4.1 General

This section explains how to disassemble the computer and replace Field Replaceable Units (FRUs). It may not be necessary to remove all the FRUs in order to replace one. The chart below is a guide to which FRUs need to be removed in order to remove others. Always start by removing the battery pack, next, optional items such as the optional PC card and optional SD card, then follow the line on the chart to determine which FRU you must remove next in order to repair the one you think is causing the computer to operate improperly. Refer to the example at the bottom of the page.

4.2 Battery Pack	
4.3 PC card 4.4 SD card	4.24 Display mask
4.5 HDD 4.6 Optical drive 4.7 Memory module/MDC 4.8 Wireless LAN board	4.25 FL inverter 4.26 LCD module 4.27 Sensor/ Switch Board
4.9 Keyboard	
4.10 Switch cover ASSY/Switch membrane	4.29 Fluorescent Lamp
4.11 Display assembly	
4.12 TouchPad button 4.13 microphone 4.14 Touch pad 4.15 RTC battery 4.16 Sound board/Touch Pad holder 4.17 CD-key assembly	
4.18 System board	
4.19 CPU 4.20 Speaker	
4.21 Fan 4.23 RGB board/Power board 4.22 USB board/DC-in jack/Network jack	
4.28 LCD cable/Wireless LAN Antenna/Hinge	

How to See the Chart

Two examples of referring to the chart are shown below.

•**Removing the Display assembly**

4.2 Battery to 4.10 Switch cover ASSY/Switch membrane must be removed.

		4.24 Display mask
		4.25 FL inverter 4.26 LCD module 4.27 Sensor/ Switch Board
		4.29 Fluorescent Lamp
4.11 Display assembly		
4.12 TouchPad button 4.13 microphone 4.14 Touch pad 4.15 RTC battery 4.16 Sound board/Touch Pad holder 4.17 CD-key assembly		
4.18 System board		
4.19 CPU 4.20 Speaker		
4.21 Fan 4.23 RGB board/Power board 4.22 USB board/DC-in jack/Network jack		
4.28 LCD cable/Wireless LAN Antenna/Hinge		

Safety Precautions

Before you begin disassembly, read the following safety precautions and observe them carefully as you work.

DANGER: 1) *Always use the genuine battery that is authorized by Toshiba or compatible with the unit. Since other battery packs have different specifications, they may be incompatible with the unit, and may burst or explode.*
Never heat or disassemble the battery pack, as that could cause leakage of alkaline solution. Never throw the battery pack into a fire, as that could cause the battery pack to explode.

2) *The power supply, FL inverter and other components carry high voltages. If you need to turn on the power of a partially disassembled computer to check its operation, be very careful not to touch connectors or components, in order to avoid the risk of electric shock.*
Also, do not disassemble individual components in first-level maintenance.

WARNING: 1) *Turn off the power and disconnect the AC adaptor from the power source, to avoid exposure to electric shock.*

2) *Batteries in the computer retain an electrical charge, so there is danger of electrical shock even when the computer is disconnected from an AC power source. Remove any metal jewelry or accessories such as necklaces, bracelets or rings, in order to reduce the risk of electric shock. Never work with wet or damp hands.*

3) *Be careful of edges and corners as these may cut.*

CAUTION: 1) *When you change a component, be sure the replacement component meets the required specifications. Never use foreign parts, to avoid any risk of damage to the computer.*

2) *To avoid any risk of short-circuit, fire or other internal damage, never allow any metal objects such as screws or paper clips to fall into the unit. Be sure to replace screws with the same size as those removed. Make sure all screws are securely fastened. Loose screws can cause short circuits, resulting in heat, smoke or fire.*

3) *Before lifting out an FRU or other component, make sure all cables to the component have been disconnected, in order to reduce the risk of accidental electric shock.*

4) *If you use AC power, be sure to use the cable that came with the computer or one recommended by Toshiba.*

5) *Make sure that all replacement components meet the specifications for the computer and that all cables and connectors are securely fastened, in order to avoid the risk of electric shock.*

6) *Some parts inside the computer, such as the CPU and cooling module, become very hot during operation. Conduct repair work after they have cooled. Be careful around the CPU and cooling module to avoid burns.*

Before You Begin

Look over the procedures in this section before you begin disassembling the computer. Familiarize yourself with the disassembly and reassembly steps. Begin each procedure by removing the AC adapter and the battery pack as instructed in this section:

1. Do not disassemble the computer unless it is operating abnormally.

2. Use only the correct and approved tools.

3. Make sure the working environment is free from the following elements whether you are using or storing the computer.

    -   Dust and contaminates
    -   Static electricity
    -   Extreme heat, cold and humidity

4. Make sure the FRU you are replacing is causing the abnormal operation by performing the necessary diagnostics tests described in this manual.

5. Do not perform any operations that are not necessary and use only the described procedures for disassembling and installing FRUs in the computer.

6. After removing parts from the computer, place them in a safe place away from the computer so they will not be damaged and will not interfere with your work.

7. You will remove and replace many screws when you disassemble the computer. When you remove screws, make sure they are placed in a safe place and identified with the correct parts.

