# Dell Pro 7 13

P713260

Service Manual

Regulatory Model: P208G
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## Notes, cautions, and warnings

**NOTE:** A NOTE indicates important information that helps you make better use of your product.

**CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.**

**WARNING: A WARNING indicates a potential for property damage, personal injury, or death.**

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# 1

# Working inside your computer

## Safety instructions

Use the following safety guidelines to protect your computer from potential damage and to ensure your personal safety. Unless otherwise noted, each procedure in this document assumes that you have read the safety information that shipped with your computer.

**WARNING: Before working inside your computer, read the safety information that is shipped with your computer. For more safety best practices, see Dell Regulatory Compliance Home Page.**

**WARNING: Disconnect your computer from all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting your computer to an electrical outlet.**

**WARNING: For laptops, discharge the battery completely before removing it. Disconnect the AC power adapter from the computer and operate the computer solely on battery power—the battery is fully discharged when the computer no longer turns on when the power button**

**CAUTION: To avoid damaging the computer, ensure that the work surface is flat, dry, and clean.**

**CAUTION: You should only perform troubleshooting and repairs as authorized or directed by the Dell technical support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty.**

**CAUTION: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity which could harm internal components.**

**CAUTION: To avoid damaging the components and cards, handle them by their edges, and avoid touching the pins and the contacts.**

**CAUTION: When you disconnect a cable, pull it by its connector or its pull tab, not the cable itself. Some cables have connectors with locking tabs or thumbscrews that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending the connector pins. When connecting cables, ensure that the connector on the cable is correctly oriented and aligned with the port.**

**CAUTION: Press and eject any installed card from the media-card reader.**

**CAUTION: Exercise caution when handling rechargeable Li-ion batteries in laptops. Swollen batteries should not be used and must be replaced and disposed properly.**

## Before working inside your computer

### About this task

**NOTE:** The images in this document may differ from your computer depending on the configuration you ordered.

### Steps

1. Save and close all open files and exit all open applications.
2. Shut down your computer. For Windows operating system, click **Start** > **Power** > **Shut down**.

   **NOTE:** If you are using a different operating system, see the documentation of your operating system for instructions.

3. Turn off all the attached peripherals.
4. Disconnect your computer from the electrical outlet.
5. Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.
6. Remove any media card and optical drive from your computer, if applicable.
7. To clean the air vents, use a soft brush and move vertically.

   **NOTE:** Do not remove the base cover or use any blower to clean the vents.

8. Enter the Service Mode.

   **Service Mode**

   Service Mode is used to cut off power without disconnecting the battery cable from the system board before conducting repairs in the computer.

   **CAUTION: If you are unable to turn on the computer to put it into Service Mode, disconnect the battery cable. To disconnect the battery cable, follow the steps in the Removing the battery topic.**

   **NOTE:** Ensure that your computer is shut down and the power adapter is disconnected.

   a. Press and hold the B key and the power button for three seconds, or until the Dell logo appears on the screen.
   b. If the **Owner Tag** is set, it is displayed on the screen. Press any key to continue.

      **NOTE:** If the **Owner Tag** information is not already set, the computer automatically skips this step and proceeds to enter Service Mode.

   c. If the power adapter is still connected, a message appears on the screen prompting you to disconnect it. Disconnect the power adapter, then press any key to continue.
   d. When the **System Ready For Service** message appears on the screen, press any key to proceed. The computer emits three short beeps and shuts down immediately.
      The computer shuts down and enters the Service Mode.

# Safety precautions

This section details the primary steps to be followed before disassembling any device or component.

Observe the following safety precautions before any installation or break-fix procedures involving disassembly or reassembly:

- Turn off the computer and all attached peripherals.
- Disconnect the computer from AC power.
- Disconnect all network cables and peripherals from the computer.
- Use an ESD field service kit when working inside your computer to avoid electrostatic discharge (ESD) damage.
- Place the removed component on an anti-static mat after removing it from the computer.
- Press and hold the power button for 15 seconds to discharge the residual power in the system board.

## Bonding

Bonding is a method for connecting two or more grounding conductors to the same electrical potential. This is done by using a field service electrostatic discharge (ESD) kit. When connecting a bonding wire, ensure that it is connected to bare metal and never to a painted or nonmetal surface. Ensure that the wrist strap is secure and in full contact with your skin. Remove all jewelry, watches, bracelets, or rings before grounding yourself and the equipment.

# Electrostatic discharge—ESD protection

ESD is a major concern when you handle electronic components, especially sensitive components such as expansion cards, processors, memory modules, and system boards. A slight charge can damage circuits in ways that may not be obvious, such as intermittent problems or a shortened product life span. As the industry pushes for lower power requirements and increased density, ESD protection is an increasing concern.

Two recognized types of ESD damage are catastrophic and intermittent failures.

- **Catastrophic** – Catastrophic failures represent approximately 20 percent of ESD-related failures. The damage causes an immediate and complete loss of device functionality. An example of catastrophic failure is a memory module that has

received a static shock and immediately generates a "No POST/No Video" symptom with a beep code that is emitted for missing or nonfunctional memory.

- **Intermittent** – Intermittent failures represent approximately 80 percent of ESD-related failures. The high rate of intermittent failures means that most of the time when damage occurs, it is not immediately recognizable. The memory module receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms that are related to the damage. The weakened trace may take weeks or months to melt, and in the meantime may cause degradation of memory integrity, intermittent memory errors, and so on.

Intermittent failures that are also called latent or "walking wounded" are difficult to detect and troubleshoot.

Perform the following steps to prevent ESD damage:

- Use a wired ESD wrist strap that is properly grounded. Wireless anti-static straps do not provide adequate protection. Touching the chassis before handling parts does not ensure adequate ESD protection on parts with increased sensitivity to ESD damage.
- Handle all static-sensitive components in a static-safe area. If possible, use anti-static floor pads and workbench pads.
- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the anti-static packing material until you are ready to install the component. Before unwrapping the anti-static packaging, use the anti-static wrist strap to discharge the static electricity from your body.

  **NOTE:** You can protect against ESD and discharge static electricity from your body by touching a metal-grounded object before you interact with anything electronic, for example, an unpainted metal surface on your computer's I/O panel. When connecting a peripheral (including handheld digital assistants) to your computer, you should always ground both yourself and the peripheral before connecting it to the computer. In addition, as you work inside the computer, periodically touch a metal-grounded object to remove any static charge that your body may have accumulated.

  For more information about the wrist strap and ESD wrist strap tester, see Components of an ESD Field Service Kit.
- Before transporting a static-sensitive component, place it in an anti-static container or packaging.

# ESD Field Service kit

The unmonitored field service kit is the most commonly used service kit. Each Field Service kit includes three main components: anti-static mat, wrist strap, and bonding wire.

**CAUTION: It is critical to keep ESD-sensitive devices away from internal parts that are insulated and often highly charged, such as plastic heat sink casings.**

## Working environment

Before the ESD Field Service kit is deployed, conduct an evaluation of the site to ensure proper setup and readiness. For example, deploying the kit for a server environment is different than for a desktop or laptop environment. Servers are typically installed in a rack within a data center; desktops or laptops are typically placed on office desks or cubicles. Always look for a large open flat work area that is free of clutter and large enough to deploy the ESD kit with additional space to accommodate the type of computer that is being repaired. The workspace should also be free of insulators that can cause an ESD event. On the work area, insulators such as styrofoam and other plastics should always be moved at least 12 inches or 30 centimeters away from sensitive parts before physically handling any hardware components.

## ESD packaging

All ESD-sensitive devices must be shipped and received in static-safe packaging. Metal, static-shielded bags are preferred. However, you should always return the damaged component using the same ESD bag and packaging that the new part arrived in. The ESD bag should be folded over and taped shut and all the same foam packing material should be used in the original box that the new part arrived in. ESD-sensitive devices should be removed from packaging only at an ESD-protected work surface, and parts should never be placed on top of the ESD bag because only the inside of the bag is shielded. Always place parts in your hand, on the anti-static mat, in the computer, or inside an ESD bag.

## Components of an ESD Field Service kit

The components of an ESD Field Service kit are:

- **Anti-Static Mat** – The anti-static mat is dissipative and parts can be placed on it during service procedures. When using an anti-static mat, your wrist strap should be snug and the bonding wire should be connected to the anti-static mat and to any bare metal on the computer being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the anti-static mat. ESD-sensitive items are safe in your hand, on the anti-static mat, in the computer, or inside an ESD bag.
- **Wrist Strap and Bonding Wire** – If an anti-static mat is not being used, the wrist strap and bonding wire should be connected directly between your wrist and an exposed metal part of the hardware. If you are using an anti-static mat, connect the wrist strap and bonding wire to the anti-static mat to ensure protection for any hardware placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the anti-static mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, anti-static mat, and bonding wire. Never use wireless wrist straps. Always be cautious that the internal wires of a wrist strap are prone to damage from normal wear and tear, and must be checked regularly with a wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the wrist strap and bonding wire at least once per week.
- **ESD Wrist Strap Tester** – The wires inside an ESD strap are prone to damage over time. When using an unmonitored ESD kit, it is recommended to test the wrist strap regularly—ideally before each service session, and at a minimum, once per week. The most reliable method for testing is with a wrist strap tester. To perform the test, connect the bonding wire of the wrist strap to the tester while wearing the strap. Press the test button to initiate the check. A green LED indicates a successful test, while a red LED and audible alarm signal a failure.

**NOTE:** It is recommended to always use the traditional wired ESD grounding wrist strap and protective anti-static mat when servicing Dell products. In addition, it is critical to keep sensitive parts separate from all insulator parts while servicing the computer.

## Transporting sensitive components

When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

## After working inside your computer

### About this task

**CAUTION: Leaving stray or loose screws inside your computer may severely damage your computer.**

### Steps

1. Replace all screws and ensure that no stray screws remain inside your computer.
2. Connect any external devices, peripherals, or cables you removed before working on your computer.
3. Replace any media cards, disks, or any other parts that you removed before working on your computer.
4. Connect your computer to their electrical outlets.

   **NOTE:** To exit service mode, ensure to connect the AC adapter to the power-adapter port on your computer.
5. Press the power button to turn on the computer.

# Information on repairability for Québec - From Dell Canada Inc. - to Quebec consumers

Dell does not guarantee the availability of replacement parts, repair services, or information necessary for maintenance or repair.

# BitLocker

When updating the BIOS on a computer with BitLocker enabled, consider the following precautions.

**CAUTION: If BitLocker is not suspended before updating the BIOS, the BitLocker key is not recognized the next time you reboot the computer. You will then be prompted to enter the recovery key to proceed, and the**

**computer displays a prompt for the recovery key on each reboot. Failure to provide the recovery key can result in data loss or an operating system reinstall. For more information, refer Updating the BIOS on Dell systems with BitLocker enabled.**

The installation of the following components triggers BitLocker:

- Hard disk drive or solid state drive
- System board

# Recommended tools

The procedures in this document may require the following tools:

- Phillips screwdriver #0
- Plastic scribe

# Screw list

**NOTE:** When removing screws from a component, it is recommended to note the screw type and the quantity of screws, and then place them in a screw storage box. This is to ensure that the correct number of screws and correct screw type is restored when the component is replaced.

**NOTE:** Some computers have magnetic surfaces. Ensure that the screws are not left attached to such surfaces when replacing a component.

**NOTE:** Screw color may vary depending on the configuration ordered.

### Table 1. Screw list

| Component | Screw type | Quantity | Screw torque strength | Screw image |
|---|---|---|---|---|
| Base cover | M2x4 (Captive screws) | 6 | 2.55 kgf-cm to 3.45 kgf-cm |  |
| Battery | M2x4 (Captive screws) | 5 | 2.55 kgf-cm to 3.45 kgf-cm |  |
| 5G WWAN card | M2x2.5 | 1 | 1.6 kgf-cm |  |
| 4G WWAN card | M1.6x3.2 | 1 | 1.6 kgf-cm |  |
| WLAN card | M2x3.5 | 1 | 1.6 kgf-cm |  |
| Solid state drive M.2 2230 | M2x2.5 | 3 | 1.6 kgf-cm |  |
| Solid state drive M.2 2280 | M2x2.5 | 2 | 1.6 kgf-cm |  |
| Speaker | M2x2 | 4 | 1.6 kgf-cm |  |
| Fan | M2x4 | 3 | 1.6 kgf-cm |  |
| Smart-card reader | M1.6x1.7 | 4 | 1.0 kgf-cm |  |

**Table 1. Screw list (continued)**

| Component | Screw type | Quantity | Screw torque strength | Screw image |
|---|---|---|---|---|
| Heat sink | M2x4 (Captive screws) | 4 | 2.55 kgf-cm to 3.45 kgf-cm |  |
| Display assembly | M2.5x3.5 | 6 | 1.6 kgf-cm |  |
| System board | M2x2.5 | 6 | 1.6 kgf-cm |  |
| USB Type-C connector module | M2x5 | 3 | 1.6 kgf-cm |  |
| WLAN antenna module | M1.6x2.5 | 4 | 1.0 kgf-cm |  |
| I/O-bridge board | M1.6x5.5 | 2 | 1.0 kgf-cm |  |
| I/O board | M2x2.5 | 1 | 1.6 kgf-cm |  |
| Power button | M1.6x1.5 | 1 | 1.6 kgf-cm |  |
| Keyboard | • M2x2.2<br>• M1.6x2<br>• M1.4x1.2 | • 2<br>• 3<br>• 17 | • 1.6 kgf-cm<br>• 1.0 kgf-cm |  |

# Major components of Dell Pro 7 13 P713260

The following image shows the major components of Dell Pro 7 13 P713260.

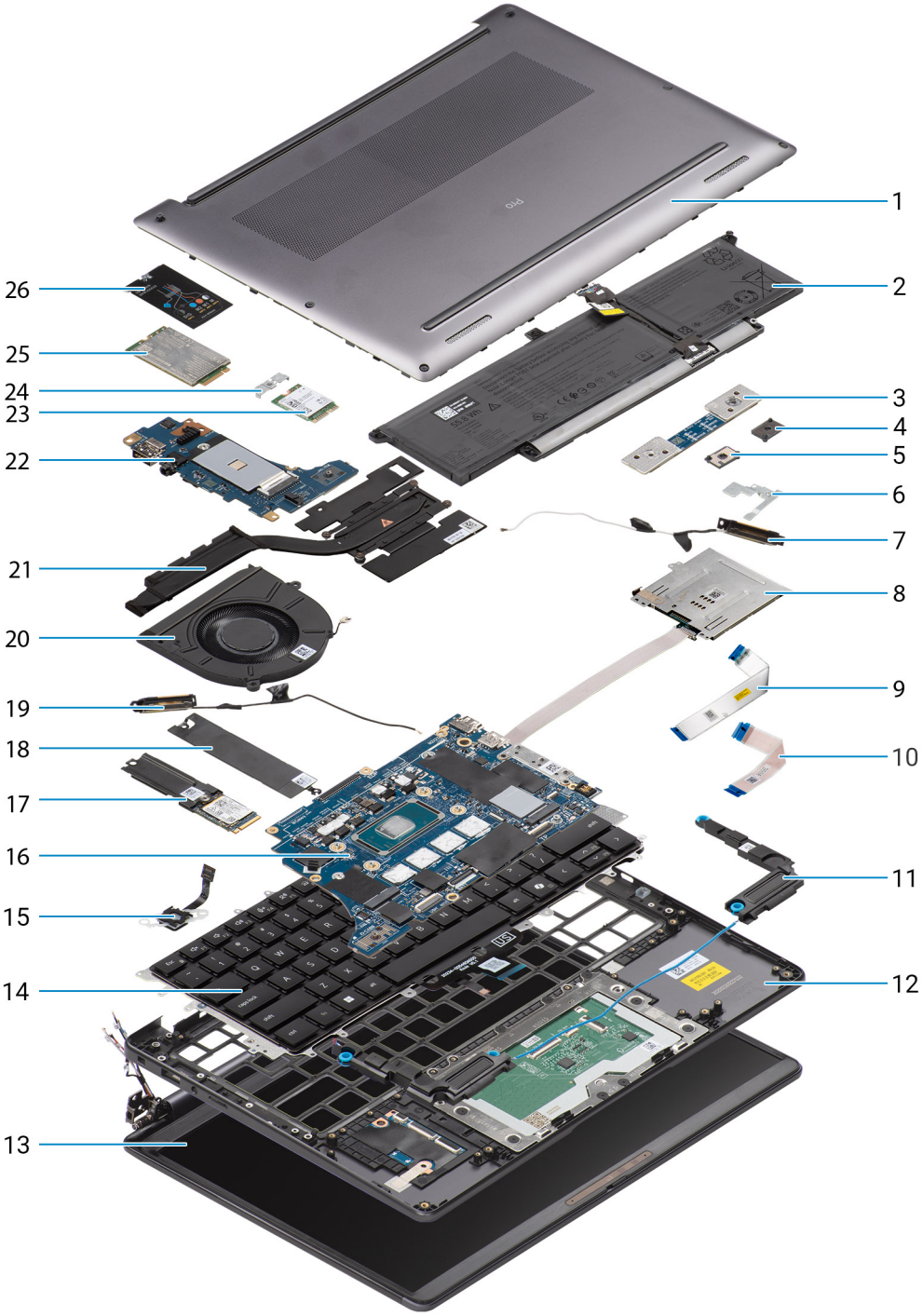



**Figure 1. Major components of Dell Pro 7 13 P713260**

1. Base cover
2. Battery
3. I/O-bridge board
4. I/O-bridge board interposer (to system board)
5. I/O-bridge board interposer (to I/O board)
6. I/O-board bracket
7. WLAN antenna
8. Smart card reader
9. Touchpad cable
10. USH-daughterboard cable
11. Speakers

12. Palm-rest assembly
13. Display assembly
14. Keyboard
15. Power button with optional finger print reader
16. System board
17. Solid state drive
18. Solid state drive shield
19. WLAN antenna module
20. Fan
21. Heat sink
22. I/O board
23. WLAN card
24. WLAN-card bracket
25. WWAN card
26. WWAN thermal shield

**NOTE:** Dell provides a list of components and their part numbers for the original computer configuration purchased. These parts are available depending on the warranty coverage that is selected at the time of purchase. Components from upsell or upgraded variants may not be covered under the standard system warranty. For more details or to explore purchase options, contact your Dell sales representative.

# Customer Replaceable Units (CRUs) and Field Replaceable Units (FRUs) list

The replaceable components in Dell Pro 7 13 P713260 are either Customer Replaceable Units (CRUs) or Field Replaceable Units (FRUs).

**CAUTION: To avoid any potential damage to the component or loss of data, ensure that an authorized service technician replaces the Field Replaceable Units (FRUs). Customers can replace only the Customer Replaceable Units (CRUs) following the safety precautions and replacement procedures.**

### Table 2. CRU and FRU list

| Customer Replaceable Unit (CRU) | Field Replaceable Unit (FRU) |
|---|---|
| Base cover | USH-board cable |
| Battery and battery cable | Smart card reader |
| Wireless Wide Area Network (WWAN) card and WWAN thermal shield | Heat sink |
| Wireless Local Area Network (WLAN) card and WLAN-card bracket | Display assembly (for computers shipped with WWAN configuration) |
| Fan | System board |
| Speakers | USB Type-C connector module |
| Solid state drive (SSD) and SSD thermal shield | Wireless Local Area Network (WLAN) antenna modules |
| SSD holder (for M.2 2230 SSD) | I/O-bridge board |
| nano-SIM card tray (optional) | I/O board |
| | Power button with fingerprint reader |
| | Power button (without fingerprint reader) |
| | Touchpad cable |
| | Keyboard |
| | Nano-SIM card slot dummy filler |

**Table 2. CRU and FRU list (continued)**

| Customer Replaceable Unit (CRU) | Field Replaceable Unit (FRU) |
|---|---|
| | Palm-rest assembly |
| | Display bezel |
| | Display hinges |
| | Display panel |
| | Display back-cover |

2

# Removing and installing Customer Replaceable Units (CRUs)

The replaceable components in this chapter are Customer Replaceable Units (CRUs).

