Chapter 4

Replacement Procedures

Chapter 4 Contents

4.1 General 4-1
Safety Precautions 4-2
Before You Begin 4-4
Disassembly Procedures 4-5
Assembly Procedures 4-5
Tools and Equipment 4-6
Screw Tightening Torque 4-6
Colors of Screw Shanks 4-7
Symbols of Screws on the Laptop Body 4-7
Symbol examples 4-7
4.2 Battery 4-8
Removing the Battery Pack 4-8
Installing the Battery Pack 4-9
4.3 2nd HDD 4-10
Removing the 2nd HDD 4-10
Installing the 2nd HDD 4-12
4.4 Main HDD 4-15
Removing the Main HDD 4-15
Installing the Main HDD 4-15
4.5 Memory 4-16
Removing the Optional Memory 4-16
Installing the Optional Memory 4-17
4.6 ODD 4-18
Removing the ODD 4-18
Installing the ODD 4-19
Disassembling the ODD 4-19
Assembling the ODD 4-19
4.7 Keyboard 4-20
Removing the Keyboard 4-20

Installing the Keyboard 4-22
4.8 WLAN Card 4-23
Removing the WLAN Card 4-23
Installing the WLAN Card 4-24
4.9 Logic Upper Assembly 4-25
Removing the Logic Upper Assembly 4-25
Installing the Logic Upper Assembly 4-27
4.10 Speakers 4-28
Removing the Speakers 4-28
Installing the Speakers 4-28
4.11 Touchpad on/off Button Board 4-29
Removing the Touchpad on/off Button Board 4-29
Installing the Touchpad on/off Button Board 4-29
4.12 Touchpad Button Board 4-30
Removing the Touchpad Button Board 4-30
Installing the Touchpad Button Board 4-30
4.13 ODD Board 4-31
Removing the ODD Board 4-31
Installing the ODD Board 4-31
4.14 USB Board 4-32
Removing the Right USB Board 4-32
Installing the Right USB Board 4-32
4.15 Indicator Board 4-33
Removing the Indicator Board 4-33
Installing the Indicator Board 4-33
4.16 Motherboard 4-34
Removing the Motherboard 4-34
Installing the Motherboard 4-34
4.17 Sub-Woofer 4-36
Removing the Sub-Woofer 4-36
Installing the Sub-Woofer 4-36
4.18 CPU and Thermal Module 4-37

Removing the CPU and Thermal Module 4-37
Installing the CPU and Thermal Module 4-38
4.19 VGA Board 4-40
Removing the VGA board 4-40
Installing the VGA Board 4-40
4.20 Display Assembly 4-41
Removing the Display Assembly 4-41
Installing the Display Assembly 4-42
4.21 LCD Bezel 4-43
Removing the LCD Bezel Assembly 4-43
Installing the LCD Bezel Assembly 4-44
4.22 LCD Module 4-45
Removing the LCD Module 4-45
Installing the LCD Module 4-48
4.23 Camera Module 4-49
Removing the Camera Module 4-49
Installing the Camera Module 4-49
4.24 Antennas 4-50
Removing the Antennas 4-50
Installing the Antennas 4-50

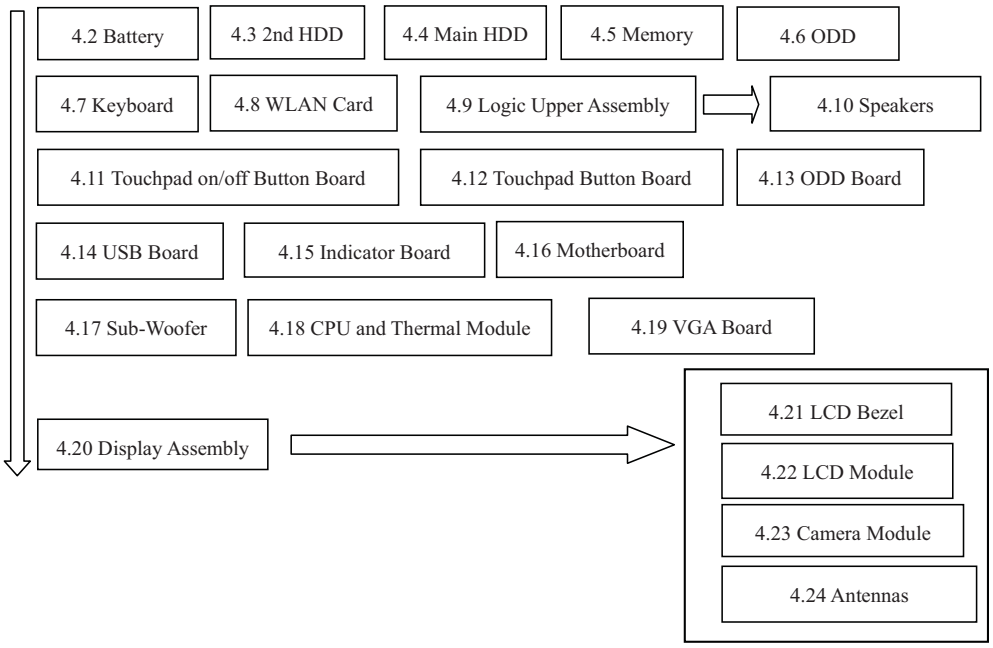
Figures

Figure 4-1 Removing the Battery Pack 4-8
Figure 4-2 Removing the logic lower door 4-10
Figure 4-3 Removing the 2nd HDD from the HDD bay 4-11
Figure 4-4 Removing the HDD aluminum 4-12
Figure 4-5 Installing the HDD aluminum foil 4-13
Figure 4-6 Installing the logic lower door 4-14
Figure 4-7 Removing the main HDD 4-15
Figure 4-8 Removing the RAM from the connectors 4-16
Figure 4-9 Removing the ODD 4-18
Figure 4-10 Removing the ODD bracket from the ODD 4-19
Figure 4-11 Removing screws securing the keyboard 4-20
Figure 4-12 Prying up the keyboard 4-21
Figure 4-13 Disconnecting the FPC and removing the keyboard 4-21
Figure 4-14 Removing the WLAN Card 4-23
Figure 4-15 Removing screws from the bottom of the laptop 4-25
Figure 4-16 Removing one screw 4-26
Figure 4-17 Disconnecting touchpad FFC and speaker cable from the motherboard 4-26
Figure 4-18 Removing the logic upper assembly from the laptop 4-27
Figure 4-19 Removing the speakers 4-28
Figure 4-20 Removing the touchpad on/off button board 4-29
Figure 4-21 Removing the touchpad button board 4-30
Figure 4-22 Disconnecting the ODD board FFC 4-31
Figure 4-23 Disconnecting the FFC from the motherboard 4-32
Figure 4-24 Disconnecting the FFC from the motherboard 4-33
Figure 4-25 Removing the motherboard from the logic lower assembly 4-34
Figure 4-26 Removing the sub-woofer 4-36
Figure 4-27 Removing the Thermal Module spring screws 4-37
Figure 4-28 Removing the CPU 4-38
Figure 4-29 Reapply the Shinetsu 7762 grease on the thermal module 4-39
Figure 4-30 Removing the VGA board 4-40
Figure 4-31 Removing the screws 4-41

Figure 4-32 Removing the LCD Bezel 4-43
Figure 4-33 Removing the LCD Module from the LCD cover assembly 4-45
Figure 4-34 Disconnect the camera module cable 4-46
Figure 4-35 Removing the LCD hinges 4-46
Figure 4-36 Removing the LVDS cable from the LCD panel 4-47
Figure 4-37 Installing the LCD hinges 4-48
Figure 4-38 Removing the Camera Module 4-49
Figure 4-39 Removing the antennas from the LCD cover assembly 4-50

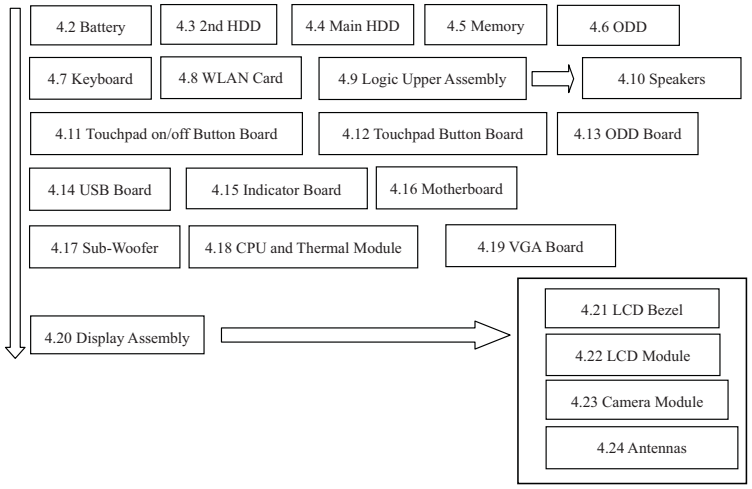
4.1 General

This chapter explains how to disassemble the laptop and replace Field Replaceable Units (FRUs). Some replacement procedures may not require you to remove all the surrounding FRUs to replace only one FRU. The chart below shows the FRUs in the order in which they should be removed in a top-down manner, irrespective of their physical locations. The FRUs shown in the top area of the chart should normally be removed before removing the FRUs shown in the bottom area. To replace the FRUs, first identify the suspect FRU for the system failure. Next, according to this chart, determine the FRUs that need to be removed before removing the suspect FRU. After you determine those FRUs, go to the appropriate sections according to the section numbers shown in the boxes. Then start removal and replacement.



How to use the chart (one example):

- For removing the LCD Module:
  First, remove 4.20 Display Assembly, 4.21 LCD Bezel, then remove 4.22 the LCD Module.



Safety Precautions

Before you begin disassembly read the following safety precautions carefully. Be sure to follow them while you are working.

DANGER:

1. *Always use the original batteries or replacement batteries authorized by Toshiba. Batteries other than those differ in specifications and are incompatible with the laptop. They may burst or explode. To avoid leakage of alkaline solutions, never heat or disassemble the battery packs. Never throw the battery packs into a fire. If this is violated, they will explode.*
2. *The components such as the power supply and inverter carry high voltages. When you partially disassemble the laptop and turn on the components, use extreme care not to touch the connectors and components to avoid the risk of electrical shock. Do not disassemble individual components during first-level maintenance.*

WARNING:

1. *To avoid the risk of electrical shock, turn the laptop off and remove the AC adapter from the electrical outlet.*
2. *Because the battery in the laptop is left charged, the risk of electrical shock remains even after the AC adapter is removed from the electrical outlet. To avoid the risk of electrical shock, be sure to remove any metal jewelry or accessories such as necklaces, bracelets and rings before starting work. Never work with damp or wet hands.*
3. *To avoid personal injury, use care to avoid the sharp edges or corners of the components.*

CAUTION:

1. *Before replacing a component, make sure that the replacement component meets the required specifications. To avoid laptop failures, never use components that do not meet the specifications.*
2. *To avoid internal damage such as short circuits and fire, never drop metal objects such as screws, pins, paper clips, etc. into the components. When a screw is removed, be sure to replace a screw that is the same size as the original screw. Make sure that all the screws are fastened securely. Loose screws can cause short circuits, overheating, smoke or fire.*
3. *Before removing a FRU or other component, make sure that all the component cables have been disconnected to avoid the risk of electrical shock caused by accidental contact with the energized components.*
4. *For AC input, be sure to use the AC adapter and AC power cable that come with your laptop or Toshiba-recommended equivalents.*
5. *To avoid the risk of electrical shock, make sure that all the replacement components meet the specifications of the laptop and that all the cables and connectors are fastened securely.*
6. *The components inside the PC become hot during operation (such as the CPU and cooling module). To avoid burns, let the hot components cool down before starting inspection or repair task.*

Before You Begin

Before you begin to disassemble the laptop, keep in mind the precautions and advice in this section. Always begin disassembly by removing the AC adapter and battery pack. Remove the optional parts and accessories as well. The procedures for removing the batteries will be explained later.

Disassemble the laptop only when an abnormality has occurred.

Use only the recommended tools.

To run and store the laptop, be sure to prepare a working environment that is free from:

- Dust and contaminants
- Static electricity
- Extremely high or low temperatures and extremely high humidity

Run the diagnostic tests explained in Chapter 2 of this manual to identify the FRU that has probably caused the system failure.

Perform only the required machine operations. Use only the disassembly and reinstallation procedures described in this manual.

Place the removed components in a safe place away from the laptop so that they are not damaged or get in the way of you doing your work.

Normally, a number of screws need to be removed or replaced during disassembling. Place the removed screws in a safe place so that you can easily find the right screws for the right components.

When assembling the laptop, use the specified screws to fasten the parts to the specified locations. See the appropriate explanations and figures for screw sizes.

To avoid personal injury, use care when handling components that have sharp edges or corners.

After you have replaced a FRU, check that the FRU works correctly to ensure normal laptop operation.

Disassembly Procedures

The cable connectors come in these two basic types:

- Pressure plate connectors
- Normal pin connectors

To remove a pressure plate connector, pull up the tabs on either side of the connector's plastic pressure plate and gently pull the cable out of the connector. To reconnect the cable to the pressure plate's connector, raise the pressure plate up to a satisfactory height and slide the cable into the connector. Secure the cable in the correct position by pressing down the sides of the pressure plate so that the plate is flush with the sides of the connector. Grasp and pull the cable gently to check that the cable is connected firmly. If the cable has come off the connector, reinsert the cable by raising the pressure plate up to a satisfactory height.

Normal pin connectors are used for all the other types of cables. These connectors can be installed or removed by simply inserting them or pulling them out.

Assembly Procedures

You have to reassemble the laptop after you have disassembled the laptop and fixed the component that caused the problem.

When reassembling the laptop, keep the following general guidelines in mind:

- Take your time to carry out the suggested instructions completely. Hurried reassembly can often cause problems.
- Check that all the cable and connectors are fastened securely.
- Before securing the FRUs or other parts, check that the cables are not caught by the screws or FRUs.
- Check that all the latches are closed securely.
- Check that all the required screws are used to secure the FRUs. Using wrong screws can damage the threads or heads of the screws or not ensure the FRUs securely.

After installing a FRU, make sure that the FRU and laptop work normally.

Tools and Equipment

For your safety and that of other people in the working environment, it is strongly recommended that you use electrostatic discharge (ESD) equipment. The proper use of this equipment will ensure successful repair work and reduce the costs for repairing damaged components. The equipment and tools required for disassembly and reassembly are:

- ❑ One 2 mm Phillips screwdriver
- ❑ One 4 mm flat-blade screwdriver
- ❑ Torx screwdriver
- ❑ Tweezers (for pulling out screws)
- ❑ ESD mats (for the floor and work desks)
- ❑ An ESD wrist strap or heel grounder
- ❑ Anti-static carpets or flooring
- ❑ Air ionizers (for highly electrostatic sensitive areas)
- ❑ A plastic card (in credit card size)

Screw Tightening Torque

To secure screws, follow the torque values listed below. Over-tightening can damage components and screws. Under-tightening can loosen the screw or cause screws to come off, which may result in short circuits or other damage.

- ❑ M2 (2 mm) 0.22 N·m (2.2 kgf·cm)
- ❑ M2.5 (2.5 mm) 0.36 N·m (3.5 kgf·cm)
- ❑ M3 (3 mm) 0.51 N·m (5.0 kgf·cm)
- ❑ M2.5x4 PSP TITE screws 0.204 N·m (2.0 kgf·cm)
- ❑ M2.5x6 GIZA TITE screws 0.36 N·m (3.5 kgf·cm)

Colors of Screw Shanks

For easy identification of the correct screws, the screw shanks are colored according to their lengths, as follows:

- Screws of an odd-numbered length Silver
- Screws of a special length Black
  Screws of a special length are those of a length having decimal places (i.e. 16mm).

Symbols of Screws on the Laptop Body

For easy maintenance, the screw types are shown on the laptop body as symbols. A symbol consists of a letter representing the screw type and a numeral representing the screw length.

Screw type	Letter	
Bind screw	B	(stands for bind)
Flat-head screw	F	(stands for flat-head)
Super flat-head screw	S	(stands for super flat-head)
Tapping screw	T	(stands for tapping)
Other screws	U	(stands for unique-pan head screws, studs, etc.)