8. When assembling the computer make sure you use the correct screws to secure the various pieces in place. Screw sizes are listed in their corresponding figures.

9. The computer contains many sharp edges and corners, so be careful not to injure yourself.

10. After you have replaced an FRU, make sure the computer is functioning properly by performing the appropriate test on the FRU you have fixed or replaced.

Disassembly Procedures

The computer has two basic types of cable connectors:

- Pressure Plate Connectors
- Coaxial Cable Connectors
- Normal Pin Connectors

To disconnect a Pressure Plate connector, lift up the tabs on either side of the connector's plastic pressure plate and slide the cable out of the connector. To connect the cable to a Pressure Plate connector, make sure the pressure plate is fully lifted and slide the cable into the connector. Secure the cable in place by pushing the sides of the pressure plate down so the plate is flush with the sides of the connector. Gently pull on the cable to make sure the cable is secure. If you pull out the connector, connect it again making sure the connector's pressure plate is fully lifted when you insert the cable.

Coaxial cables should be disconnected with an antenna coaxial disconnector.

Standard pin connectors are used with all other cables. These connectors can be connected and disconnected by simply pulling them apart or pushing them together.

Assembly Procedures

After you have disassembled the computer and fixed or repaired the problem that was causing the computer to operate abnormally, you will need to reassemble the computer.

Install all the removed FRUs following the steps described in the corresponding sections in this chapter.

While assembling the computer, remember the following general points:

- Take your time, making sure you follow the instructions closely. Most problems arise when you get in a hurry assembling the computer.

- Make sure all cables and connectors are securely fastened.

- Before securing the FRU or other parts, make sure that screws or the FRU will pinch no cables.

- Check that all latches are closed securely in place.

- Make sure all the correct screws are used to secure all FRUs. Using the wrong screw can either damage the threads on the screw or the head of the screw and may prevent proper seating of an FRU.

After installing an FRU in the computer, confirm that the FRU and the computer are functioning properly.

Tools and Equipment

The use of Electrostatic Discharge (ESD) equipment is very important for your safety and the safety of those around you. Proper use of these devices will increase the success rate of your repairs and lower the cost for damaged or destroyed parts. The following equipment is necessary to disassemble and reassemble the computer:

- One M2 point size 0 Phillips screwdriver to remove and replace screws.

- One M2.5/M3 point size 1 Phillips screwdriver to remove and replace screws.

- One 4 mm flat-blade screwdriver.

- Tweezers, to lift out screws that you cannot grasp with your fingers.

- ESD mats for the floor and the table you are working on.

- An ESD wrist strap or heel grounder.

- Anti-static carpeting or flooring.

- Air ionizers in highly static sensitive areas.

- Antenna coaxial cable disconnector

Screw Tightening Torque

When you fasten screws, be sure to follow the torque list below.

CAUTION: Overtightening can damage components and screws; undertightening can result in electrical shorts or other damage if screws or components come loose.

NOTE: Toshiba recommends that you use an electric screwdriver for quick and easy operations.

- M2   0.17 N·m (1.7 kgf·cm)

- M2.5   0.30 N·m (3.0 kgf·cm)

- M3   0.57 N·m (5.6 kgf·cm)

NOTE: The computer contains several flat head screws. These screws have less contact area with the screwdriver, so be careful to press firmly enough to prevent the screwdriver from slipping out and damaging the screw head.

Color of Screw Shaft

To avoid mistakes on the screw length, screw shafts are colored as follows:

- ❑ Even number length screw: brown

- ❑ Odd number length screw: white

- ❑ Special length screw: blue

  Screws whose lengths are indicated to one or more decimal places such as 2.5 mm or 2.8 mm.

Marking of Screws on the Computer Body

To make maintenance of the computer easier, markings of the kinds of the screws including the types and lengths of the screws are indicated on the computer body.

Kind of screws	Symbol
❑ BIND screw	B
❑ FLAT HEAD screw	F
❑ SUPER FLAT HEAD screw	S
❑ TAPPING screw	T
❑ Other screws (Unique screws, STUD, etc.)	U

Examples:

- ❑ 6 mm BIND screw   B6

- ❑ 12 mm BIND screw   B12

- ❑ 5 mm FLAT HEAD screw   F5

- ❑ (Indicates the screwed length in round number regardless the length of the stud.)

4.2 Battery Pack

Removing the Battery Pack

To remove the battery pack, follow the steps below and refer to figure 4-1.

> *CAUTION:* *When handling battery packs, be careful not to short circuit the terminals. Also do not drop, hit or apply impact; do not scratch, break, twist or bend the battery pack.*

1. Turn off the computer.

2. Disconnect the AC cable and other external devices from the computer.

3. Turn the computer face down.

4. Release the **battery lock** while sliding the **battery latch**, pull out the **battery pack** to the arrow direction in the figure below.