**CAUTION: CRUs may be replaced by the customer, following the safety precautions and replacement procedures.**

**NOTE:** The images in this document may differ from your computer depending on the configuration you ordered.

# Nano-SIM card tray (optional)

## Removing the nano-SIM card tray

### Prerequisites

1. Follow the procedure in Before working inside your computer.

**NOTE:** This procedure is applicable only if your computer is shipped with a WWAN module.

**CAUTION: Removing the SIM card when the computer is turned on can cause data loss or damage to the card. Ensure that your computer is turned off or the network connections are disabled.**

### About this task

The following images indicate the location of the nano-SIM card tray and provide a visual representation of the removal procedure.

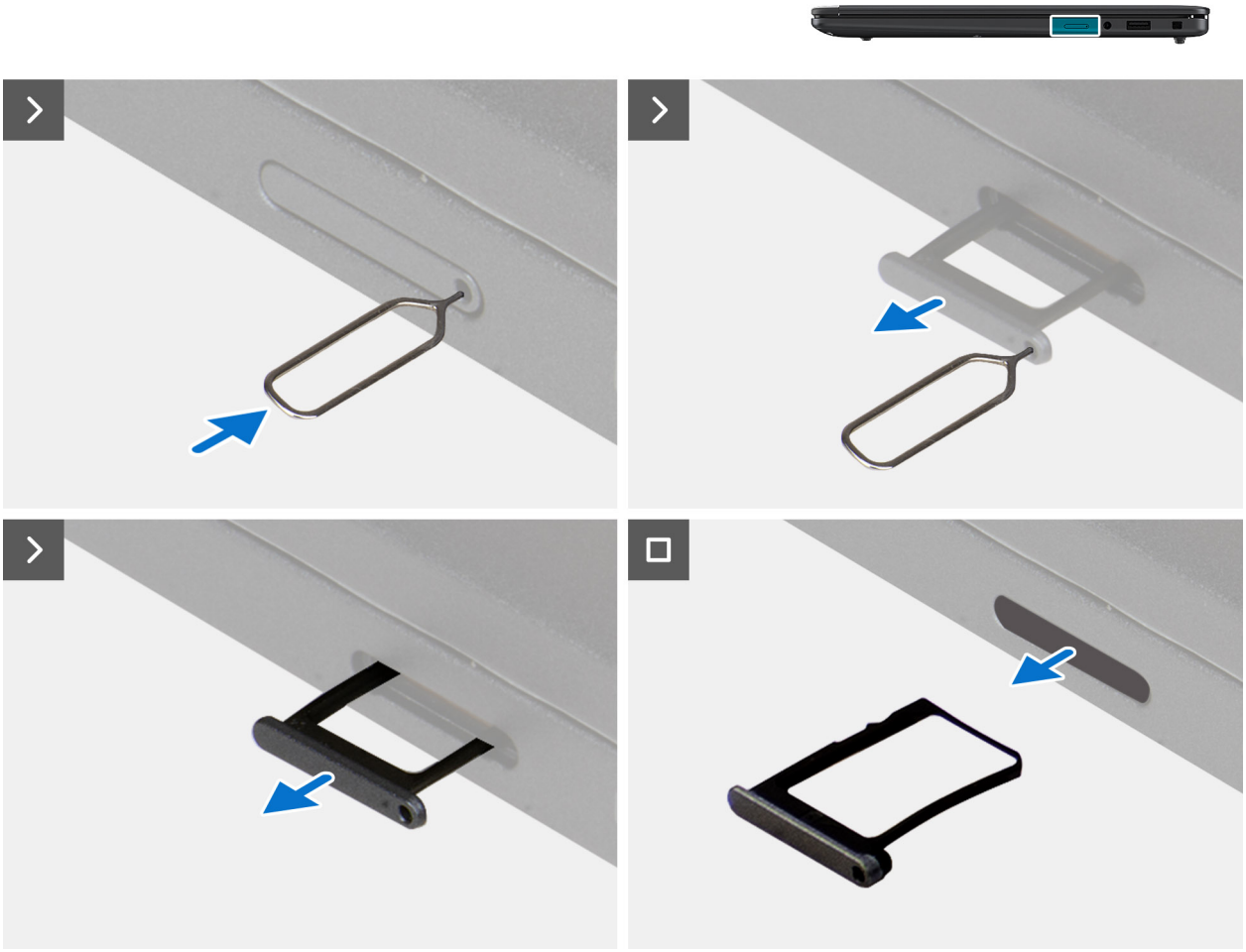


Figure 2. Removing the nano-SIM card tray

### Steps

1. Insert a SIM-ejector pin into the release hole to release the nano-SIM card tray.
2. Push the SIM-ejector pin to disengage the lock, and eject the nano-SIM card tray.
3. Slide the nano-SIM card tray out of the slot on the computer.

## Installing the nano-SIM card tray

### Prerequisites

**NOTE:** This procedure is applicable only if your computer is shipped with a WWAN module.

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following images indicate the location of the nano-SIM card tray and provide a visual representation of the installation procedure.

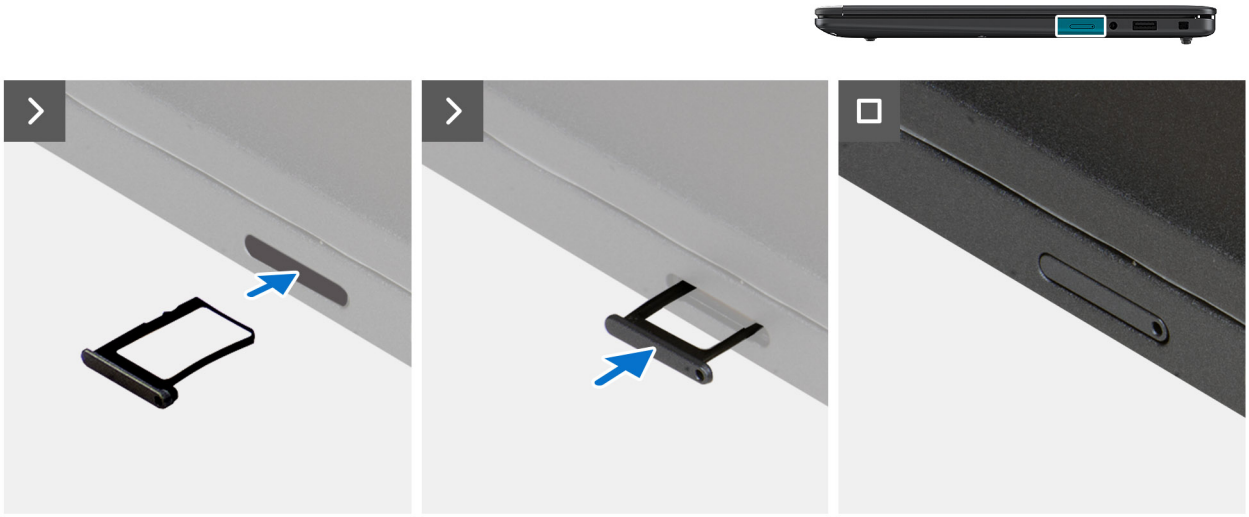


Figure 3. Installing the nano-SIM card tray

### Steps

1. Align the nano-SIM card tray with the slot on the computer and carefully slide it in.
2. Slide the nano-SIM card tray into the slot, until it clicks into place.

### Next steps

1. Follow the procedure in After working inside your computer.

# Base cover

## Removing the base cover

### Prerequisites

1. Follow the procedure in Before working inside your computer.

   **CAUTION: If you are unable to enter Service Mode, peel off the tape and disconnect the battery cable from the battery-cable connector (BATT1) on the system board.**

2. Remove the nano-SIM card tray, if applicable.

### About this task

The following images indicate the location of the base cover and provide a visual representation of the removal procedure.




Figure 4. Removing the base cover

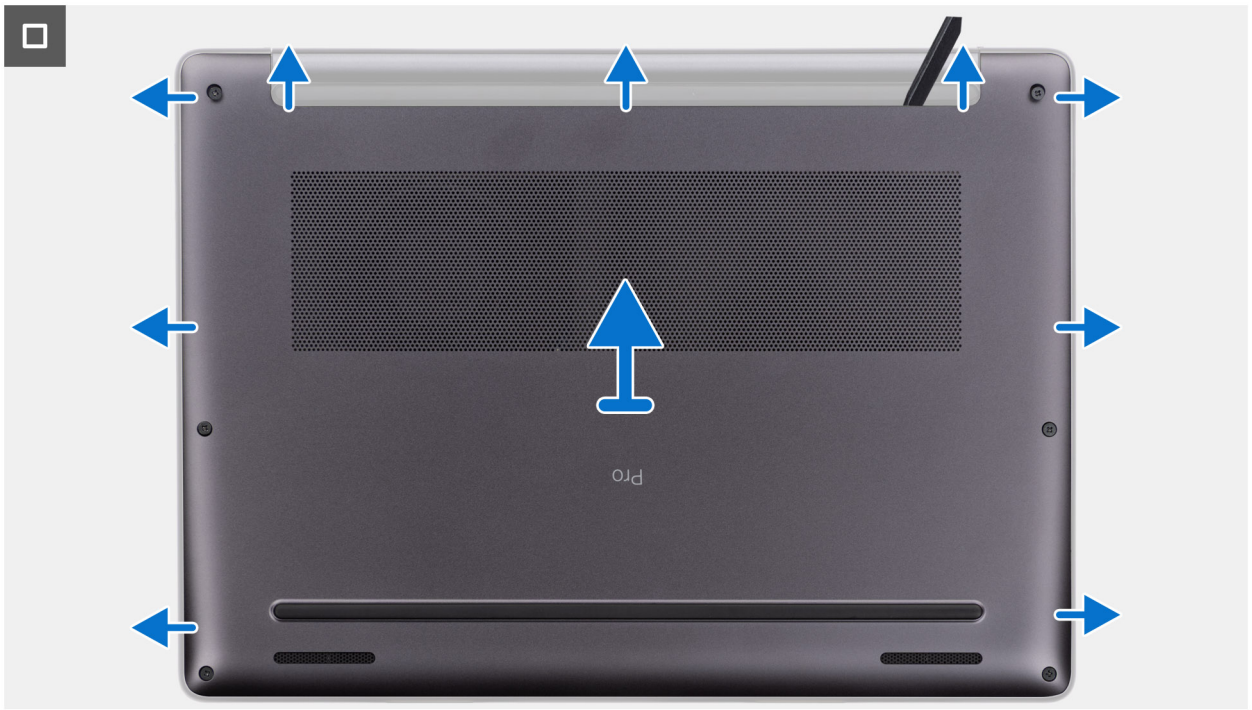


Figure 5. Removing the base cover

### Steps

1. Loosen the two captive screws (M2.5x7) that secure the base cover to the palm-rest assembly.
2. Loosen the four captive screws (M2.5x5) that secure the base cover to the palm-rest assembly.
3. Using a plastic scribe, pry open the base cover from the recesses that are located in the U-shaped indents at the top edge of the base cover near the hinges.
4. Lift the base cover off the palm-rest assembly.

**NOTE:**

If you are unable to enter Service Mode, peel off the tape and disconnect the battery cable from the battery-cable connector (BATT1) on the system board.



**Figure 6. Disconnecting the battery cable**

5. Press and hold the power button for five seconds to ground the computer and drain the flea power.

## Installing the base cover

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following images indicate the location of the base cover and provide a visual representation of the installation procedure.



**Figure 7. Connecting the battery cable**




Figure 8. Installing the base cover



Figure 9. Installing the base cover

**NOTE:** If the battery is not a pre-requisite and if you have disconnected the battery cable, ensure to connect the battery cable. To connect the battery cable, follow step 1 in the procedure.

### Steps

1. Connect the battery cable to the battery-cable connector (BATT1) on the system board.
2. Adhere the tape on the battery cable to the battery.
3. Align the screw holes on the base cover with the screw holes on the palm-rest assembly, and then snap the base cover into place.
4. Tighten the two captive screws (M2.5x7) that secure the base cover to the palm-rest assembly.
5. Tighten the four captive screws (M2.5x5) that secure the base cover to the palm-rest assembly.

### Next steps

1. Install the nano-SIM card tray, if applicable.
2. Follow the procedure in After working inside your computer.

**NOTE:** Ensure that your computer is in Service Mode. For more information, see Before working inside your computer.

# Battery

## Rechargeable Li-ion battery precautions

**CAUTION:**

- **Exercise caution when handling rechargeable Li-ion batteries.**
- **Discharge the battery completely before removing it. Disconnect the AC power adapter from the computer and operate the computer solely on battery power—the battery is fully discharged when the computer no longer turns on when the power button is pressed.**
- **Do not crush, drop, mutilate, or penetrate the battery with foreign objects.**
- **Do not expose the battery to high temperatures, or disassemble battery packs and cells.**
- **Do not apply pressure to the surface of the battery.**
- **Do not bend the battery.**
- **Do not use tools of any kind to pry on or against the battery.**
- **To prevent accidental puncture or damage to the battery and other components, ensure that no screws are lost or misplaced during the servicing of the computer.**
- **Always purchase genuine batteries from Dell Support Site or authorized Dell partners and resellers.**
- **Swollen batteries should not be used and should be replaced and disposed properly. For guidelines on how to handle and replace swollen rechargeable Li-ion batteries, see Handling swollen rechargeable Li-ion batteries.**

## Removing the battery

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.

### About this task

**CAUTION: Removing the battery resets the BIOS setup settings to default. It is recommended that you note the BIOS setup settings before removing the battery.**

The following images indicate the location of the battery and provide a visual representation of the removal procedure.

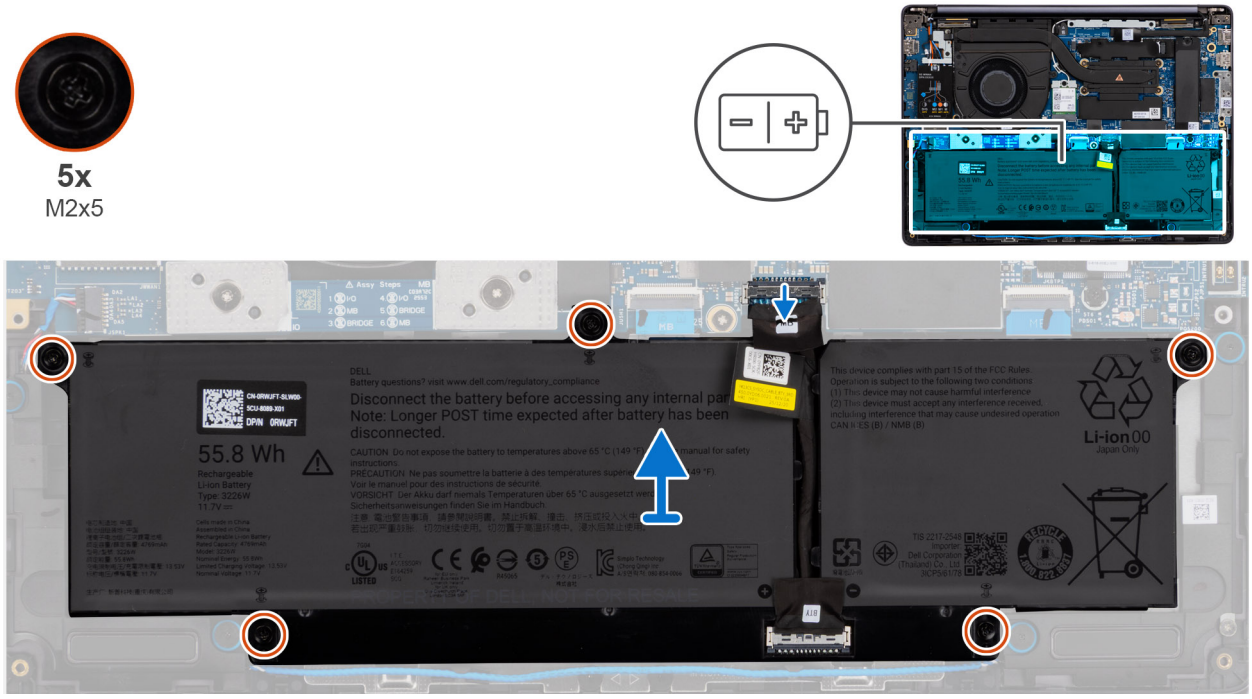



**Figure 10. Removing the battery**

### Steps

1. Disconnect the battery cable from the battery cable connector (BATT1) on the system board (if not disconnected earlier).

   **NOTE:** The tab on the battery is part of the covering, not a pull tab pulling it may tear and expose wires. Use caution when disconnecting the cable at either end to avoid damage.

2. Loosen the five captive screws (M2x5) that secure the battery to the palm-rest assembly.
3. Lift the battery off the palm-rest assembly.
4. If you are replacing the battery, remove the battery cable to transfer it to the replacement battery. For more information, see Removing the battery cable.

# Installing the battery

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following images indicate the location of the battery and provide a visual representation of the installation procedure.

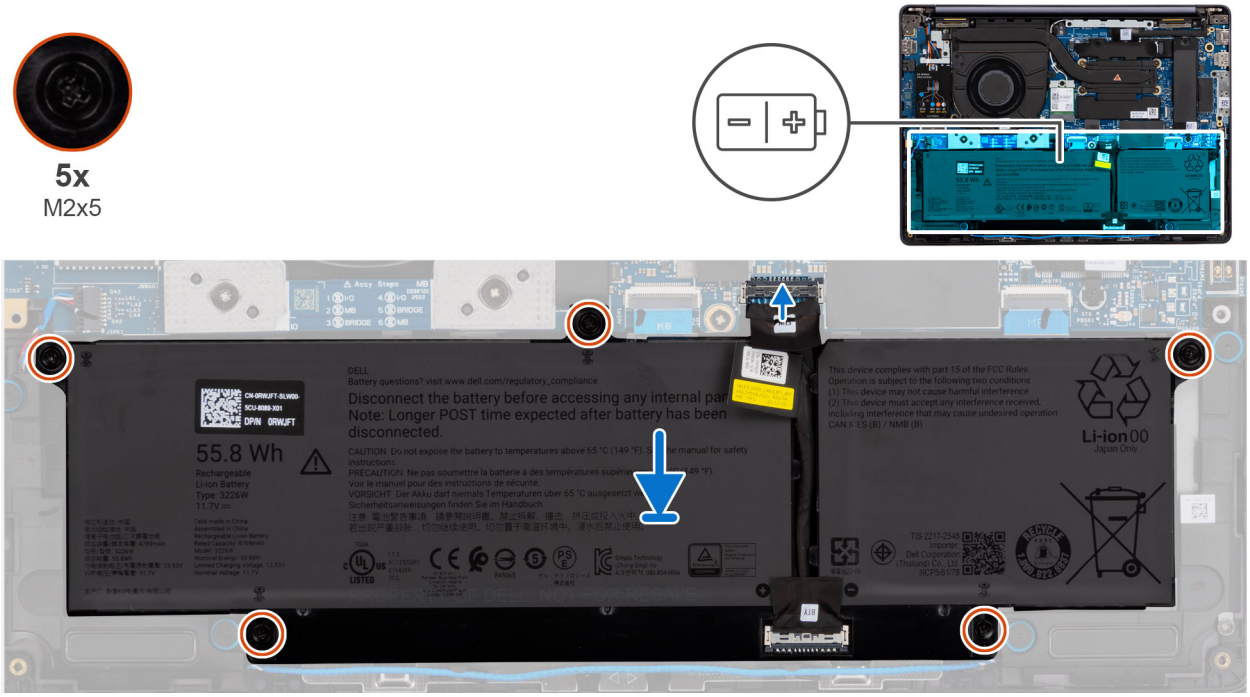



**Figure 11. Installing the battery**

### Steps

1. If the battery cable was removed for replacing the battery, you must transfer the battery cable from the old battery to the replacement battery. For more information, see Installing the battery cable.
2. Using the alignment posts, place the battery on the palm-rest assembly.
3. Align the screw holes on the battery with the screw holes on the palm-rest assembly.
4. Tighten the five captive screws (M2x5) that secure the battery to the palm-rest assembly.

