

MANUAL

Penguin J4 GNU/Linux Laptop



Important Notes: Read First



Support

Early releases of GNU/Linux may not have full support or may require additional Steps to get working.

See ThinkPenguin.com/support

Ubuntu 20.04, 20.10, Linux Mint 20.x, & Most Derived Distributions

i7 Variant: An OEM kernel is temporarily required:

```
apt install linux-oem-20.04 && sudo reboot 0
```

i5 Variant: A HWE kernel update is temporarily required:

```
sudo apt install linux-image-generic-hwe-20.04-edge && sudo reboot 0
```

Trisquel 9.x

At the time of publication Trisquel 9 only included support in the distribution's repository and therefore installation is generally not possible.

Future editions of Trisquel however should be supported out of the box.

Other Distributions

For distributions with a recent software stack such as Debian (Testing), Arch, Parabola GNU/Linux-libre, Manjaro, Fedora, etc. there is already support for the laptop with at least the most recent editions "out of the box". Simply install the distribution utilizing the distributions normal installation procedures.

J4 GNU/Linux Laptop **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 *Penguin J4 GNU/Linux Laptop*.

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.

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 with an AC Input of 100 - 240V, 50 - 60Hz, DC Output of 19V, 3.42A (**65 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.

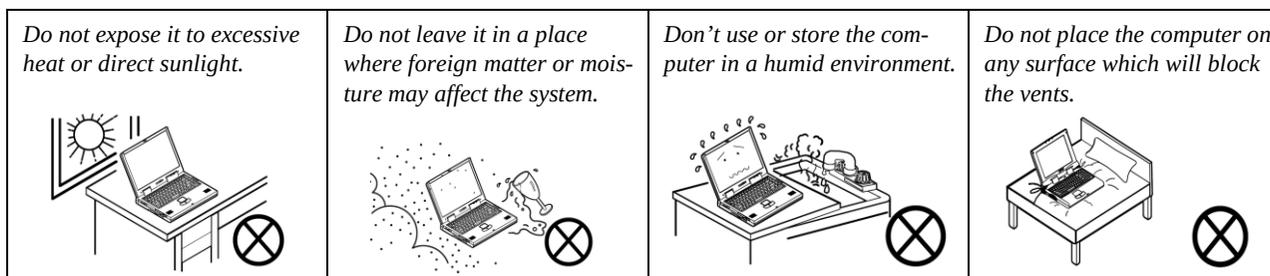
Instructions for Care and Operation

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

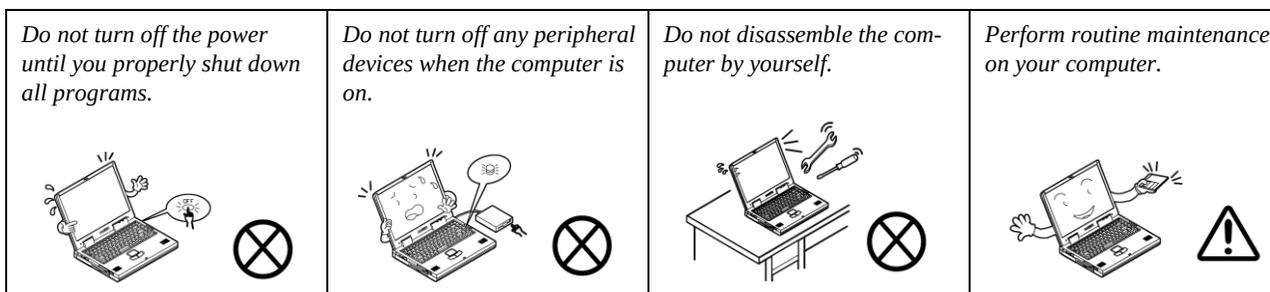
1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.



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.

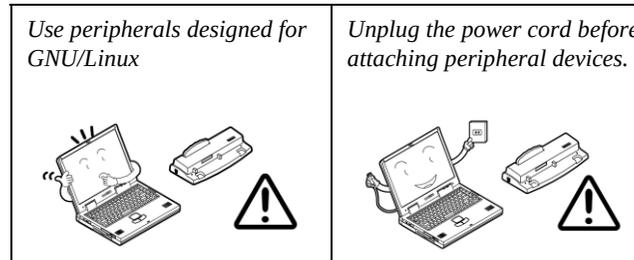


3. **Follow the proper working procedures for the computer.** Shut the computer down properly and don't forget to save your work. Remember to periodically save your data as data may be lost if the battery is depleted.



Preface

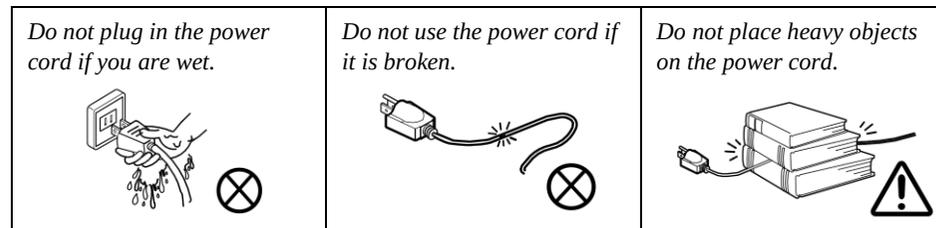
4. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.
5. **Take care when using peripheral devices.**



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  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 need to consult additional documentation at: <https://www.thinkpenguin.com/support>

System Startup

1. Remove all packing materials.
2. Place the computer on a stable surface.
3. Securely attach any peripherals you want to use with the computer (e.g. keyboard and mouse) to their ports.
4. **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 right 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.
5. Use one hand to raise the lid/LCD to a comfortable viewing angle (do not exceed 180 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).
6. Press the power button on the right side of the computer to turn the computer “on” (note that the lid/LCD must be open for the power button to function).

