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IN SEARCH OF INCREDIBLE



PN54 Series

Service Manual

ASUS

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SERVICE AND SUPPORT

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Table of Contents

Chapter 1: Introduction

Disclaimer	6
Safety precautions	6
Pre-repair checklist.....	7
Diagnostics tool.....	8
Repair tools.....	8
Major components (PN54)	9
Major components (PN54-M).....	10

Chapter 2: Service Procedures

Bottom cover	12
Removal.....	12
Installation.....	13
Memory module	14
Removal.....	14
Installation.....	15
M.2 SSD.....	16
Removal.....	17
Installation.....	18
Wireless card	20
Removal.....	20
Installation.....	21
Speaker	22
Removal.....	22
Installation.....	23
Motherboard	24
Removal.....	25
Installation.....	28
Fan module	33
Removal.....	34
Installation.....	35
I/O module	36
Removal.....	36
Installation.....	37

Heatsink	38
Removal.....	39
Installation.....	40
CMOS battery.....	42
Removal.....	43
Installation.....	45
Microphone module	46
Removal.....	47
Installation.....	48
Inner bracket	49
Removal.....	50
Installation.....	52
Fingerprint module	54
Removal.....	55
Installation.....	56

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

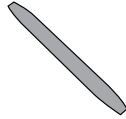
Run system diagnosis in MyASUS after replacing any components to ensure that all components are working properly.

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

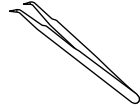
Repair tools



Screwdriver

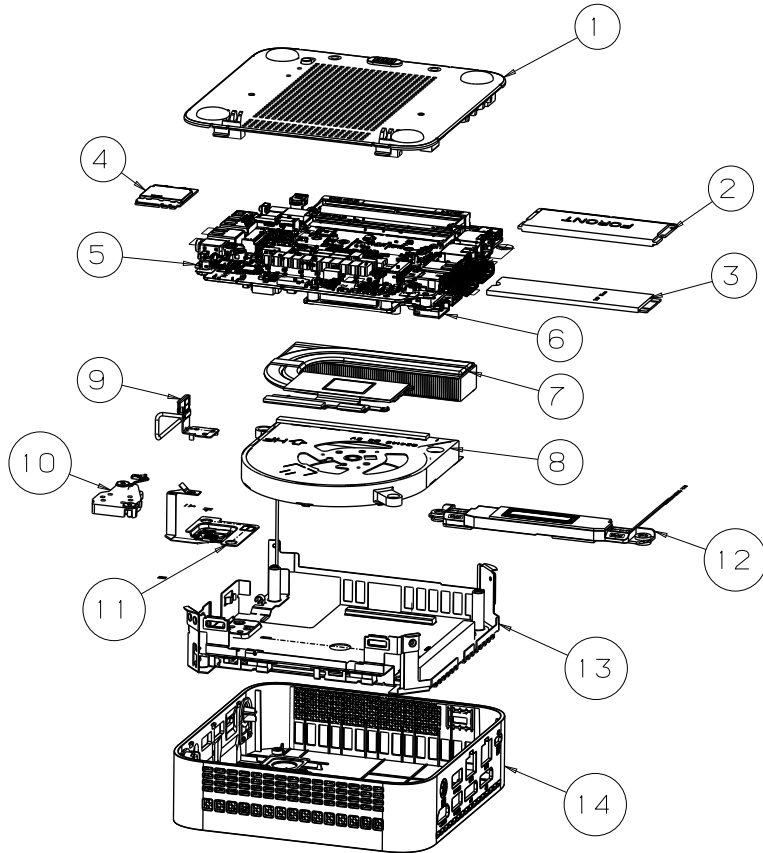


Plastic blade



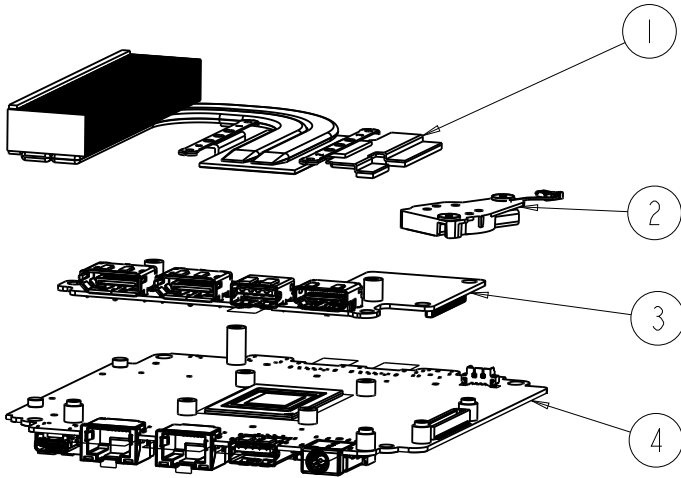
Tweezers

Major components (PN54)



- | | | | |
|----|---------------|-----|--------------------|
| 1. | Bottom cover | 8. | Fan module |
| 2. | Memory module | 9. | Microphone module |
| 3. | M.2 SSD | 10. | CMOS battery |
| 4. | Wi-Fi module | 11. | Fingerprint module |
| 5. | Motherboard | 12. | Speaker |
| 6. | I/O module | 13. | Inner bracket |
| 7. | Heatsink | 14. | Top cover |

Major components (PN54-M)



- 1. Heatsink
- 2. Battery

- 3. I/O module
- 4. Motherboard

Chapter 2: ***Service Procedures***

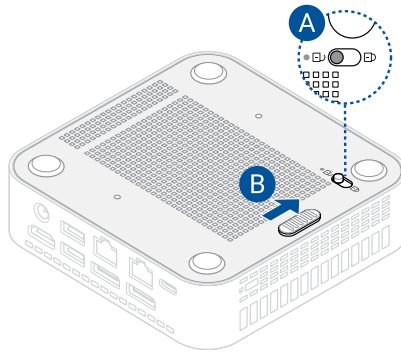
Bottom cover

Before you begin

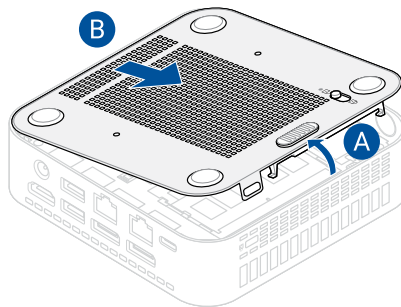
Read the **Safety Precautions** and complete the **Pre-repair Checklist**.

Removal

1. Slide the bottom cover lock to the unlocked position (A), then slide the spring-loaded release button as shown (B).

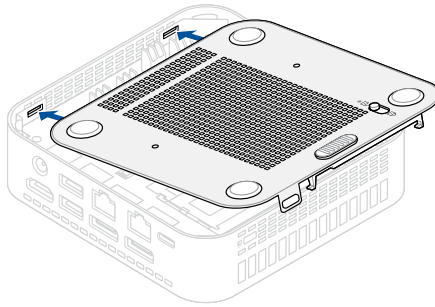


2. Remove the bottom cover.

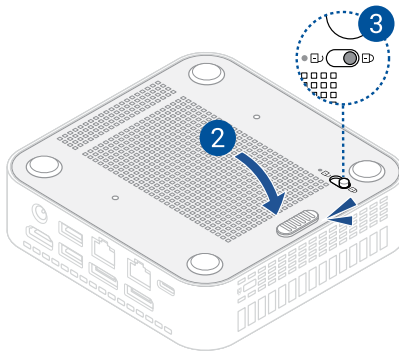


Installation

1. Insert the two tabs on the bottom cover into the corresponding slots on the chassis.



2. Gently press down on the bottom cover until it clicks into place.
3. Slide the lock to the locked position to secure the bottom cover.



