

E25002

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IN SEARCH OF INCREDIBLE



NUC15CRK / NUC15CRH

Service Manual

ASUS

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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 NUC system 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 NUC system 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 NUC system.
 3. Turn off your NUC system.
 4. Place your NUC system on a stable surface.
 5. Disconnect all connected peripherals and cables.
-

IMPORTANT!

- Purchase replacement components from an authorized retailer of this NUC system 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

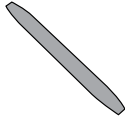
Run system diagnosis in MyASUS after replacing any components to ensure that all components are working properly.

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

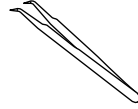
Repair tools



Screwdriver

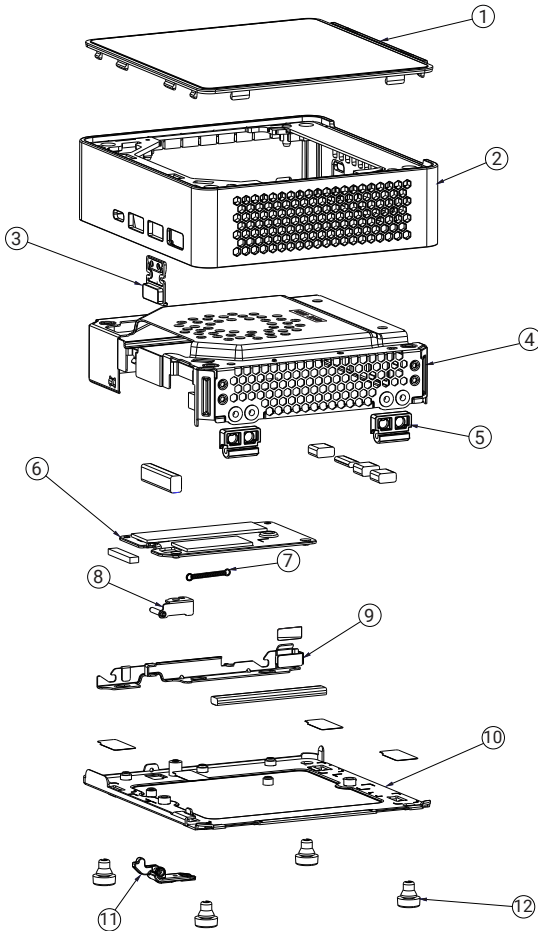


Plastic blade



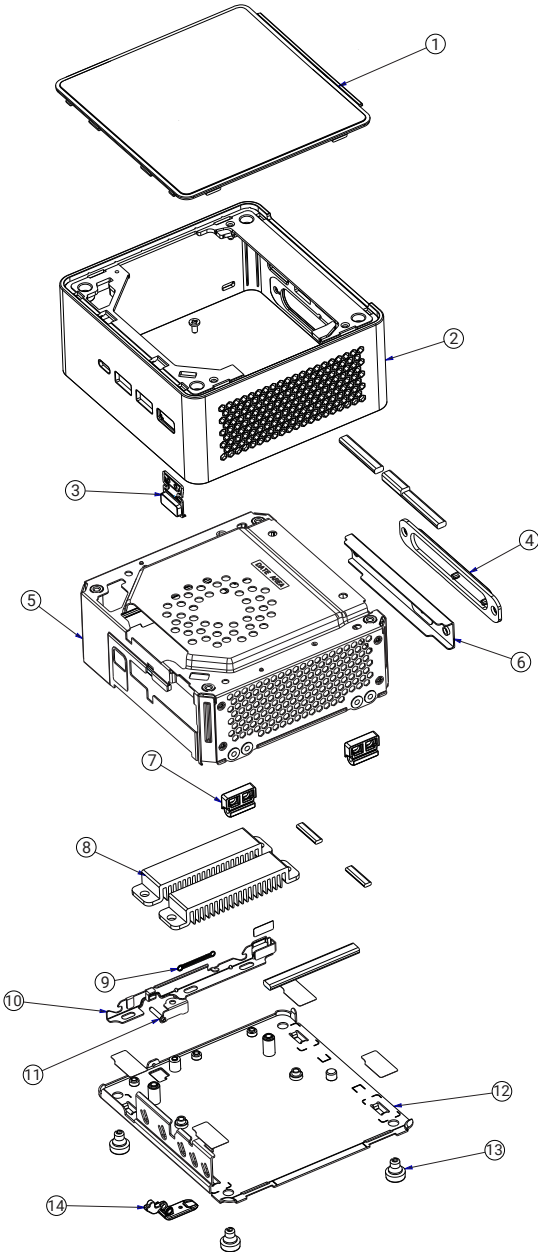
Tweezers

Major components (NUC15CRK)



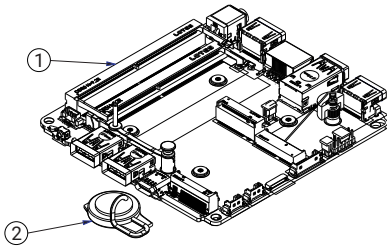
1. Top cover
2. System chassis
3. Power button
4. System chassis inner bracket
5. Bottom cover hinge
6. Bottom cover thermal module
7. Lock latch spring
8. Lock latch shaft
9. Lock latch bracket
10. Bottom cover
11. Lock latch
12. Rubber feet

Major components (NUC15CRH)

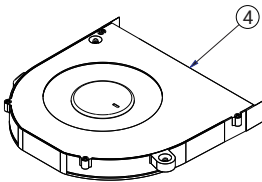
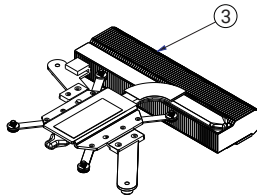


1. Top cover
2. System chassis
3. Power button
4. Plastic faceplate
5. System chassis inner bracket
6. Faceplate metal bracket
7. Bottom cover hinge
8. Bottom cover thermal module
9. Lock latch spring
10. Lock latch bracket
11. Lock latch shaft
12. Bottom cover
13. Rubber feet
14. Lock latch

Major components (NUC15CRB)



1. Motherboard
2. Battery
3. Heatsink
4. Fan module



Chapter 2: ***Service Procedures***

Bottom cover

NOTE: The system illustration for this section is for reference only. The system appearance may vary depending on the model, but the installation steps remain the same.

Before you begin

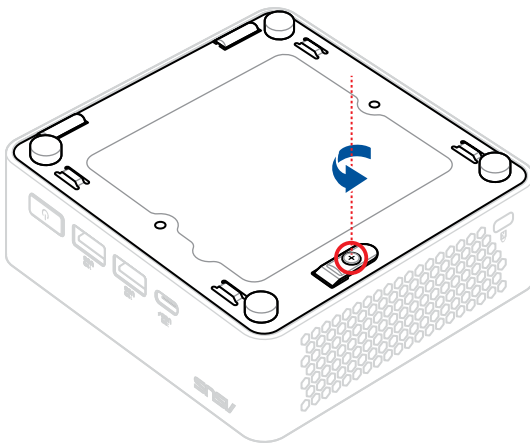
Read the **Safety Precautions** and complete the **Pre-repair Checklist**.

Screw list

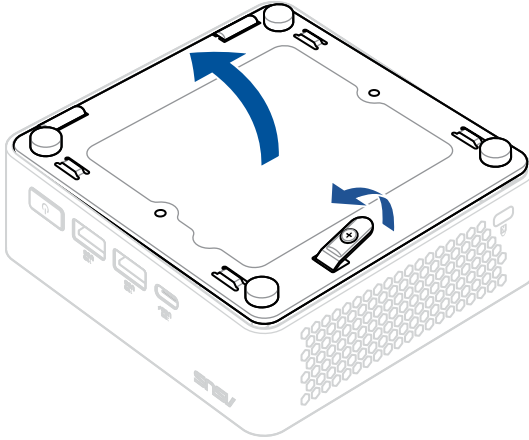
- ⊕ Bottom cover lock latch captive screw (1 pc)

Opening the bottom cover

1. Place the NUC system on a flat stable surface with its top side facing down.
2. Completely loosen the screw on the bottom cover lock latch.

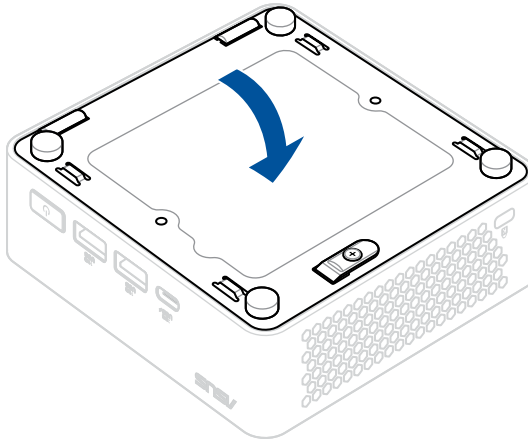


3. Lift the lock latch upwards to release the bottom cover, and lift open the bottom cover.

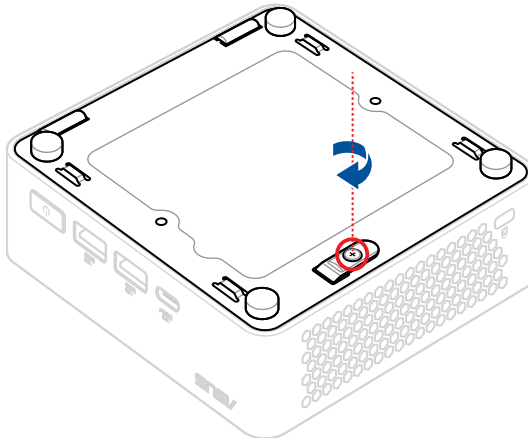


Closing the bottom cover

1. Close the bottom cover, then press down on the bottom cover to make sure the bottom cover clicks into place.



2. Secure the bottom cover by tightening the latch lock screw.



Memory module

IMPORTANT! You can only install a DDR5 SODIMM or CSODIMM to the NUC system's DIMM slot.

NOTE:

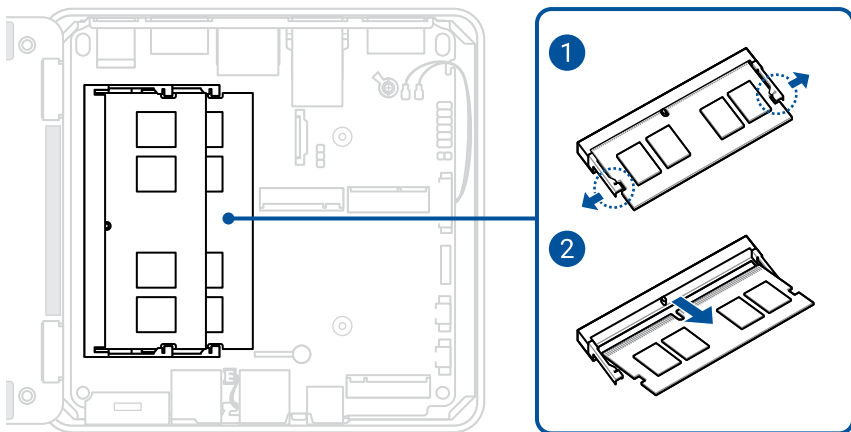
- We recommend that you install the memory module under professional supervision. You may also visit an authorized service center for further assistance.
 - The system illustration for this section is for reference only. The system appearance may vary depending on the model, but the installation steps remain the same.
-

Before you begin

1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Open the bottom cover.

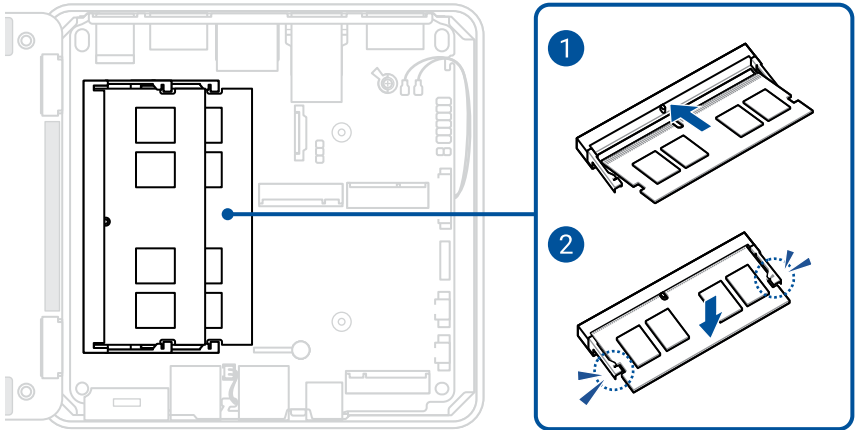
Removal

1. Simultaneously push the two retaining clips on the memory module slot outward.
2. Remove the module from the slot.



Installation

1. Align and insert the memory module into the slot.
2. Press down until it clicks and is securely seated in place.



3. 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.

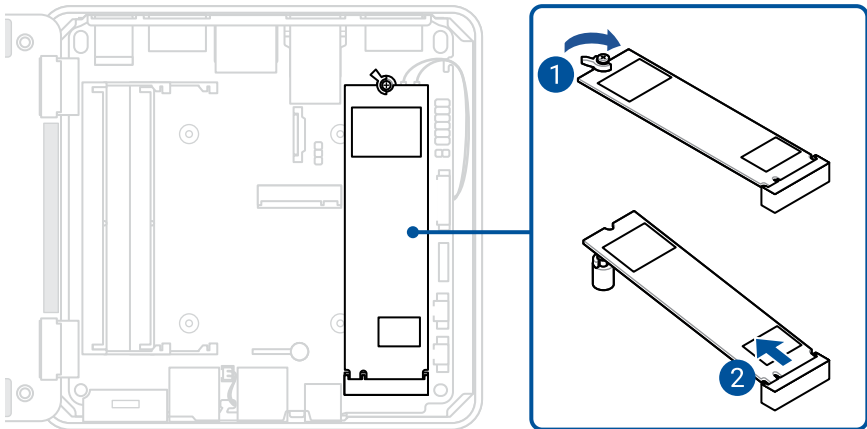
NOTE: The system illustration for this section is for reference only. The system appearance may vary depending on the model, but the installation steps remain the same.

Before you begin

1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Open the bottom cover.

