

E22003

First Edition / September 2023

# IN SEARCH OF INCREDIBLE



Service Manual



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This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

# ***Chapter 1:***

## ***Introduction***

## Disclaimer

ASUS is not responsible for direct, indirect, intentional or unintentional damages resulting from improper installation and operation.

## Safety precautions

- Before handling components, use a grounded wrist strap or touch a safely grounded object to avoid damaging them due to static electricity.
- Keep liquids or moisture away from your Mini PC to avoid short circuits.
- Remove rings, watches, and any other metal objects from your hands.
- Hold components by the edges to avoid touching the ICs.
- Properly install all components before connecting the AC power.
- Do not use power adapters or batteries from other devices to reduce the risk of injury to persons due to fire or explosion. Use only certified power adapters or batteries supplied by the manufacturer or authorized retailers.
- Detach all clips or flaps before removing cables to prevent damage.



- Disconnect cables, connectors, and power plugs by pulling the plug evenly to avoid damage.
- Use screws with the correct specifications on your Mini PC to prevent damage.
- Confirm that the cable orientation is correct before connecting any cables.
- Photograph the appearance of cables, cable routing, connectors, and screws for later reference before proceeding with each step.

# Pre-repair checklist

1. Read the entire manual before starting any service procedures and follow all instructions.
2. Back up your Mini PC.
3. Turn off your Mini PC.
4. Place your Mini PC on a stable surface.
5. Disconnect all connected peripherals and cables.

---

## IMPORTANT!

- Purchase replacement components from an authorized retailer of this Mini PC to ensure maximum compatibility and reliability.
  - Refer to <https://www.asus.com> for a list of compatible components.
- 

## NOTE:

- The illustrations are for reference only.
  - Product and component images are for illustrative purposes only. The actual appearance and specifications may vary depending on the model.
  - The procedures described in this manual may vary depending on the model configuration and may not reflect the entire servicing process. To service components that are not covered in this manual, please visit an authorized service center for assistance.
  - Keep all adhesive tape, insulating materials, screws, and other removable items in a safe place until the service procedure is completed, as they may be needed during installation.
-

## Diagnostics tool

Run system diagnosis in MyASUS after replacing any components to ensure that all components are working properly.

For more information, visit <https://www.asus.com/support/myasus-deeplink/>.

## Installation tools



**Screwdriver**

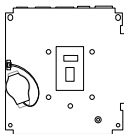


**Plastic blade**



**Tweezers**

# Major components



**Motherboard**



**HDD / SSD**



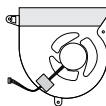
**Memory Module**



**M.2 SSD module**



**Wireless card**



**Fan module**



**Heatsink**



**Battery**



**Power button module**



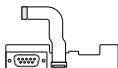
**DP module**



**VGA module**



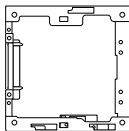
**LAN module**



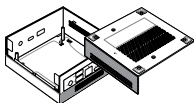
**COM module**



**Microphone  
module**



**Metal support  
bracket**



**Chassis**



**Power adapter  
and cord**

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no text or other markings on the paper.

## ***Chapter 2:***

## ***Service Procedures***

# Bottom cover

## Before you begin

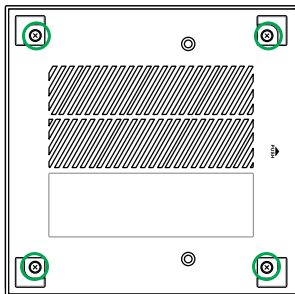
Read the **Safety Precautions** and complete the **Pre-repair Checklist**.

## Screw list

- ⊕ M2.5 X 6L (4 pcs)

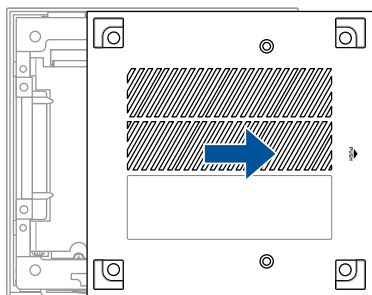
## Removal

1. Loosen the screw(s) from the Mini PC's bottom cover.



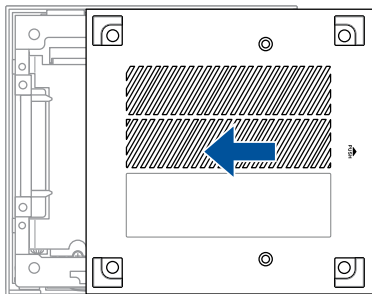


2. Slowly and with extreme care, slide the bottom cover in the direction shown in the illustration to release it from the metal support bracket.

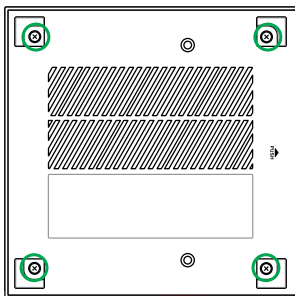


## Installation

1. Align the three tabs on the bottom cover to the corresponding elongated slots on the metal support bracket.
2. Apply steady downward pressure while carefully sliding the bottom cover in the direction shown in the illustration.



3. Once the screw holes on the bottom cover align with those on the metal support bracket, secure the bottom cover with the screw(s) removed earlier.



# HDD or SSD

## Before you begin

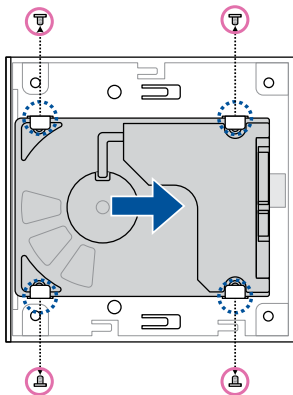
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover

## Screw list

- ⊕ M3 X 4L (4 pcs)

## Removal

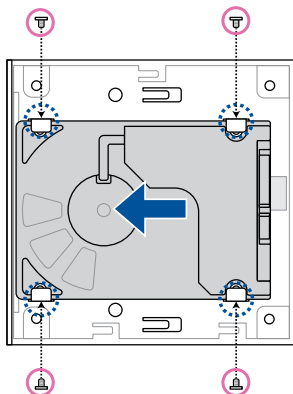
1. Remove the screw(s) securing the HDD or SSD in place.



