

Notebook Computer

**PB70DDS / PB70DF1 / PB70DF2 /
PB71DDS / PB71DF1 / PB71DF2**

Service Manual

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About this Manual

This manual is intended for service personnel who have completed sufficient training to undertake the maintenance and inspection of personal computers.

It is organized to allow you to look up basic information for servicing and/or upgrading components of the **PB70DDS** / **PB70DF1** / **PB70DF2** / **PB71DDS** / **PB71DF1** / **PB71DF2** series notebook PC.

The following information is included:

Chapter 1, Introduction, provides general information about the location of system elements and their specifications.
Chapter 2, Disassembly, provides step-by-step instructions for disassembling parts and subsystems and how to upgrade elements of the system.

Appendix A, Part Lists

Appendix B, Schematic Diagrams

Preface

IMPORTANT SAFETY INSTRUCTIONS

Follow basic safety precautions, including those listed below, to reduce the risk of fire, electric shock and injury to persons when using any electrical equipment:

1. Do not use this product near water, for example near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
5. This product is intended to be supplied by a Listed Power Unit as follows:
 - AC Input of 100 - 240V, 50 - 60Hz, DC Output of 19.5V, 11.8A (**230** Watts) minimum AC/DC Adapter.

FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

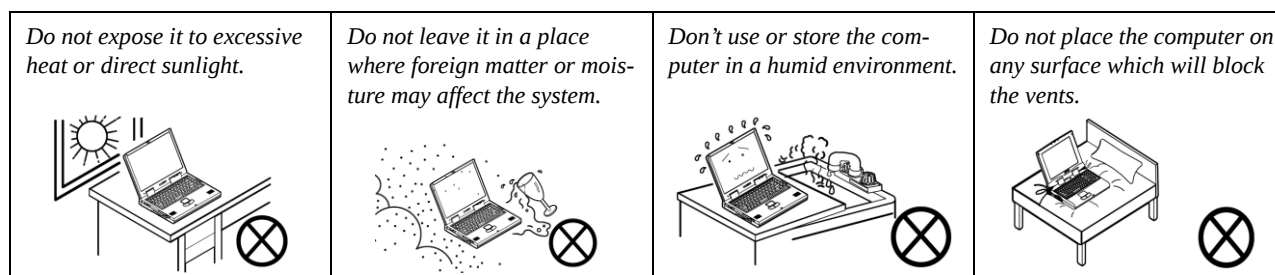
Instructions for Care and Operation

The notebook computer is quite rugged, but it can be damaged. To prevent this, follow these suggestions:

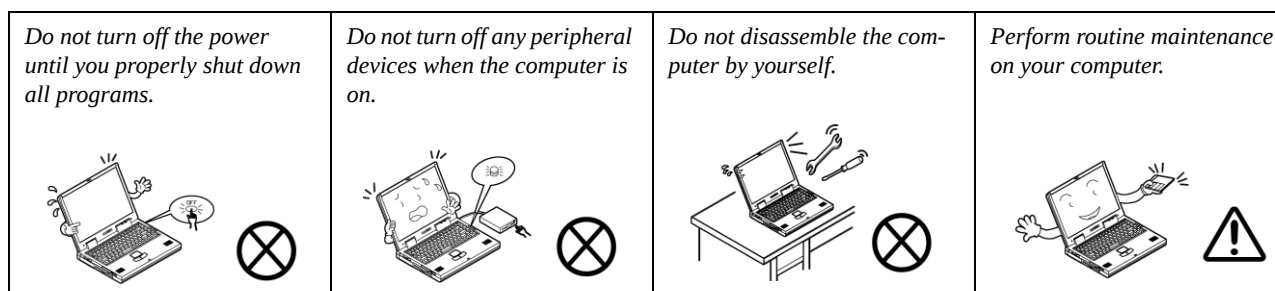
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.

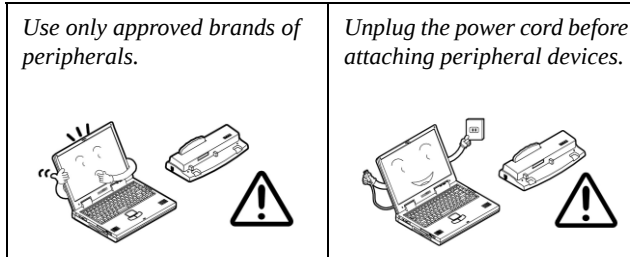


3. **Follow the proper working procedures for the computer.** Shut the computer down properly and don't forget to save your work. Remember to periodically save your data as data may be lost if the battery is depleted.



Preface

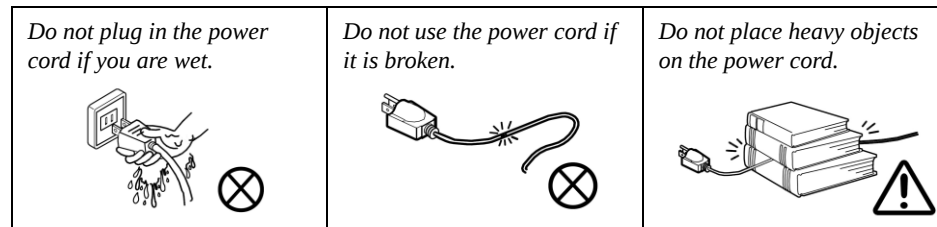
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



Power Safety

The computer has specific power requirements:

- Only use a power adapter approved for use with this computer.
- Your AC adapter may be designed for international travel but it still requires a steady, uninterrupted power supply. If you are unsure of your local power specifications, consult your service representative or local power company.
- The power adapter may have either a 2-prong or a 3-prong grounded plug. The third prong is an important safety feature; do not defeat its purpose. If you do not have access to a compatible outlet, have a qualified electrician install one.
- When you want to unplug the power cord, be sure to disconnect it by the plug head, not by its wire.
- Make sure the socket and any extension cord(s) you use can support the total current load of all the connected devices.
- Before cleaning the computer, make sure it is disconnected from any external power supplies.



Power Safety Warning

Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines and power cord). It is advisable to also remove your battery in order to prevent accidentally turning the machine on.

Battery Precautions

- Only use batteries designed for this computer. The wrong battery type may explode, leak or damage the computer.
- Do not continue to use a battery that has been dropped, or that appears damaged (e.g. bent or twisted) in any way. Even if the computer continues to work with a damaged battery in place, it may cause circuit damage, which may possibly result in fire.
- Recharge the batteries using the notebook's system. Incorrect recharging may make the battery explode.
- Do not try to repair a battery pack. Refer any battery pack repair or replacement to your service representative or qualified service personnel.
- Keep children away from, and promptly dispose of a damaged battery. Always dispose of batteries carefully. Batteries may explode or leak if exposed to fire, or improperly handled or discarded.
- Keep the battery away from metal appliances.
- Affix tape to the battery contacts before disposing of the battery.
- Do not touch the battery contacts with your hands or metal objects.

Battery Guidelines

The following can also apply to any backup batteries you may have.

- If you do not use the battery for an extended period, then remove the battery from the computer for storage.
- Before removing the battery for storage charge it to 60% - 70%.
- Check stored batteries at least every 3 months and charge them to 60% - 70%.



Battery Disposal

The product that you have purchased contains a rechargeable battery. The battery is recyclable. At the end of its useful life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal.

Caution

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used battery according to the manufacturer's instructions.

Battery Level

Click the battery icon  in the taskbar to see the current battery level and charge status. A battery that drops below a level of 10% will not allow the computer to boot up. Make sure that any battery that drops below 10% is recharged within one week.

Related Documents

You may also need to consult the following manual for additional information:

User's Manual on CD/DVD

This describes the notebook PC's features and the procedures for operating the computer and its ROM-based setup program. It also describes the installation and operation of the utility programs provided with the notebook PC.

System Startup

1. Remove all packing materials.
2. Place the computer on a stable surface.
3. Insert the battery and make sure it is locked in position.
4. Securely attach any peripherals you want to use with the computer (e.g. keyboard and mouse) to their ports.
5. **When first setting up the computer use the following procedure** (as to safeguard the computer during shipping, the battery will be locked to not power the system until first connected to the AC/DC adapter and initially set up as below):
 - Attach the AC/DC adapter cord to the DC-In jack on the left of the computer, then plug the AC power cord into an outlet, and connect the AC power cord to the AC/DC adapter. The battery will now be unlocked.
6. Use one hand to raise the lid/LCD to a comfortable viewing angle (do not exceed 130 degrees); use the other hand (as illustrated in Figure 1) to support the base of the computer (**Note: Never** lift the computer by the lid/LCD).
7. Press the power button to turn the computer "on".

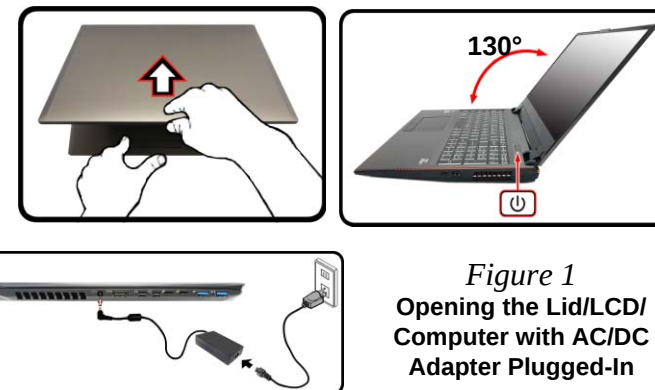


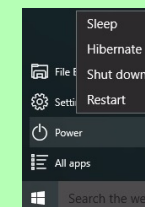
Figure 1
**Opening the Lid/LCD/
Computer with AC/DC
Adapter Plugged-In**



Shut Down

Note that you should always shut your computer down by choosing the **Shut down** command in **Windows** (see below). This will help prevent hard disk or system problems.

