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TUF GAMING

TUF GAMING | LAPTOP

SERVICE MANUAL

More info:

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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 device 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 the correct screw models on your device to prevent damage.
- Confirm that the cable orientation is correct before connecting any cables.
- Fully remove all adhesive residue after removing and before installing any components.
- Photograph the appearance of cables, cable routing, connectors, and screws for later reference before proceeding with each step.

Pre-repair checklist

- Read the entire manual before starting any service procedures and follow all instructions.
- Back up the data on your device.
- Place your device on a clean and stable surface.
- Turn off your device.
- Disconnect all connected peripherals and cables.
- Disconnect all power cables and remove the battery pack (if applicable).

IMPORTANT!

- If you are uncertain about performing the described service procedures, stop and contact an authorized service center for assistance.
- Purchase replacement components from authorized retailers of this device to ensure maximum compatibility and reliability.

NOTE:

- The illustrations are for reference only.
- The service procedures described in this manual depend 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 further 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.

Repair tools

Screwdriver

Plastic blade

Tweezers

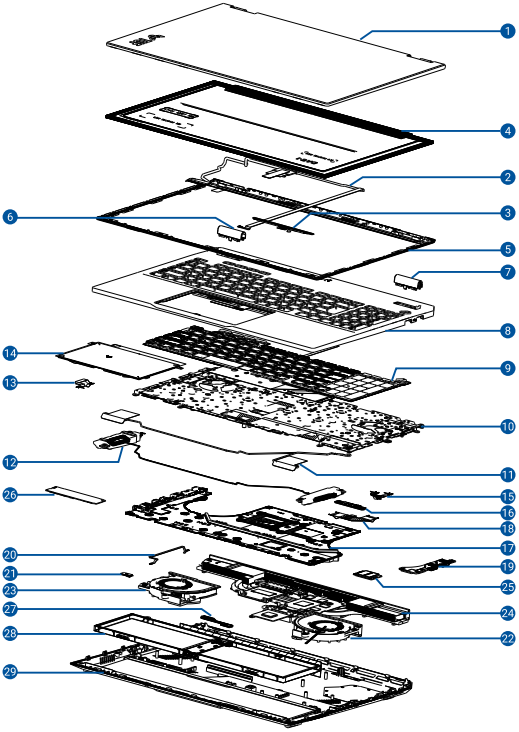
Diagnostic tools

Use ASUS System Diagnostics after completing any service procedures to ensure that all components are working properly.

For more information, visit www.asus.com/support/FAQ/1048490/.

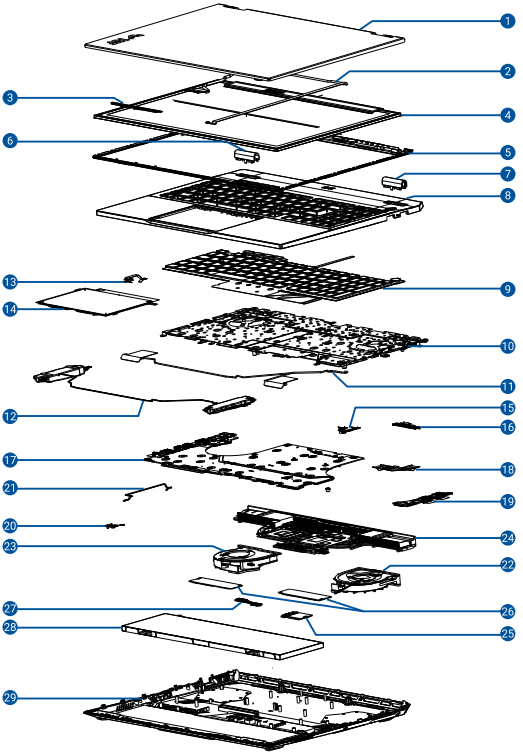
Major components

FX608



1. Top cover
2. eDP cable
3. Camera module
4. Display panel
5. Display bezel
6. Hinge cap (left)
7. Hinge cap (right)
8. Keyboard frame
9. Keyboard module
10. Keyboard shielding
11. Auxiliary antenna cable
12. Speakers
13. Touchpad cable
14. Touchpad
15. LED board cable
16. LED board
17. Motherboard
18. I/O board cable
19. I/O board
20. Hall sensor cable
21. Hall sensor board
22. GPU fan module
23. CPU fan module
24. Heat sink
25. WLAN module
26. M.2 SSD module
27. Battery cable
28. Battery
29. Bottom cover

FA608



1. Top cover
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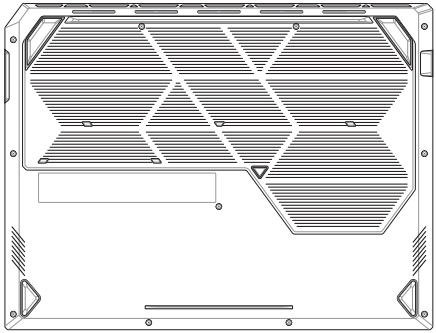
16. LED board
17. Motherboard
18. I/O board cable
19. I/O board
20. Hall sensor cable
21. Hall sensor board
22. GPU fan module
23. APU fan module
24. Heat sink
25. WLAN module
26. M.2 SSD module
27. Battery cable
28. Battery
29. Bottom cover

Chapter 2: Service Procedures

Bottom cover



Before you begin

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

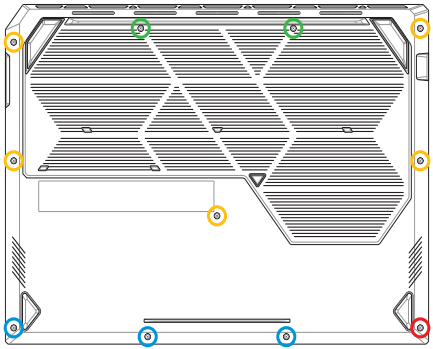
Screw list

- M2.0 X 13.0L (2pcs)
- M2.0 X 7.0L (5pcs)
- M2.0 X 3.5L (3pcs)
- M2.0 X 6.0L (1pc Pop-open Screw)

Removal

IMPORTANT! System power will be cut off automatically upon removal of the bottom cover. To restore power, reattach the bottom cover securely and connect the AC power adapter to your Notebook PC after the servicing is complete.

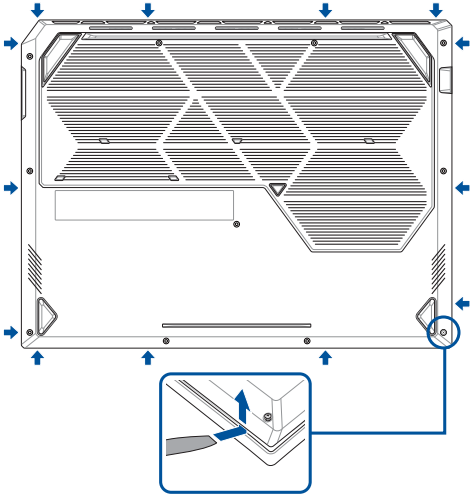
1. Remove the screw(s) from the bottom cover.
2. Loosen the Pop-open Screw without removing the screw from the cover.



3. Use the plastic blade to pry open the indicated area of the bottom cover as shown in the illustration below.

4. Remove the bottom cover.

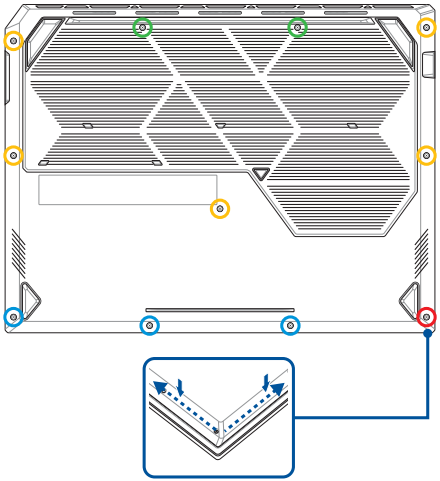
IMPORTANT! Avoid sliding the plastic blade along the side of your device or air vents to prevent damage.



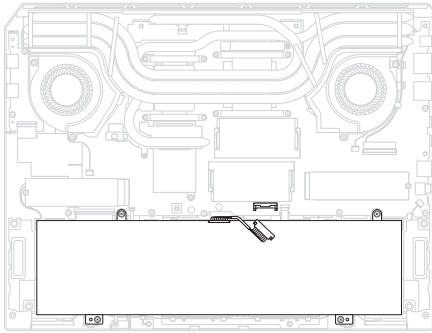
Installation

IMPORTANT! System power will be cut off automatically upon removal of the bottom cover. To restore power, reattach the bottom cover securely and connect the AC power adapter to your Notebook PC after the servicing is complete.

1. Install the bottom cover.
2. Gently press down on the bottom cover until it clicks into place.
3. Secure the bottom cover using the screw(s) you removed earlier.
4. Tighten the Pop-open Screw.



Battery



Before you begin

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

Screw list

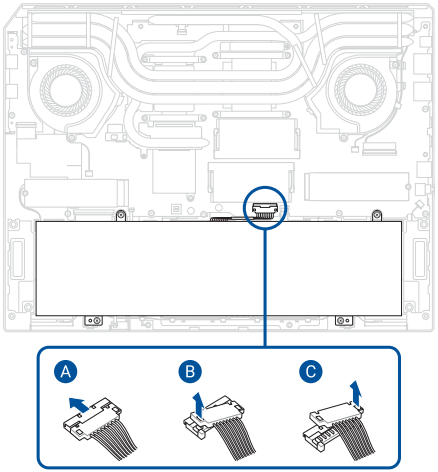
- ⊕ M2.0 X 3.5L (4pcs)

Removal

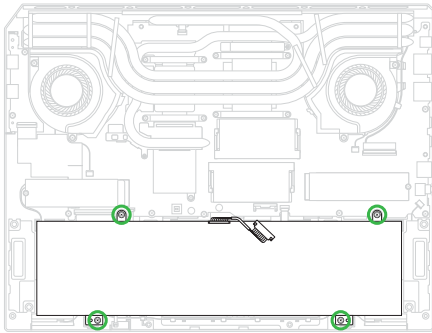
1. Disconnect the battery power cable.

IMPORTANT!

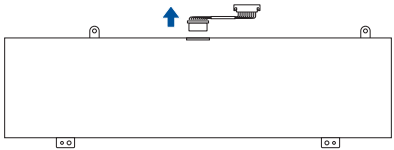
- Disconnect the battery power cable by lifting the side with the red wires first.
- Serious risk of fire or explosion may occur if the battery is punctured. If you are uncertain about proceeding, stop and contact an authorized service center for assistance.