> *NOTE:* *For environmental reasons, do not throw away a spent battery pack. Collect the spent battery packs.*
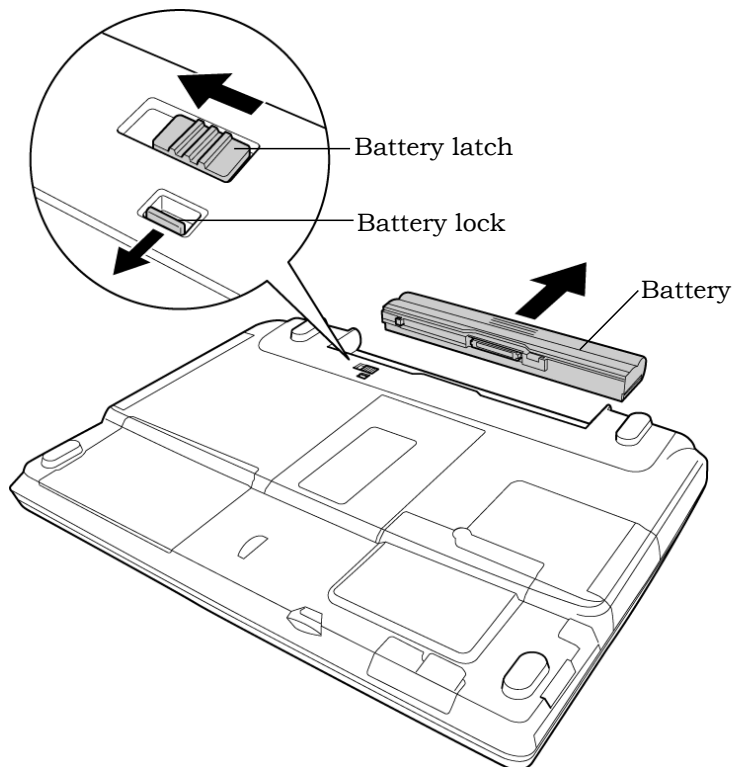
Figure 4-1   Removing the Battery pack

Installing the Battery Pack

To install the battery pack, follow the steps below and refer to figure 4-1.

CAUTION: *The battery pack is a lithium ion battery, which can explode if not properly replaced, used, handled or disposed of. For environmental reasons, collect the spent battery packs. Use only batteries recommended by Toshiba as replacements.*

NOTE: *Check the battery's terminals visually. If they are dirty, wipe them clean with a dry cloth.*

1. Push **the battery pack** into the battery slot. Make sure the battery pack is installed securely.

2. Slide the **battery lock** into the lock position.

4.3   PC Card

Removing the PC Card

To remove the PC card, follow the steps below and refer to figure 4-2.

> *CAUTION:* *Before you remove a PC card, refer to the card's documentation and your operating system documentation for proper procedures and precautions.*

1. Turn the computer face up.

2. Push the **eject button**. It will pop out when you release it. Then press once more the eject button to eject the PC card.
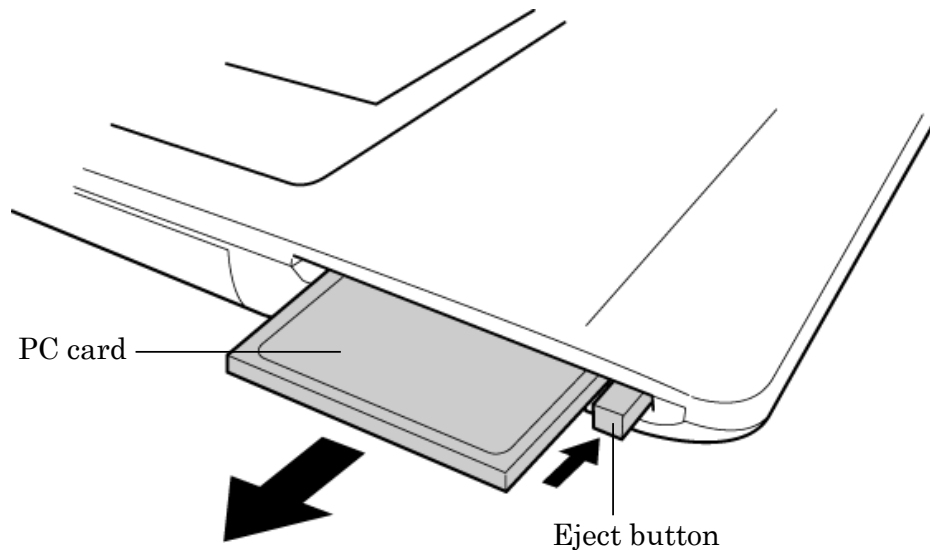
3. Grasp the **PC card** and pull it out.

PC card

Eject button

Figure 4-2   Removing the PC card

Installing the PC Card

To install the PC card, follow the steps below and refer to figure 4-2.

1. Make sure the **eject button** does not stick out.

2. Insert the **PC card** and press it until it is securely connected.

4.4 SD Card

Removing the SD Card

To remove the SD card, follow the steps below and refer to figure 4-3.