Memory module

IMPORTANT! You can only install DDR5 SO-DIMMs to the Mini PC's DIMM slots.

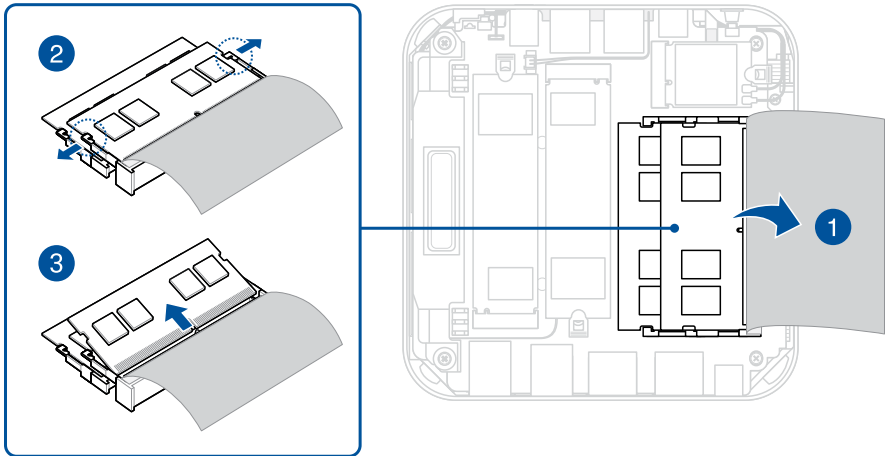
NOTE: We recommend that you install the memory modules under professional supervision. You may also visit an authorized service center for further assistance.

Before you begin

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

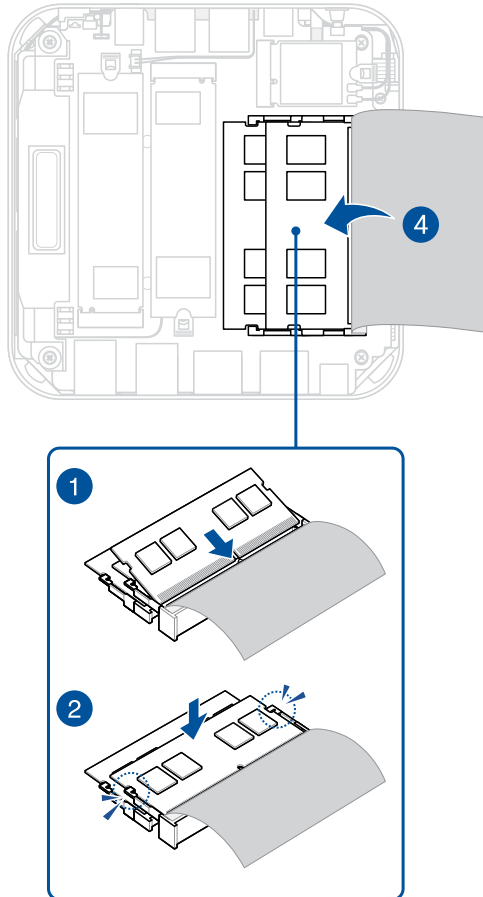
Removal

1. Flip the shielding foil to expose the memory slot(s).
2. Simultaneously push the two retaining clips on the memory module slot outward.
3. Remove the module from the slot.
4. Repeat the same steps to remove the other module.



Installation

1. Align and insert the memory module into the slot.
2. Press down until it clicks and is securely seated in place.
3. Repeat the same steps to install a second module.
4. Flip the EMI film back to its original position so that it is shielding the memory module(s).



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

M.2 SSD

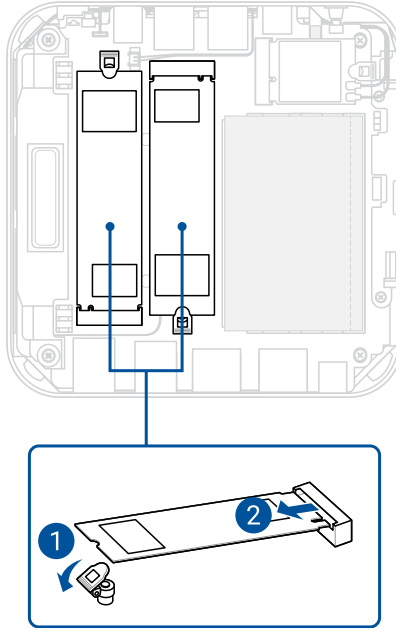
IMPORTANT! Thermal paste, thermal pads, liquid metal, or other thermal interface materials must be thoroughly removed and replaced if this component is removed. Ensure that replacement materials are available before proceeding, or contact an authorized service center for assistance.

Before you begin

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

Removal

1. Press down on the 2280 M.2 retaining clip to release the M.2 module.
2. Remove the M.2 module from the M.2 slot.
3. Repeat the same steps to remove the other module.

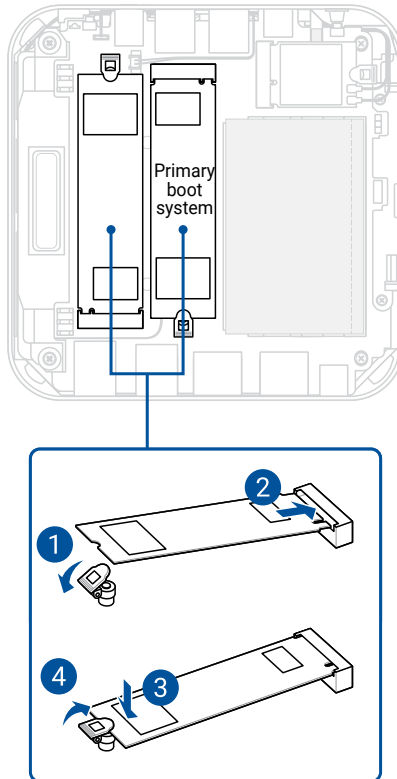


Installation

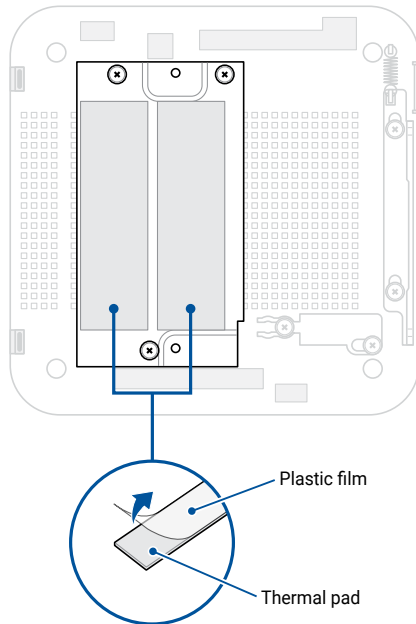
1. Press down on the 2280 M.2 retaining clip to access the alignment standoff.