Symbol examples

- 6 mm bind screw B6
- 12 mm bind screw B12
- 5 mm stud U5
  (The numeral represents the rounded length of the threaded portion regardless of the entire stud length.)

4.2 Battery

Removing the Battery Pack

Remove the battery pack according to the following procedures and Figure 4-1.

> ***CAUTION:*** *When handling the battery packs, use care not to short circuit the terminals. Do not drop, hit, twist, or bend the battery packs. Do not scratch or break up their casing.*

1. Turn the laptop upside down.
2. Slide the battery outward.
3. Slide the battery release latch outward, and remove the battery pack from the laptop.

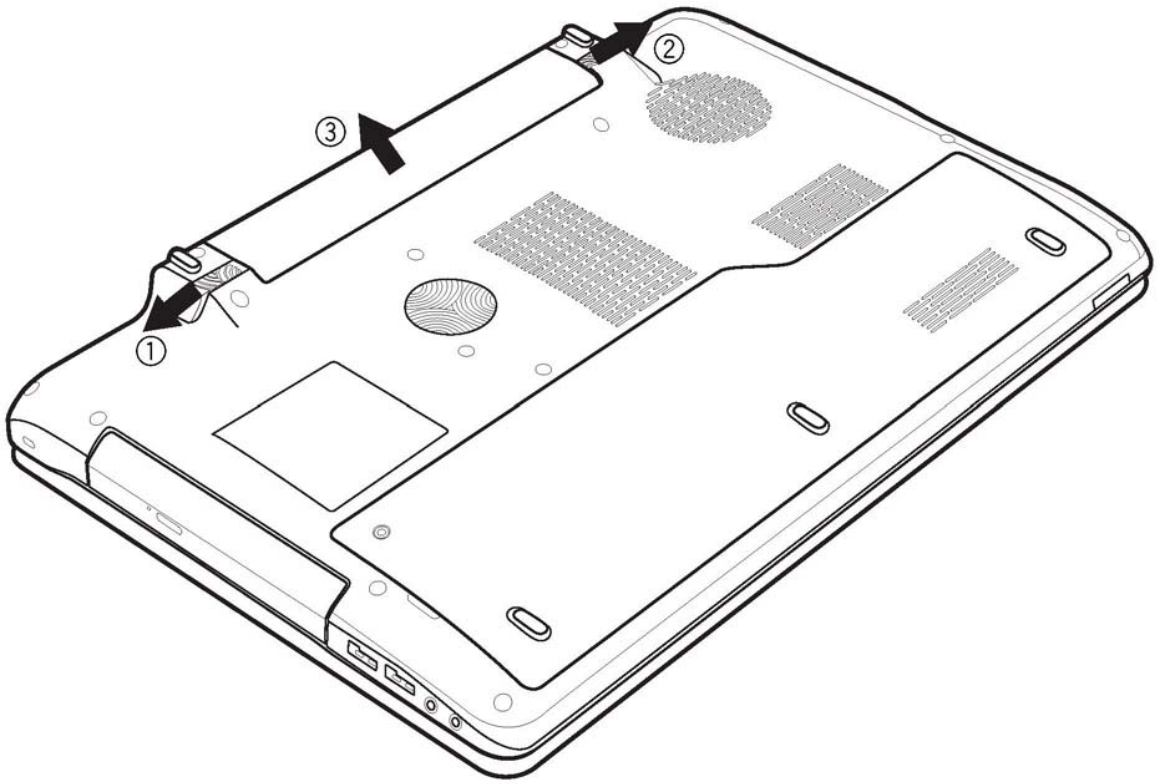


Figure 4-1 Removing the Battery Pack

> ***NOTE:*** *Dispose of the used battery packs as required by local ordinances or regulations.*

Installing the Battery Pack

Install the battery pack according to the following procedures:

> ***CAUTION:*** *The battery packs contain a lithium ion battery, which can explode due to improper replacement, use, handling or disposal. Always dispose of the battery packs as required by local ordinances or regulations. Use only replacement batteries recommended by Toshiba.*

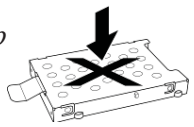
> ***NOTE:*** *Visually check the battery's terminals. If they are dirty, clean them with a dry cloth.*

1. Gently insert a new or recharged battery pack into the battery bay. Check that the battery release latch slides inward and stops with a click.
2. Slide in the battery lock.

4.3 2nd HDD

Removing the 2nd HDD

Remove the 2nd HDD (hard disk drive) according to the following procedures and Figures 4-2, 4-3 and 4-4.

> ***CAUTION:*** *This is push bar for Assemble HDD. Do not press on the top or bottom of the drive. Applying such pressure can either corrupt the data in the drive or damage the drive.*
>
> 

1. Loosen the one M2.5x5 screw securing the logic lower door.
2. Pry up the logic lower door and remove it.

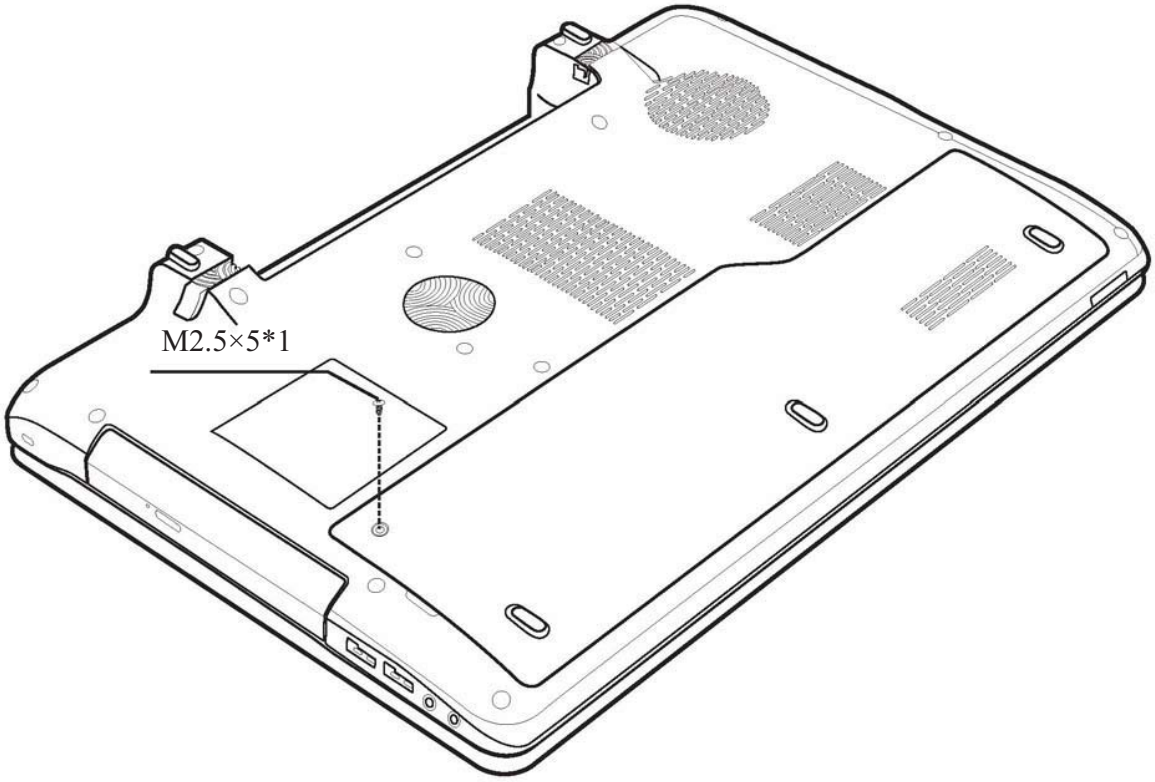


Figure 4-2 Removing the logic lower door

3. Remove the 2nd HDD by pulling the tab attached to the HDD.

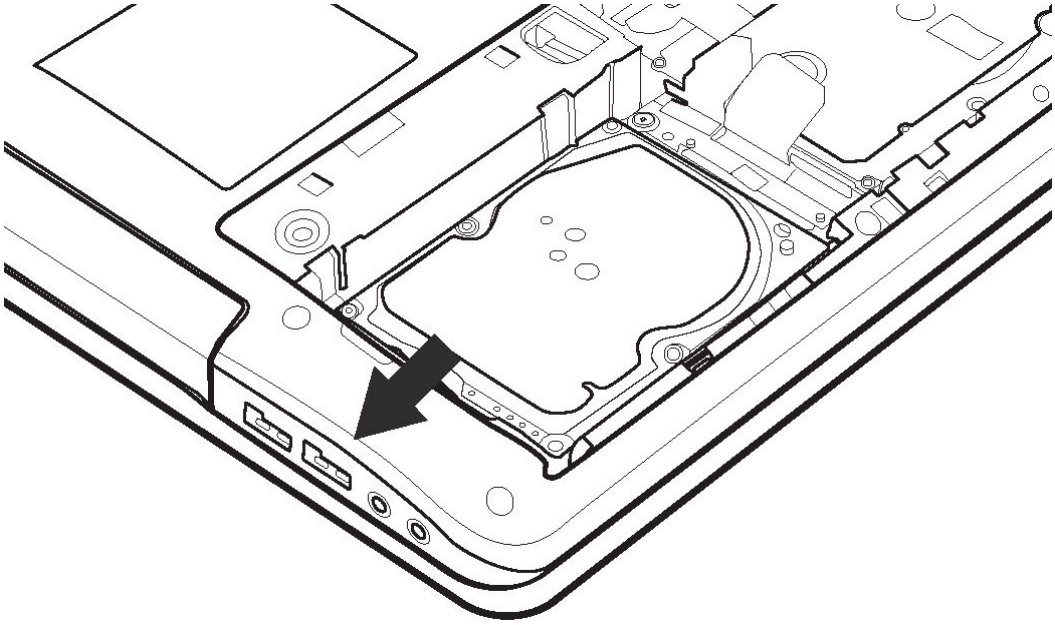


Figure 4-3 Removing the 2nd HDD from the HDD bay

> ***NOTE:*** *Do not disassemble the HDD pack when it is working normally. Disassemble or replace the HDD pack only if it fails.*

4. Place the HDD on a flat surface such as a desk.

5. Remove the four M3x3 screws securing the HDD aluminum foil.

6. Remove the HDD aluminum foil.

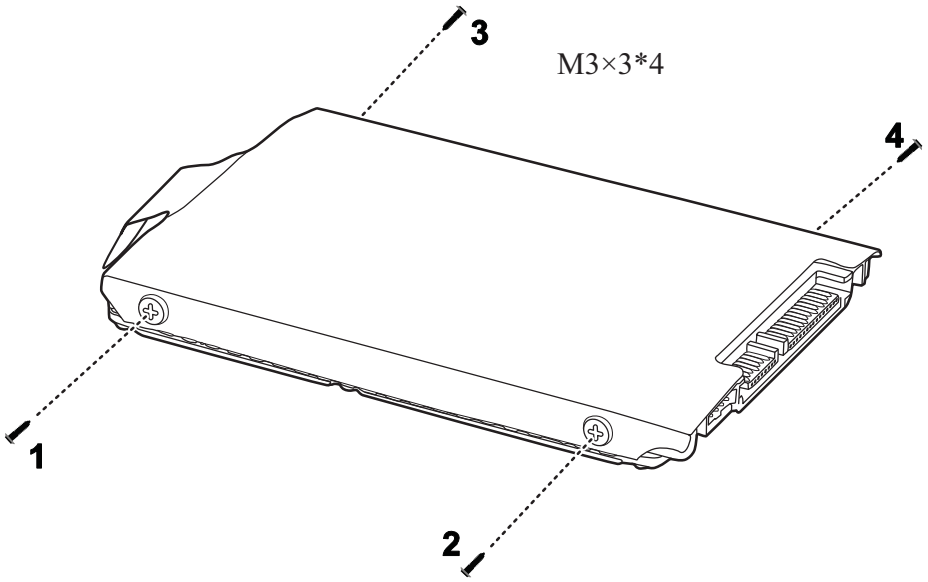


Figure 4-4 Removing the HDD aluminum

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

Installing the 2nd HDD

Install the 2nd HDD according to the following procedures:

CAUTION: *To avoid damage, always hold the HDD only by its sides.*

1. Place the HDD aluminum foil onto the HDD.

2. Secure the HDD aluminum foil to the HDD with four M3x3 screws according to the sequence indicated in Figure 4-5.

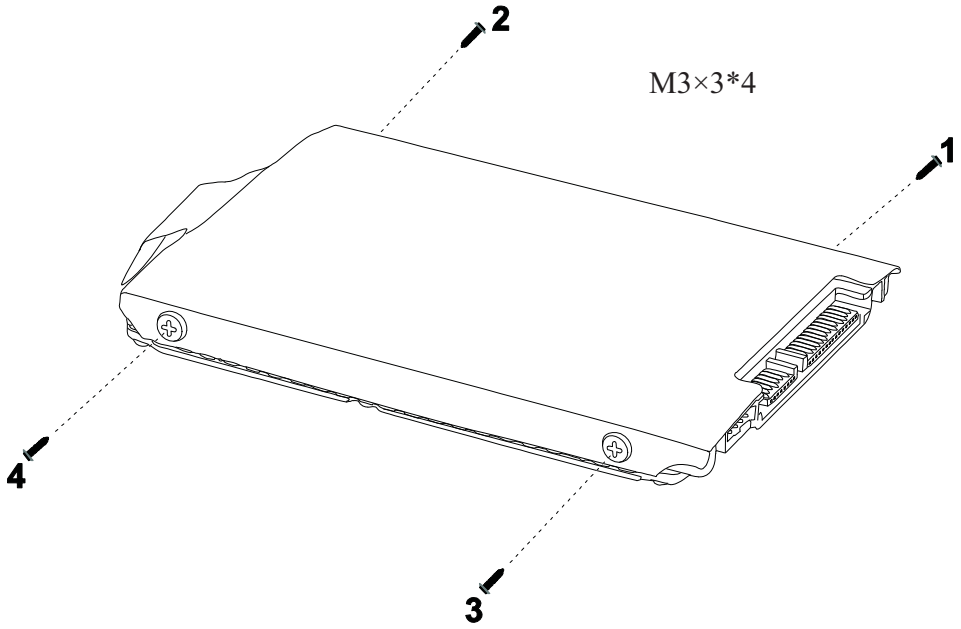


Figure 4-5 Installing the HDD aluminum foil

> ***CAUTION:*** *To prevent the HDD aluminum foil from being distorted when installing the HDD pack into the laptop, do not press the center of the HDD pack. Always hold the HDD pack by its sides.*

3. Insert the HDD into the HDD bay, and slide the HDD inward to connect to the motherboard.

4. Replace the logic lower door, press down the logic lower door according to the following procedures indicated in Figure 4-6.

