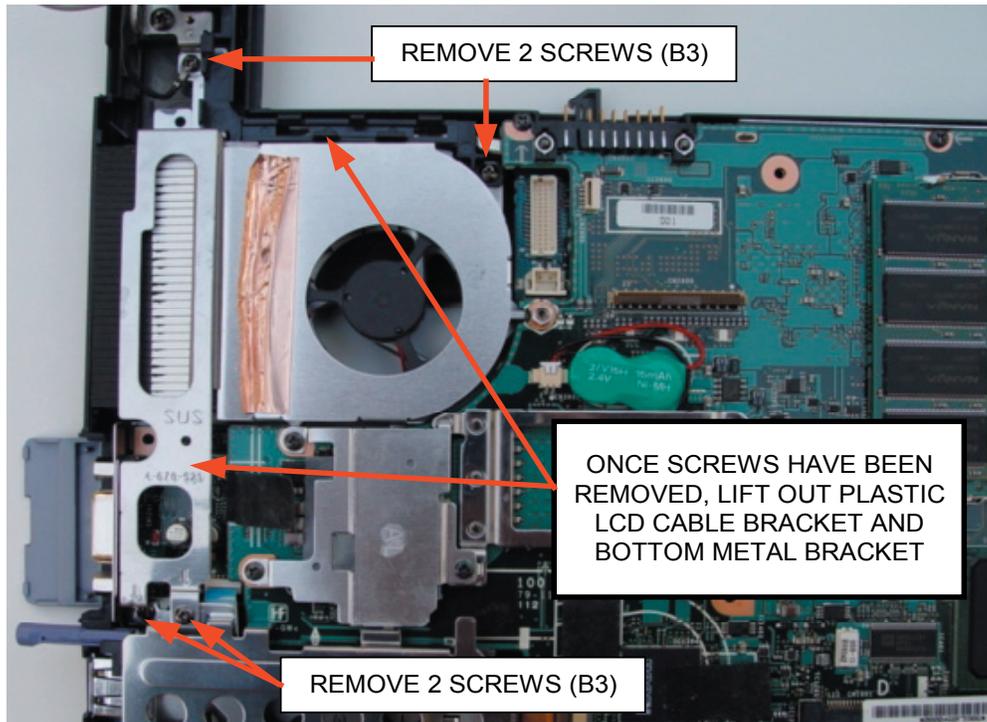


FIGURE 2-13 - LCD PANEL REMOVAL (step 2)

Step 3: Referring to Figure 2-14, remove the 4 screws (B13) securing the LCP panel hinges to the chassis. Remove the LCD panel and set aside.

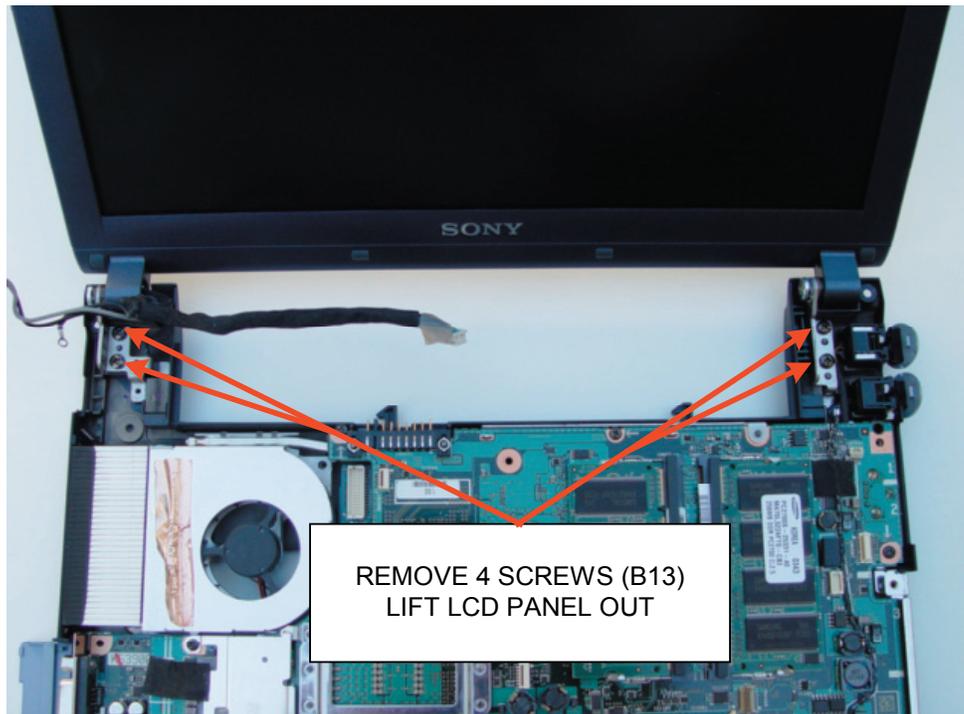


FIGURE 2-14 - LCD PANEL REMOVAL (step 3)

PC Card Slot and Shield

The PC card slot assembly is shown in Figure 2-15. Unlock the connector securing the FPC cable. Remove the 3 screws (B1) and lift the assembly out. The shield and PC card slot will now be separated and should be set aside together.