2. Remove the HDD or SSD.

## Installation

1. Align the HDD or SSD with the storage bay on the bottom cover of your Mini PC.
2. Insert the HDD or SSD into the storage bay.
3. Secure the HDD or SSD with the screw(s) you removed earlier.



4. Install the component(s) you removed in **Before you begin**.

# Memory module(s)

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**IMPORTANT!** You can only install DDR4 SO-DIMMs to the Mini PC's DIMM slots.

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**NOTE:** We recommend that you install the memory module(s) under professional supervision. You may also visit an authorized service center for further assistance.

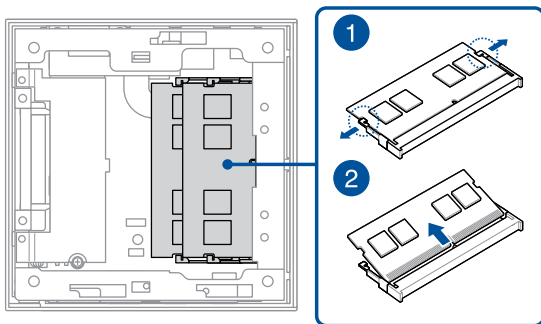
---

## Before you begin

1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover

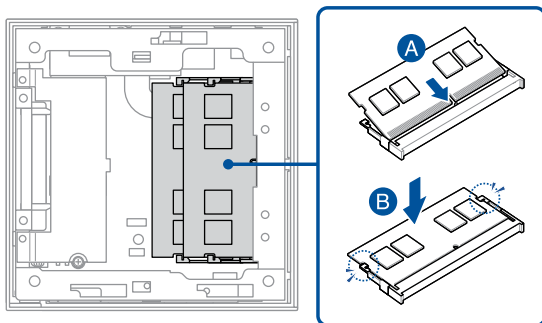
## Removal

1. Simultaneously press the two retaining clips outward.
2. Remove the module from the slot.
3. Repeat the same steps to remove the other module.



## Installation

1. Align and insert the new memory module into the slot (A), and press down (B) until it is securely seated in place.



2. Repeat the same steps to install a second memory module.
3. Install the component(s) you removed in **Before you begin**.

## M.2 SSD heat spreader

### Before you begin

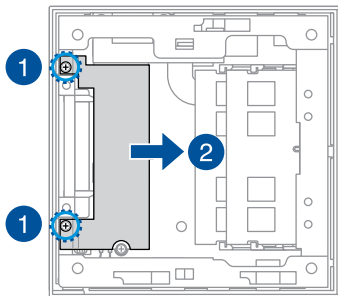
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover

### Screw list

- ⊕ M2 X 3L (2 pcs)

### Removal

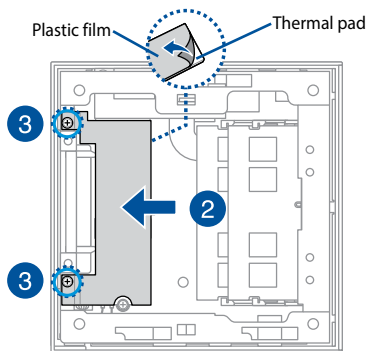
1. Remove the screw(s) from the heat spreader.
2. Slide the heat spreader in the direction as shown, and then lift it to remove it.





## Installation

1. Before replacing the heat spreader, ensure to remove the plastic film on the thermal pad, if one exists.
2. Slide the heat spreader in the direction as shown.
3. Secure the heat spreader with the screw(s) removed earlier.



4. Install the component(s) you removed in **Before you begin**.

---

**NOTE:**

- The specifications for the thermal pad used on the heat spreader are as follows:

Thickness:	1.0 mm
Size:	67 mm x 18 mm
Thermal conductivity:	> 2 W/mK
Hardness:	< 40
  - To replace the thermal pad yourself, check with an ASUS Service Partner near you ([www.asus.com/support](http://www.asus.com/support)) for the availability of replacement thermal pads.
  - The availability of replacement parts may vary depending on the country.
- 

**WARNING!** Heat dissipation performance may still vary even when you have replaced the thermal pad with one that meets the specifications provided. To prevent potential damage to the M.2 SSD, you should have the thermal pad replaced by a service center near you.

---

## M.2 SSD

### Before you begin

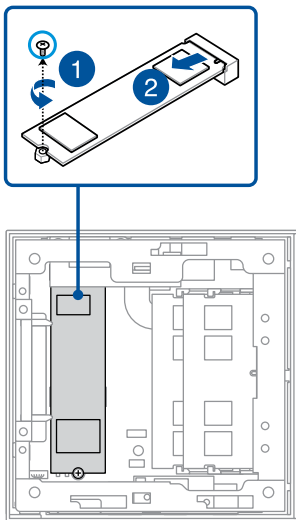
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover
  - M.2 SSD heat spreader

### Screw list

- ⊕ M2 X 3L (1 pc)

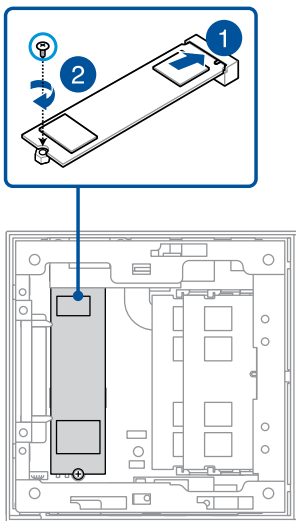
## Removal

1. Remove the screw from the standoff.
2. Remove the M.2 SSD from the chassis.



## Installation

1. Align and insert the M.2 SSD.
2. Gently push down the M.2 SSD on top of the standoff, and secure it with the screw removed earlier.