NOTE: We recommend installing the M.2 module with the primary boot system in the slot closer to the SO-DIMM slots.

2. Insert an M.2 module into the M.2 slot.
3. Gently push down the M.2 module on top of the standoff.
4. Secure the M.2 module by returning the retaining clip to its closed position.



5. Before replacing the bottom cover, ensure to remove the plastic film on the thermal pad(s), if they exist.



NOTE:

- The specifications for the thermal pad(s) used here are as follows:
Thickness: 0.75 mm
Size: 69.8 mm x 22 mm
Thermal conductivity: 3.0 W/mK
Hardness: 25±5 shore 00
- To replace the thermal pad yourself, check with an ASUS Service Partner near you (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.

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

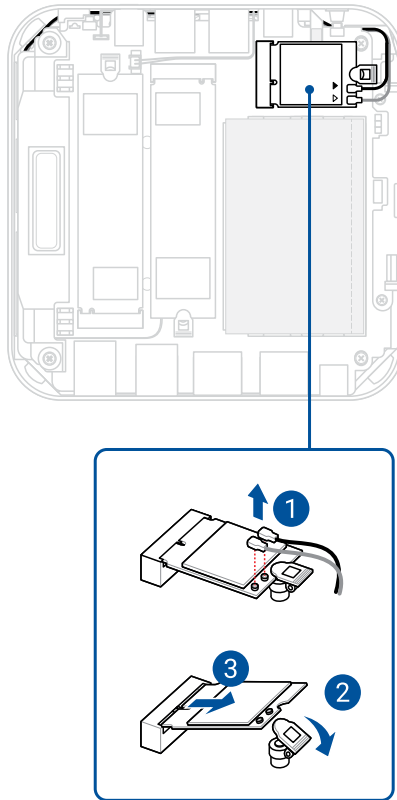
Wireless card

Before you begin

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

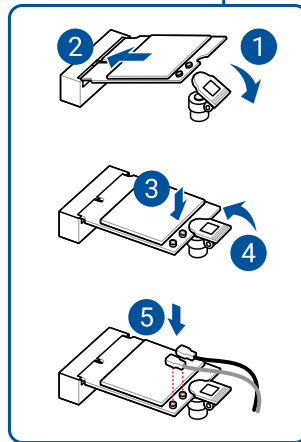
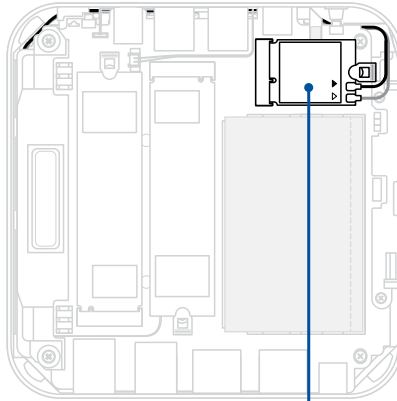
Removal

1. Disconnect the antenna cables from the wireless card.
2. Press down on the 2230 M.2 retaining clip to access the alignment standoff.
3. Remove the wireless card.



Installation

1. Install the wireless card, then secure it using the screw removed earlier.
2. Connect the antenna cables to the wireless card.



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

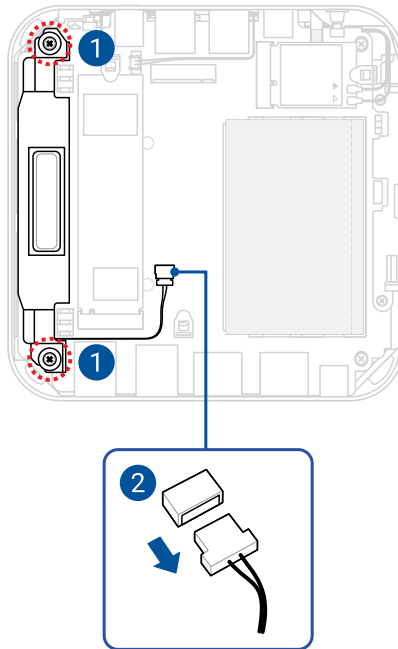
Speaker

Before you begin

1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
 - Bottom cover
 - The memory module closer to the SO-DIMM slots

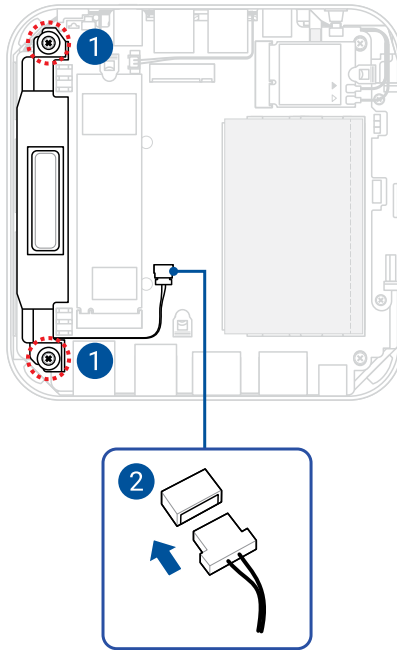
Removal

1. Loosen the captive screws securing the speaker to the motherboard.
2. Disconnect the speaker cable from the motherboard.
3. Remove the speaker.



Installation

1. Install the speaker, then secure it by tightening the screws.
2. Connect the speaker cable to the motherboard.



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

Motherboard

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.

Before you begin

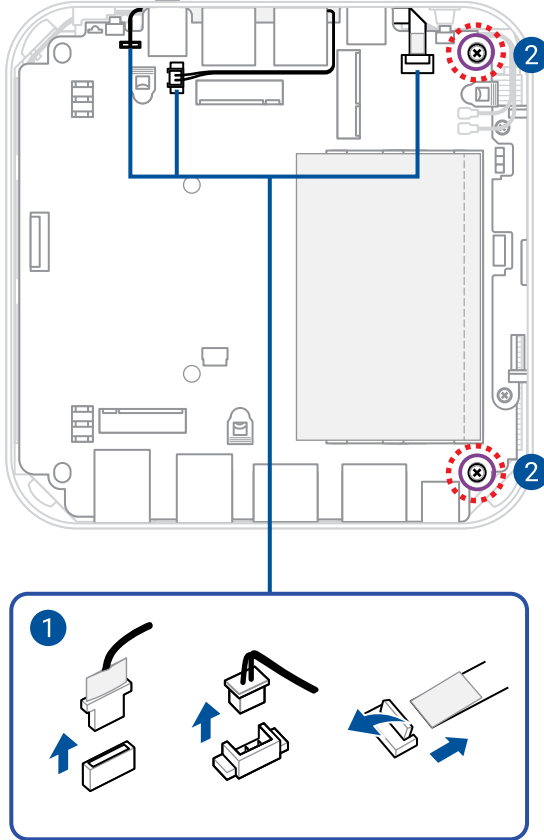
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
 - Bottom cover
 - Memory module(s)
 - M.2 SSD(s)
 - Wireless card
 - Speaker