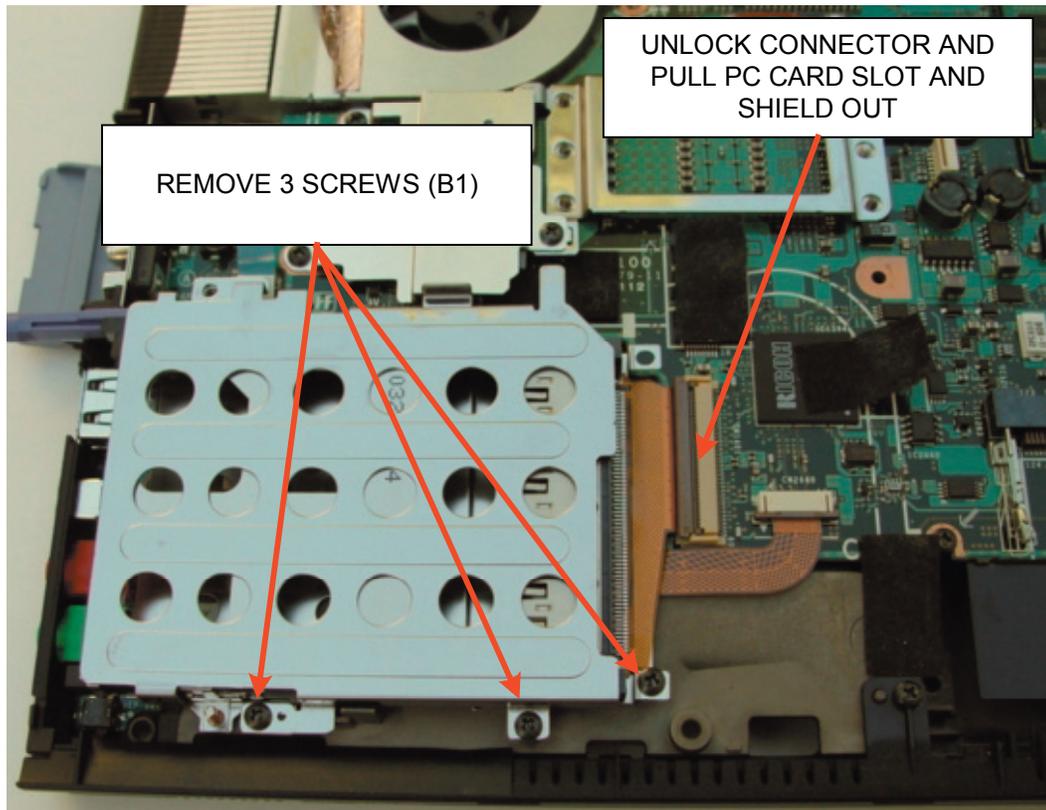


FIGURE 2-15 - PC SLOT AND SHIELD REMOVAL

Motherboard Removal

Removal From Chassis

Referring to Figure 2-16, unplug the 3 FPC cables. Note that the cable on the front right is covered by a piece of cloth tape. Carefully remove the tape and set aside. Remove the 4 screws (B1). One of the screws is located on the side of the unit near the front right corner and is securing a metal tab. Lift the RJ11 and RJ45 jacks from their slots. The RJ11 jack is secured with double-sided tape so you will have to pull a little to unseat it. Once the cables and screws have been removed, lift the motherboard out as shown in Figure 2-17.