# Wireless card

## Before you begin

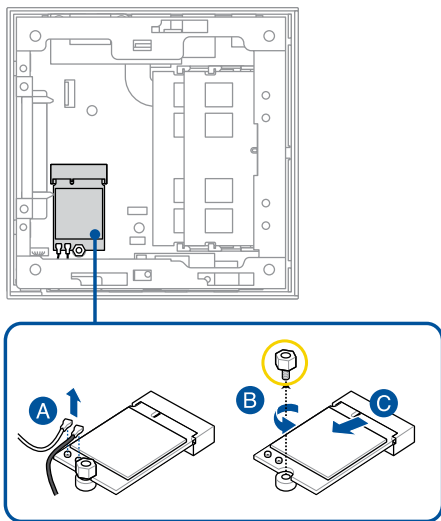
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover
  - M.2 SSD in the chassis (if one is installed)

## Screw list

- ☉ M2 X 2.4L (1 pcs)

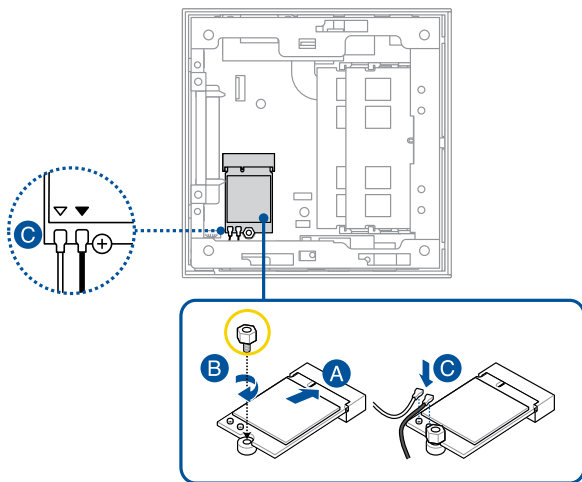
## Removal

Remove the wireless card as shown.



## Installation

1. Install the wireless card as shown.



---

### NOTE:

- Connect the black antenna cable to the wireless card connector marked with a black triangle ▲, and connect the white antenna cable to the one marked with a white triangle △.
  - Connecting antennas to your wireless card may strengthen the wireless signal.
  - A soft clicking sound indicates that the antenna has been securely attached to the wireless card.
- 

2. Install the component(s) you removed in **Before you begin**.



# Metal support bracket

## Before you begin

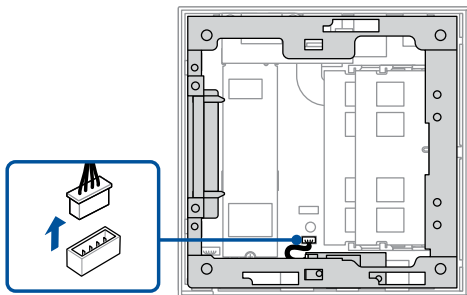
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover
  - M.2 SSD heat spreader

## Screw list

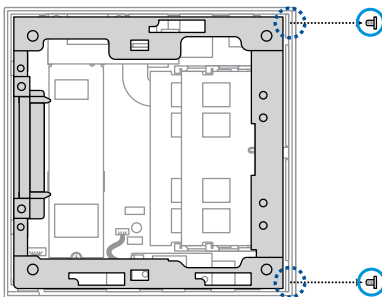
- ⊕ M2 X 3L (2 pcs)

## Removal

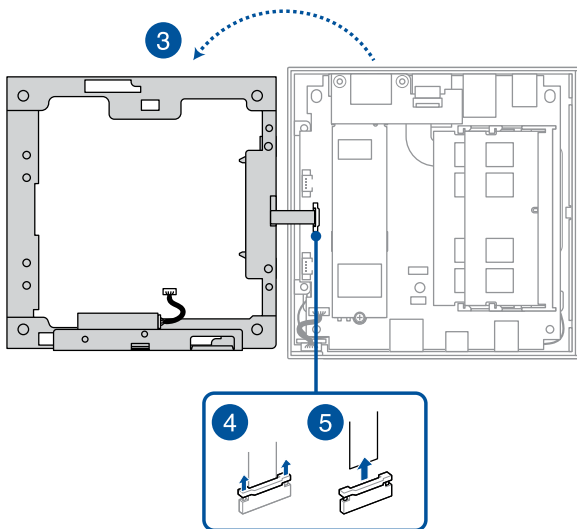
1. Disconnect the memory card connector.



2. Remove the screw(s) securing the metal support bracket in place.



3. Slowly lift the metal support bracket in the direction shown in the illustration to access the flexible flat cable (FFC) connector.
4. Pull the latch on the FFC connector up.
5. Remove the FFC.



## Installation

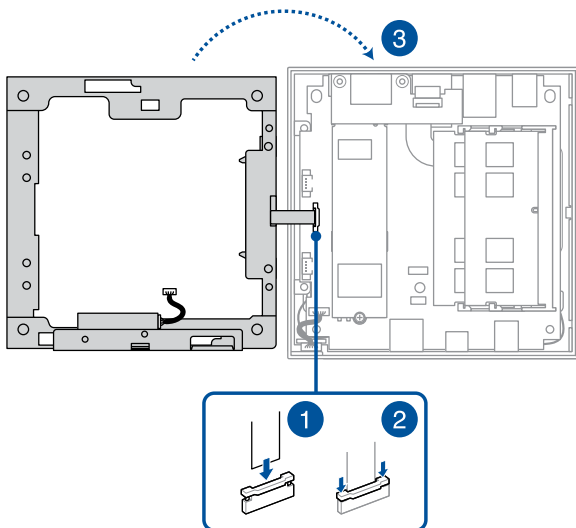
1. Install the FFC into the FFC connector as shown.
2. Push down the the latch to secure the FFC in place.

