Maintenance & Disassembly

5.1 Introduction

This section contains preventive and corrective maintenance procedures for the A360+ notebook. The first part of the section describes the computer cleaning procedures and preferred handling procedures for sensitive components (e.g. disk drives, LCD, CPU, batteries).

The second part of the chapter identifies all field replaceable parts with the remainder explaining the removal and replacement procedures for the field replaceable parts.

5.2 Preventive Maintenance

Preventive maintenance is limited to cleaning the plastic case, the keyboard, and the display screen and cleaning the floppy drive heads as required.

5.2.1 Cleaning the Computer

When it is necessary to clean the plastic case and keyboard, use a soft lint-free cloth, slightly dampened with a mild detergent solution, or use the contents of any commercially available computer cleaning kit.

ⓘ   Never use alcohol, petroleum-based solvents, or harsh detergents to clean the notebook. Also, do not spray any liquids directly on the computer case, keyboard, or screen. If the liquid-crystal display (LCD) screen has become smeared or dusty, clean the screen by first applying a mild glass cleaner to a soft, clean, lint-free cloth, and gently wipe the glass. Never apply liquids directly on the screen surface. Moreover, do not use paper towels to clean the display screen. Paper can scratch the display screen matte.

5.2.2 Protecting the Disk Drives

To protect the disk drives and data, back up the system disk periodically on floppy diskettes. Periodically use a head-cleaning diskette in the floppy diskette drive to prolong the life of the drive and to help maintain data integrity.

5.2.3 Maintaining the LCD Quality

When it comes to screen problems, heat plays a big part. After a good working session, the typical routine is to shut the machine and close the cover. But the display surface - no matter what type it is - and the components inside the computer radiates heat; when you close the cover, you trap the heat against the screen. Leave the computer's cover open for about ten minutes while the heat disperses. Make this a habit.

5.2.4 Maintaining the Hard Disk Drive

The hard disk drive is one of the most common parts that always gets problem. Here is some preventive maintenance that you can do when handling the hard disk.

- Always back up the data files from the hard disk.

- Run a virus detecting program for possible virus infected area on the hard disk.

- Use **SCANDISK** to correct any errors found in the directory and File Allocation Table (FAT). This will also free up space from any unused sectors.

- Never turn the computer off when the hard disk is being accessed.

- Never move or raise the computer while the hard disk is being accessed, most especially don't jar the hard disk as this may cause a hard disk crash.

- Use hard disk system tools like **Disk Defragmenter** under Windows. This reorganizes your hard disk by eliminating fragmentation and improves the hard disk access time.

5.2.5 Handling the Computer Battery Packs

The battery packs furnished with the computer require reasonable care and handling to ensure efficient operation and maximum life. Periodically inspect the battery terminals and the batteries for evidence of corrosion and oxide build-up.

To ensure that the battery packs endure normal life cycle, always observe the following precautions when handling the battery packs:

- Do not drop the battery packs or subject them to excessive shock and vibration.

- Do not expose the battery packs to direct sunlight, moisture, or chemical compounds.

- Do not disassemble the battery packs.

- Do not use the battery packs to power other devices.

- Do not short the battery leads or connect the battery with reversed polarity.

- Never attempt to charge the battery packs in any way other than as described in this manual and the User's Manual.

- Always charge the battery packs as soon as possible after a low battery indication.

5.3 Required Tools and Equipment

To troubleshoot and repair PC systems properly, you need a few basic tools:

- Tweezers
- Small flat-blade screwdriver
- Small Cross screwdriver
- Regular size Cross screwdriver
- Small Hex-bolt screwdriver

> (i) All boards, options, and peripherals contain components that are sensitive to static electricity. When handling any of these items, use wrist or ankle grounding straps and grounded working mats. When moving or storing items, use the anti-static bags supplied with the items.

5.4 Notebook Field-Replaceable Parts and Assemblies

The notebook contains two major assemblies: The Cover Display LCD Assembly and the System Unit Assembly.

Cover Display LCD Assembly

System Unit Assembly
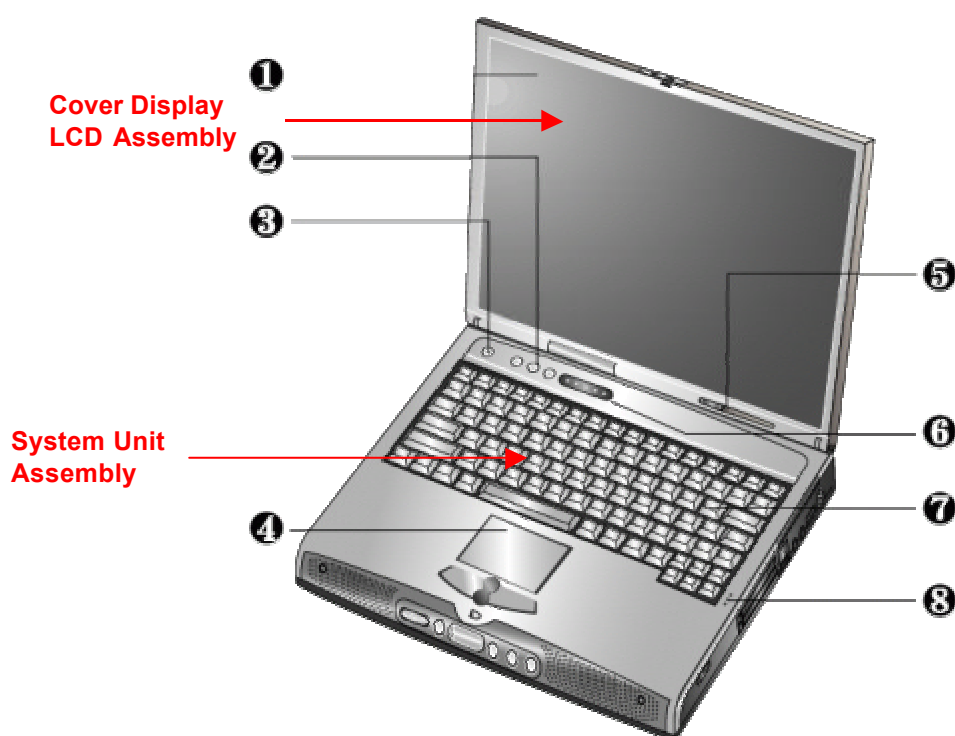
❶	Color LCD Panel	❷	Keyboard	❸	Integrated Microphone
❹	Power Status LED Indicator	❺	Status LED Indicator	❻	Easy Buttons
❼	Power Button	❽	Glidepad Pointing Device		