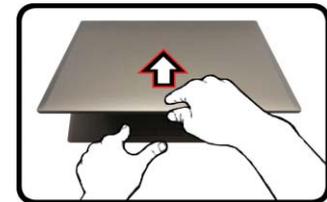


Powering the Computer On

After every disassembly, make sure that the bottom case's screws are all inserted and tightened before turning 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 using the **Shut down** command or option in GNU/Linux. This will help prevent hard disk or system problems.

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Chapter 1: Introduction

Overview

This manual covers the information you need to service or upgrade the Penguin J4 GNU/Linux Laptop.

Operating systems (e.g. *GNU/Linux*, etc.) have their own manuals as do application softwares (e.g. LibreOffice, etc)

If you have questions about these programs, you should consult the appropriate documentation, manuals, and books.

For additional documentation, manuals, and books on specific applications check out <http://www.thinkpenguin.com/>

The ***Penguin J4 GNU/Linux Laptop*** 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.



CPU

The CPU is not a user serviceable part. Accessing the CPU in any way may violate your warranty.

Processor Options

Intel® Core™ i7 Processor

i7-1165G7 (2.80GHz), TDP 28W

Intel® Core™ i5 Processor

i5-1135G7 (2.40GHz), TDP 28W

BIOS

128Mb SPI Flash ROM

Insyde BIOS

Memory

Dual Channel DDR4

Two 260 Pin SO-DIMM Sockets

Supporting up to **3200MHz DDR4** Memory

Expandable Memory from **8GB** up to **64GB**

Compatible with 4GB, 8GB, 16GB or 32GB Modules

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

LCD

LCD, 14" (35.56cm), 16:9, FHD (1920x1080)

Card Reader

6-In-1 Card Reader - MMC/ RS MMC- SD/ Mini SD / SDHC/ SDXC

*Note: Some of these cards require adapters, which are usually supplied with the cards.

Storage

One M.2 **PCIe Gen4 x4** Solid State Drive (SSD)

Video Adapter

Intel Iris™ Xe Graphics (i7-1165G7, i5-1135G7)

HDR Support

Pointing Device

Built-in Clickpad (with PTP Multi Gesture & Scrolling Functionality)

Keyboard

A4 size isolated illuminated keyboard (**White-LED**)

Audio

High Definition Audio Compliant Interface

2 * Built-In Speakers

Built-In Array Microphone

Security

Security (Kensington® Type) Lock Slot

BIOS Password

M.2 Slots

Slot 1 for **WLAN** Module

Slot 2 for **PCIe Gen4 x4 SSD**

Communication

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

WLAN M.2 Modules:

Atheros® Wireless-N 802.11n QCA9565 Module

Interface

One Thunderbolt 4 Port with Power Delivery DC-In (Type C)
One USB 3.2 Gen 2 Type-C Port*
Two USB 3.2 Gen 1 Type-A Ports
One HDMI-Out Port
One 2-In-1 Audio Jack (Headphone / Microphone)
One RJ-45 LAN Jack
One DC-in Jack

Power

Embedded 4 Cell Smart Lithium-Ion Battery Pack, 49WH
Full Range AC/DC Adapter
AC Input: 100 - 240V, 50 - 60Hz
DC Output: 19V, 3.42A (**65W**)

Environmental Spec

Temperature

Operating: 5°C - 35°C
Non-Operating: -20°C - 60°C

Relative Humidity

Operating: 20% - 80%
Non-Operating: 10% - 90%

Dimensions & Weight

324.9mm (w) * 225mm (d) * 17.6mm (h)
1.35g (Unit and 49WH Battery)

Introduction

Figure 1
Top View

External Locator - Top View with LCD Panel Open

1. Camera
2. *Camera LED
**When the PC camera is in use, the LED will be illuminated in white.*
3. Built-In Array Microphone
4. Display
5. Keyboard
6. Touchpad & Buttons



External Locator - Front & Right Side Views

Figure 2
Front View

FRONT VIEW



Figure 3
Right Side View

RIGHT SIDE VIEW



1. Speaker
2. 2-In-1 Audio Jack (Headphone / Microphone)
3. USB 3.2 Gen 2 Type-C Port
4. USB 3.2 Gen 1 Type-A Port
5. HDMI-Out Port
6. Power Button
7. DC-In Jack
8. LED Indicator

Introduction

External Locator - Left Side & Rear View

Figure 4
Left Side View

1. Security Lock Slot
2. RJ-45 LAN Jack
3. USB 3.2 Gen 1 Type-A Port
4. SD Card Reader
5. Thunderbolt 4 Port with Power Delivery (DC-In)*
6. Speaker