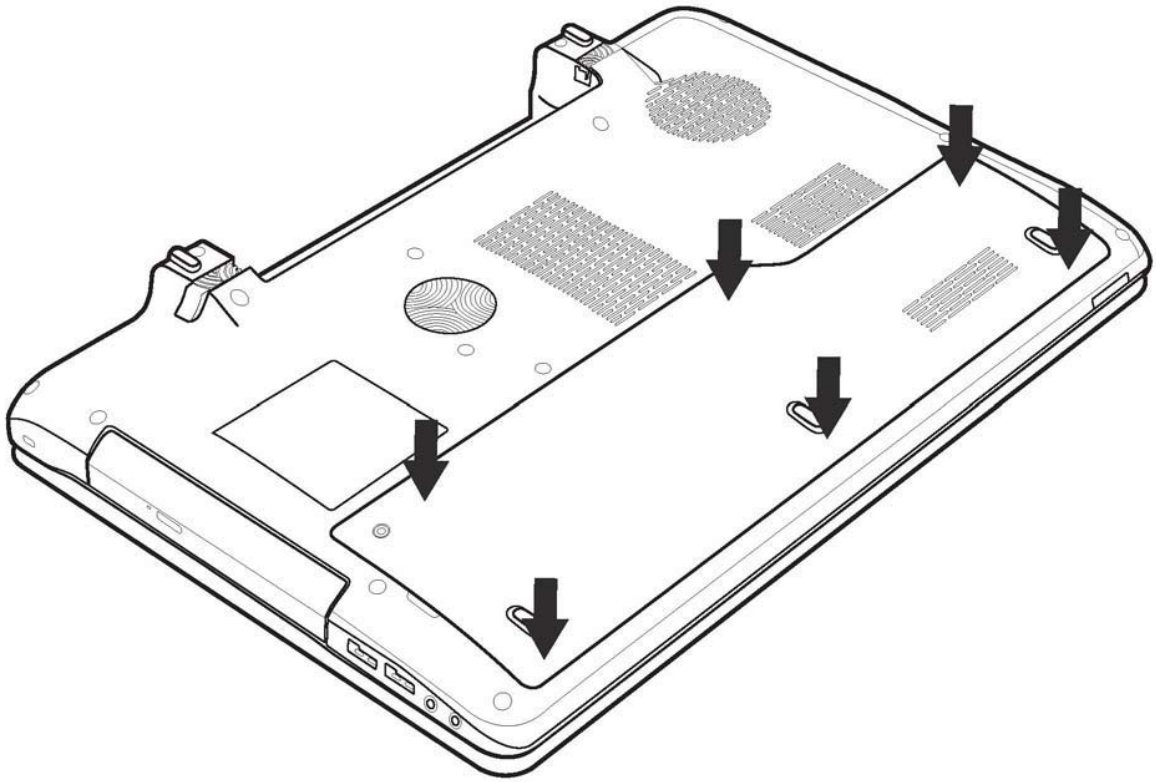


Figure 4-6 Installing the logic lower door

5. Tighten the one M2.5x5 screw on the logic lower door.

4.4 Main HDD

Removing the Main HDD

Remove the main HDD according to the following procedure and Figure 4-7.

1. Remove the one M2.5x4 screw securing the HDD board.
2. Remove the HDD board.
3. Remove the main HDD by pulling the tab attached to the HDD.

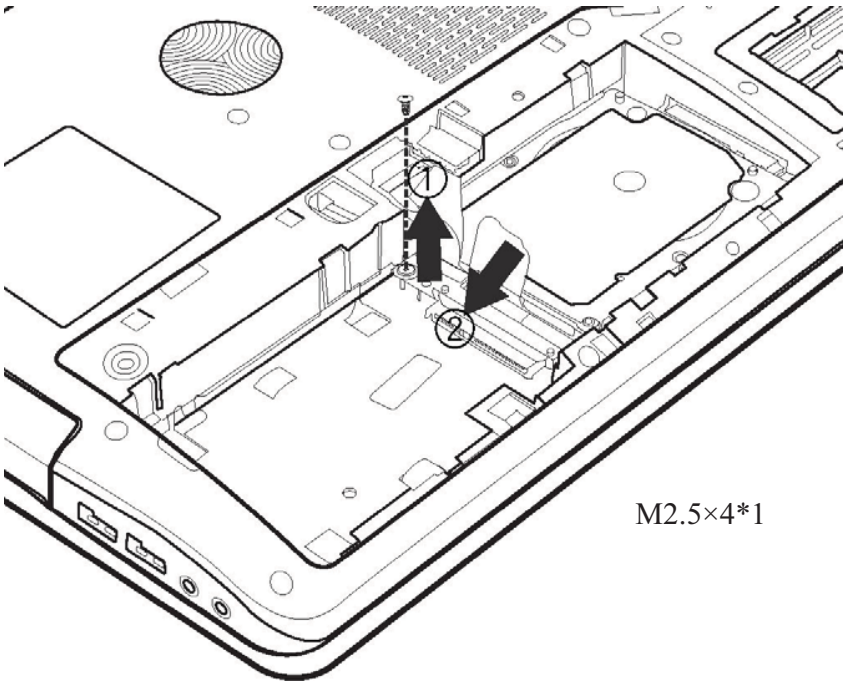


Figure 4-7 Removing the main HDD

Installing the Main HDD

Install the main HDD according to the following procedure:

1. Insert the main HDD into the HDD bay, and slide the HDD inward to connect to the motherboard.
2. Seat the HDD board in place and secure it with one M2.5x4 screw.

NOTE*: To remove and install the main HDD aluminum foil, please follow the steps of remove and install 2nd HDD aluminum foil.*

4.5 Memory

Removing the Optional Memory

Remove the optional memory according to the following procedures and Figure 4-8 after checking that the laptop is turned off.

> ***CAUTION:*** *Remove the optional memory after turning off the laptop. If this is violated, the laptop or memory can be damaged.*

1. Turn the laptop upside down.
2. Pull the two memory lock latches outward so that the memory pops up.

> ***CAUTION:*** *Do not touch the connectors on the memory or in the laptop. Contaminated connector can cause memory access problems.*

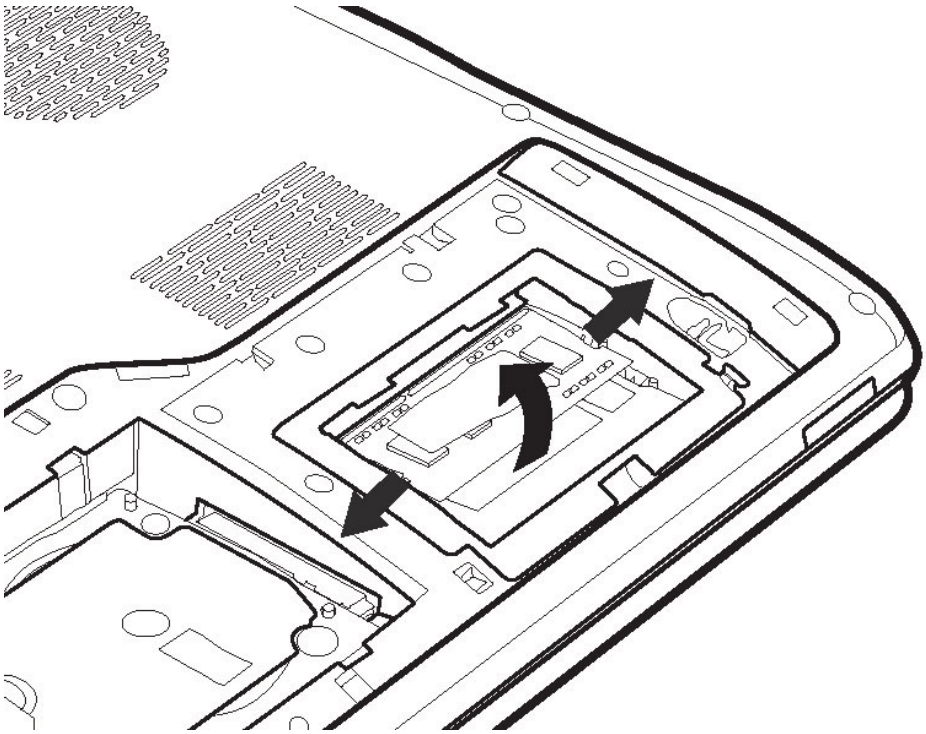


Figure 4-8 Removing the RAM from the connectors

3. Pull the memory up and out at an angle of 45 degree, using care to avoid touching the connector.

Installing the Optional Memory

Install the optional memory according to the following procedures after checking that the laptop is turned off.

> ***CAUTION:*** *Install the optional memory after turning off the laptop. If this is violated, the laptop or memory can be damaged.*

1. Insert the memory into the connector at an angle of 45 degree.
2. Press down on the memory module until it is secured in place by the two memory lock latches.

Once the laptop is turned on, check the hardware configuration in the Hardware Setup or TESTUP program to make sure that the installed memory has been recognized by the system. If it has not been recognized yet, check the connections.

4.6 ODD

Removing the ODD

> ***NOTE:*** *The installation and removal procedures are the same for all the modules that can be installed in the ODD bay. See the appropriate sections for the disassembly procedures of specific modules.*

Remove the ODD (optical disc drive) according to the following procedures and Figure 4-9.

1. Turn the laptop upside down.
2. Remove the one M2.5x6 screw securing the ODD.
3. Push the ODD outward as indicated in Figure 4.9 and then remove the ODD.

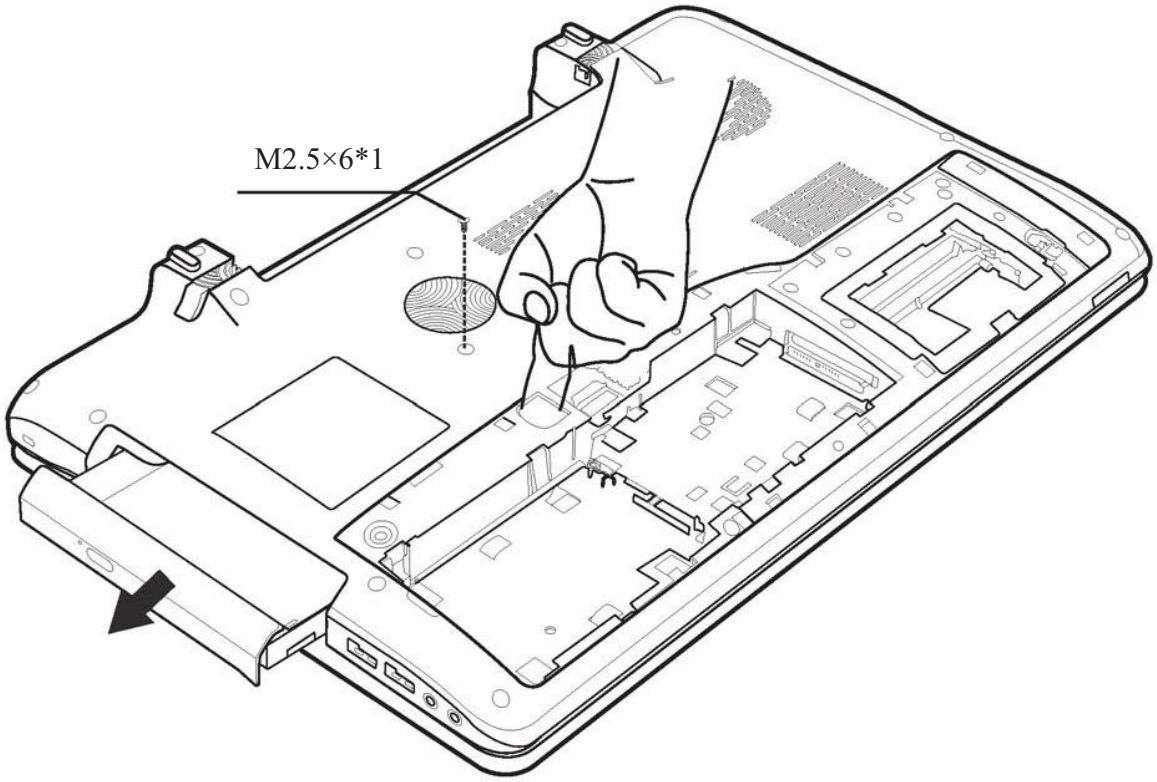


Figure 4-9 Removing the ODD

> ***CAUTION:*** *Handle the ODD carefully. It can become hot during operation.*

Installing the ODD

Install the ODD according to the following procedures:

1. Insert the ODD into the ODD bay.
2. Slide the ODD bay inward until it meets the end.
3. Secure the ODD with one M2.5x6 screw.

Disassembling the ODD

> ***NOTE:*** *Do not disassemble the ODD when it is working normally. Disassemble or replace the ODD only if it fails.*

Disassemble the ODD according to the following procedures and Figure 4-10.

1. Remove two M2x3 screws securing the ODD bracket to the ODD.
2. Remove the ODD bracket from the ODD.

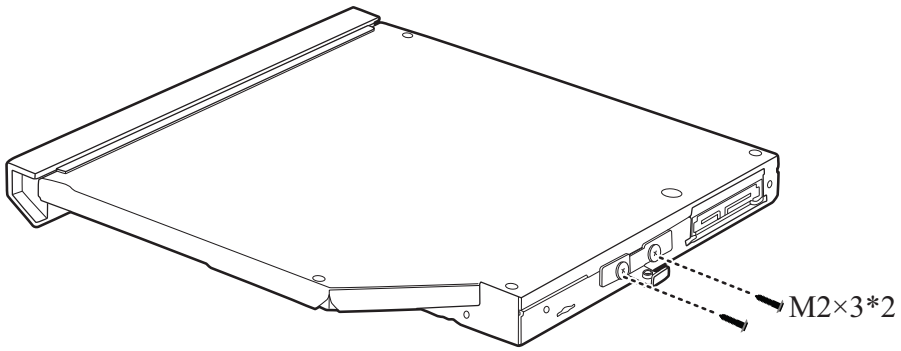


Figure 4-10 Removing the ODD bracket from the ODD

Assembling the ODD

Assemble the ODD drive according to the following procedures:

1. Seat the ODD bracket in the correct position on the ODD.
2. Secure the ODD bracket to the ODD with two M2×3 screws.

4.7 Keyboard

Removing the Keyboard

Remove the Keyboard according to the following procedures and Figures 4-11, 4-12, and 4-13.