1. Click the Start Menu icon .
2. Click the **Power** item .
3. Choose **Shut Down** from the menu.



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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the **PB70DDS / PB70DF1 / PB70DF2 / PB71DDS / PB71DF1 / PB71DF2** series notebook computer. Information about operating the computer (e.g. getting started, and the *Setup* utility) is in the *User's Manual*. Information about drivers (e.g. VGA & audio) is also found in the *User's Manual*. The manual is shipped with the computer.

Operating systems (e.g. *Windows 10*, etc.) have their own manuals as do application softwares (e.g. word processing and database programs). If you have questions about those programs, you should consult those manuals.

The **PB70DDS / PB70DF1 / PB70DF2 / PB71DDS / PB71DF1 / PB71DF2** series notebook is designed to be upgradeable. See [Disassembly on page 2 - 1](#) for a detailed description of the upgrade procedures for each specific component. Please take note of the warning and safety information indicated by the “” symbol.

The balance of this chapter reviews the computer's technical specifications and features.

Introduction

Specifications



Latest Specification Information

The specifications listed here are correct at the time of sending them to the press. Certain items (particularly processor types/speeds) may be changed, delayed or updated due to the manufacturer's release schedule. Check with your service center for more details.



CPU Speed & Computer in DC Mode

Note that when the computer is in DC mode (powered by the battery only) the CPU may not run at full speed. This is a design feature implemented in order to protect the battery.

Processor Options

i7-10875H (2.30GHz)

16MB Smart Cache, 14nm, DDR4-2933MHz, TDP 45W

i7-10750H (2.60GHz)

12MB Smart Cache, 14nm, DDR4-2933MHz, TDP 45W

Core Logic

Intel® HM470 Express Chipset

LCD Options

LCD, 17.3" (43.94cm), 16:9, UHD (3840x2160) / FHD (1920x1080)

BIOS

128Mb SPI Flash ROM

INSYDE BIOS

Memory

Dual Channel DDR4

Two 260 Pin SO-DIMM Sockets

Supporting up to **3200MHz DDR4** Memory

Memory Expandable from **8GB (minimum)** up to **64GB (maximum)**

Compatible with 8GB, 16GB or 32GB Modules

(The real memory operating frequency depends on the FSB of the processor.)

Security

Security (Kensington® Type) Lock Slot

BIOS Password

Intel PTT for Systems Without TPM Hardware

(Factory Option) TPM 2.0

(Factory Option) Fingerprint Sensor

Video Adapter Options

Microsoft Hybrid Graphics Mode or Discrete Graphics Mode

Supports up to 4 Active Displays

Supports NVIDIA Surround View via HDMI x 1, MiniDP x1 and Display Port over Type-C

Intel Integrated GPU

Intel® UHD Graphics 630

Dynamic Frequency

Intel Dynamic Video Memory Technology

Microsoft DirectX®12 Compatible

NVIDIA® Discrete GPU

NVIDIA® GeForce RTX 2070 Super (PB70DF2 / PB71DF2)

8GB GDDR6 Video RAM

Microsoft DirectX®12 Compatible

NVIDIA® GeForce RTX 2070 (PB70DF1 / PB71DF1)

8GB GDDR6 Video RAM

Microsoft DirectX®12 Compatible

NVIDIA® GeForce RTX 2060 (PB70DDS / PB71DDS)

8GB GDDR6 Video RAM

Microsoft DirectX®12 Compatible

Pointing Device

(Factory Option) Built-in Touchpad/Secure Pad (with Microsoft PTP Multi Gesture & Scrolling Functionality)

Keyboard

Full Size **Multi Full Color** LED Keyboard (with numeric keypad)

Or

(Factory Option) Full Size **Full Color N-Key Rollover "Per Key"** LED Keyboard (with Numeric Keypad)

Storage

One changeable 2.5" (6cm) **7.0mm (h) SATA** (Serial) Hard Disk Drive/Solid State Drive (SSD)
(Factory Option) One M.2 2280 SATA Solid State Drive (SSD)
Or
(Factory Option) Two M.2 2280 PCIe Gen3 x4 SSDs supporting RAID level 0/1

Audio

High Definition Audio Compliant Interface
S/PDIF Digital Output
Built-In Array Microphone
Two Speakers
One Subwoofer
Sound Blaster Atlas

Communication

1.0M HD PC Camera Module
Built-In 10/100/1000Mb Base-TX Ethernet LAN

WLAN/ Bluetooth M.2 Modules:

(Factory Option) Intel® Dual Band Wireless-AC 9560 Wireless LAN **(802.11ac)** + Bluetooth
(Factory Option) Intel® Dual Band Wi-Fi 6 AX201 Wireless LAN **(802.11ax)** + Bluetooth
(Factory Option) Intel® Dual Band Wi-Fi 6 AX201 Wireless LAN **(802.11ax)** + Bluetooth
(Factory Option) Killer™ Dual Band Wi-Fi 6 AX1650i Wireless LAN **(802.11ax)** + Bluetooth

Card Reader

Embedded Multi-In-1 Push-Push Card Reader
MMC (MultiMedia Card) / RS MMC
SD (Secure Digital) / Mini SD / SDHC/ SDXC

M.2 Slots

Slot 1 for **Combo WLAN and Bluetooth** Module
Slot 2 for **SATA or PCIe Gen3 x4 SSD**
Slot 3 for **PCIe Gen3 x4 SSD**

Interface

One USB 3.2 Gen 2 Type-C Port*
**The maximum amount of current supplied by USB Type-C ports is 500mA (USB 2.0)/900mA (USB 3.2).*
Or
(Factory Option) One Thunderbolt 3 Port
Three USB 3.2 Gen 1 Type-A Ports (Including one AC/DC Powered USB Port)
One DisplayPort 1.4 over USB 3.2 Gen 2 Type-C Port
One Mini DisplayPort 1.4
One HDMI-Out Port
One 2- In-1 Audio Jack (Microphone and S/PDIF Optical)
One 2- In-1 Audio Jack (Headphone and Microphone)
One RJ-45 LAN Jack
One DC-In Jack

Features

Supports NVIDIA® G-SYNC™ Technology in DISCRETE Mode
(NVIDIA® G-SYNC™ Technology is supported by some displays)
Intel® Optane™ Technology
Virtual Reality Ready
Windows® Mixed Reality Compatible
(Factory Option) USB Drive

Environmental Spec

Temperature
Operating: 5°C - 35°C
Non-Operating: -20°C - 60°C
Relative Humidity
Operating: 20% - 80%
Non-Operating: 10% - 90%

Power

Removable 6 Cell Smart Lithium-Ion Battery Pack, 62WH

Full Range AC/DC Adapter
AC Input: 100 - 240V, 50 - 60Hz
DC Output: 19.5V, 11.8A **(230W)**

Dimensions & Weight

399mm (w) * 275mm (d) * 29.9mm (h)
2.9kg (Barebone with 62WH Battery)

Introduction

Figure 1
Top View

1. PC Camera
2. *PC Camera LED
**When the PC camera is in use, the LED will be illuminated.*
3. Built-In Array Microphone
4. LCD
5. Power Button
6. Keyboard
7. Touchpad & Buttons
8. Fingerprint Sensor (Optional)

External Locator - Top View with LCD Panel Open



External Locator - Front & Right Side Views

FRONT VIEW



Figure 2
Front View

1. LED Indicator
2. Multi-in-1 Card Reader

RIGHT SIDE VIEW



Figure 3
Right Side View

1. USB 3.2 Gen 2 Type-C Port Or (Factory Option) Thunderbolt 3 Port
2. USB 3.2 Gen 1 Type-A Port
3. Vent
4. Speaker

Introduction

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. Security Lock Slot
2. Vent
3. *Powered USB 3.2 Gen 1 Type-A Port
4. 2-In-1 Audio Jack (Microphone and S/PDIF Optical)
5. 2-In-1 Audio Jack (Headphone and Microphone)
6. Speaker

LEFT SIDE VIEW



Figure 5
Rear View

1. Vent
2. RJ-45 LAN Jack
3. HDMI-Out Port
4. Mini Display Port 1.4
5. Display Port 1.4 over USB 3.2 Gen 2 Type-C Port
6. USB 3.2 Gen 1 Type-A Port
7. DC-In Jack