Removal (2280)

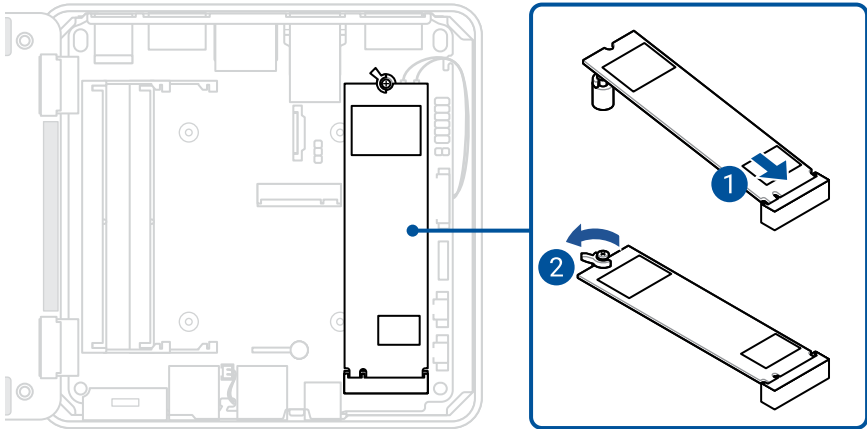
1. Rotate the Q-Latch clockwise to release the M.2 module.
2. Remove the M.2 module from the M.2 slot



Installation (2280)

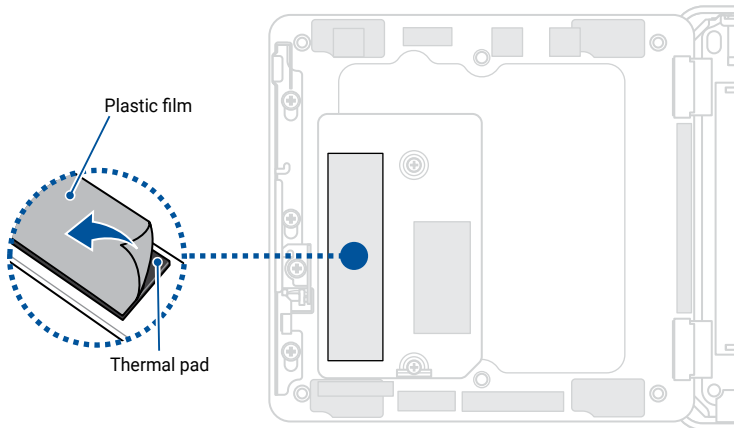
1. Insert the M.2 module into the M.2 slot on the system board.
2. Rotate the Q-Latch counterclockwise to secure the M.2 module in place.

NOTE: The Q-latch and latch screw is installed to the 2280 length position screw stand by default.



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

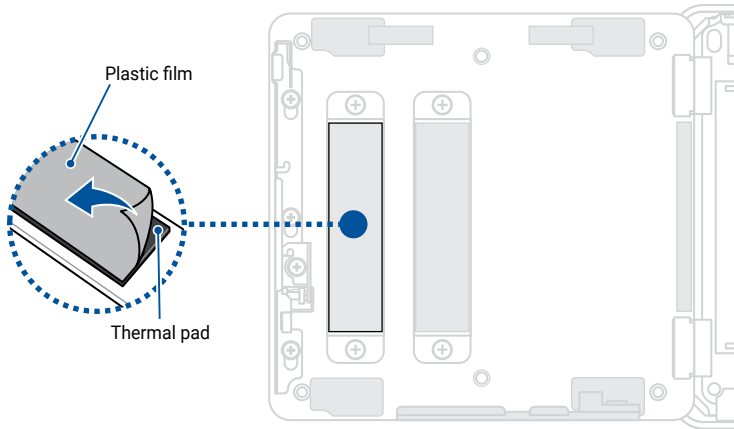
NUC15CRK



NOTE:

- The specifications for the thermal pad(s) used here are as follows:
Thickness: 1.25mm
Size: 55mm x 14.5mm
Thermal conductivity: 3.0 W/mK
Hardness: 20 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.



NOTE:

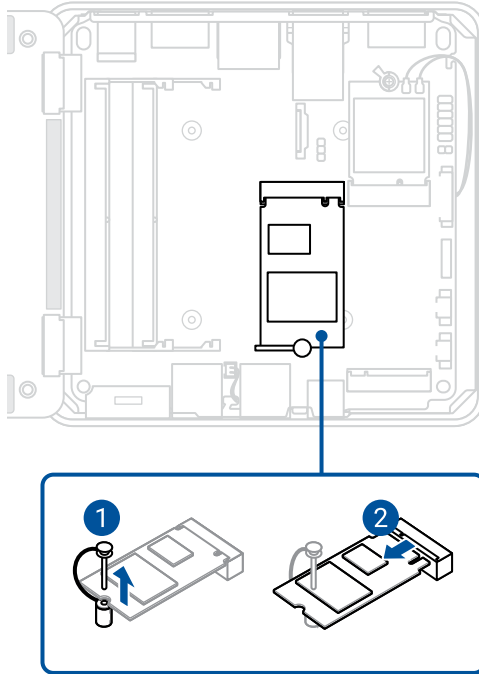
- The specifications for the thermal pad(s) used here are as follows:
Thickness: 1.25mm
Size: 55mm x 14.5mm
Thermal conductivity: 3.0 W/mK
Hardness: 20 shore 00
- To replace the thermal pad yourself, check with an ASUS Service Partner near you (www.asus.com/support) for the availability of replacement 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.

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

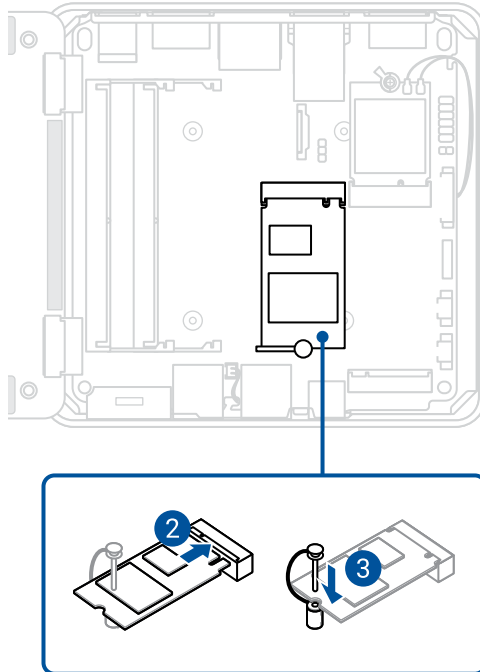
Removal (2242)

1. Pull the pin of the M.2 anchor upwards so that the pin is completely pulled out.
2. Remove the M.2 module from the M.2 slot.



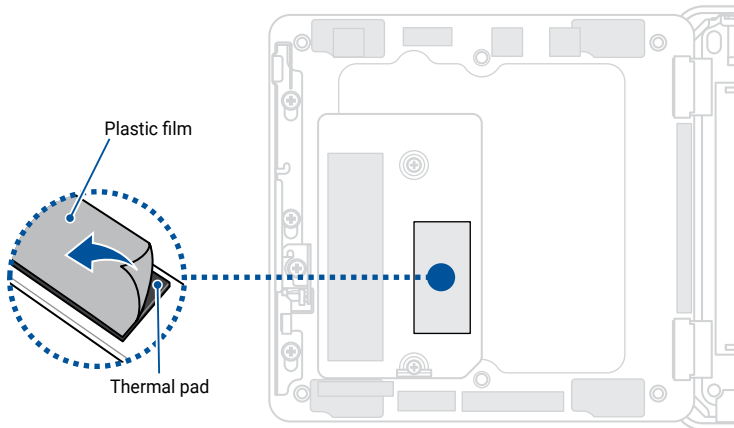
Installation (2242)

1. Pull the pin of the M.2 anchor upwards so that the pin is completely pulled out.
2. Align and insert the M.2 module.
3. Gently push the M.2 module down on top of the M.2 anchor, and secure it by pushing the pin of the M.2 anchor into the hole.



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

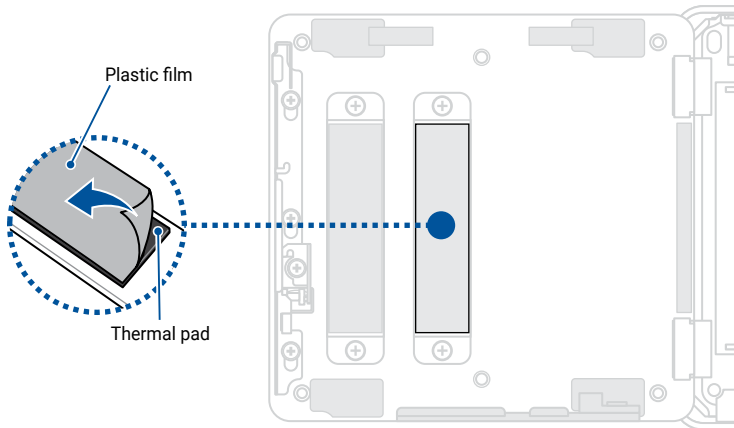
NUC15CRK



NOTE:

- The specifications for the thermal pad(s) used here are as follows:
Thickness: 1.25mm
Size: 30mm x 14.5mm
Thermal conductivity: 3.0 W/mK
Hardness: 20 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.



NOTE:

- The specifications for the thermal pad(s) used here are as follows:
Thickness: 1.25mm
Size: 55mm x 14.5mm
Thermal conductivity: 3.0 W/mK
Hardness: 20 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.

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

Optional M.2 expansion (only for NUC15CRH)

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.

NOTE:

- The system illustration for this section is for reference only. The system appearance may vary depending on the model, but the installation steps remain the same.
 - The module for optional 2280 M.2 is purchased separately.
-

Before you begin

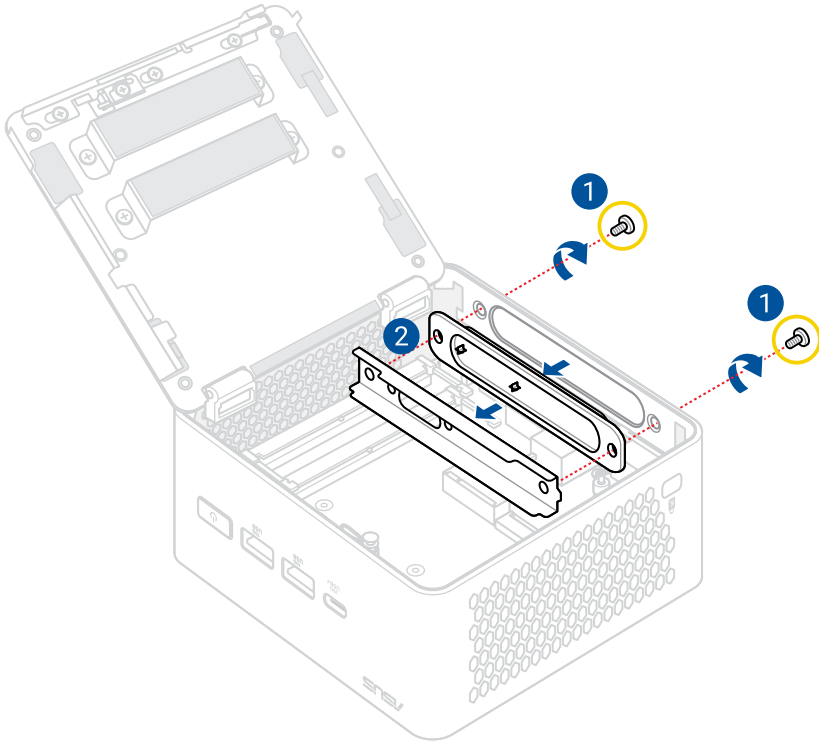
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Open the bottom cover.

Screw list

- ⊕ M3 X 5L (2 pcs)
- ⊕ M2.5 X 3L (2 pcs)
- ⊕ M2.5 X H7 (2 pcs)

Installation

1. Remove the two (2) screws securing the back panel faceplate.
2. Remove the back panel faceplate and separate the black plastic faceplate from the metal bracket.

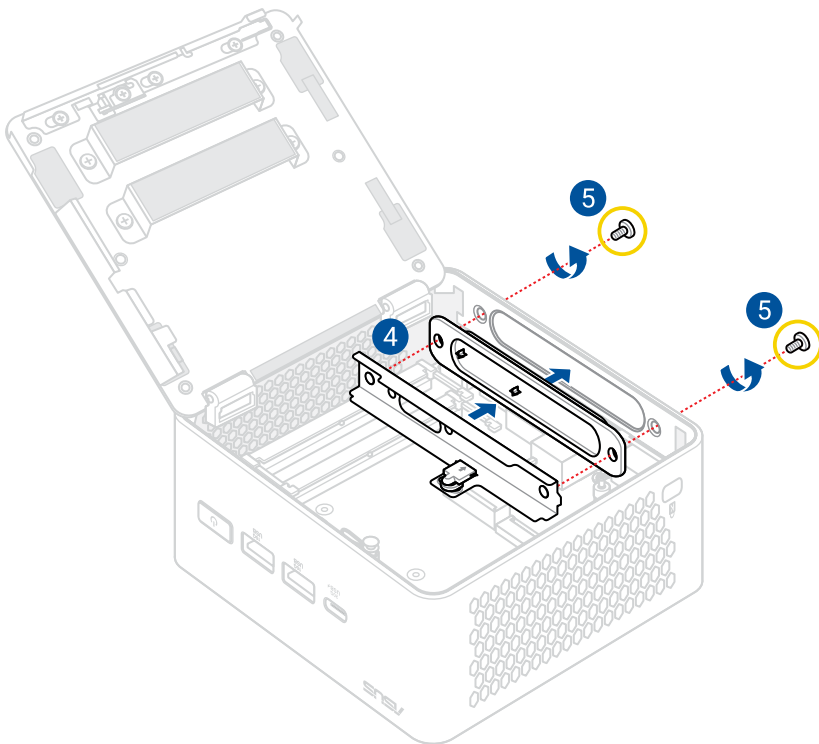


3. Prepare the M.2 expansion metal bracket.
4. Align and insert the cross protrusions on the plastic faceplate removed in step 2 into the M.2 expansion metal bracket.