Figure 5
Rear View

1. Vent



External Locator - Bottom View



Figure 6
Bottom View

1. Vent
2. RJ-45 LAN Jack
3. Speakers



Overheating

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

Introduction

Figure 7
Mainboard Top
Key Parts

1. KBC-ITE IT5570

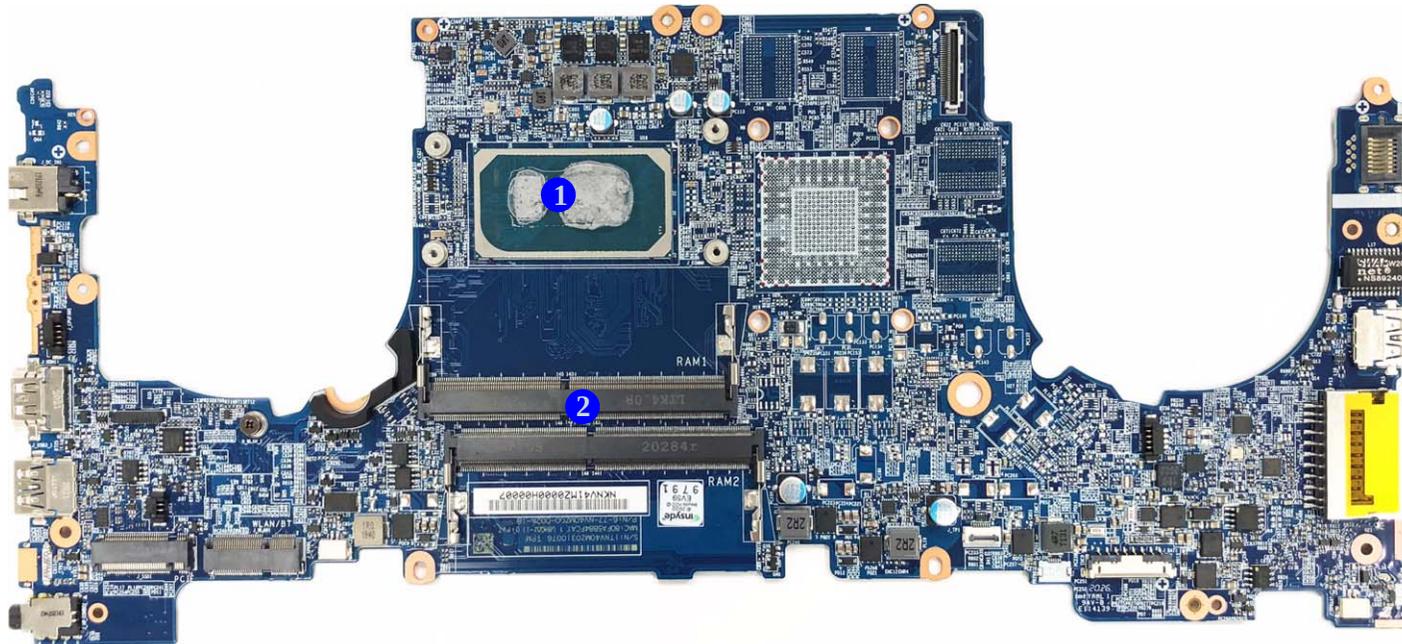
Mainboard Overview - Top (Key Parts)



Mainboard Overview - Bottom (Key Parts)