Figure 5-1   Cover Display and System Unit Assembly

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5.4.1 Cover-Display LCD assembly

The Cover-Display LCD Assembly includes the following major Field Replaceable Units/parts (FRUs):

- **LCD Face and Back Panel Cover**
  These parts are used to cover the whole LCD Panel assembly, which includes the LCD Display Module, the LCD FPC cables, and inverter board.

- **LCD Display Module**
  12.1"/13.3"/14.1" LCD (Liquid Crystal Display) screen is used for output display. This part is assembled together with LCD Power Inverter Board, and LCD cables contained inside the whole LCD Panel. Handle this part with care against static electricity and accidents that can break the LCD.

- **LCD Power Inverter Board**
  This part or PCB (Printed Circuit Board) is used to provide high voltage to the CCFT (Cold Cathode Fluorescent Tube) of the notebook's LCD backlighting. It is connected to the right side of the LCD display screen and attached to the back panel by a screw. Exercise safety electrical precautions in handling and servicing this part. The circuit board also includes the function for displaying the power status and battery charge LED indicators.

- **LCD FPC Cable**
  The LCD FPC cable is used to convert output signals from the motherboard in driving the LCD display screen. The cable is connected to the back of the LCD Panel.

5.4.2 System Unit Assembly

The System Unit Assembly comprise of several assemblies of which can be divided into two major sub-assemblies.

- The System Top Unit Assembly.
- The System Base Unit Assembly.

The following System Top Unit Assembly includes the following major Field Replaceable Units/parts (FRUs):

- **Glidepad Touch Pad Module Assembly**
  The touch pad (glide pad) pointing device module is assembled at the underside of the top cover with the sensor pad exposed on the top. The assembly comprises of the glide pad board, the glide pad converter board, the select buttons bracket casing, the insulator sheet, the glide pad FPC cable, and the glidepad wire cable. The glide pad board is assembled just underneath the select button assembly. It provides a FPC cable connector for the mother board.

- **Keyboard Panel Assembly**
  The keyboard is assembled on top of the system unit and connected to the main board's keyboard FPC type connector. The keyboard is also secured on the system's top unit casing. There are no screws attached to the keyboard.

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- **Heat Plate and Fan Exhaust Unit**
  The Fan Exhaust unit is assembled on the upper-right side of the system unit. It comprises of a heat plate and one fan. There are seven screws securing the heat plate to the CPU module inserted on the motherboard. The exhaust fan is secured beside the heat plate.

- **Keyboard Cover Assembly**
  The keyboard cover is a thin bracket for holding the keyboard as well as covering the base unit. It is also includes the power button, easy buttons, and status LED cover moldings.

The following System Base Unit Assembly includes the following major Field Replaceable Units/parts (FRUs):

- **Battery Pack**
  This is one of more easily replaceable parts. The battery pack is found on the right side on the base unit and can be easily removed by pressing the latch underneath the unit and pulling the battery on its handle. The battery pack is replaced as a whole and must not be opened for repair.

- **Hard Disk Drive Module**
  The Hard Disk Drive is attached on the lower-left side of the system base unit located just below the keyboard. The HDD is secured by only one screw. The HDD module is a 2.5-inch hard disk drive with a maximum height of 9.5mm. The hard drive module assembly is attached to the motherboard through the HDD connector.

- **CD-ROM / DVD-ROM / CD-RW Drive Assembly**
  The CD-ROM / DVD-ROM / CD-RW Drive Assembly is attached on the left side of the base unit and is secured with one screws.\

- **Floppy Disk Drive Assembly**
  The Floppy Drive assembly is located at the front left side of the base unit just underneath the HDD assembly. It is assembled to the unit with one screw secured on the left side.

- **CPU**
  The Pentium-III/Celeron FC-PGA socket is found on the top right part of the motherboard. You will need a flat screwdriver and CPU tooling for removing or installing the CPU. Refer to Chapter 2 on how to install and upgrade the CPU.