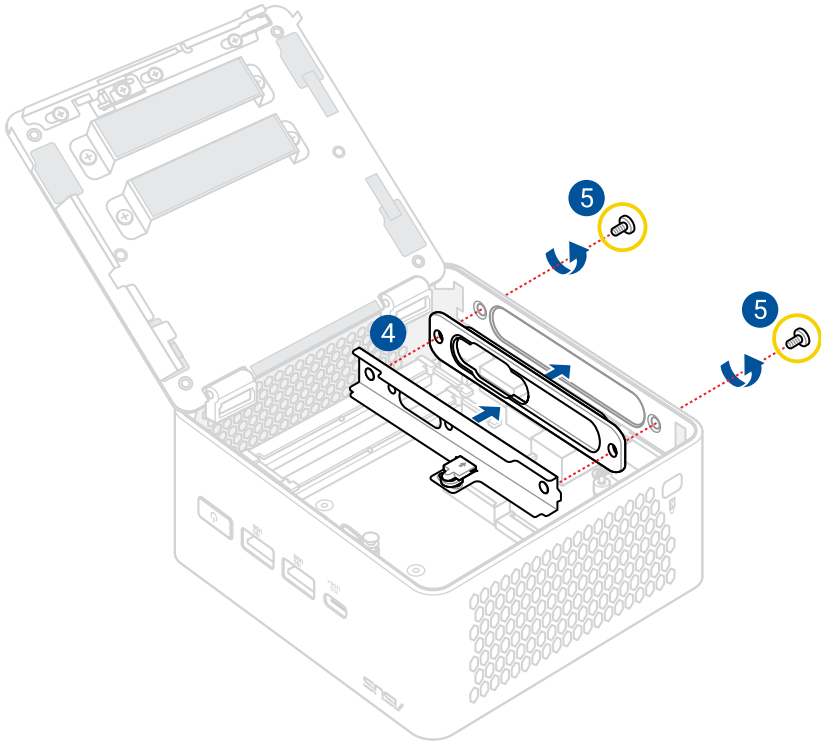
NOTE: An additional plastic faceplate with COM port opening is bundled, if you wish to install a COM port, please replace the default plastic faceplate with the bundled faceplate with COM port opening.

5. Secure the M.2 expansion metal bracket and plastic faceplate combo to the chassis using two (2) screws.

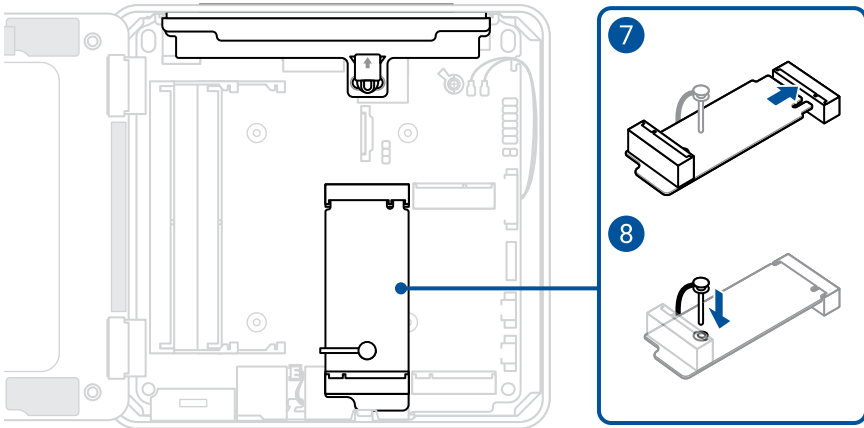
M.2 expansion metal bracket and default plastic faceplate



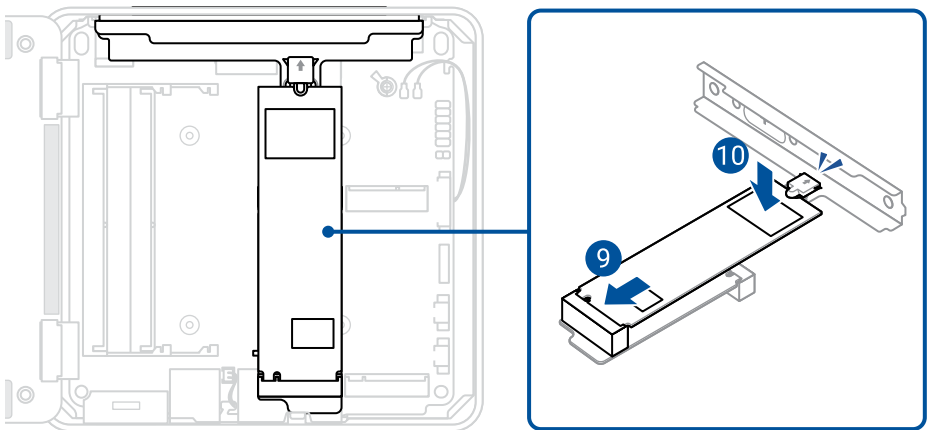
M.2 expansion metal bracket and plastic faceplate with COM port opening



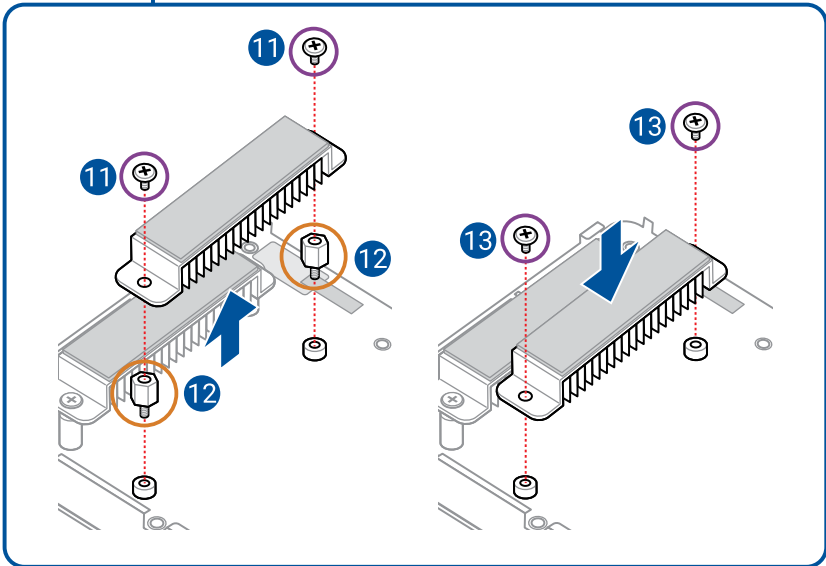
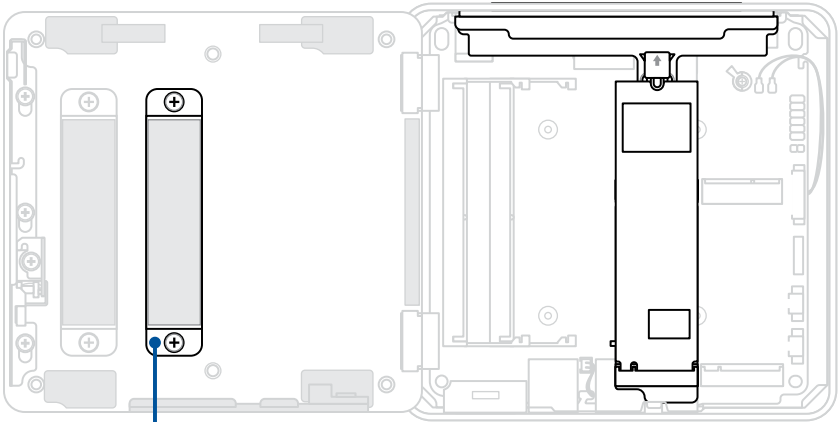
6. Pull the pin of the M.2 anchor upwards so that the pin is completely pulled out.
7. Insert the M.2 expansion board into the M.2 slot.
8. Gently push the M.2 expansion board down on top of the M.2 anchor, and secure it by pushing the pin of the M.2 anchor into the hole.



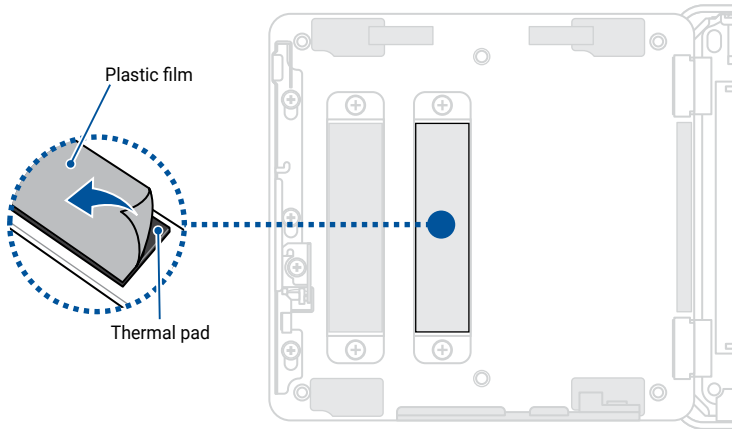
9. Insert the M.2 module into the M.2 slot on the M.2 expansion board.
10. Gently push the M.2 module down until the lock mechanism on the M.2 expansion metal bracket clicks and locks the M.2 module in place.



11. Remove the screws from the M.2 heatsink, then lift and remove the heatsink.
12. Remove the two (2) M.2 heatsink stand screws.
13. Replace the M.2 heatsink and secure it using the screws removed previously.



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



NOTE:

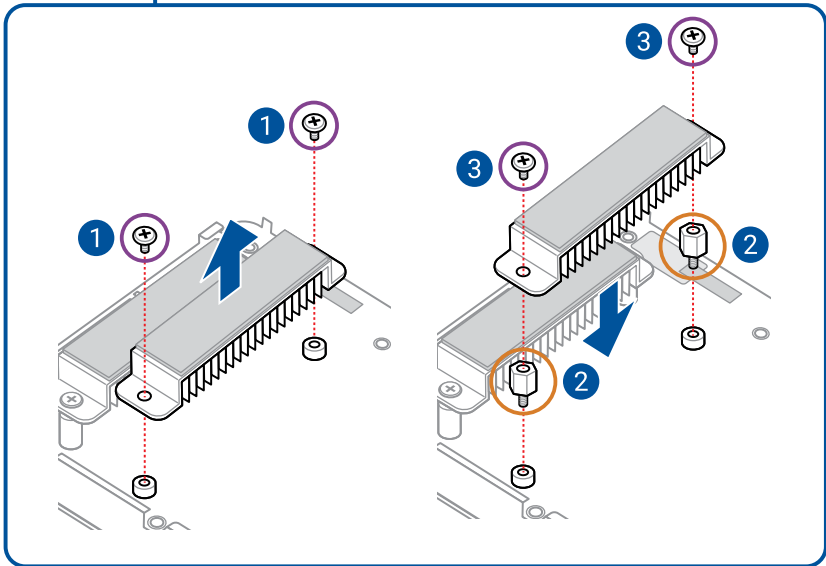
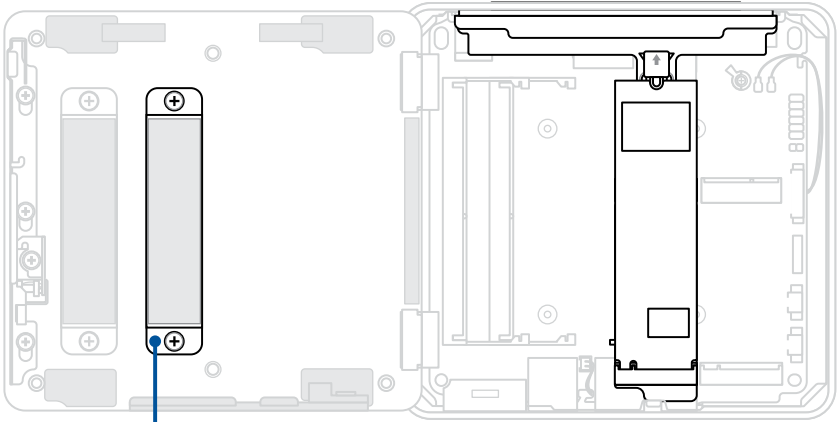
- The specifications for the thermal pad(s) used here are as follows:
Thickness: 1.25mm
Size: 55mm x 14.5mm
Thermal conductivity: 3.0 W/mK
Hardness: 20 shore 00
- To replace the thermal pad yourself, check with an ASUS Service Partner near you (www.asus.com/support) for the availability of replacement 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.

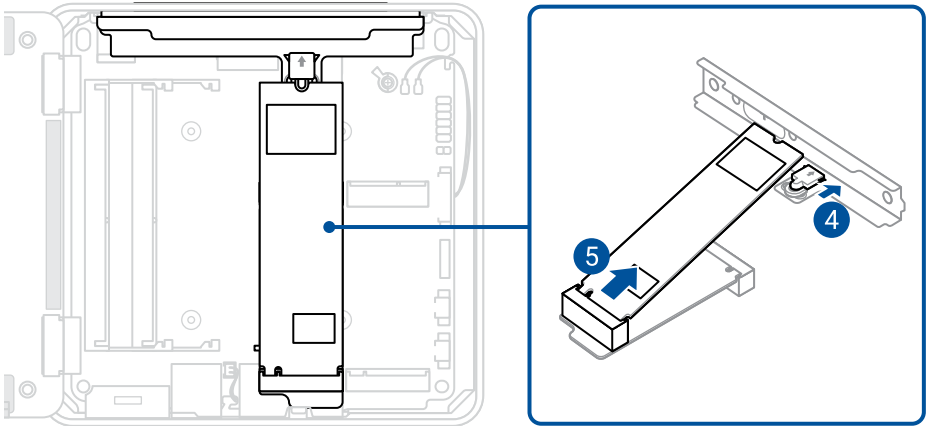
15. Install the component(s) you removed in **Before you begin**.

Removal

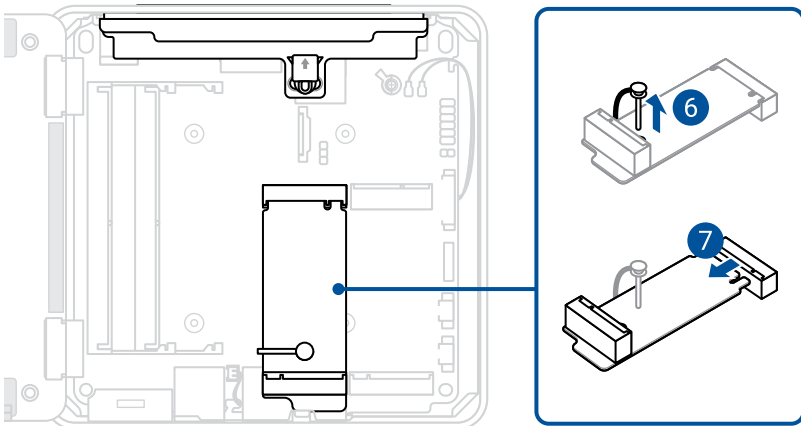
1. Remove the screws from the M.2 heatsink, then lift and remove the heatsink.
2. Install the two (2) M.2 heatsink stand screws.
3. Replace the M.2 heatsink and secure it using the screws removed previously.



4. Gently push the lock mechanism away from the M.2 slot to release the M.2 module.
5. Remove the M.2 module from the M.2 slot on the M.2 expansion board.