2. Remove the screw(s) from the battery.
3. Remove the battery.

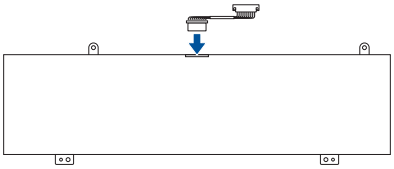


4. Remove the battery power cable.

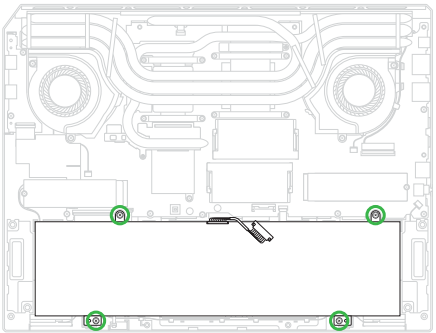


Installation

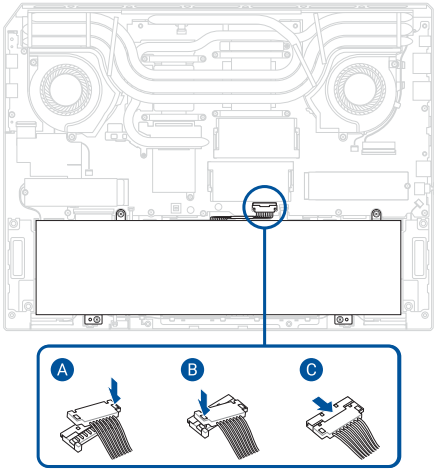
1. Connect the battery power cable to the battery.



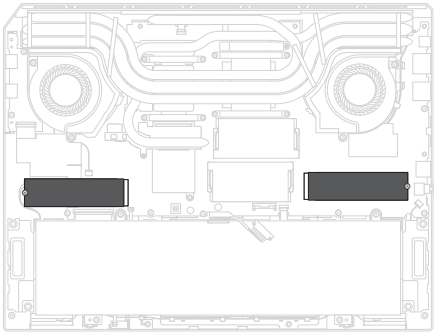
2. Install the battery.
3. Secure the battery using the screw(s) you removed earlier.



4. Reconnect the battery power cable.
5. Install the components you removed in the *Before you begin* section.



M.2 SSD module



Before you begin

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.

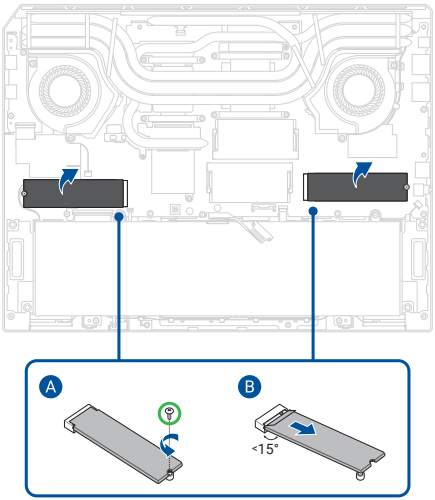
1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.

Screw list

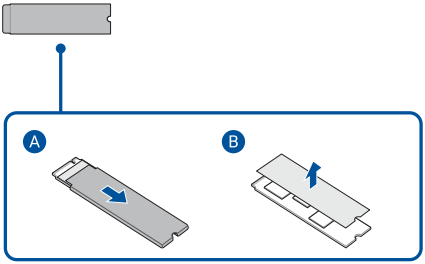
- ⊕ M2.0 X 2.5L (2pcs)

Removal

1. Remove the screw(s), then remove the M.2 SSD module(s) from the motherboard.

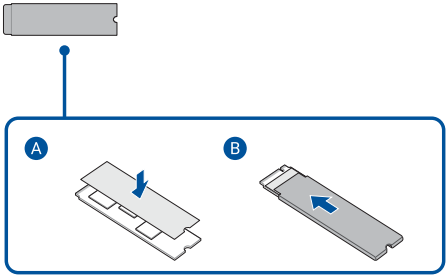


2. Remove the aluminum foil sleeve(s), then remove the absorber sheet(s).



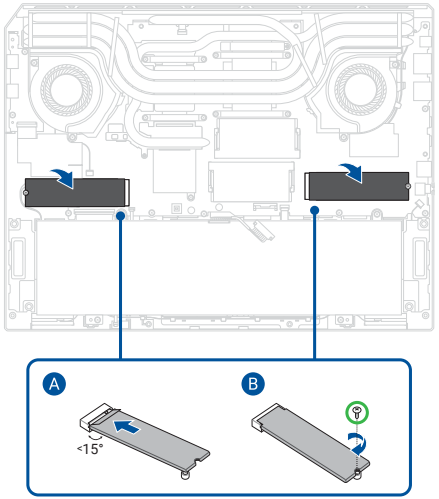
Installation

1. Attach the absorber sheet(s) to the M.2 SSD module(s).
2. Insert the M.2 SSD module(s) into the aluminum foil sleeve(s) as shown in the illustration below.

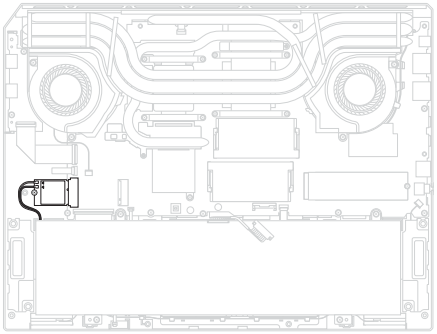


3. Align and insert the M.2 SSD module(s) into the M.2 connector(s), then secure the M.2 SSD module(s) to the motherboard using the screw(s) you removed earlier.

4. Install the components you removed in the *Before you begin* section.



WLAN module



Before you begin

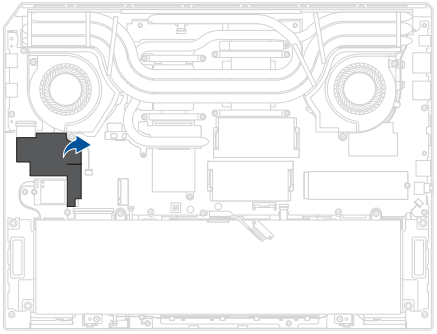
1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.

Screw list

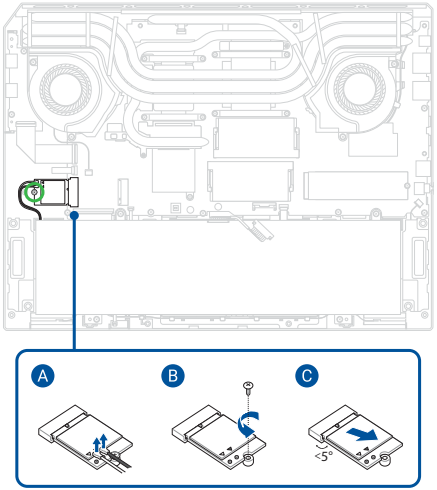
- M2.0 X 2.5L (1pc)

Removal

1. Remove the polyester film.

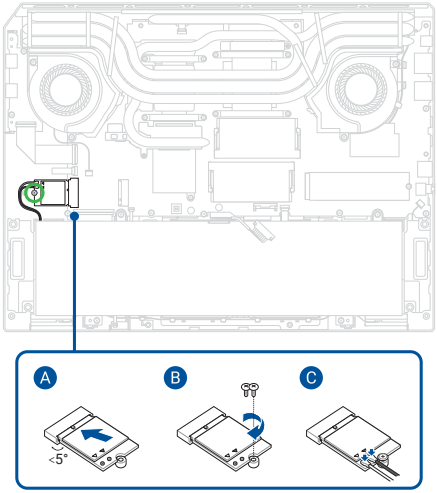


2. Disconnect the antenna cable(s), then remove the screw and remove the WLAN module.

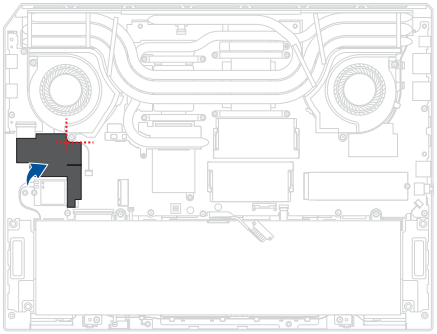


Installation

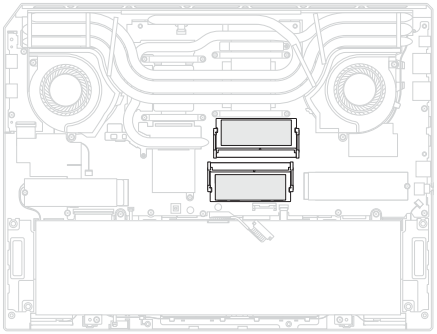
1. Install the WLAN module, then secure the WLAN module using the screw you removed earlier and reconnect the antenna cable(s).



2. Align and reattach the polyester film.
3. Install the components you removed in the *Before you begin* section.



RAM module

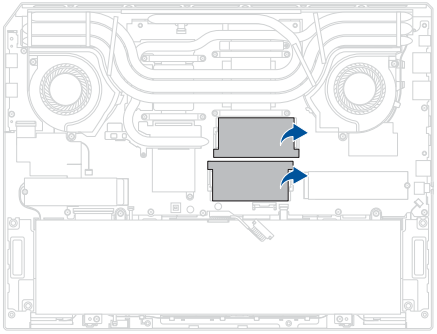


Before you begin

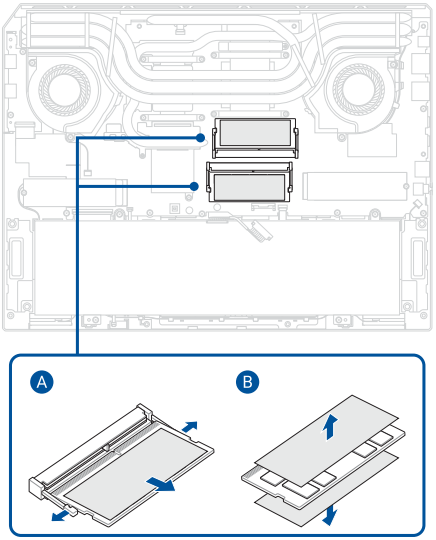
1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.

Removal

1. Remove the polyester film (if available).

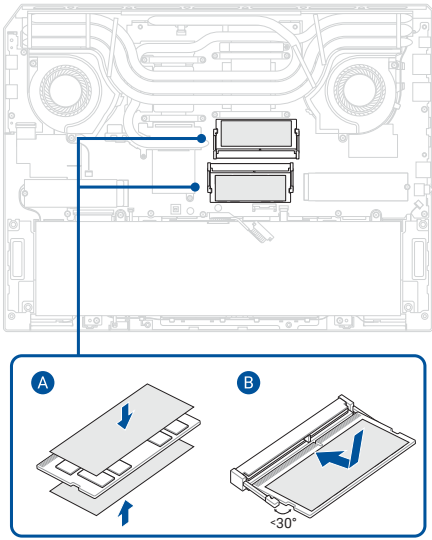


2. Push the clips outwards to remove the RAM module(s).
3. Remove the absorber sheet(s) from both sides of the RAM module(s).