- **Speaker Assembly**
  The internal speakers of the notebook are assembled into front side of the system. They are secured into a slot and speaker cable connector is attached into the main board.

- **Motherboard Assembly**
  The Motherboard assembly is the most important part of the notebook. It contains the entire major chipsets including the core logic, PCMCIA, memory, and BIOS to operate the whole computer. It also includes the sockets, connectors and ports completing the functionality.

- **Internal Modem / LAN / Combo Module Assembly**
  If the computer includes an internal modem, LAN, or combo module, it is located underneath the motherboard using a mini-PCI slot.

- **System Base Unit Case**
  The System Base Unit Case is where the Motherboard is placed. It includes openings for the battery, FDD, CD-ROM and PCMCIA equipment.

5.5 Parts Removal and Replacement Procedures

This section contains the field service-level removal/ replacement procedures for the notebook. The notebook is designed for optimum modularity in order to make field replacement and maintenance easy and efficient.

5.5.1 Removing the Battery Pack

The procedure for removing and replacing the battery pack is as follows:

1. The battery pack is located on the right side of the system unit.

2. To release the battery pack, locate the battery latch found underneath the unit.

3. Push the latch to release the lock and at the same time pull the battery pack out.

5.5.2 Removing the Keyboard

The internal keyboard is located above the system top unit and is fitted in without screws on the top unit case. Follow the steps below on how to remove the keyboard:

1. Remove keyboard cover by gently bending it and sliding it towards in front of you.

Figure 5-2   Remove keyboard cover

2. Lift the keyboard and tilt it towards the LCD panel.

3. Release keyboard cable by sliding the ZIF connector towards up direction.
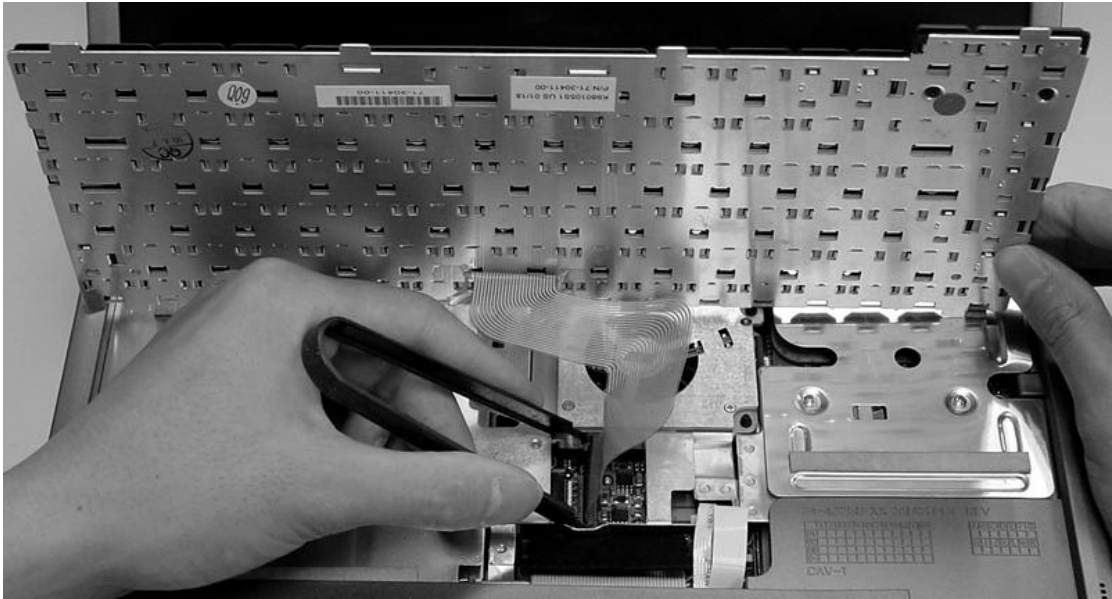
Figure 5-3   Remove keyboard

5.5.3 Removing the Palm Rest and Glide Pad

Follow the procedure below on how to remove them:

1. Remove the five screws securing the palm-rest cover underneath the system base unit.
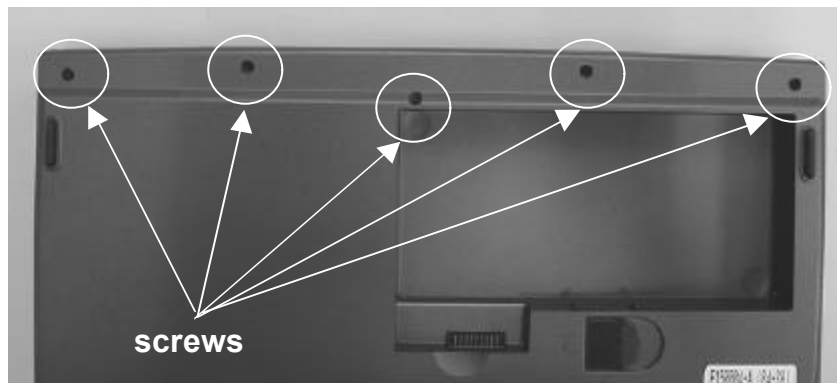

Figure 5-4   Remove Palm Reset

2. Remove the palm-rest cover by slowly unsnapping each section of the palm-rest cover from the base unit.

3. Slowly lift the cover case, and you will find two cables connected to the main board. One is from glidepad, and another one is from Audio DJ panel. Pull the glidepad cable and Audio DJ panel from the main board to separate the palm-rest cover from the system unit.