REAR VIEW



External Locator - Bottom View

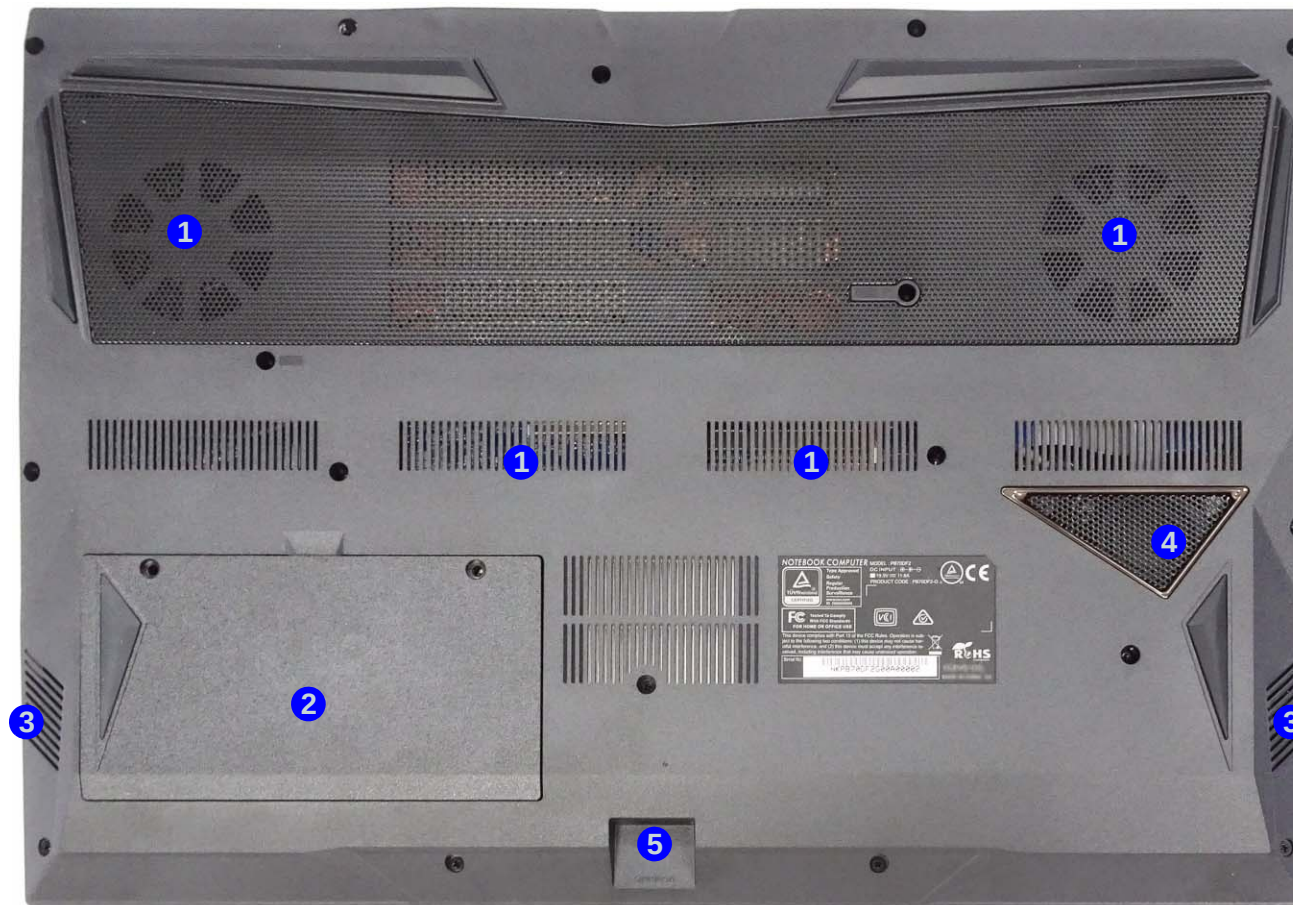


Figure 6
Bottom View

1. Vent
2. Battery
3. Speakers
4. Subwoofer
5. Multi-in-1 Card Reader



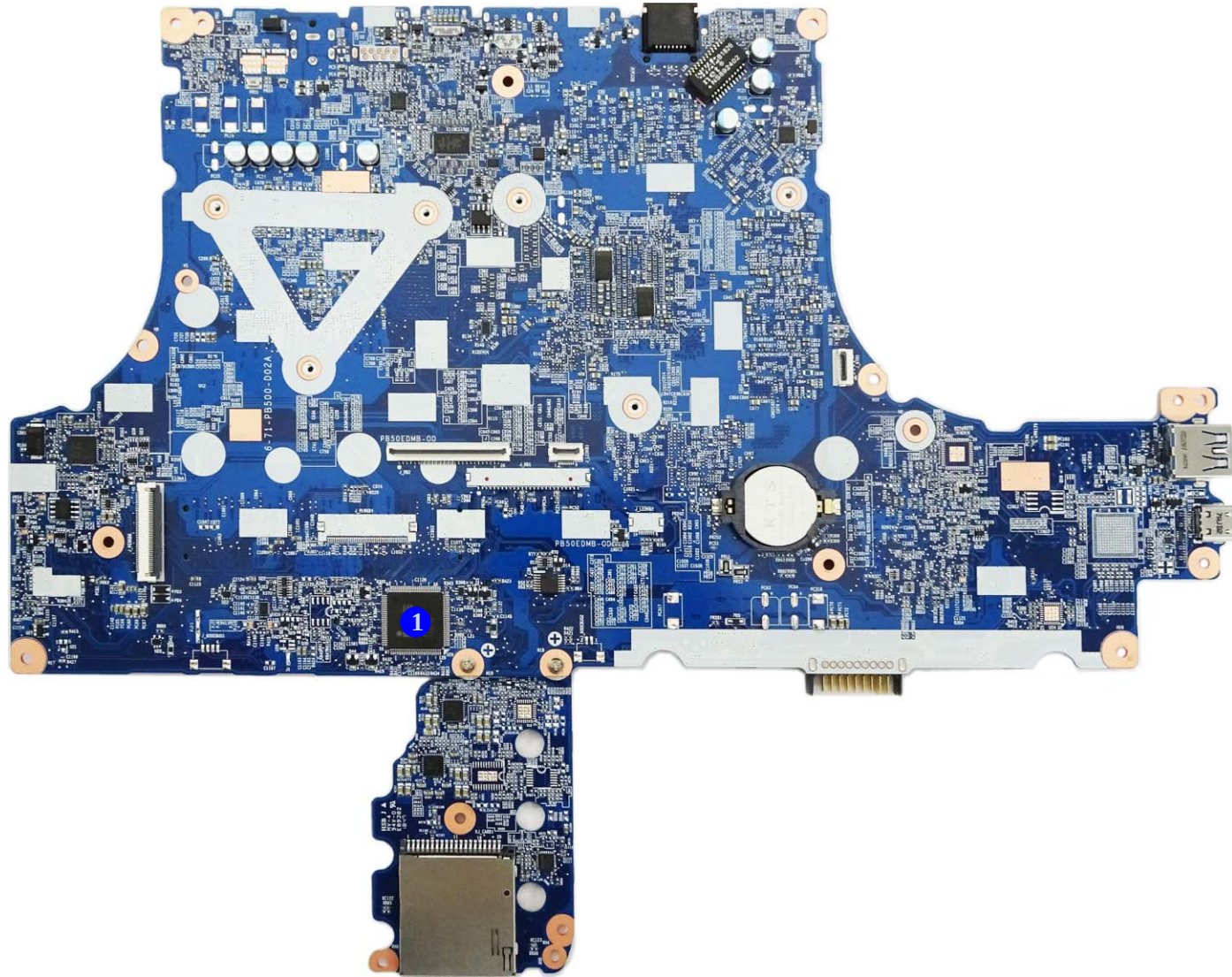
Overheating

To prevent your computer from overheating, make sure nothing blocks any vent while the computer is in use.

Figure 7
**Mainboard Top
Key Parts**

1. KBC-ITE IT5570

Mainboard Overview - Top (Key Parts)



Mainboard Overview - Bottom (Key Parts)