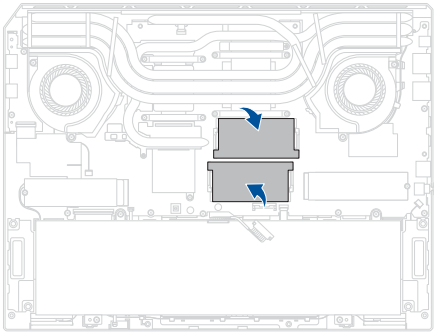


Installation

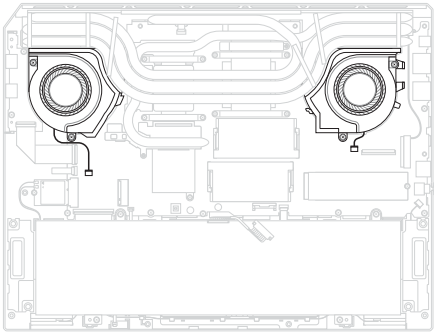
1. Reattach the absorber sheet(s) to both sides of the RAM module(s).
2. Align and insert the RAM module(s) into the RAM module slot(s).



3. Reattach the polyester film (if available).
4. Install the components you removed in the *Before you begin* section.



Fan module



Before you begin

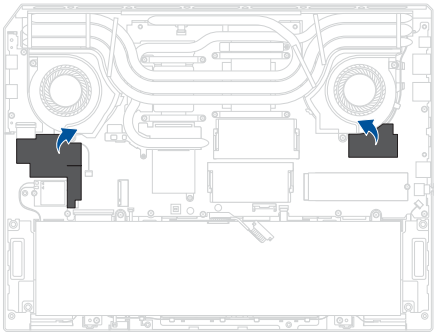
1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.

Screw list

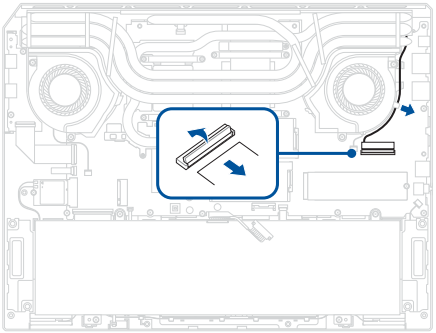
- M2.0 X 7.0L (2pcs)
- M2.0 X 4.5L (2pcs or 3pcs)

Removal

1. Remove the polyester film.

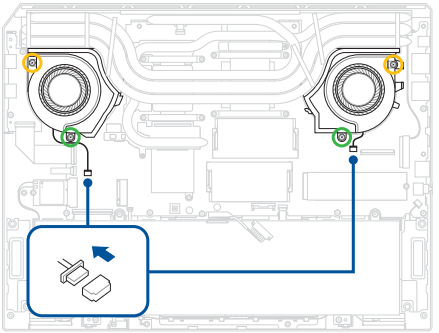


2. Disconnect the cable.

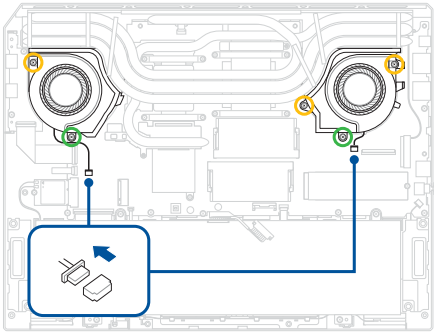


3. Remove the screw(s), then disconnect the fan connector(s).
4. Tilt the fan(s) upward and remove the fan(s) sideways.

FX608J/FX608L/FA608P/FA608F



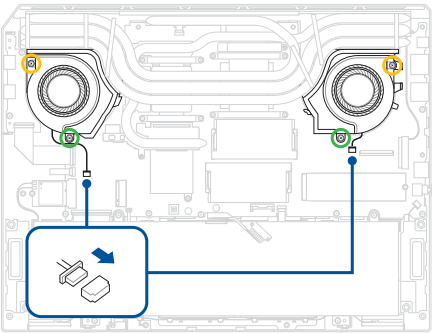
FA608U/FA608W



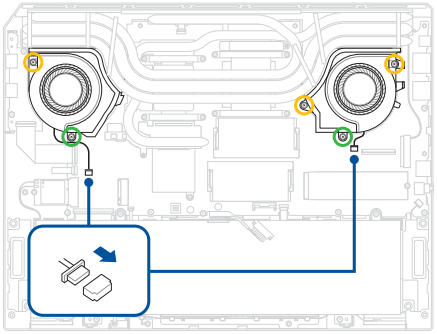
Installation

1. Tilt the fan(s) downward, then align and install the fan(s) sideways.
2. Secure the fan(s) using the screw(s) you removed earlier.
3. Reconnect the fan connector(s).

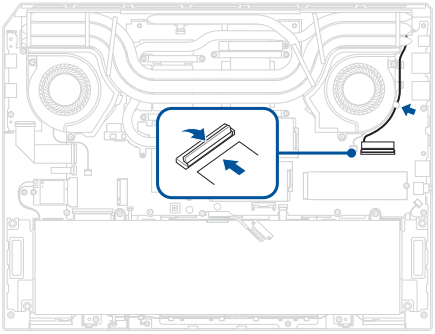
FX608J/FX608L/FA608P/FA608F



FA608U/FA608W

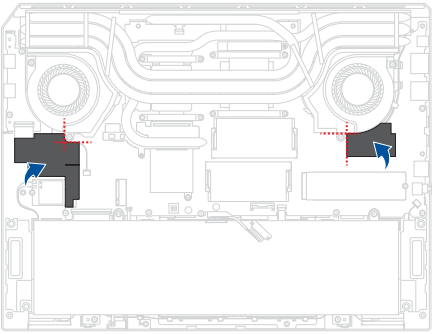


4. Reconnect the cable.

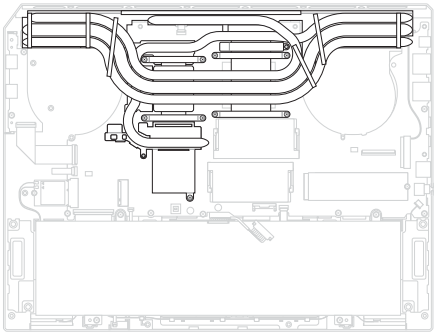


5. Align and reattach the polyester film.

6. Install the components you removed in the *Before you begin* section.



Heat sink



Before you begin

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. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.

Screw list

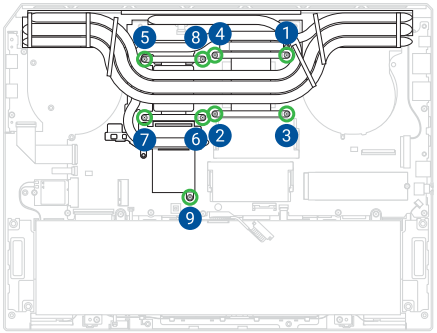
- M2.0 X 2.5L (8pcs or 9pcs)

Removal

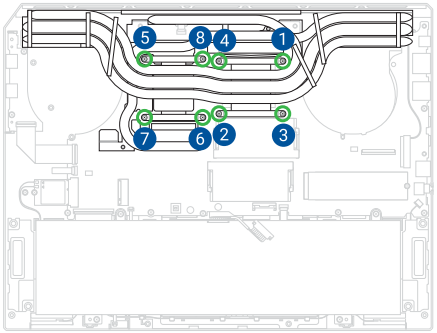
Remove the heat sink screw(s) one by one in the sequence shown in the illustration below, then remove the heat sink.

IMPORTANT! Vertically lift the heat sink using the middle part of the heat sink to prevent damage.

FX608



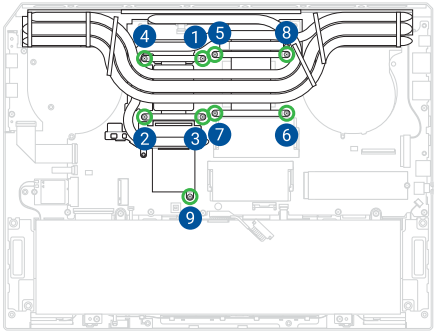
FA608



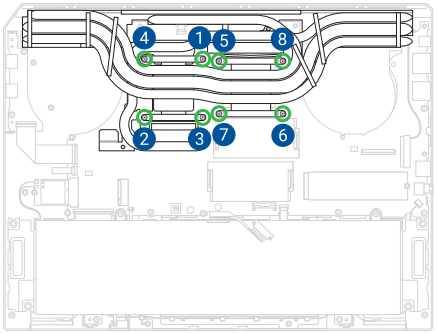
Installation

1. Align and install the heat sink, then secure the heat sink screw(s) one by one in the sequence shown in the illustration below.
2. Install the components you removed in the *Before you begin* section.

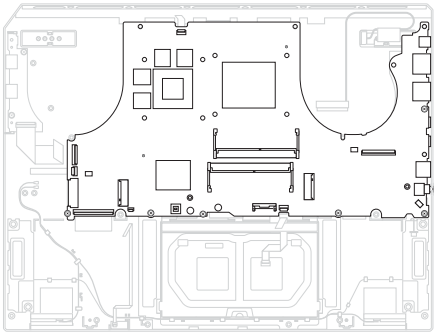
FX608



FA608



Motherboard



Before you begin

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. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.