### Next steps

1. Install the base cover.
2. Install the nano-SIM card tray, if applicable.
3. Follow the procedure in After working inside your computer.

# Battery cable

## Removing the battery cable

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.

### About this task

The following images indicate the location of the battery cable and provide a visual representation of the removal procedure.

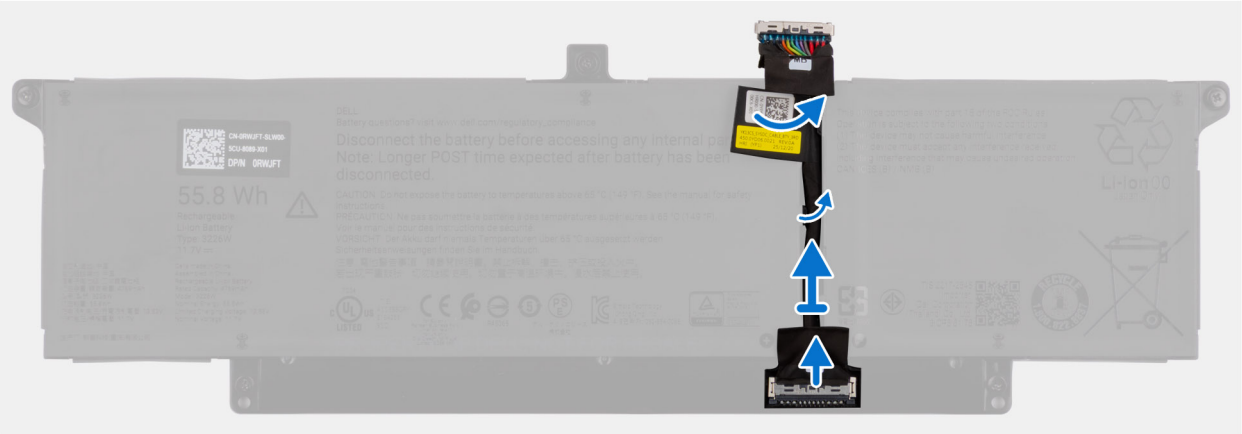


Figure 12. Removing the battery cable

### Steps

1. Remove the battery cable from the routing guides on the battery.
2. Lift the connector up vertically to disconnect the battery cable from the battery.

   **NOTE:** The tab on the battery is part of the covering, not a pull tab pulling it may tear and expose wires. Use caution when disconnecting the cable at either end to avoid damage.

## Installing the battery cable

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following images indicate the location of the battery cable and provide a visual representation of the installation procedure.

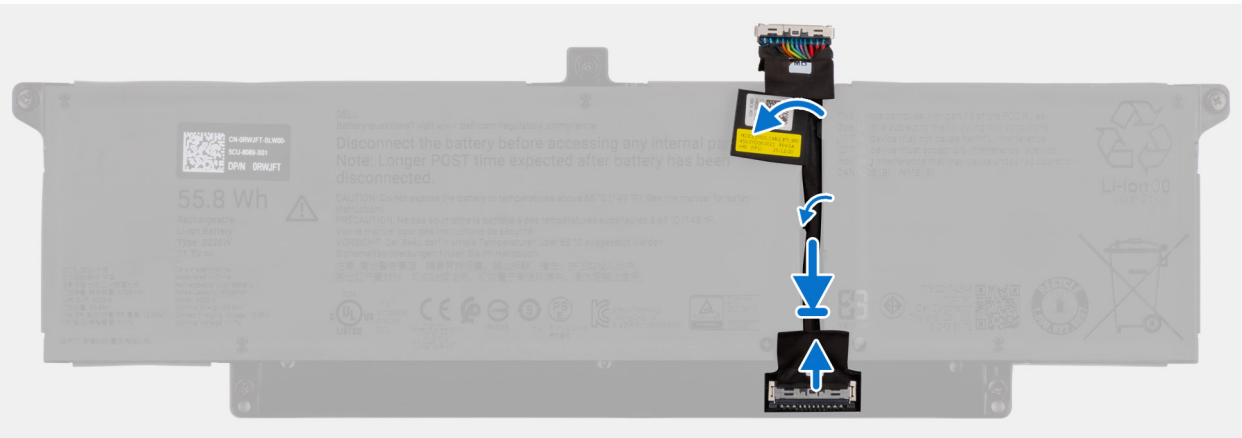


Figure 13. Installing the battery cable

### Steps

1. Align the connector and press it vertically down to connect the battery cable to the battery.
2. Route the battery cable along the routing guides on the battery.

   **NOTE:** When installing the battery cable, ensure that the cable is properly routed under the routing guides.

### Next steps

1. Install the base cover.
2. Install the nano-SIM card tray, if applicable.
3. Follow the procedure in After working inside your computer.

# Wireless Wide Area Network (WWAN) card

## Removing the 5G WWAN card

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.

### About this task

**NOTE:** The 5G WWAN card is available only on certain configurations. It is connected to the computer with four antenna cables.

The following images indicate the location of the 5G WWAN card and provide a visual representation of the removal procedure.




**Figure 14. Removing the 5G WWAN card**

### Steps

1. Remove the screw (M2x2.5) that secure the finger-print reader bracket to the I/O board.
2. Lift the WWAN-card shield off the WWAN card.
3. Remove the screw (M2x2.5) that secure the 5G WWAN-card bracket to the 5G WWAN card.
4. Disconnect the four antenna cables from the 5G WWAN card.
5. Slide and remove the 5G WWAN card off the 5G WWAN-card slot (JWWAN1) on the I/O board.

**NOTE:** If you are replacing the 5G WWAN card, ensure that the thermal pad is in place.

**NOTE:** If you are replacing the system board, ensure to transfer the thermal pad from the old system board to the new system board. If the thermal pad is damaged, peel the thermal pad from the system board and replace it with a new thermal pad.



Figure 15. WWAN thermal pad

# Installing the 5G WWAN card

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

**NOTE:** The 5G WWAN card is available only on certain configurations. It is connected to the computer with four antenna cables.

The following images indicate the location of the 5G WWAN card and provide a visual representation of the installation procedure.




**Figure 16. Installing the 5G WWAN card**

### Steps

1. Align the notch on the 5G WWAN card with the tab on the I/O board.

   **NOTE:** If you are replacing the 5G WWAN card, ensure that the thermal pad is in place.

   **NOTE:** If you are replacing the system board, ensure to peel the thermal pad from the old system board to the new system board.

   **NOTE:** If the thermal pad is damaged, peel the thermal pad from the system board and replace it with a new thermal pad.

2. Connect the antenna cables to the 5G WWAN card.

   The following table provides the antenna-cable color scheme for the 5G WWAN card that is supported on your computer.

**Table 3. Antenna-cable color scheme for 5G WWAN cards**

| Connectors on the WWAN card | Antenna-cable color | Silkscreen marking | |
|---|---|---|---|
| D/G | Black with a thin white stripe | ANT3 D/G | △ (white triangle) |
| M2 | Blue | ANT2 M2 | △ (white triangle) |

**Table 3. Antenna-cable color scheme for 5G WWAN cards (continued)**

| Connectors on the WWAN card | Antenna-cable color | Silkscreen marking | |
|---|---|---|---|
| M1 | Orange | ANT1 M1 | △ (white triangle) |
| M | White with a thin gray stripe | ANT0 M | △ (white triangle) |

3. Insert the 5G WWAN card at an angle into the 5G WWAN-card slot.
4. Align the notch on the 5G WWAN card with the tab on the 5G WWAN-card slot (JWWAN1).
5. Replace the screw (M2x3.5) that secure the WWAN-card shield to the WWAN card.
6. Replace the screw (M2x2.5) that secure the finger-print reader bracket to the I/O board.

### Next steps

1. Install the base cover.
2. Install the nano-SIM card tray, if applicable.
3. Follow the procedure in After working inside your computer.

# Removing the 4G WWAN card

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.

### About this task

The following images indicate the location of the 4G WWAN card and provide a visual representation of the removal procedure.

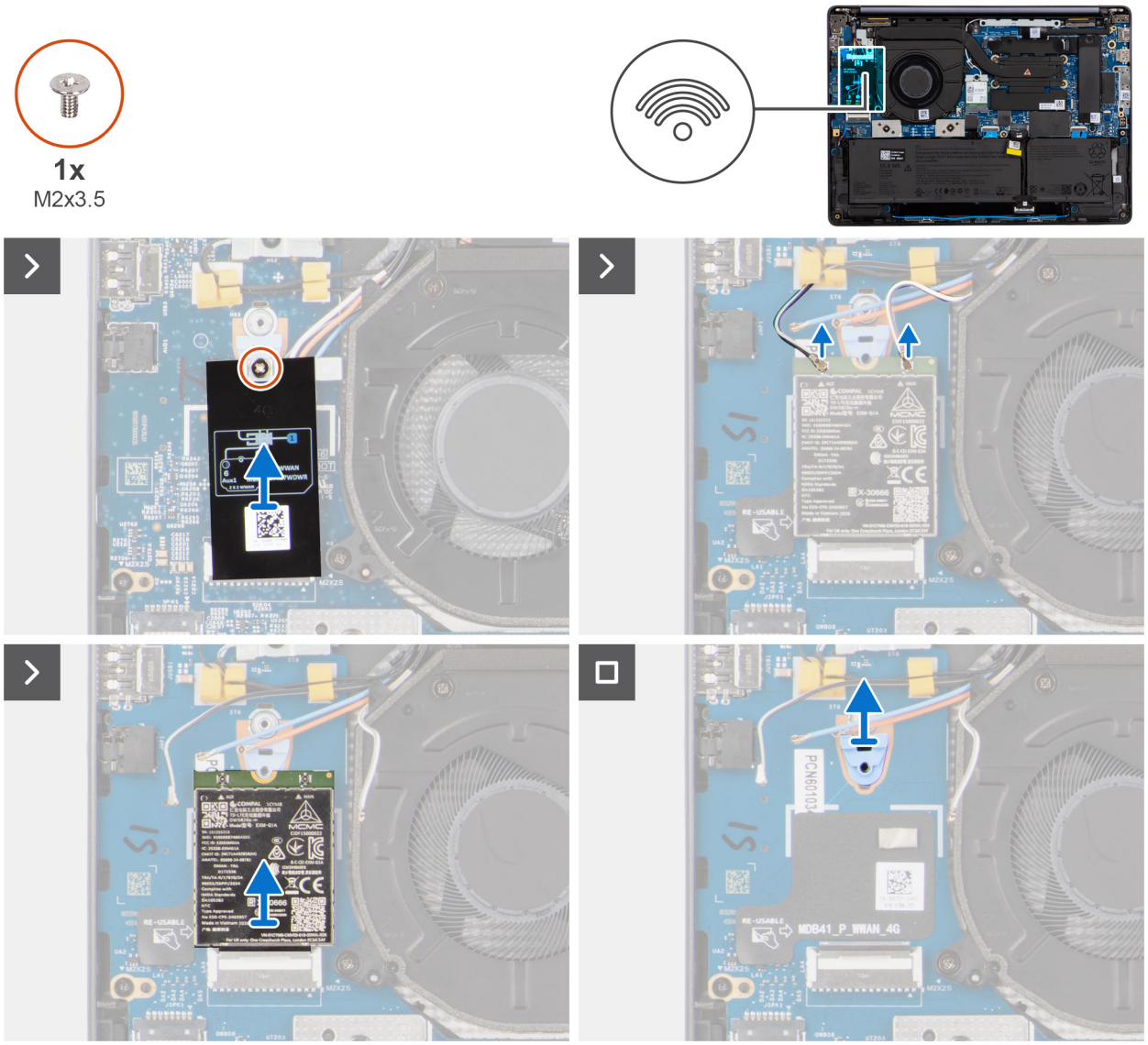



Figure 17. Removing the 4G WWAN card

### Steps

1. Loosen the screw (M2x3.5) that secures the WWAN-card bracket.
2. Disconnect the two antenna cables from the WWAN card.
3. Remove the WWAN card from the WWAN-card slot on the I/O board.

# Installing the 4G WWAN card

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following images indicate the location of the 4G WWAN card and provide a visual representation of the installation procedure.

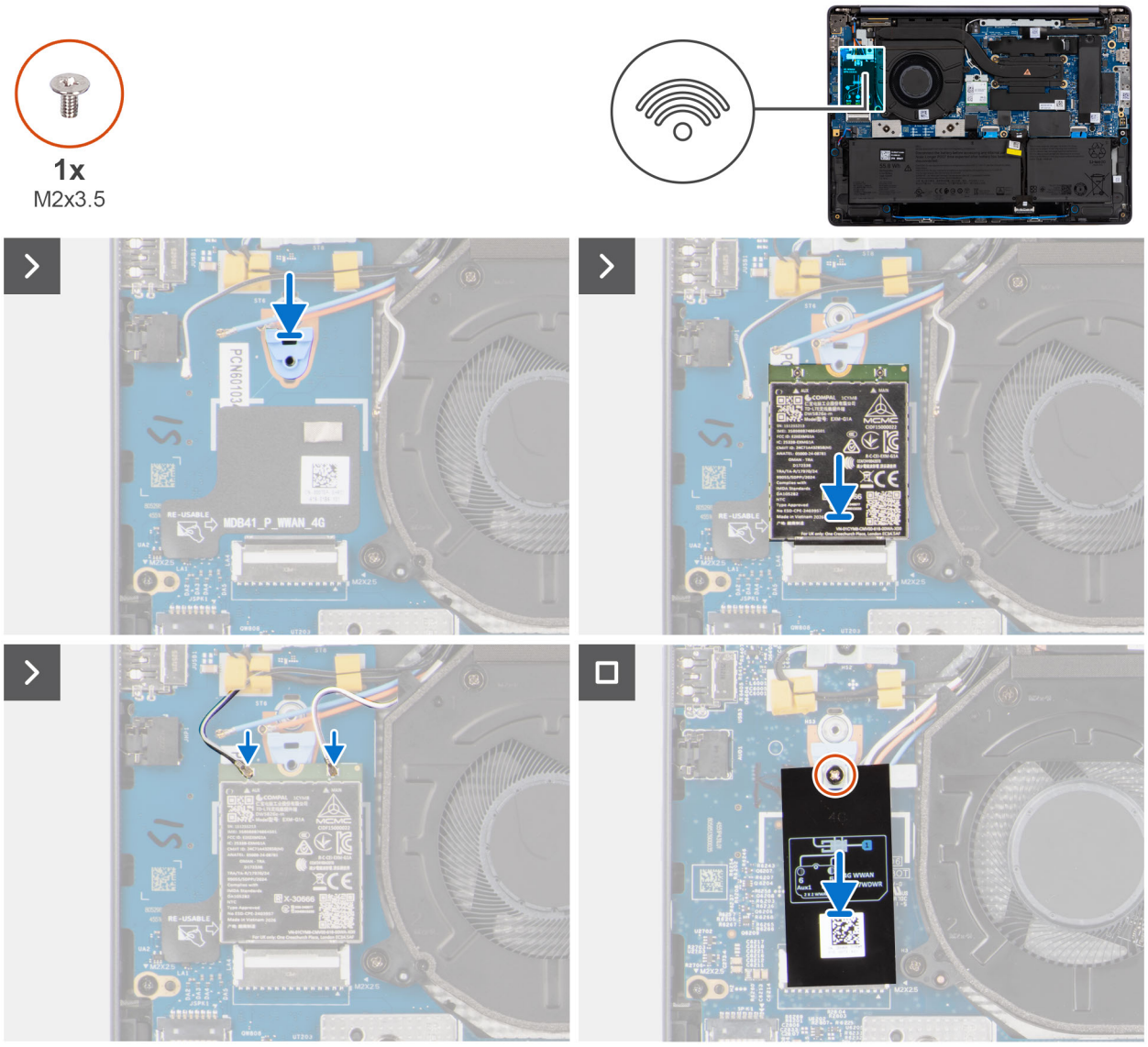



**Figure 18. Installing the 4G WWAN card**

### Steps

1. Insert the WWAN card at an angle into the WWAN-card slot on the I/O board.
2. Connect the antenna cables to their respective connectors on the WWAN card.

   The following table provides the antenna-cable color scheme for the WWAN card that is supported on your computer.

**Table 4. Antenna-cable color scheme for 4G WWAN card**

| Connectors on the WWAN card | Antenna-cable color |
|---|---|
| 6 Aux1 | Black with a thin gray stripe |
| 5 Main | White with a thin gray stripe |

3. Replace the screw (M2x3.5) that secures the WWAN-card thermal shield to the I/O board.

### Next steps

1. Install the base cover.
2. Install the nano-SIM card tray, if applicable.
3. Follow the procedure in After working inside your computer.

# Wireless Local Area Network (WLAN) card

## Removing the WLAN card

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.

### About this task

The following image indicates the location of the WLAN card and provides a visual representation of the removal procedure.

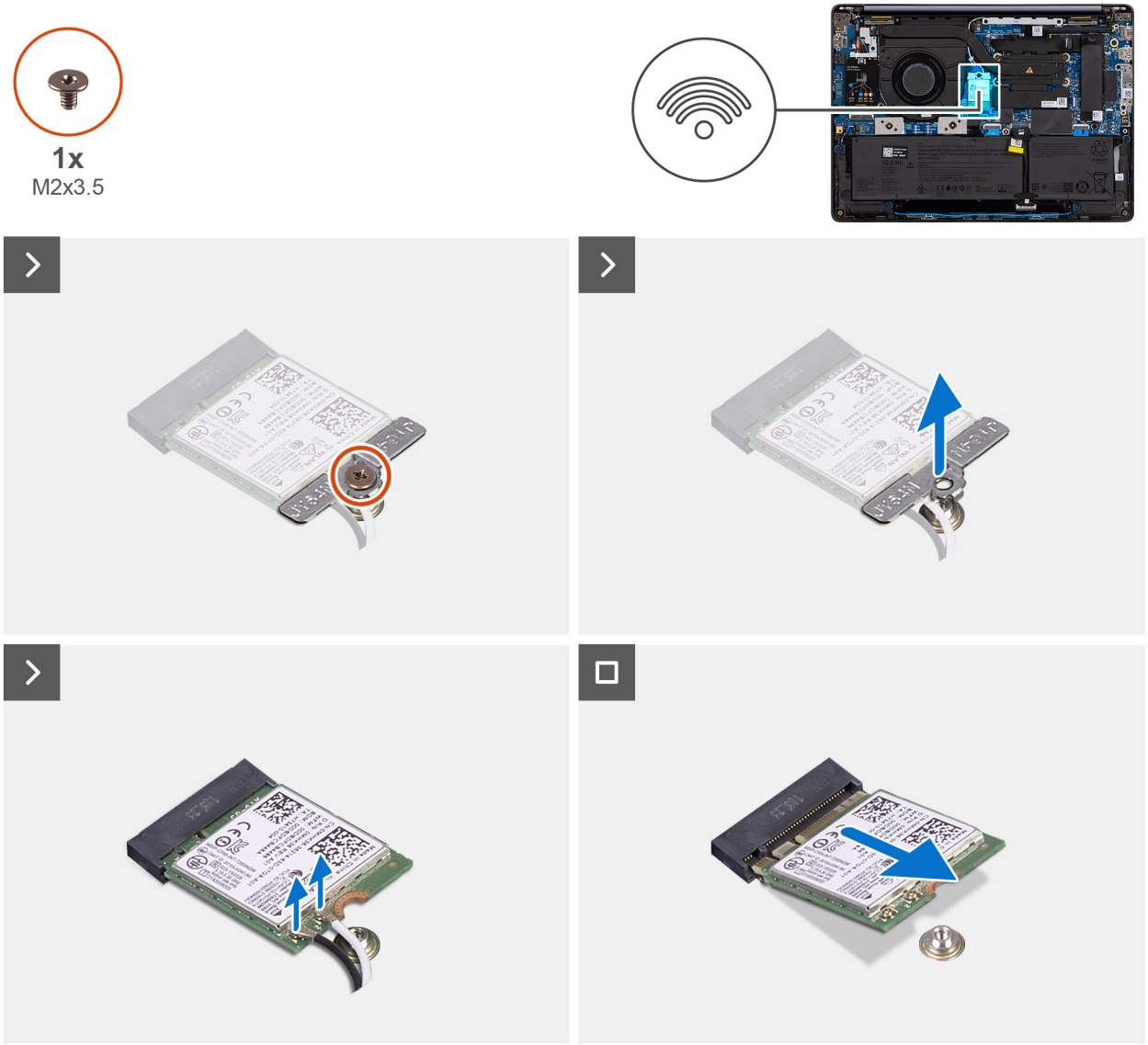



Figure 19. Removing the WLAN card

### Steps

1. Remove the screw (M2x3.5) that secures the wireless-card bracket to the system board.
2. Lift the wireless-card bracket from the WLAN card.
3. Disconnect the WLAN antenna cables from the WLAN card.