4. Underneath the palm-rest cover, you will see the glidepad module assembly. Remove the five screws on the glidepad converter board where the glidepad wire cable is connected.
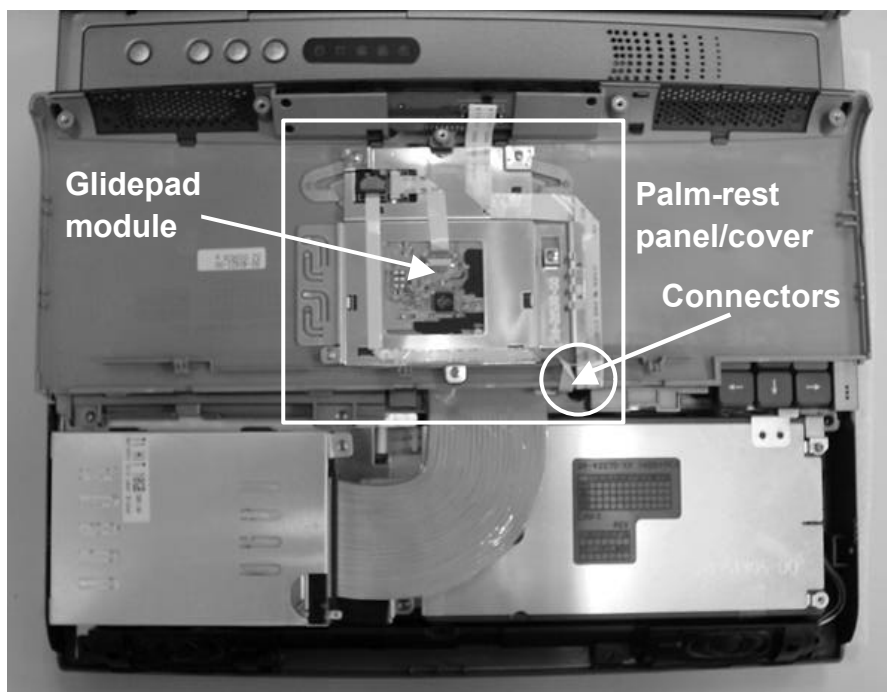
Figure 5-5   Removing Palm Rest / Glide Pad

5. When the converted board is removed, you can remove the select-button bracket casing covering the glidepad board.

6. Replace a new glidepad module and reverse the procedure to reassemble.

5.5.4   Removing the Internal Hard Disk Drive

The notebook provides a built-in hard disk for the primary IDE controller. The HDD is an industry standard 2.5" IDE disk drive with a maximum height of 9.5mm.

1. Find out the built-in hard disk secured with one screw at the upper right corner of the hard disk. Remove this screw and carefully pull the hard disk module from the connector.
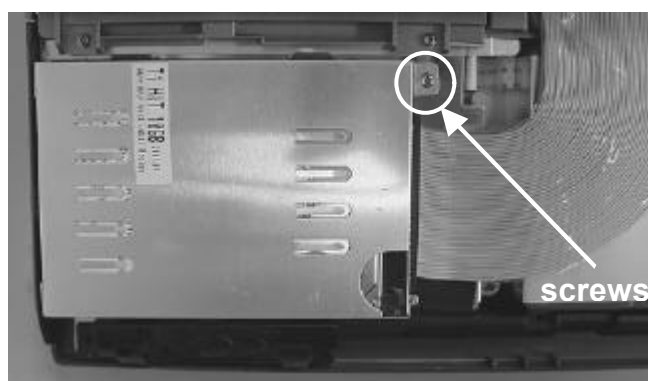
Figure 5-6   The disassembly of Hard Disk Drive

2. Remove four screws of frame HDD bracket plate. Two ones of them are at the same side, and others are at the other sides.
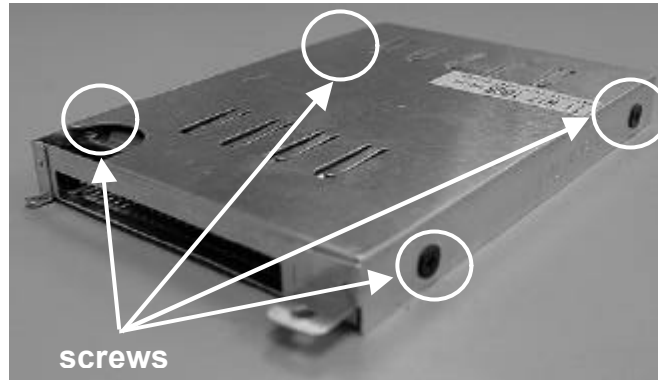

Figure 5-7   Screws Locations of the frame HDD bracket plate

5.5.5   Removing the LCD Panel

The procedure for removing the LCD Panel is as follows:

1. Follow the steps above in removing the keyboard cover.

2. You will find the LCD panel connector with a cover attached to the system unit using two screws. Remove the screws of the cover and pull out the FPC connector.
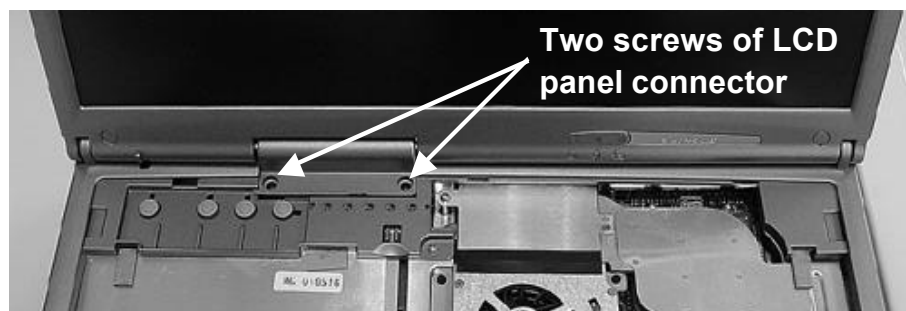

Figure 5-8   Two Screws of LCD Panel Connector

3. There are four screws securing both LCD hinges to the system unit. Two screws are at the rear side of notebook, and the other two screws are at the under side. Remove the screws to separate the LCD panel from the system unit.

Figure 5-9   Four Screws Securing the LCD Hinges

4. Slowly pullout the LCD panel from the system unit.

5. To remove the LCD panel, you need to disassemble the LCD bezel and LCD cover back. Remove six screws on the front bezel as shown in the figure below. Then, carefully separate the front bezel cover from the LCD assembly.
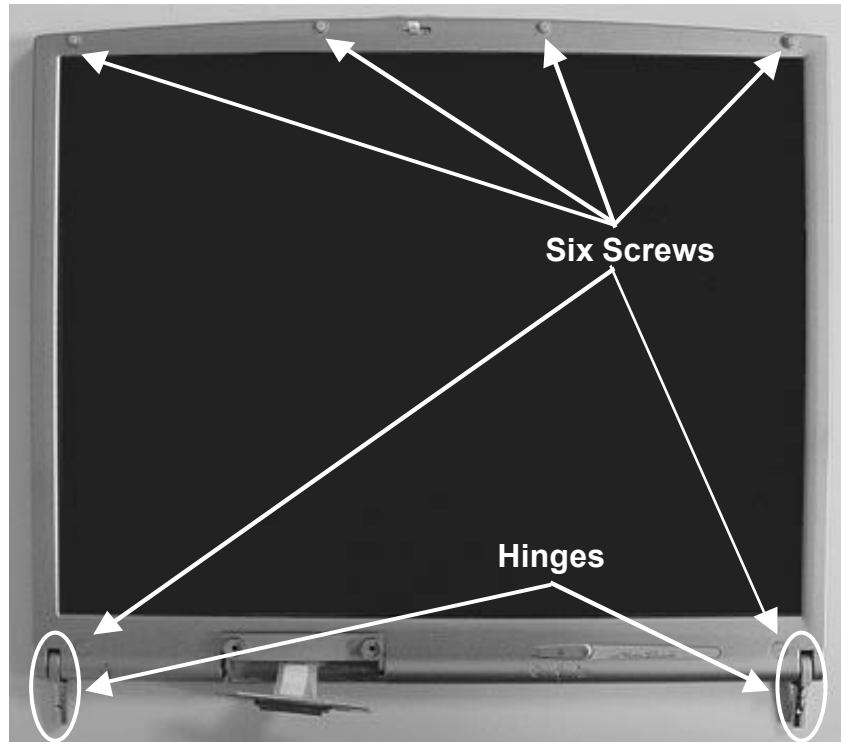

Figure 5-10   LCD Bezel Screw Locations

5.5.6   Removing the Heat Sink Plate
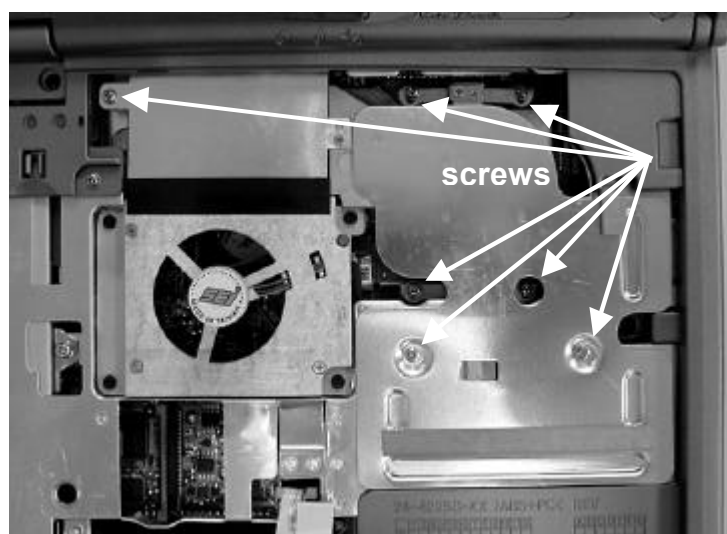
1. Release seven screws as shown in the picture below.

Figure 5-11   Remove heat sink plate

2. Remove heat sink plate by slightly lifting it up.

5.5.7 Removing the CPU

1. For doing this disassembly, you need first to do the disassembly for the keyboard cover, keyboard, and heat sink plate.