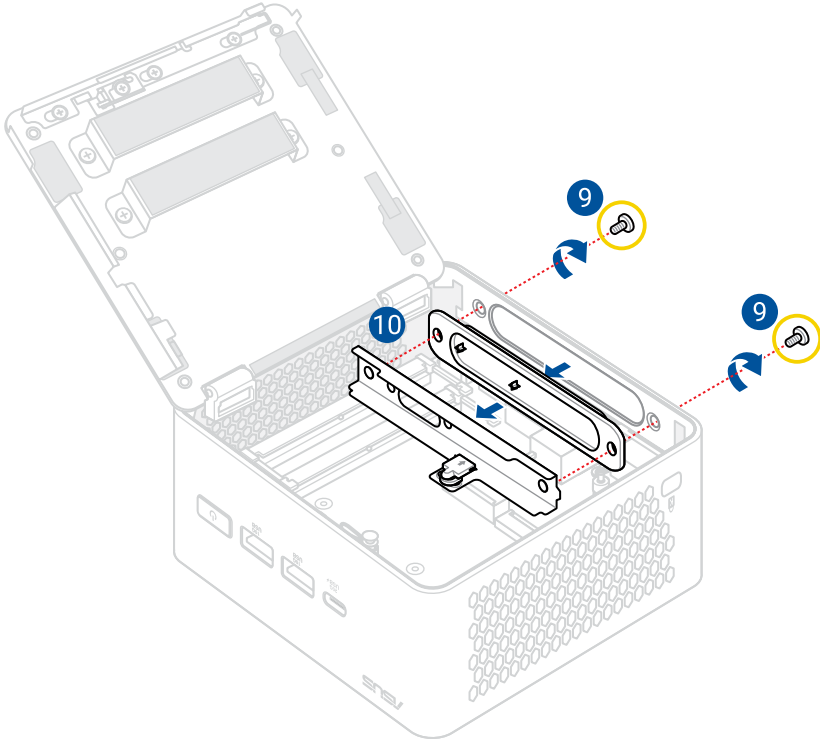


6. Pull the pin of the M.2 anchor upwards so that the pin is completely pulled out.
7. Remove the M.2 expansion board into the M.2 slot.
8. Replace the M.2 anchor.

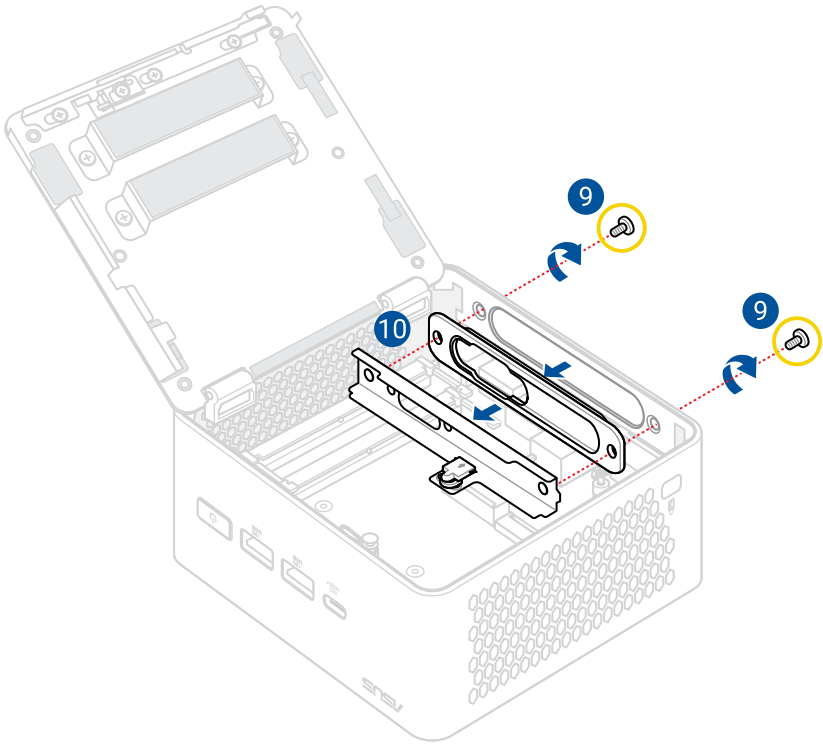


9. Remove the two (2) screws securing the back panel faceplate.
10. Remove the M.2 expansion metal bracket and plastic faceplate combo from the chassis.

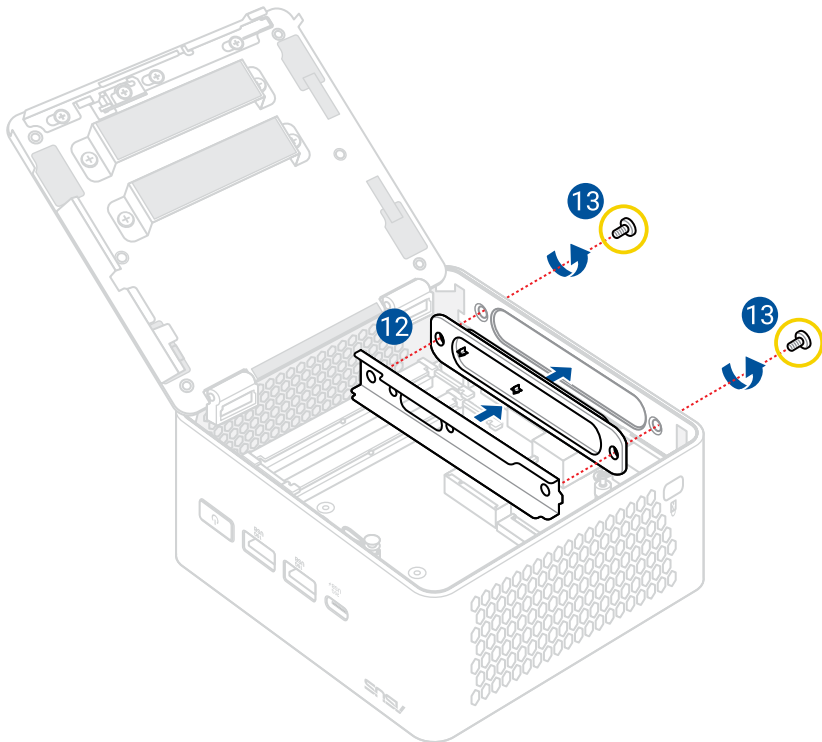
M.2 expansion metal bracket and default plastic faceplate



M.2 expansion metal bracket and plastic faceplate with COM port opening



11. Prepare the default metal bracket and plastic faceplate.
12. Align and insert the cross protrusions on the default plastic faceplate into the default metal bracket.
13. Secure the default metal bracket and default plastic faceplate combo to the chassis using two (2) screws.



Optional LAN expansion (only for NUC15CRH)

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.

NOTE:

- The system illustration for this section is for reference only. The system appearance may vary depending on the model, but the installation steps remain the same.
 - The module for optional LAN expansion is purchased separately.
-

Before you begin

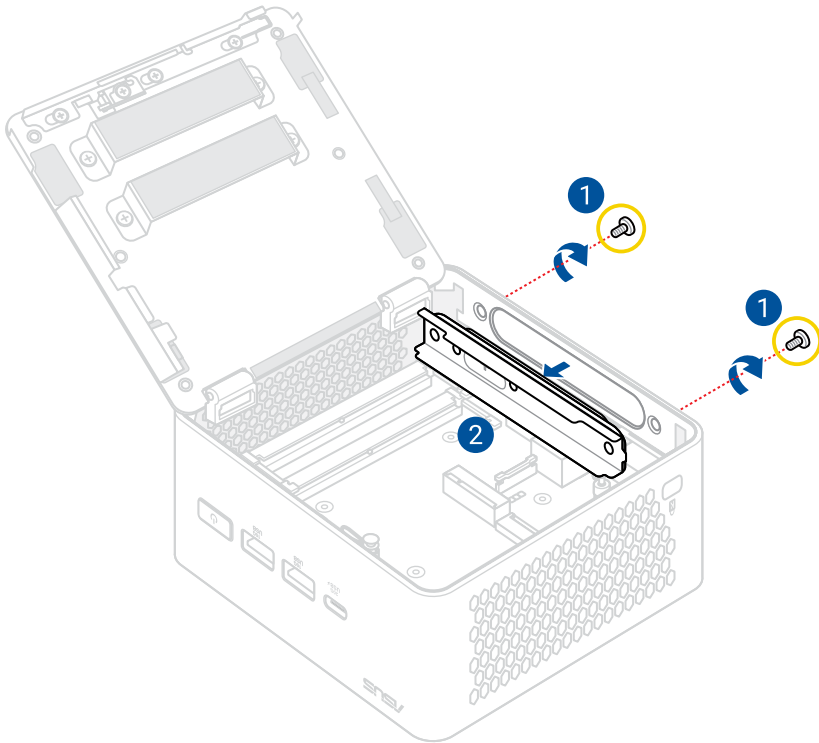
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Open the bottom cover.

Screw list

- ⊕ M3 X 5L (2 pcs)

Installation

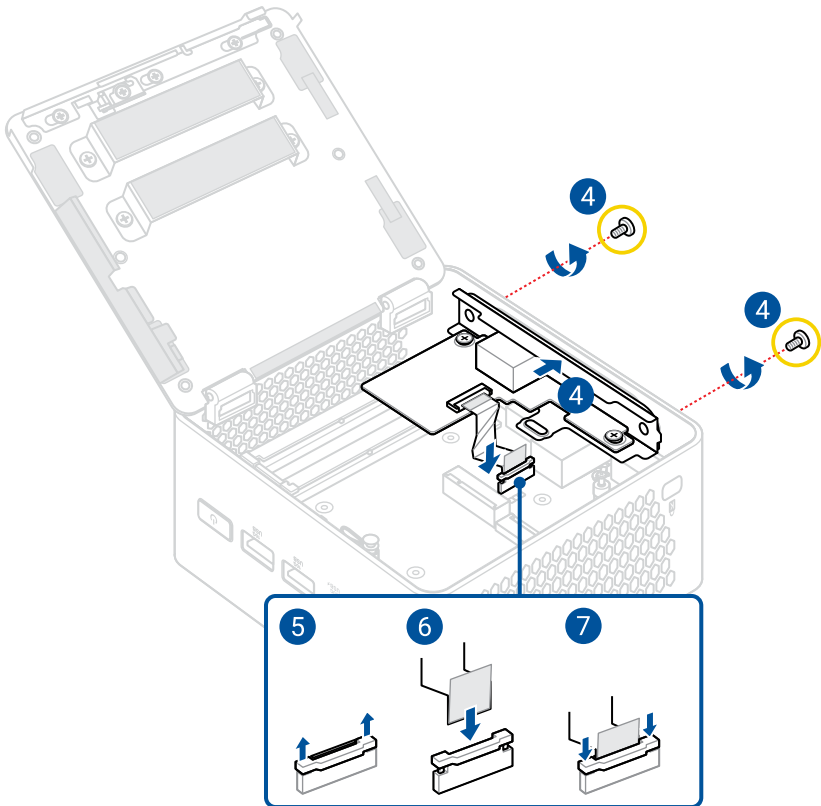
1. Remove the two (2) screws securing the back panel faceplate.
2. Remove the back panel faceplate.



3. Prepare the LAN expansion module.
4. Secure the LAN expansion module to the chassis using two (2) screws.
5. Pull the latch on the flexible flat cable (FFC) connector up.
6. Install the FFC into the FFC connector.

WARNING! Ensure the FFC is connected in the correct orientation with the gold fingers facing away from the FFC connector latch.

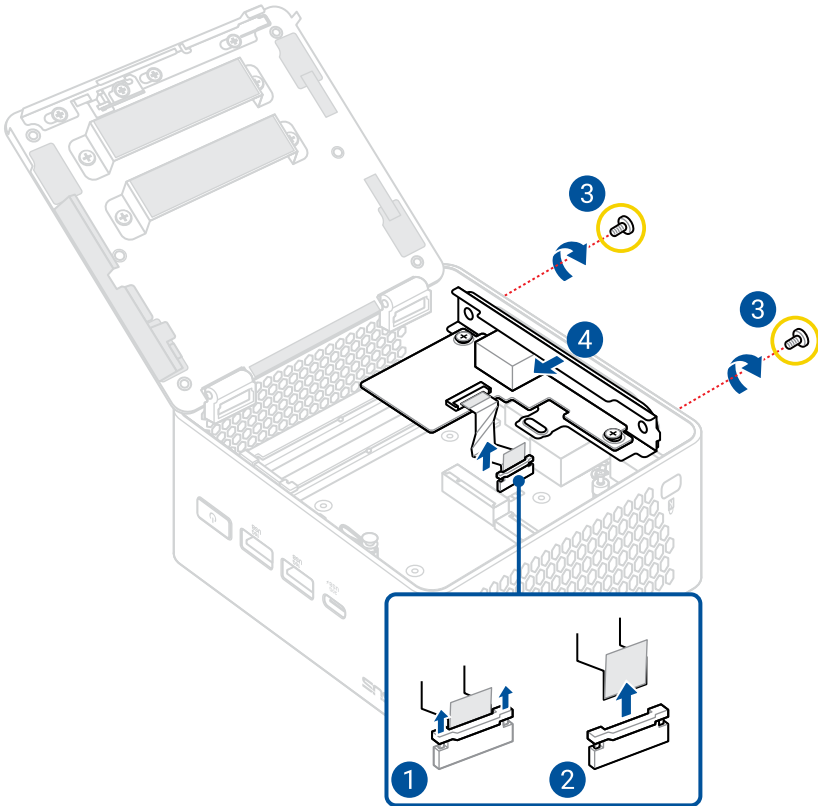
7. Push the latch down to secure the FFC in place.



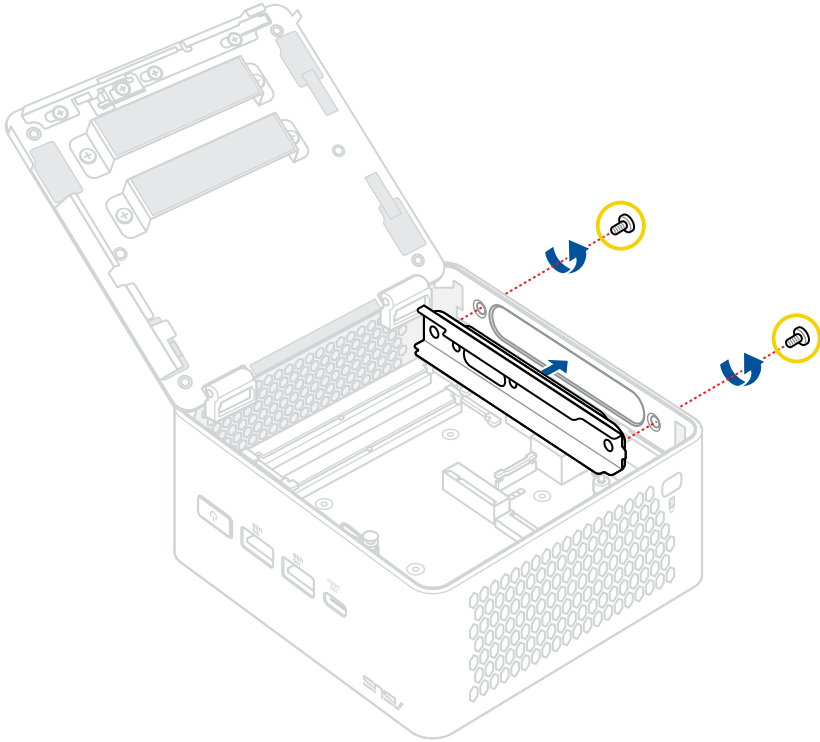
8. Install the component(s) you removed in **Before you begin**.