4. Slide and remove the WLAN card at an angle from the wireless-card slot.

# Installing the WLAN card

### About this task

The following image indicates the location of the WLAN card and provides a visual representation of the install procedure.

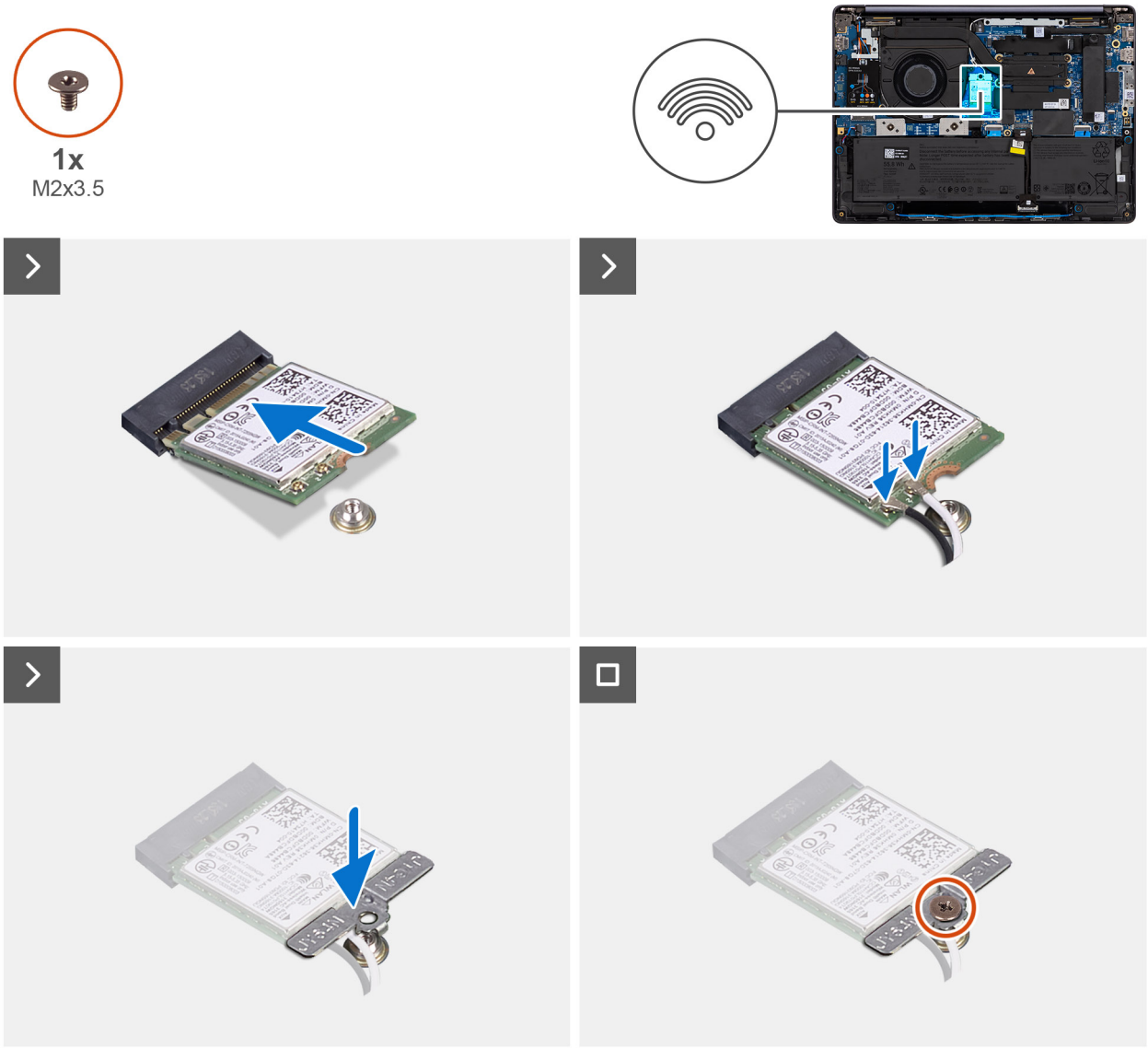



**Figure 20. Installing the WLAN card**

### Steps

1. Align the notch on the WLAN card with the tab on the wireless-card slot.
2. Connect the WLAN-antenna cables to the respective connectors on the WLAN card.

**Table 5. WLAN-antenna cable color scheme**

| Connectors on the WLAN card | Antenna-cable color |
|---|---|
| Main - White triangle (△) | White cable |
| Auxiliary - Solid triangle (▲) | Black cable |

3. Slide the WLAN card at an angle into the WLAN-card slot.

4. Align and place the WLAN-card bracket on the WLAN card.
5. Align the screw hole on the WLAN-card bracket with the screw hole on the system board.
6. Replace the screw (M2x3.5) that secures the WLAN-card bracket and the WLAN card to the system board.

### Next steps

1. Install the base cover.
2. Install the nano-SIM card tray, if applicable.
3. Follow the procedure in After working inside your computer.

# Solid State Drive (SSD)

## Removing the M.2 2230 SSD

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.

### About this task

The following images indicate the location of the M.2 2230 SSD and provide a visual representation of the removal procedure.

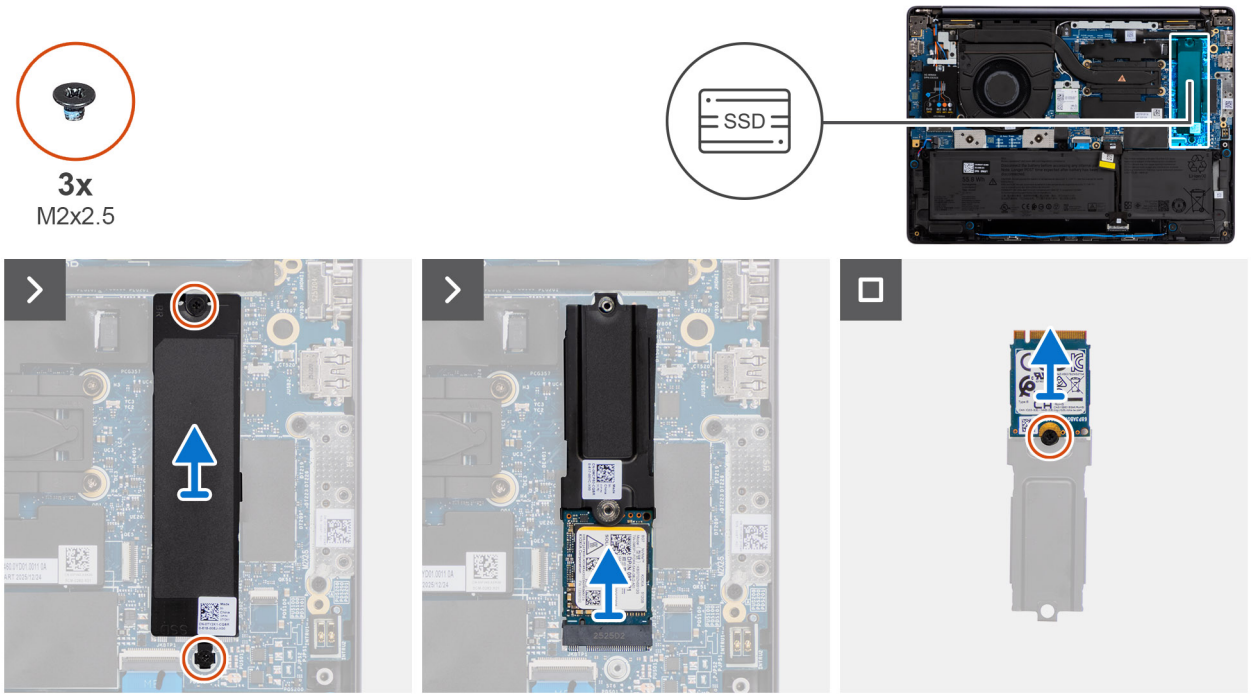



Figure 21. Removing the M.2 2230 SSD

### Steps

1. Remove the two screws (M2x2.5) that secure the SSD thermal shield to the system board.
2. Lift the SSD thermal shield off the SSD.

   **NOTE:** If the thermal pads get separated from the shielding cover or gets adhered to the SSD while replacing the SSD, they must be adhered back to the SSD cover before reinstalling it to the computer.

3. Lift and slide the M.2 2230 SSD assembly out of the M.2 card slot (SSD1) on the right I/O board.
4. Slide and remove the SSD from the SSD slot.

**NOTE:** For models shipped with M.2 2230 SSD, ensure that the SSD screw holder is transferred when the system board is removed or replaced.

# Installing the M.2 2230 SSD

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the location of the M.2 2230 SSD and provide a visual representation of the installation procedure.

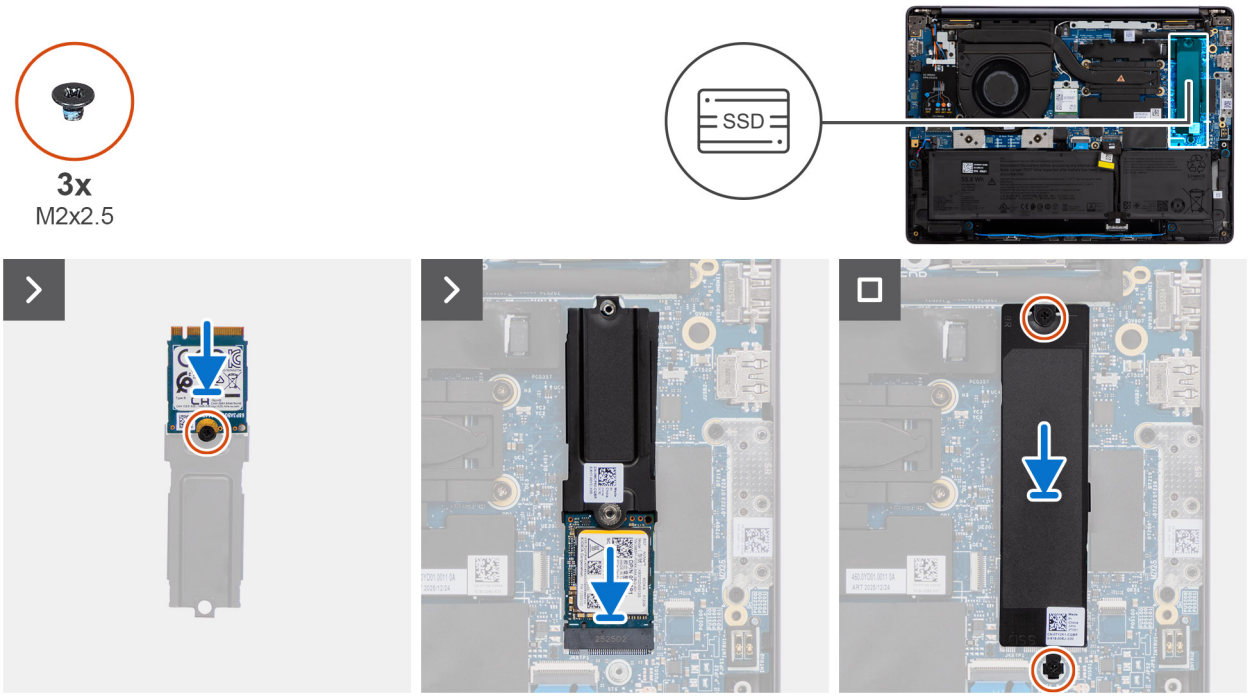



**Figure 22. Installing the M.2 2230 SSD**

### Steps

1. Place the M.2 2230 solid state drive on the M.2 2230 bracket.

   **NOTE:** For models shipped with M.2 2230 SSD, ensure that the SSD screw holder is transferred when the system board is removed or replaced.

2. Align the screw hole on the M.2 2230 solid state drive with the screw hole on the SSD holder.
3. Replace the screw (M2x2.5) that secures the M.2 2230 SSD (SSD1) to the M.2 SSD holder.
4. Align the notch on the M.2 2230 SSD to the tab on the M.2 card slot (SSD1) on the I/O board.
5. Slide the M.2 2230 SSD at an angle into the M.2 card slot (SSD1) on the right I/O board.
6. Align and place the SSD thermal shield over the M.2 2230 SSD.
7. Replace the screw (M2x2.5) that secures the M.2 SSD thermal shield to the right I/O board.

### Next steps

1. Install the base cover.
2. Install the nano-SIM card tray, if applicable.
3. Follow the procedure in After working inside your computer.

# Removing the M.2 2280 SSD

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.

### About this task

The following images indicate the location of the M.2 2280 SSD and provide a visual representation of the removal procedure.

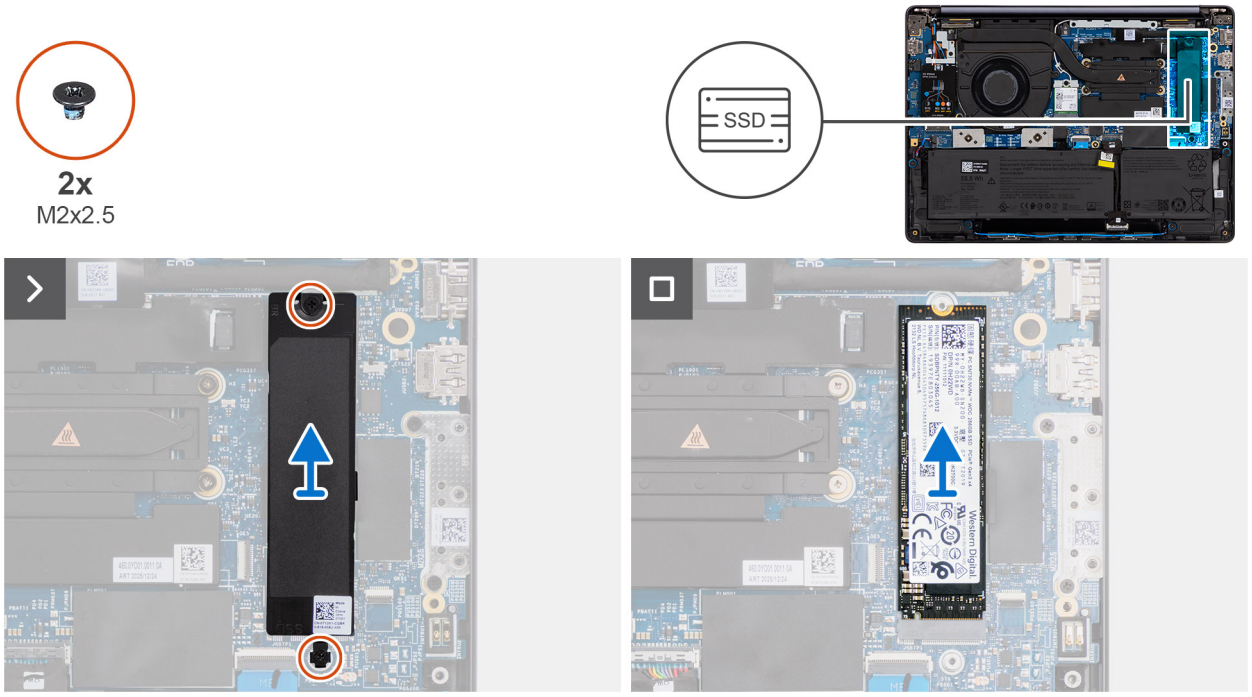



Figure 23. Removing the M.2 2280 SSD

### Steps

1. Remove the two screws (M2x2.5) that secure the SSD thermal shield to the palm-rest assembly.
2. Lift the SSD thermal shield off the palm-rest assembly.
3. Slide and remove the M.2 2280 SSD off the SSD slot.

# Installing the M.2 2280 SSD

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the location of the M.2 2280 SSD and provide a visual representation of the installation procedure.

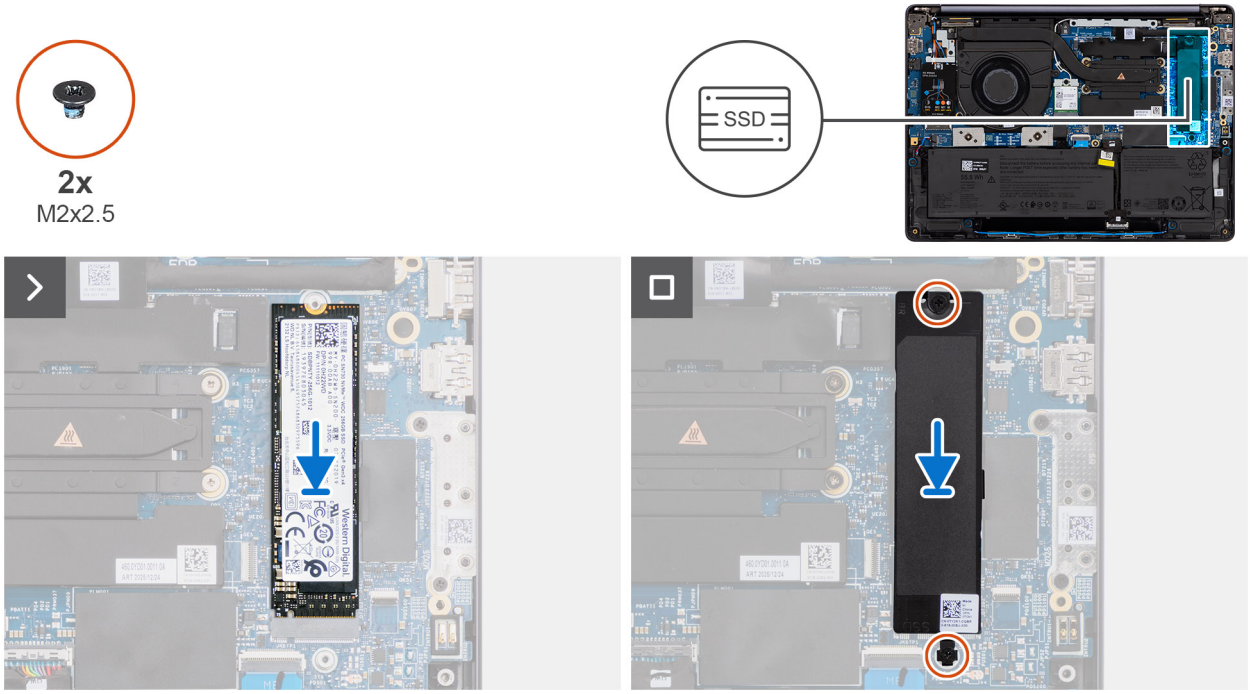



**Figure 24. Installing the M.2 2280 SSD**

### Steps

1. Align the notch on the M.2 2280 SSD with the tab on the M.2 2280 SSD slot.
2. Slide the M.2 2280 SSD into the M.2 2280 SSD slot (SSD).
3. Align and place the SSD thermal shield on the SSD.
4. Replace the two screws (M2x2.5) that secure the SSD thermal shield to the palm-rest assembly.