3. Remove the following components:
    - Battery
    - M.2 SSD module
    - WLAN module
    - Fan module
    - Heat sink

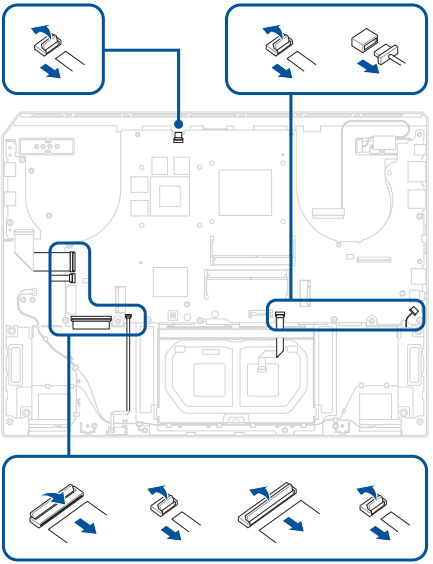
Screw list

● ⊕ M2.0 X 3.5L (6pcs)

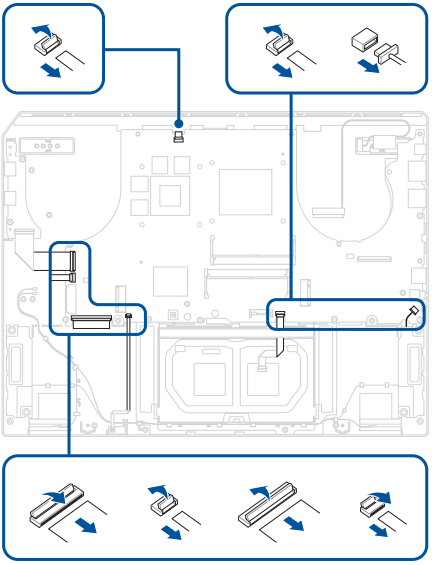
Removal

1. Disconnect the cable(s) as shown in the illustration.

FX608

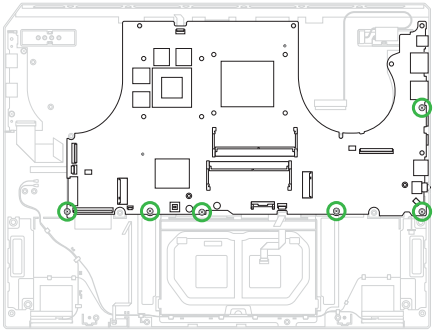


FA608



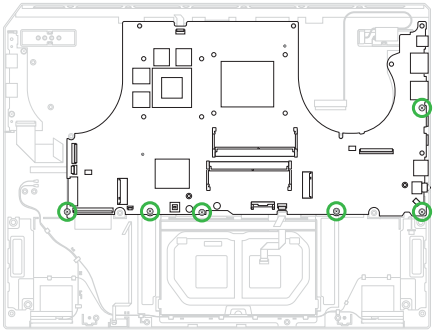
2. Remove the screw(s) from the motherboard.

3. Slightly lift the left side of the motherboard, then remove the motherboard.



Installation

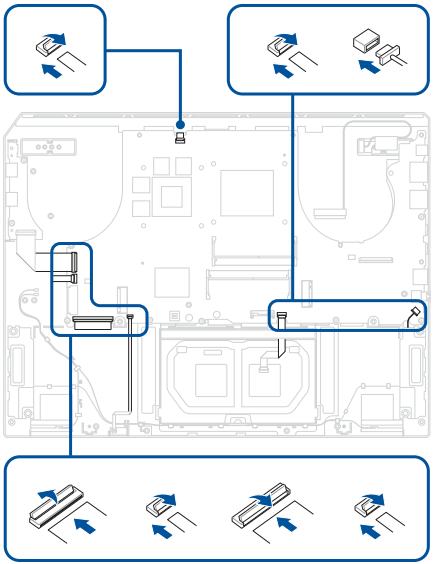
1. Align and install the motherboard.
2. Secure the motherboard using the screw(s) you removed earlier.



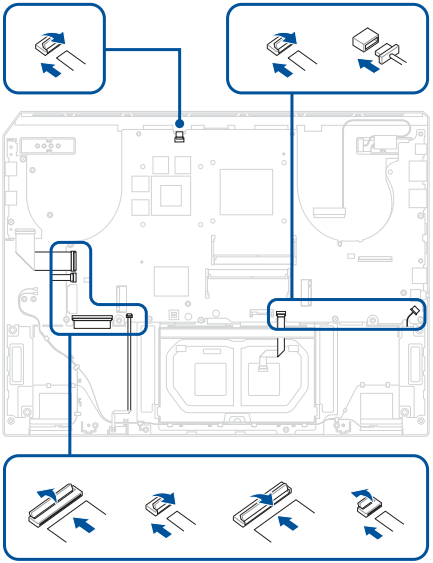
3. Locate and reconnect the cable(s) as shown in the illustration.

4. Install the components you removed in the *Before you begin* section.

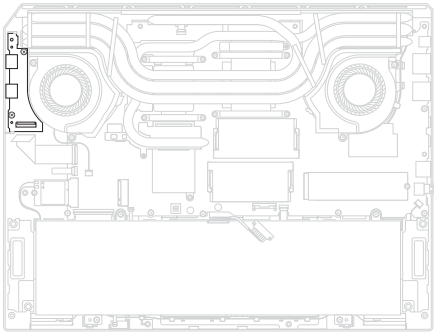
FX608



FA608



I/O board



Before you begin

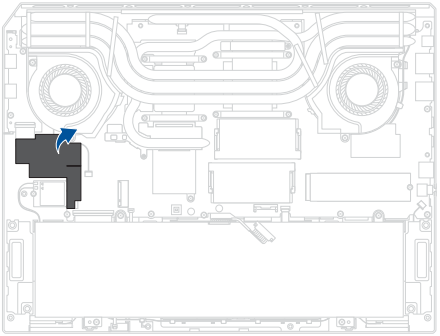
1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.

Screw list

- ⊕ M2.0 X 3.5L (2pcs or 3pcs)

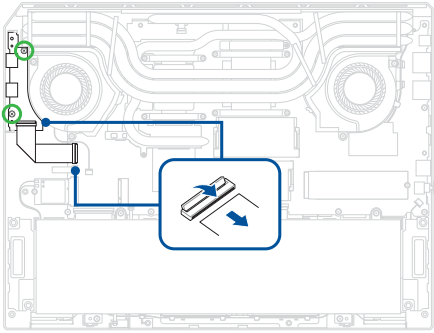
Removal

1. Remove the polyester film.

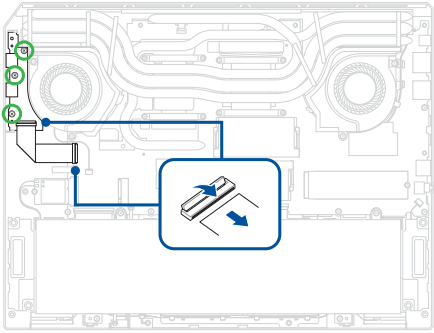


2. Disconnect the cable from the I/O board.
3. Remove the screw(s), then remove the I/O board.

FX608



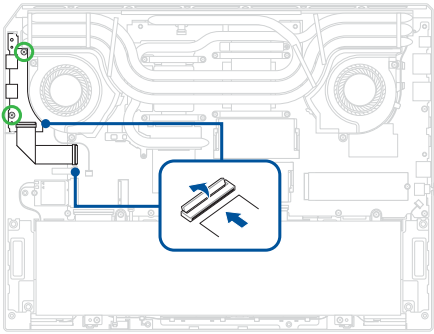
FA608



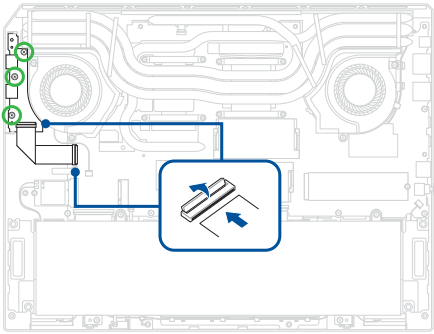
Installation

1. Install the I/O board, then secure the I/O board using the screw(s) you removed earlier.
2. Reconnect the cable to the I/O board.

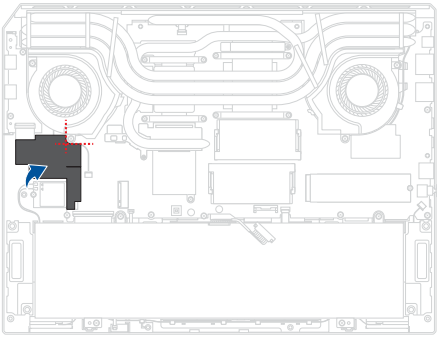
FX608



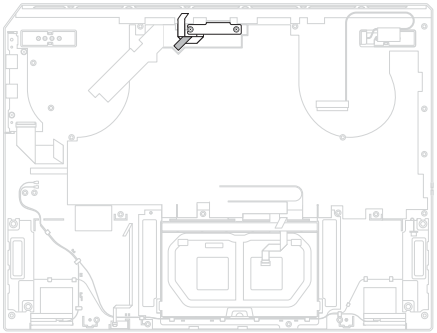
FA608



3. Reattach the polyester film.
4. Install the components you removed in the *Before you begin* section.



LED board



Before you begin

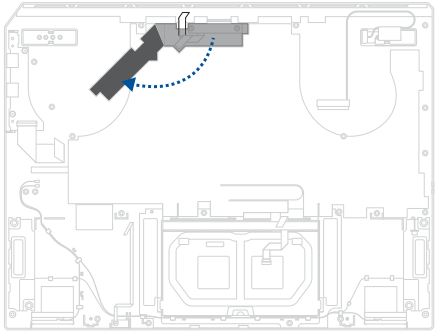
1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.
3. Remove the following components:
    - Battery
    - M.2 SSD module
    - WLAN module
    - Fan module
    - Heat sink
    - Motherboard

Screw list

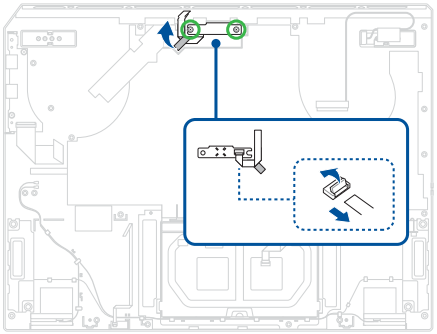
- ⊕ M2.0 X 2.5L (2pcs)

Removal

1. Partially peel off the polyester film.

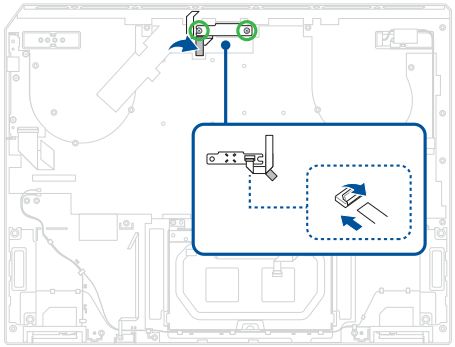


2. Remove the screw(s).
3. Peel off the tape, then flip over the LED board.
4. Disconnect the FFC cable, then remove the LED board.