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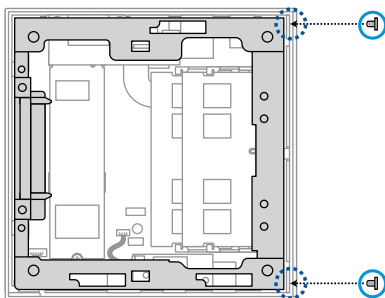
**WARNING!** Ensure the FFC is connected in the correct orientation with the gold fingers facing outwards.

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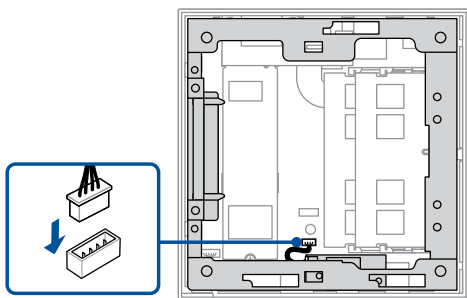
3. Position the metal support bracket back in place.



4. Secure the metal support bracket with the screw(s) you removed earlier.



5. Connect the cable from the memory card module to the memory card connector on the motherboard.



6. Install the component(s) you removed in **Before you begin**.

# Memory card module (on selected models)

## Before you begin

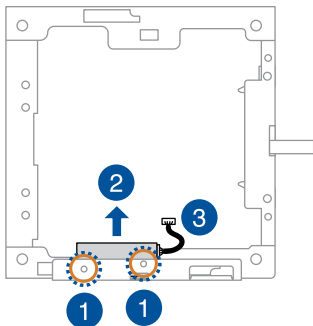
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover
  - M.2 SSD heat spreader
  - Metal support bracket

## Screw list

- ⊕ M2.5 X 3L (2 pcs)

## Removal

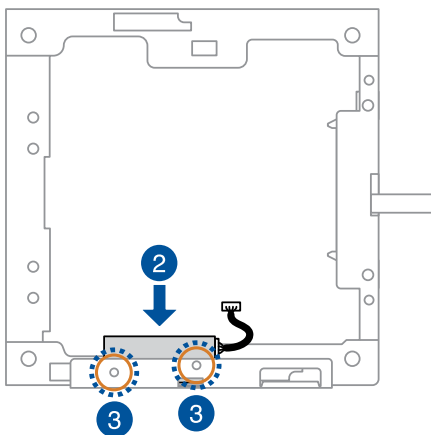
1. Remove the screw(s) securing the memory card module in place.
2. Carefully slide out the module.



3. Disconnect the memory card cable from the module.

## Installation

1. Connect the memory card cable that was removed earlier to the connector on the memory card module.
2. Insert the memory card module into the opening on the metal support frame for it.
3. Secure the module to the metal support frame with the screw(s) removed earlier.



4. Install the component(s) you removed in **Before you begin**.



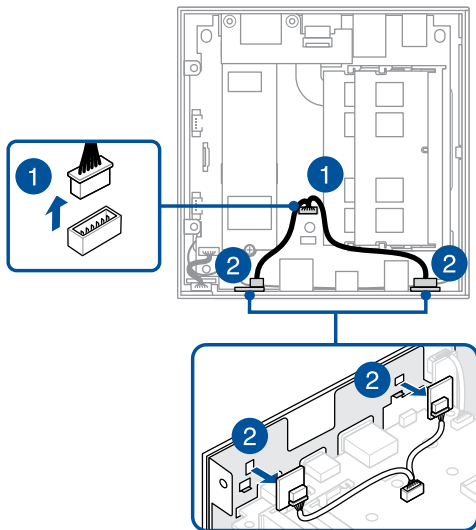
# Microphone modules (on selected models)

## Before you begin

1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover
  - M.2 SSD heat spreader
  - Metal support bracket

## Removal

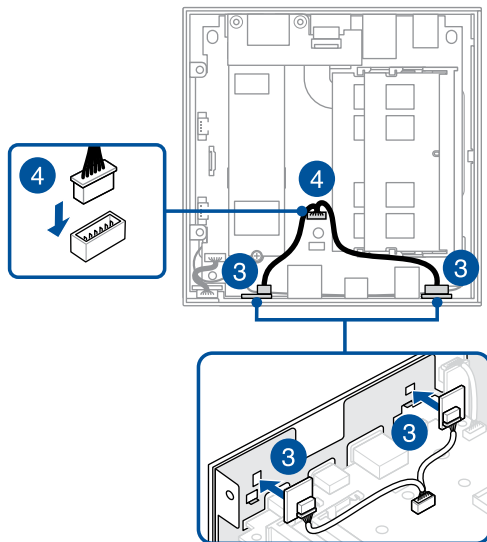
1. Disconnect the microphone cable from the motherboard.
2. Remove the two microphone modules that are taped to the chassis.



3. Disconnect the microphone cable from the microphone modules.

## Installation

1. Connect the microphone cable that was removed earlier to the connectors on the microphone modules.
2. Remove the liner from the double-sided tape on the microphone modules (if they exist).
3. Position the microphone modules as shown, and press them firmly against the inside of the chassis.
4. Connect the free end of the microphone cable to the motherboard.