### Next steps

1. Install the base cover.
2. Install the nano-SIM card tray, if applicable.
3. Follow the procedure in After working inside your computer.

# Speakers

## Removing the speakers

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the battery.

### About this task

The following images indicate the location of the speakers and provide a visual representation of the removal procedure.

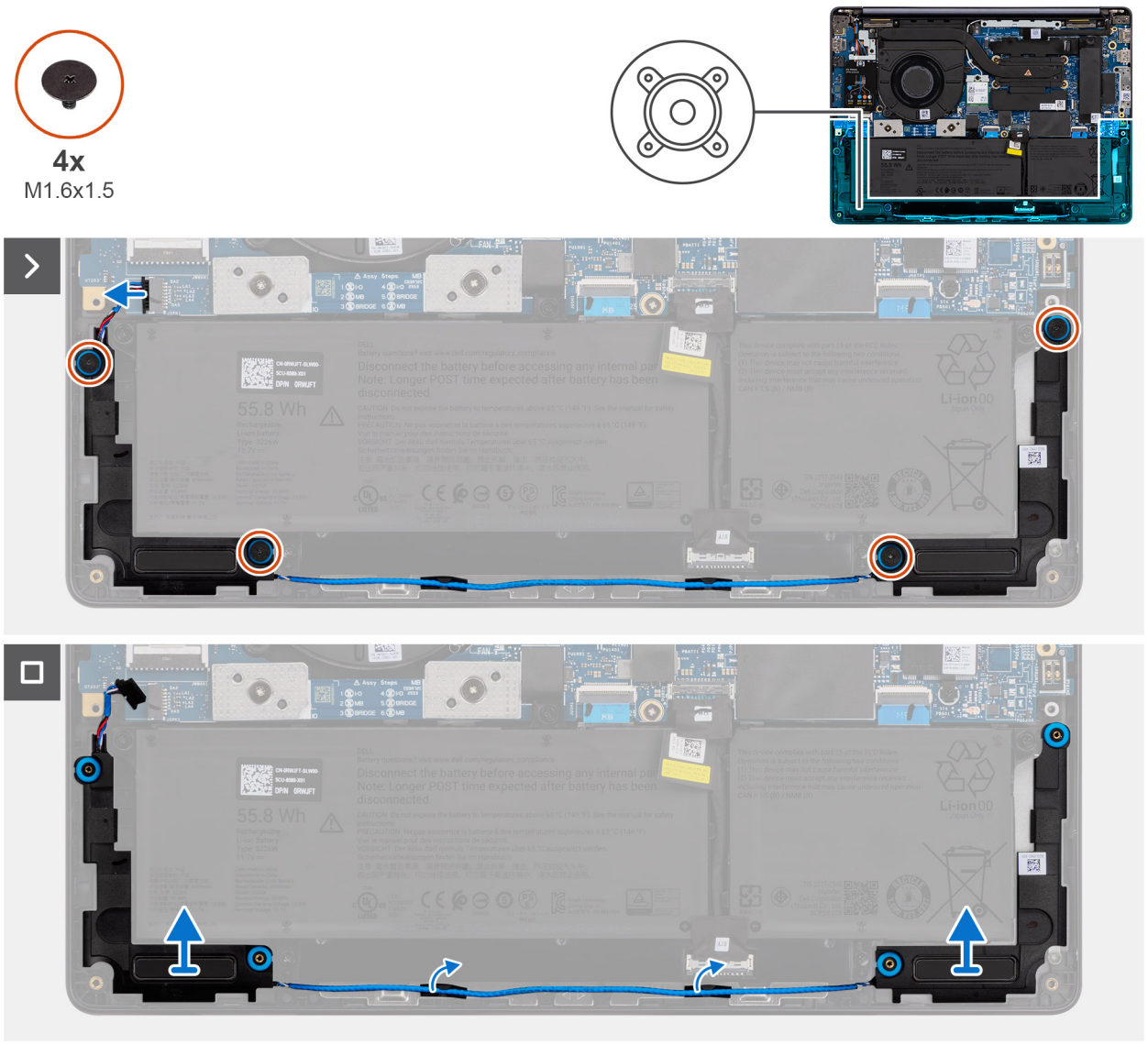



**Figure 25. Removing the speakers**

### Steps

1. Disconnect the speaker cable from the I/O board.
2. Remove the speaker cables from the routing guides on the palm-rest assembly.
3. Remove the four screws (M2x2) that secure the speakers to the palm-rest assembly.
4. Release the right and left speakers from the rubber grommets and lift the speakers along with the cable, off the palm-rest assembly.

# Installing the speakers

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the location of the speakers and provide a visual representation of the installation procedure.

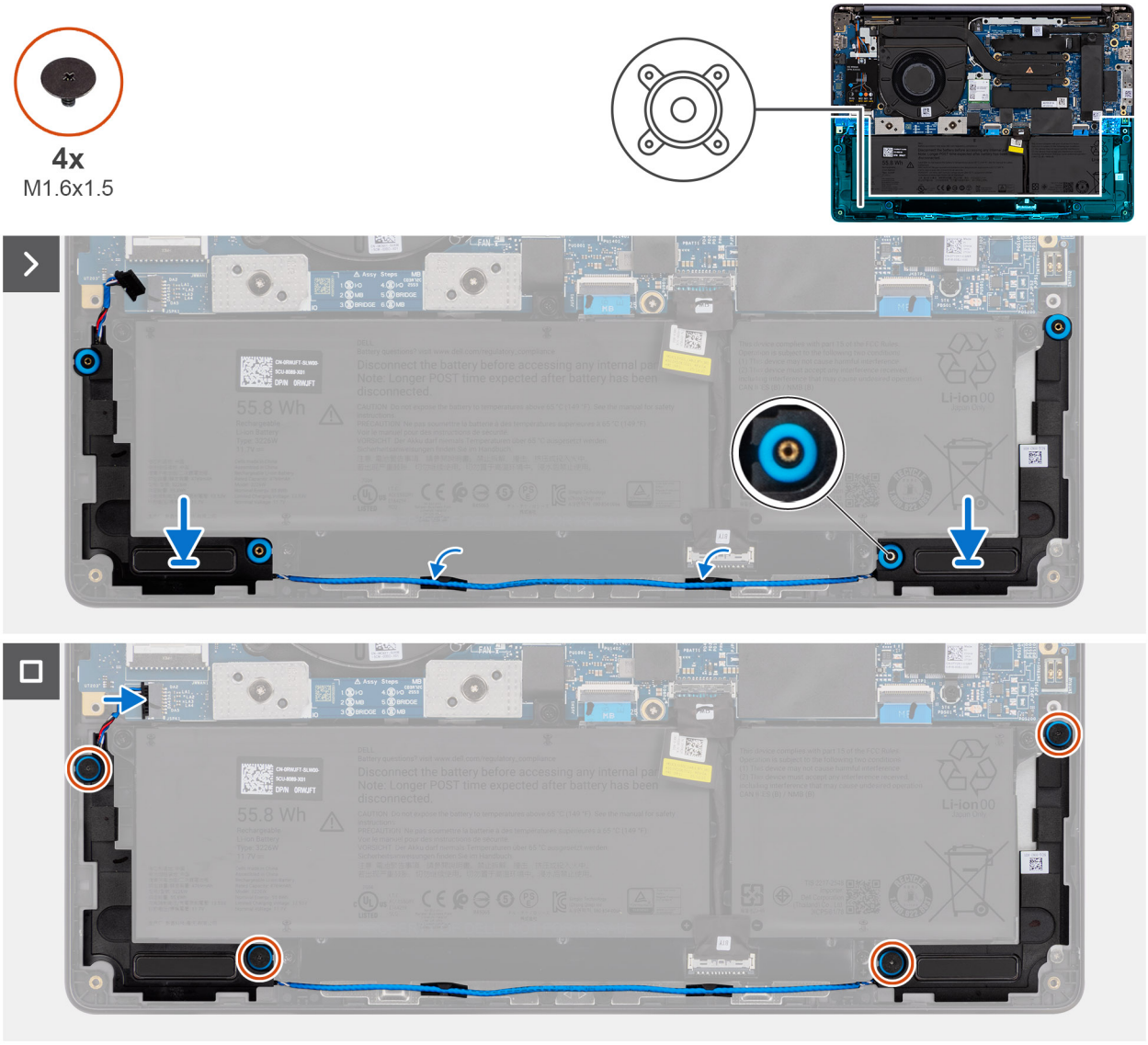



**Figure 26. Installing the speakers**

### Steps

1. Using the alignment posts, place the left and right speakers into their slots on the palm-rest assembly.
2. Route the speaker cable through the routing guides on the palm-rest assembly.
3. Replace the four screws (M2x2) that secure the speakers to the palm-rest assembly.
4. Connect the speaker cable to the speaker cable connector on the I/O board.

### Next steps

1. Install the battery.
2. Install the base cover.
3. Install the nano-SIM card tray, if applicable.
4. Follow the procedure in After working inside your computer.

# Fan

## Removing the fan

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.

### About this task

The following images indicate the location of the fan and provide a visual representation of the removal procedure.

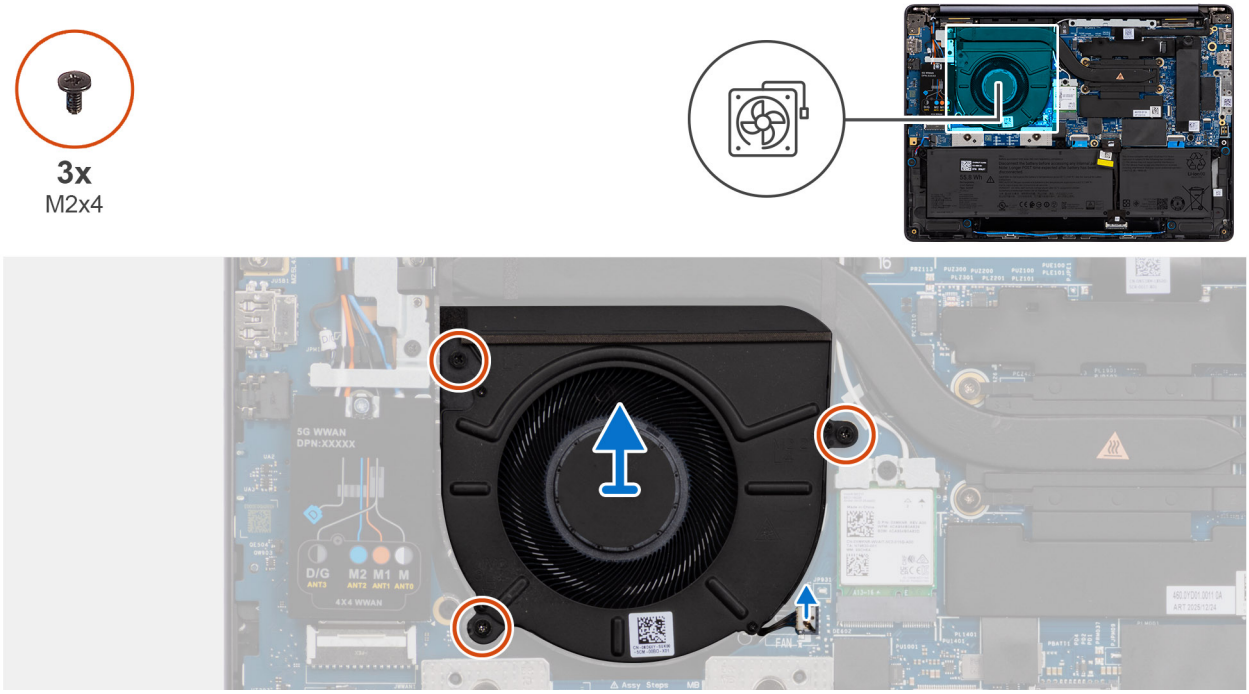



Figure 27. Removing the fan

### Steps

1. Remove the three screws (M2x4) that secure the fan on the palm-rest assembly.
2. Disconnect the fan cable from the top of the fan-cable connector (FAN1) on the system board.
3. Lift the fan off the palm-rest assembly.

## Installing the fan

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the location of the fan and provide a visual representation of the installation procedure.

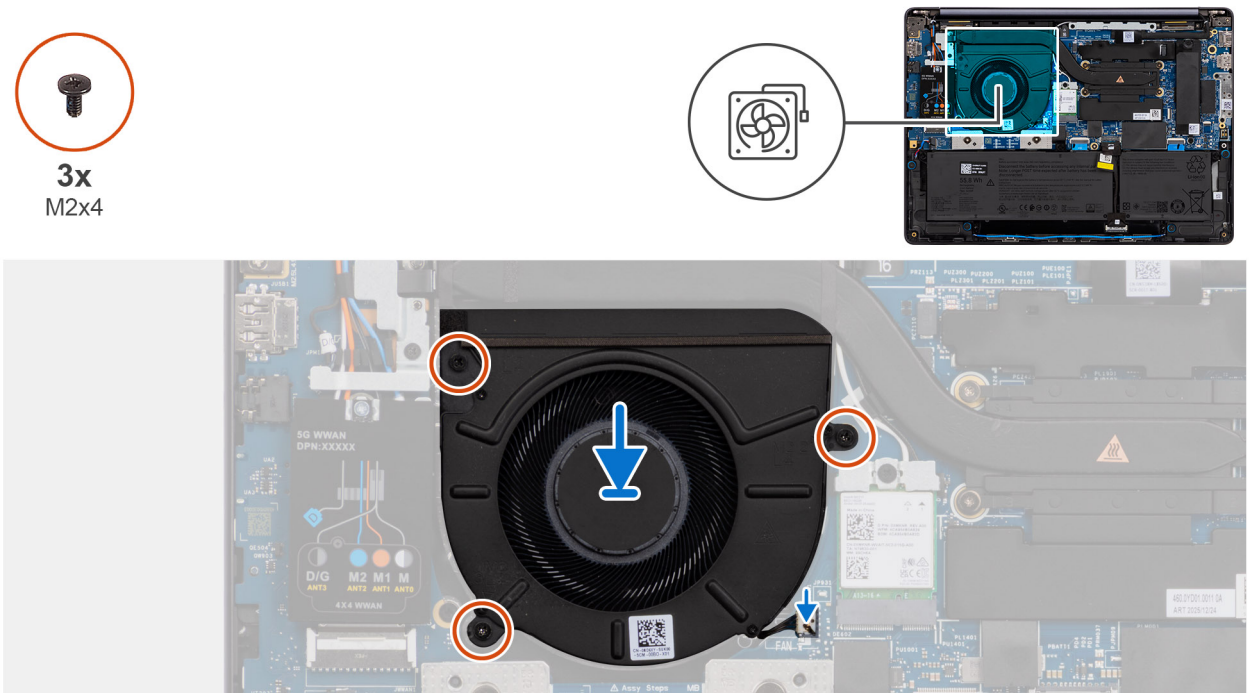



**Figure 28. Installing the fan**

### Steps

1. Align the screw holes on the fan with the screw holes on the palm-rest assembly.
2. Replace the three screws (M2x4) that secure the fan to the palm-rest assembly.
3. Connect the fan cable to the fan-cable connector (FAN1) on the system board by aligning the connector and pressing it down from the top until it is fully seated.

### Next steps

1. Install the base cover.
2. Install the nano-SIM card tray, if applicable.
3. Follow the procedure in After working inside your computer.

# 3

# Removing and installing Field Replaceable Units (FRUs)

The replaceable components in this chapter are Field Replaceable Units (FRUs).

**CAUTION: FRUs should be replaced by an authorized service technician, who is a trained technical repair specialist.**

**NOTE:** Damages resulting from improper replacement or from failure to follow instructions are not covered by your warranty. Consider having a trained technical repair specialist perform replacements of FRU components.

**NOTE:** The images in this document may differ from your computer depending on the configuration you ordered.

## USH-board cable

### Removing the USH-board cable

**Prerequisites**

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the battery.

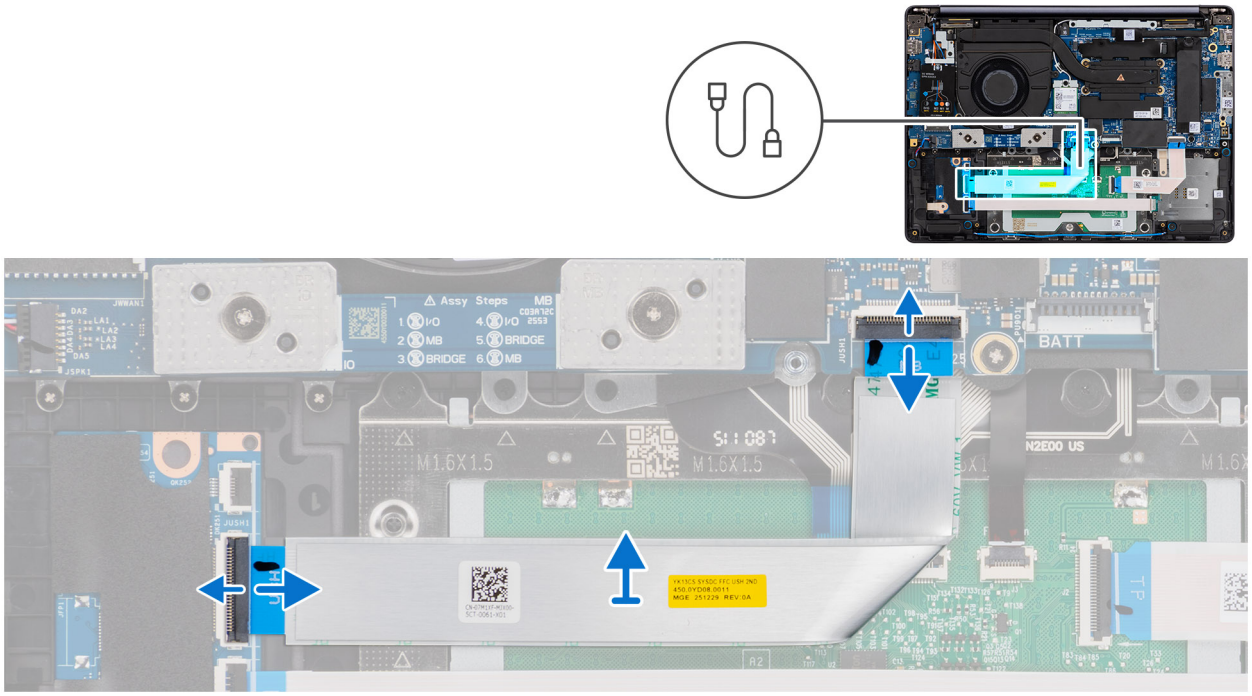



**Figure 29. Removing the USH-board cable**

### Steps

1. Open the latches and disconnect the USH-board cable from the connectors on both the system board and the USH board.
2. Lift the USH-board cable off the computer.