CAUTION: *Before you remove the SD card, refer to the card's documentation and to your operating system documentation for proper procedures and precautions.*

---

1. Turn the computer face up.

2. Push the **SD card**. It will pop out partly when you release, so pull out the card.
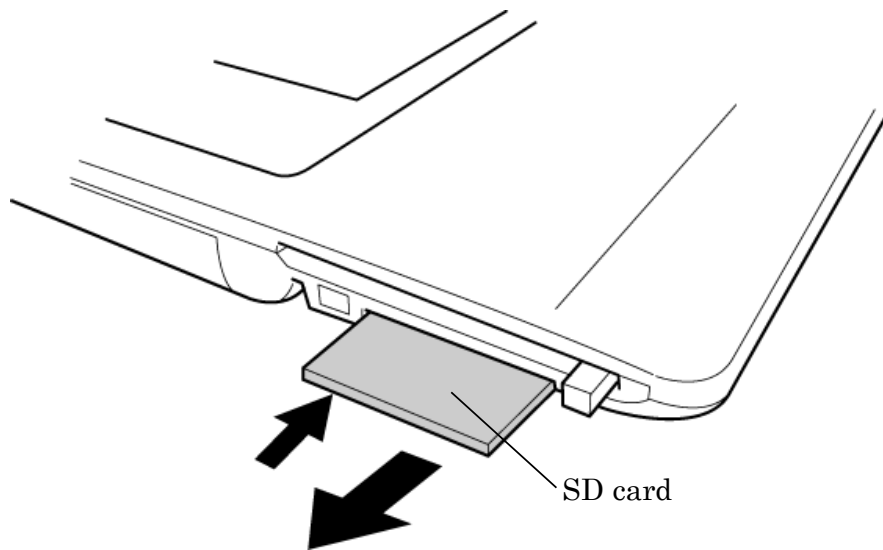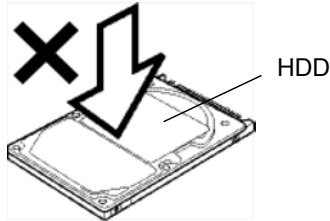

Figure 4-3 Removing the SD card

Installing the SD Card

To install the SD card, follow the steps below and refer to figure 4-3.

1. Insert the **SD card** and press it until it is securely connected.

4.5 HDD

CAUTION: When handling the HDD, do not press the top surface as shown by the arrow. Hold it by the sides.

Removing the HDD

To remove the HDD, follow the steps below and refer to figures 4-4 and 4-5.

1. Turn the computer upside down.

2. Remove the following **screw** securing the HDD cover. Remove the **HDD cover** by lifting up.
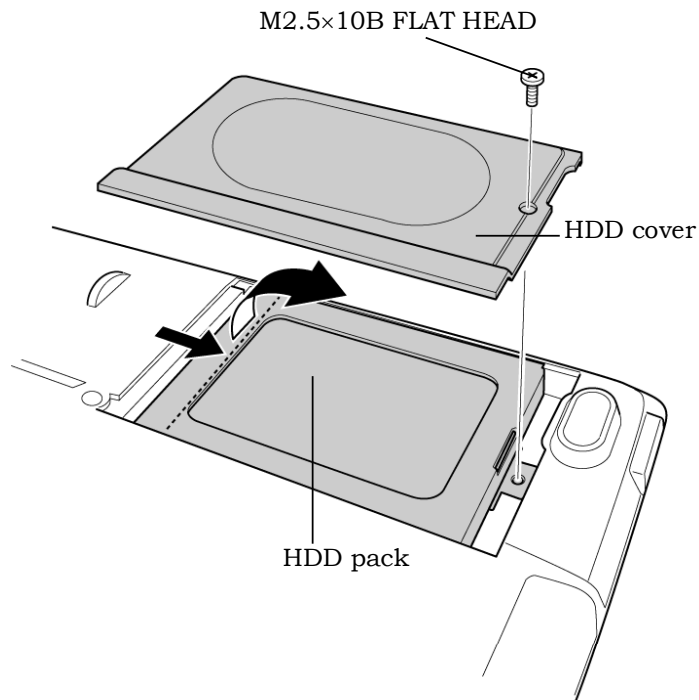
    - M2.5×10B   FLAT HEAD screw   ×1

Figure 4-4   Removing the HDD cover

3. Push the tab of the **HDD pack** to the direction of the arrow and remove the HDD pack. Be careful not to damage the connector.