2. Use a flat screw driver and insert it into the CPU socket and tilt it towards in front of you to unlock CPU from the socket. It's recommended to use the protective tooling securing CPU against damage.
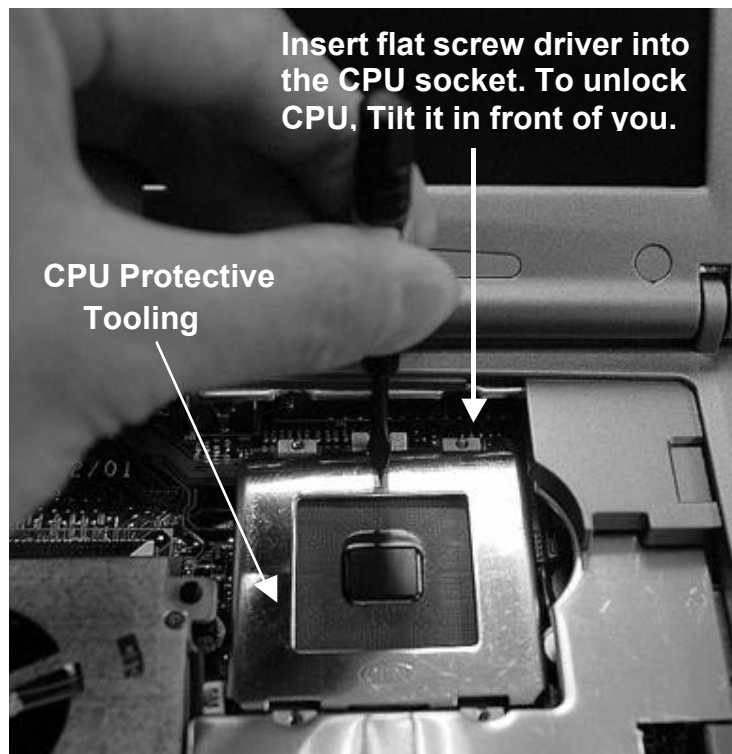

Figure 5-12   Remove CPU

5.5.8 Removing the CD-ROM Module

The procedure for removing and replacing the CD-ROM module is as follows:

1. Before removing the CD-ROM module, you need to disassemble keyboard first.
2. To remove the CD-ROM module, remove one screw securing the CD-ROM bracket and push out the drive from the connector.

3. Slowly slide the CD-ROM module out of the base unit.
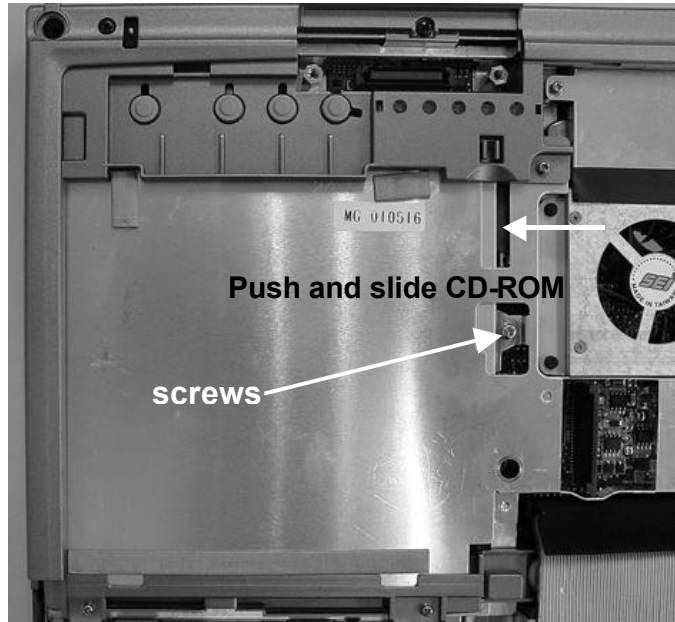

Figure 5-13   Remove CD-ROM Drive

4. To replace the CD-ROM, remove the metal bracket around it.

5.5.9   Removing the Top Cover and System Cover

The procedure for removing the top cover and system cover is as follows:

1. Before removing the top case, you need first to disassemble keyboard cover, keyboard, palm rest, LCD panel, and HDD.
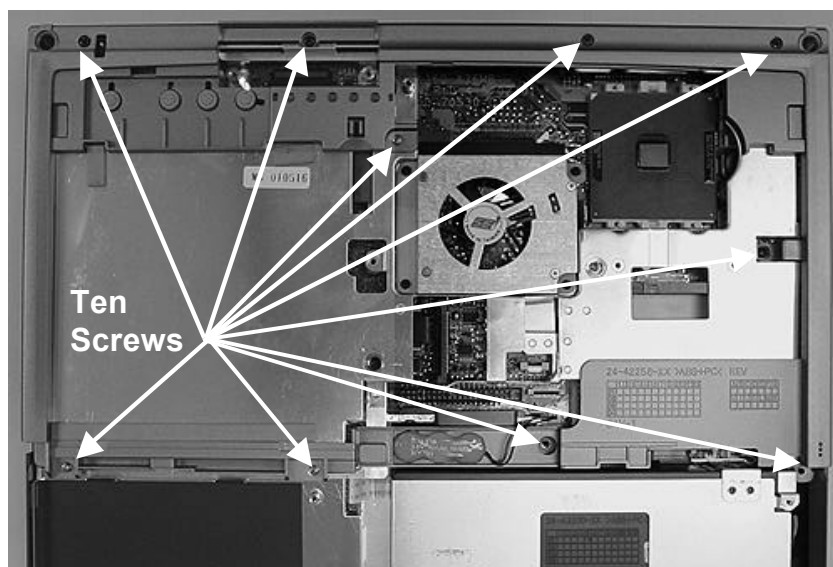

Figure 5-14   Top Cover Screw Locations

2. To remove the top cover, you need to remove several screws. There are ten screws found on the top cover as indicated on the figure previous page. Remove them all.