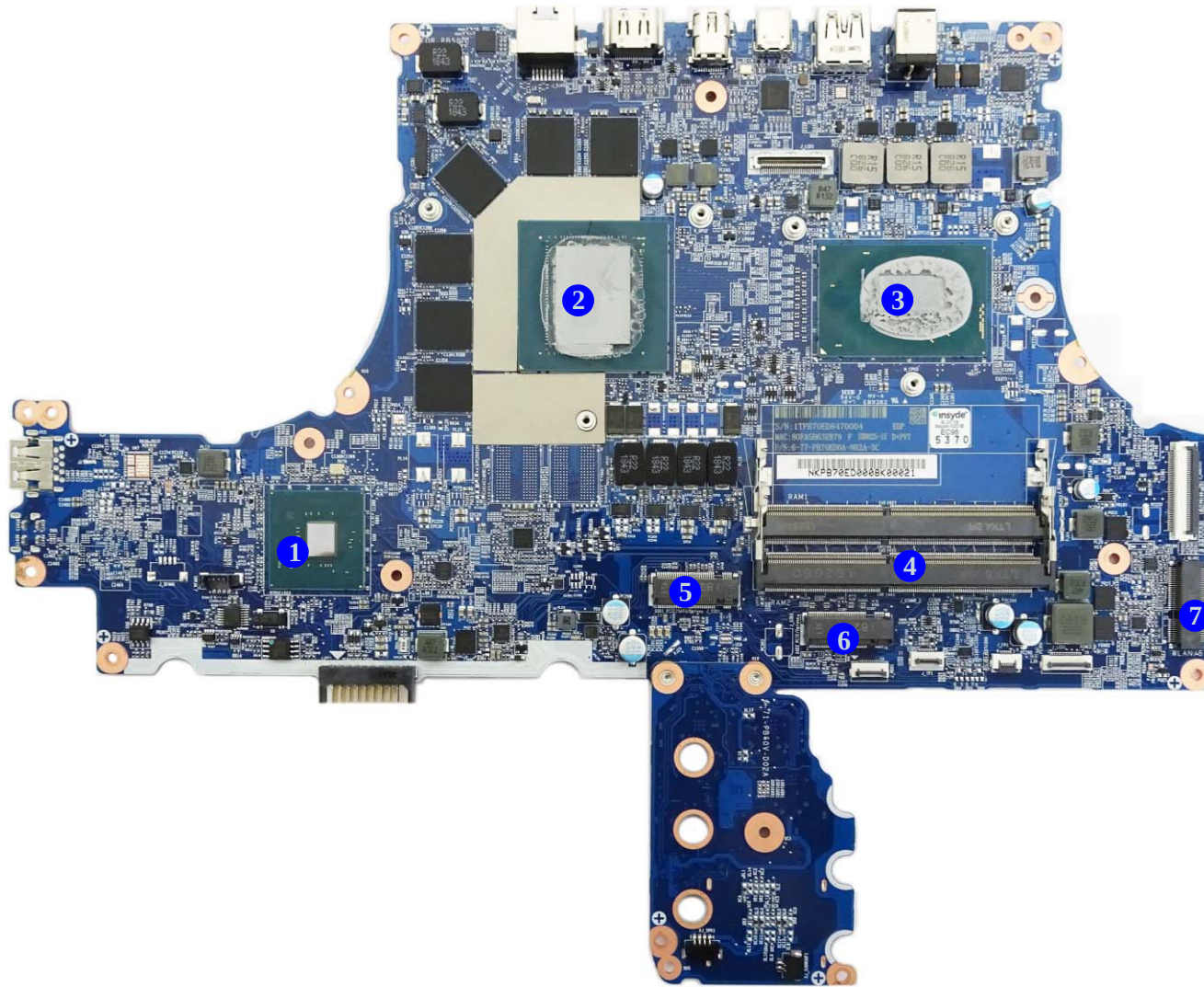


Figure 8
**Mainboard Bottom
Key Parts**

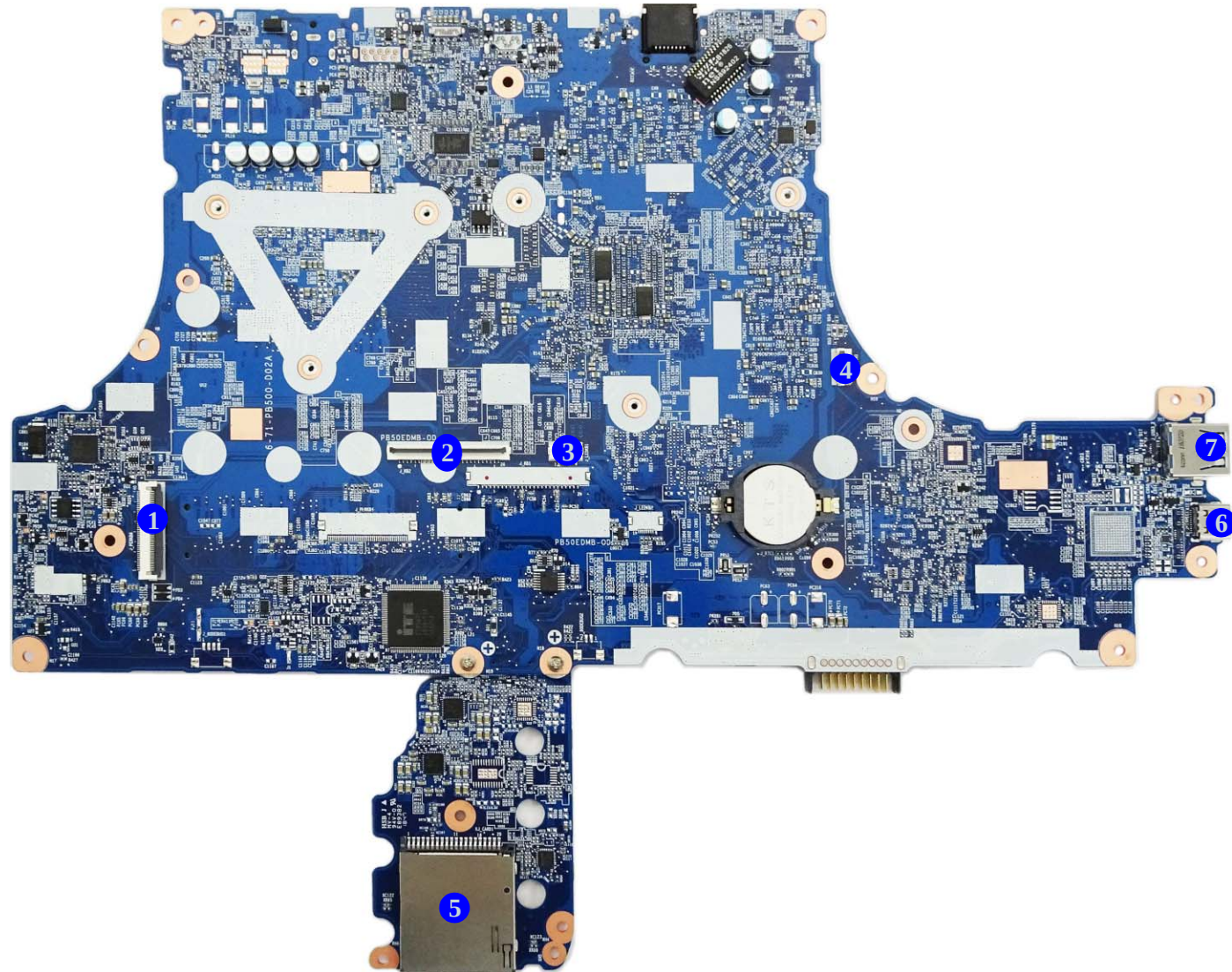
1. PCH
2. GPU
3. CPU
4. Memory Slots
DDR4 SO-DIMM
5. Mini-Card
Connector (M.2
PCIE/SATA SSD
Module)
6. Mini-Card
Connector (M.2
PCIE Module)
7. Mini-Card
Connector (WLAN
Module)

Introduction

Figure 9
**Mainboard Top
Connectors**

1. Per Key Cable Connector
2. Keyboard Cable Connector
3. RGB Keyboard Cable Connector
4. Power Switch Connector
5. Multi-in-1 Card Reader
6. USB 3.2 Gen 2 Type-C Port Or
(Factory Option) Thunderbolt 3 Port
7. USB 3.2 Gen 1 Type-A Port

Mainboard Overview - Top (Connectors)



Mainboard Overview - Bottom (Connectors)

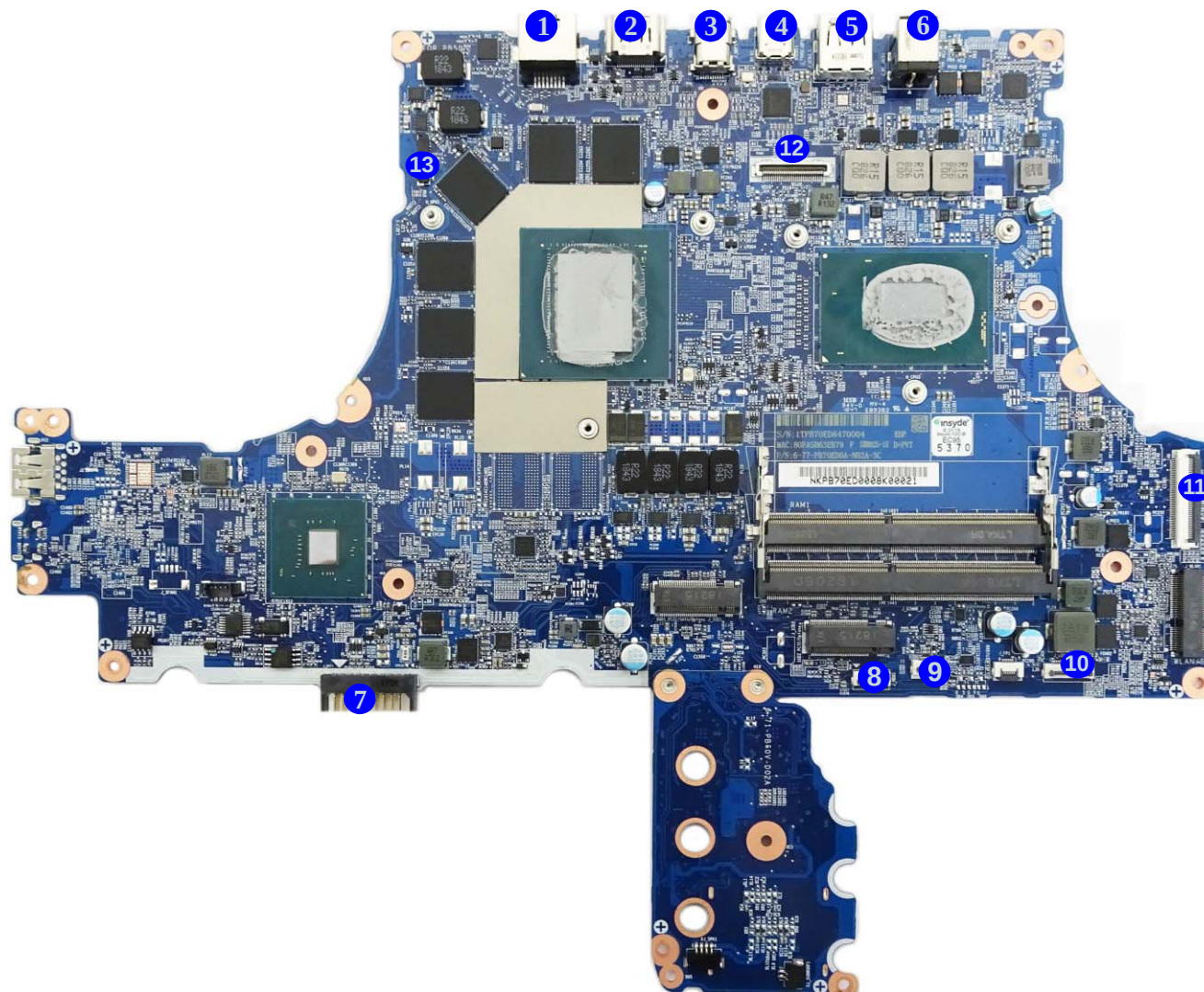


Figure 10
**Mainboard Bottom
Connectors**

1. RJ-45 LAN Jack
2. HDMI-Out Port
3. Mini DisplayPort 1.3
4. DisplayPort 1.3 over USB 3.2 Gen 2 Type-C Port
5. USB 3.2 Gen 1 Type-A Port
6. DC-In Jack
7. Battery Connector
8. HDD Cable Connector
9. Touchpad Cable Connector
10. LED Indicator Connector
11. Audio Board Connector
12. Panel Connector
13. CCD Connector

Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the **PB70DDS / PB70DF1 / PB70DF2 / PB71DDS / PB71DF1 / PB71DF2** series notebook's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

We suggest you completely review any procedure before you take the computer apart.

Procedures such as upgrading/replacing the RAM, optical device and hard disk are included in the User's Manual but are repeated here for your convenience.

To make the disassembly process easier each section may have a box in the page margin. Information contained under the figure # will give a synopsis of the sequence of procedures involved in the disassembly procedure. A box with a  lists the relevant parts you will have after the disassembly process is complete. **Note:** The parts listed will be for the disassembly procedure listed ONLY, and not any previous disassembly step(s) required. Refer to the part list for the previous disassembly procedure. The amount of screws you should be left with will be listed here also.