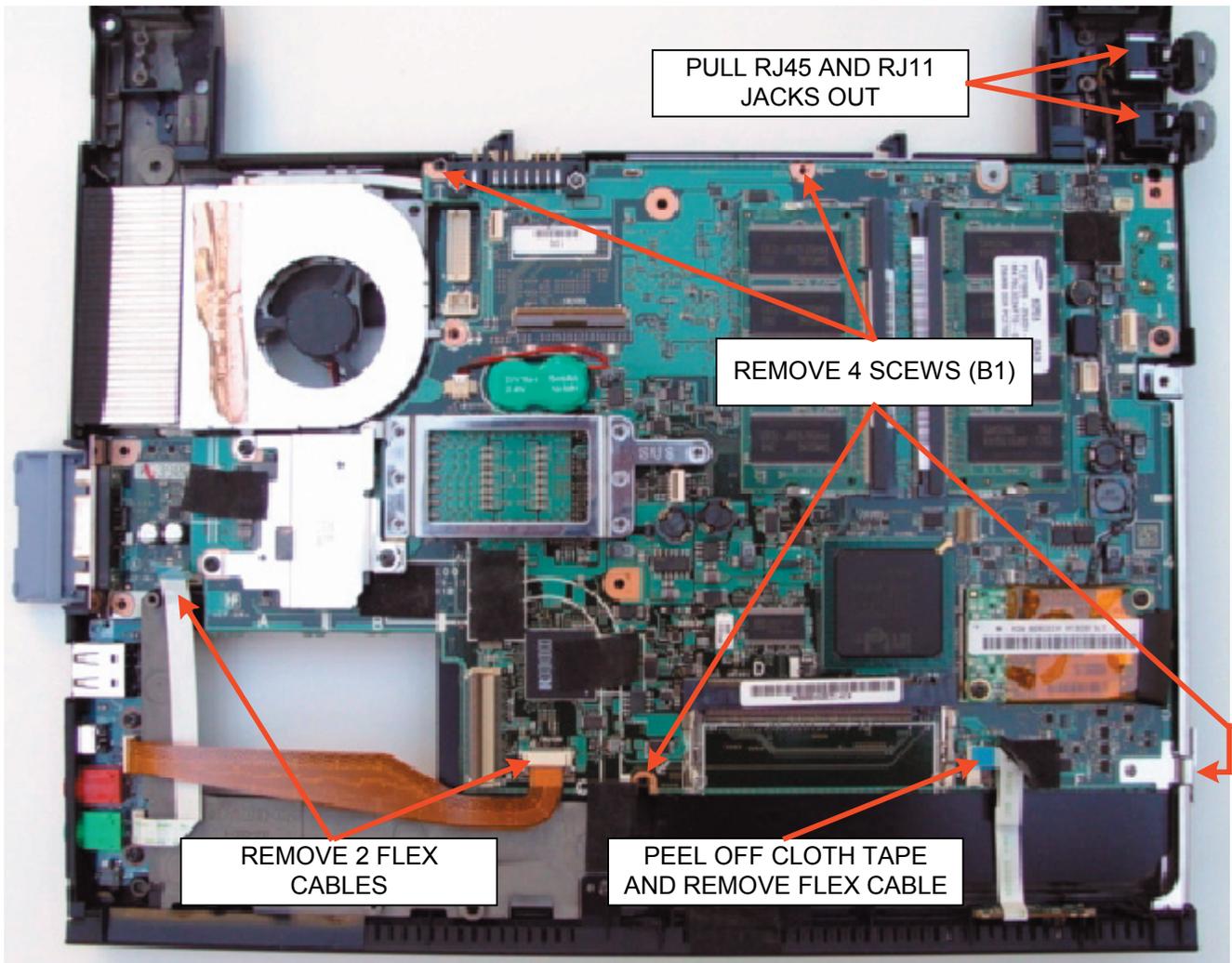


FIGURE 2-16 - MOTHER BOARD REMOVAL

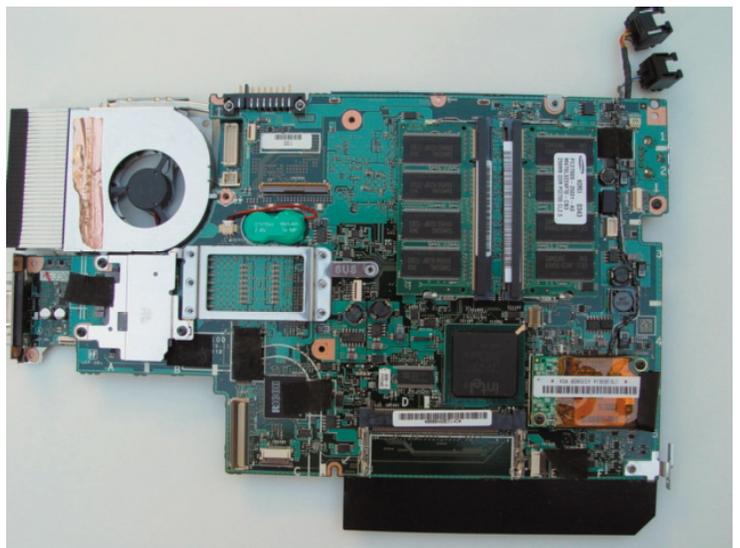
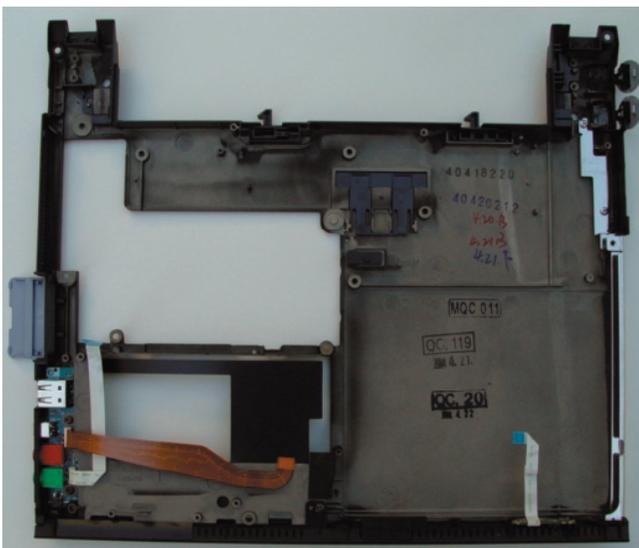


FIGURE 2-17 - MOTHER BOARD REMOVED FROM CHASSIS

Modem

Remove the 2 screws (B1) as shown in Figure 2-18. Remove the 2 cloth tape pieces, unplug the modem from the motherboard, and set the unit and cable aside. Note the routing path for the modem cable identified by the silkscreen pattern on the board to properly route the cable during re-installation.