3. Slowly unsnap the top cover from the system cover. Release one cable connected from the RTC battery to the main board and the other cable connected from the internal microphone to the main board. Then pull out the top cover.

4. Then to remove the system cover, you need to remove several screws. There are five screws and two hex bolts found on the system cover as indicated on the figure below. Remove them all.
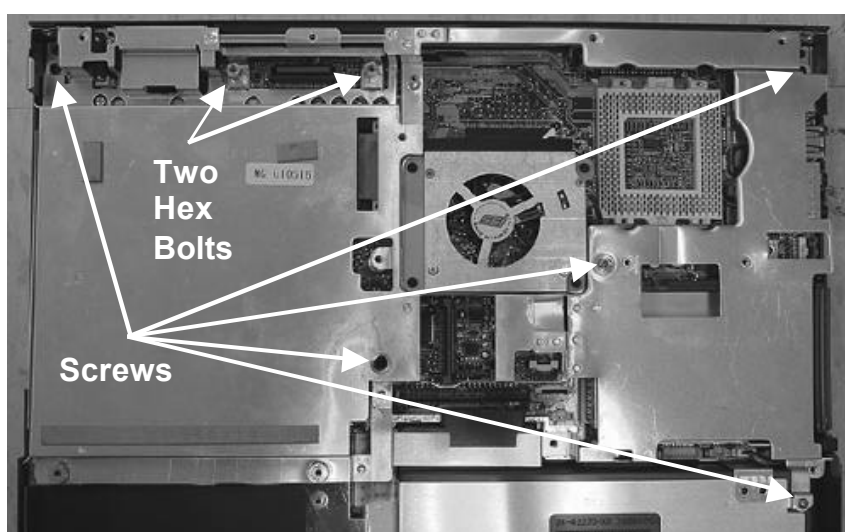

Figure 5-15   System Cover Screw Locations

5. Release one cable connected from the fan to the main board and notice a rubber foot of fan module. Then Slowly unsnap the system cover from the bottom case.

5.5.10 Removing the Internal Speakers

The internal speakers are connected on the front side of the base unit assembly. They are connected to the main board using wire cable. Follow the procedures below and illustration on how to remove the panel:

1. Before removing the internal speaker module, you need first to disassemble keyboard, palm rest, HDD, LCD panel, heat sink plate, CD-ROM, top cover, and system cover.
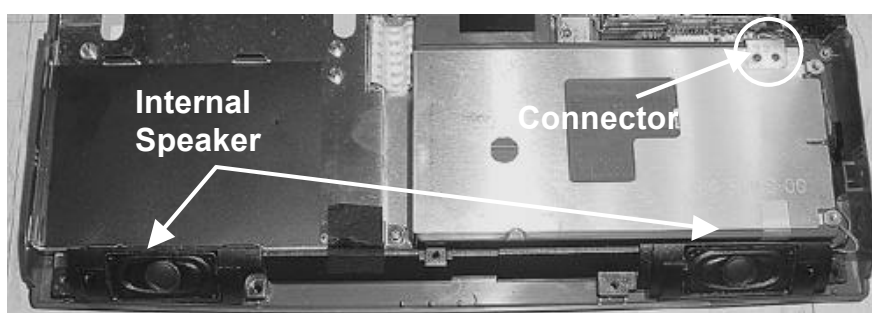

Figure 5-16   Internal Speaker Assembly

2. The speakers are located on the front side of the base unit. There are no screws attached to it, just unhook the panel from the speaker compartment case.

3. The speaker cable is directly connected to the main board. Pull the cable and take it out.

5.5.11 Removing the FDD Module

The procedures for removing and replacing the FDD module is as follows:

1. Before removing the internal speaker module, you need first to disassemble keyboard, palm rest, HDD, LCD panel, heat sink plate, CD-ROM, top cover, system cover, and internal speakers. The FDD cable is connected to main board. Detach the FDD cable also.

2. The FDD module is assembled to the lower left side of the base unit, just on bottom of the hard disk drive.
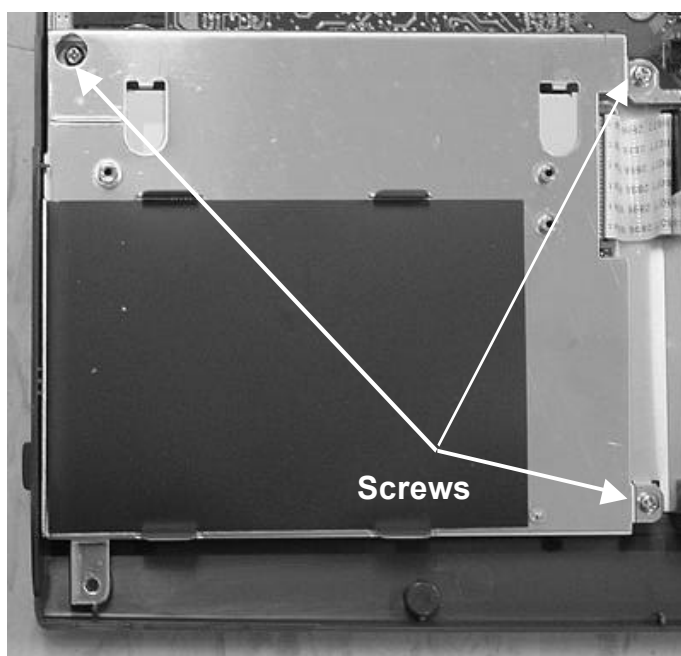