1. Turn the laptop upside down.
2. Remove the three M2.5x6 screws securing the keyboard.

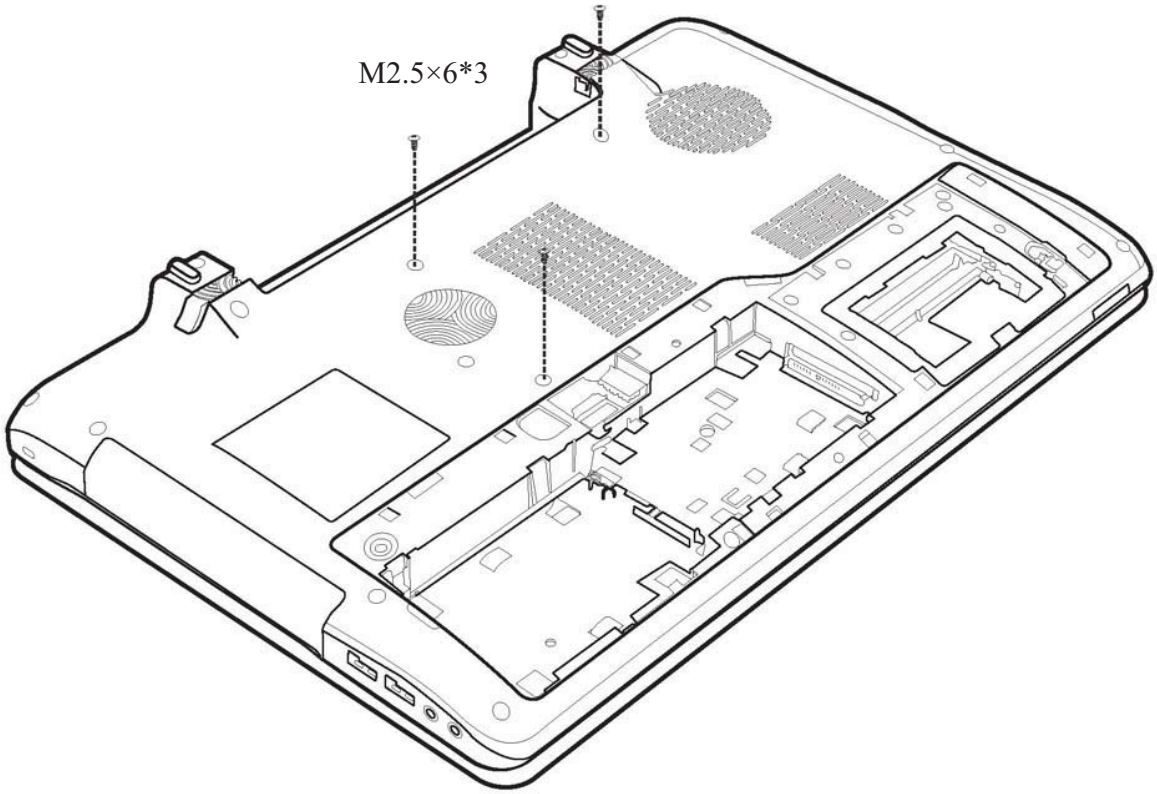


Figure 4-11 Removing screws securing the keyboard

3. Open the display panel. Gently pick up the keyboard by prying up the plastic sheet from the ODD bay.

> ***NOTE:*** *There is a hole for prying up the keyboard in the ODD bay.*

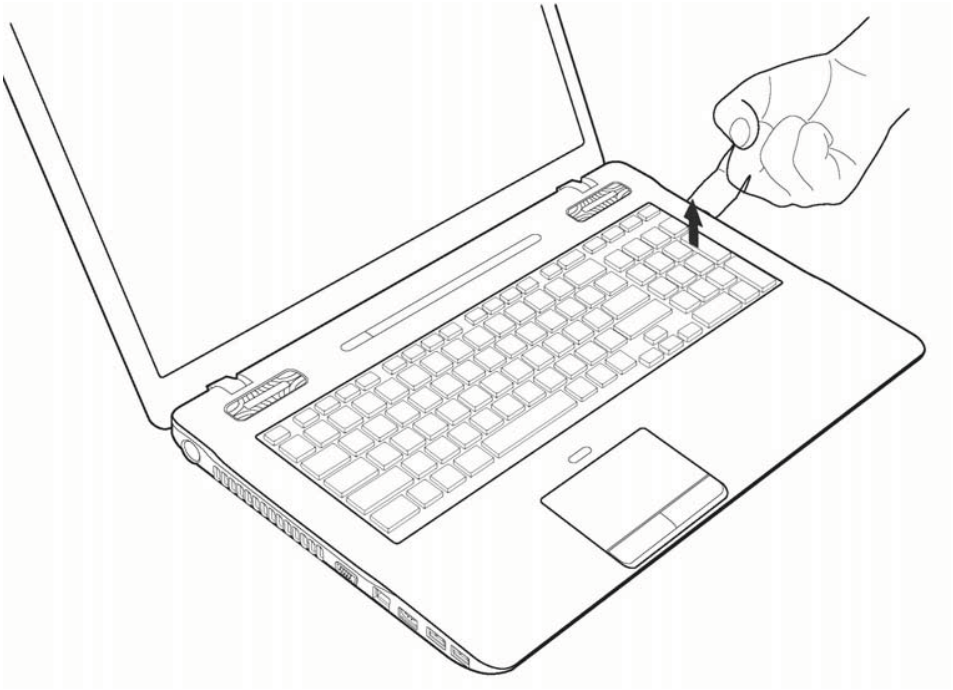


Figure 4-12 Prying up the keyboard

4. Lift up the keyboard and disconnect the FPC from the motherboard

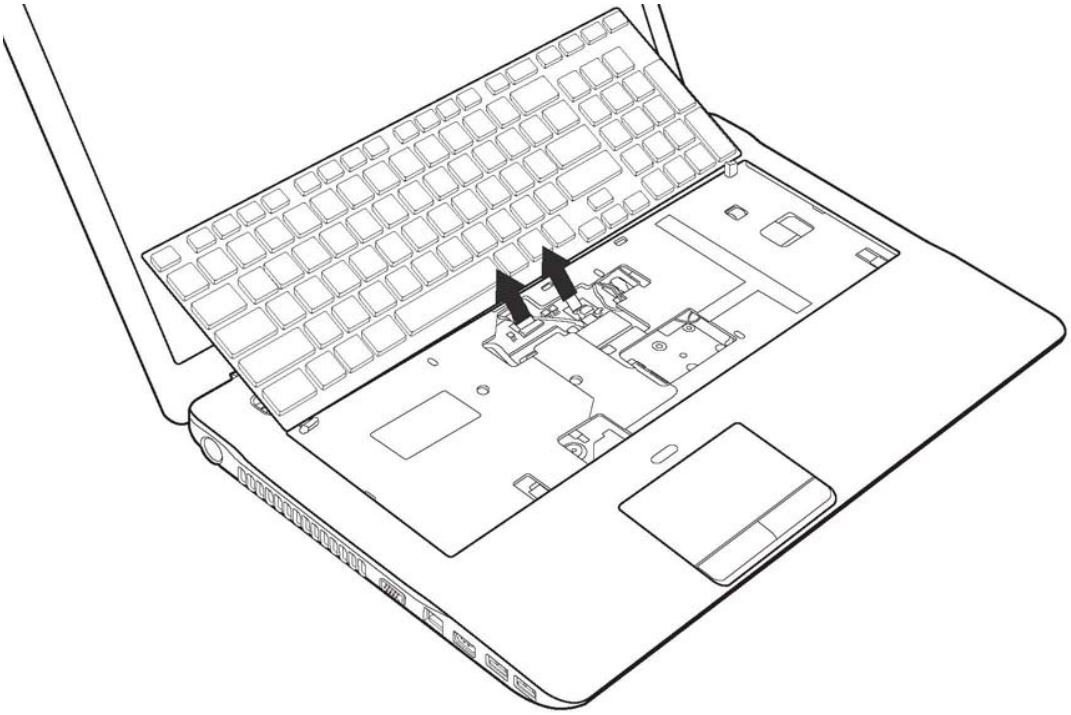


Figure 4-13 Disconnecting the FPC and removing the keyboard

Installing the Keyboard

Install the keyboard cover and keyboard according to the following procedures:

1. Connect the FPC to the motherboard.
2. Place the keyboard in the correct position and press down the keyboard starting from both sides to the top edge.
3. Securing the three M2.5x6 screws.

4.8 WLAN Card

Removing the WLAN Card

Remove the WLAN card according to the following procedures and Figure 4-14.

1. Disconnect the two antenna cables from the WLAN card.
2. Remove the one M2.5x4 screw securing the WLAN card, the WLAN card pops up automatically.
3. Remove the WLAN card at an angle of 45 degree.

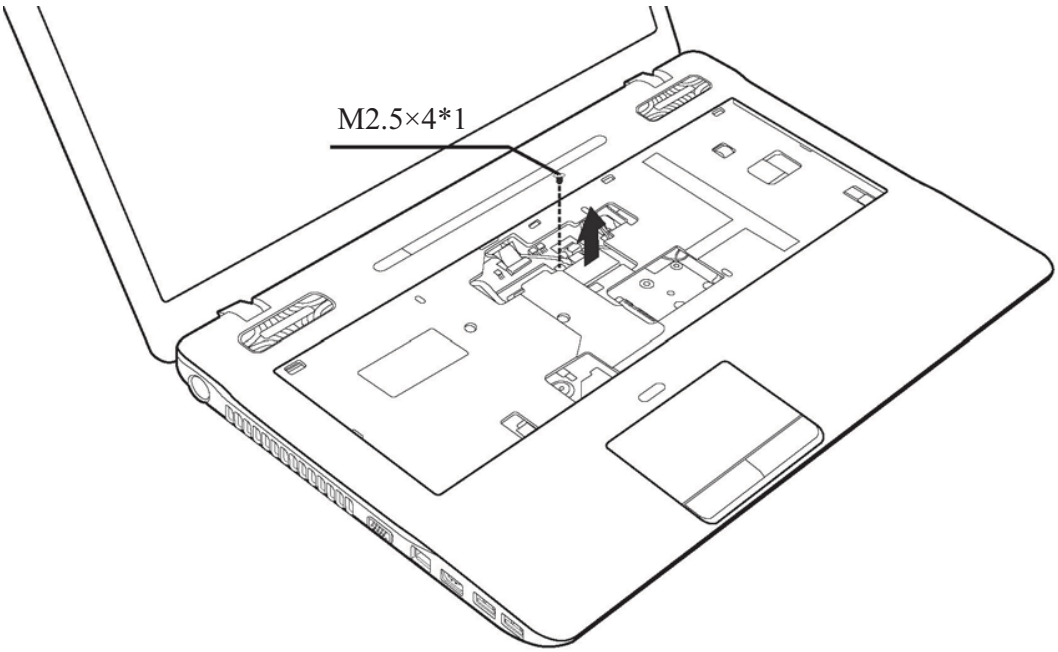


Figure 4-14 Removing the WLAN Card

Installing the WLAN Card

Install the WLAN card according to the following procedures:

1. Insert the WLAN card into the connector on the motherboard at an angle of 45 degree.
2. Press the WLAN card down and secure it with one M2.5x4 screw.
3. Connect the two antenna cables to the WLAN card. Connect the white WLAN antenna (main) to the #1 connector, and the black WLAN antenna (auxiliary) to the #2 connector.

4.9 Logic Upper Assembly

Removing the Logic Upper Assembly

Remove the logic upper assembly according to the following procedures and Figures 4-15, 4-16, 4-17 and 4-18.

1. Turn the laptop upside down.
2. Remove the fourteen M2.5x6 and one M2.5x4 screws securing the logic upper assembly.

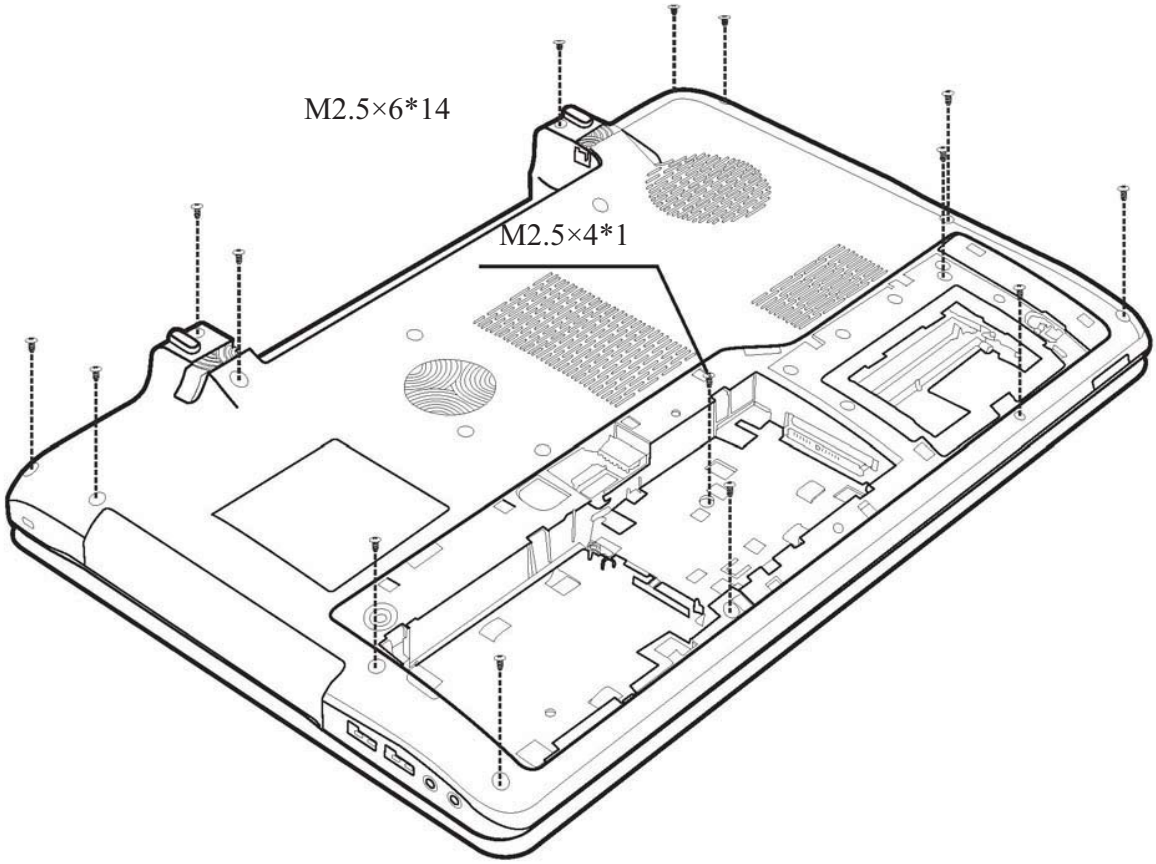


Figure 4-15 Removing screws from the bottom of the laptop

3. Turn to the front and remove the one M2.5x6 screw securing the logic upper assembly.

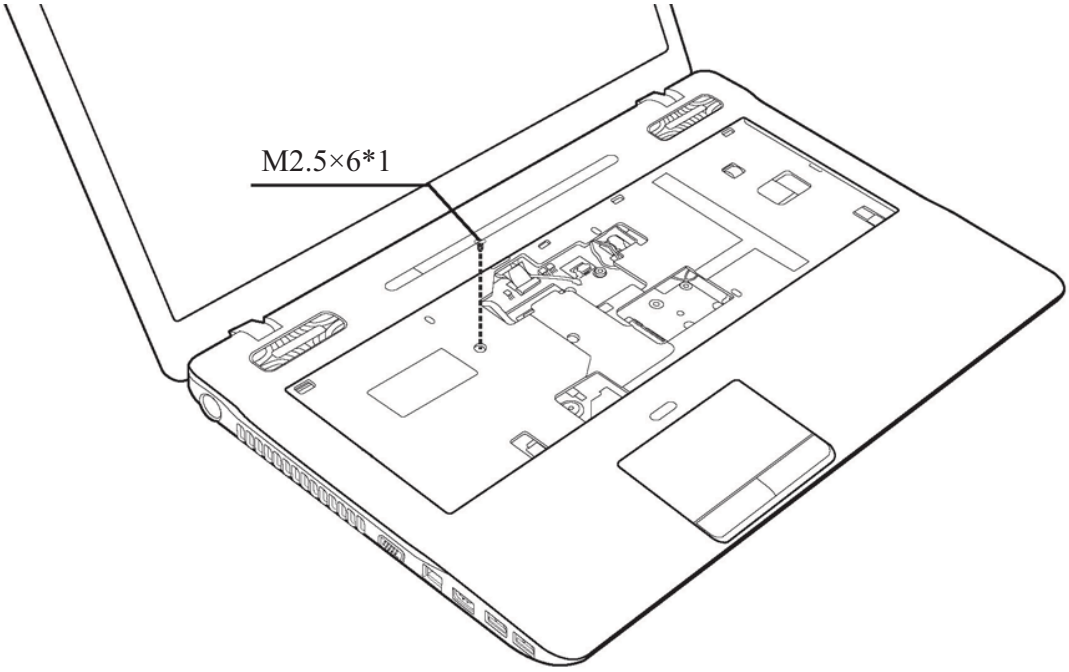


Figure 4-16 Removing one screw

4. Disconnect the touchpad FFC and speaker cable from the motherboard.

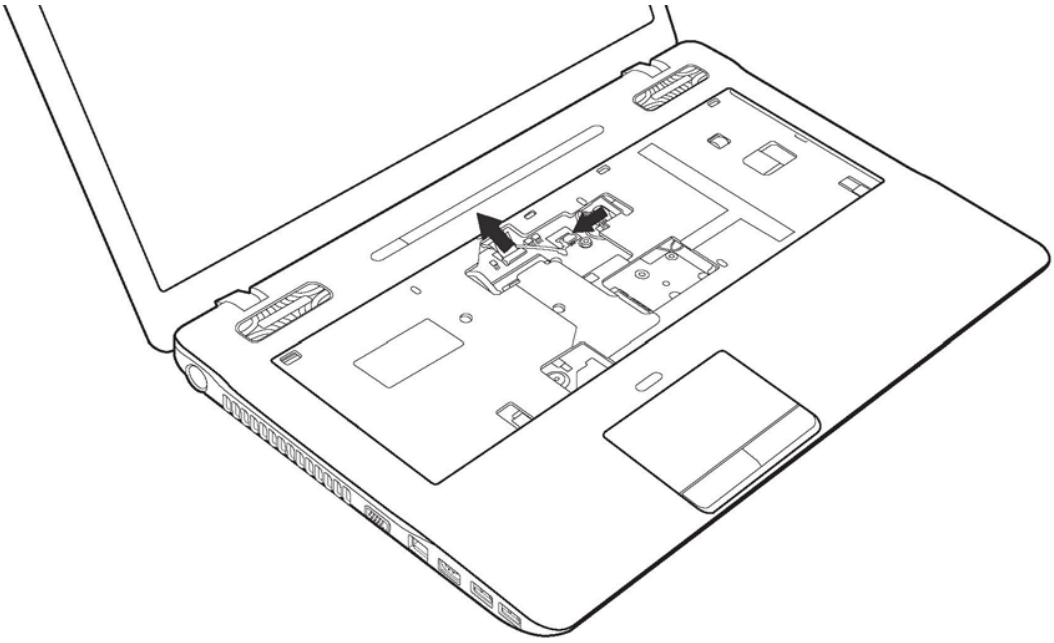


Figure 4-17 Disconnecting touchpad FFC and speaker cable from the motherboard

5. Grab the edge of the opening in the middle of the logic upper assembly and pull up to remove it from the laptop as shown in Figure 4-18.