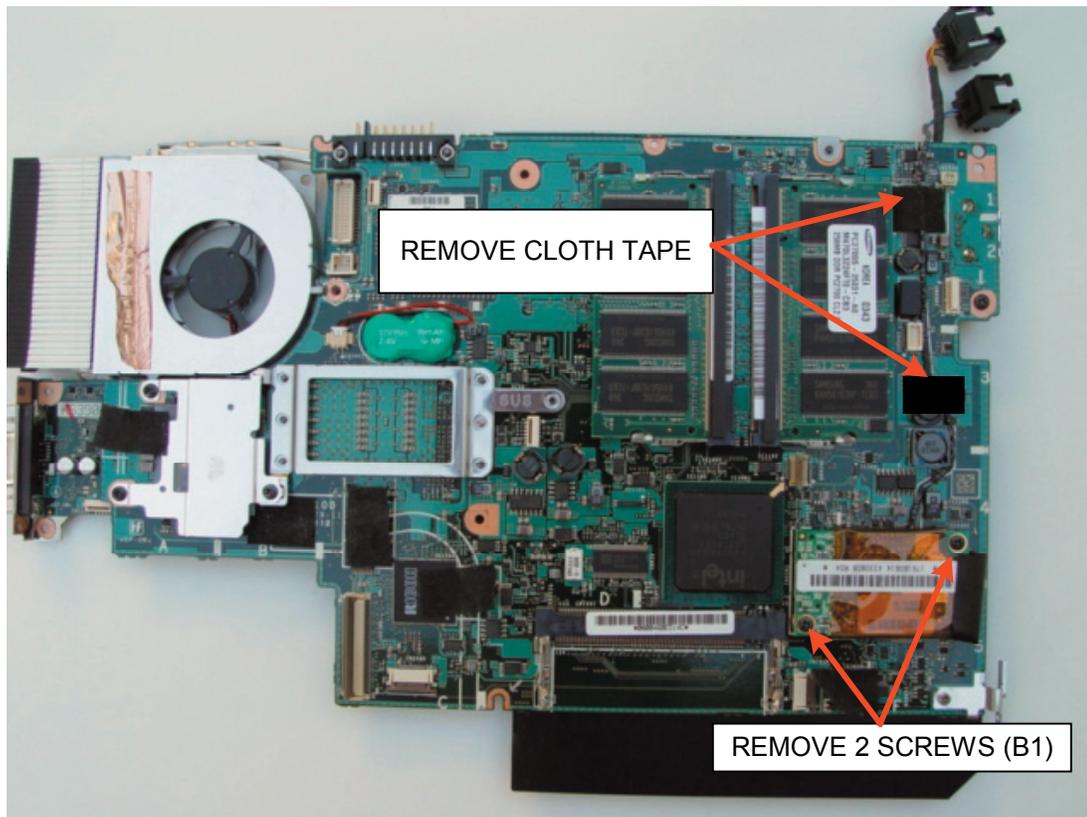


FIGURE 2-18 - MODEM REMOVAL

CPU Heat Sink

Figure 2-19 illustrates the removal of the CPU heat sink. Remove the 4 screws (B8). Lift one side of the cloth tape attached to the cooling fan and lift the heat sink out.

Important: Whenever the heat sink is removed from the CPU, *always* remove the old heat transfer pad and replace with a new one (PN466878501).

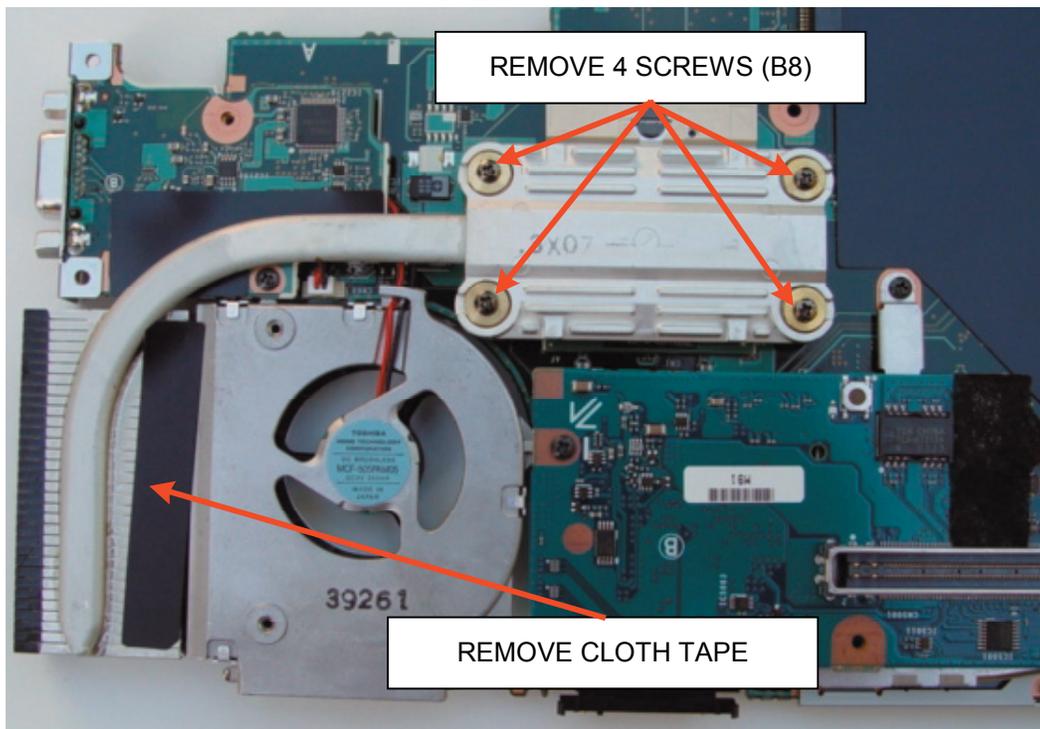


FIGURE 2-19 - CPU HEAT SINK REMOVAL

CPU Removal

Remove the CPU by turning the lock screw counter-clockwise as shown in Figure 2-20. The CPU should slide backward slightly and is easily lifted out. Be careful not to touch the pins of the CPU while it is out of its socket.

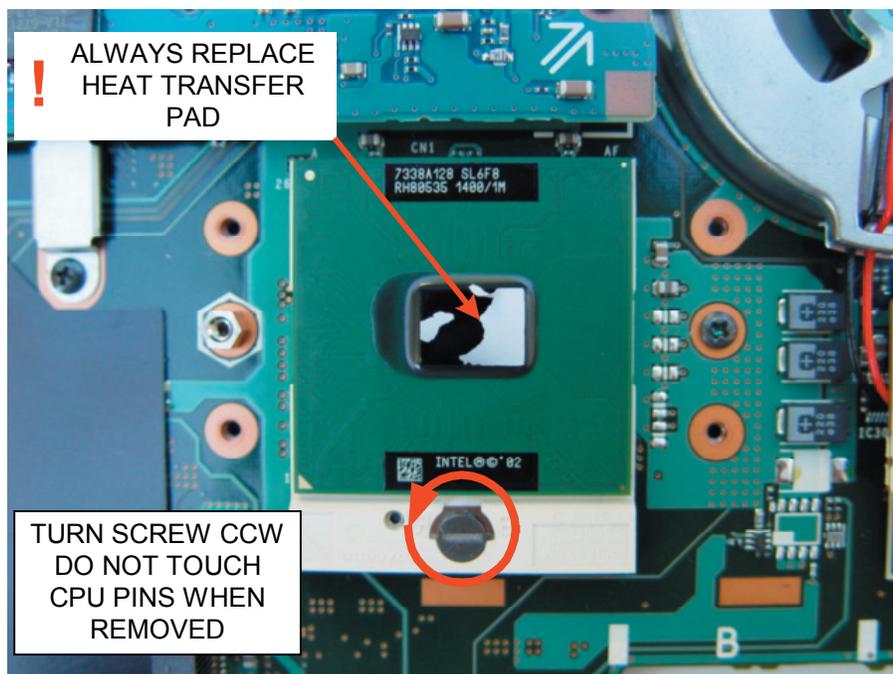


FIGURE 2-20 - CPU REMOVAL

Power Supply Heat Sink and Backup Battery

Referring to Figure 2-21, remove the backup battery by unplugging its connector. Remove the 3 screws (B1) securing the heat sink to the power supply. Lift the heat sink and pull the corner hook from the retainer slot. Make sure the heat transfer pad is still attached to the heat sink.