Screw list

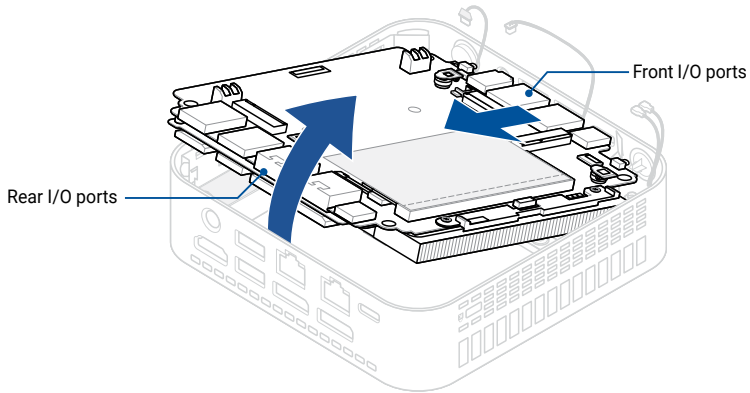
- ⊕ M2 X 4L (6 pcs)
 - for motherboard (2 pcs)
 - for I/O module (4 pcs)
- ⊕ M2 X 5L (3 pcs)
- ⊕ Heatsink captive screws (4 pcs)

Removal

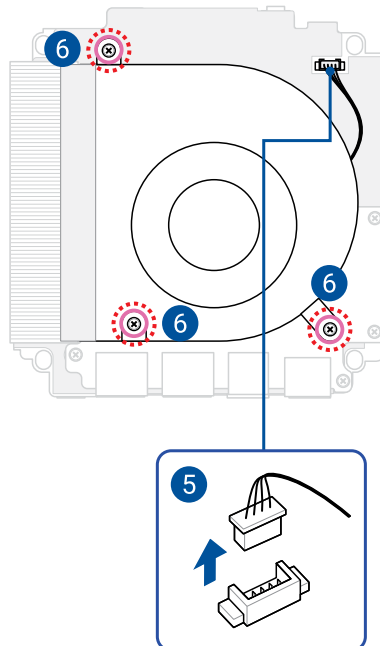
1. Disconnect the microphone and CMOS battery cables and the fingerprint flat flexible cable (FFC) from the motherboard.
2. Remove the two (2) screw(s) securing the motherboard in place.



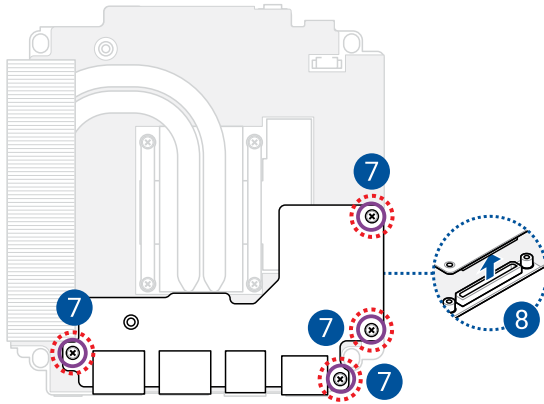
3. Remove the motherboard by first lifting the side with the rear I/O ports upwards, then sliding the side with the front I/O ports out of the chassis.



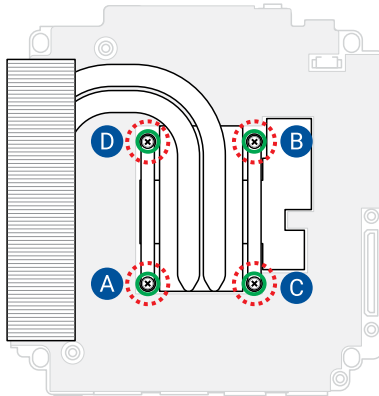
4. Flip the motherboard over so that the fan module is visible.
5. Disconnect the fan cable from the motherboard.
6. Remove the three (3) fan screws, then lift and remove the fan module.



7. Remove the four (4) I/O module screws.
8. Gently detach the I/O module from the board-to-board connector on the motherboard.



9. Completely loosen the four (4) heatsink screws in the sequence shown in the illustration, then lift and remove the heatsink.

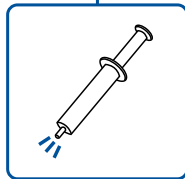
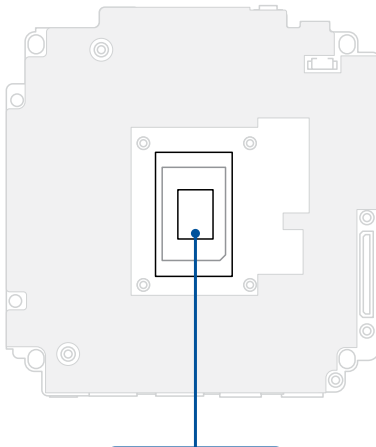


Installation

WARNING! To prevent potential damage to the CPU, you should have the CPU fan module and heatsink replaced by a service center near you.

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.

1. Prepare the motherboard by wiping the CPU surface clean with a clean cloth. Apply several drops of TIM to the exposed area of the CPU that will be in contact with the heatsink. Ensure that it is spread in an even thin layer.

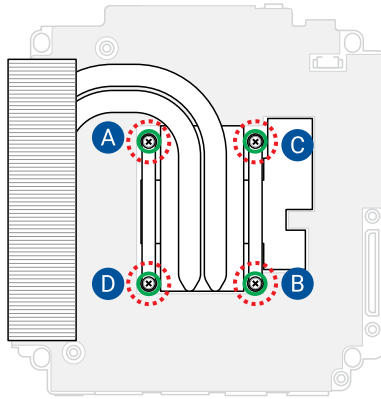


Thermal conductivity: > 5.2 W/mK
(recommended)

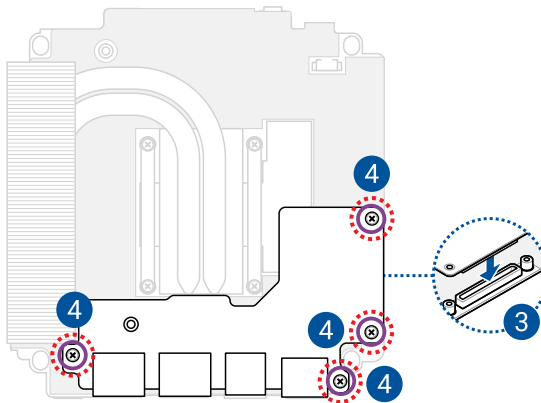
WARNING! The TIM is toxic and inedible. DO NOT eat it. If it gets into your eyes or touches your skin, wash it off immediately, and seek professional medical help.

IMPORTANT! To prevent contaminating the TIM, DO NOT spread it with your finger.