A box with a  will also provide any possible helpful information. A box with a  contains warnings.

An example of these types of boxes are shown in the sidebar.


Information

Warning

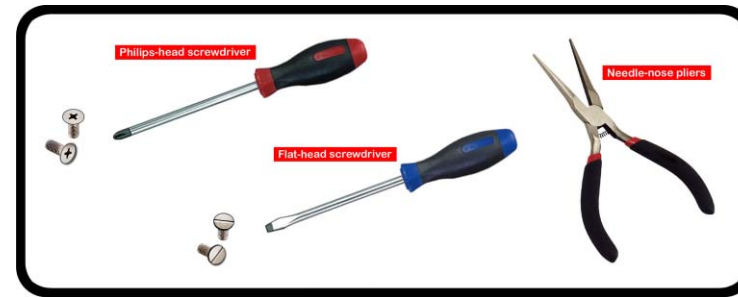
Disassembly

NOTE: All disassembly procedures assume that the system is turned **OFF**, and disconnected from any power supply (the battery is removed too).

Maintenance Tools

The following tools are recommended when working on the notebook PC:

- M3 Philips-head screwdriver
- M2.5 Philips-head screwdriver (magnetized)
- M2 Philips-head screwdriver
- Small flat-head screwdriver
- Pair of needle-nose pliers
- Anti-static wrist-strap



Connections

Connections within the computer are one of four types:

Locking collar sockets for ribbon connectors

To release these connectors, use a small flat-head screwdriver to gently pry the locking collar away from its base. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.

Pressure sockets for multi-wire connectors

To release this connector type, grasp it at its head and gently rock it from side to side as you pull it out. Do not pull on the wires themselves. When replacing the connection, do not try to force it. The socket only fits one way.

Pressure sockets for ribbon connectors

To release these connectors, use a small pair of needle-nose pliers to gently lift the connector away from its socket. When replacing the connection, make sure the connector is oriented in the same way. The pin1 side is usually not indicated.

Board-to-board or multi-pin sockets

To separate the boards, gently rock them from side to side as you pull them apart. If the connection is very tight, use a small flat-head screwdriver - use just enough force to start.

Maintenance Precautions

The following precautions are a reminder. To avoid personal injury or damage to the computer while performing a removal and/or replacement job, take the following precautions:

1. **Don't drop it.** Perform your repairs and/or upgrades on a stable surface. If the computer falls, the case and other components could be damaged.
2. **Don't overheat it.** Note the proximity of any heating elements. Keep the computer out of direct sunlight.
3. **Avoid interference.** Note the proximity of any high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage components and/or data. You should also monitor the position of magnetized tools (i.e. screwdrivers).
4. **Keep it dry.** This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.
5. **Be careful with power.** Avoid accidental shocks, discharges or explosions.
 - Before removing or servicing any part from the computer, turn the computer off and detach any power supplies.
 - When you want to unplug the power cord or any cable/wire, be sure to disconnect it by the plug head. Do not pull on the wire.
6. **Peripherals** – Turn off and detach any peripherals.
7. **Beware of static discharge.** ICs, such as the CPU and main support chips, are vulnerable to static electricity. Before handling any part in the computer, discharge any static electricity inside the computer. When handling a printed circuit board, do not use gloves or other materials which allow static electricity buildup. We suggest that you use an anti-static wrist strap instead.
8. **Beware of corrosion.** As you perform your job, avoid touching any connector leads. Even the cleanest hands produce oils which can attract corrosive elements.
9. **Keep your work environment clean.** Tobacco smoke, dust or other air-born particulate matter is often attracted to charged surfaces, reducing performance.
10. **Keep track of the components.** When removing or replacing any part, be careful not to leave small parts, such as screws, loose inside the computer.

Cleaning

Do not apply cleaner directly to the computer, use a soft clean cloth.

Do not use volatile (petroleum distillates) or abrasive cleaners on any part of the computer.

(For Computer Models Supplied with Light Blue Cleaning Cloth) Some computer models in this series come supplied with a light blue cleaning cloth. To clean the computer case with this cloth follow the instructions below.

- Power off the computer and peripherals.
- Disconnect the AC/DC adapter from the computer.
- Use a little water to dampen the cloth slightly.
- Clean the computer case with the cloth.
- Dry the computer with a dry cloth, or allow it time to dry before turning on.
- Reconnect the AC/DC adapter and turn the computer on.



Power Safety Warning

Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines and power cord). It is advisable to also remove your battery in order to prevent accidentally turning the machine on.

Disassembly Steps

The following table lists the disassembly steps, and on which page to find the related information. **PLEASE PERFORM THE DISASSEMBLY STEPS IN THE ORDER INDICATED.**

To remove the Battery:

- 1. Remove the battery [page 2 - 5](#)

To remove the Keyboard:

- 1. Remove the battery [page 2 - 5](#)
- 2. Remove the keyboard-1 [page 2 - 6](#)
- 3. Remove the keyboard-2 [page 2 - 7](#)

To remove the HDD:

- 1. Remove the battery [page 2 - 5](#)
- 2. Remove the keyboard [page 2 - 6](#)
- 3. Remove the HDD [page 2 - 8](#)

To remove the System Memory:

- 1. Remove the battery [page 2 - 5](#)
- 2. Remove the keyboard [page 2 - 6](#)
- 3. Remove the HDD [page 2 - 8](#)
- 4. Remove the system memory [page 2 - 10](#)

To remove and install the M.2 SSD:

- 1. Remove the battery [page 2 - 5](#)
- 2. Remove the keyboard [page 2 - 6](#)
- 3. Remove the HDD [page 2 - 8](#)
- 4. Remove the M.2 SSD [page 2 - 11](#)

To remove the Wireless LAN Module:

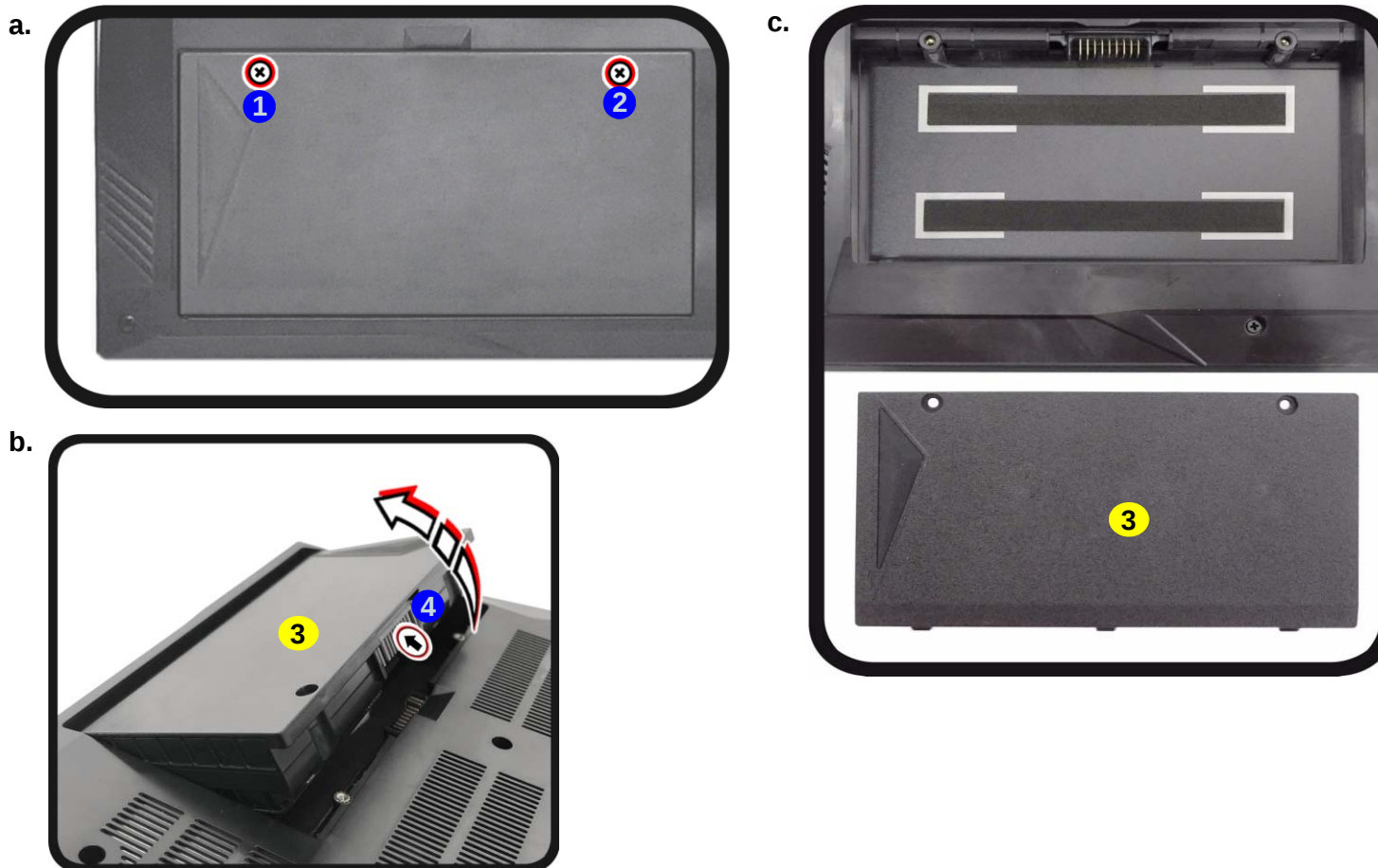
- 1. Remove the battery [page 2 - 5](#)
- 2. Remove the keyboard [page 2 - 6](#)
- 3. Remove the HDD [page 2 - 8](#)
- 4. Remove the WLAN [page 2 - 12](#)

Removing the Battery

1. Turn **off** the computer, turn it over.
2. Remove screws **1** - **2** (*Figure 1a*).
3. Carefully lift the battery **3** up in the direction of the arrow at point **4** (*Figure 1b*).
4. Remove the battery **3** off the computer (*Figure 1c*).
5. Reverse the process to install a new battery (do not forget to replace all the screws and bottom cover).