5. Install the component(s) you removed in **Before you begin**.

# DP module (on selected models)

## Before you begin

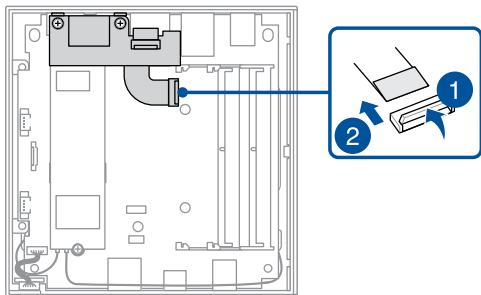
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover
  - Metal support bracket

## Screw list

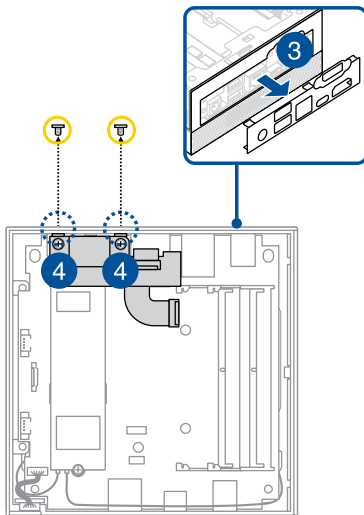
- ⊕ M2 X 3L (2 pcs)

## Removal

1. Flip open the connector flap.
2. Remove the flexible printed circuit (FPC).



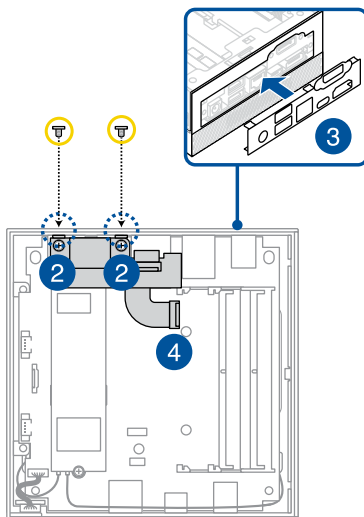
3. Use a plastic blade to pry out the rear panel.
4. Remove the screw(s) securing the module in place.



5. Remove the module.

## Installation

1. Align the module to the rear panel as shown.
2. Secure the module with the screw(s) you removed earlier.
3. Install the rear panel as shown.
4. Insert the free end of the FPC into the connector for it on the motherboard, and close the flap to secure the FPC.



5. Install the component(s) you removed in **Before you begin**.

# VGA module (on selected models)

## Before you begin

1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover
  - Metal support bracket

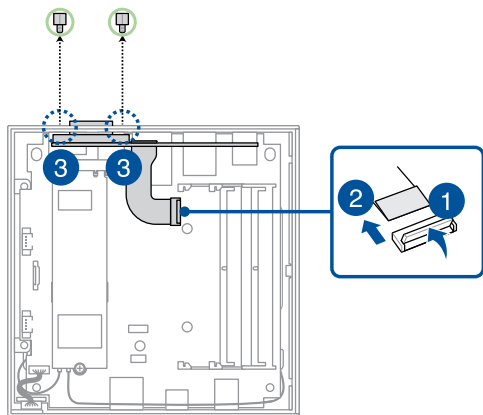
## Screw list

- ☉ 4\*4+4.5+4.75 (2 pcs)



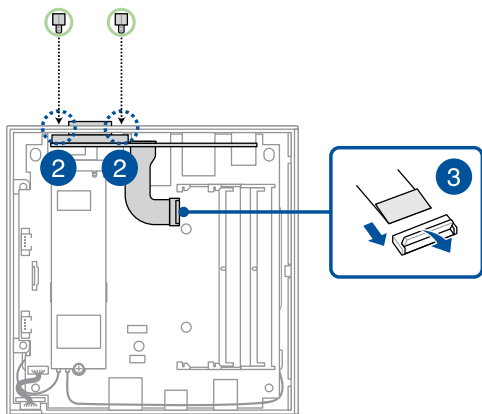
## Removal

1. Flip open the connector flap.
2. Remove the flexible printed circuit (FPC).
3. Remove the screw(s) securing the module in place.
4. Remove the module.



## Installation

1. Align the module to the rear panel as shown.
2. Secure the module with the screw(s) you removed earlier.
3. Insert the free end of the FPC into the connector for it on the motherboard, and close the flap to secure the FPC.



4. Install the component(s) you removed in **Before you begin**.

# LAN module (on selected models)

## Before you begin

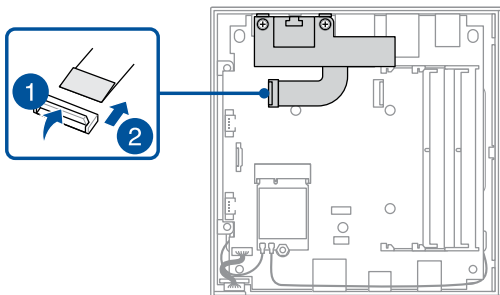
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover
  - M.2 SSD (if one exists)
  - Metal support bracket

## Screw list

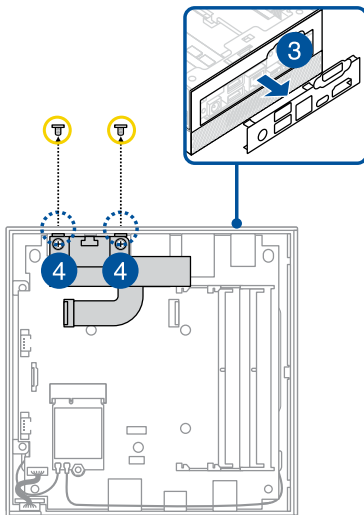
- ⊕ M2 X 3L (2 pcs)

## Removal

1. Flip open the connector flap.
2. Remove the flexible printed circuit (FPC).



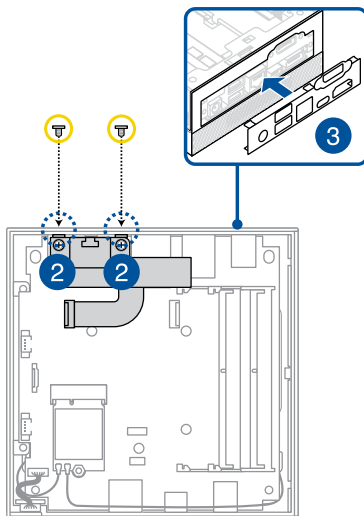
3. Use a plastic blade to pry out the rear panel.
4. Remove the screw(s) securing the module in place.