## Installing the USH-board cable

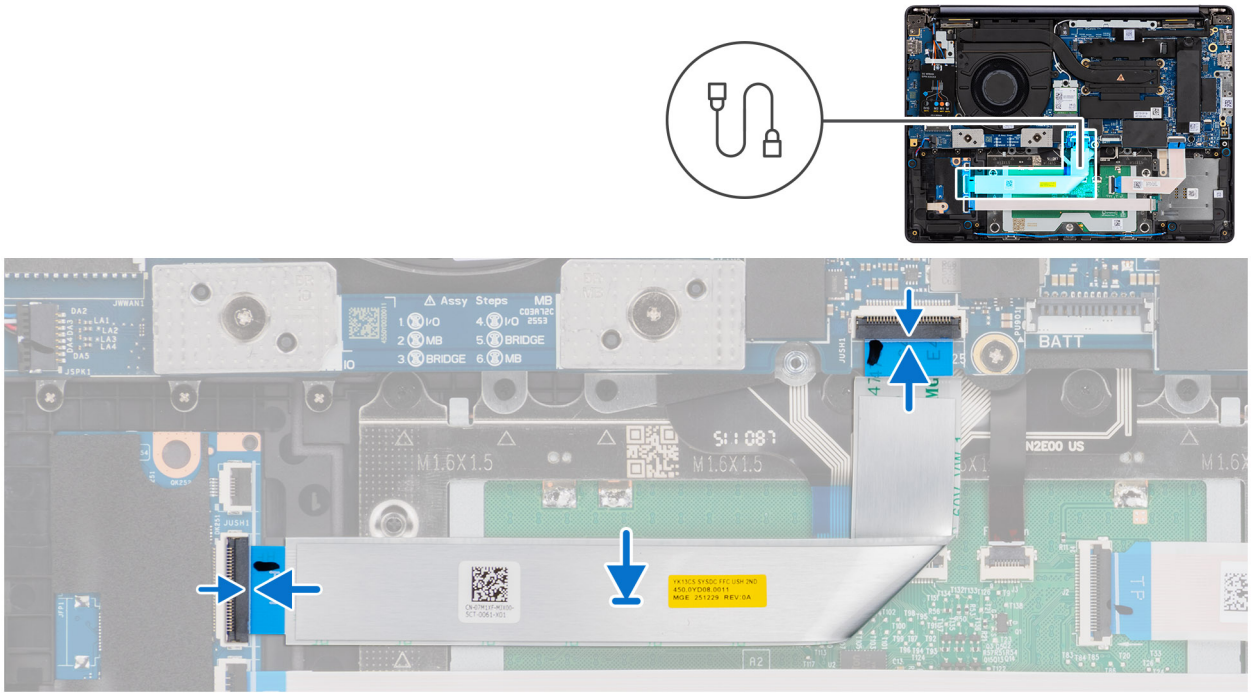


**Figure 30. Installing the USH-board cable**

### Steps

1. Place the USH-board cable on the chassis.
2. Connect the USH-board cable to the connectors on both the system board and the USH board, and close the latches to secure the cable.

### Next steps

1. Install the battery.
2. Install the base cover.
3. Install the nano-SIM card tray, if applicable.
4. Follow the procedure in After working inside your computer.

# Smart-card reader

## Removing the smart-card reader

**NOTE:** This procedure is applicable only if your computer is shipped with a smart-card reader.

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.

4. Remove the battery.
5. Remove the speakers.

### About this task

The following images indicate the location of the smart-card reader and provide a visual representation of the removal procedure.

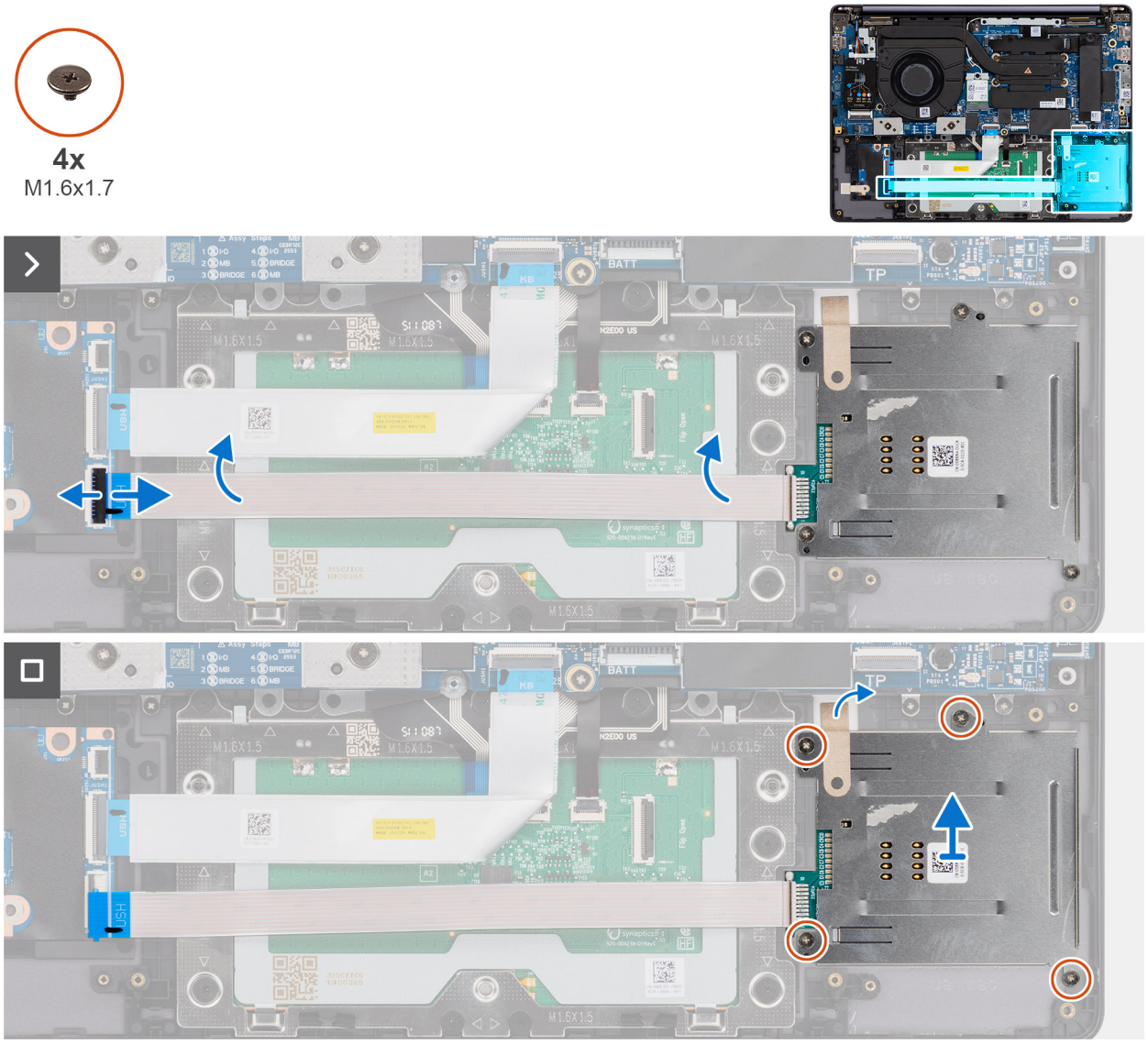



Figure 31. Removing the smart-card reader

### Steps

1. Open the latch and disconnect the smart-card reader cable from the connector on the USH board.
2. Gently peel the smart-card reader cable from the palm-rest assembly.
3. Gently peel up and remove the grounding tape securing the smart-card reader cable.
4. Remove the four screws (M1.6x1.7) that secure the smart-card reader to the palm-rest assembly.
5. Lift the smart-card reader, along with its cable, off the palm-rest assembly.

# Installing the smart-card reader

**NOTE:** This procedure is applicable only if your computer is shipped with a smart-card reader.

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the location of the smart-card reader and provide a visual representation of the installation procedure.

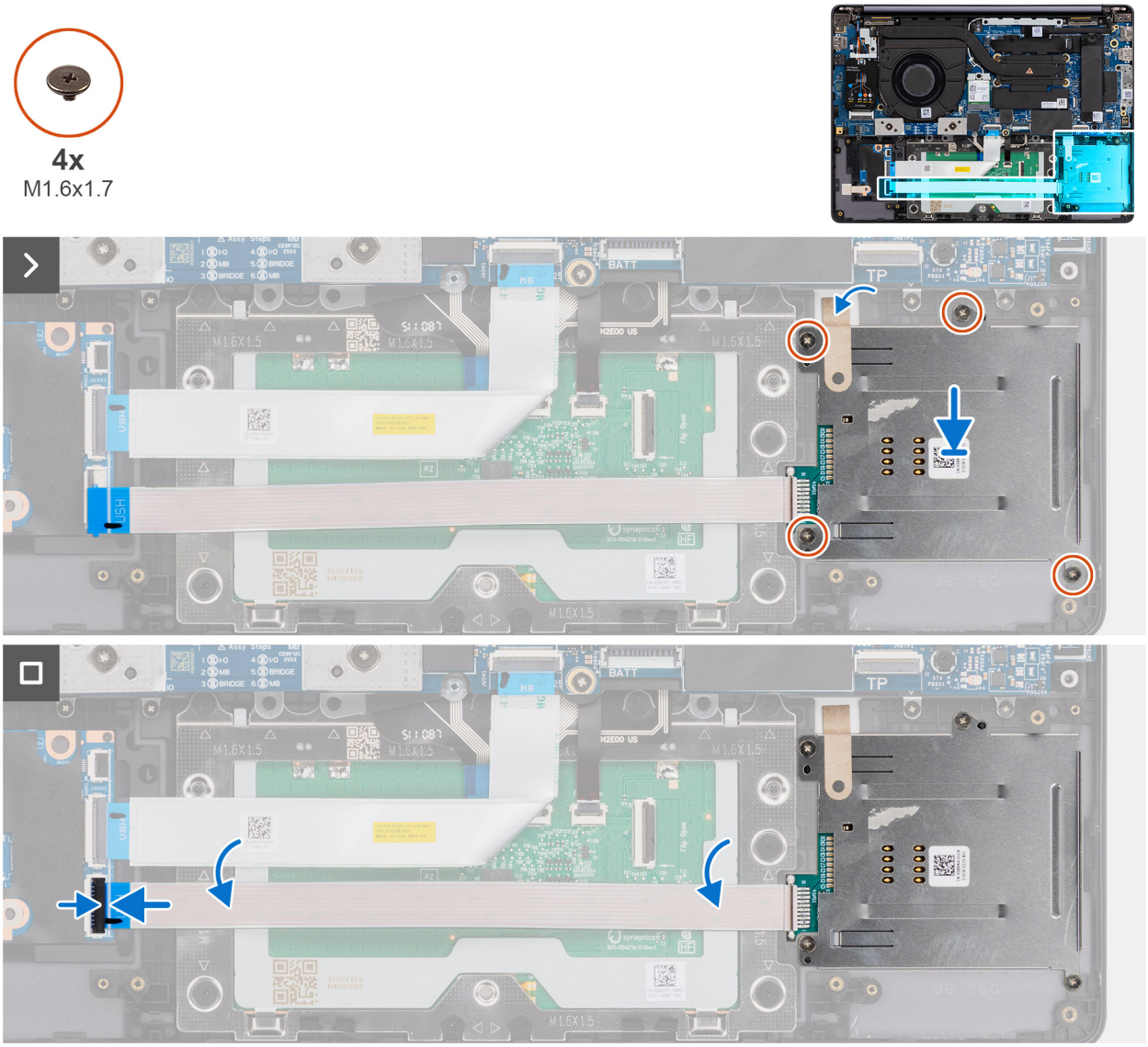



**Figure 32. Installing the smart-card reader**

### Steps

1. Align and place the smart-card reader on its slot on the palm-rest assembly.
2. Apply the grounding tape to secure the smart-card reader cable in place.
3. Replace the four screws (M1.6x1.7) that secures the smart-card reader to the palm-rest assembly.
4. Connect the smart-card cable to the connector on the USH board and close the latch to secure the cable.

### Next steps

1. Install the speakers.
2. Install the battery.
3. Install the base cover.
4. Install the nano-SIM card tray, if applicable.

5. Follow the procedure in After working inside your computer.

# Heat sink

## Removing the heat sink

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.

### About this task

**NOTE:** The heat sink may become hot during normal operation. Allow sufficient time for the heat sink to cool before you touch it.

**NOTE:** For maximum cooling of the processor, do not touch the heat-transfer areas on the heat sink. The oils on your skin can reduce the heat-transfer capability of the thermal grease.

The following images indicate the location of the heat sink and provide a visual representation of the removal procedure.

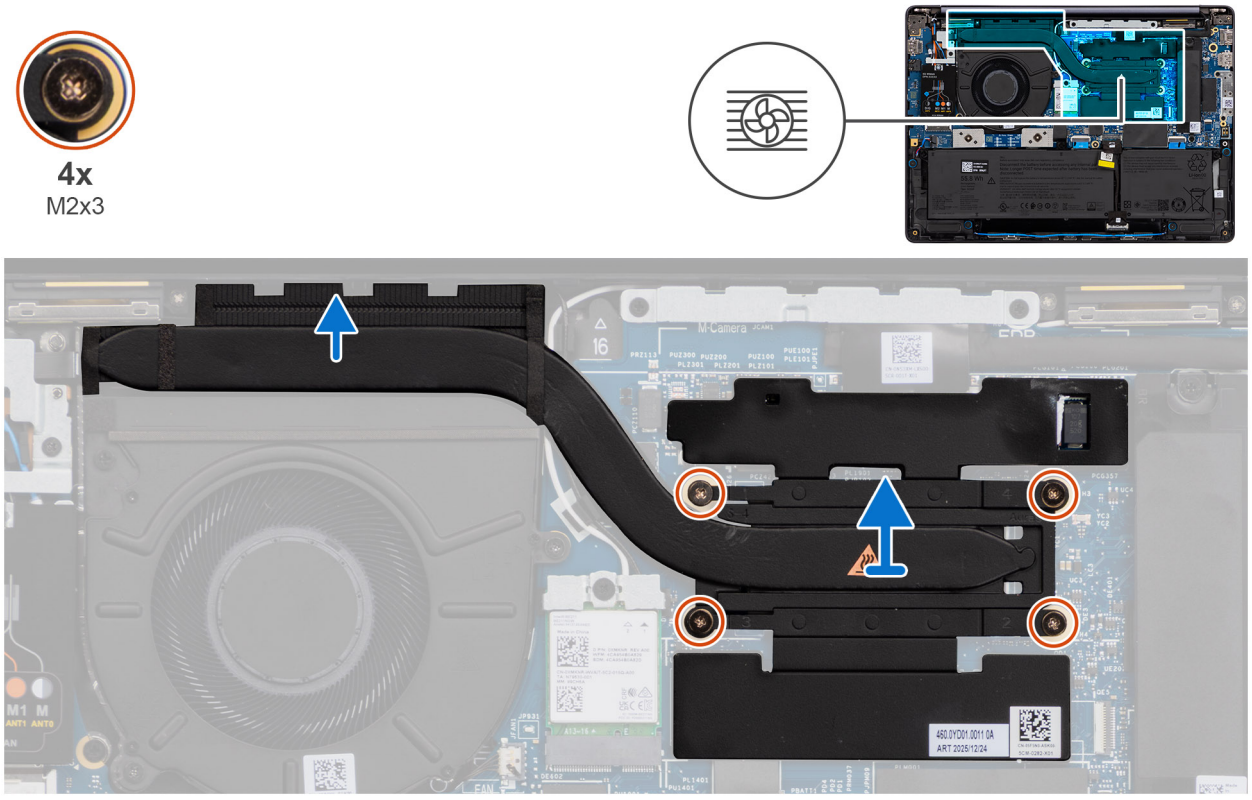



Figure 33. Removing the heat sink

### Steps

1. Peel and remove the grounding tape from the smart-card reader.
2. In the reverse sequential order (4 > 3 > 2 > 1), loosen the four captive screws that secure the heat sink to the system board.
3. Lift the heat sink from the system board.

# Installing the heat sink

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

**NOTE:** If either the system board or the heat sink is replaced, use the thermal gel and grease that is provided in the kit to ensure that the thermal conductivity is achieved.

The following images indicate the location of the heat sink and provide a visual representation of the installation procedure.

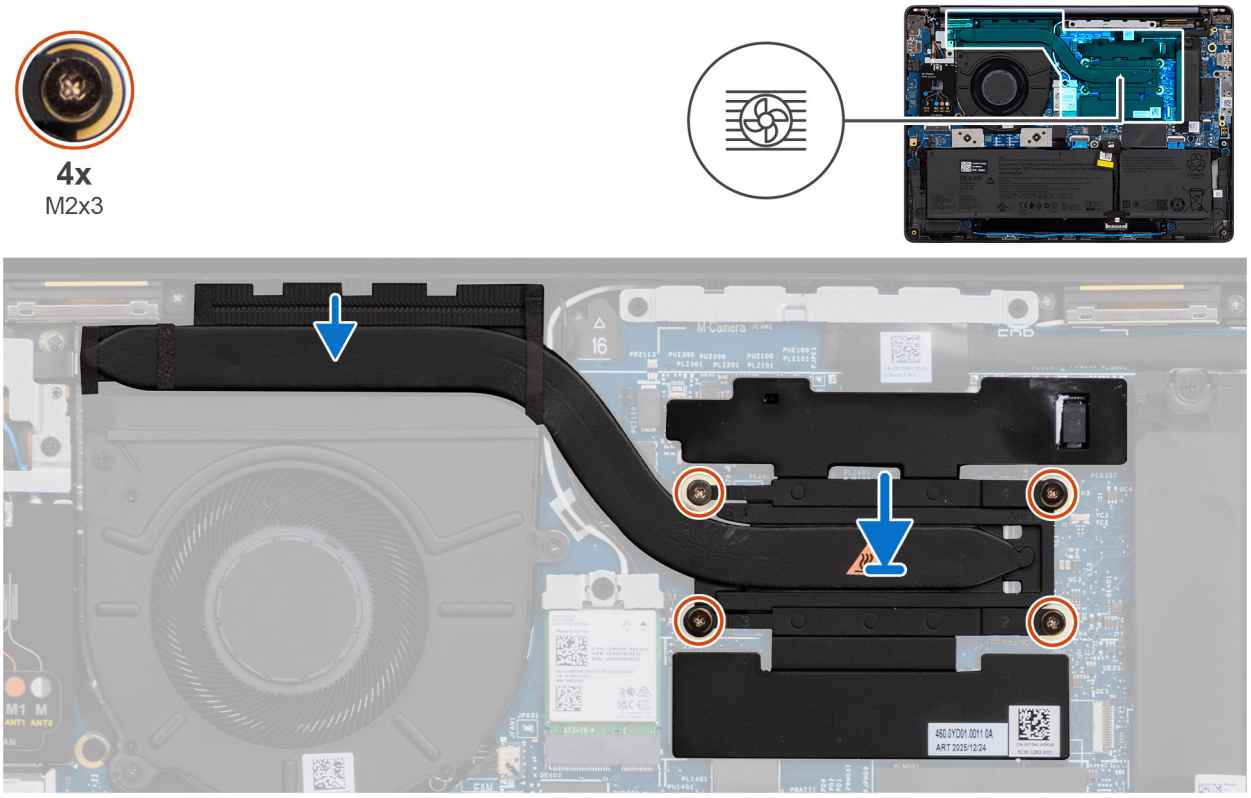



Figure 34. Installing the heat sink

### Steps

1. Place the heat sink on the system board and align the captive screws on the heat sink with the screw holes on the system board.