Removal

1. Pull the latch on the flexible flat cable (FFC) connector up.
2. Remove the FFC from the FFC connector.
3. Remove the two (2) screws securing the LAN expansion module.
4. Remove the LAN expansion module.



5. Install the back panel faceplate and secure it with two (2) screws.



Optional LAN and COM expansion (only for NUC15CRH)

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.

NOTE:

- The system illustration for this section is for reference only. The system appearance may vary depending on the model, but the installation steps remain the same.
 - The module for optional LAN and COM expansion is purchased separately.
-

Before you begin

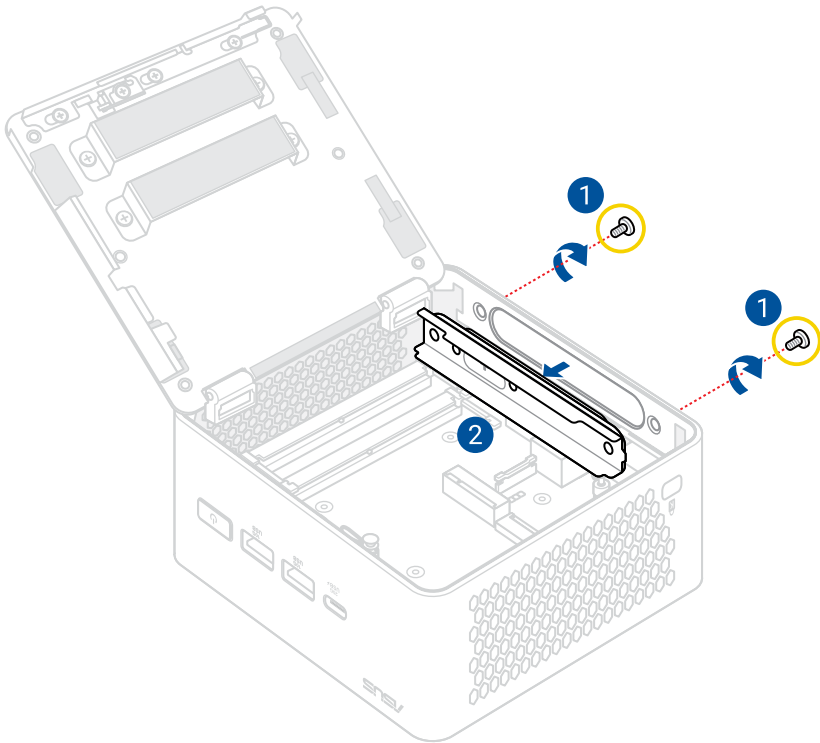
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Open the bottom cover.

Screw list

- ⊕ M3 X 5L (2 pcs)

Installation

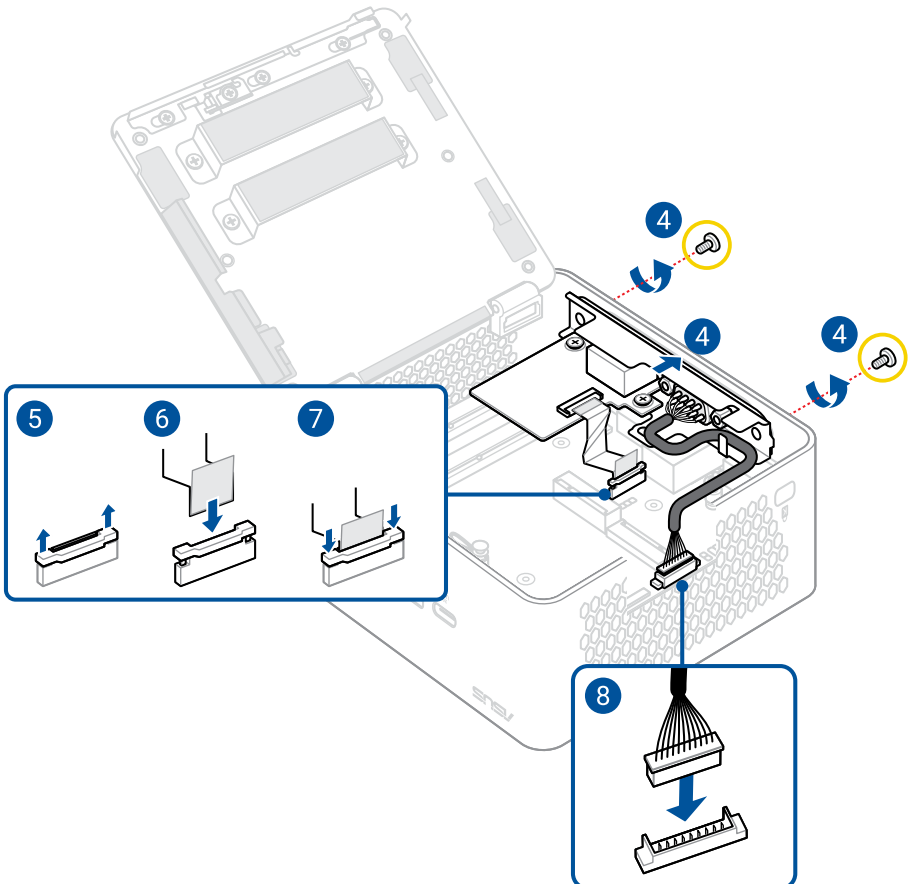
1. Remove the two (2) screws securing the back panel faceplate.
2. Remove the back panel faceplate.



3. Prepare the LAN and COM expansion module.
4. Secure the LAN and COM expansion module to the chassis using two (2) screws.
5. Pull the latch on the flexible flat cable (FFC) connector up.
6. Install the FFC into the FFC connector.

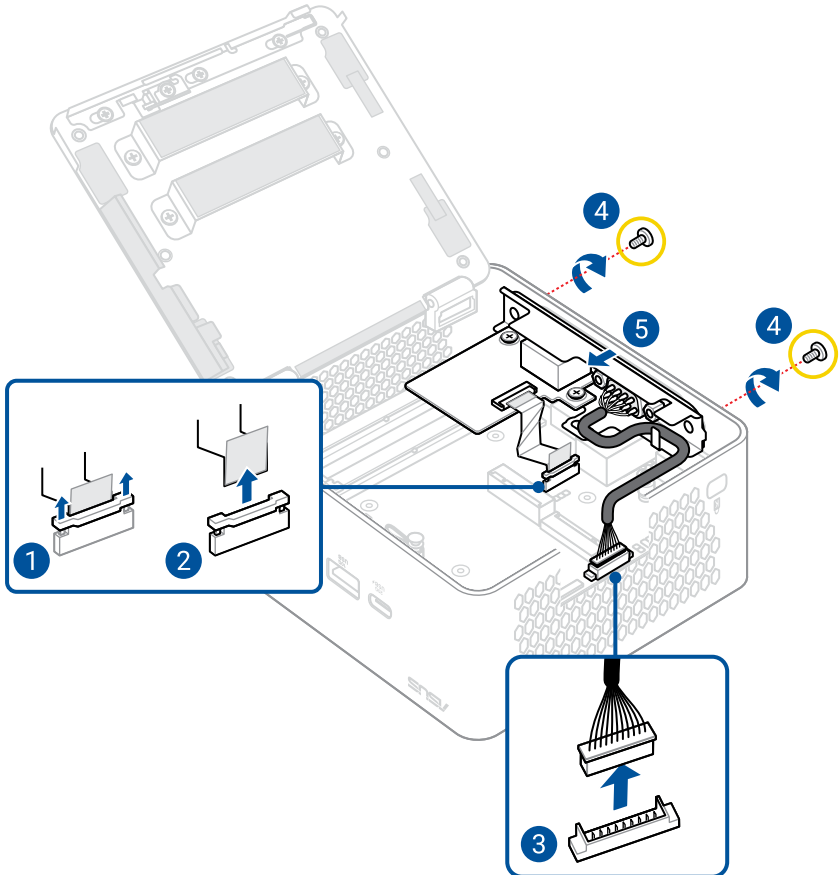
WARNING! Ensure the FFC is connected in the correct orientation with the gold fingers facing away from the FFC connector latch.

7. Push the latch down to secure the FFC in place.
8. Connect the COM port cable to the COM port to the connector on the motherboard.

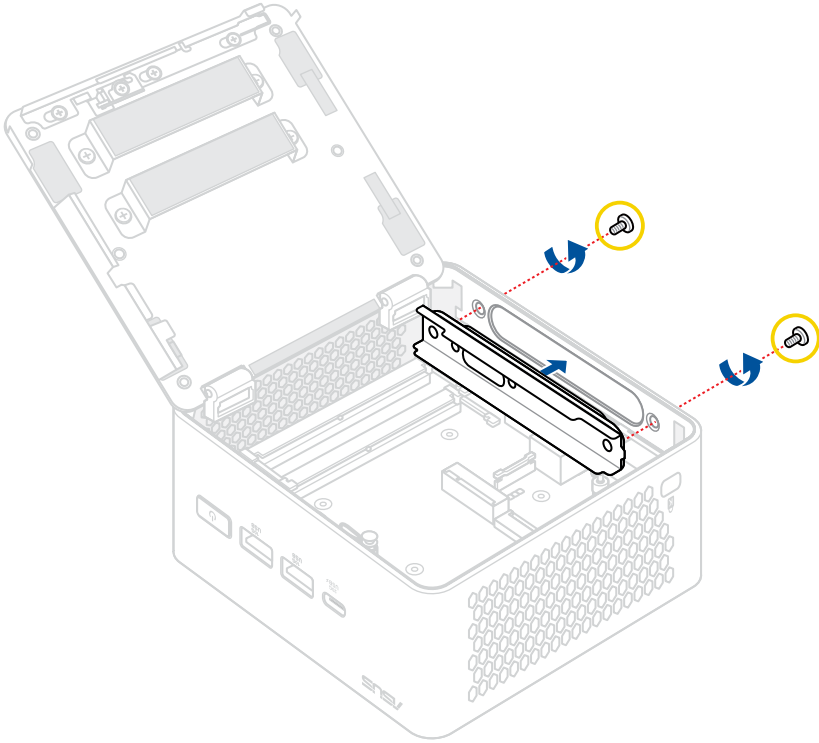


Removal

1. Pull the latch on the flexible flat cable (FFC) connector up.
2. Remove the FFC from the FFC connector.
3. Disconnect the COM port cable from the COM port connector on the motherboard.
4. Remove the two (2) screws securing the LAN and COM expansion module.
5. Remove the LAN and COM expansion module.



6. Install the back panel faceplate and secure it with two (2) screws.



Wireless card

NOTE: The system illustration for this section is for reference only. The system appearance may vary depending on the model, but the installation steps remain the same.

Before you begin

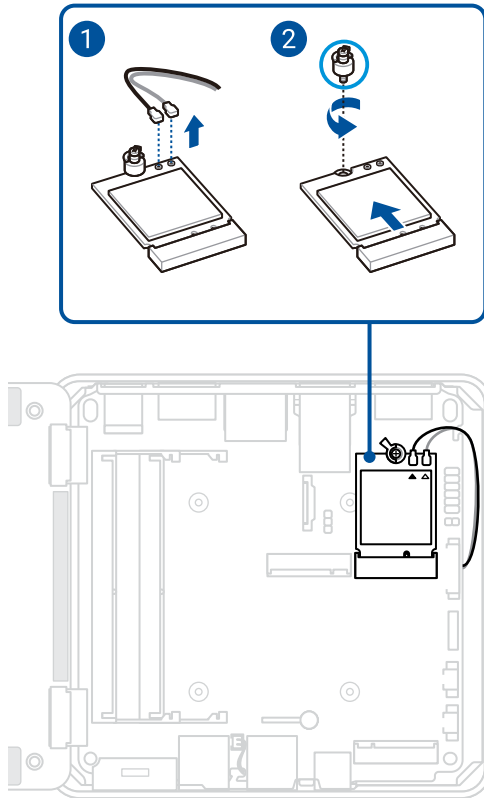
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Open the bottom cover.
3. Remove the following component(s):
 - M.2 SSD (2280)

Screw list

- ⊕ Q-latch standoff screw (1 pc)

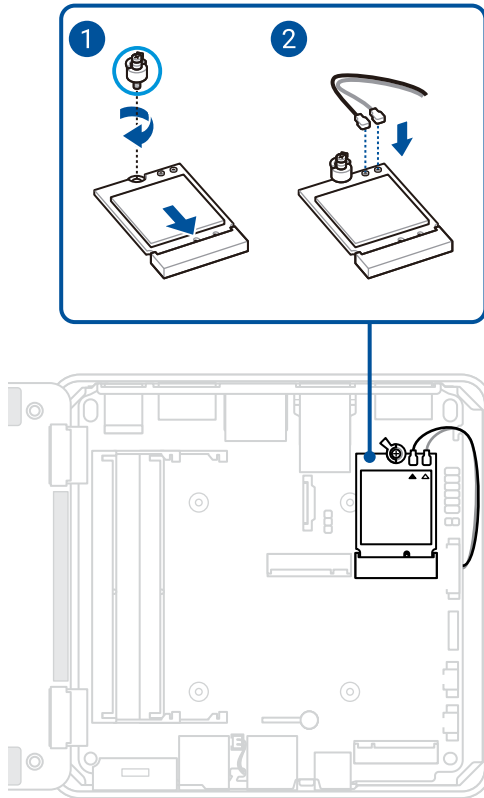
Removal

1. Disconnect the antenna cables from the wireless card.
2. Remove the Q-latch standoff screw, then remove the wireless card.



Installation

1. Install the wireless card, then secure it using the Q-latch standoff screw.
2. Connect the antenna cables to the wireless card.



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.