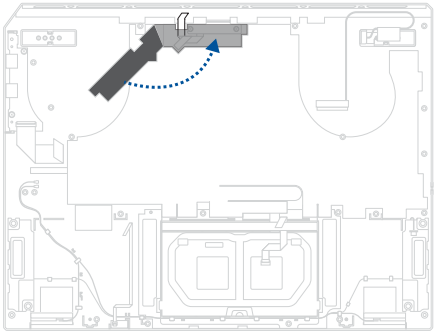


Installation

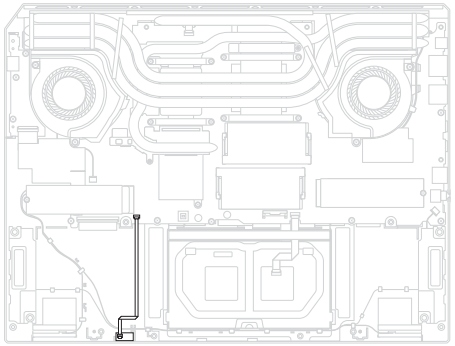
1. Connect the LED FFC cable to the bottom of the LED board.
2. Flip and install the LED board
3. Reattach the tape.
4. Secure the LED board using the screw(s) you removed earlier.



5. Reattach the polyester film.
6. Install the components you removed in the *Before you begin* section.



Hall sensor board



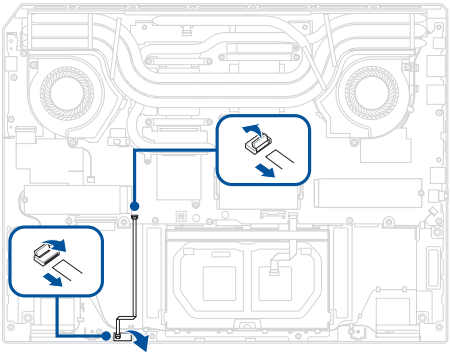
Before you begin

1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.
3. Remove the following components:
    - Battery

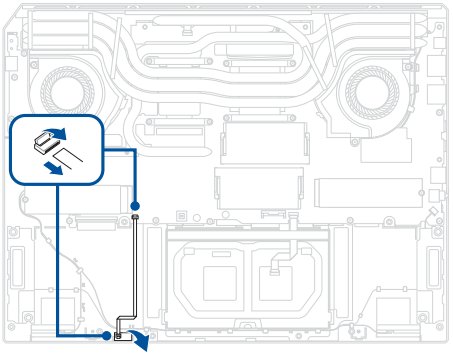
Removal

1. Disconnect the cable.
2. Remove the hall sensor board.

FX608



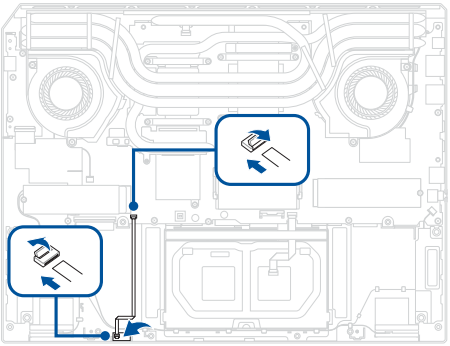
FA608



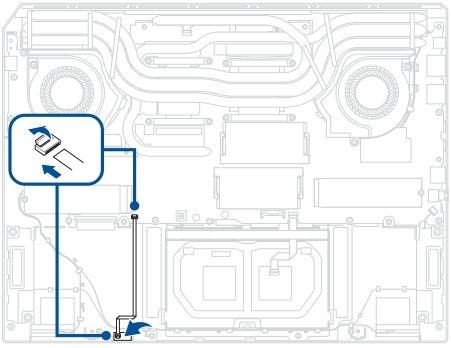
Installation

1. Align and install the hall sensor board.
2. Reconnect the cable.
3. Install the components you removed in the *Before you begin* section.

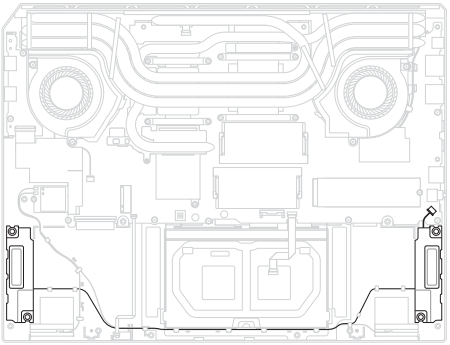
FX608



FA608



Speakers

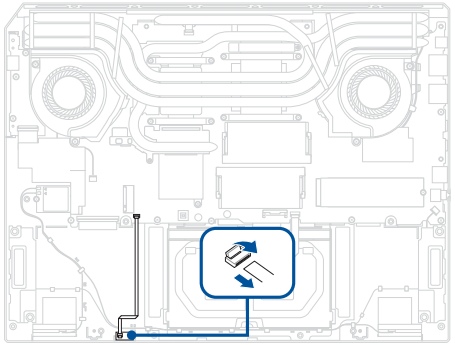


Before you begin

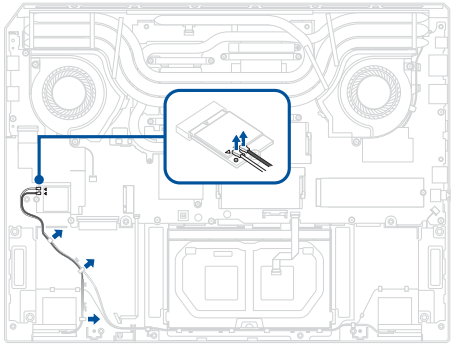
1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.
3. Remove the following components:
   - Battery
   - M.2 SSD module

Removal

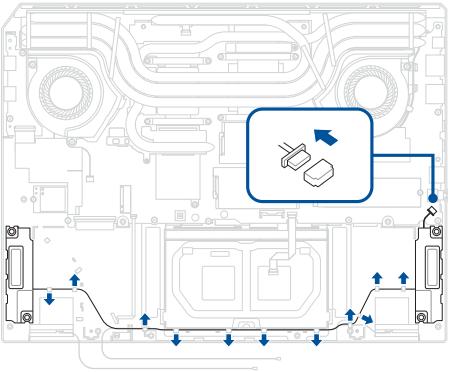
1. Disconnect the hall sensor cable .



2. Remove the antenna cable(s) from the WLAN module and the indicated cable guide(s).



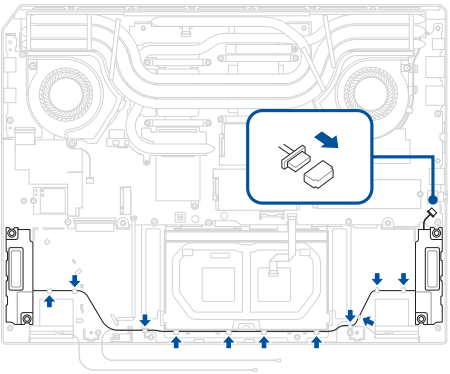
3. Remove the speaker cable from the cable guide(s), then remove the speakers.



Installation

1. Install the speakers.
2. Route the speaker cable through the cable guide(s).

IMPORTANT! Damage may occur if cables are not properly routed through the cable guides. Confirm that all cables are routed through each of the indicated cable guides before proceeding.

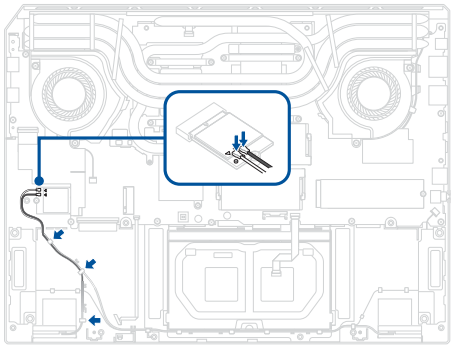


3. Route the antenna cable(s) through the indicated cable guide(s).

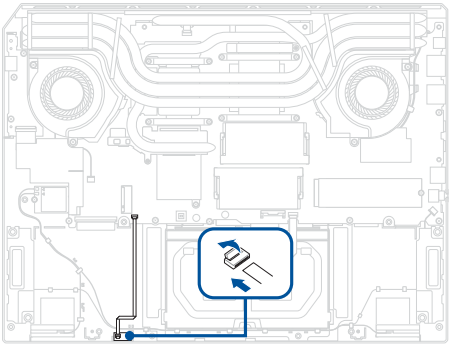
IMPORTANT! Damage may occur if cables are not properly routed through the cable guides. Confirm that all cables are routed through each of the indicated cable guides before proceeding.

4. Reconnect the antenna cable(s).

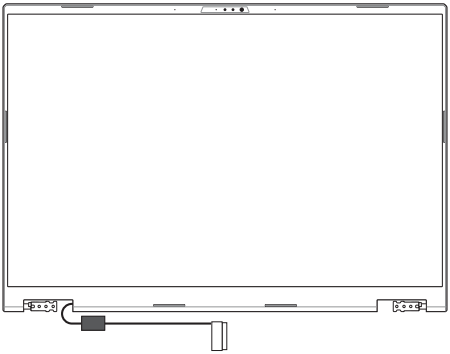
NOTE: Ensure to connect the antenna cable to the connector marked with a matching color triangle.



5. Reconnect the hall sensor cable.
6. Install the components you removed in the *Before you begin* section.



Display panel module



Before you begin

IMPORTANT! Do not bend the display panel in any way to avoid risk of display panel leakage.

1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.
3. Remove the following components:
   - Battery
   - M.2 SSD module
   - WLAN module

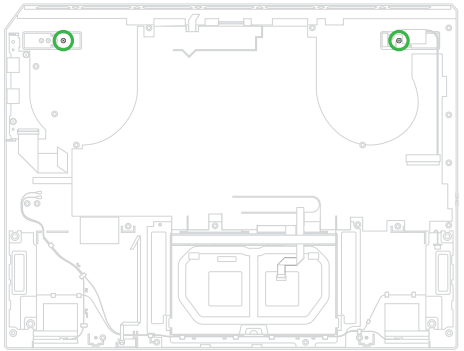
- Fan module
- Heat sink
- Motherboard

Screw list

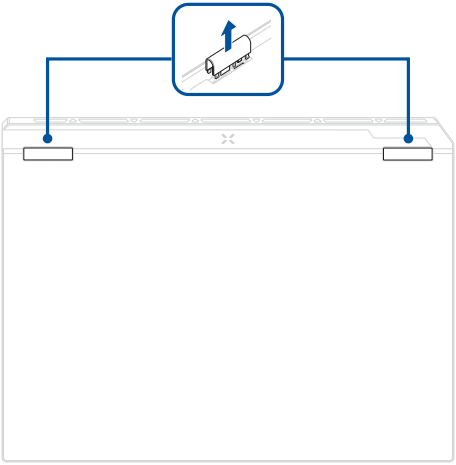
● ⊕ M2.0 X 3.5L (8pcs)

Removal

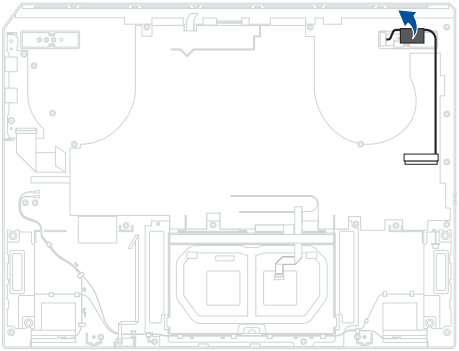
1. Remove the hinge cap screw(s).