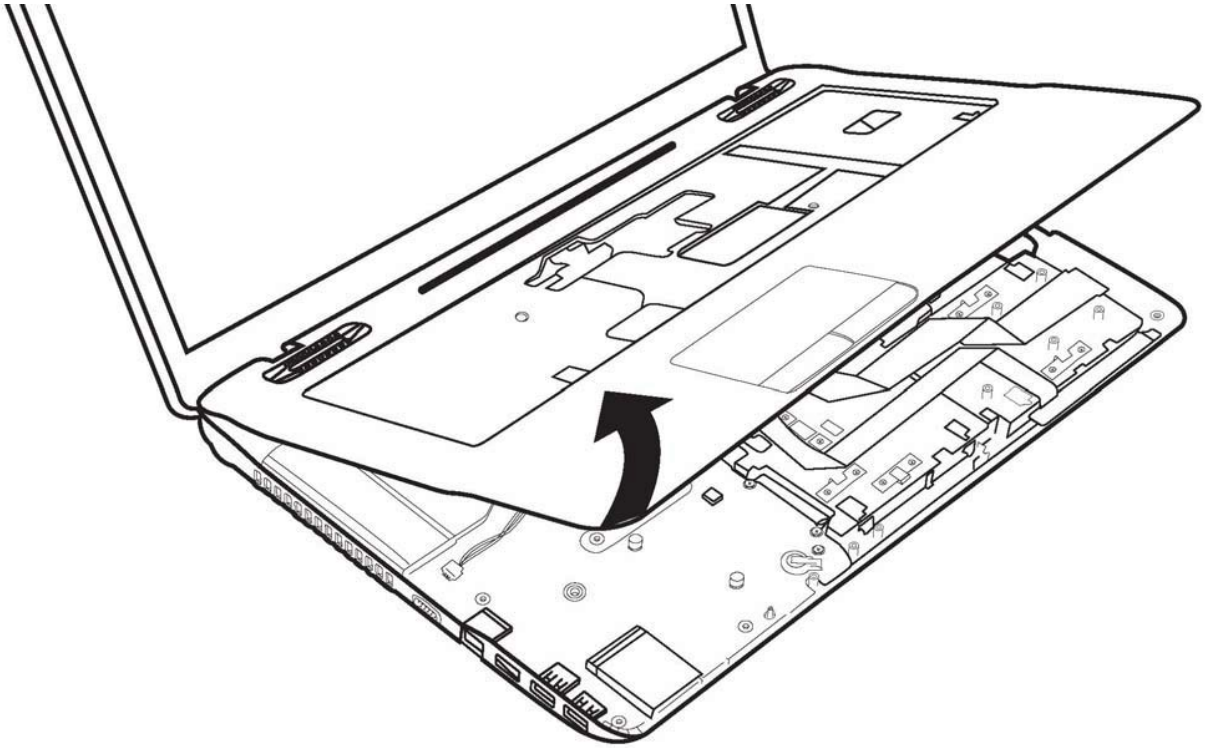


Figure 4-18 Removing the logic upper assembly from the laptop

Installing the Logic Upper Assembly

Install the logic upper assembly according to the following procedures:

1. Seat the logic upper assembly to the front of the laptop, and adjust to the correct position.
2. Press down the logic upper assembly, starting from the top and toward the bottom. Make sure that the hooks on the back of the assembly are securely in place.
3. Connect the touchpad FFC and speaker cable to the motherboard.
4. Secure one M2.5x6 screw.
5. Turn the laptop upside down.
6. Secure the logic upper assembly with fourteen M2.5x6 and one M2.5x4 screws as indicated in Figure 4-17.

4.10 Speakers

Removing the Speakers

Remove the Speakers according to the following procedures and Figure 4-19.

1. Remove the four M2×3 screws securing the two speakers.
2. Remove the left and right speakers from the logic upper assembly.

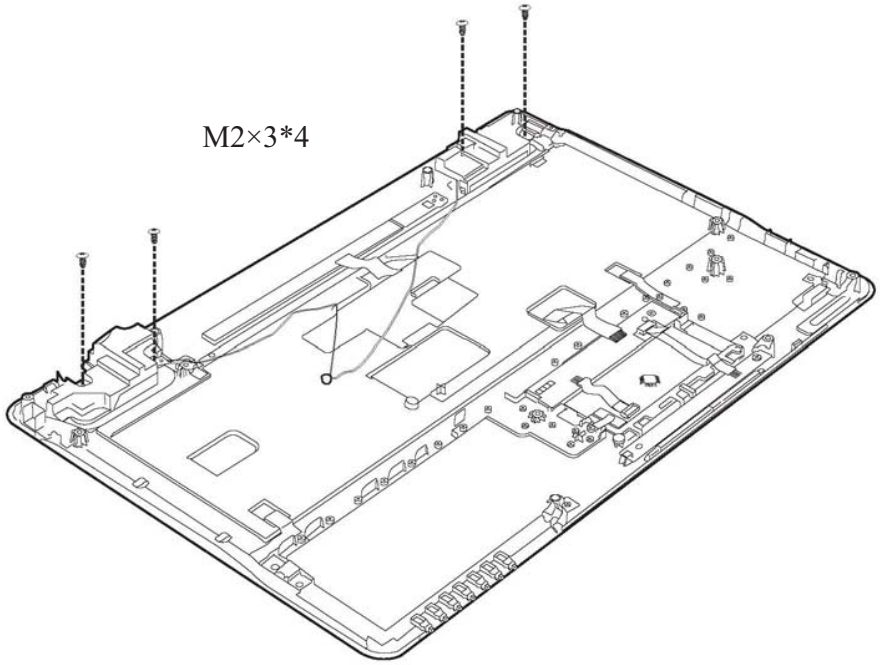


Figure 4-19 Removing the speakers

Installing the Speakers

Install the speakers according to the following procedures:

1. Seat the left and right speakers in the logic lower upper assembly.
2. Secure the four M2×3 screws.
3. Route the speaker cable in the routing channel on the logic lower assembly and secure it in place with tape.

4.11 Touchpad on/off Button Board

Removing the Touchpad on/off Button Board

Remove the touchpad on/off button board according to the following procedures and Figure 4-20.

1. Disconnect the two touchpad FFCs from the board.
2. Remove the one M2.5x3 screw securing the bar.
3. Gently remove the bar from the logic upper assembly.

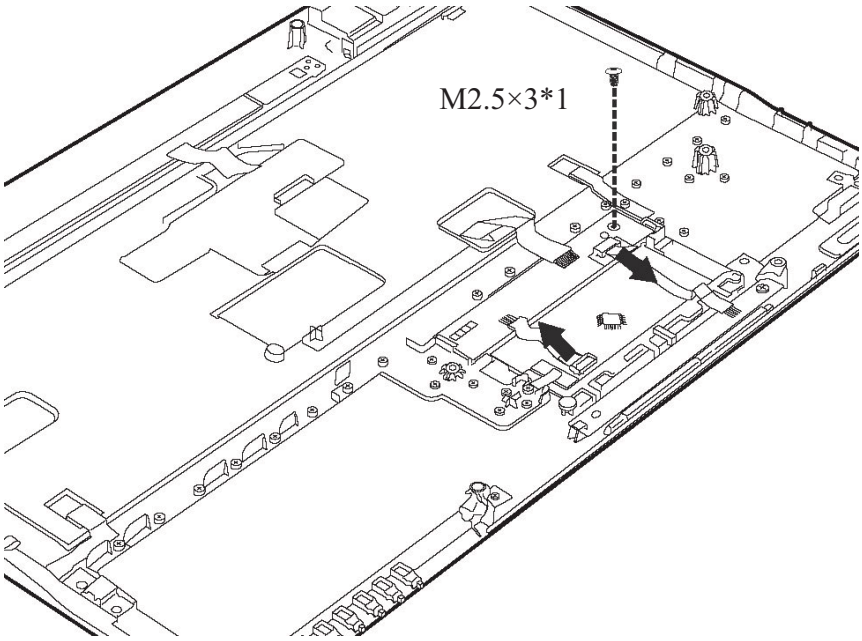


Figure 4-20 Removing the touchpad on/off button board

Installing the Touchpad on/off Button Board

Install the touchpad on/off button board according to the following procedures:

1. Seat the touchpad on/off button board in the logic upper assembly.
2. Secure the one M2.5x3 screw.
3. Connect the FFC to the board.

4.12 Touchpad Button Board

Removing the Touchpad Button Board

Remove the touchpad button board according to the following procedures and Figure 4-21.

1. Remove the one M2.5x3 screw securing the touchpad button board.
2. Remove the touchpad button board.

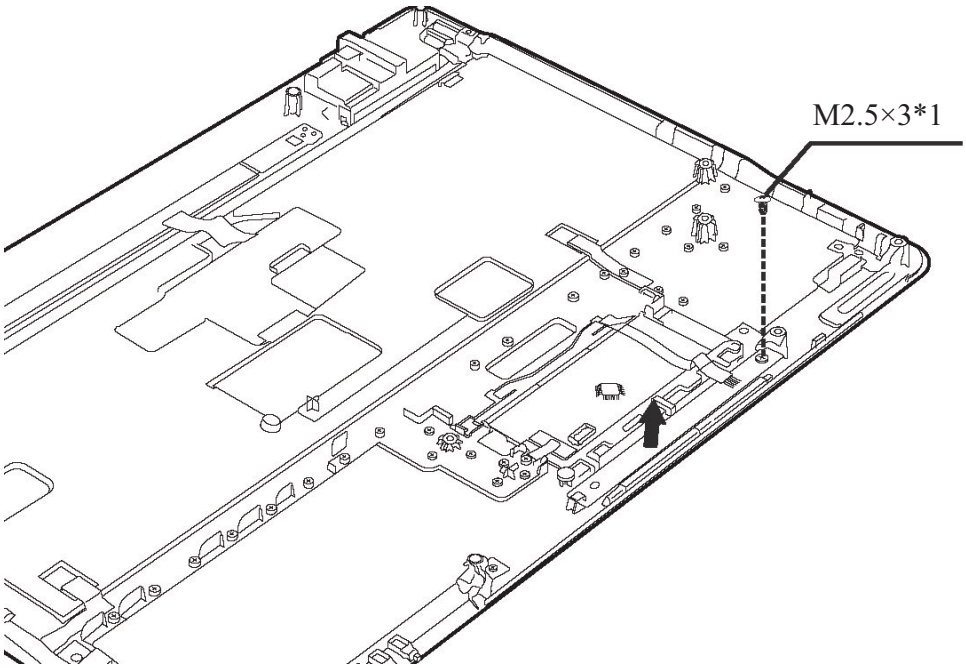


Figure 4-21 Removing the touchpad button board

Installing the Touchpad Button Board

Install the touchpad button board according to the following procedures:

1. Seat the touchpad button board.
2. Secure the one M2.5x3 screw.

4.13 ODD Board

Removing the ODD Board

Remove the ODD board according to the following procedures and Figure 4-22.

1. Disconnect the ODD board FFC from the motherboard.

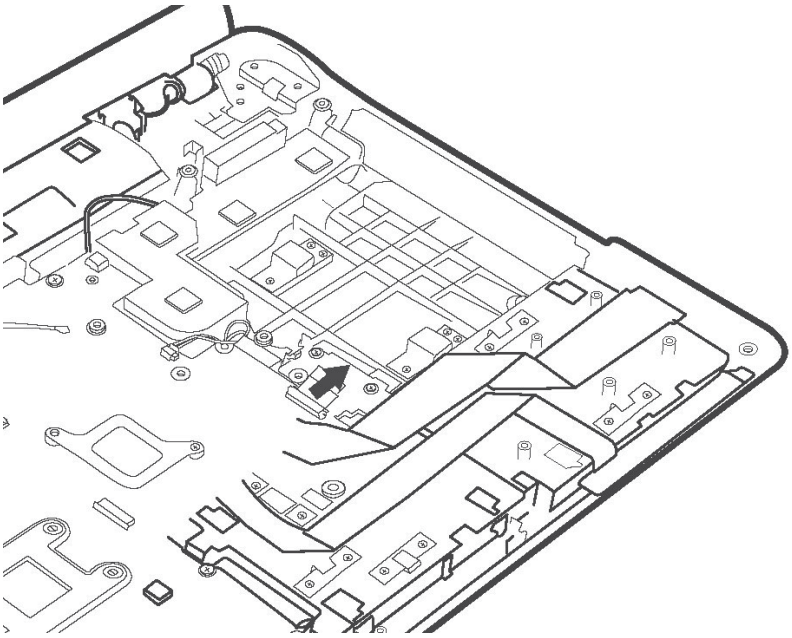


Figure 4-22 Disconnecting the ODD board FFC

2. Remove the ODD board from the logic lower assembly.

Installing the ODD Board

Install the power switch according to the following procedures:

1. Seat the ODD board in the logic lower assembly.
2. Connect the ODD board FFC to the motherboard assembly.

4.14 USB Board

Removing the Right USB Board

Remove the Right USB board according to the following procedures and Figure 4-23.

1. Disconnect the USB board FFC from the motherboard.
2. Gently pry up the USB board FFC.

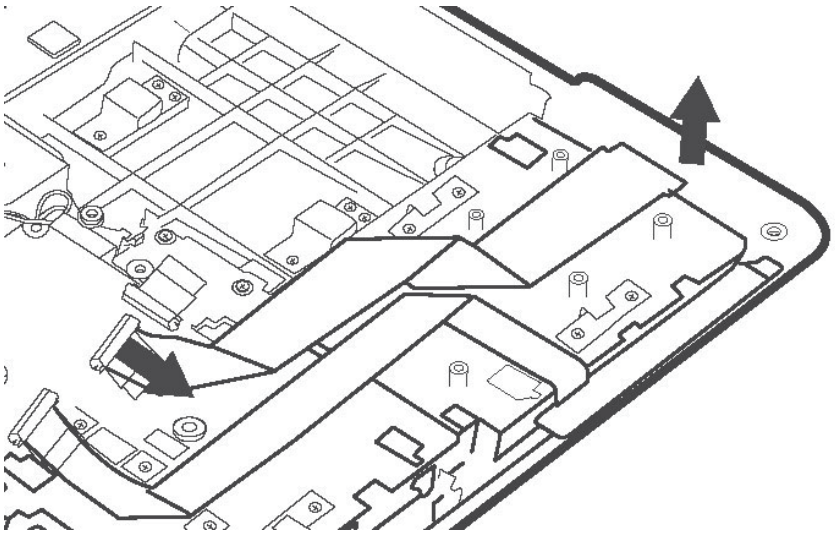


Figure 4-23 Disconnecting the FFC from the motherboard

3. Remove the USB board from the logic lower assembly.

Installing the Right USB Board

Install the Right USB board according to the following procedures:

1. Seat the USB board in the logic lower assembly.
2. Connect the USB board FFC to the motherboard

4.15 Indicator Board

Removing the Indicator Board

Remove the indicator board according to the following procedures and Figure 4-24.