NOTE: *The following steps describe how to disassemble the HDD pack; however, do not disassemble if the HDD is working properly.*

---

4. Remove the following **screws**.

   • M3×4S   FLAT HEAD screw   ×4

5. Remove the **HDD bracket**.

CAUTION: *Do not apply pressure to the top or bottom of the HDD.*

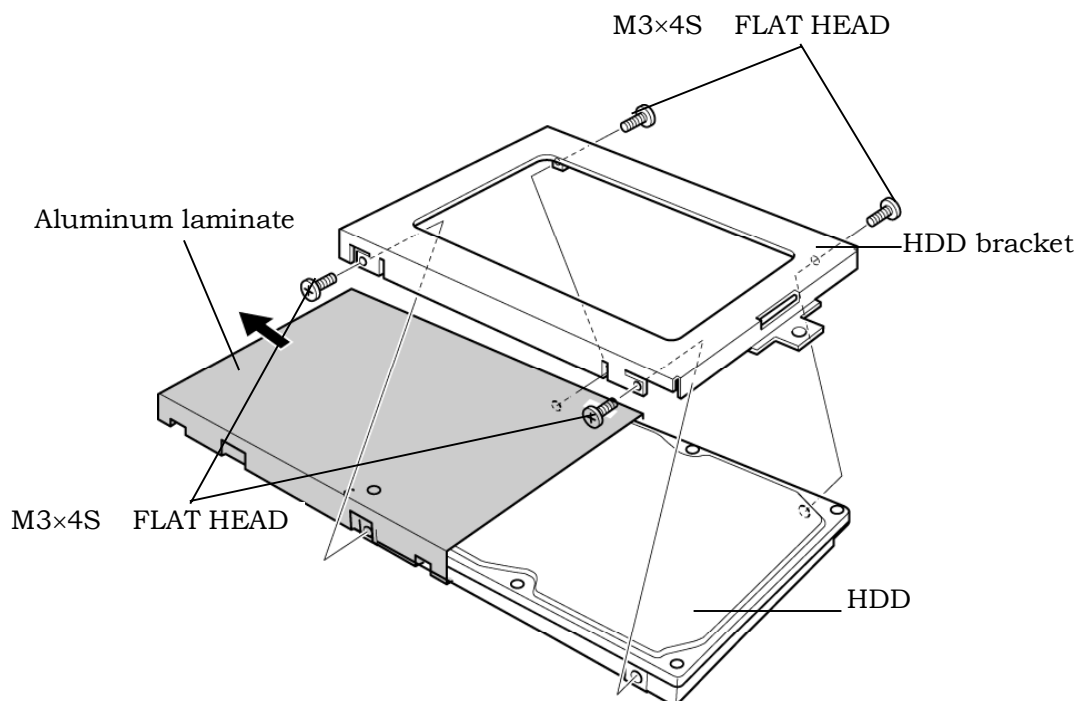6. Remove the **HDD** from the **aluminum laminate**.

Figure 4-5   Removing the HDD bracket and HDD

Installing the HDD

To install the HDD, follow the steps below and refer to figures 4-4 and 4-5.

> ***CAUTION:*** *Do not hold the HDD by its top and bottom flat surfaces. It may damage the HDD.*

1. Install the **HDD** to the **aluminum laminate**.

2. Place the **HDD** in the bracket.

3. Secure the HDD to the HDD bracket with the following **screws**.

    - M3×4S   FLAT HEAD screw   ×4

> ***CAUTION:*** *Do not apply pressure to the middle of the HDD pack. It may damage the HDD pack. Hold the HDD pack by its corners.*

4. Hold the **HDD pack** and place it in the slot. Slide the HDD pack to the connector of the computer to connect. Press to ensure a firm connection.

5. Seat the **HDD cover** and secure it with the following **screw**.

    - M2.5×10B   FLAT HEAD screw   ×1

4.6 Optical Drive

Removing the Optical Drive

To remove the optical drive, follow the steps below and refer to figures 4-6 and 4-7.

CAUTION: Do not apply excessive force to the top of an optical drive.

---

1. Remove the following screws securing the **optical drive**.

   - M2.5×4B FLAT HEAD screw   ×2

2. Slide the optical drive outward to disconnect it from the connector **PJ1820** on the system board.
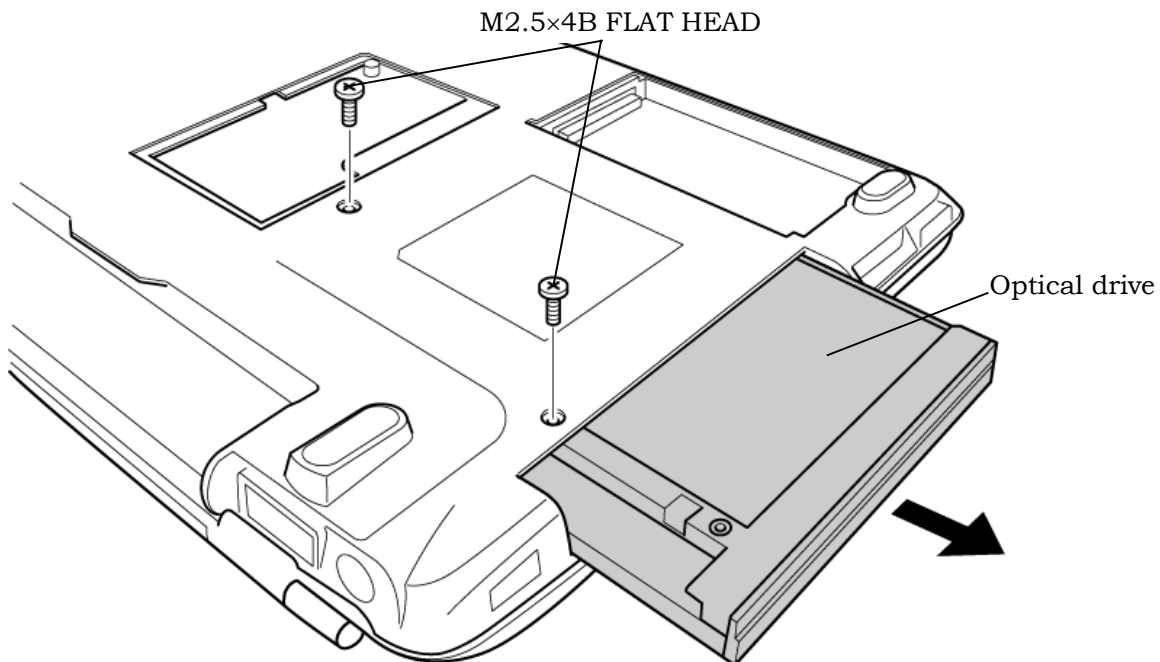