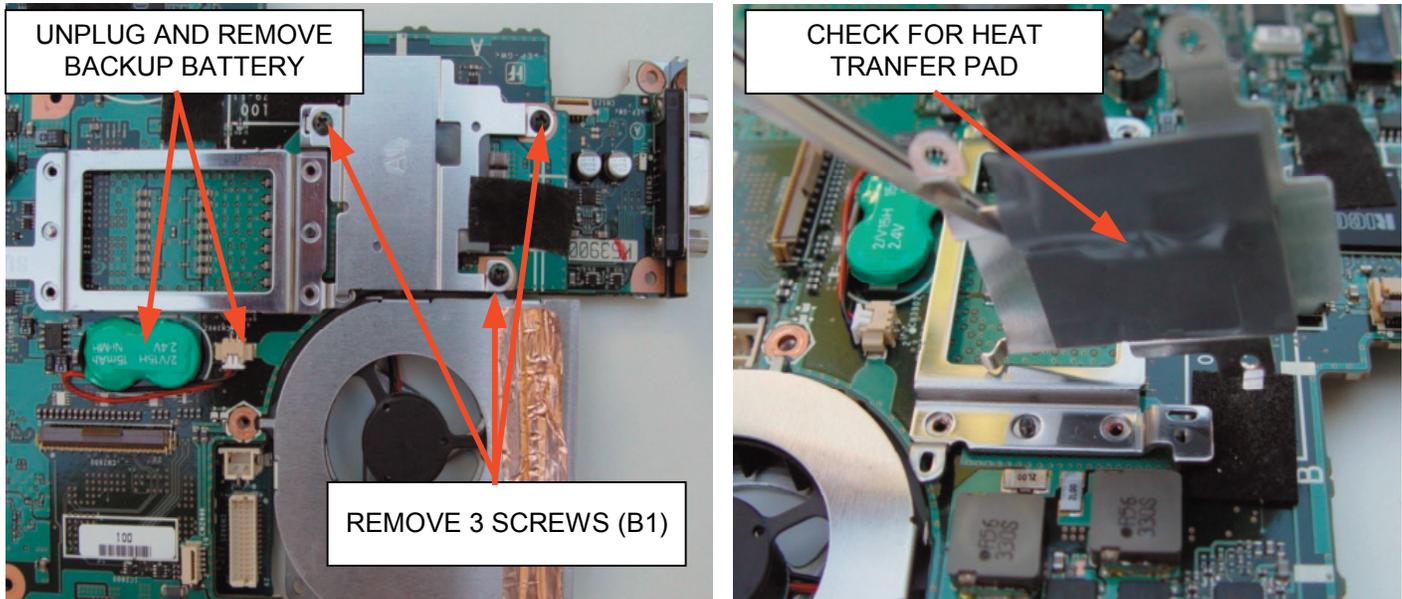


FIGURE 2-21 - POWER SUPPLY HEAT SINK AND BACKUP BATTERY REMOVAL

VIF-33 and CX192 Boards

As shown in Figure 2-22, remove the VIF-33 board attached with 3 screws (B1). The location of the connector on the opposite side of the board attaching it to the motherboard is shown.

Remove one screw (B1) on the CX192 board and unplug it from the motherboard.

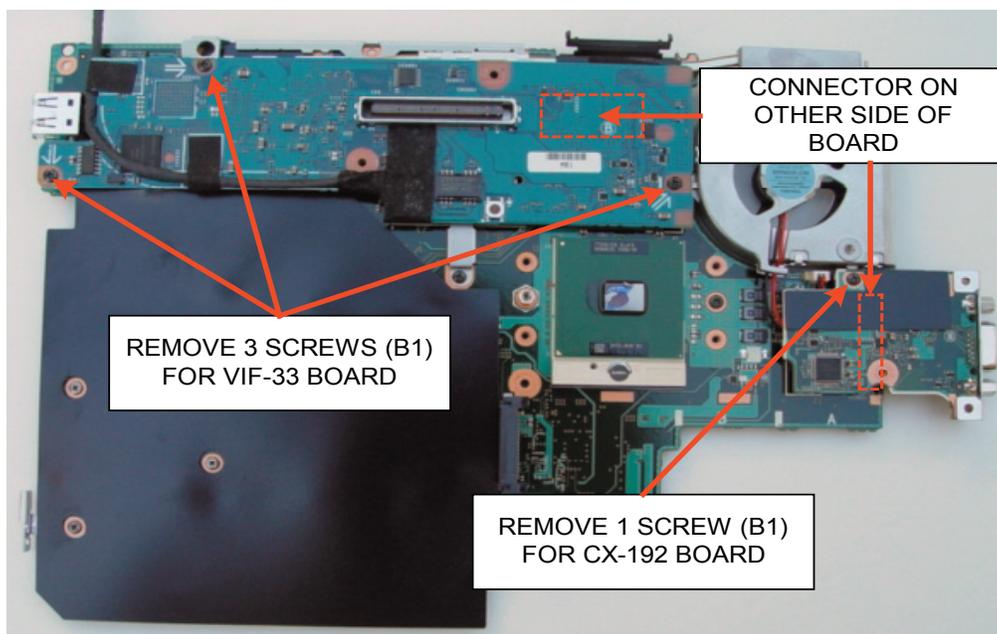


FIGURE 2-22 - VIF-33 AND CX-192 BOARD REMOVAL

Cooling Fan

Remove the spacer nut (72) on the bottom side of the motherboard securing the fan. Flip the motherboard over. Remove one screw (B1) and unplug the fan connector. Lift the fan out and set aside. This is illustrated in Figure 2-23.