1. Disconnect the indicator board FFC from the motherboard.
2. Gently pry up the indicator board FFC.

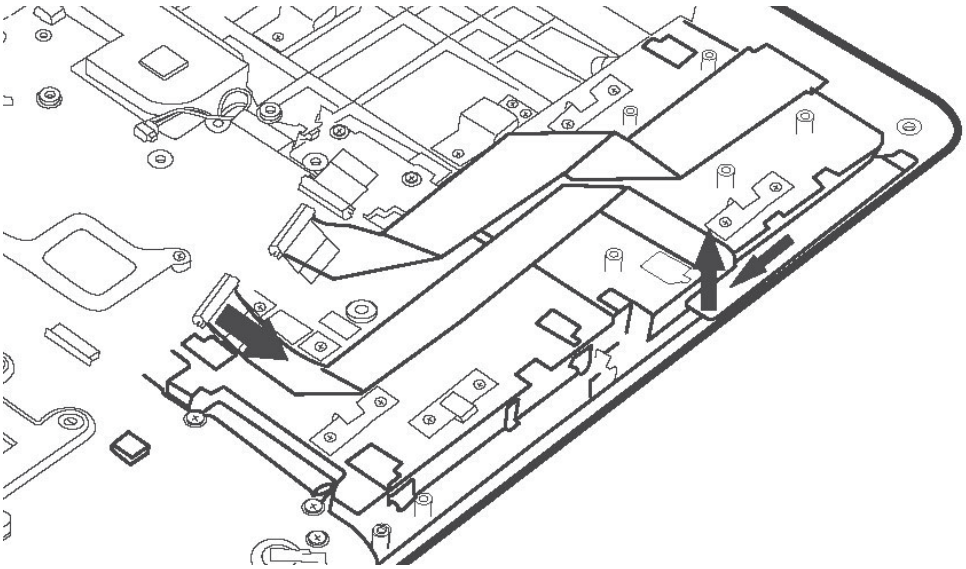


Figure 4-24 Disconnecting the FFC from the motherboard

3. Remove the indicator board from the logic lower assembly.

Installing the Indicator Board

Install the indicator board according to the following procedures:

1. Seat the indicator board in the logic lower assembly.
2. Connect the indicator board FFC to the motherboard.

4.16 Motherboard

Removing the Motherboard

Remove the motherboard according to the following procedures and Figure 4-25.

1. Pull out the DC-IN connector from the routing channel.
2. Disconnect the Jpower connector, sub-woofer cable, thermal fan cable and LVDS cable from the motherboard.
3. Remove the two M2.5x4 screws securing the motherboard.
4. Gently lift the right edge of the motherboard to free the port connectors, and remove the motherboard from the logic lower assembly.

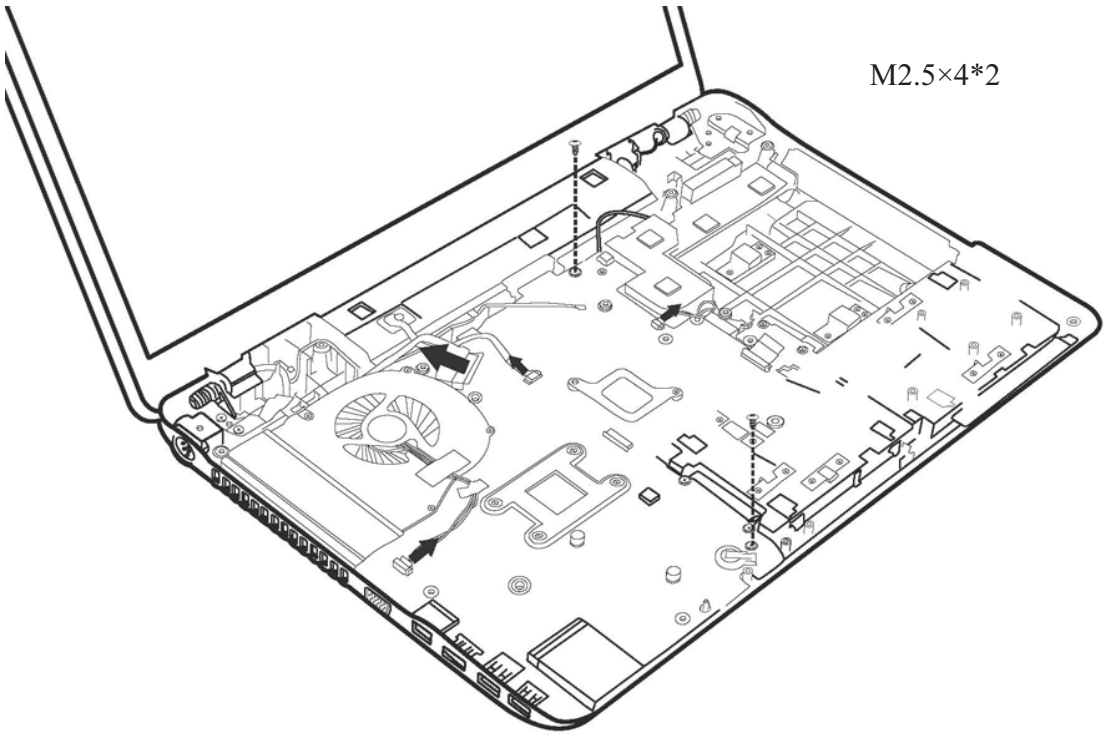


Figure 4-25 Removing the motherboard from the logic lower assembly

Installing the Motherboard

Install the motherboard according to the following procedures:

1. Align the ports on the left side of the motherboard to the corresponding openings in the logic lower assembly, and seat the motherboard in the logic lower assembly.

2. Seat the DC-IN connector in the DC_IN trough and route the cable from right to left in the routing channel.

3. Connect the Jpower connector, sub-woofer cable, thermal fan cable and LVDS cable to the motherboard.

4. Secure the motherboard with two M2.5x4 screws.

4.17 Sub-Woofer

Removing the Sub-Woofer

Remove the Sub-Woofer according to the following procedures and Figure 4-26.

1. Remove the two M2.5x9.8 screws.

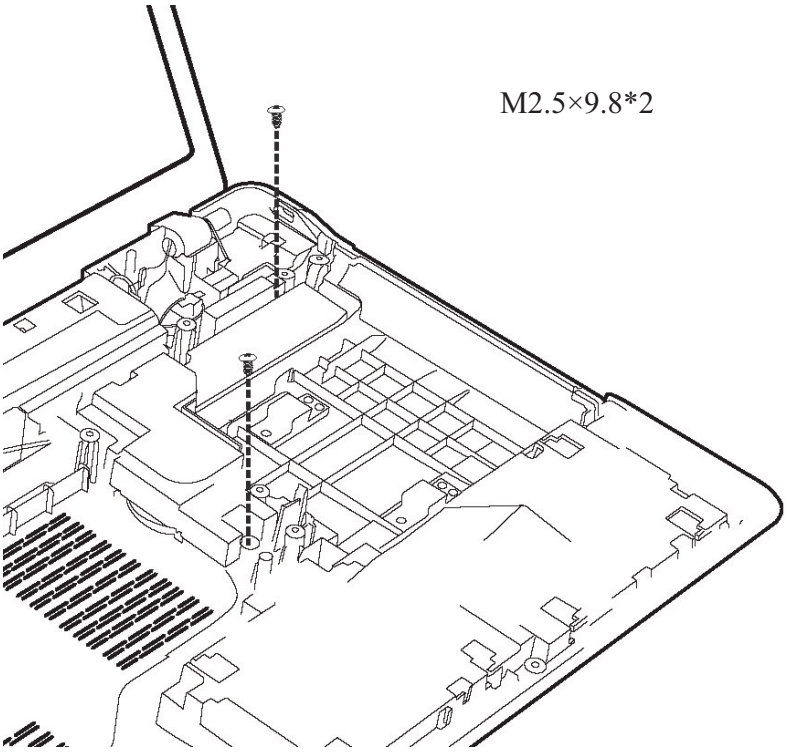


Figure 4-26 Removing the sub-woofer

2. Remove the sub-woofer from the logic lower.

Installing the Sub-Woofer

Install the power switch according to the following procedures:

1. Seat the sub-woofer in the logic lower.
2. Secure the two M2.5x9.8 screws.

4.18 CPU and Thermal Module

Removing the CPU and Thermal Module

Remove the CPU thermal module according to the following procedures and Figure 4-27.

> ***CAUTION:***
>
> *When removing the thermal module, keep the following in mind:*
>
> *1. The thermal module can become very hot during operation. Be sure to let it cool down before starting the repair work.*
>
> *2. If you remove the CPU thermal module, please use soft cloth with alcohol to clean the CPU and CPU thermal module. Reapply Shinetsu 7762 grease before installing the CPU thermal module.*

1. Remove the eight spring screws securing the thermal module in the sequence indicated in Figure 4-27.

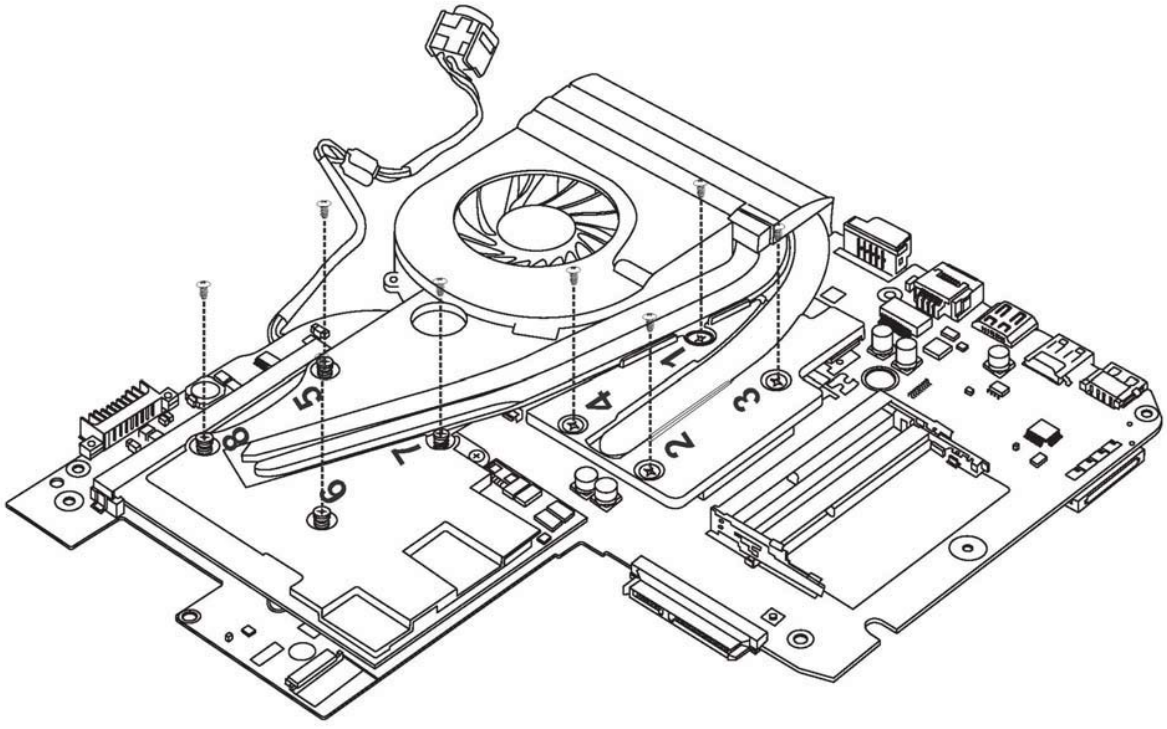


Figure 4-27 Removing the Thermal Module spring screws

2. Remove the thermal module from the motherboard.

Remove the CPU according to the following procedures and Figure 4-28.

> ***CAUTION:***
>
> *When removing the CPU, keep the following in mind:*
>
> *The CPU can become very hot during operation. Be sure to let it cool down before starting repair work.*

1. Rotate the cam on the CPU socket counterclockwise to the unlock position with a flat blade screwdriver.
2. Remove the CPU.

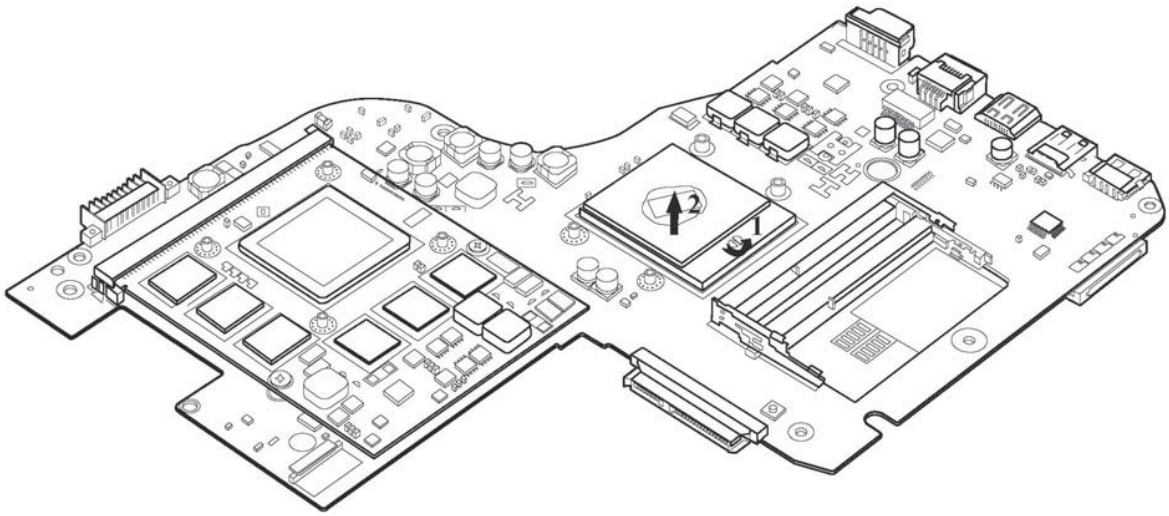


Figure 4-28 Removing the CPU

Installing the CPU and Thermal Module

Install the CPU and Thermal Module according to the following procedures:

1. Make sure the cam is in the unlock position.
2. Seat the CPU on the socket, using care not to damage the pins. Align the CPU with the CPU socket by using the triangle as a guide.
3. Rotate the cam clockwise to the lock position with a flat blade screwdriver.

CAUTION:

When installing the thermal module, keep the following in mind:

1. *Be sure to confirm the correct position for the module.*
2. *Secure the relevant screws on the thermal module to the motherboard according to the number sequence sealed on the thermal module.*

4. Reapply Shinetsu 7762 grease on the CPU thermal module as shown in Figure 4-29. If you use a new CPU thermal module, remove the release papers on the thermal pads first.

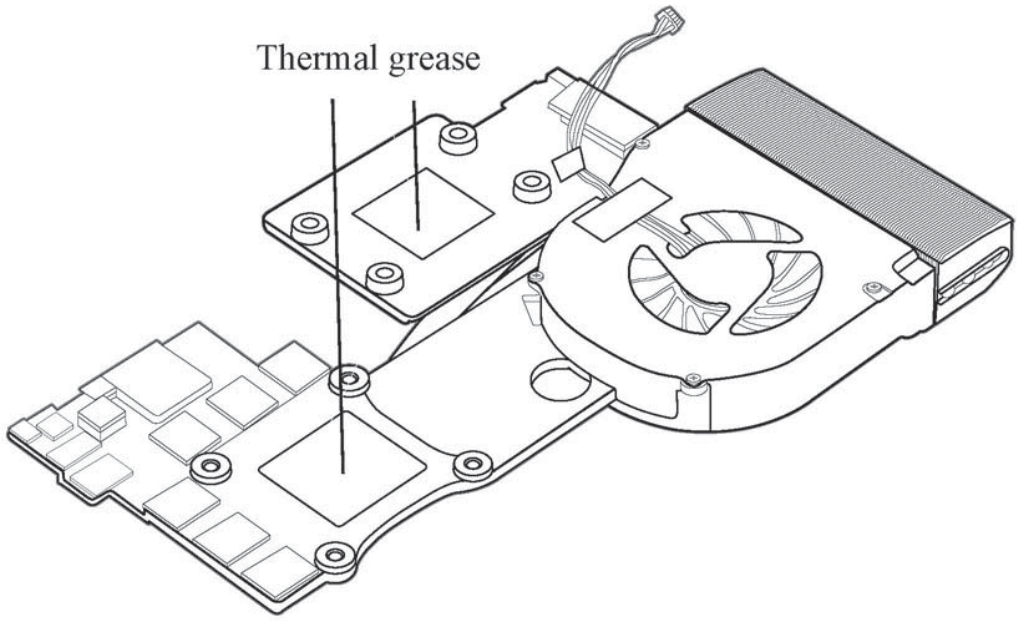


Figure 4-29 Reapply the Shinetsu 7762 grease on the thermal module

5. Place the thermal module in the correct position on the motherboard.
6. Secure the thermal module with seven spring screws, according to the number sequence sealed on the thermal module.