5. Remove the module.

## Installation

1. Align the module to the rear panel as shown.
2. Secure the module with the screw(s) you removed earlier.
3. Install the rear panel as shown.




4. Install the component(s) you removed in **Before you begin**.

# COM module (on selected models)

## Before you begin

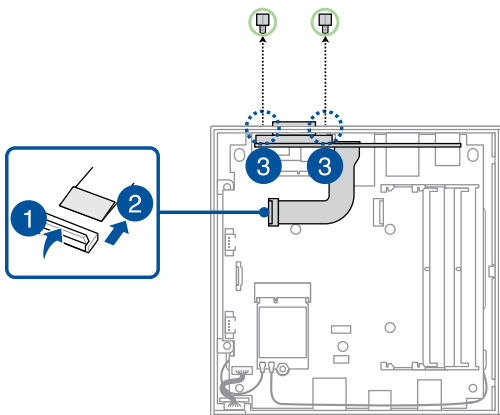
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover
  - M.2 SSD (if one exists)
  - Metal support bracket

## Screw list

-  4\*4+4.5+4.75 (2 pcs)

## Removal

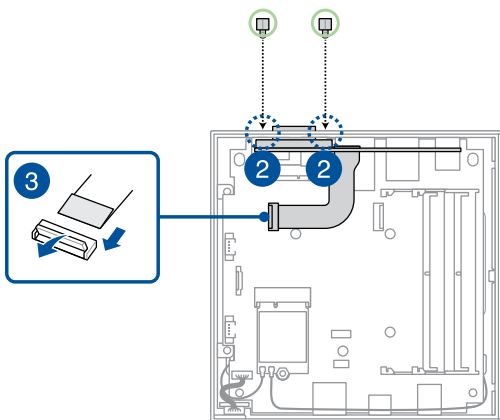
1. Flip open the connector flap.
2. Remove the flexible printed circuit (FPC).
3. Remove the screw(s) securing the module in place.
4. Remove the module.





## Installation

1. Align the module to the rear panel as shown.
2. Secure the module with the screw(s) you removed earlier.
3. Insert the free end of the FPC into the connector for it on the motherboard, and close the flap to secure the FPC.



4. Install the component(s) you removed in **Before you begin**.

# Power button module

## Before you begin

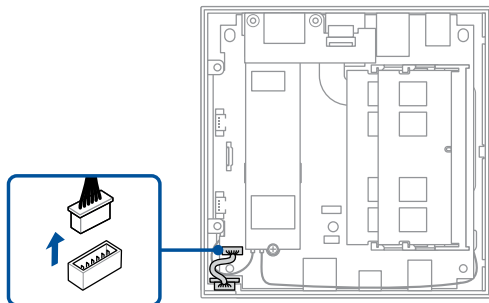
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover
  - M.2 SSD heat spreader
  - Metal support bracket

## Screw list

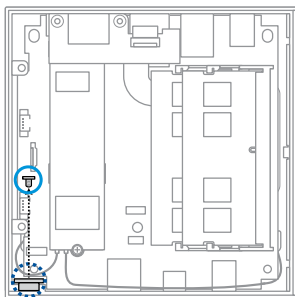
- ⊕ M2 X 3L (1 pc)

## Removal

1. Disconnect the power button cable.



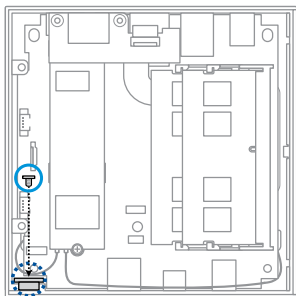
2. Remove the screw(s) securing the power button module in place.



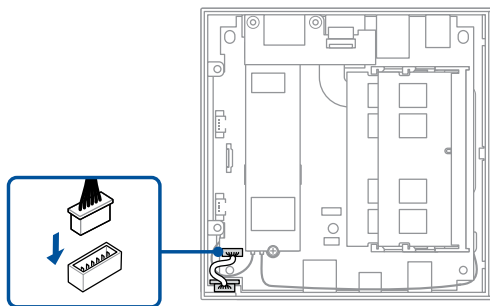
3. Remove the power button module.

## Installation

1. Align and place the power button module in the chassis as shown, and secure it with the screw(s) you removed earlier.



2. Connect the cable from the power button module to the power button connector on the motherboard.



3. Install the component(s) you removed in **Before you begin**.

# Fan module (on selected models)

## Before you begin

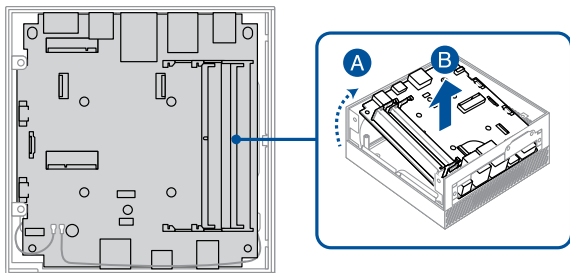
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover
  - M.2 SSD heat spreader
  - Metal support bracket

## Screw list

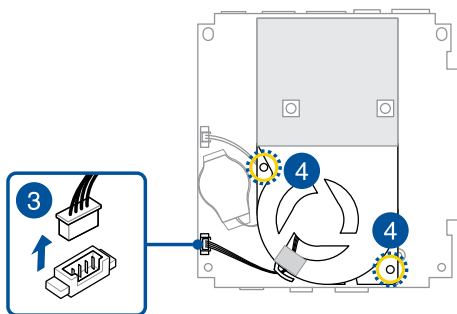
- ⊕ M2.5 X 10L (2 pcs)
- ⊕ M2.5 X 4L (3 pcs)

## Removal

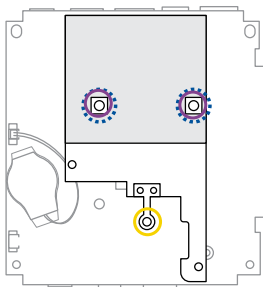
1. Remove the motherboard as shown.