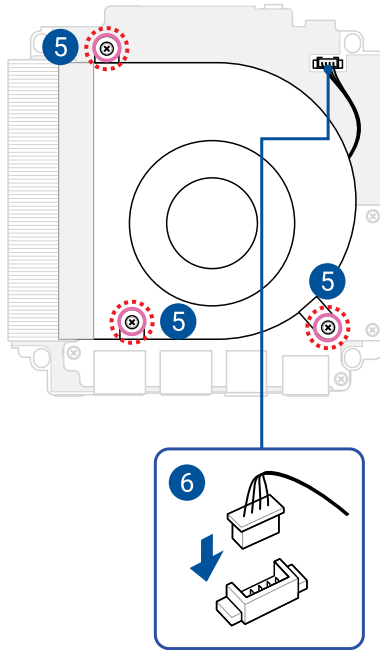
2. Align and place the heatsink as shown, and secure it to the motherboard by tightening the screws one by one in the sequence shown in the illustration.



3. Align and insert the board-to-board connector on the I/O module to the motherboard.
4. Secure the I/O module using the screw(s) removed earlier.



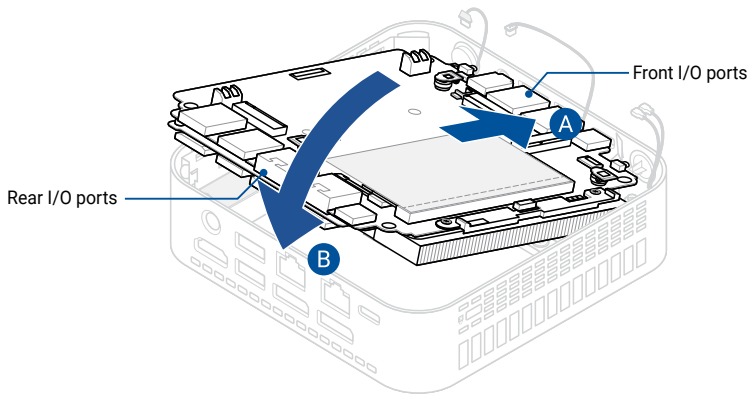
5. Align and place the fan module as shown, then secure it using the screw(s) removed earlier.
6. Connect the cable from the fan module to the fan connector on the motherboard.



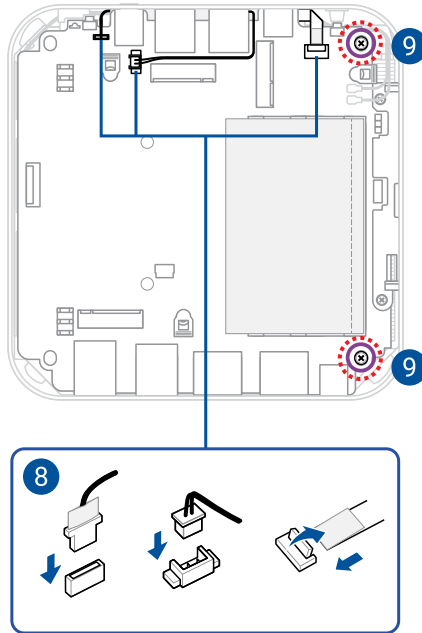
- Place the motherboard into the chassis by sliding the front I/O ports of the motherboard into the chassis first, then pushing the rear I/O ports side downwards.

NOTE:

- Make sure the motherboard is installed into the chassis with the fan module facing down.
 - Make sure the antenna cables, the CMOS are threaded along the side of the inner bracket and easily accessible even after the motherboard has been placed into the chassis.
-



8. Reconnect the cables.
9. Secure the motherboard using the screw(s) removed earlier.



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

Fan module

Before you begin

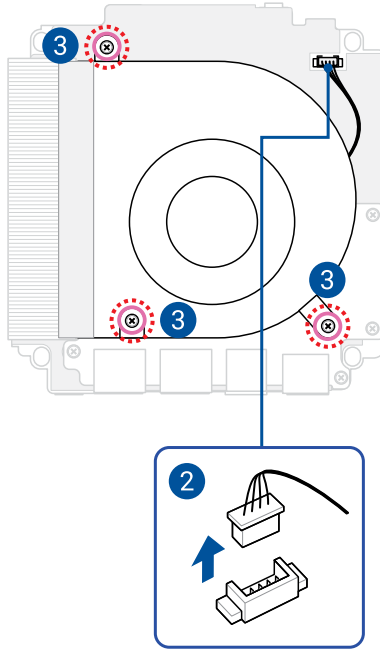
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
 - Bottom cover
 - Memory module(s)
 - M.2 SSD(s)
 - Wireless card
 - Speaker
 - Motherboard

Screw list

- ⊕ M2 X 5L (3 pcs)

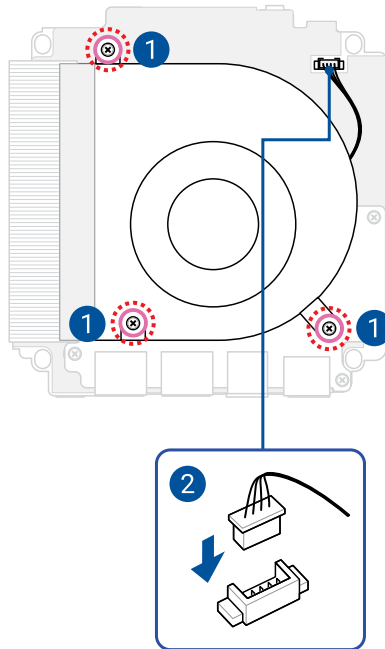
Removal

1. Flip the motherboard over so that the fan module is visible.
2. Disconnect the fan cable from the motherboard.
3. Remove the three (3) fan screws, then lift and remove the fan module.



Installation

1. Align and place the fan module as shown, then secure it using the screw(s) removed earlier.
2. Connect the cable from the fan module to the fan connector on the motherboard.



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

I/O module

Before you begin

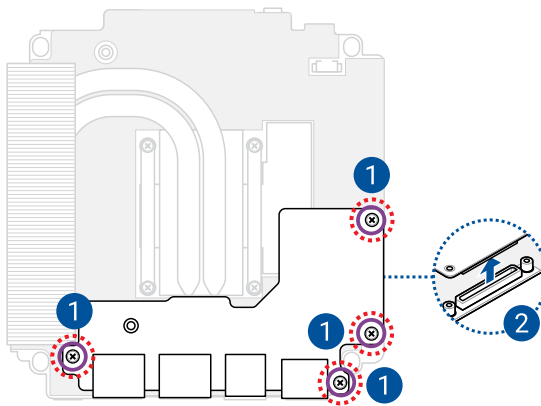
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
 - Bottom cover
 - Memory module(s)
 - M.2 SSD(s)
 - Wireless card
 - Speaker
 - Motherboard
 - Fan module

Screw list

- ⊕ M2 X 4L (4 pcs)

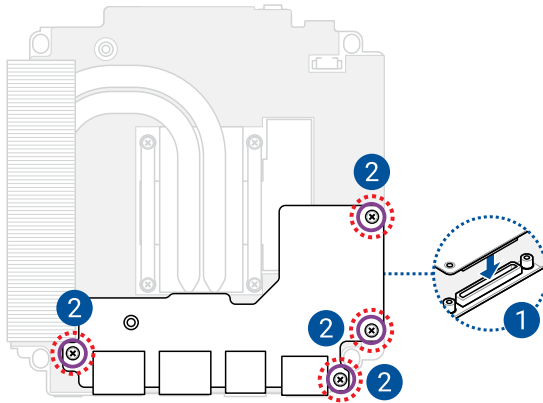
Removal

1. Remove the four (4) I/O module screws.
2. Gently detach the I/O module from the board-to-board connector on the motherboard.