Figure 8
Mainboard Bottom
Key Parts

1. CPU
2. Memory Slots
DDR4 SO-DIMM

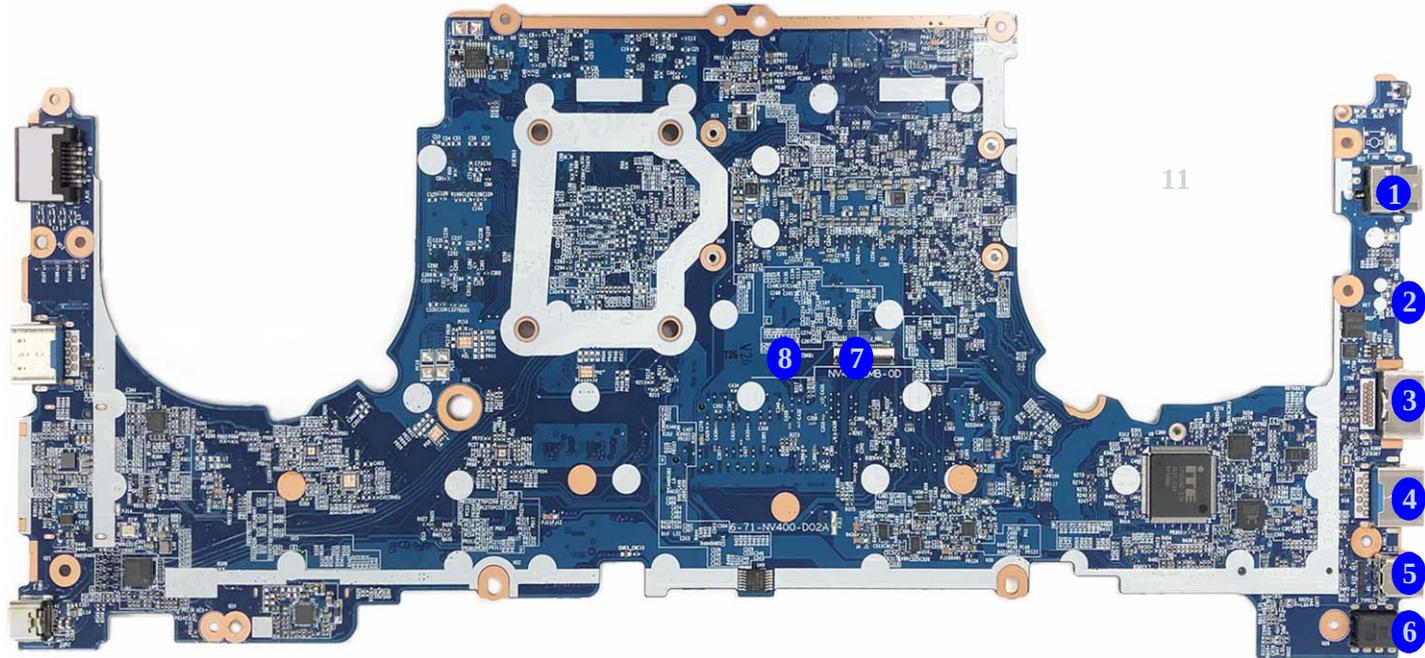


Introduction

Figure 9
**Mainboard Top
Connectors**

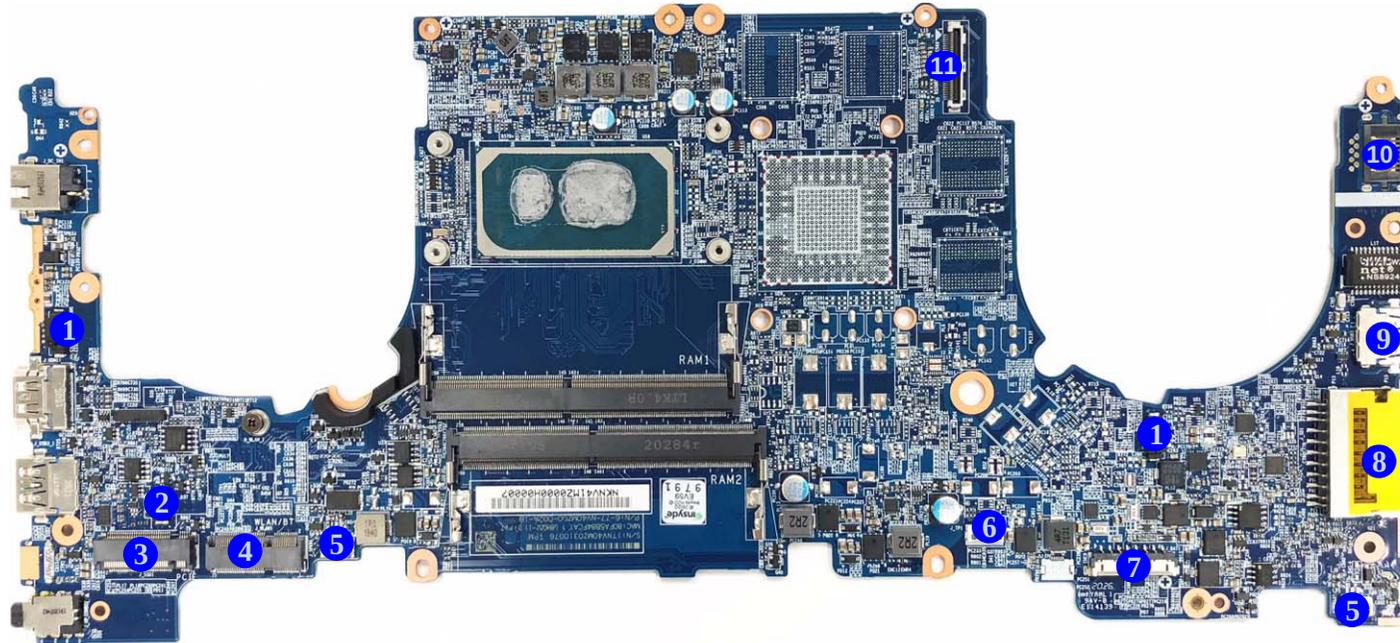
1. DC-In Jack
2. Power Button
3. HDMI-Out Port
4. USB 3.1 Gen 2 Type-A Port
5. USB 3.1 Gen 2 Type-C Port
6. 2-In-1 Audio Jack (Headphone / Microphone)
7. Keyboard Connector
8. LED KB Connector

Mainboard Overview - Top (Connectors)



Mainboard Overview - Bottom (Connectors)

Figure 10
**Mainboard Bottom
Connectors**



1. Fan Connector
2. CMOS Battery Connector
3. M.2 Card Connector
4. WLAN/BT Connector
5. Speaker Connector
6. Touchpad Connector
7. Battery Connector
8. SD Card Reader
9. USB 3.1 Gen 2 Type-A Port
10. RJ-45 LAN Jack
11. LCD Cable Connector

Chapter 2: Disassembly

Overview

This chapter provides step-by-step instructions for disassembling the Penguin J4 GNU/Linux Laptops's parts and subsystems. When it comes to reassembly, reverse the procedures (unless otherwise indicated).

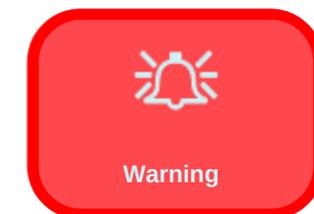
We suggest you completely review any procedure before you take the computer apart.

Procedures such as upgrading/replacing the RAM, optical device and hard disk are included.

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.