NOTE: The system illustration for this section is for reference only. The system appearance may vary depending on the model, but the installation steps remain the same.

Before you begin

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

Screw list

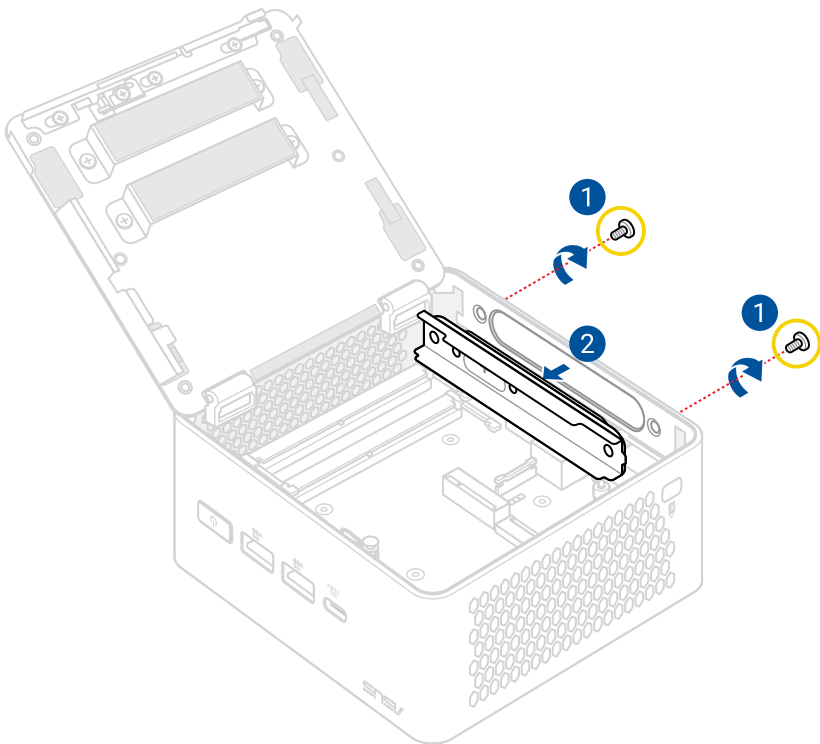
- ⊕ M3 X 5L (2 pcs, NUC15CRH only)
- ⊕ M2.5 X 5L (4 pcs)
- ⊕ M2.5 X 5.5L (4 pcs)
- ⊕ Fan captive screws (2 pcs)
- ⊕ Heatsink captive screws (4 pcs)

Removal

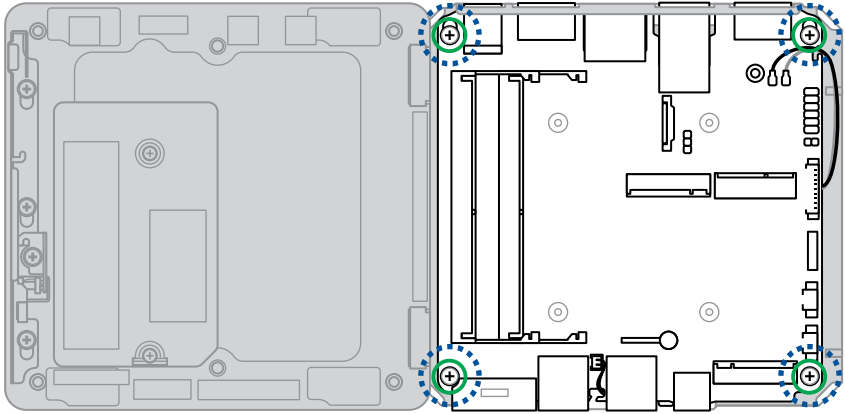
NOTE:

- Only follow steps 1 and 2 for the NUC15CRH model. For the NUC15CRK model, please skip to step 3.
 - If the optional M.2 expansion, optional LAN expansion, or optional LAN and COM expansion is installed, please refer to the respective sections in this guide to remove the optional M.2 expansion, optional LAN expansion, or optional LAN and COM expansion.
-

1. Remove the two (2) screws securing the back panel faceplate.
2. Remove the back panel faceplate.

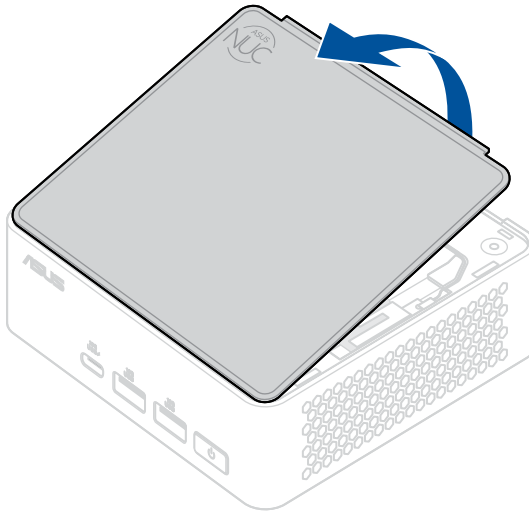


3. Remove four (4) screws from the motherboard.



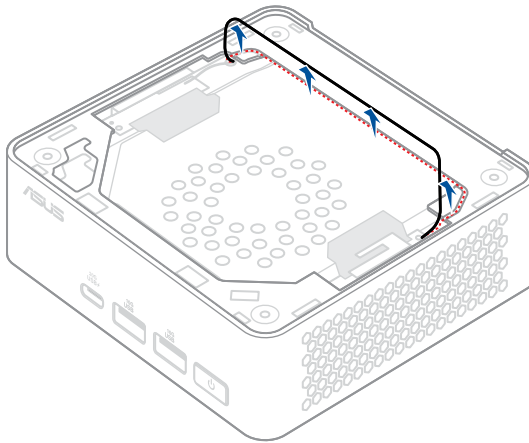
4. Flip the system over.
5. Pry open the top cover, then remove the top cover.

NOTE: Use a tool if necessary.

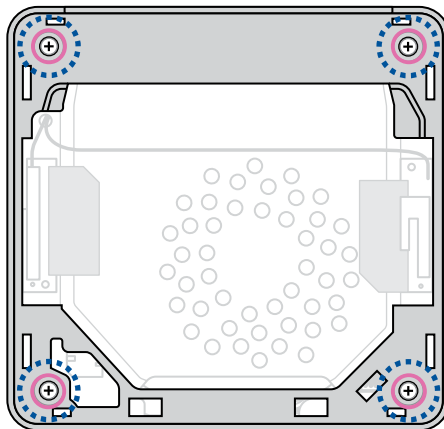


- Carefully detach the antenna cable from the cable routing groove so that the antenna cable is completely free from the plastic bracket.

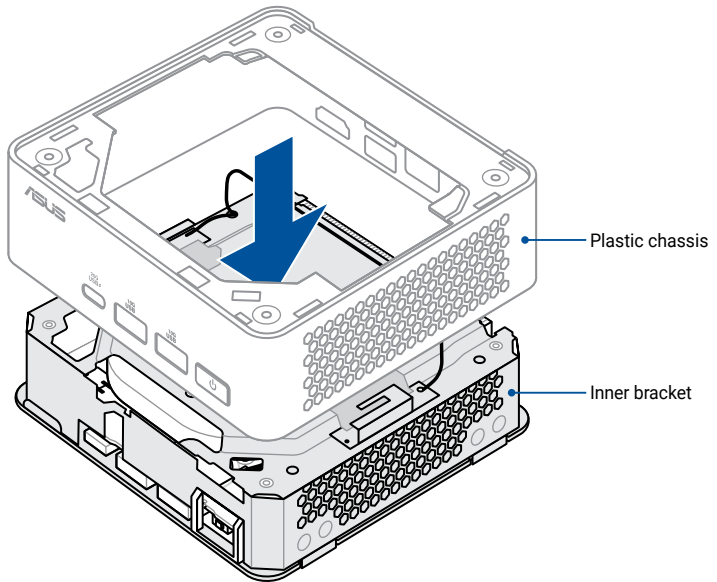
NOTE: Use a tool if necessary.



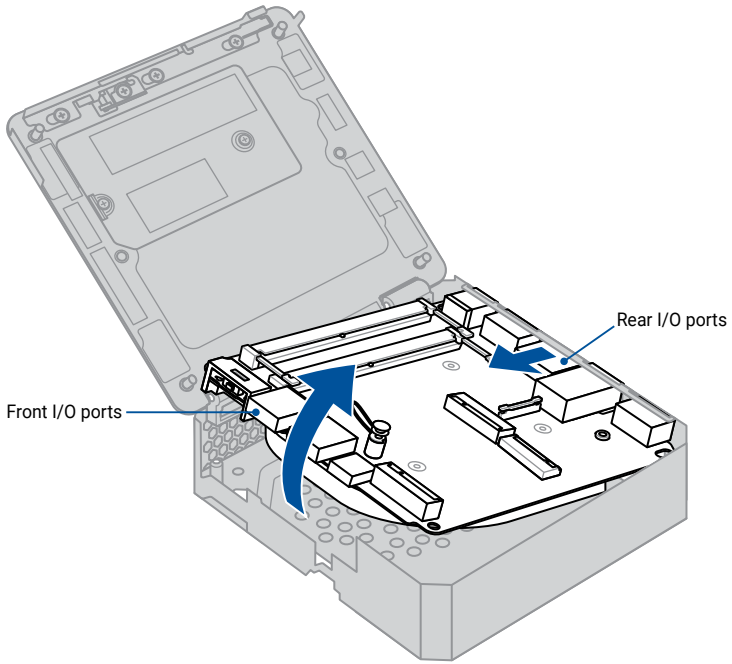
- Remove the four (4) screws securing the inner bracket.



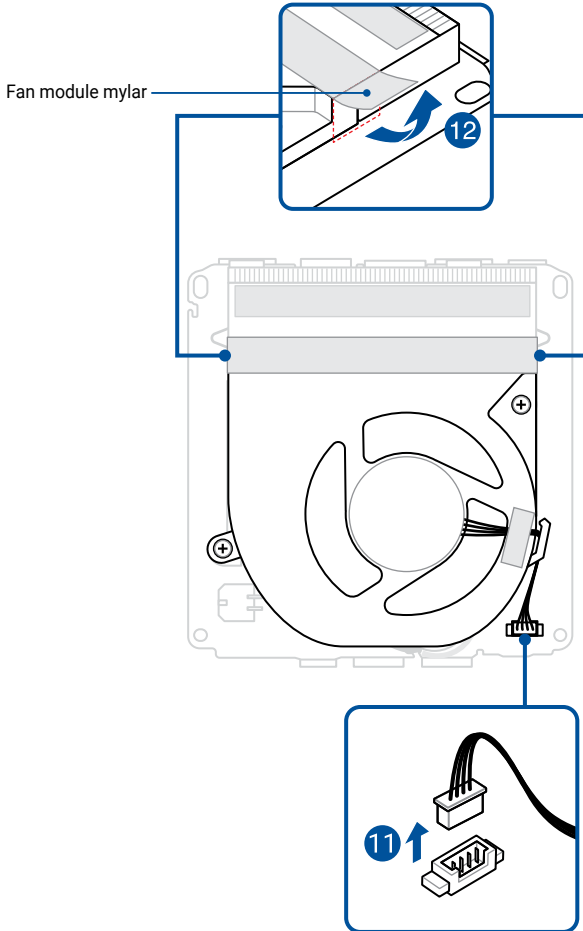
8. Gently push the inner bracket out of the plastic chassis until the inner bracket is completely disengaged from the plastic chassis, then place the plastic chassis aside.



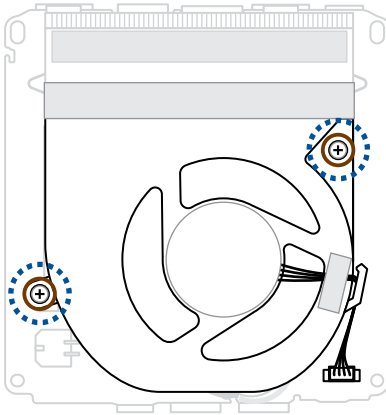
9. Flip the inner bracket over, then remove the motherboard by first lifting the side with the front I/O ports upwards, then pulling the motherboard towards you so that the rear I/O ports slide out of the inner bracket.



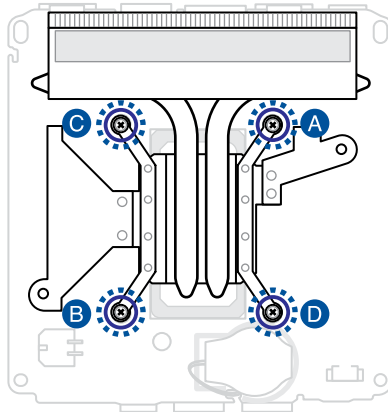
10. Place the motherboard face down.
11. Disconnect the fan cable from the motherboard.
12. Peel both sides of the fan module mylar upwards.



13. Completely loosen the two (2) fan screws, then lift and remove the fan module.

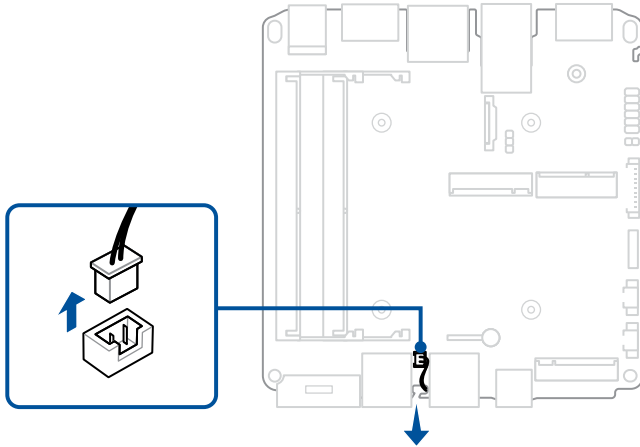


14. Loosen the heatsink screw(s) one by one in the sequence shown in the illustration.



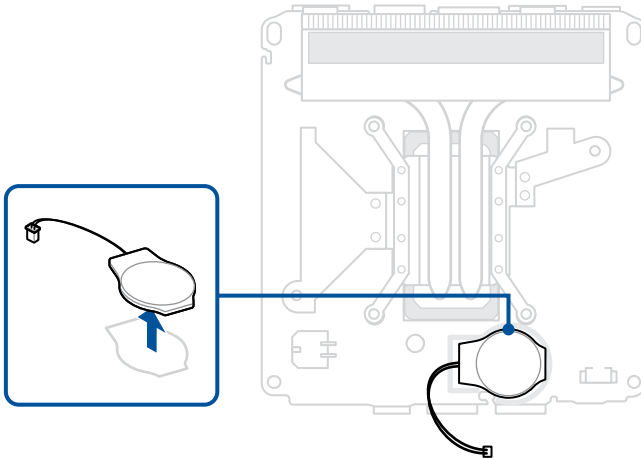
15. Remove the heatsink.