   **CAUTION: Incorrect alignment of the heat sink can damage the system board and processor.**

2. In sequential order (1 > 2 > 3 > 4), tighten the four (M2x3) captive screws that secure the heat sink to the system board.
3. Place and secure the grounding tape onto the smart-card reader.

### Next steps

1. Install the base cover.
2. Install the nano-SIM card tray, if applicable.
3. Follow the procedure in After working inside your computer.

# USB Type-C connector module

## Removing the USB Type-C connector module

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the battery.
5. Remove the M.2 2230 or M.2 2280 SSD, as applicable.
6. Remove the 5G WWAN card or 4G WWAN card, as applicable.
7. Remove the I/O-board bridge.
8. Remove the WLAN card.
9. Remove the fan.
10. Remove the display assembly.
11. Remove the system board.

**NOTE:** The system board can be removed and installed with the heat sink to preserve the thermal bond.

### About this task

The following images indicate the location of the USB Type-C connector module and provide a visual representation of the removal procedure.

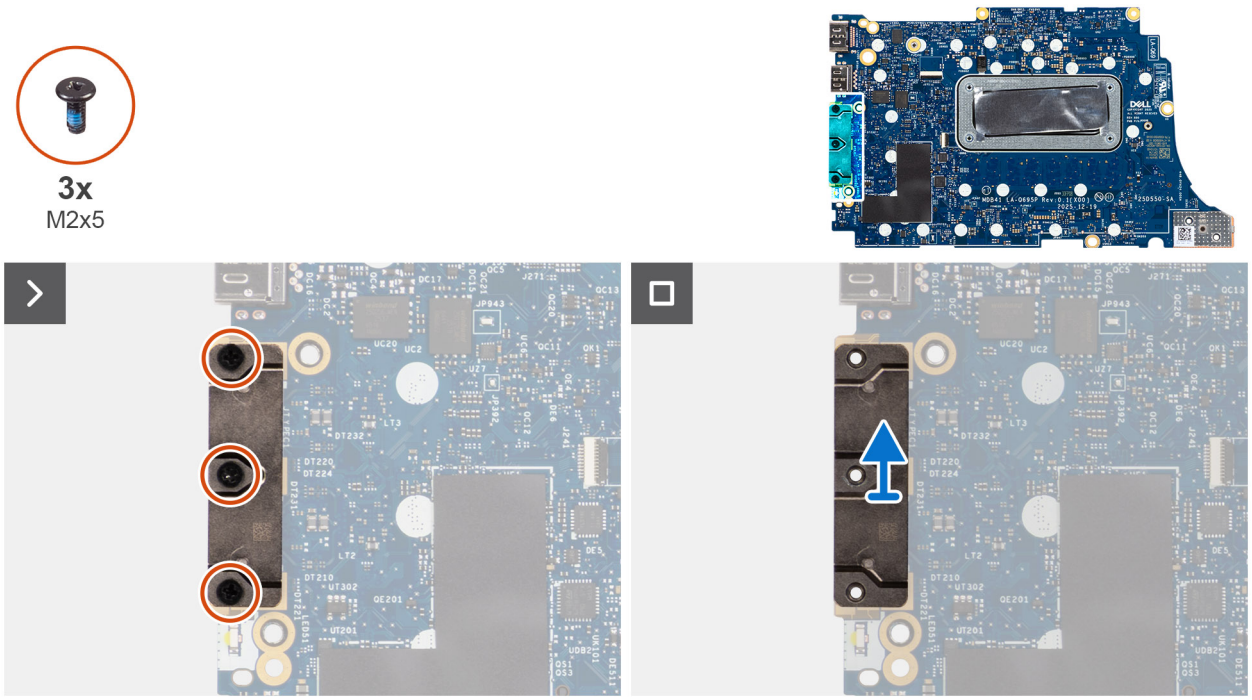



**Figure 35. Removing the USB Type-C Connector Module**

### Steps

1. Remove the three screws (M2x5) that secure the USB Type-C connector module to the bottom side of the system board.
2. Remove the USB Type-C connector module from the system board.

# Installing the USB Type-C connector module

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following images indicate the location of the USB Type-C connector module and provide a visual representation of the installation procedure.

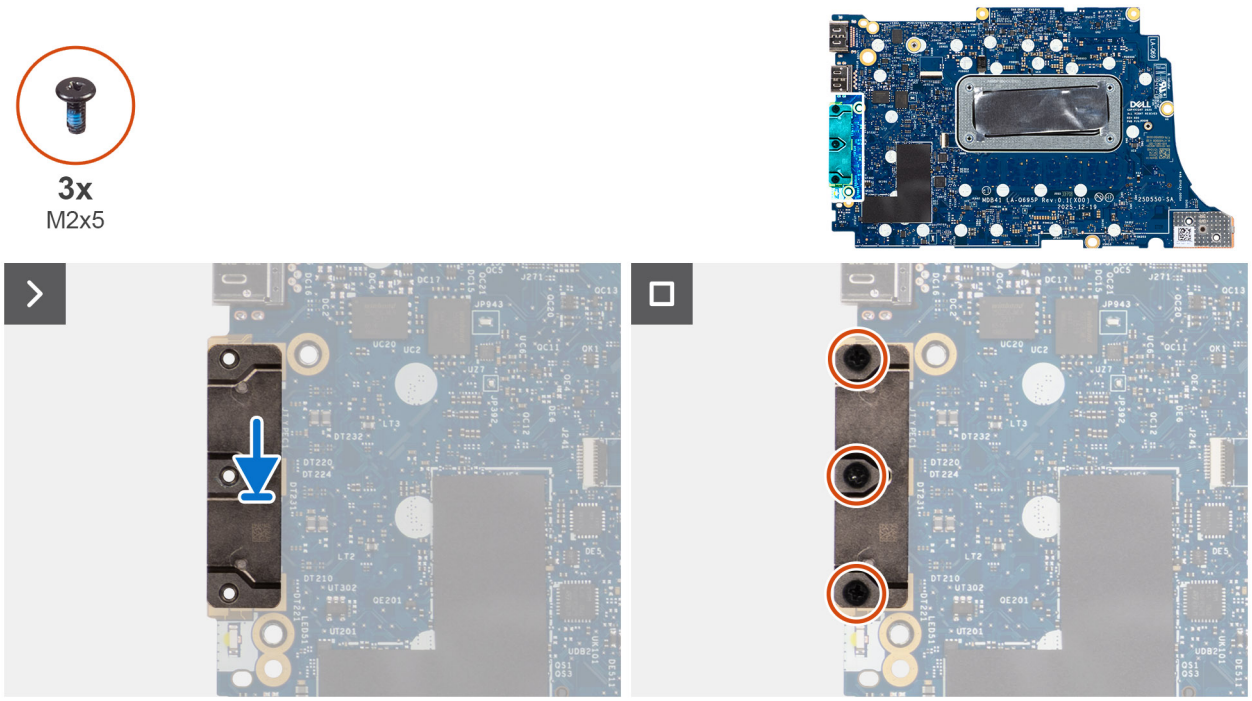



**Figure 36. Installing the USB Type-C Connector Module**

### Steps

1. Align and place the USB Type-C connector module to the slot on the bottom side of the system board.
2. Replace the three screws (M2x5) that secure the USB Type-C connector module in place.

### Next steps

1. Install the system board.

   **NOTE:** The system board can be removed and installed with the heat sink to preserve the thermal bond.

2. Install the display assembly.
3. Install the WLAN card.
4. Install the fan.
5. Install the I/O-board bridge.
6. Install the 5G WWAN card or 4G WWAN card, as applicable.
7. Install the M.2 2230 or M.2 2280 SSD, as applicable.
8. Install the battery.
9. Install the base cover.
10. Install the nano-SIM card tray, if applicable.
11. Follow the procedure in After working inside your computer.

# Wireless Local Area Network (WLAN) antenna modules

## Removing the wireless antenna modules

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the battery.
5. Remove the M.2 2230 or M.2 2280 SSD, as applicable.
6. Remove the 5G WWAN card or 4G WWAN card, as applicable.
7. Remove the WLAN card.

### About this task

The following images indicate the location of the wireless antenna modules and provide a visual representation of the removal procedure.

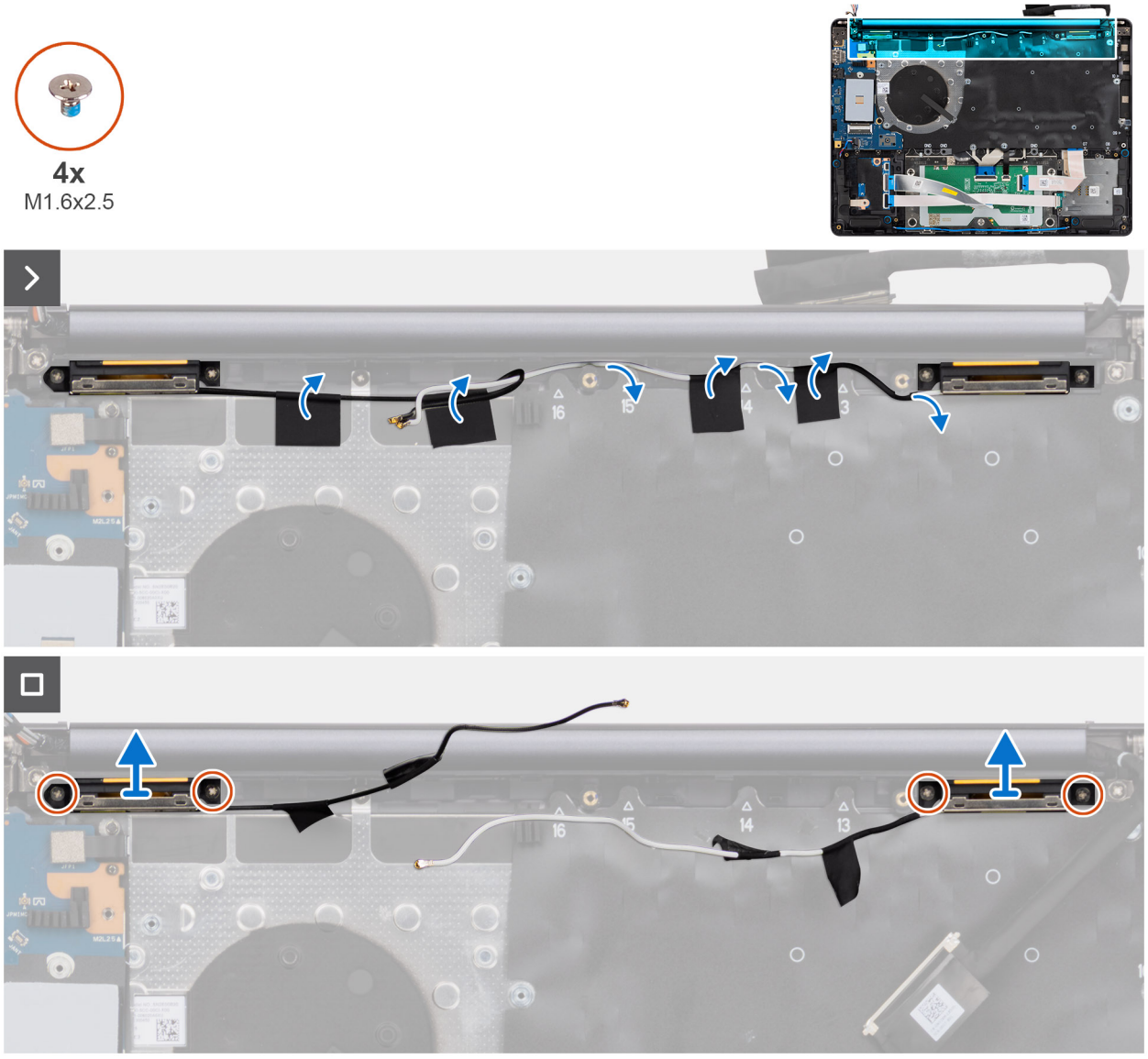



Figure 37. Removing the wireless antenna module

### Steps

1. Remove the antenna cables from the routing guides on the palm-rest assembly.
2. Remove the four screws (M1.6x2.5) that secure the WLAN antenna modules to the palm-rest assembly.
3. Lift the WLAN antenna modules off the palm-rest assembly.

## Installing the wireless antenna modules

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following image indicates the location of the wireless antenna module and provides a visual representation of the removal procedure.

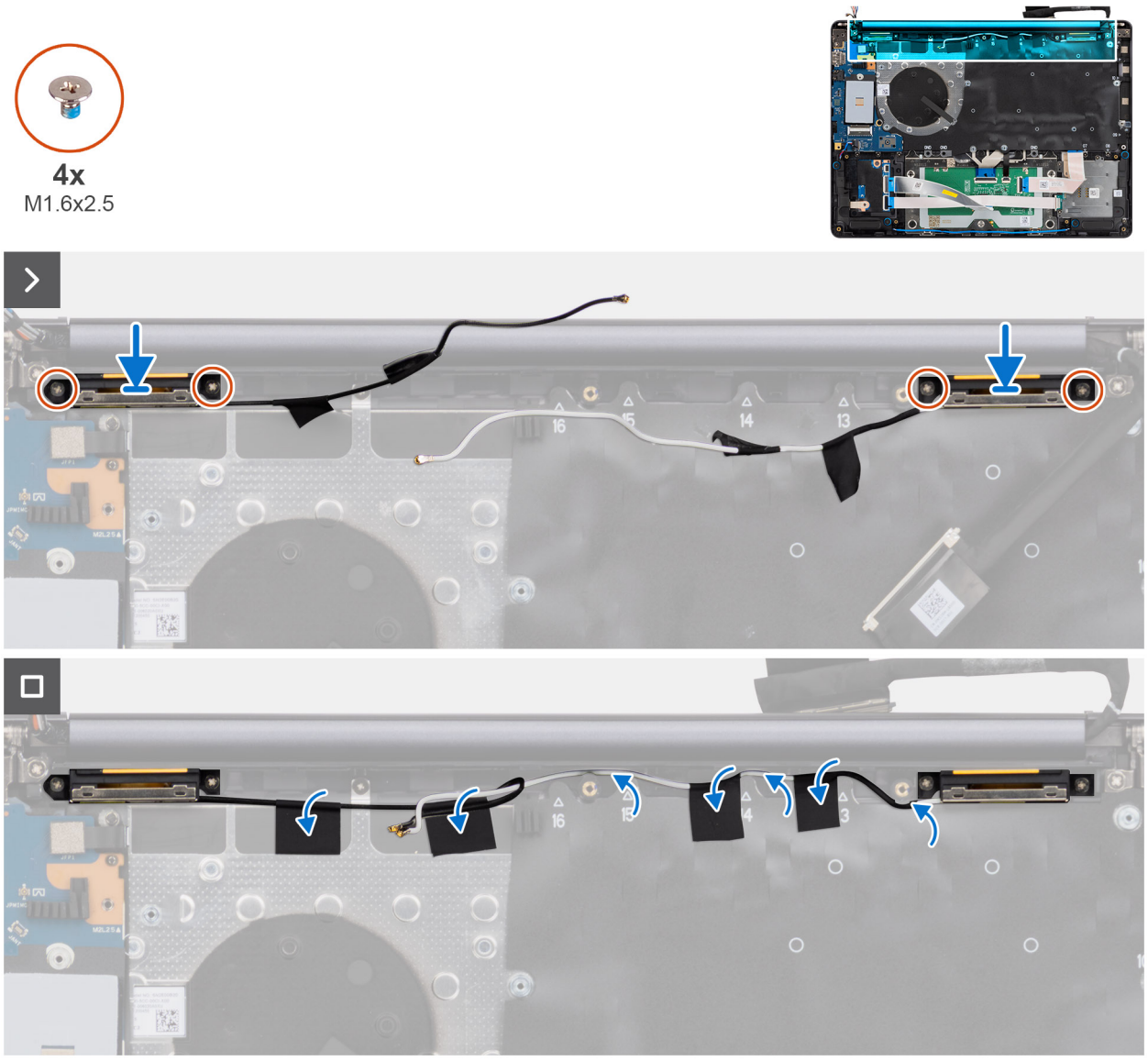



**Figure 38. Installing the wireless antenna module**

### Steps

1. Align and place the wireless antenna modules on to its slot on the palm-rest assembly.
2. Replace the four screws (M1.6x2.5) that secure the wireless antenna modules to the palm-rest assembly.
3. Route the WLAN antenna cables through the routing guides on the palm-rest assembly.

### Next steps

1. Install the wiresless card.
2. Install the 5G WWAN card or 4G WWAN card, as applicable.
3. Install the M.2 2230 or M.2 2280 SSD, as applicable.
4. Install the battery.
5. Install the base cover.
6. Install the nano-SIM card tray, if applicable.
7. Follow the procedure in After working inside your computer.

# I/O-bridge board

## Removing the I/O-bridge board

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.

### About this task

The following images indicate the location of the I/O-bridge board and provide a visual representation of the removal procedure.

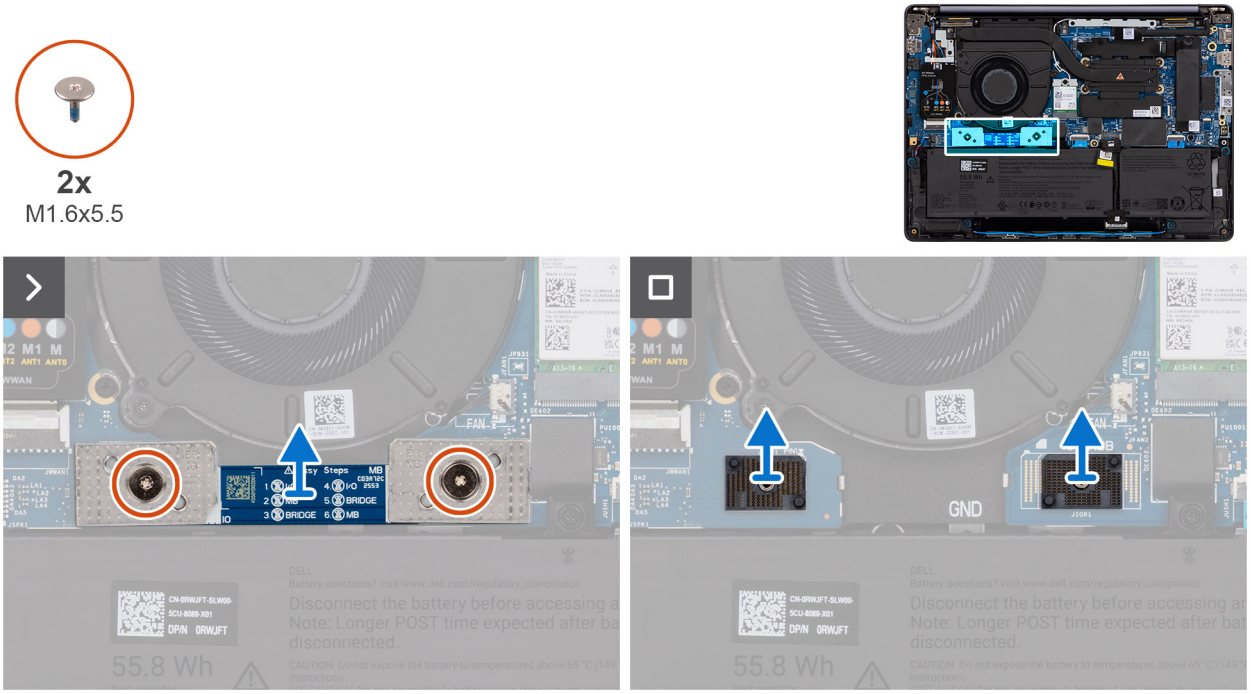



Figure 39. Removing the I/O-bridge board

### Steps

1. Remove the two (M1.6x5.5) screws that secures the I/O-bridge board in place.
2. Lift the I/O-bridge board away from the system board.