Figure 1
Battery Removal

- a. Remove the screws.
- b. Lift the battery up.
- c. Remove the battery.



3. Battery
- 2 Screws

Disassembly

Figure 2
**Keyboard-1
Removal**

- a. Remove the screws from the bottom of the computer and then eject the keyboard using a special eject stick to push the keyboard out while releasing the keyboard as shown.
 - b. Lift the keyboard up and disconnect the keyboard ribbon cable from the locking collar socket.
 - c. Remove the keyboard.
1. Turn **off** the computer, turn it over.
 2. Remove screws **1** - **2** from the bottom of the computer.
 3. Open it up with the LCD on a flat surface before pressing at point **3** to release the keyboard module (use the special eject stick **4** to do this) while releasing the keyboard in the direction of the arrow **5** as shown (*Figure 2a*).
 4. Carefully lift the keyboard **6** up, being careful not to bend the keyboard ribbon cable **7**. Disconnect the keyboard ribbon cable **7** from the locking collar socket by using a flat-head screwdriver to pry the locking collar pins **8** away from the base (*Figure 2b*).
 5. Carefully lift the keyboard **6** off the computer (*Figure 2c*).

Re-inserting the Keyboard

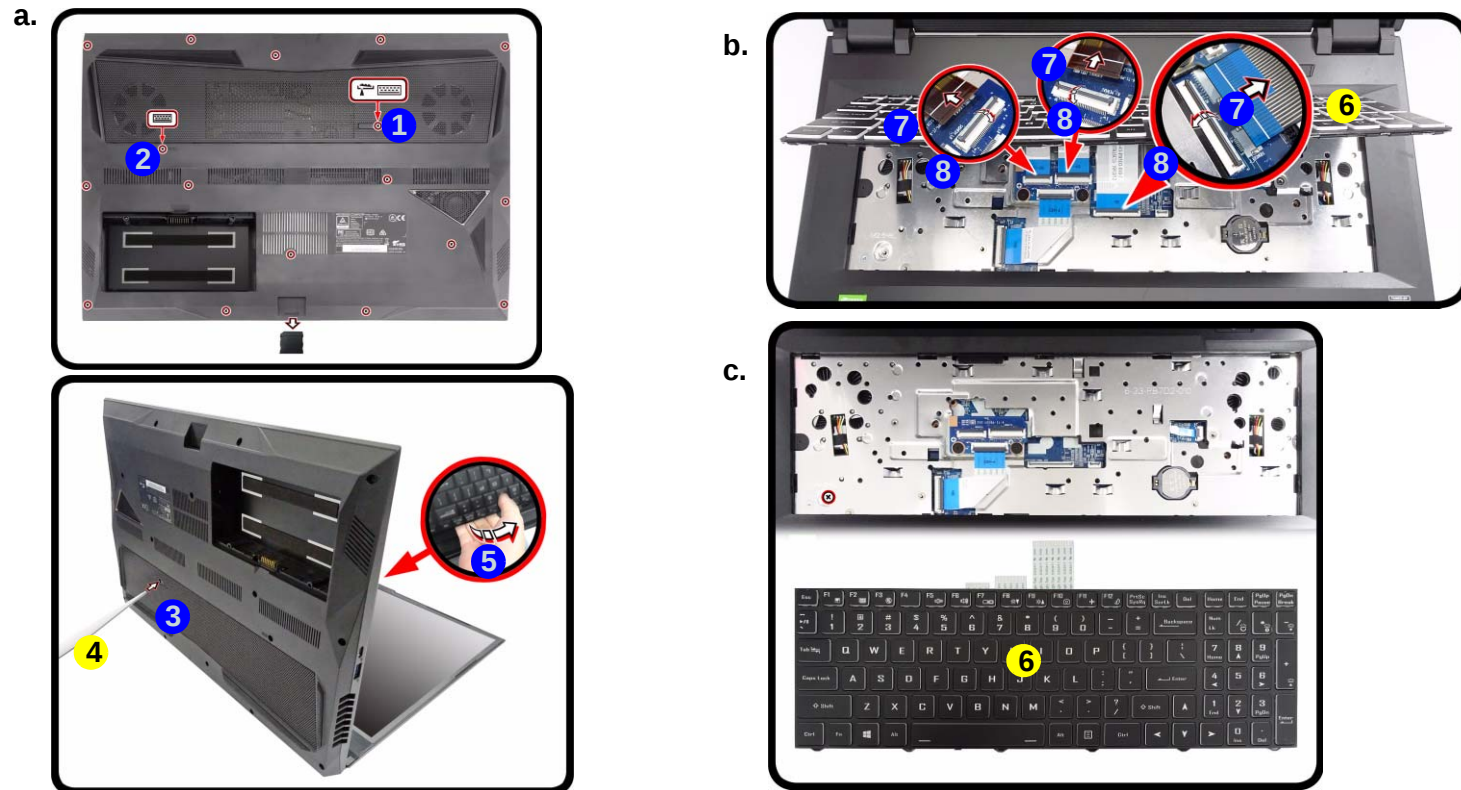
When re-inserting the keyboard firstly, align the keyboard tabs at the bottom of the keyboard with the slots in the case.

4. Eject Stick
6. Keyboard

- 2 Screws

Removing the Keyboard

Keyboard-1 Removal Procedure



Keyboard-2 Removal Procedure

1. Turn **off** the computer, turn it over.
2. Remove screws **1** - **2** from the bottom of the computer.
3. Open it up with the LCD on a flat surface before pressing at point **3** to release the keyboard module (use the special eject stick **4** to do this) while releasing the keyboard in the direction of the arrow **5** as shown (**Figure 3a**).
4. Carefully lift the keyboard **6** up, being careful not to bend the keyboard ribbon cable **7**. Disconnect the keyboard ribbon cable **7** from the locking collar socket by using a flat-head screwdriver to pry the locking collar pins **8** away from the base (**Figure 3b**).
5. Carefully lift the keyboard **6** off the computer (**Figure 3c**).

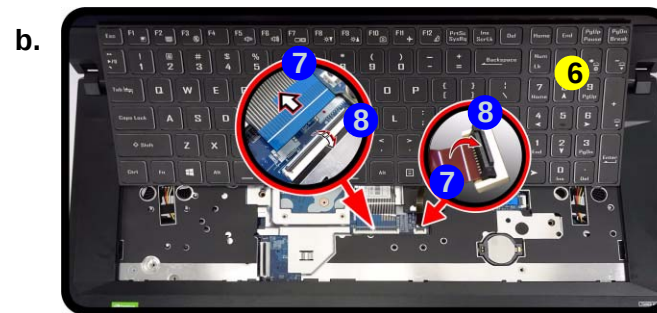
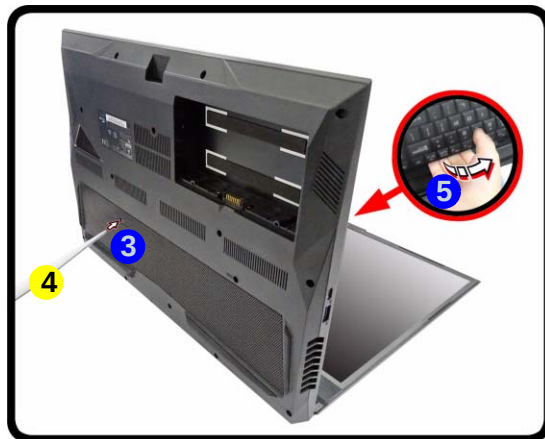
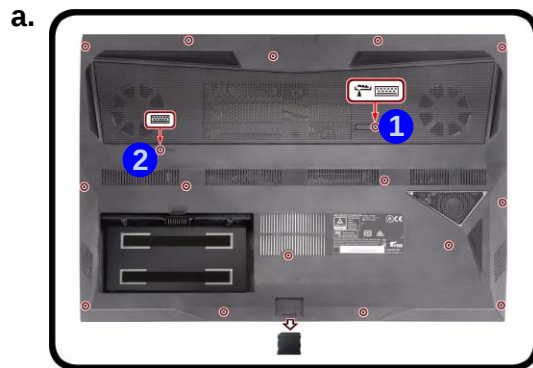


Figure 3
**Keyboard-2
Removal**

- a. Remove the screws from the bottom of the computer and then eject the keyboard using a special eject stick to push the keyboard out while releasing the keyboard as shown.
- b. Lift the keyboard up and disconnect the keyboard ribbon cable from the locking collar socket.
- c. Remove the keyboard.



Re-inserting the Keyboard

When re-inserting the keyboard firstly, align the keyboard tabs at the bottom of the keyboard with the slots in the case.



4. Eject Stick
6. Keyboard

- 2 Screws

Disassembly

Figure 4
HDD Assembly Removal

- Remove the screws.
- Remove the SD cover and screws.
- Remove the bottom case.



HDD System Warning

New HDD's are blank. Before you begin make sure:

You have backed up any data you want to keep from your old HDD.

You have all the CD-ROMs and FDDs required to install your operating system and programs.

If you have access to the internet, download the latest application and hardware driver updates for the operating system you plan to install. Copy these to a removable medium.