16. Disconnect the battery cable from battery connector on the flip side of the motherboard.



17. Carefully remove the CMOS battery.

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

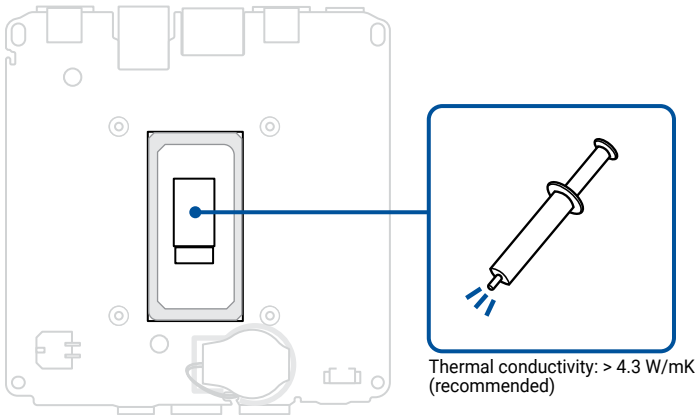


Installation

WARNING! To prevent potential damage to the CPU, you should have the CPU thermal fan and module 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.

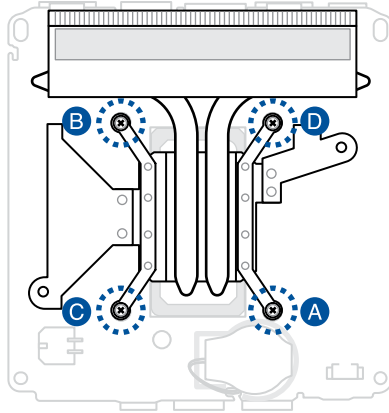
1. Prepare the motherboard by wiping the CPU surface clean with a clean cloth. Apply several drops of TIM to the exposed area of the CPU that will be in contact with the heatsink. Ensure that it is spread in an even thin layer.



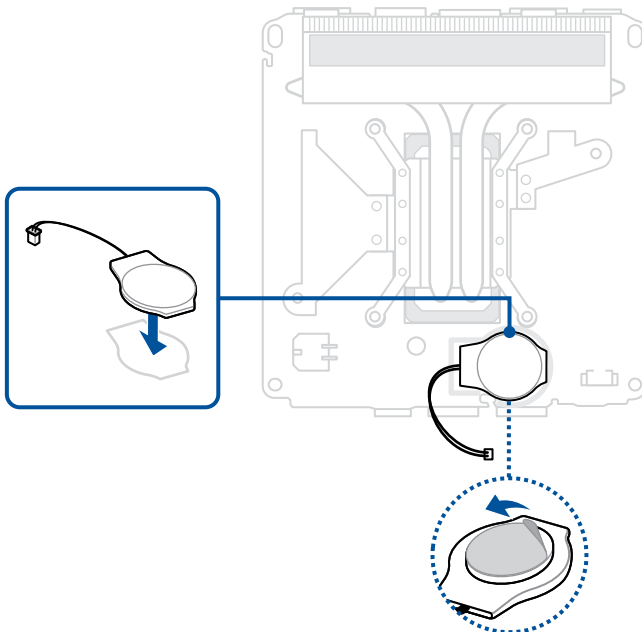
WARNING! The TIM is toxic and inedible. DO NOT eat it. If it gets into your eyes or touches your skin, wash it off immediately, and seek professional medical help.

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

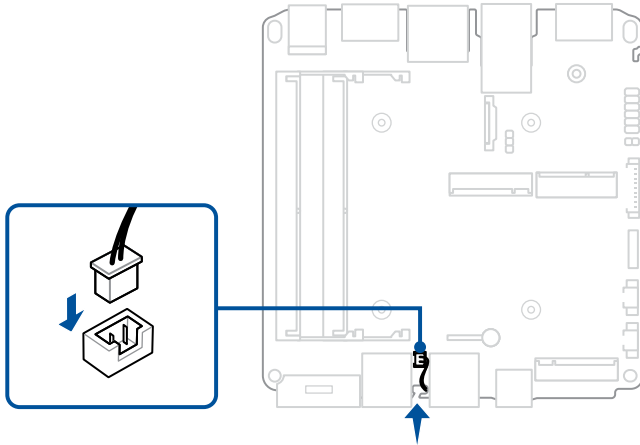
- Align and place the heatsink as shown, and secure it to the motherboard by tightening the screw(s) one by one in the sequence shown in the illustration.



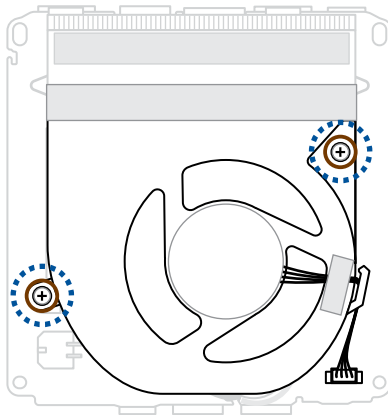
- Remove the release liner on the battery, if one exists.
- Align the battery as shown, and then affix it within the designated area outlined on the motherboard.



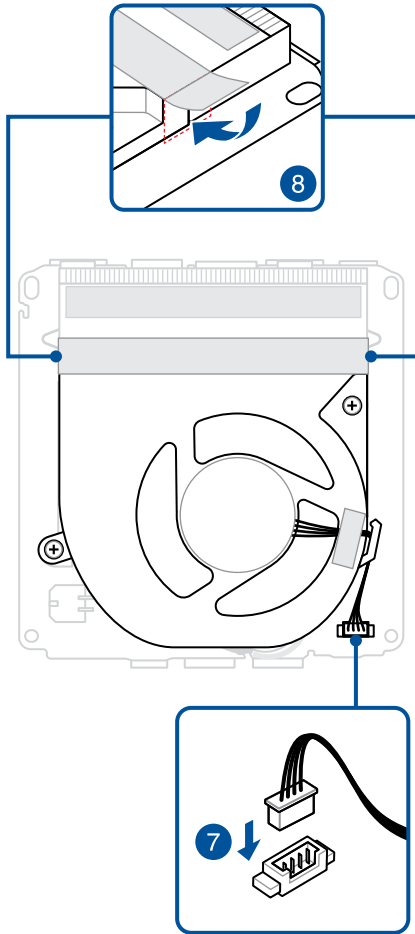
5. Connect the cable from the battery to the battery connector on the flip side of the motherboard.



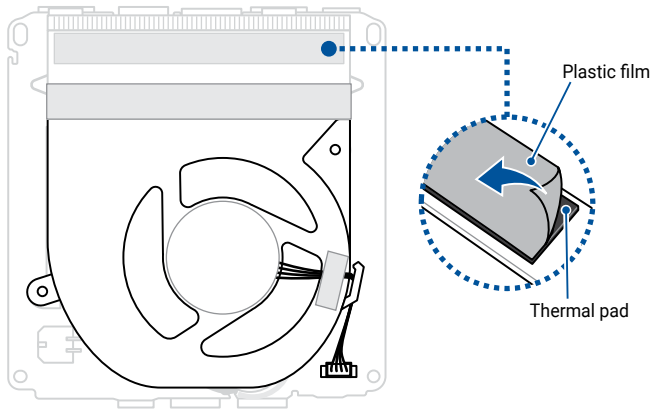
6. Align and place the fan module as shown then secure the fan by tightening the two (2) screws.



7. Connect the cable from the fan module to the fan connector on the motherboard.
8. Make sure the fan mylar is stuck firmly to the heatsink.



9. Before replacing the motherboard, ensure to remove the plastic film on the thermal pad(s), if they exist.



NOTE:

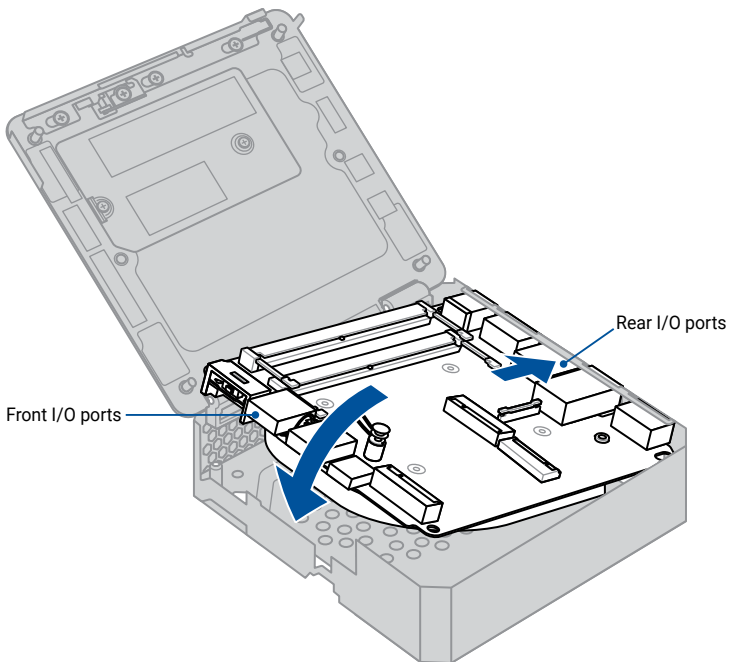
- The specifications for the thermal pad(s) used here are as follows:
Thickness: 1mm
Size: 77mm x 8.8mm
Thermal conductivity: 1.8 W/mK
Hardness: 20 shore 00
- To replace the thermal pad yourself, check with an ASUS Service Partner near you (www.asus.com/support) for the availability of replacement thermal 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 fan module and motherboard, you should have the thermal pad replaced by a service center near you.

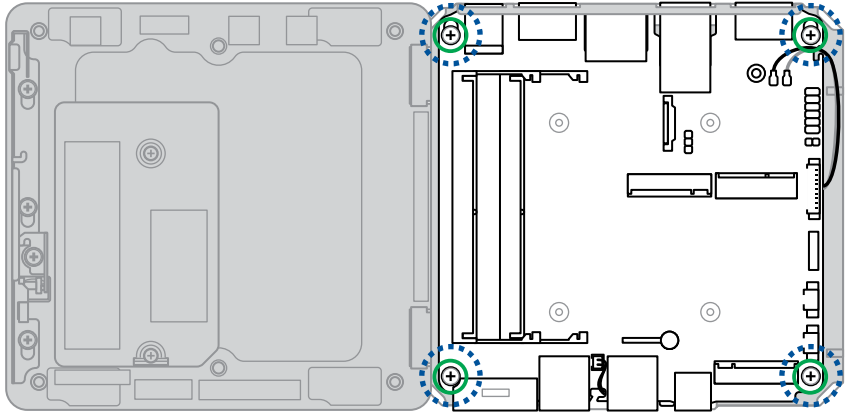
10. Place the motherboard into the inner bracket by sliding the rear I/O ports of the motherboard into the chassis first, then pushing the front I/O ports side downwards.

NOTE:

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

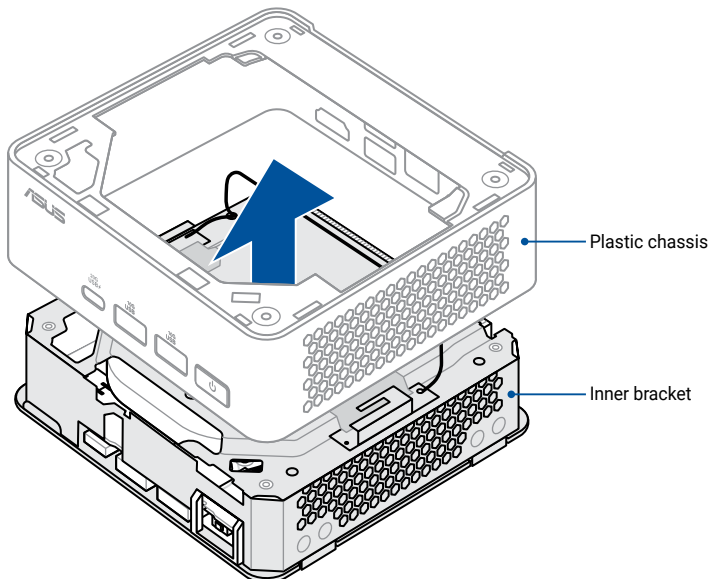


11. Secure the motherboard using four (4) screws.



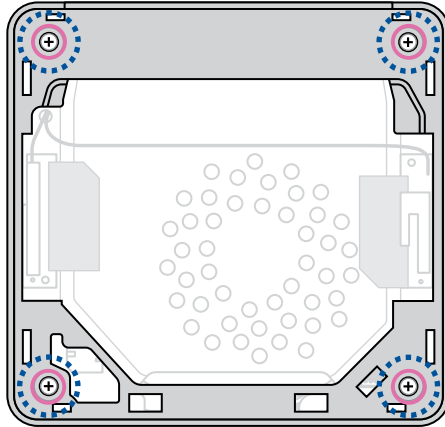
12. Align the ports of the motherboard to the openings on the plastic chassis, then place the inner bracket into the plastic chassis.

NOTE: Make sure the antenna cable is easily accessible after the plastic chassis has been replaced. We recommend pushing the antenna cable towards the middle of the inner bracket when placing the inner bracket into the plastic chassis.



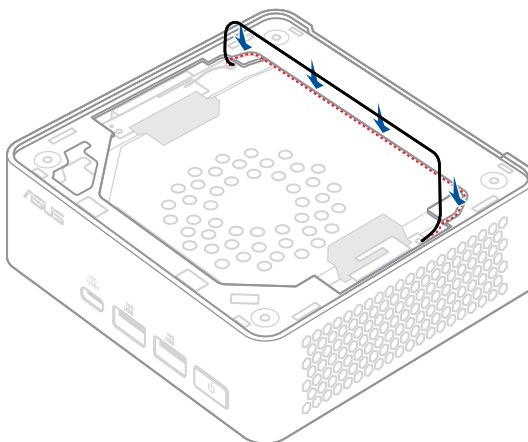
13. Flip the entire system over.
14. Secure the inner bracket to the plastic chassis using four (4) screws.

NOTE: Make sure the antenna cable is easily accessible after the plastic chassis has been replaced. We recommend pushing the antenna cable towards the middle of the inner bracket when placing the inner bracket into the plastic chassis.