Installation

1. Align and insert the board-to-board connector on the I/O module to the motherboard.
2. Secure the I/O module using the screw(s) removed earlier.



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

Heatsink

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.

Before you begin

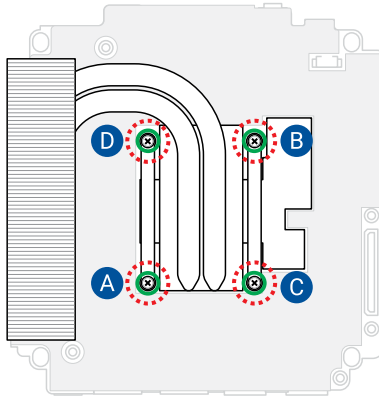
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
 - Bottom cover
 - Memory module(s)
 - M.2 SSD(s)
 - Wireless card
 - Speaker
 - Motherboard
 - Fan module
 - I/O module

Screw list

- ⊕ Heatsink captive screws (4 pcs)

Removal

1. Completely loosen the four (4) heatsink screws in the sequence shown in the illustration, then lift and remove the heatsink.

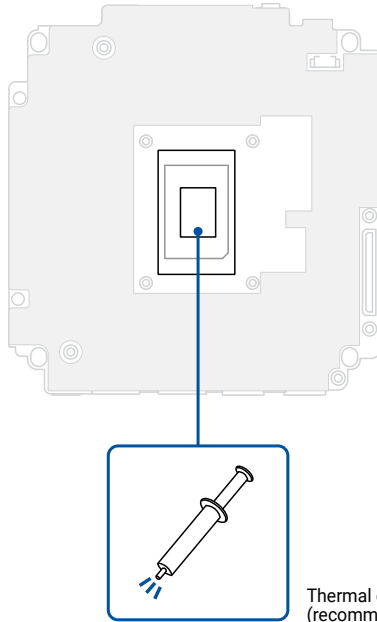


Installation

WARNING! To prevent potential damage to the CPU, you should have the CPU fan module and heatsink replaced by a service center near you.

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.

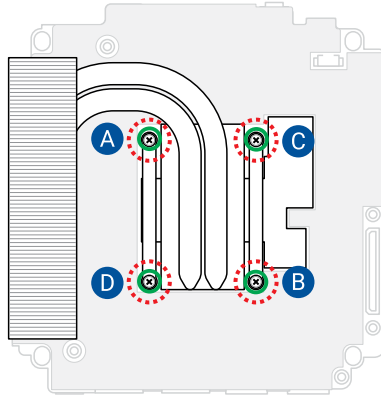
1. Prepare the motherboard by wiping the CPU surface clean with a clean cloth. Apply several drops of TIM to the exposed area of the CPU that will be in contact with the heatsink. Ensure that it is spread in an even thin layer.



WARNING! The TIM is toxic and inedible. DO NOT eat it. If it gets into your eyes or touches your skin, wash it off immediately, and seek professional medical help.

IMPORTANT! To prevent contaminating the TIM, DO NOT spread it with your finger.

2. Align and place the heatsink as shown, and secure it to the motherboard by tightening the screws one by one in the sequence shown in the illustration.



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

CMOS battery

Before you begin

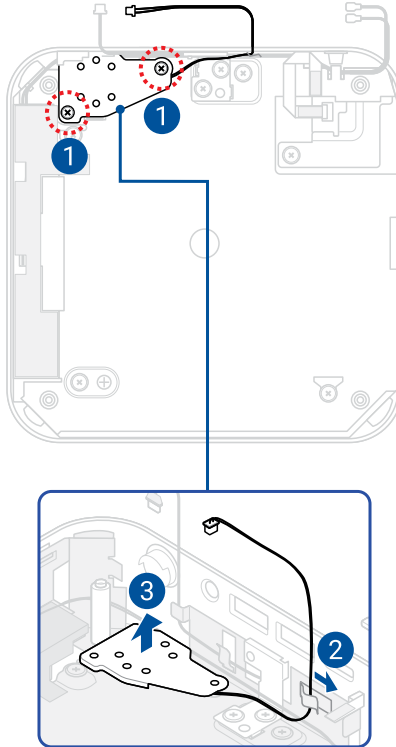
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
 - Bottom cover
 - Memory module(s)
 - M.2 SSD(s)
 - Wireless card
 - Speaker
 - Motherboard

Screw list

- ⊕ M2 X 4L (2 pcs)

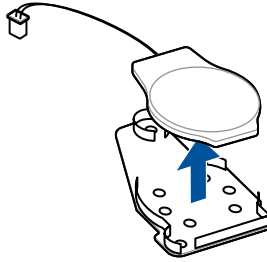
Removal

1. Loosen the two (2) screws on the battery holder.
2. Remove the CMOS battery cable from the cable organizer clip.
3. Remove the battery holder.



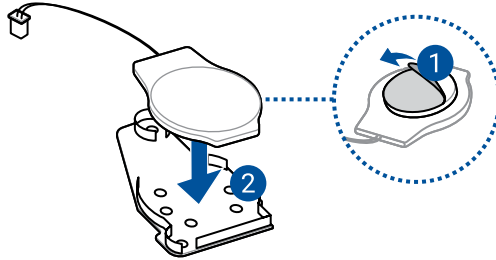
- Carefully remove the CMOS battery from the battery holder.

IMPORTANT! Be careful not to damage the CMOS battery when you remove it from the battery holder.

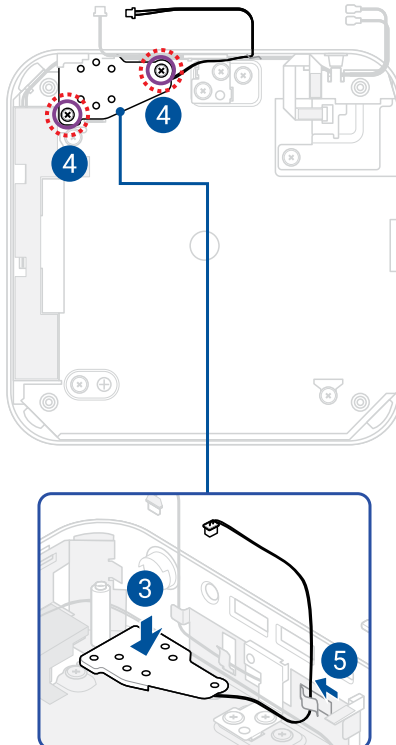


Installation

1. Remove the release liner on the battery, if one exists.
2. Align the battery as shown, then affix it to the battery holder.



3. Install the battery holder back into the chassis.
4. Secure the battery holder to the chassis with the screw(s) removed earlier.
5. Route the CMOS battery cable through the cable organizer clip(s).