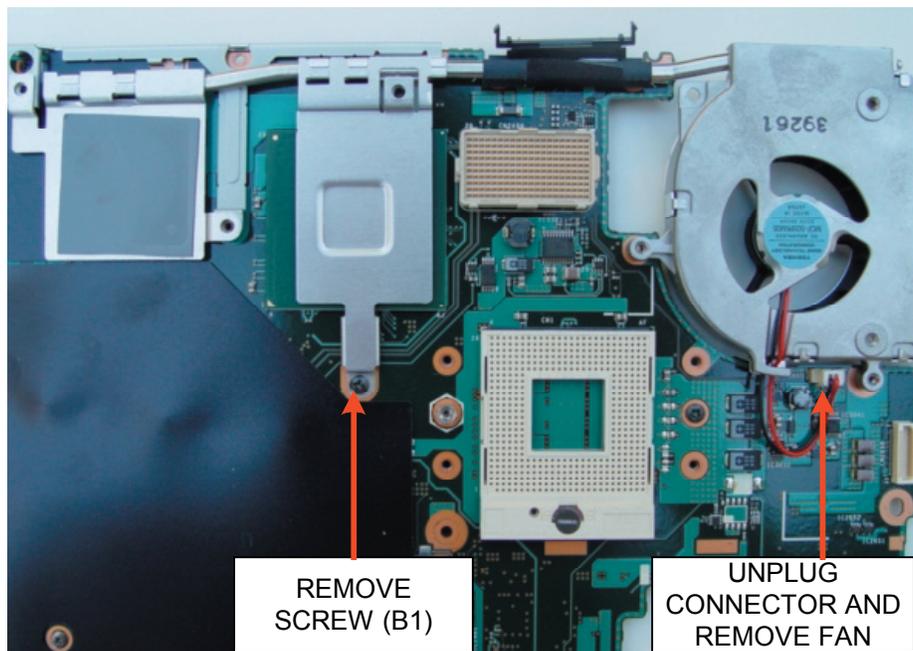
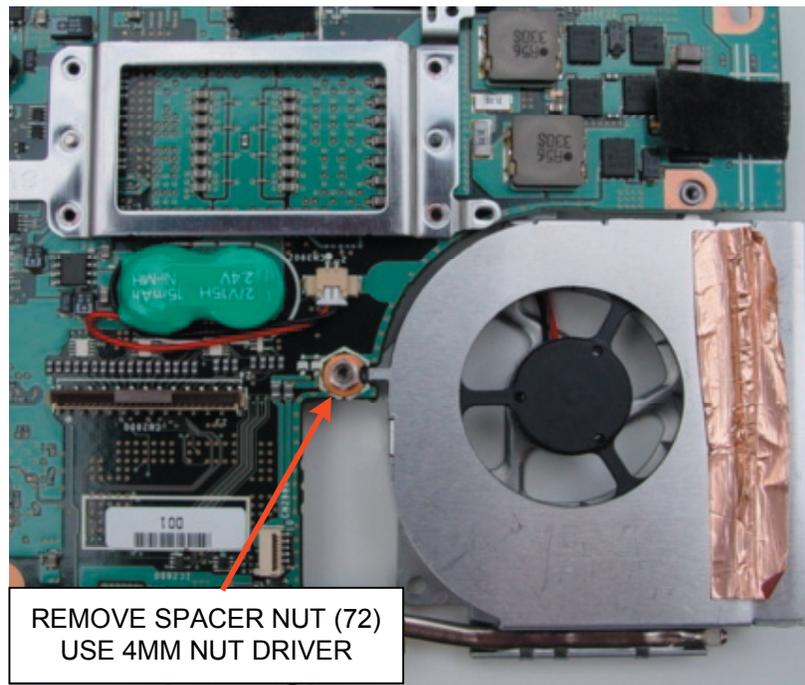


FIGURE 2-23 - COOLING FAN REMOVAL

MBX and CPU Brackets

As shown in Figure 2-24, remove one screw (B1) and lift off the MBX bracket. Remove one spacer nut (72) and screw (B1). The CPU bracket is removed from the other side of the board.