Figure 4-6   Removing the optical drive

3. Remove the following **screws** securing the **plastic frame**.

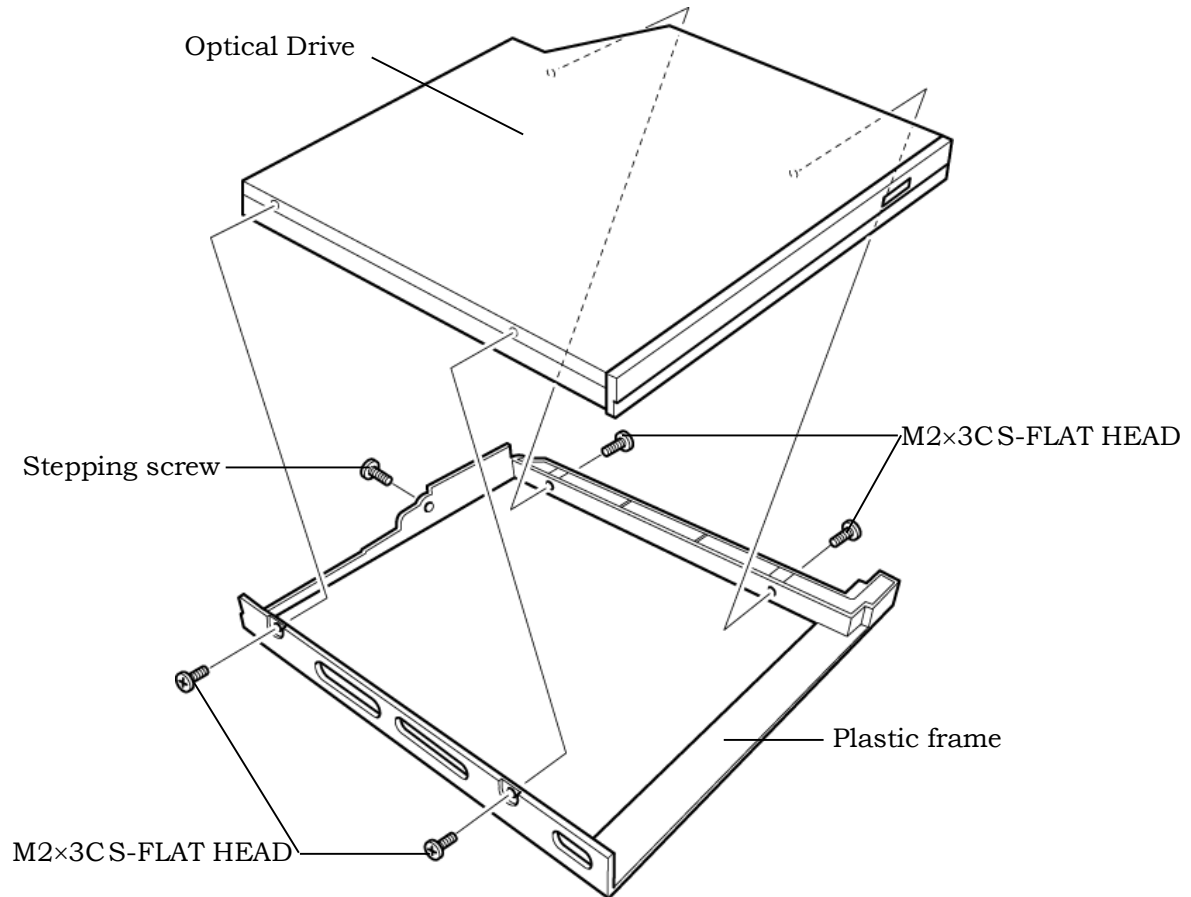- M2×3C   S-FLAT HEAD screw   ×4
- Stepping screw   ×1

Optical Drive

M2×3C S-FLAT HEAD

Stepping screw

M2×3C S-FLAT HEAD

Plastic frame

Figure 4-7 Disassembling the optical drivel

Installing the Optical drive

To install the optical drive, follow the steps below and refer to figures 4-6 and 4-7.