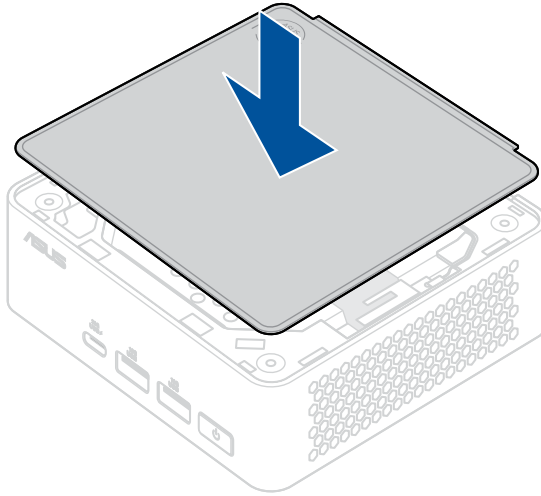


15. Push the antenna cable into the grooves on the plastic chassis.

NOTE: Use a tool if necessary.



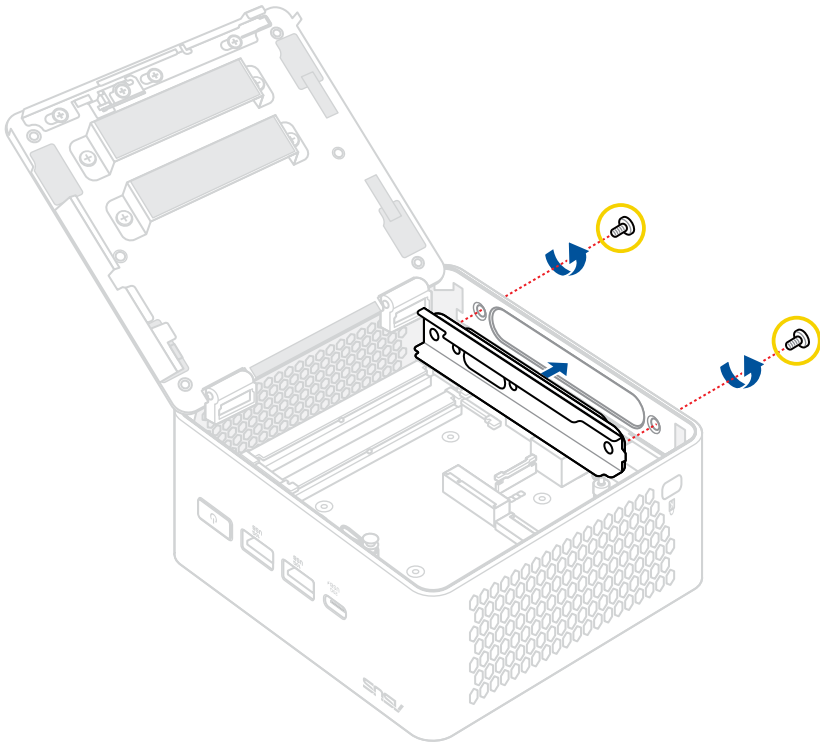
16. Replace the top cover.



NOTE:

- Only follow step 17 for the NUC15CRH model.
 - If you wish to install the optional M.2 expansion, optional LAN expansion, or optional LAN and COM expansion, please refer to the respective sections in this guide to install the optional M.2 expansion, optional LAN expansion, or optional LAN and COM expansion.
-

17. Install the back panel faceplate and secure it with two (2) screws.



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

Fan module

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

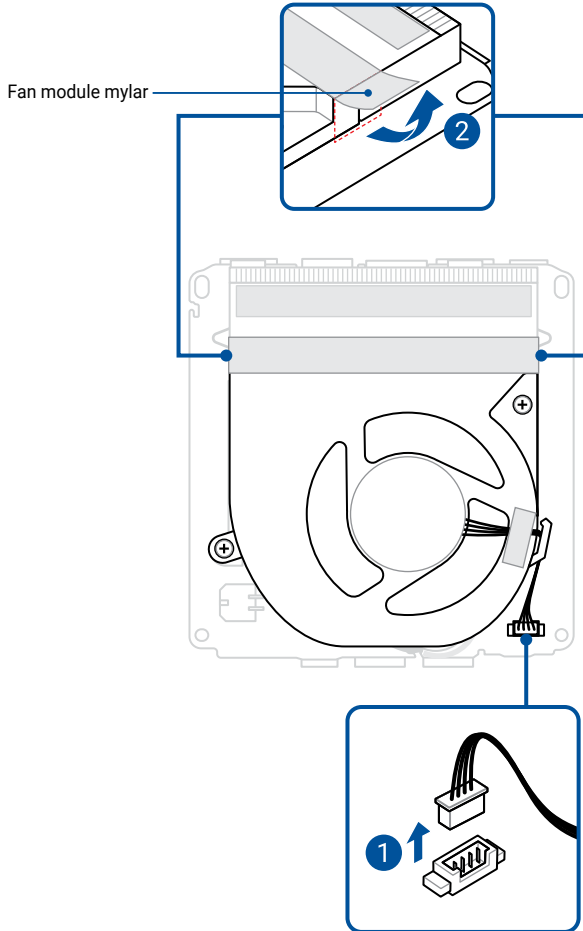
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Open the bottom cover.
3. Remove the following component(s):
 - Memory module
 - M.2 SSD
 - Wireless card
 - Motherboard

Screw list

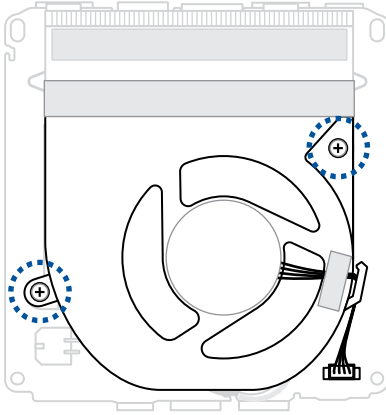
- ⊕ Fan captive screws (2 pcs)

Removal

1. Disconnect the fan cable from the motherboard.
2. Peel both sides of the fan module mylar upwards.



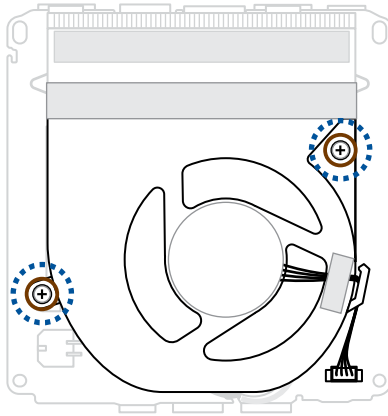
3. Completely loosen the two (2) fan screws, then lift and remove the fan module.



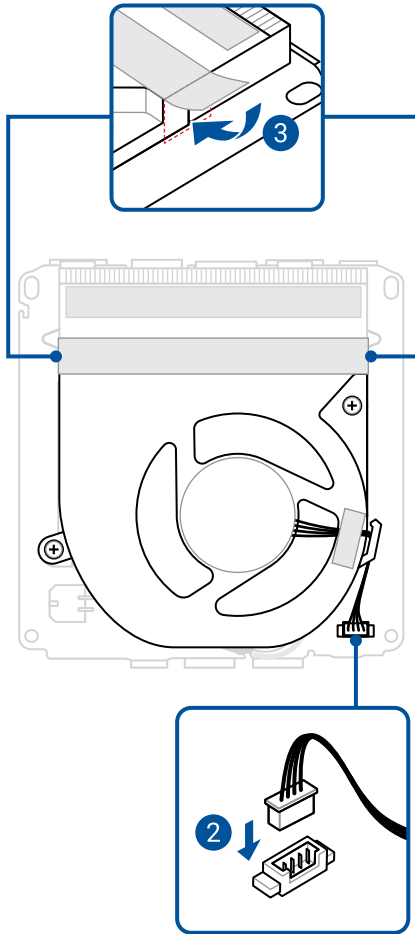
Installation

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

1. Align and place the fan module as shown then secure the fan by tightening the two (2) screws.



2. Connect the cable from the fan module to the fan connector on the motherboard.
3. Make sure the fan mylar is stuck firmly to the heatsink.



4. 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

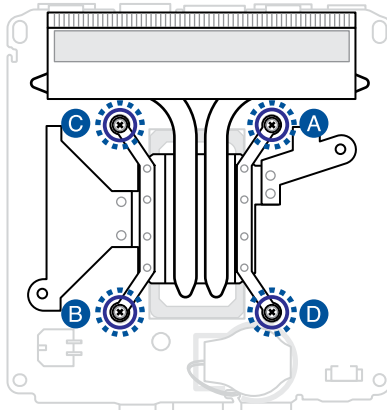
1. Read the **Safety Precautions** and complete the **Pre-repair Checklist**.
2. Open the bottom cover.
3. Remove the following component(s):
 - Memory module
 - M.2 SSD
 - Wireless card
 - Motherboard
 - Fan module

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.

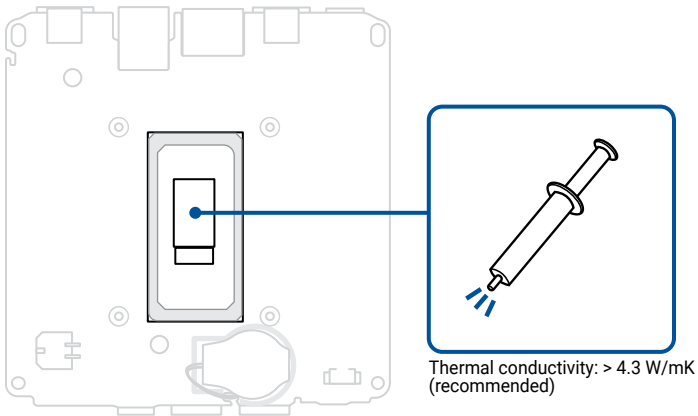


Installation

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.

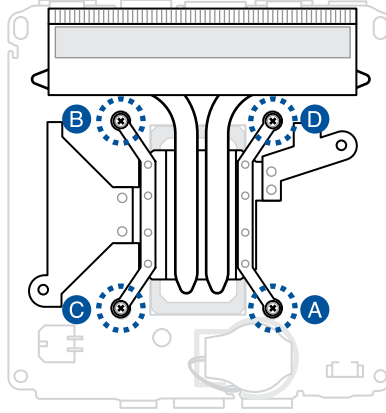
1. Prepare the motherboard by wiping the CPU surface clean with a clean cloth. Apply several drops of TIM to the exposed area of the CPU that will be in contact with the heatsink. Ensure that it is spread in an even thin layer.



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 screw(s) one by one in the sequence shown in the illustration.



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

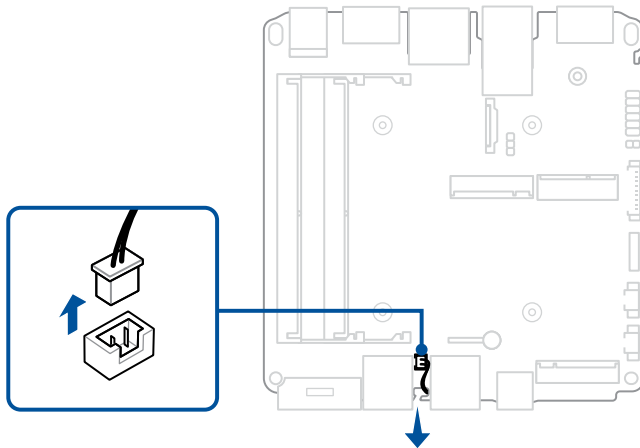
CMOS battery

Before you begin

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

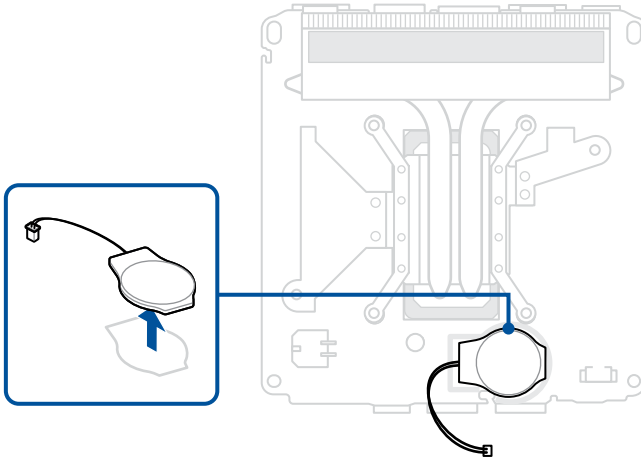
Removal

1. Disconnect the battery cable from battery connector on the flip side of the motherboard.



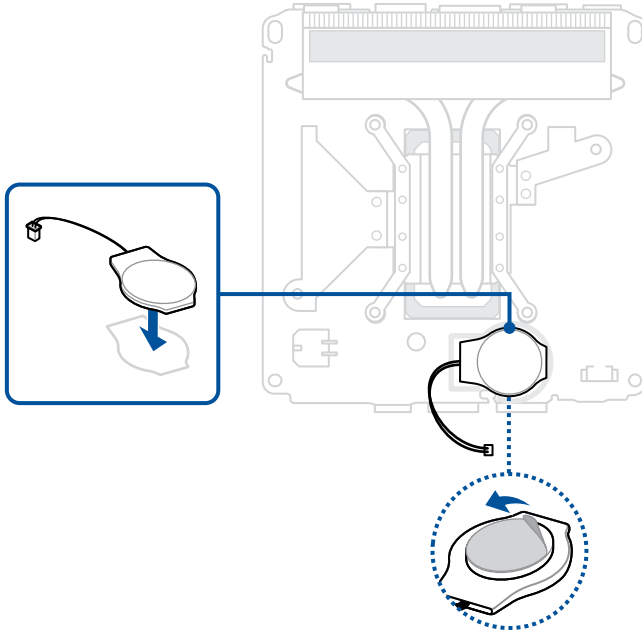
2. Carefully remove the CMOS battery.

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

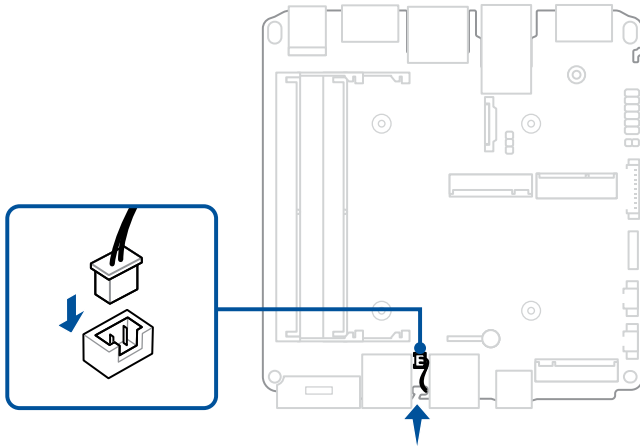


Installation

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 flip side of the motherboard.



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