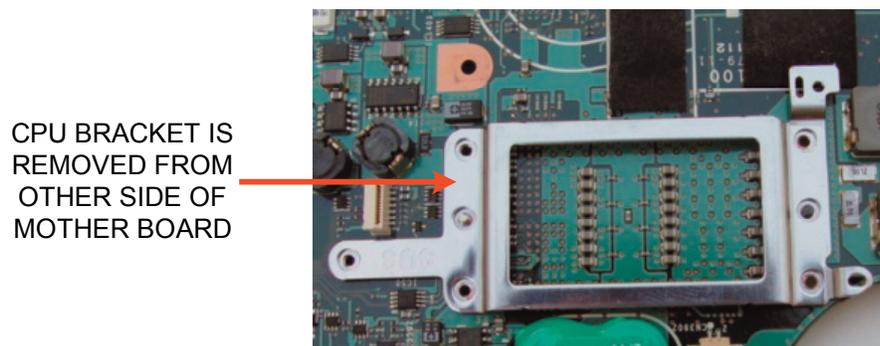
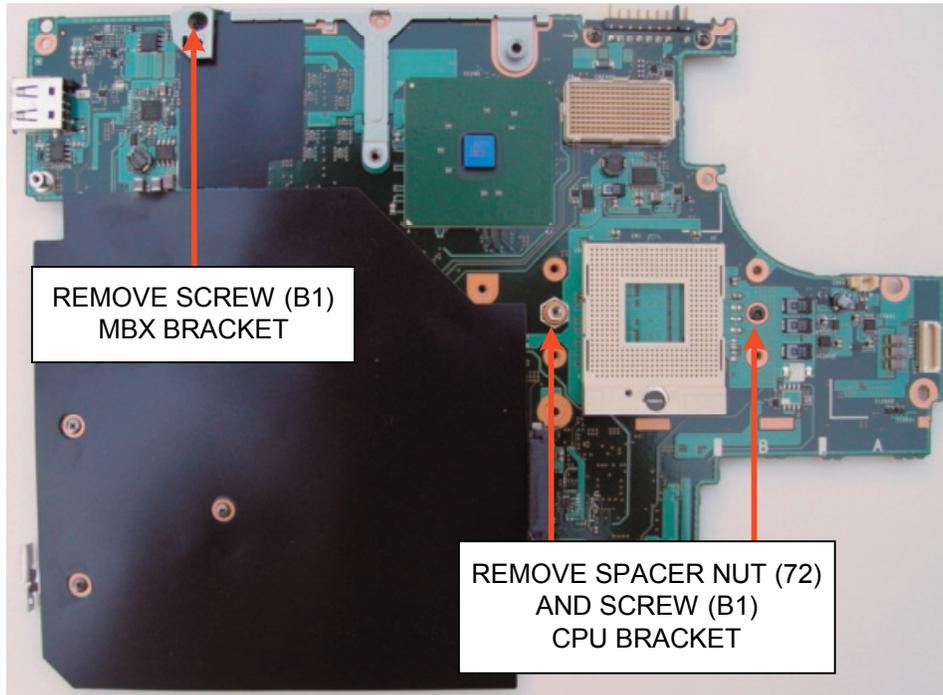


FIGURE 2-24 - MBX AND CPU BRACKET REMOVAL

Replacing the LCD Panel

If the LCD panel requires replacement, it must be removed from its housing. The following steps illustrate this procedure.

Step 1: Remove the rubber screw covers at each corner as shown in Figure 2-25. Remove the 4 screws (B15). Unsnap the bezel retainers by lifting up the inside edges of the bezel and pushing outward slightly. Start with the top, followed by the sides, and ending with the bottom.



FIGURE 2-25 - LCD PANEL REMOVAL (step1)

Step 2: Referring to Figure 2-26, remove the 2 antenna cable cushions on the left side. Remove the cloth tape as shown and unplug the connectors at each end of the circuit board. Remove the 2 screws (B14) located in the lower left corner securing the ground wire and hinge cover. Remove 4 screws (B15) at each corner.

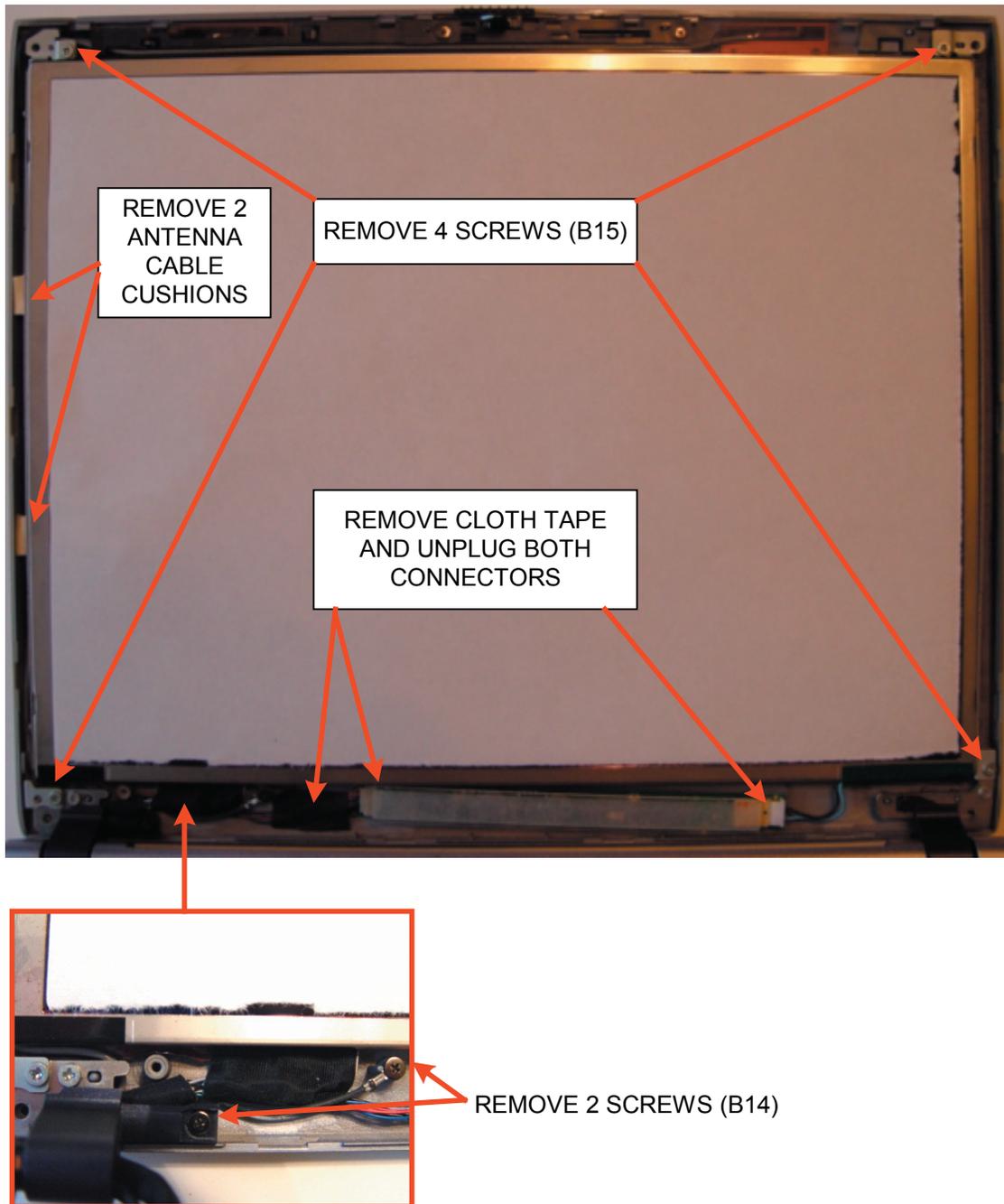


FIGURE 2-26 - LCD PANEL REMOVAL (step 2)

Step 3: Lift the hinge cover and move the wireless LAN antenna cables from under the hinge bracket as illustrated in Figure 2-27. The panel can now be lifted out.