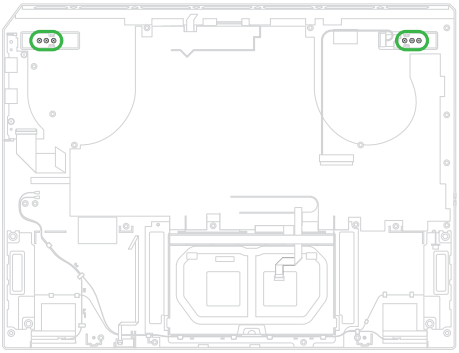
2. Turn over the device and remove the hinge cap(s).



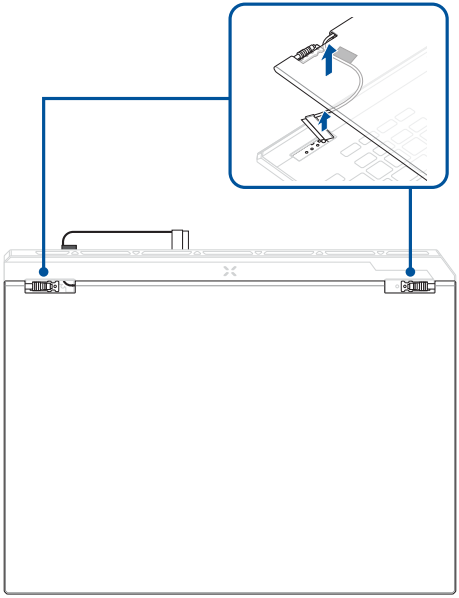
3. Turn over the device again and peel off the tape.



4. Remove the screw(s).

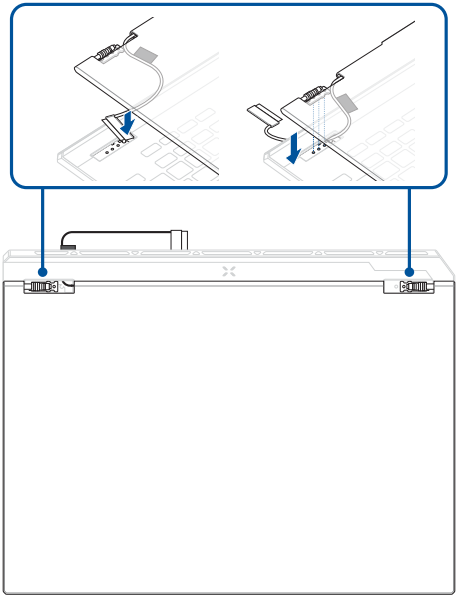


5. Turn the device over, then carefully lift and remove the display panel module.

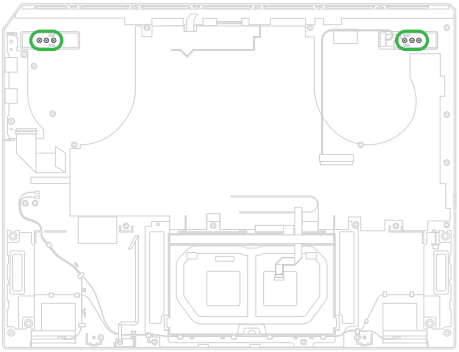


Installation

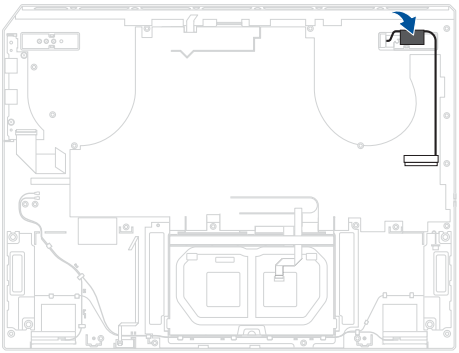
1. Align and insert the hinges of the display panel module.



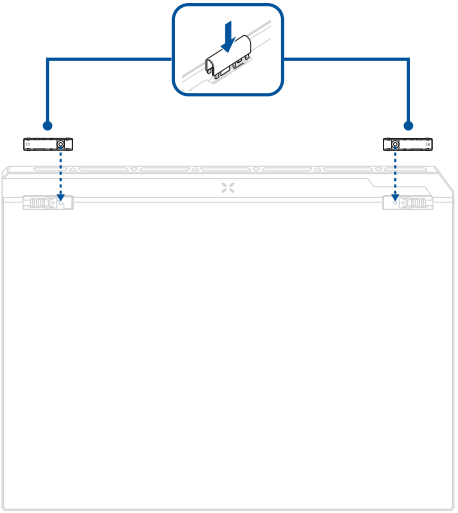
2. Turn over the device, then secure the hinges using the screw(s) you removed earlier.



3. Reattach the tape.

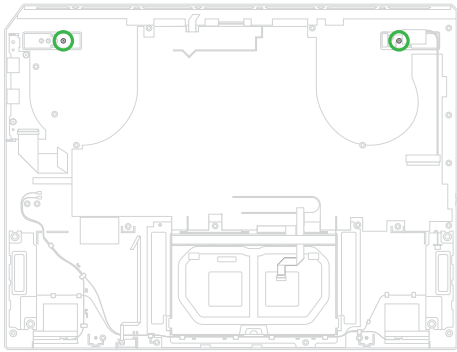


4. Turn over the device, then install the hinge cap(s).

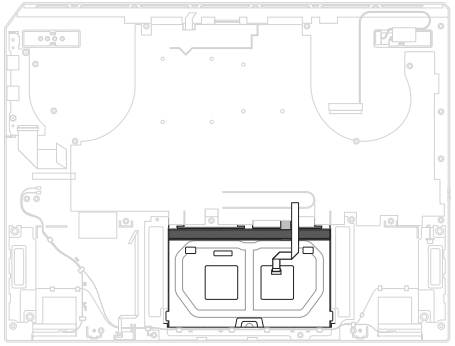


5. Turn over the device again, then secure the hinge cap(s) using the screw(s) you removed earlier.

6. Install the components you removed in the *Before you begin* section.



Touchpad



Before you begin

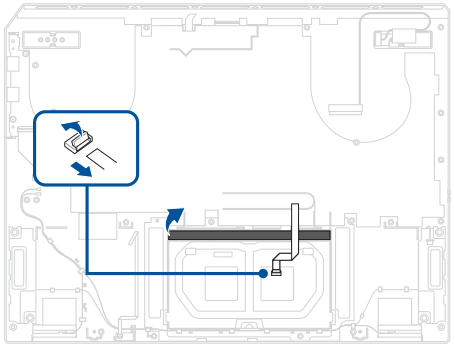
1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.
3. Remove the following components:
   - Battery
   - M.2 SSD module
   - WLAN module
   - Fan module
   - Heat sink
   - Motherboard

Screw list

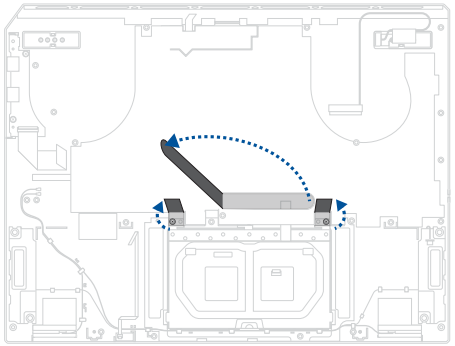
- M2.0 X 2.5L (3pcs)

Removal

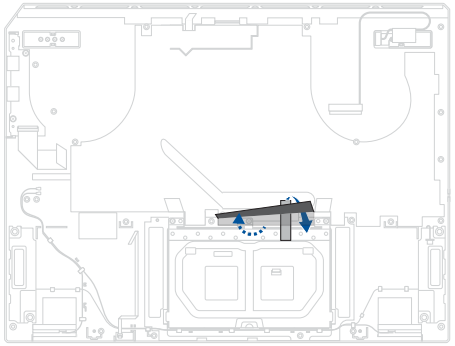
1. Disconnect and remove the touchpad cable from the touchpad.
2. Remove the foam gasket.



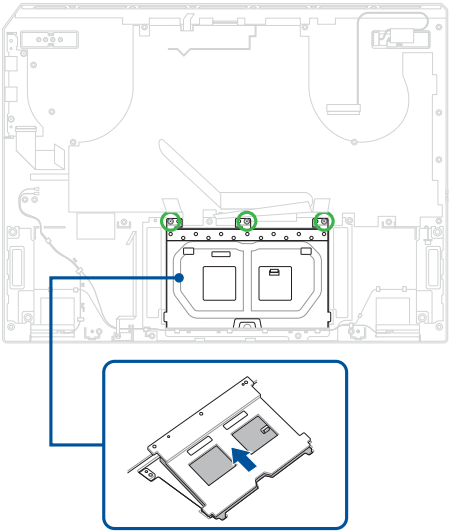
3. Partially peel off the lower part of the polyester film as shown in the illustration below to reveal the screw(s).



4. Lift the lower part of the polyester film as shown in the illustration below, then remove the tape underneath.

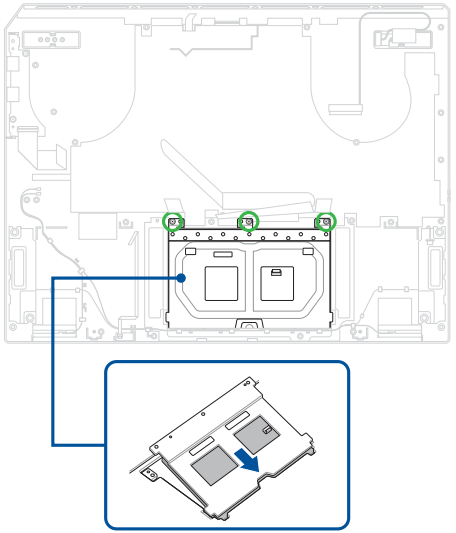


5. Remove the screw(s), then remove the touchpad module as shown in the illustration below.



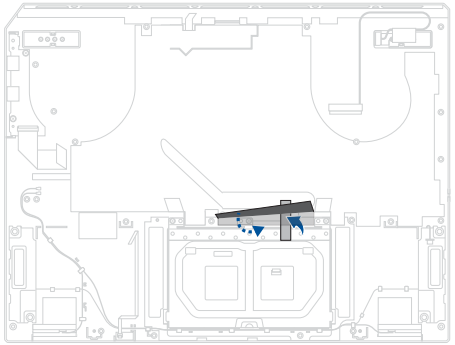
Installation

1. Align and install the touchpad as shown in the illustration below.
2. Secure the touchpad using the screw(s) you removed earlier.