2. SD Card Cover
18. Bottom Case

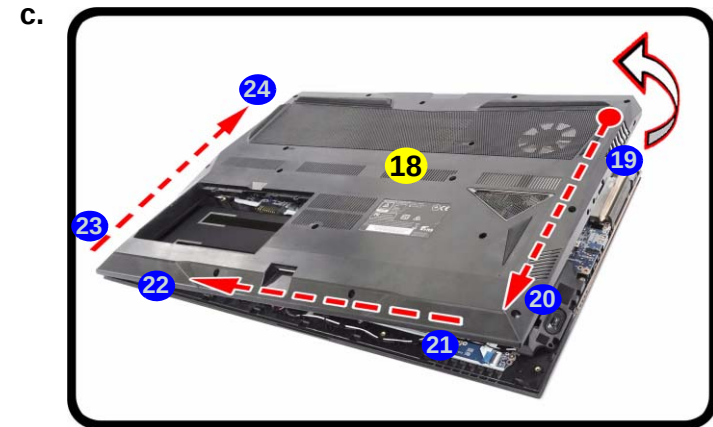
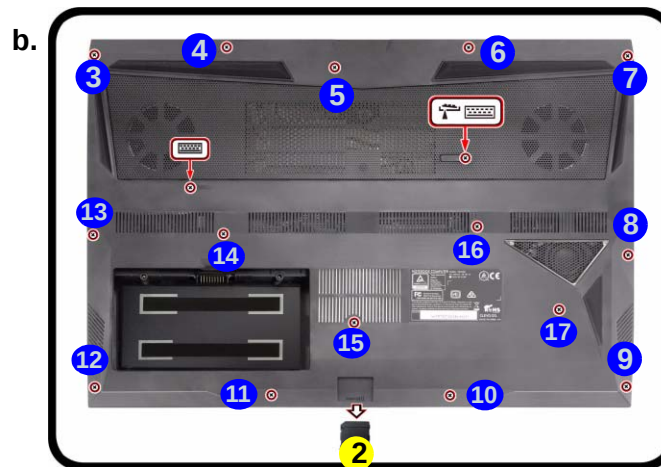
- 15 Screws

Removing the Hard Disk Drive

The hard disk drive can be taken out to accommodate other 2.5" serial (SATA) hard disk drives with a height of 7mm (h). Follow your operating system's installation instructions, and install all necessary drivers and utilities (as outlined in **Chapter 4 of the User's Manual**) when setting up a new hard disk.

Hard Disk Disassembly Process

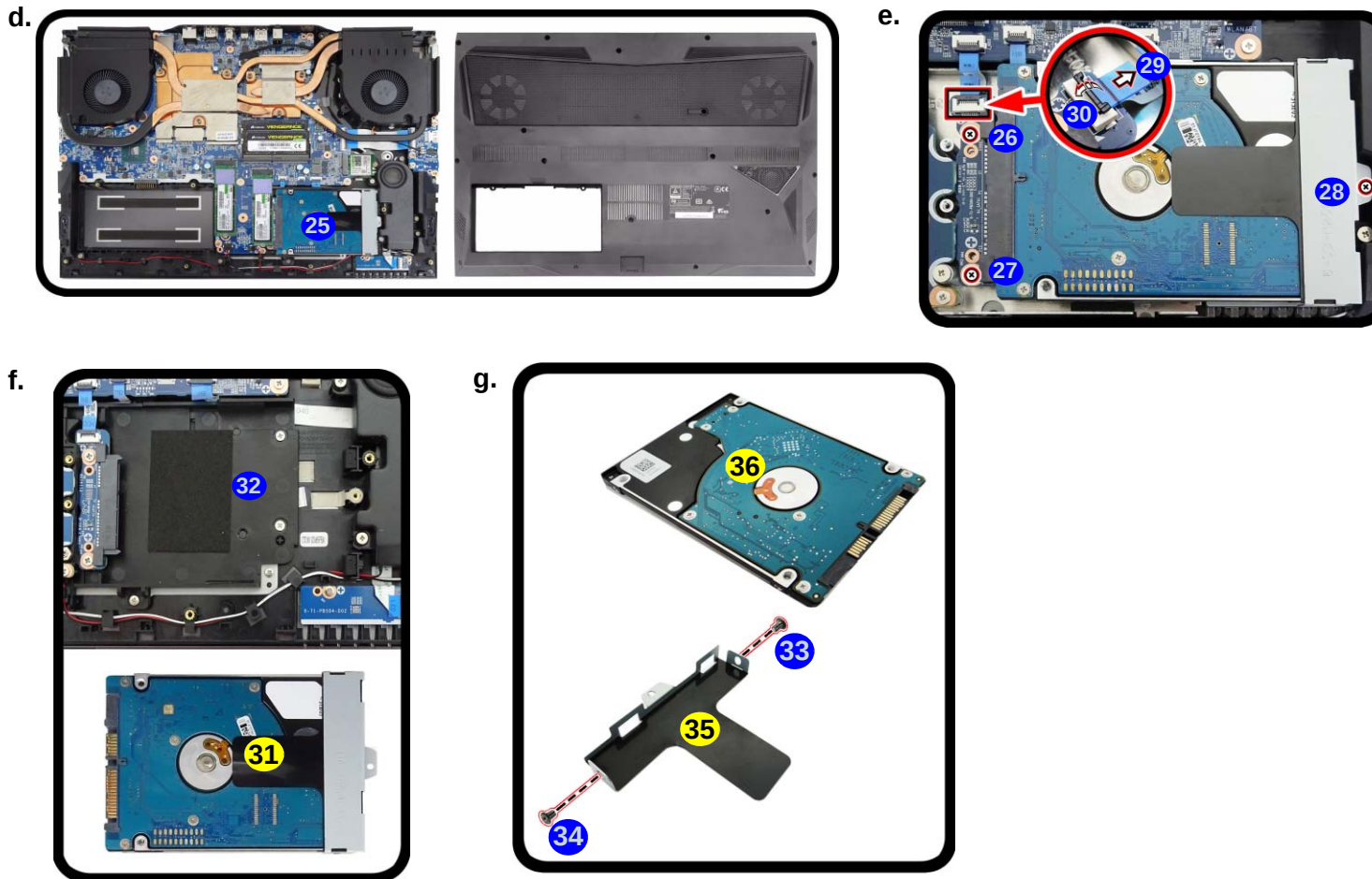
- Turn **off** the computer, turn it over and remove the battery ([page 2 - 5](#)) and keyboard ([page 2 - 5](#)).
- Remove the screw **1** ([Figure 4a](#)).
- Remove the SD card cover **2** and screws **3** - **17** ([Figure 4b](#)).
- Carefully lift the bottom case **18** up in the direction of the arrow at point **19** - **24** and remove it ([Figure 4c](#)).



5. The HDD will be visible at point **25** on the mainboard (**Figure 5d**).
6. Remove screws **26** - **28** from the HDD assembly and disconnect the ribbon cable **29** from the locking collar socket by using a flat-head screwdriver to pry the locking collar pins **30** away from the base (**Figure 5e**).
7. Lift the hard disk assembly **31** out of the bay **32** (**Figure 5f**).
8. Remove screws **33** - **34** and bracket **35** from the hard disk **36** (**Figure 5g**).
9. Reverse the process to install a new hard disk (do not forget to carefully reinsert the bottom case in reverse order (see **Figure 4c**) and to replace the screws).

Figure 5
**HDD Assembly
Removal (cont'd.)**

- d. Locate the HDD.
- e. Remove the screw.
- f. Slide and pull the HDD assembly out of the bay.
- g. Remove the screws and bracket from the HDD.



31. HDD Assembly
35. HDD Bracket
36. HDD

- 5 Screws

Disassembly

Figure 6
RAM Module Removal

- The RAM modules will be visible at point **1** on the mainboard.
- Pull the release latches.
- Remove the module.



Contact Warning

Be careful not to touch the metal pins on the module's connecting edge. Even the cleanest hands have oils which can attract particles, and degrade the module's performance.



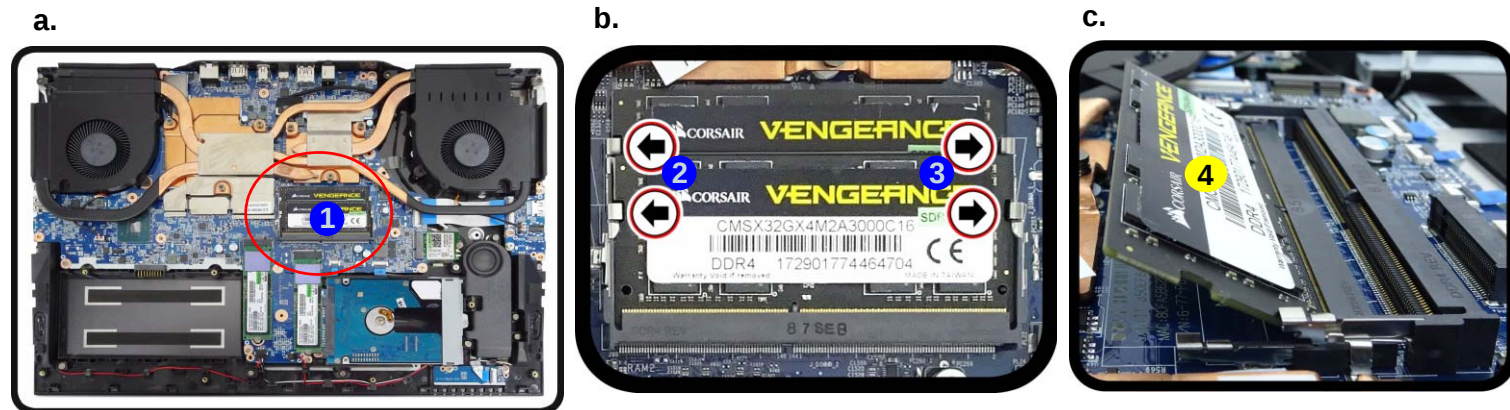
4. RAM Module

Removing the System Memory (RAM)

The computer has four memory sockets for 260 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDR4 Up to 3200 MHz. The main memory can be expanded up to 64GB. The total memory size is automatically detected by the POST routine once you turn on your computer.