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 laptop:

- 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 [page 2 - 6](#)

To remove the System Memory:

1. Remove the battery [page 2 - 5](#)
2. Remove the system memory [page 2 - 7](#)

To remove the Wireless LAN Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the WLAN [page 2 - 9](#)

To remove and install the M.2 SSD Module:

1. Remove the battery [page 2 - 5](#)
2. Remove the SSD-1 module [page 2 - 11](#)

To remove the CCD Module:

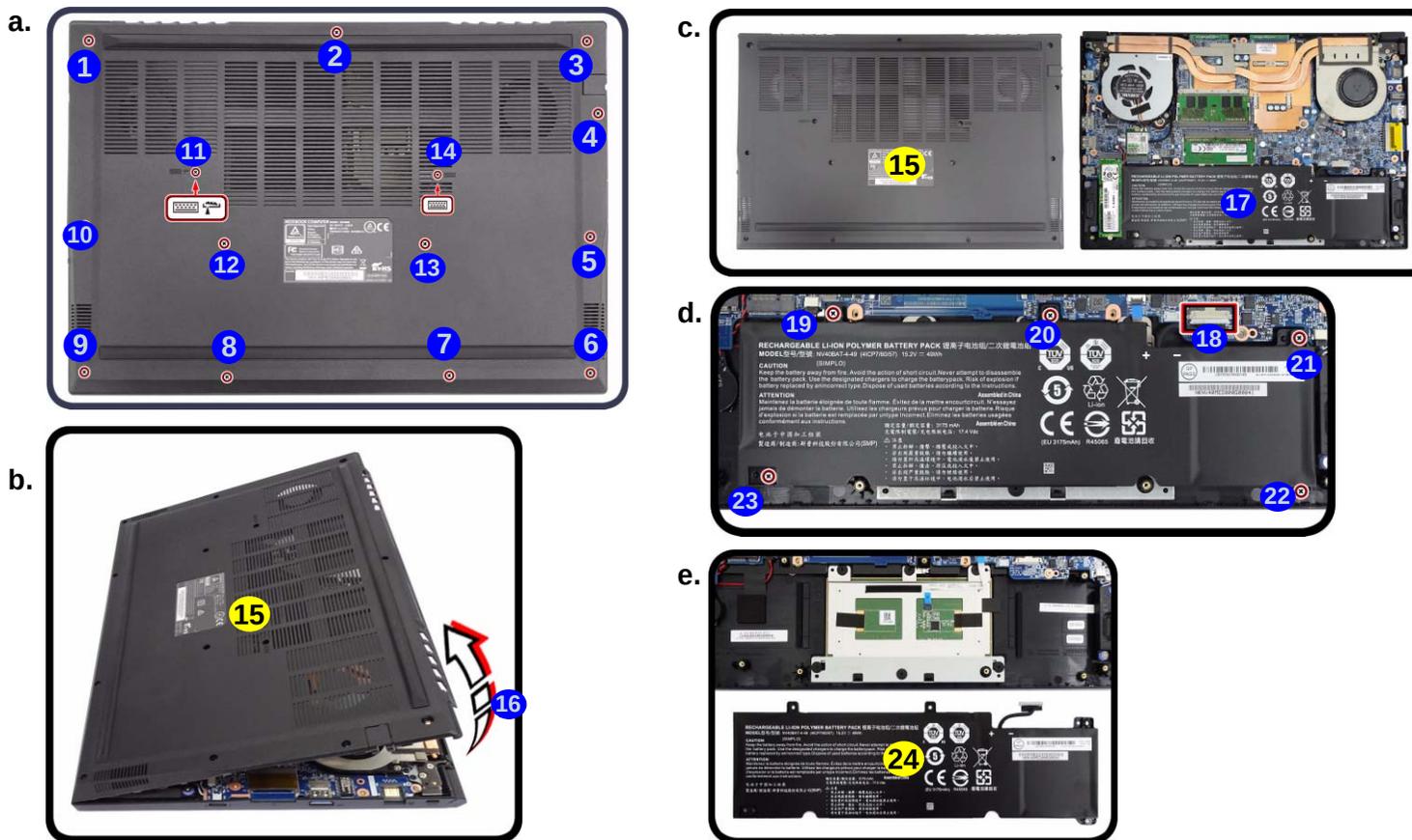
1. Remove the battery [page 2 - 5](#)
2. Remove the CCD module [page 2 - 12](#)

Removing the Battery

1. Turn **off** the computer, turn it over.
2. Remove screws **1** - **14** on the bottom case (*Figure 1a*).
3. Carefully lift the bottom case **15** up from point **16** (*Figure 1b*).
4. The battery will be visible at point **17** on the computer (*Figure 1c*).
5. Carefully disconnect the cable **18**, then remove screws **19** - **23** (*Figure 1d*).
6. Lift the battery **24** off the computer (*Figure 1e*).
7. 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. Remove the bottom case.
- c. Locate the battery.
- d. Disconnect the cable and remove the screws.
- e. Lift the battery off the computer.



Powering the Computer On

After every disassembly, make sure that the bottom case's screws are all inserted and tightened before turning the computer on.