4.19 VGA Board

Removing the VGA board

Remove the VGA board according to the following procedures and Figure 4-30

1. Remove the two M2.5x4 screws securing the VGA board.
2. Pull the VGA board up and out at an angle of 45 degree, using care to avoid touching the connector

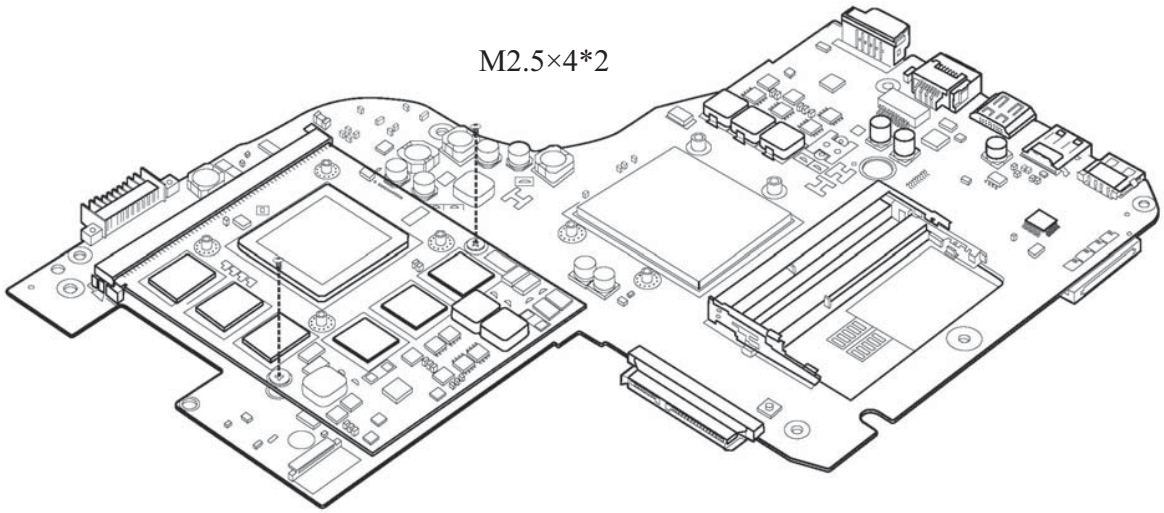


Figure 4-30 Removing the VGA board

Installing the VGA Board

Install the VGA board according to the following procedures:

1. Insert the VGA board into the connector at an angle of 45 degree.
2. Secure the two M2.5x4 screws.

4.20 Display Assembly

Removing the Display Assembly

> ***CAUTION:***
>
> *Use care to avoid the antenna cable being caught between the display assembly and the laptop.*

Remove the display assembly according to the following procedures and Figure 4-31.

1. Peel away the tape securing the four antenna cables (black, white, blue and red) and the LVDS cable, and pull the cables from the routing channels on the logic lower assembly.
2. Remove the four M2.5x6 screws securing the display assembly.
3. Remove the display assembly from the logic lower assembly.

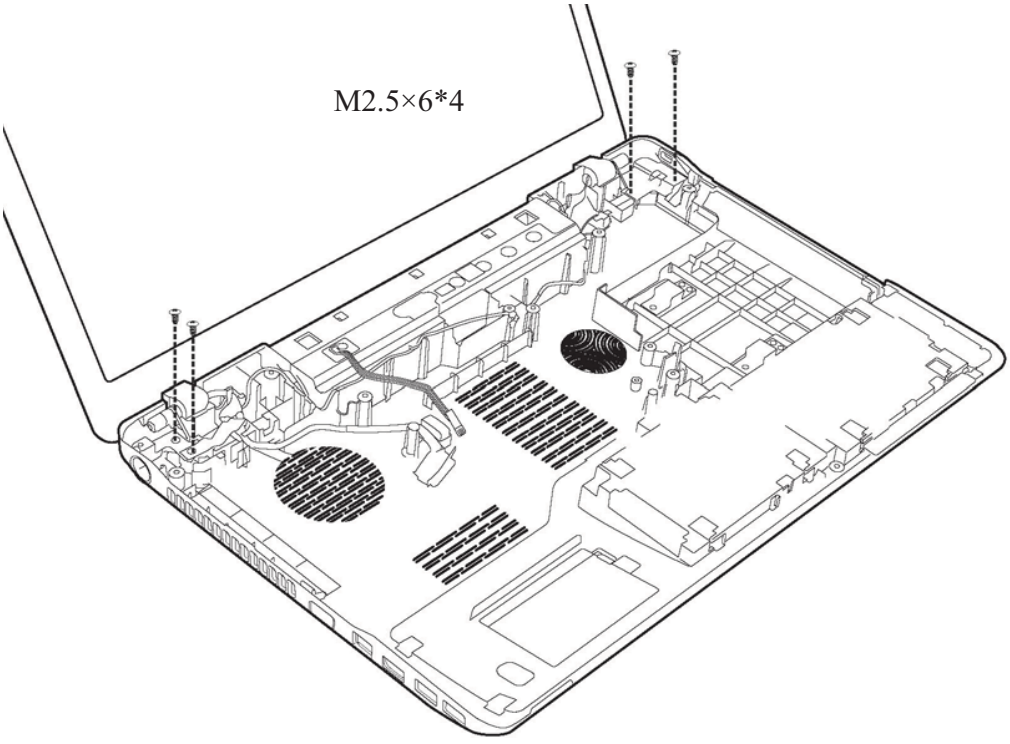


Figure 4-31 Removing the screws

Installing the Display Assembly

Install the display assembly according to the following procedures:

1. Seat the display hinge brackets in the correct position on the logic lower assembly and secure it with four M2.5x6 screws.

2. Connect the LVDS cable to the motherboard and adhere the clear tape over the connector to secure it in place.

3. Route the four antenna cables and the LVDS cable into the routing channel on the logic lower assembly.

4.21 LCD Bezel

Removing the LCD Bezel Assembly

Remove the LCD bezel according to the following procedures and Figure 4-32.

1. Remove the six screw rubbers on the LCD bezel.
2. Remove the six M2.5x5 screws as shown in Figure 4-32.

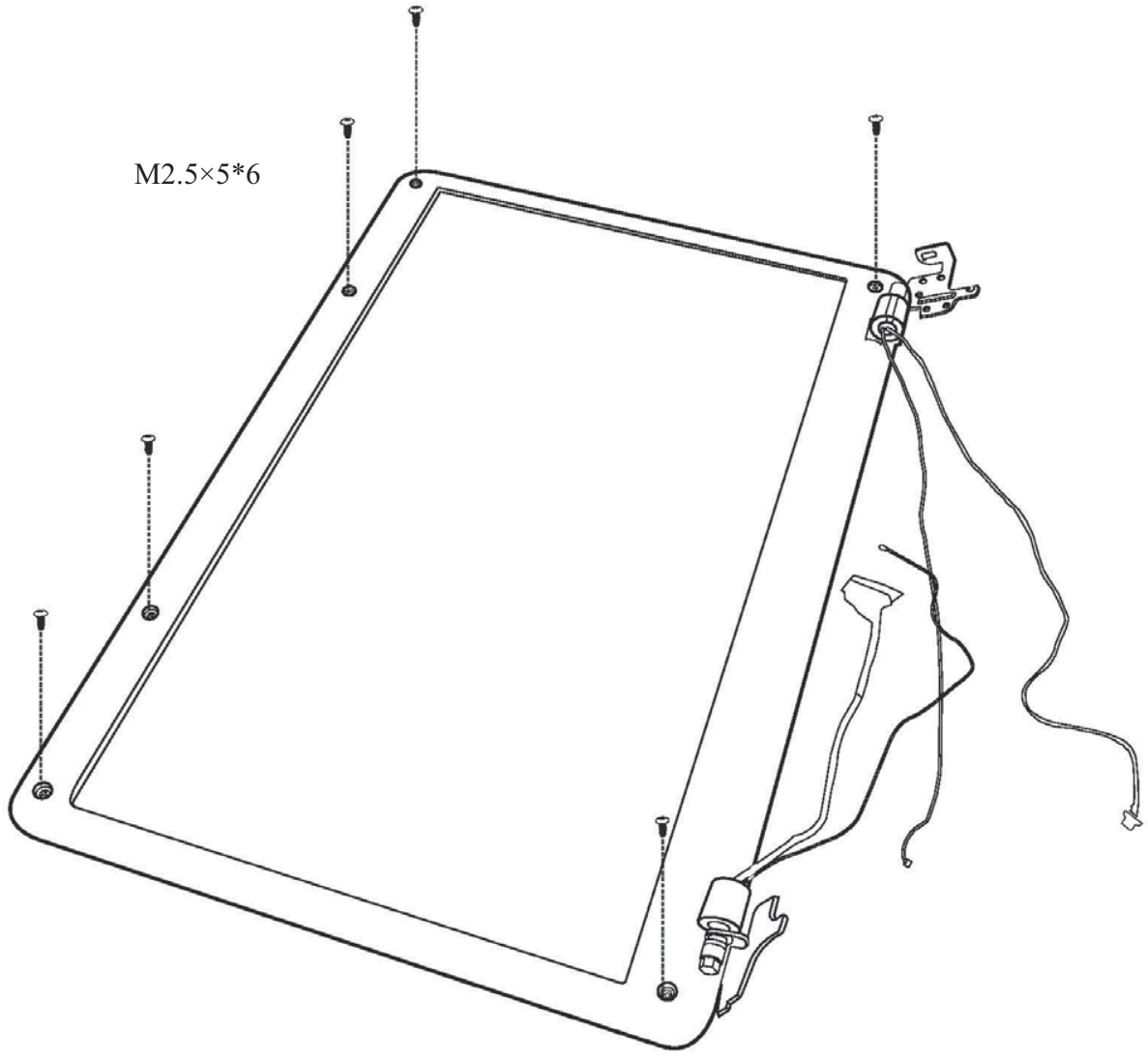


Figure 4-32 Removing the LCD Bezel

3. Pry up the left and right sides of the LCD bezel from the inner edges.

4. Pry up the LCD bezel, starting from the bottom edge and toward the top edge.

5. Push up the hinge caps to free it from the LCD hinges and remove the LCD bezel.

Installing the LCD Bezel Assembly

> ***NOTE:***
>
> *Take care not to pinch the antenna cables. Make sure the routing positions of the antennas are correct and do not block any components, such as screw holes.*

Install the LCD bezel according to the following procedures:

1. Place the LCD bezel assembly on the LCD cover assembly. Make sure the hinge caps fit over the LCD hinges and the tabs on the back of the LCD bezel align with the slots in the LCD cover assembly.

2. Press down on the LCD bezel, starting from the bottom edge and toward the sides and top edge. Make sure the bezel clicks into place.

3. Secure the LCD bezel to the LCD cover assembly with six M2.5x5 screws.

4. Adhere the six screw rubbers to the screws.

4.22 LCD Module

Removing the LCD Module

Remove the LCD module according to the following procedures and Figures 4-33, 4-34, 4-35 and 4-36.

1. Remove the two M2.5x5 screws securing the LCD module to the LCD cover assembly.

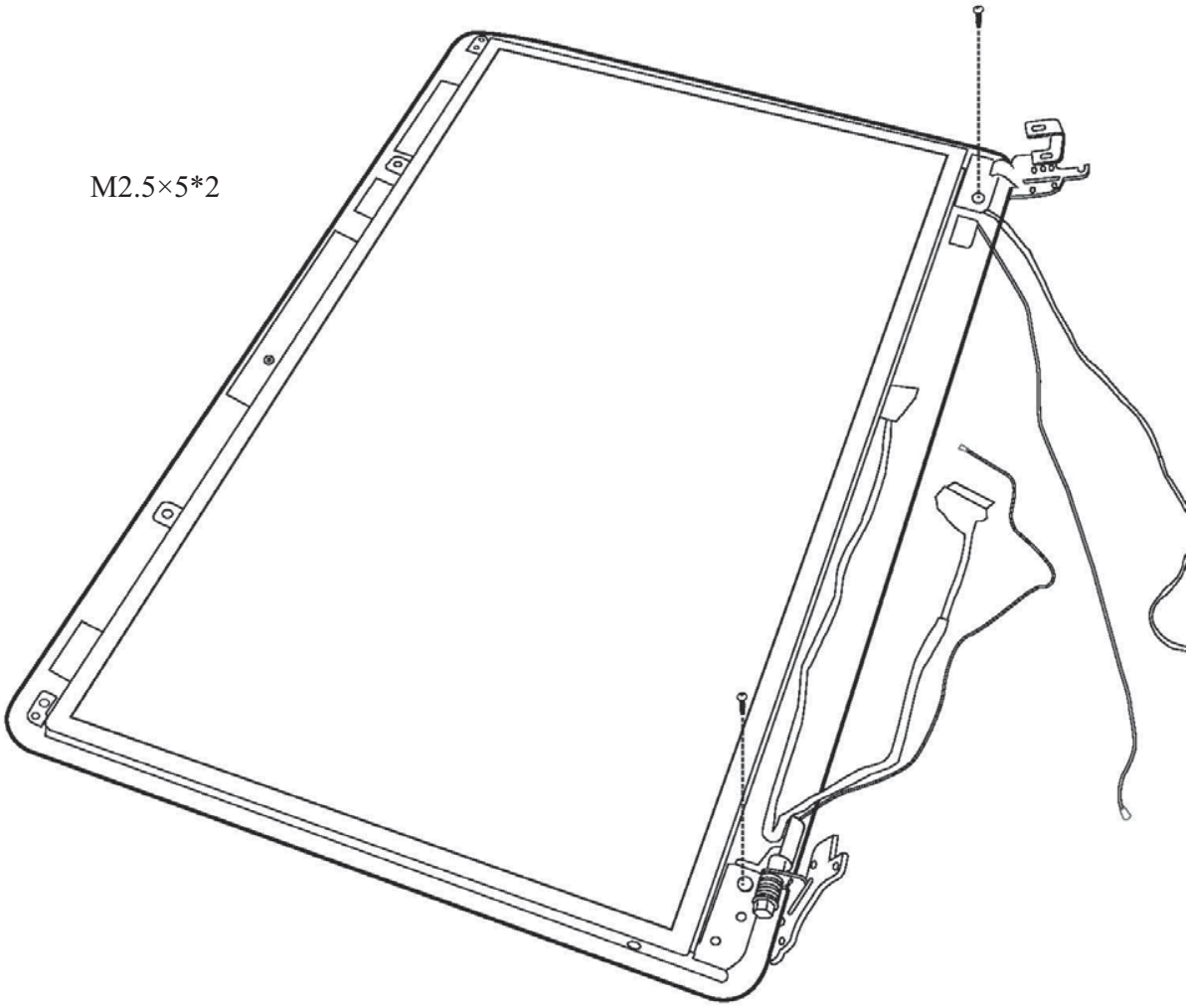


Figure 4-33 Removing the LCD Module from the LCD cover assembly

2. Disconnect the camera module cable.

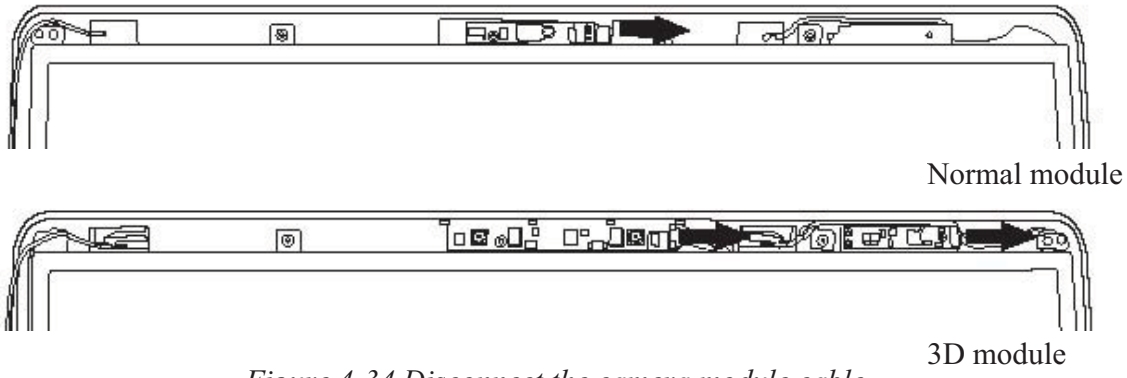


Figure 4-34 Disconnect the camera module cable

3. Lift the LCD panel out of the LCD cover assembly.
4. Remove the six M2x2.5 screws securing the LCD hinges.
5. Remove the LCD hinges.