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

Microphone module

Before you begin

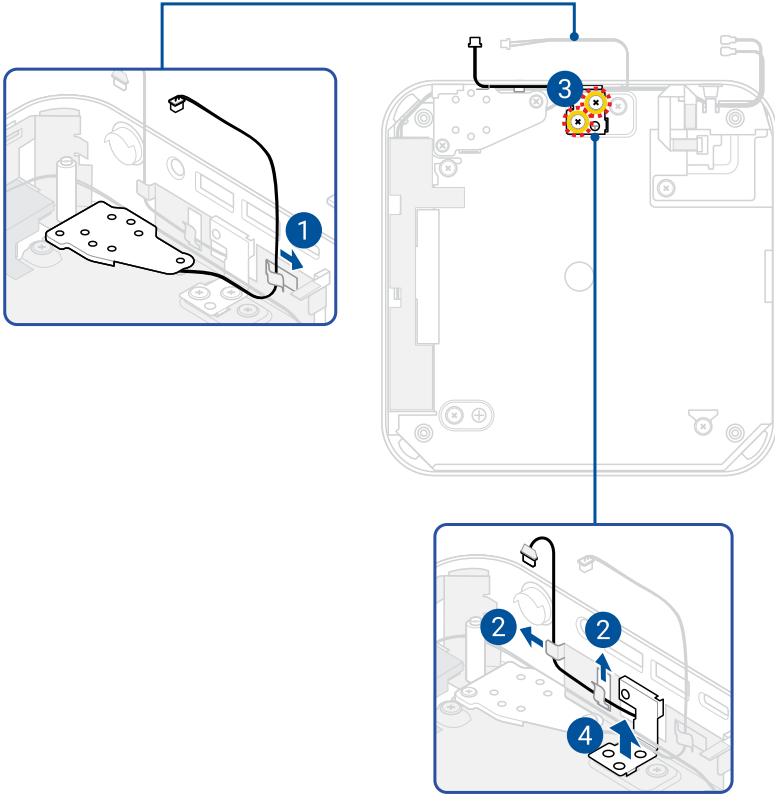
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
 - Bottom cover
 - Memory module(s)
 - M.2 SSD(s)
 - Wireless card
 - Speaker
 - Motherboard

Screw list

- ⊕ M2 X 2L (2 pcs)

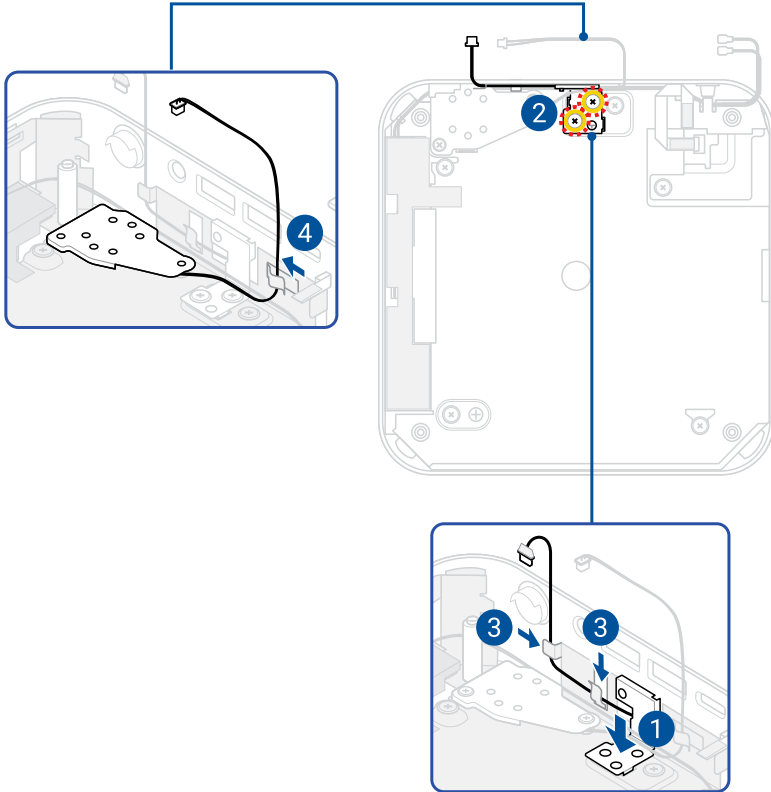
Removal

1. Remove the CMOS battery cable from the cable organizer clip(s).
2. Remove the microphone cable from the cable organizer clip(s).
3. Remove the screw(s) securing the microphone module to the chassis.
4. Remove the module.



Installation

1. Align and install the microphone module.
2. Secure the microphone module using the screw(s) removed earlier.
3. Route the microphone cable through the cable organizer clip(s).
4. Route the CMOS battery cable through the cable organizer clip(s)



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

Inner bracket

Before you begin

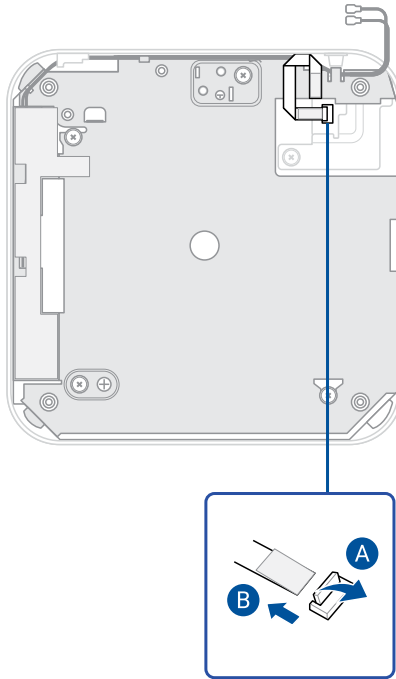
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
 - Bottom cover
 - Memory module(s)
 - M.2 SSD(s)
 - Wireless card
 - Speaker
 - Motherboard
 - CMOS battery
 - Microphone module

Screw list

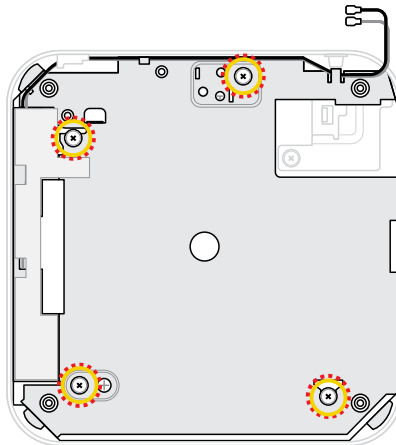
- ⊕ M2 X 2L (4 pcs)

Removal

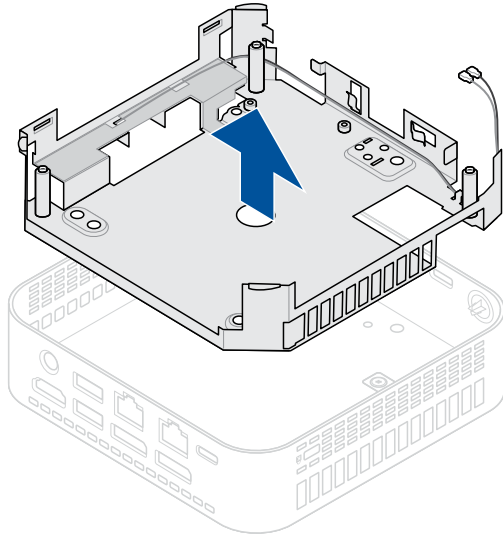
1. Disconnect the fingerprint module FFC.