Memory Upgrade Process

- Turn **off** the computer, remove the battery ([page 2 - 5](#)), keyboard ([page 2 - 6](#)) and bottom case ([page 2 - 8](#)).
- The RAM-2 modules will be visible at point **1** on the mainboard ([Figure 6a](#)).
- Gently pull the two release latches (**2** & **3**) on the sides of the memory socket in the direction indicated by the arrows ([Figure 6b](#)). The RAM module **4** will pop-up ([Figure 6c](#)), and you can then remove it.
- Pull the latches to release the second module if necessary.
- Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
- The module will only fit one way as defined by its pin alignment. Make sure the module is seated as far into the slot as it will go. **DO NOT FORCE IT**; it should fit without much pressure.
- Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
- Replace the bottom cover and the screws (see [page 2 - 5](#)).
- Restart the computer to allow the BIOS to register the new memory configuration as it starts up.



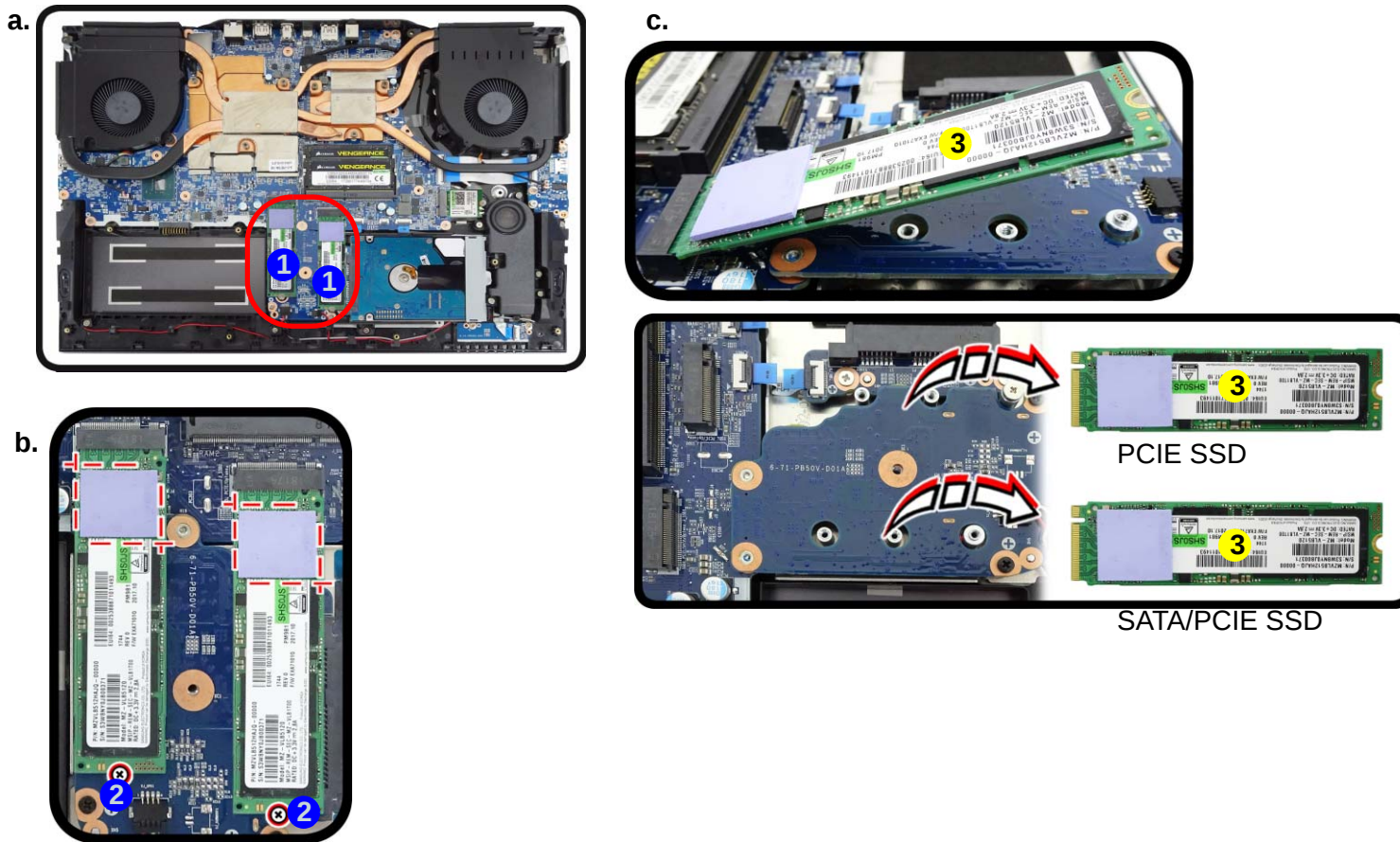
Removing the M.2 SSD Module

M.2 SSD-1 Removal Procedure

1. Turn **off** the computer, remove the battery ([page 2 - 5](#)), keyboard ([page 2 - 6](#)) and bottom case ([page 2 - 8](#)).
2. The M.2 SSD module will be visible at point **1** on the mainboard ([Figure 7a](#)).
3. Remove the screw **2** ([Figure 7b](#)).
4. The M.2 SSD module **3** ([Figure 7c](#)) will pop-up, and you can remove it from the computer.
5. Reverse the process to install a new module (do not forget to replace the screws and thermal pad).

Figure 7
M.2 SSD-1 Module Removal

- a. Locate the M.2 SSD.
- b. Remove the screw.
- c. The M.2 SSD module will pop up.



Disassembly

Figure 8
Wireless LAN
Module Removal

- Locate the WLAN.
- Disconnect the cables and remove the screw.
- The WLAN module will pop up.

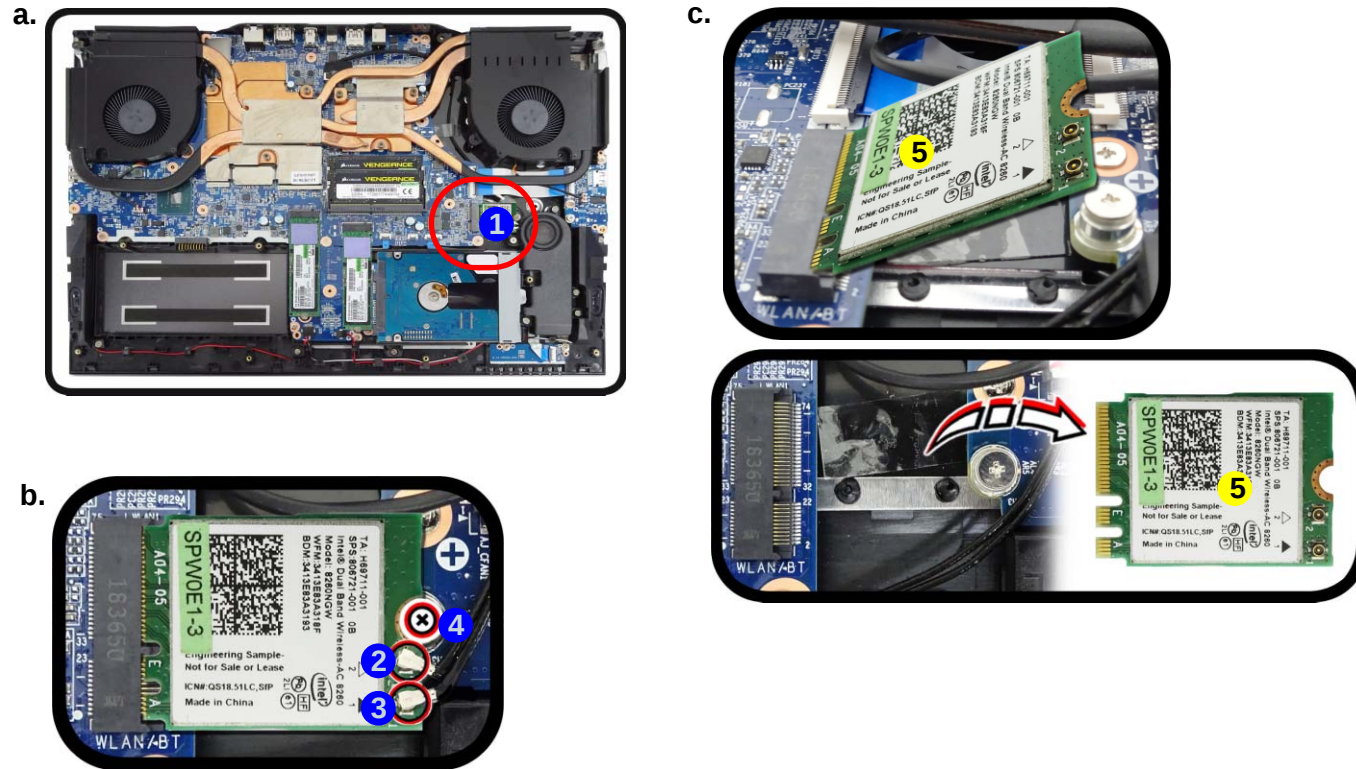
Note: Make sure you reconnect the antenna cable to the “1 + 2” socket (Figure 8b).

5. Wireless LAN Module

- 1 Screw

Removing the Wireless LAN Module

- Turn **off** the computer, remove the battery (page 2 - 5), keyboard (page 2 - 6) and bottom case (page 2 - 8).
- The Wireless LAN module will be visible at point ① on the mainboard (Figure 8a).
- Carefully disconnect the cables ② & ③, and then remove the screw ④ (Figure 8b)
- The Wireless LAN module ⑤ (Figure 8c) will pop-up, and you can remove it from the computer.



Wireless LAN, Combo Module Cables

Note that the cables for connecting to the antennae on WLAN, WLAN & Bluetooth Combo modules are not labelled. The cables/covers (each cable will have either a black or transparent cable cover) are color coded for identification as outlined in the table below.

Module Type	Antenna Type	Cable Color	Cable Cover Type
WLAN/WLAN & Bluetooth Combo	WM 1	Black	Transparent
	WM 2	Black	White

Cable 1 is usually connected to antenna 1 on the module, and cable 2 to antenna 2.