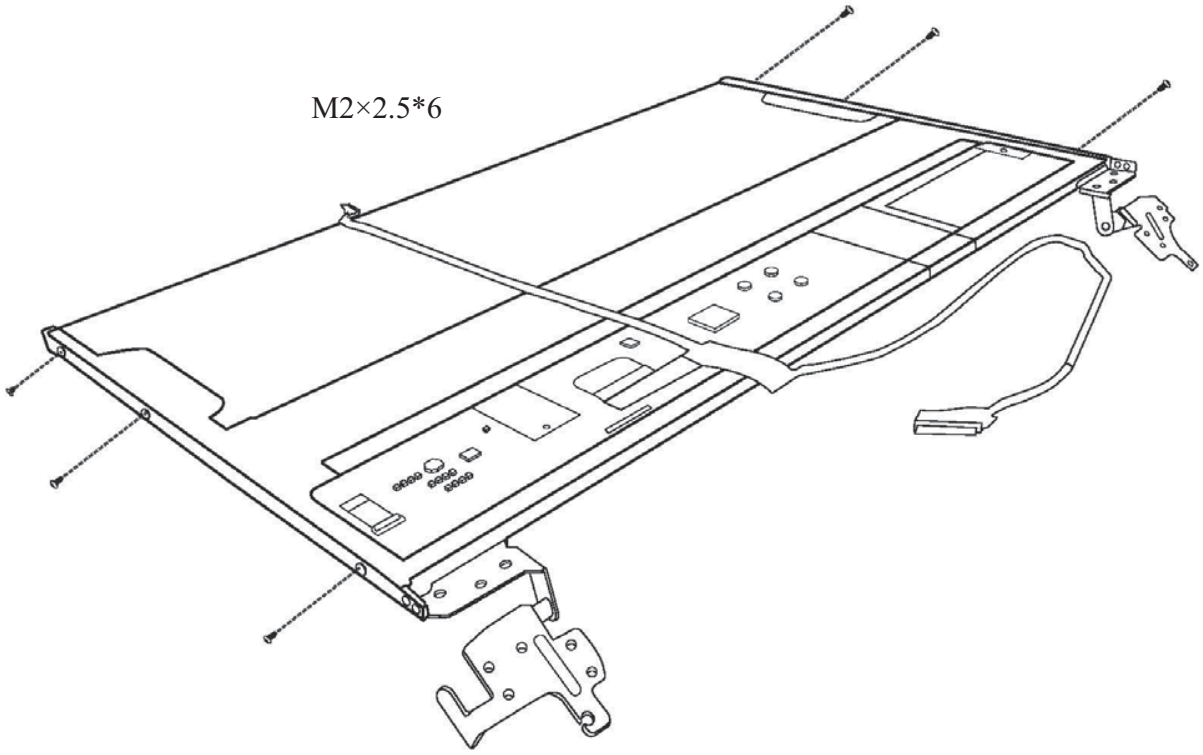


Figure 4-35 Removing the LCD hinges

6. Turn the LCD panel over and place it face down on a protective surface, such as a foam pad.

7. Gently peel the clear connector tape from the back of the LCD panel and disconnect the LVDS cable connector.

8. Remove the tape and carefully peel the LVDS cable from the back of the LCD panel.

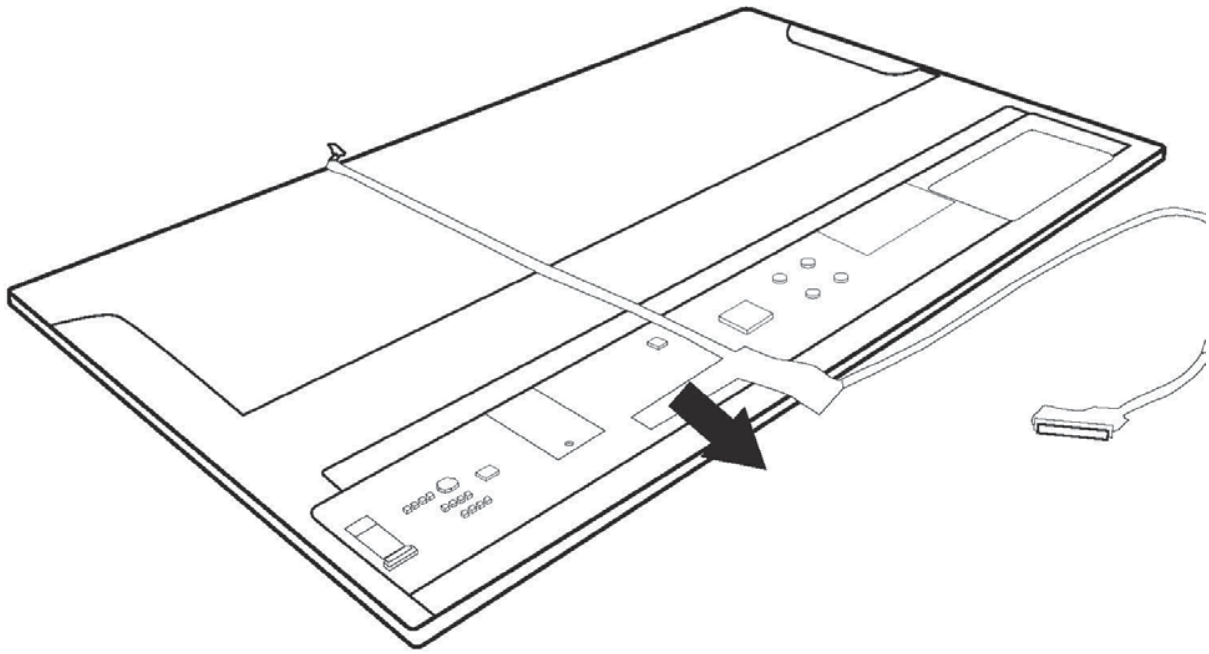


Figure 4-36 Removing the LVDS cable from the LCD panel

NOTE:

Integrated Circuits (ICs) are fragile. Use extreme care not to apply pressure to the ICs along the edges of the LCD panel.

Dispose of used LCD panels (fluorescent (FL) tubes) as required by local ordinances or regulations.

Installing the LCD Module

Install the LCD panel according to the following procedures and Figure 4-37.

1. Connect the LVDS cable to the LCD panel connector, and adhere the clear tape to the back of the LCD panel.
2. Align the LCD hinges with the LCD panel and secure them with six M2x2.5 screws, according to the following procedures indicated in Figure 4-37.

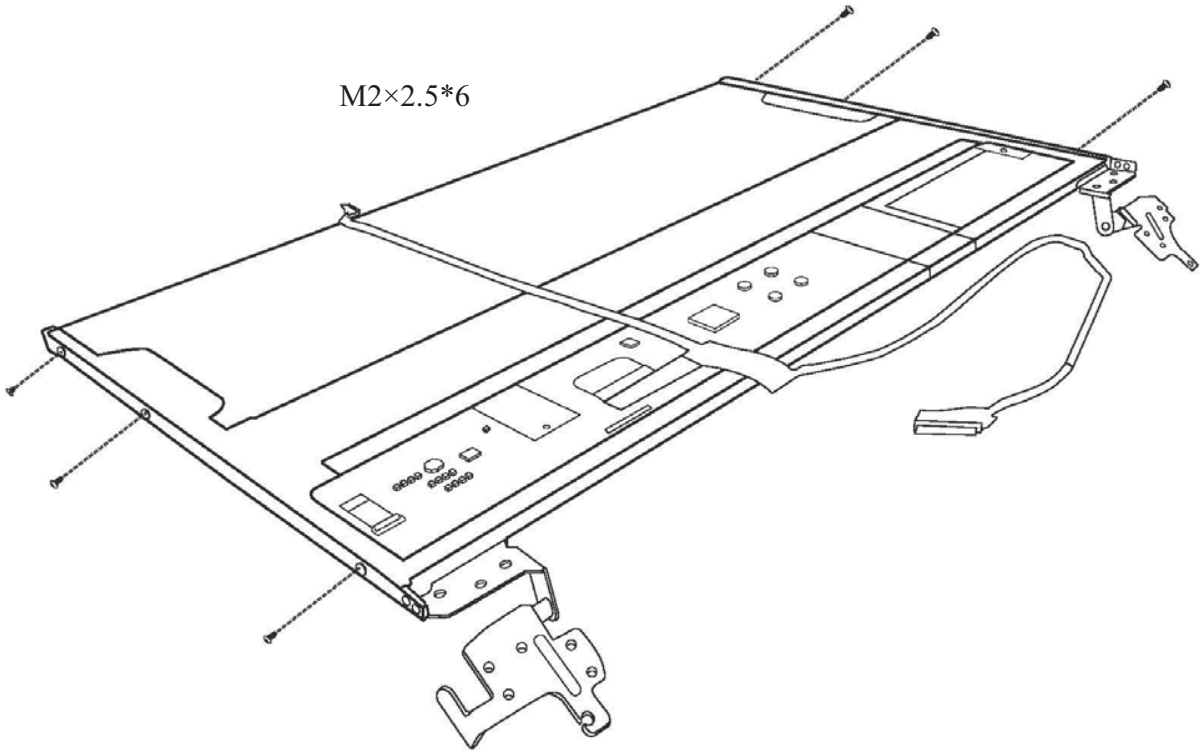


Figure 4-37 Installing the LCD hinges

3. Place the LCD module in the LCD cover assembly.
4. Connect the camera module cable to the camera module.
5. Secure the LCD panel to the LCD cover assembly with two M2.5x5 screws.

4.23 Camera Module

Removing the Camera Module

Remove the Camera Module according to the following procedure and Figure 4-38.

- ❑ Peel the camera module off the LCD cover assembly.

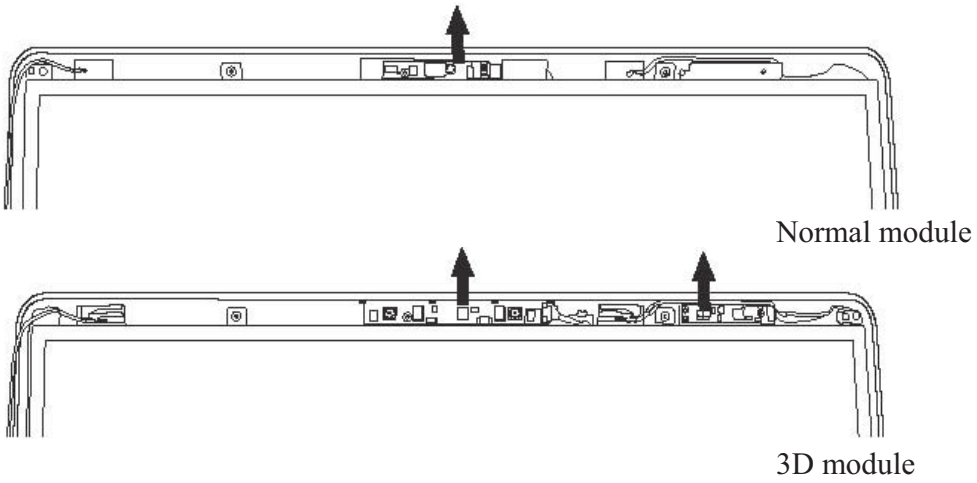


Figure 4-38 Removing the Camera Module

NOTE: *Camera module is fastened by adhesive tape. Remove it slowly and carefully.*

Installing the Camera Module

Install the Camera Module according to the following procedure:

NOTE: *Take extra care in routing cables and antennas on the LCD module. Improperly routed cables can become pinched or damaged and cause malfunction.*

- ❑ Seat the camera module on the LCD cover assembly and press down to make sure it is adhered to the LCD cover assembly.

4.24 Antennas

Removing the Antennas

Remove the antennas according to the following procedures and Figure 4-39.

1. Pull the antennas out from the routing channel on the LCD cover assembly.
2. Carefully peel the antennas from the LCD cover assembly.

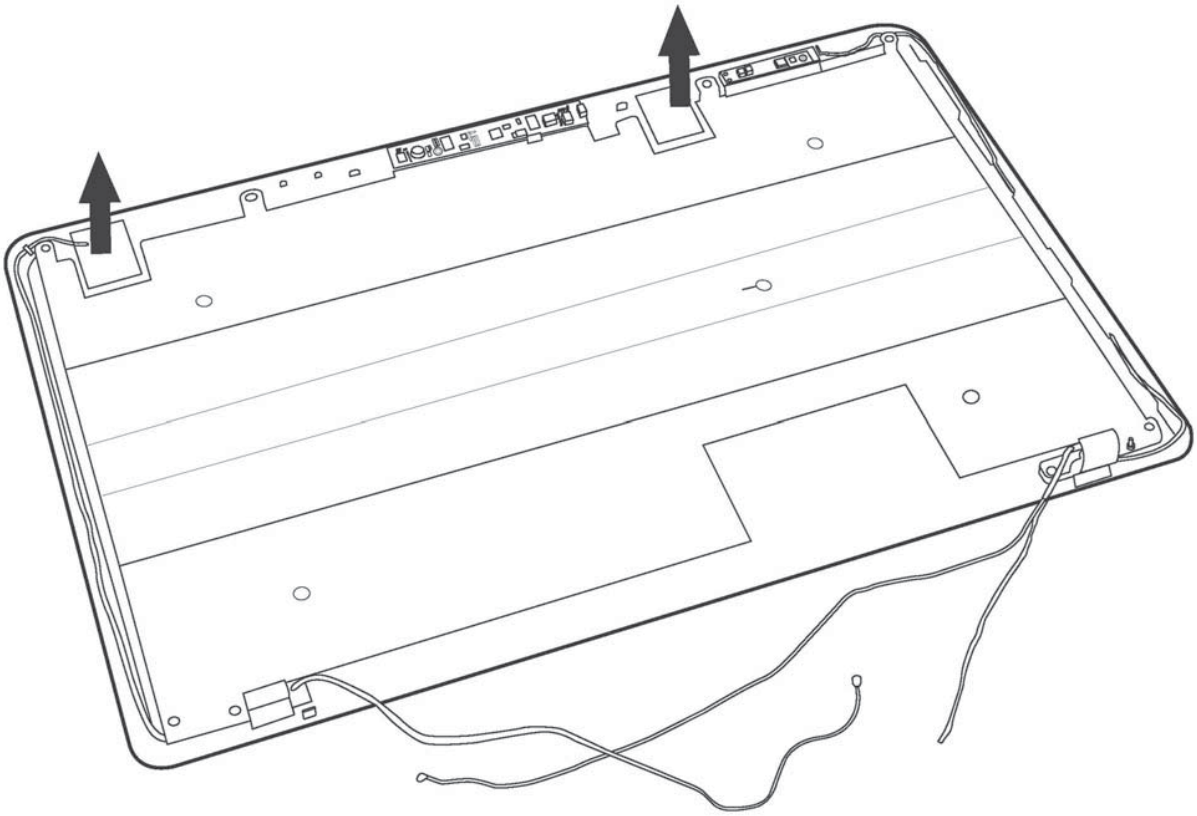


Figure 4-39 Removing the antennas from the LCD cover assembly

Installing the Antennas

NOTE: *Take care not to pinch the antenna cables. Make sure the routing positions of the antennas are correct and do not block any components, such as screw holes.*

Install the antennas according to the following procedures:

1. Adhere the antennas to the LCD cover assembly. Note that the white antenna is placed in the top left corner and the black antenna is placed in the top right corner of the LCD cover assembly.

2. Route the antennas in the routing channel on the LCD cover assembly.