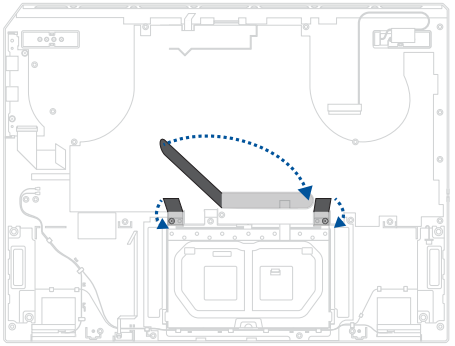


3. Reattach the tape.

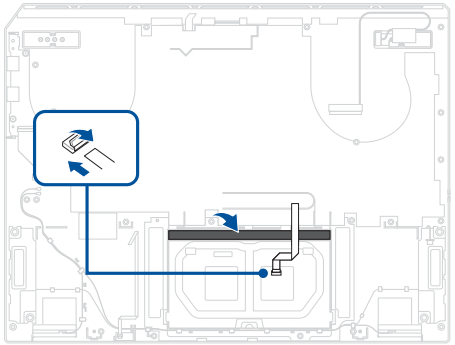
4. Reattach the lower part of the polyester film as shown in the illustration below.



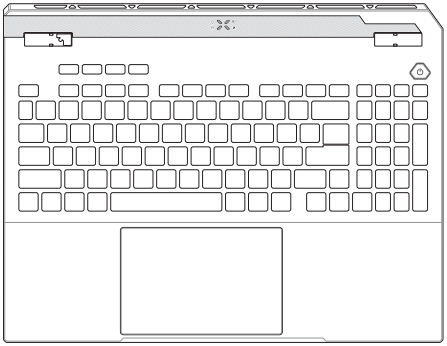
5. Reattach the lower part of the polyester film as shown in the illustration below.



6. Reattach the foam gasket.
7. Reconnect the touchpad cable.
8. Install the components you removed in the *Before you begin* section.



Keyboard module



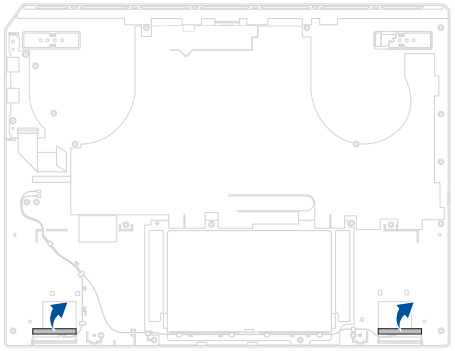
Before you begin

1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.
3. Remove the following components:
   - Battery
   - M.2 SSD module
   - WLAN module
   - Fan module
   - Heat sink
   - Motherboard
   - LED board

- Hall sensor board
- Speakers
- Touchpad

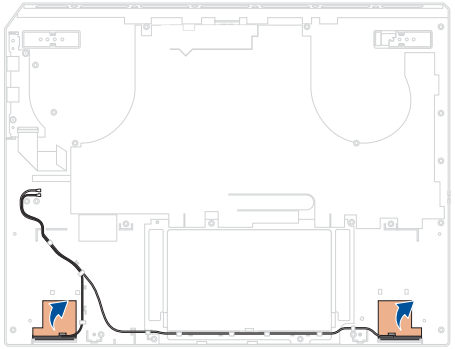
Removal

1. Remove the foam piece(s).



2. Remove the antenna cable(s) from the cable guide(s).

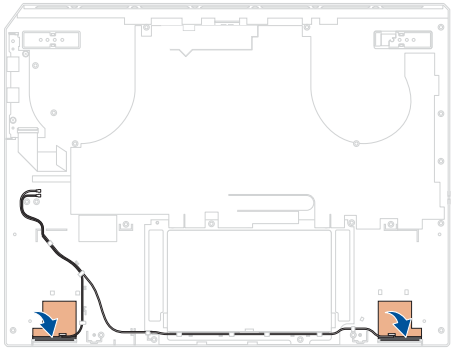
IMPORTANT! The antenna cable(s) cannot be reused once removed.



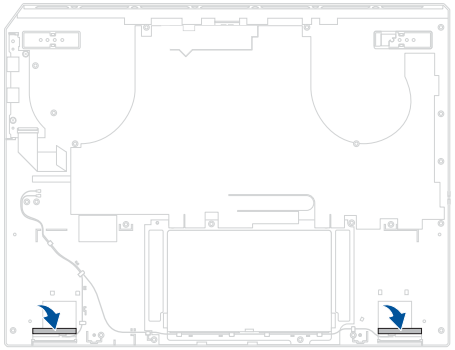
Installation

1. Install the antenna cable(s).
2. Route the cable(s) through the cable guide(s).

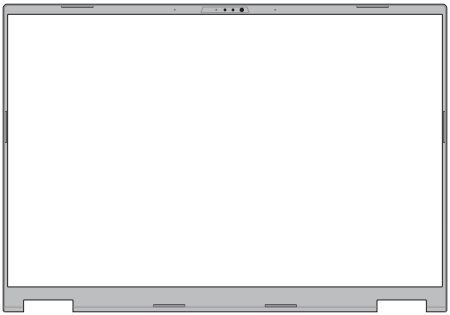
IMPORTANT! Damage may occur if cables are not properly routed through the cable guides. Confirm that all cables are routed through each of the indicated cable guides before proceeding.



3. Reattach the foam piece(s).
4. Install the components you removed in the *Before you begin* section.



Display bezel



Before you begin

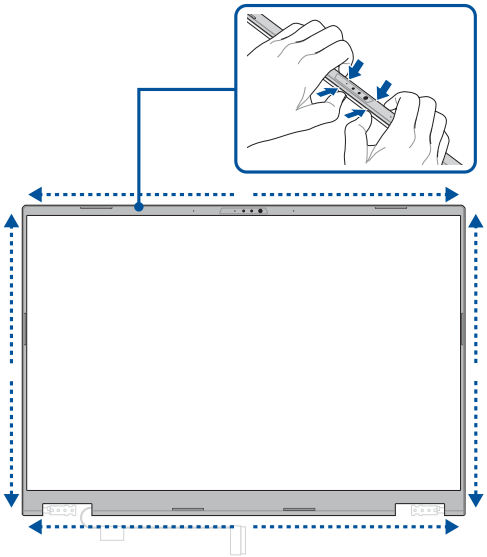
IMPORTANT! This component is fragile. Damage may occur if the service procedure is performed incorrectly. If you are uncertain about proceeding, stop and contact an authorized service center for assistance.

1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.
3. Remove the following components:
   - Battery
   - M.2 SSD module
   - WLAN module

- Fan module
- Heat sink
- Motherboard
- Display panel module

Removal

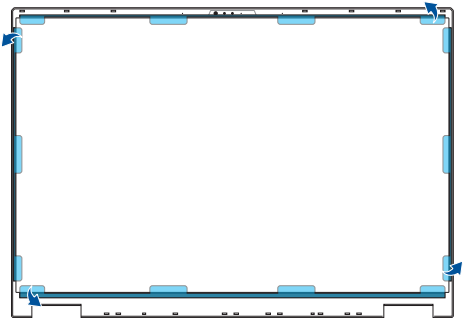
Carefully pry the bezel loose from the top side, then remove the bezel completely.



Installation

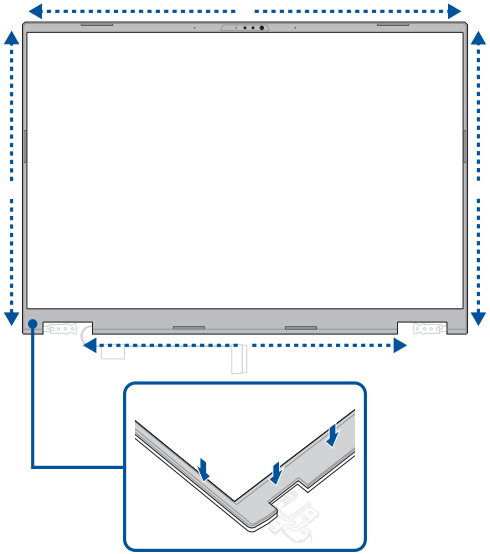
1. Remove the release liner(s) from the tape on the bezel.

NOTE: The tape cannot be reused. Remove any adhesive residue and use new tape when reinstalling components.



2. Align and install the bezel.

3. Install the components you removed in the *Before you begin* section.



Display panel

Before you begin

IMPORTANT!

- This component is fragile. Damage may occur if the service procedure is performed incorrectly. If you are uncertain about proceeding, stop and contact an authorized service center for assistance.
- Do not bend the display panel in any way to avoid risk of display panel leakage.

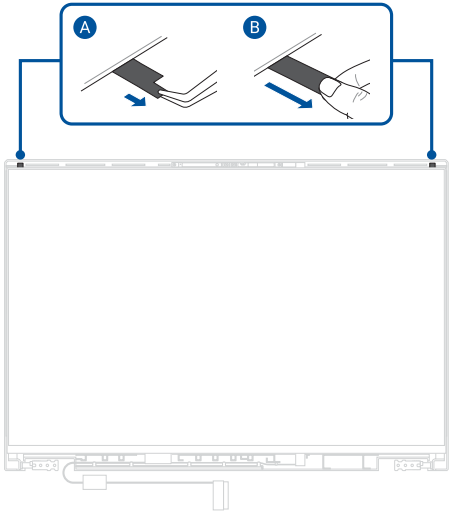
1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.
3. Remove the following components:
   - Battery
   - M.2 SSD module

- WLAN module
- Fan module
- Heat sink
- Motherboard
- Display panel module
- Display bezel

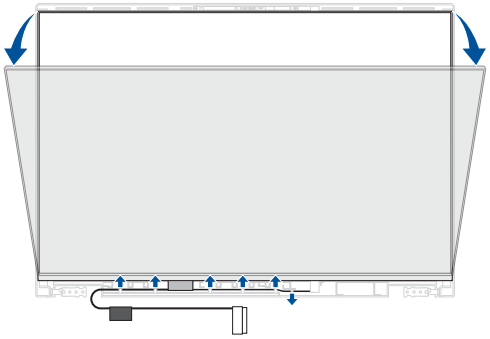
Removal

1. Locate the tip of the stretch release tape, then carefully pull out the stretch release tape as shown in the illustration below.