2. Place the motherboard face down.
3. Disconnect the fan connector.
4. Remove the screw(s) securing the fan, and remove the fan.

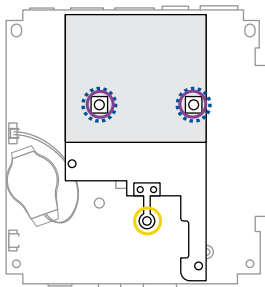


5. Remove the screw(s) securing the heatsink, and remove the heatsink.



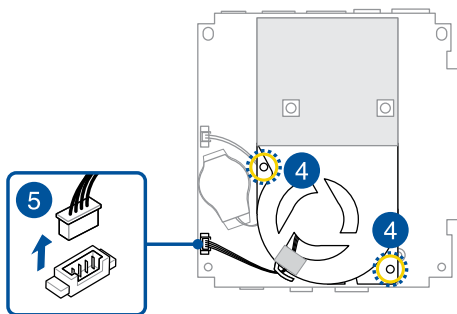
## Installation

1. Align and place the heatsink as shown.
2. Secure the heatsink with the screw(s) removed earlier.





3. Align and place the fan as shown.
4. Secure the fan with the screw(s) removed earlier.
5. Connect the cable from the fan to the fan connector on the motherboard.



6. Install the component(s) you removed in **Before you begin**.

# Heatsink (on selected models)

## Before you begin

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**IMPORTANT!** Thermal paste, thermal pads, liquid metal, or other thermal interface materials must be thoroughly removed and replaced if this component is removed. Ensure that replacement materials are available before proceeding, or contact an authorized service center for assistance.

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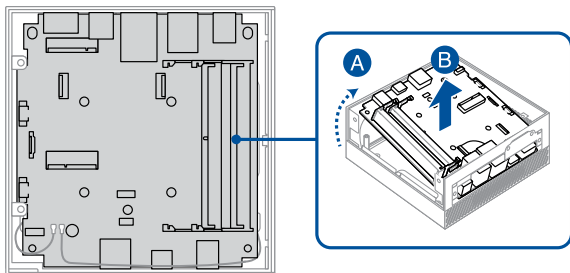
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover
  - M.2 SSD heat spreader
  - Metal support bracket

## Screw list

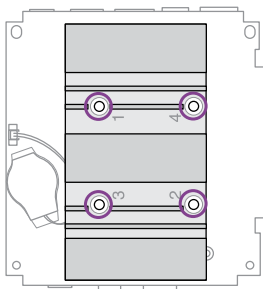
- ⊕ M2.5 X 10L (4 pcs)

## Removal

1. Remove the motherboard as shown.



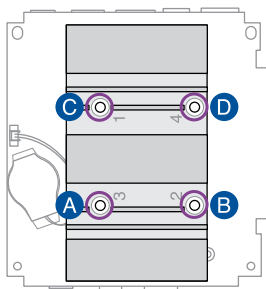
2. Place the motherboard face down.
3. Remove the heatsink screw(s) one by one in the sequence shown on the heatsink.



4. Remove the heatsink.

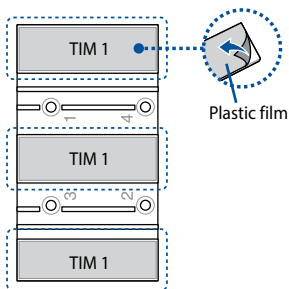
## Installation

1. Align and place the heatsink as shown, and secure it with the screw(s) removed earlier one by one in the sequence (A-B-C-D) shown in the illustration.

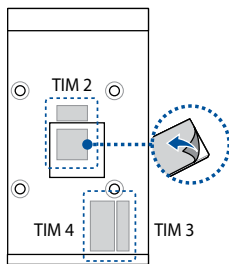


2. Before replacing the heatsink, ensure to remove the plastic film on the thermal pads, if they exist.

Heatsink - Top View



Heatsink - Bottom View



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**WARNING!** Heat dissipation performance may still vary even when you have replaced the thermal pads with ones that meet the specifications provided. To prevent potential damage to the key component(s), you should have the thermal pads replaced by a service center near you.

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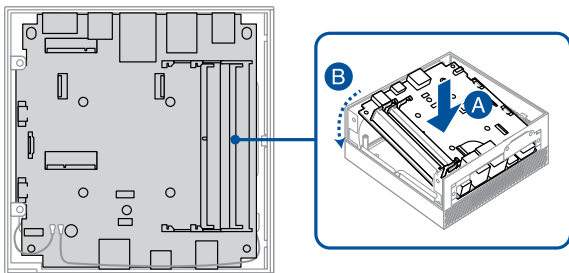
**NOTE:**

- The specifications for the thermal pads used on the heatsink are as follows:

Specifications	TIM 1	TIM 2	TIM 3	TIM 4
Thickness (mm)	1.0	3.0	3.75	1.5
Size	54 x 16.36	12 x 6.5	21 x 5	21 x 9.5
Thermal conductivity (W/mK)	> 1.2	> 4.0	> 3.0	> 3.0
Hardness	13	10	40	40

- To replace the thermal pad yourself, check with an ASUS Service Partner near you ([www.asus.com/support](http://www.asus.com/support)) for the availability of replacement thermal pads.
  - The availability of replacement parts may vary depending on the country.
-

3. Align and place the motherboard in the chassis as shown.



4. Install the component(s) you removed in **Before you begin**.

# Motherboard

## Before you begin

Read the **Safety Precautions** and complete the **Pre-repair Checklist**.

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**NOTE:** It is recommended that you replace the motherboard under professional supervision. You may also visit an authorized service center for further assistance.