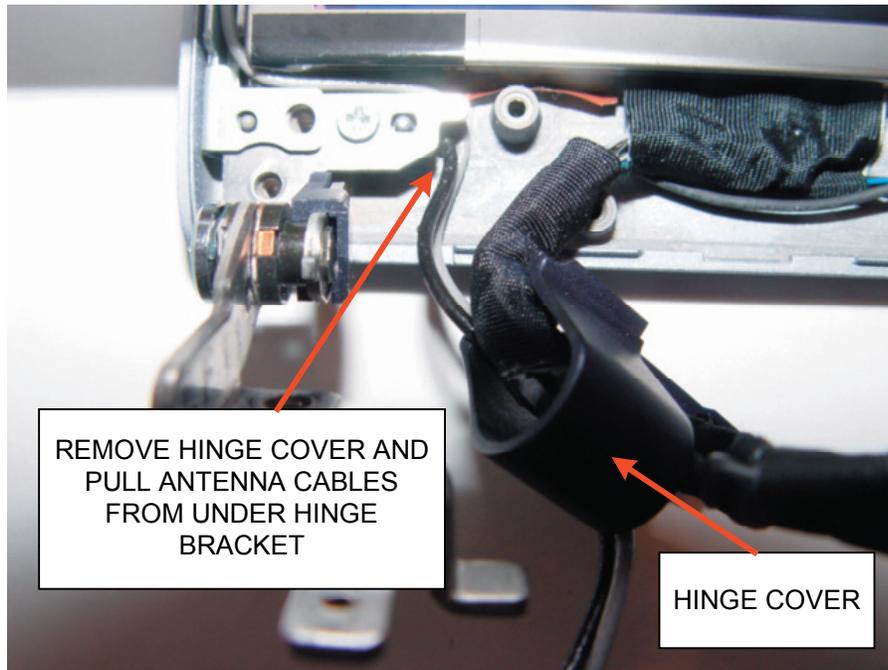


FIGURE 2-27 LCD PANEL REMOVAL (step 3)

Step 4: Lift the tape off both ends of the LCD cable and unplug from the panel. Use caution when unplugging this cable as the wires are very delicate. The panel can now be swapped with a replacement unit.

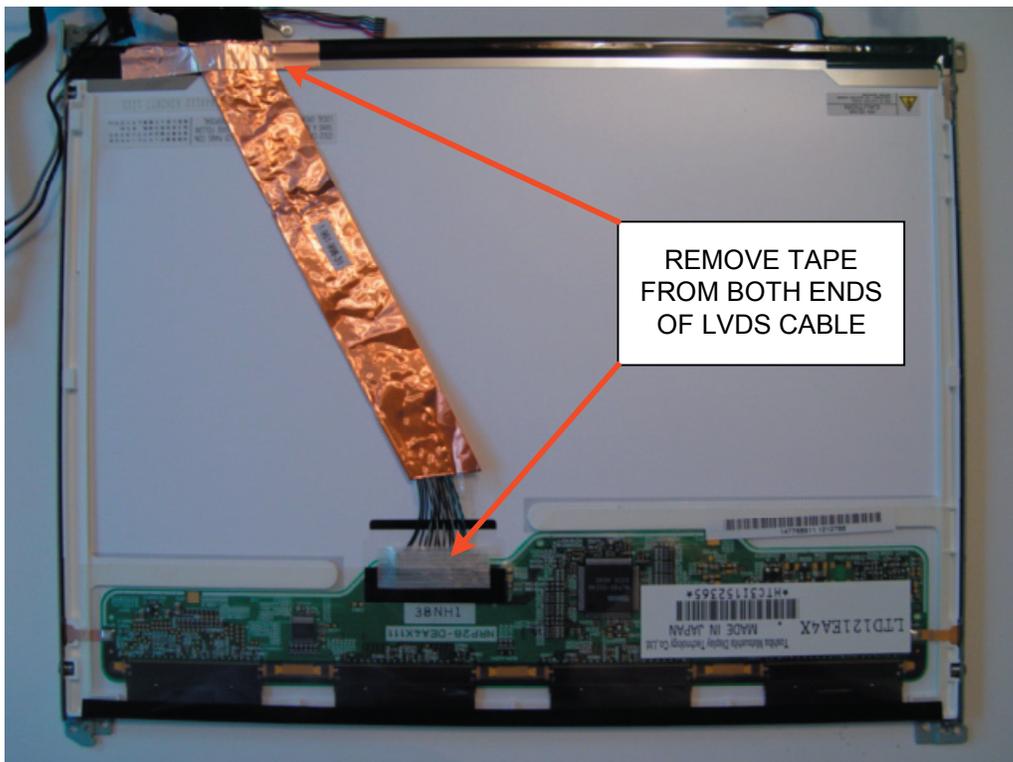


FIGURE 2-28 - LCD PANEL REMOVAL (step 4)

SONY[®] and i.Link are trademarks of Sony Electronics

SONY[®]

PDP010304

2004 Sony Electronics Inc.
EMCSA - A Service Company
1 Sony Drive
Park Ridge, New Jersey 07656

3/18/04

Reproduction in whole or part without written permission is prohibited. All rights reserved