1. Seat the **plastic frame** on the side of the optical drive, and secure it with the following s**crews**.

    - M2×3C   S-FLAT HEAD screw   ×4

    - Stepping screw   ×1

2. Slide the **optical drive** into the slot to connect it to the connector **PJ1820** on the system board.

3. Secure the optical drive with the following **screws**.

    - M2.5×4B   FLAT HEAD screw   ×2

4.7   Memory module/ Modem Daughter Card

> *CAUTION:* *The power of the computer must be turned off when you remove the memory module. Removing a memory module with the power on risks damaging the module or the computer itself.*
>
> *Do not touch the memory module terminals. Any dirt on the terminals may cause memory access problems.*
>
> *Never press hard or bend the memory module.*

4.7.1 Memory module

Removing the memory module

To remove a memory module, confirm that the computer is in boot mode. Then perform the following procedures (See Figure 4-8).

1. Turn the computer upside down.

2. Loosen the **screw** (e-ring) fixing the **memory slot cover**.

3. Remove the **memory slot cover**.

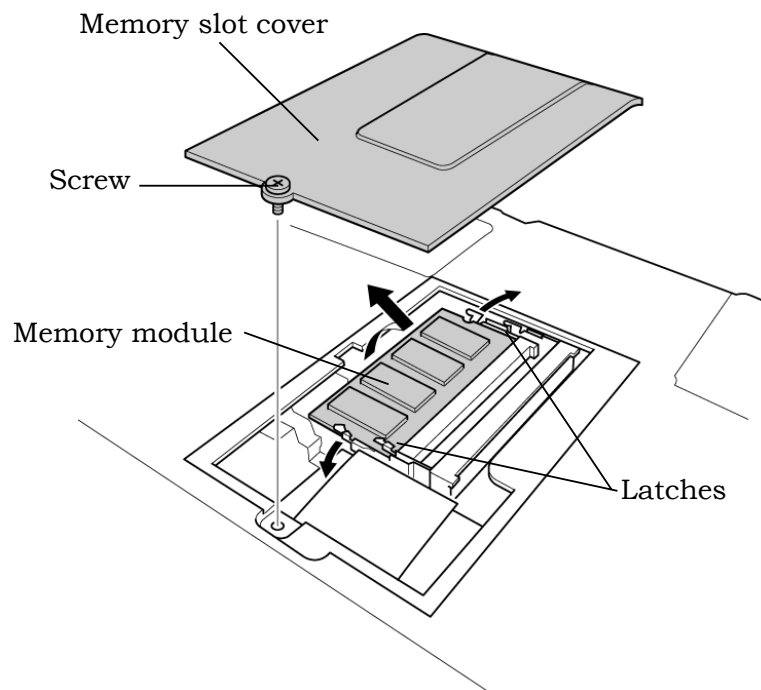4. Open the left and right **latches** and remove the **memory module**.

Figure 4-8 Removing the memory module

Installing the memory module

To install the memory module, confirm that the computer is in boot mode. Then follow the steps below and refer to figures 4-8.

1. Insert the **memory module** into the connector of the computer slantwise (terminal side first) and press it to connect firmly.

CAUTION: *The power must be turned off when you insert the memory module. Inserting a memory module with the power on might damage the module or the computer itself.*

               Never press hard or bend the memory module.

---

2. Install the **memory slot cover** and secure it with the **screw** (e-ring).

3. When the power of the computer is turned on, the computer checks automatically the memory size. Confirm that the new memory is detected correctly.

4. If the memory is not detected, check that it is connected correctly.

4.7.2 Modem Daughter Card

Removing the Modem Daughter Card

To remove the modem daughter card, follow the steps below and refer to figure 4-9.

1. Remove the following **screws** securing the modem daughter card.

   - M2×4B   BIND screw   ×2

2. Lift up the **modem daughter card** to disconnect it from the connector **PJ3000** on the system board.

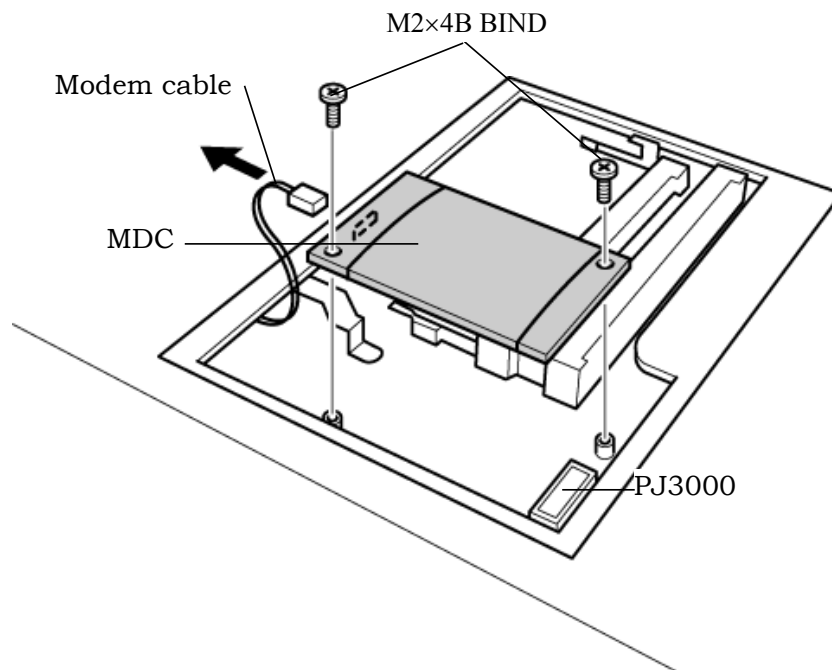4. Disconnect the **modem cable** from **CN1** on the modem daughter card.