2. Remove the screw(s) securing the inner bracket to the top cover.

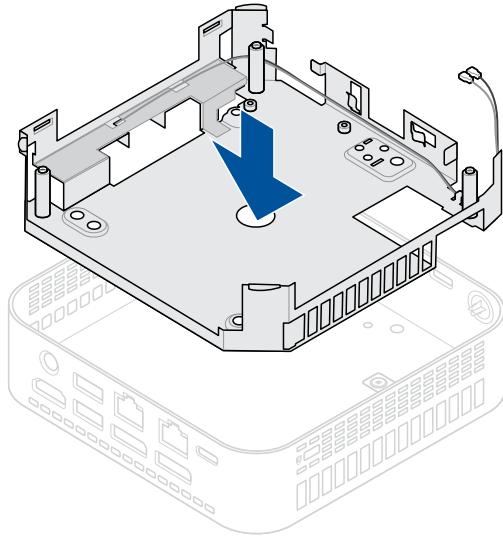


3. Lift and separate the inner bracket from the top cover.

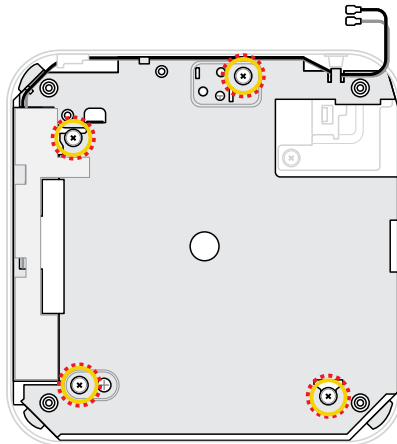


Installation

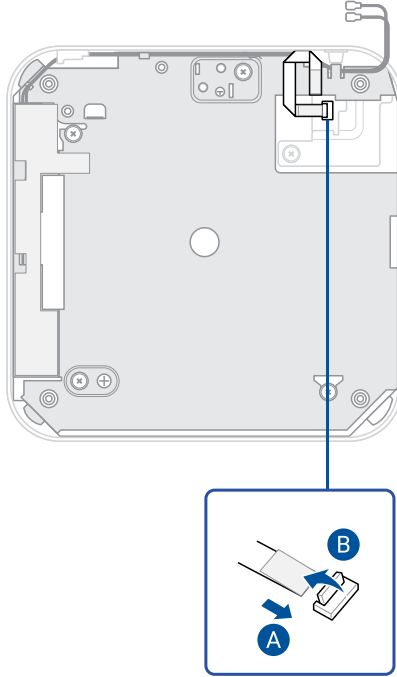
1. Align and insert the inner bracket into the top cover as shown.



2. Secure the inner bracket to the top cover using the screw(s) removed earlier.



3. Reconnect the fingerprint module FFC.



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

Fingerprint module

Before you begin

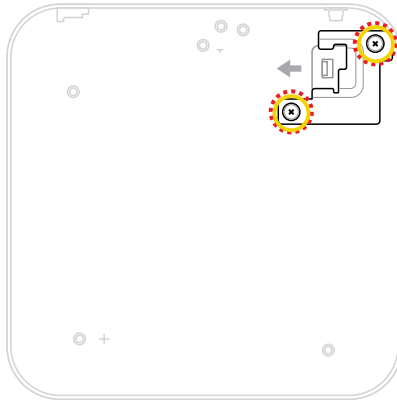
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Remove the following component(s):
 - Bottom cover
 - Memory module(s)
 - M.2 SSD(s)
 - Wireless card
 - Speaker
 - Motherboard
 - CMOS battery
 - Microphone module
 - Inner bracket

Screw list

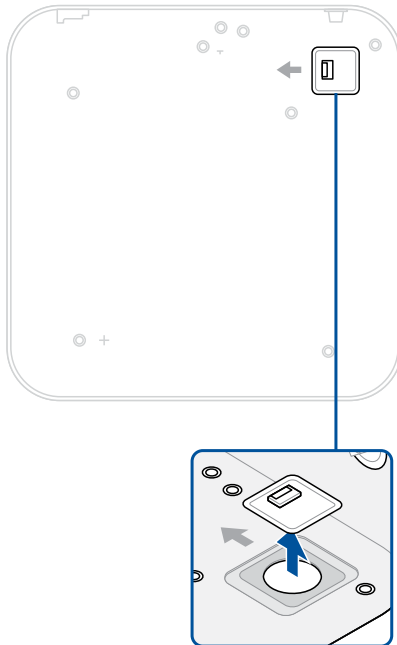
- ⊕ M2 X 2L (2 pcs)

Removal

1. Remove the screw(s) securing the fingerprint module bracket to the top cover, and remove the bracket.

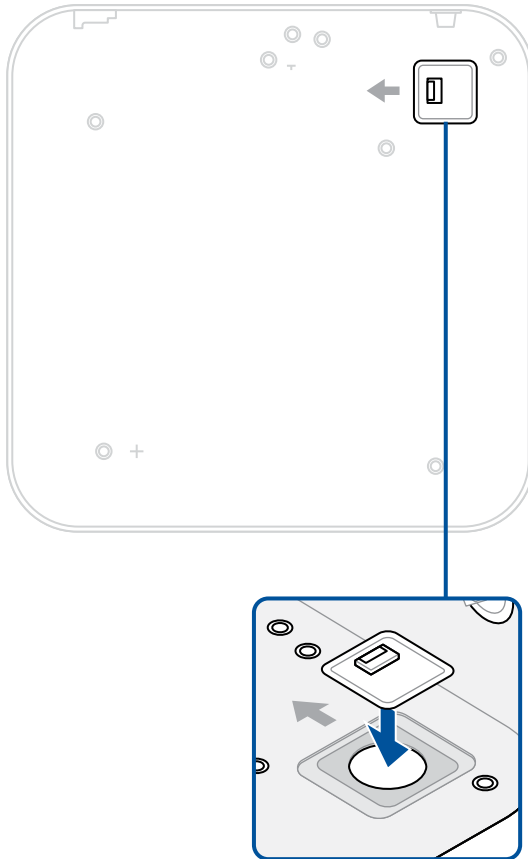


2. Remove the fingerprint module.

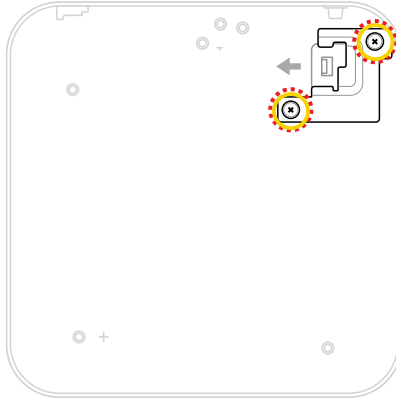


Installation

1. Align and install the fingerprint module such that the connector on it is aligned with the arrow as shown.



2. Install the fingerprint module bracket, and secure it to the top cover using the screw(s) removed earlier.



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