Figure 5-17   Remove Floppy Disk Drive

3. Remove three screws securing around the FDD metal plate.

4. Detach the FDD cable connected to the main board.

5. Slowly lift the entire FDD module and remove from the base unit.

6. To remove the metal plate in order to replace the FDD

5.5.12 Removing / Replacing the Motherboard

The motherboard contains the major chipset and components needed to run the notebook. Follow the steps below on how to remove and replace the motherboard:

1. Before removing the motherboard, you need first to disassemble the all basis unit modules mentioned in the previous sections.

2. On the motherboard, there are ten hex bolts and two screws as showed below. Remove these hex bolts and screws.
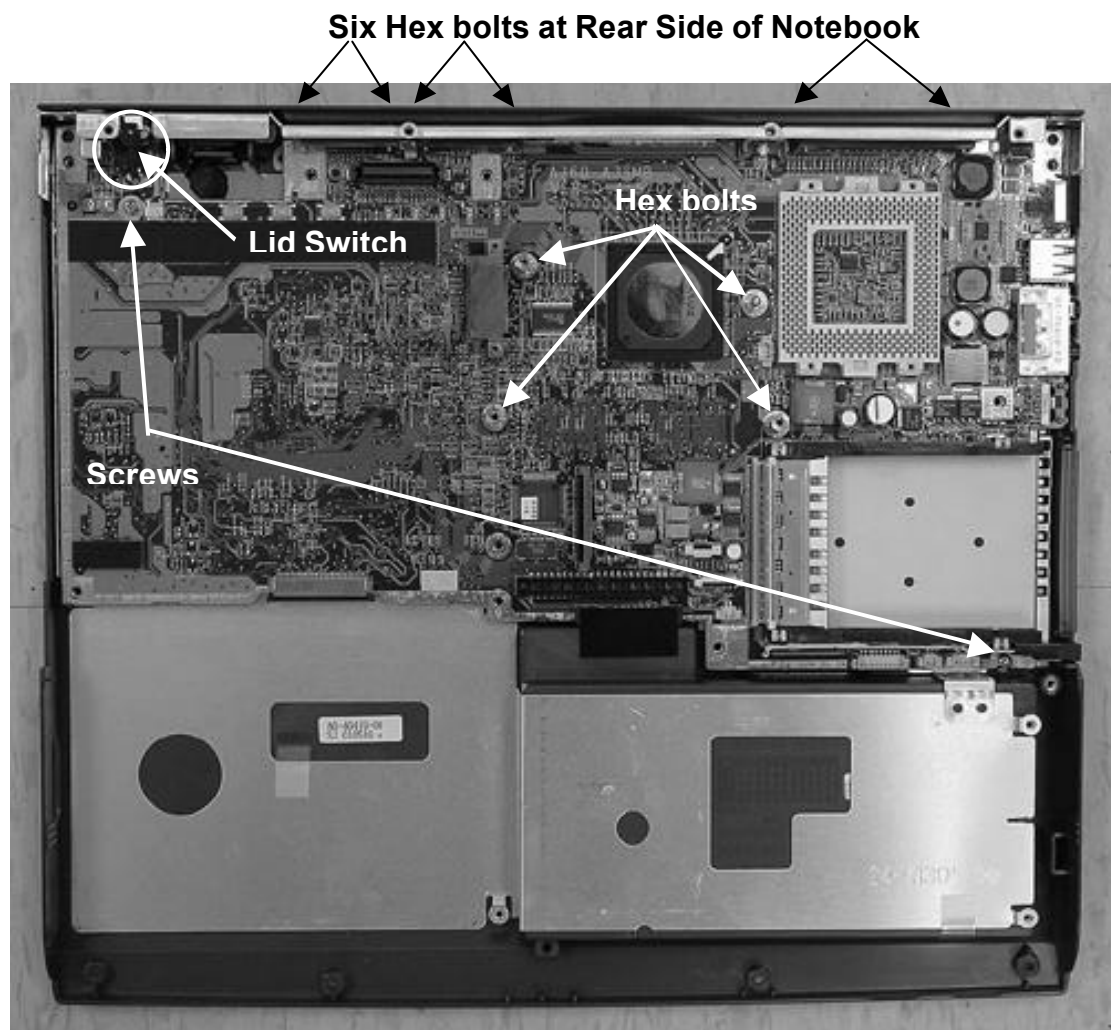
Six Hex bolts at Rear Side of Notebook

Figure 5-18   Motherboard Screws Location

3. Detach the lid switch cable connected to the main board

4. When all screws ,bolts, and lid switch cable are removed, slowly detached the main board from the base unit casing. Notice the close gap between the volume control knob and button case and may use the specific tooling to separate them more easily.