Figure 4-9   Removing the modem daughter card

Installing the Modem Daughter Card

To install the modem daughter card, follow the steps below and refer to figures 4-9.

1. Connect the **modem cable** to **CN1** on the modem daughter card.

2. Connect the **modem daughter card** to the connector **PJ3000** on the system board.

CAUTION: *Be careful not to damage the card or connector.*

3. Secure the modem daughter card with the following **screws**.

   - M2×4B   BIND screw   ×2

4. Place the **memory slot cover** and secure it with the **screw** (e-ring).

4.8 Wireless LAN board

CAUTION: *The power must be turned off when you remove the wireless LAN board. Removing the wireless LAN board with the power on risks damaging the card or the computer itself.*

          Never press hard or bend the wireless LAN board.

Removing the wireless LAN board

To remove the wireless LAN board, follow the steps below and refer to figure 4-10.

1. Turn the computer upside down.

2. Loosen the **screw** fixing the **wireless LAN board cover**.

   - M2×4B   BIND screw   ×1
                   Or
   - M2×4   LH STICK screw   ×1

3. Peel off the **glass tape** and disconnect the two **wireless LAN antenna cables** (black and white) from the wireless LAN board.

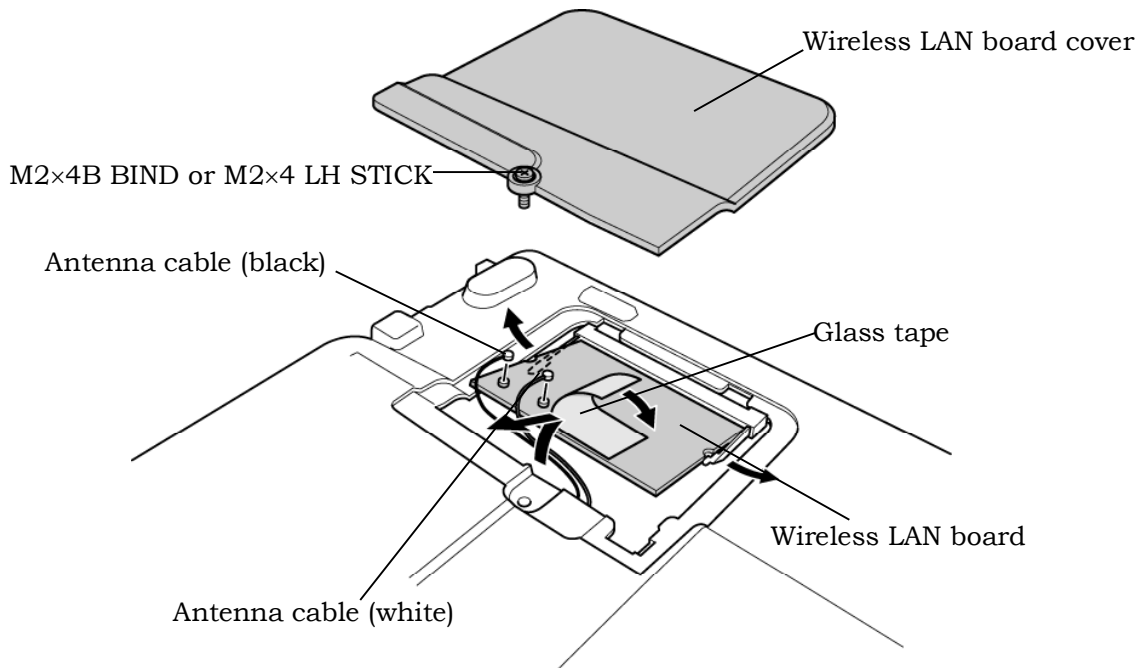4. Open the left and right latches holding the **wireless LAN board** and remove it.

Figure 4-10   Removing the wireless LAN board

Installing the wireless LAN board

To install the wireless LAN board, follow the steps below and refer to figure 4-10.

1. Insert the **wireless LAN board** terminals slantwise into the connector on the computer and press the wireless LAN board until it is securely in place.

2. Connect the **wireless LAN cables** (black and white) to the terminals on the wireless LAN board and fix them with the **glass tape**.

3. Place the **wireless LAN board cover** and secure it with the following **screw**.

    - M2×4B   BIND screw   ×1

                 Or

    - M2×4   LH STICK screw   ×1