15. Bottom Case
24. Battery

- 19 Screws

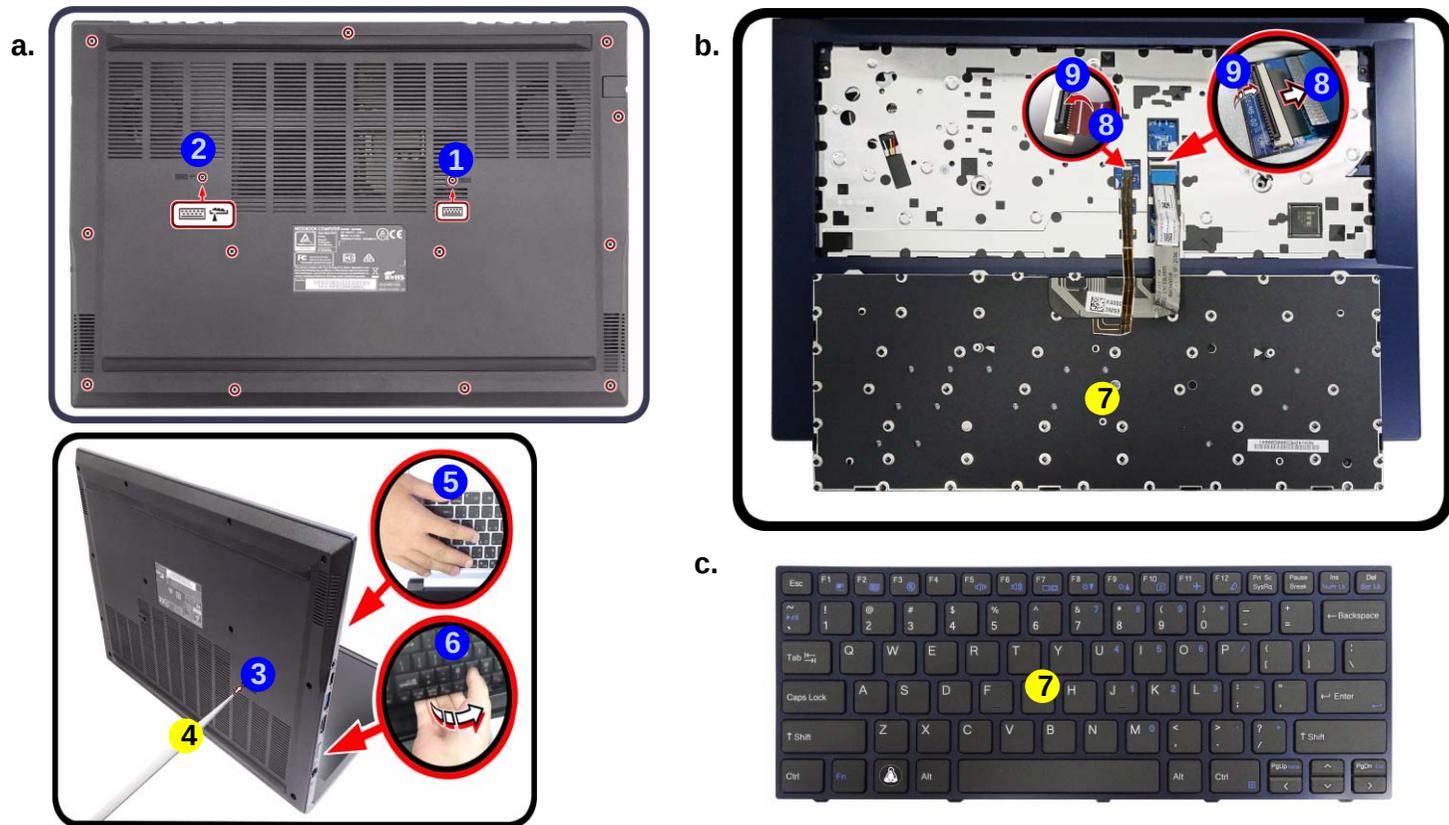
Disassembly

Figure 2
Keyboard Removal

- Remove the screws and press at point 3 to un-snap keyboard from the bottom of the computer .
- Lift the keyboard up and disconnect the keyboard ribbon cable from the locking collar socket.
- Remove the keyboard.

Removing the Keyboard

- Turn off the computer, turn it over, remove the battery (page 2 - 5).
- Remove screws 1 - 2 from the bottom of the computer
- Open it up with the LCD on a flat surface before pressing at point 3 to release the keyboard module (use a special eject stick 4 size - $\varnothing 2.0\text{mm}$ to do this, do not exert too much pressure to avoid damaging the keyboard) while supporting 5 the keyboard and then releasing the keyboard in the direction of the arrow 6 as shown (Figure 2a)
- Carefully lift the keyboard 7 up, being careful not to bend the keyboard ribbon cable 8. Disconnect the keyboard ribbon cable 8 from the locking collar socket by using a flat-head screwdriver to pry the locking collar pins 9 (Figure 2b).
- 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
- 7. Keyboard

- 2 Screws

Removing the System Memory (RAM)

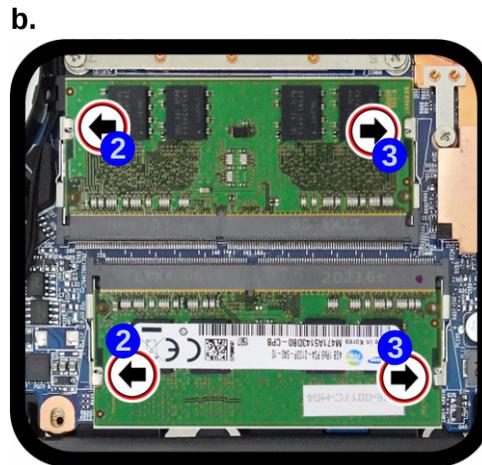
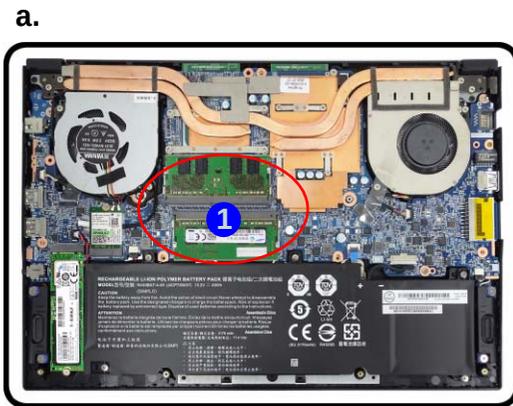
The computer has two memory sockets for 260 pin Small Outline Dual In-line Memory Modules (SO-DIMM) supporting DDR4 3200MHz. The main memory can be expanded up to 32GB. The total memory size is automatically detected by the POST routine once you turn on your computer.