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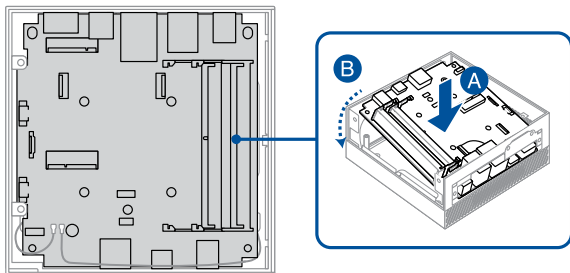
## Removal

Remove the following component(s):

- Bottom cover
- M.2 SSD heat spreader
- Metal support bracket
- M.2 SSD (if one is installed)
- Wireless card (if one is installed)
- Memory module(s)
- Fan module or heatsink (if installed)

## Installation

1. Install the component(s) you removed in **Removal**.
2. Align and place the motherboard in the chassis as shown.



3. Install the component(s) you removed in **Before you begin**.



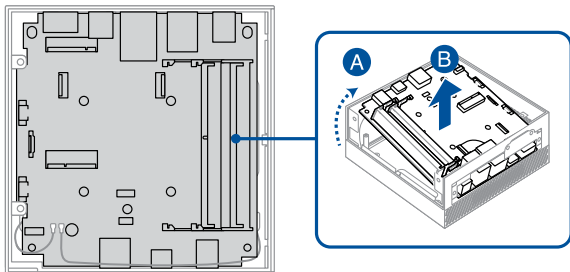
# CMOS battery

## Before you begin

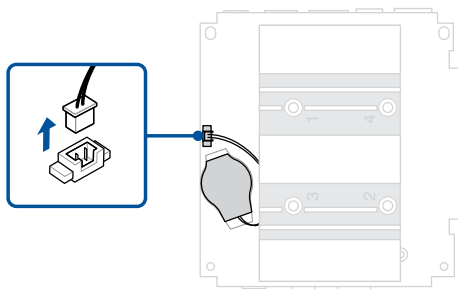
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover
  - M.2 SSD heat spreader
  - Metal support bracket

## Removal

1. Remove the motherboard as shown.



2. Place the motherboard face down.
3. Disconnect the battery cable from the connector.

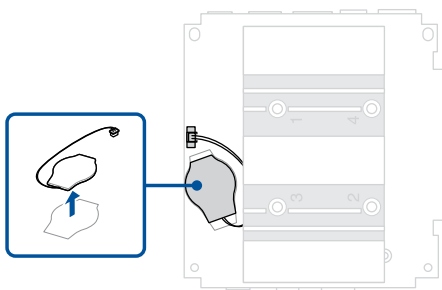


4. Carefully remove the CMOS battery.

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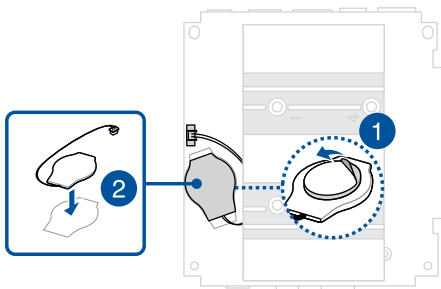
**IMPORTANT!** When removing the battery, be careful not to damage the motherboard or the CMOS battery, which is taped to the motherboard.

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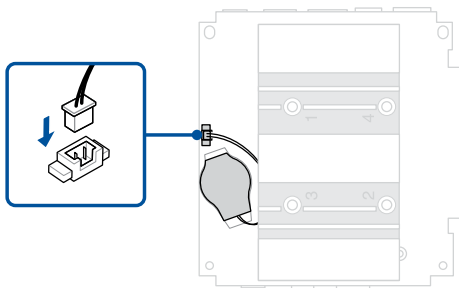


## Installation

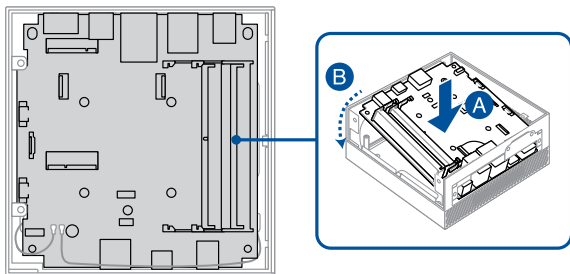
1. Remove the release liner on the battery, if one exists.
2. Align the battery as shown, and then affix it within the designated area outlined on the motherboard.



3. Connect the cable from the battery to the battery connector on the motherboard.



4. Align and place the motherboard in the chassis as shown.



5. Install the component(s) you removed in **Before you begin**.

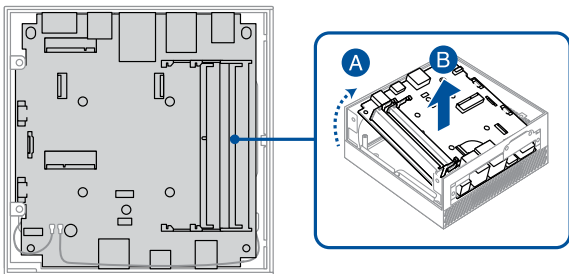
# Chassis

## Before you begin

1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
  - Bottom cover
  - M.2 SSD heat spreader
  - Metal support bracket

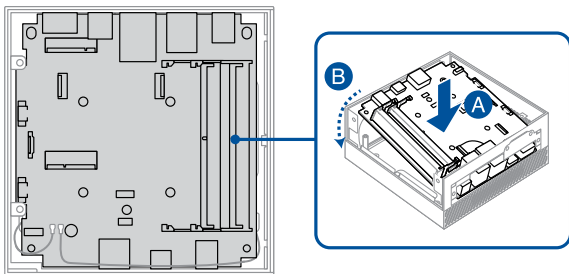
## Removal

Remove the motherboard assembly as shown.



## Installation

1. Install the motherboard assembly that was removed earlier into the new chassis as shown.



2. Install the component(s) you removed in **Before you begin**.