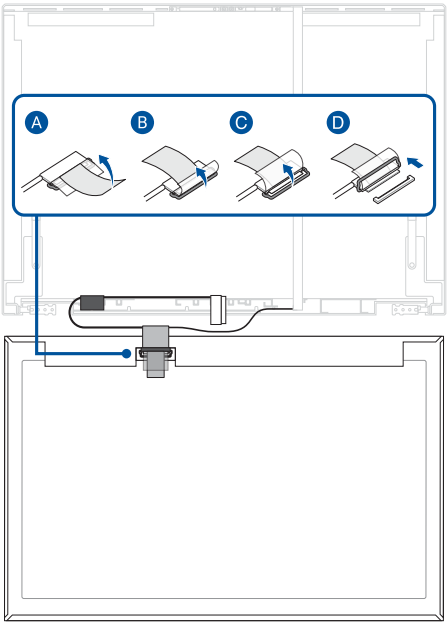
IMPORTANT! Maintain a flat angle and constant speed when pulling the stretch release tape. Excessive force may damage the stretch release tape and prevent removal of the display panel.



2. Lift the display panel as shown in the illustration below.
3. Release the cable from the cable guide(s).

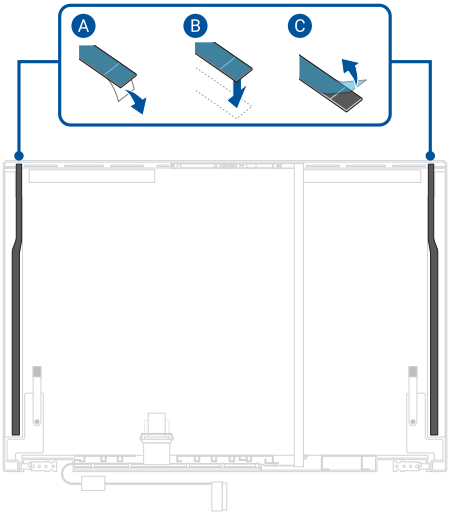


4. Disconnect the cable from the rear side of the display panel.

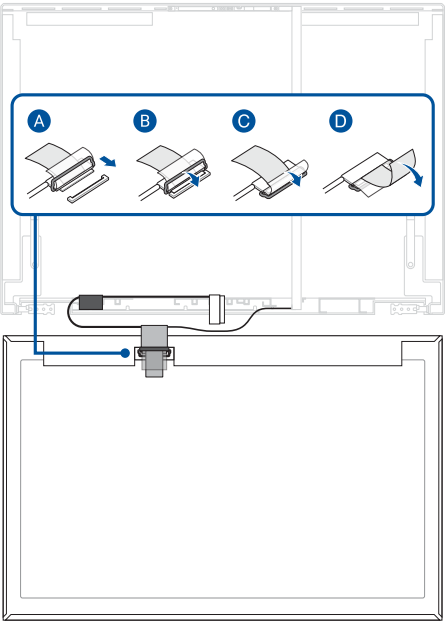


Installation

1. Remove the release liner(s) from the bottom side of the stretch release tape.
2. Align and attach the stretch release tape to the top cover.
3. Remove the release liner(s) from the top side of the stretch release tape.



4. Reconnect the cable to the rear side of the display panel.

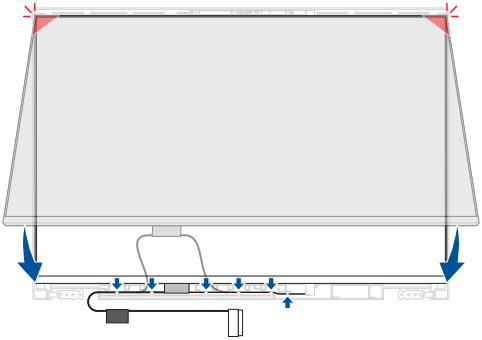


5. Align and install the display panel.

6. Route the cable through the cable guide(s).

IMPORTANT! Damage may occur if cables are not properly routed through the cable guides. Confirm that all cables are routed through each of the indicated cable guides before proceeding.

7. Install the components you removed in the *Before you begin* section.



Camera module

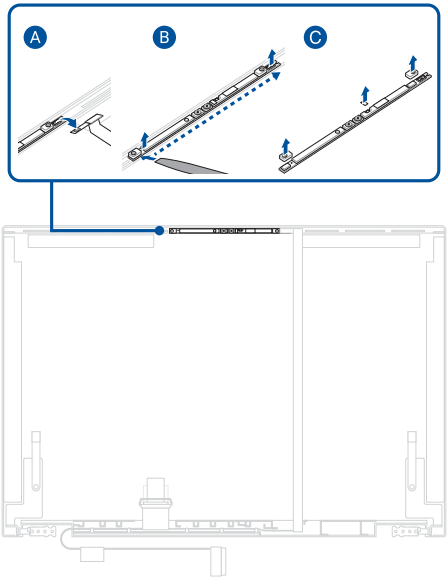
Before you begin

IMPORTANT! This component is fragile. Damage may occur if the service procedure is performed incorrectly. If you are uncertain about proceeding, stop and contact an authorized service center for assistance.

1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.
3. Remove the following components:
    - Battery
    - M.2 SSD module
    - WLAN module
    - Fan module
    - Heat sink
    - Motherboard
    - Display panel module
    - Display bezel
    - Display panel

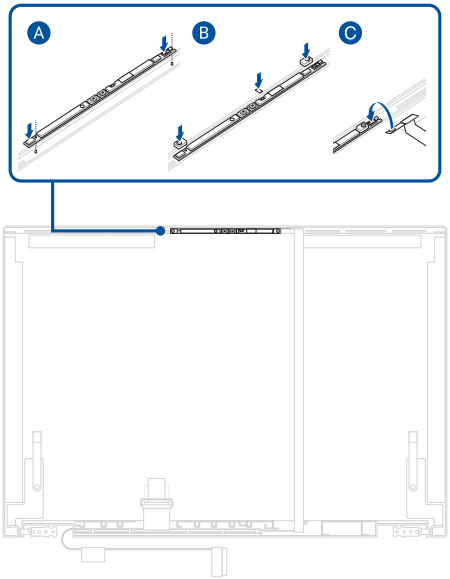
Removal

1. Disconnect the cable from the camera module.
2. Carefully remove the camera module, then remove the rubber caps and the IR LED sponge piece from the camera module.

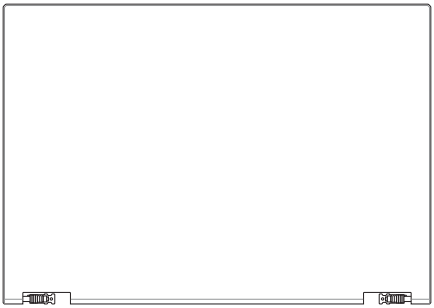


Installation

1. Align and install the camera module, then attach the rubber caps and IR LED sponge piece to the camera module.
2. Reconnect the cable to the camera module.
3. Install the components you removed in the *Before you begin* section.



Top cover



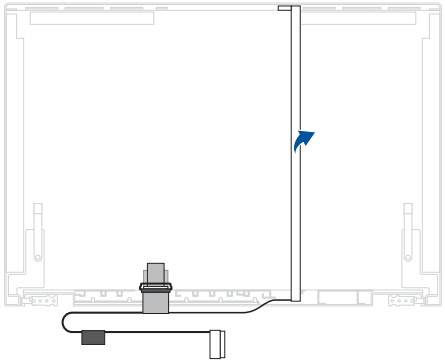
Before you begin

1. Read the **Safety Precautions** and **Pre-repair Checklist**.
2. Remove the bottom cover and disconnect the battery power cable.
3. Remove the following components:
   - Battery
   - M.2 SSD module
   - WLAN module
   - Fan module
   - Heat sink
   - Motherboard

- Display panel module
- Display bezel
- Display panel
- Camera module

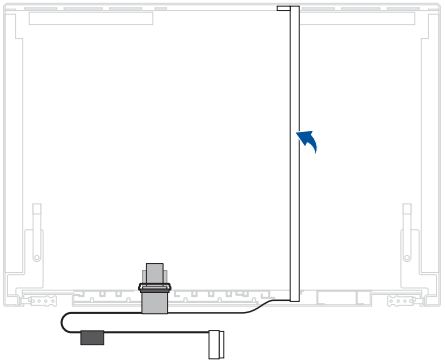
Removal

Remove the cable completely.



Installation

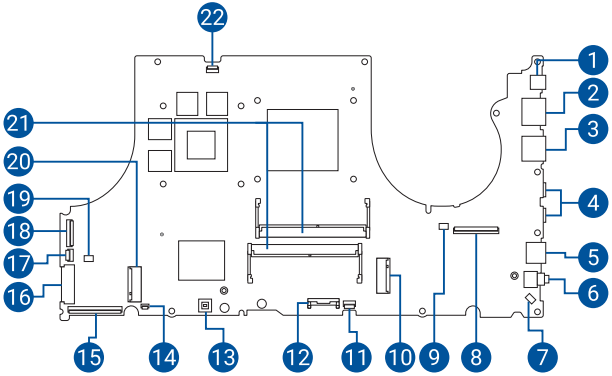
1. Align and attach the cable.
2. Install the components you removed in the *Before you begin* section.



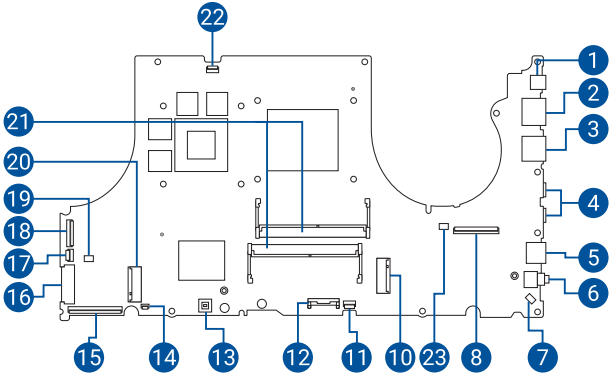
Appendices

Wiring and connection diagrams

FX608



FA608



1. Power supply connector
2. LAN connector
3. HDMI connector
4. USB Type-C® connector
5. USB Type-A connector
6. Audio connector
7. Speaker connector
8. LVDS connector
9. CPU fan connector
10. SSD connector (SSD1)
11. Touchpad connector
12. Battery connector
13. Ambient light sensor
14. Hall sensor board connector
15. Keyboard membrane connector
16. WLAN connector
17. Keyboard backlight connector
18. I/O board connector
19. GPU fan connector
20. SSD connector (SSD2)
21. RAM module slot
22. LED board connector
23. APU fan connector