Memory Upgrade Process

1. Turn **off** the computer, turn it over to remove the battery ([page 2 - 5](#)).
2. The RAM modules will be visible at point **1** on the mainboard ([Figure 3b](#)).
3. Gently pull the two release latches (**2** & **3**) on the sides of the memory socket in the direction indicated by the arrows ([Figure 3b](#)).
4. The RAM module **4** will pop-up ([Figure 3c](#)), and you can then remove it.

Figure 3
RAM Module Removal

- a. The RAM modules will be visible at point **1** on the mainboard.
- b. Pull the release latches.
- c. 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

Disassembly

5. Pull the latches to release the second module if necessary.
6. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory slot.
7. 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.
8. Press the module in and down towards the mainboard until the slot levers click into place to secure the module.
9. Replace the bottom case and the screws (see [page 2 - 5](#)).
10. Restart the computer to allow the BIOS to register the new memory configuration as it starts up.

Removing the Wireless LAN Module

1. Turn **off** the computer, turn it over to remove the battery ([page 2 - 5](#)).
2. The Wireless LAN module will be visible at point **1** on the mainboard ([Figure 4a](#)).
3. Carefully disconnect the cables **2** & **3**, and then remove the screw **4** ([Figure 4b](#)).
4. The Wireless LAN module **5** ([Figure 4c](#)) 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 all the screws and bottom cover).



Figure 4
Wireless LAN Module Removal

- a. Locate the WLAN.
- b. Disconnect the cable and remove the screw.
- c. The WLAN module will pop up and lift it out of the computer.

Note: Make sure you reconnect the antenna cable to the “1 + 2” socket ([Figure 4b](#)).



5. Wireless LAN Module

- 1 Screw

Wireless LAN Cables

Note that the cables for connecting to the antennae on WLAN 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	WL 1	Black	Transparent
	WL 2	Black	White

Cable 1 is usually connected to antenna 1 (Main) on the module, and cable 2 to antenna 2 (Aux).

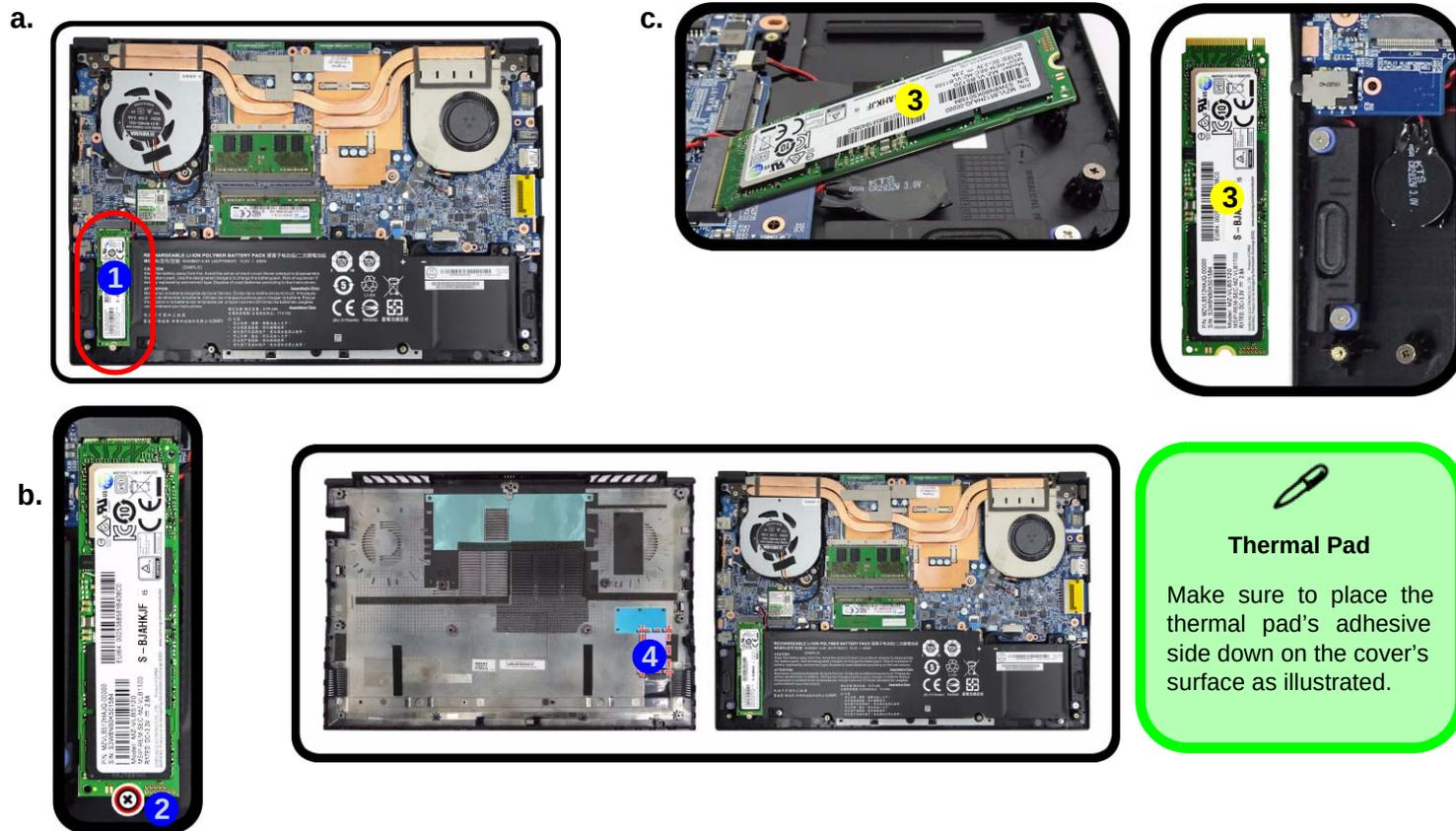
Removing and Installing the M.2 SSD Module

M.2 SSD Removal Procedure

1. Turn **off** the computer, turn it over to remove the battery ([page 2 - 5](#)).
2. The M.2 SSD module will be visible at point **1** on the mainboard ([Figure 5a](#)).
3. Remove the screw **2** ([Figure 5b](#))
4. The M.2 SSD module **3** ([Figure 5c](#)) 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 thermal pad **4** (as shown below), screws and bottom cover).

Figure 5
M.2 SSD Module Removal

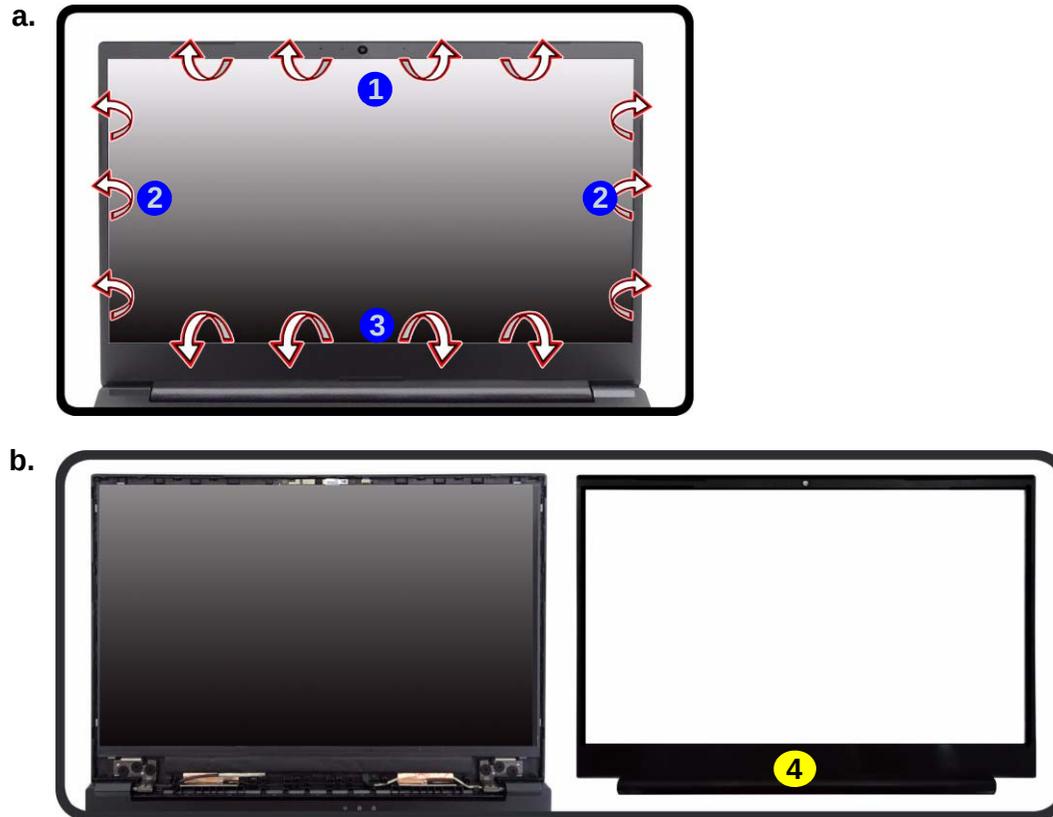
- a. Locate the M.2 SSD.
- b. Remove the screw.
- c. The M.2 SSD module will pop up.



Disassembly

Figure 6
CCD Removal

- a. Run your fingers around the inner frame of the LCD panel at the points indicated by the arrows.
 - b. Lay the computer down on a flat surface with the top case up forming a 130 degree angle. Lift the LCD front panel upwards.
1. Turn off the computer, turn it over to remove the battery ([page 2 - 5](#)).
 2. Lift up the inner frame and run your fingers around the inner frame of the LCD panel at the points as indicated by the arrows **1** - **3** ([Figure 6a](#)).
 3. Lay the computer down on a flat surface with the top case up forming a 90 degree angle. Carefully lift and remove the LCD front cover **4** upwards ([Figure 6b](#)).



4. Disconnect the cable **5** (*Figure 7c*).
5. Remove the CCD module **6** (*Figure 7d*).
6. Reverse the process to install a new CCD module.



Figure 7
CCD Removal
(cont'd.)

- c. Disconnect the cable.
- d. Remove the CCD module.