## Installing the I/O-bridge board

### About this task

The following images indicate the location of the I/O-bridge board and provide a visual representation of the installation procedure.

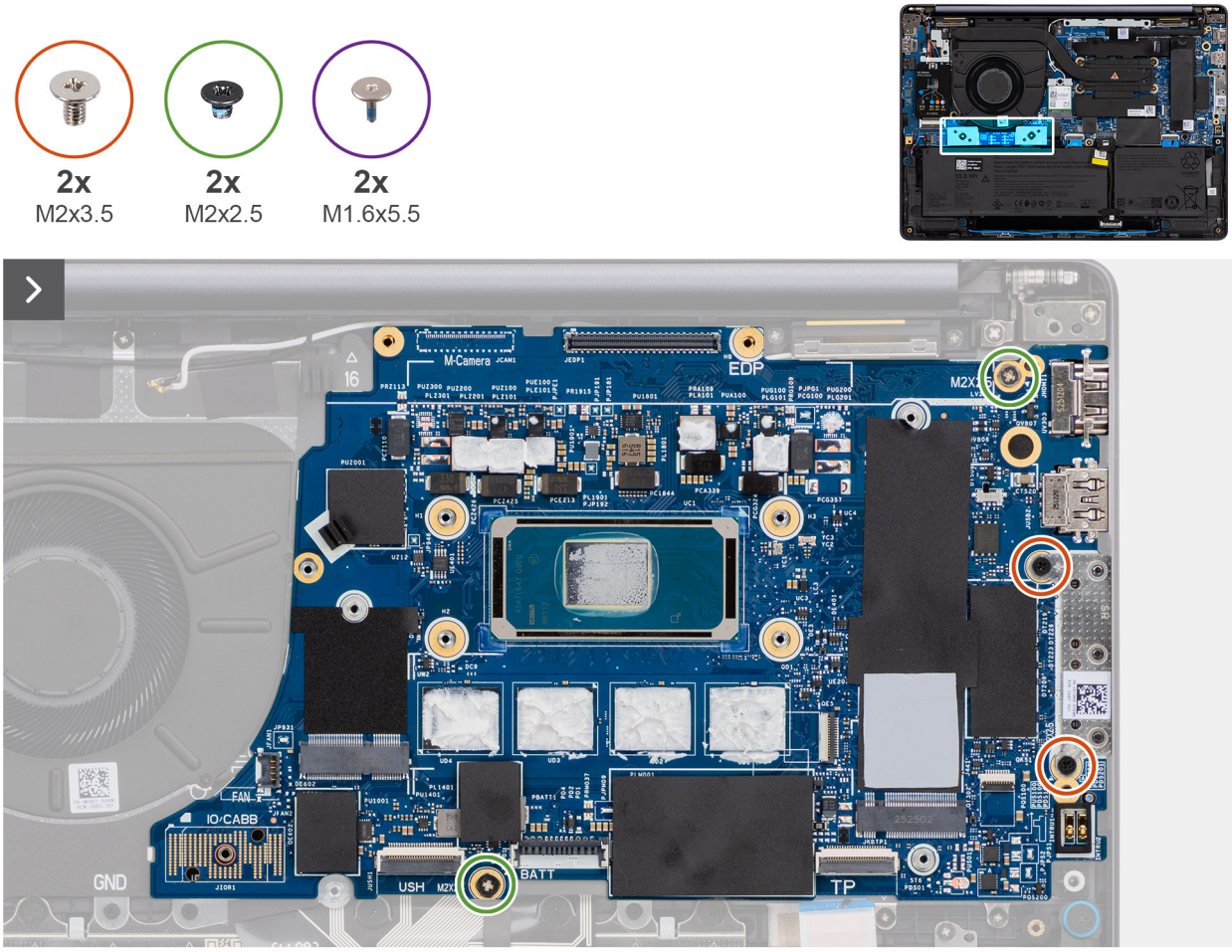



Figure 40. Installing the I/O-bridge board

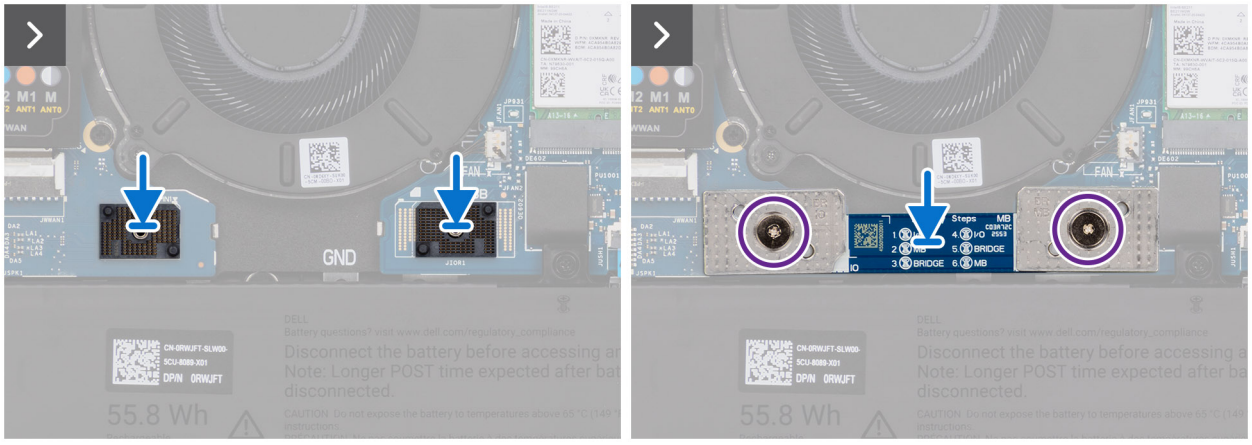



Figure 41. Installing the I/O-bridge board

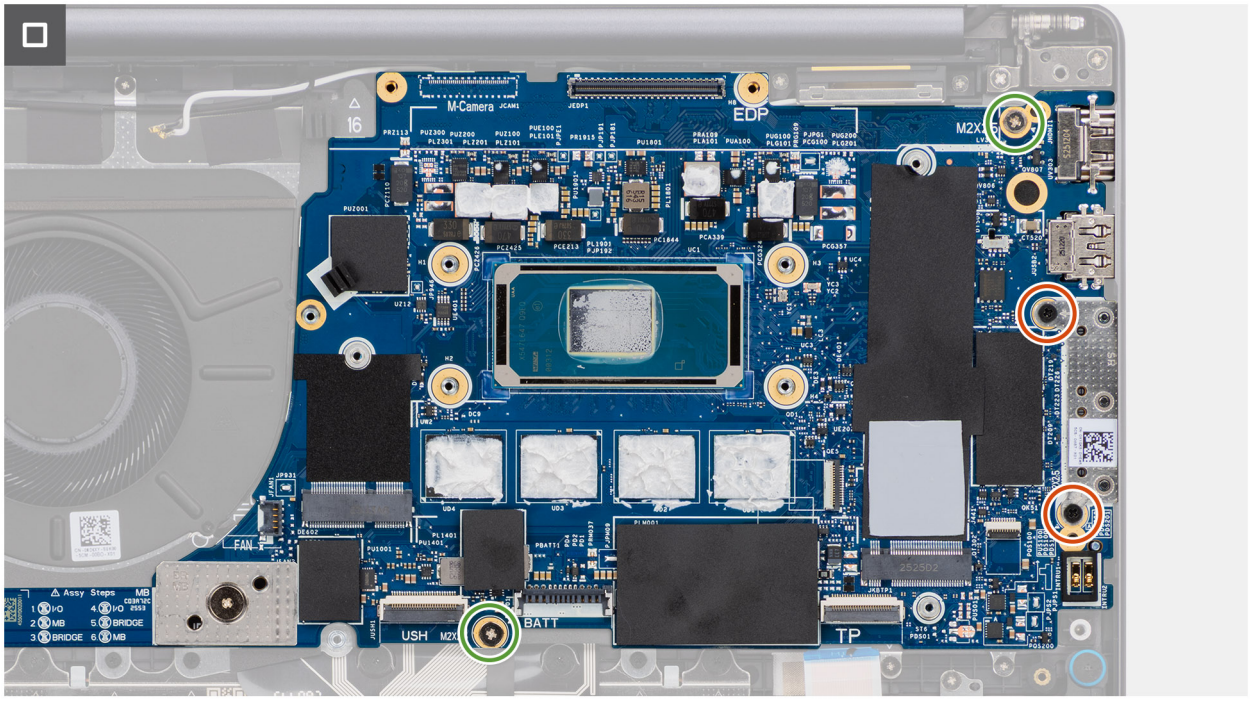



**Figure 42. Installing the I/O-bridge board**

### Steps

1. Remove the two screws (M2x3.5) that secure the system board to the palm-rest assembly.
2. Remove the two screws (M2x2.5) that secure the system board to the palm-rest assembly.
3. Using the alignment posts on the I/O board, place and align the I/O-bridge board interposer onto its connector on the I/O board.
4. Using the alignment posts on the system board, place and align the I/O-bridge board interposer onto its connector on the system board.
5. Replace the two (M1.6x5.5) that secures the I/O-bridge board in place.

   **NOTE:** To avoid bending the pins and damaging the I/O-bridge board interposer, pinch the edges of the interposer while handling it.

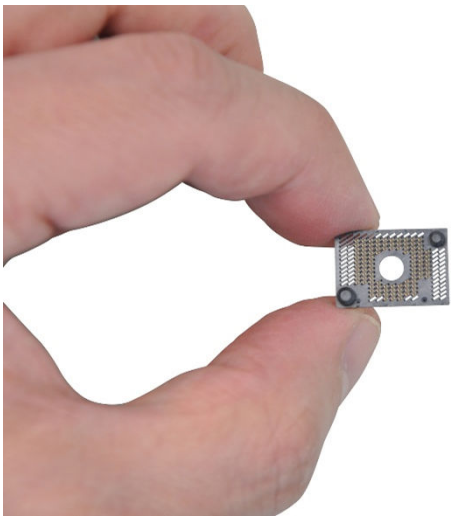


**Figure 43. Proper handling of the I/O-bridge board interposer**

6. Using the alignment posts on the I/O-bridge board interposers, place and align the I/O-bridge board onto the I/O-bridge board interposers on the system board and I/O board.

**NOTE:** There is an installation sequence (from left to right) that must be followed when either the I/O daughter board or system board is replaced. This installation sequence is documented for reference on the Bridge Connector.




**Figure 44. installation sequence**

7. Replace the screw (M2x4) that secures the I/O-bridge board to its connector on the I/O board.
8. Replace the screw (M2x4) that secures the I/O-bridge board to its connector on the system board.
9. Replace the two screws (M2x2.5) that secure the system board to the palm-rest assembly.
10. Replace the two screws (M2x3.5) that secure the system board to the palm-rest assembly.

### Next steps

1. Install the base cover.
2. Install the nano-SIM card tray, if applicable.
3. Follow the procedure in After working inside your computer.

# I/O board

## Removing the I/O board

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the 5G WWAN card or 4G WWAN card, as applicable.
5. Remove the I/O-bridge board.

### About this task

The following images indicate the location of the I/O board and provide a visual representation of the removal procedure.

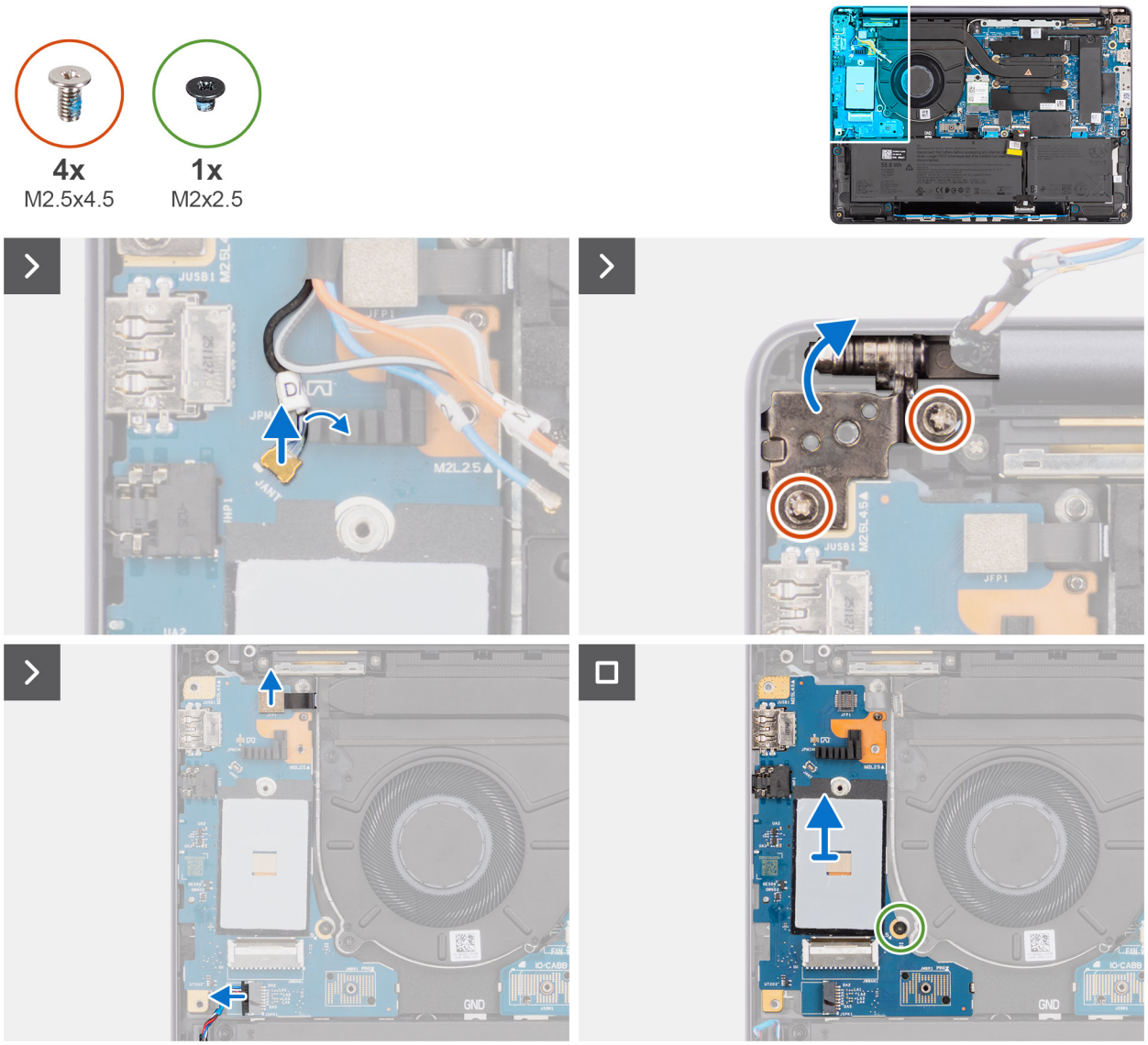



Figure 45. Removing the I/O board

### Steps

1. Disconnect the darwin antenna connector cable from the I/O board.
2. Remove the two screw (M2.5x4.5) that secures the left display hinge in place.
3. For computers shipped with the fingerprint reader, disconnect the fingerprint-reader cable from the I/O board.
4. Disconnect the speaker cable from the I/O board .
5. Remove the screw (M2x2.5) that secures the I/O board in place.
6. Lift the I/O board away from the palmrest assembly.

## Installing the I/O board

### About this task

The following images indicate the location of the I/O board and provide a visual representation of the installation procedure.

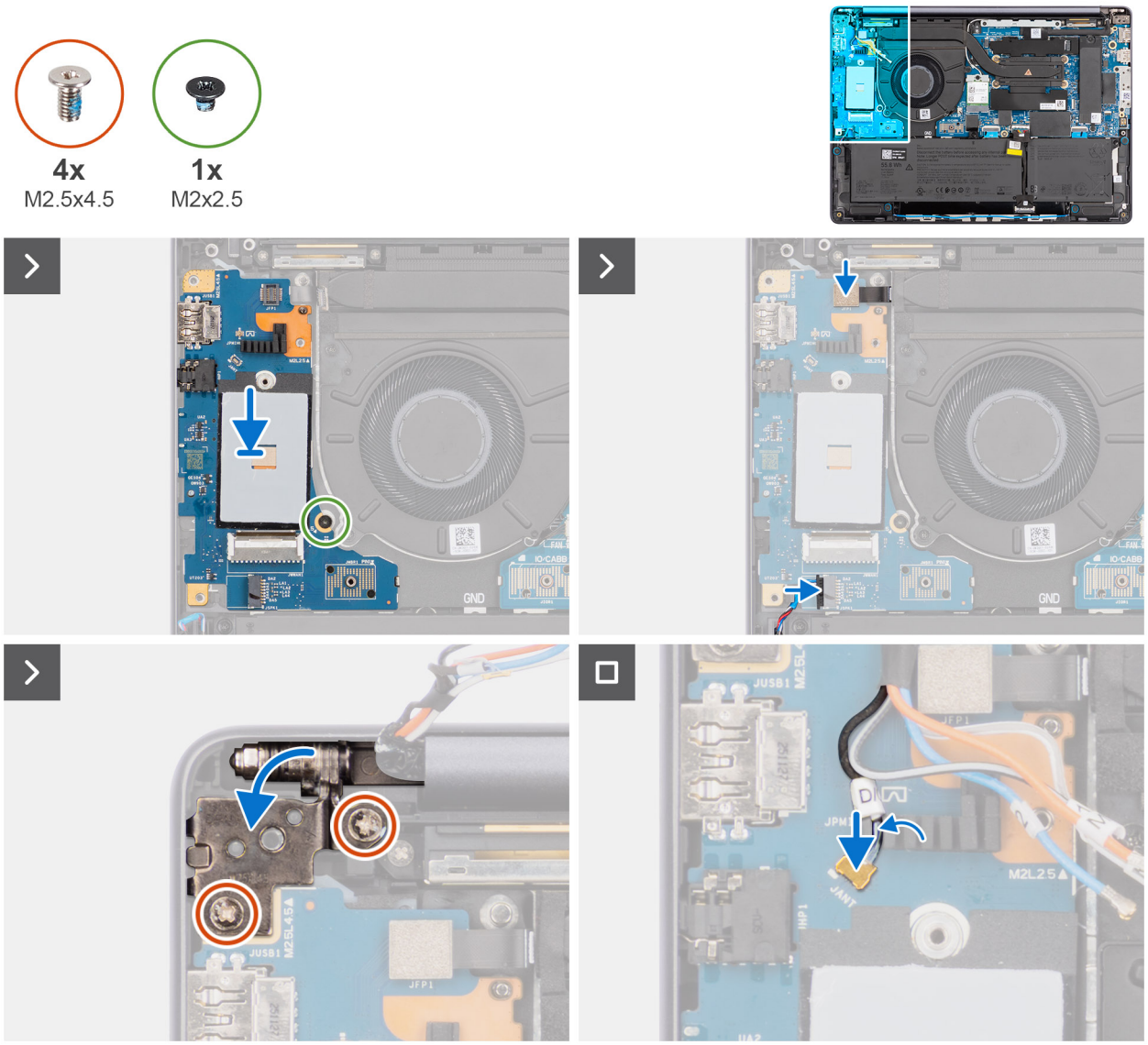



**Figure 46. Installing the I/O board**

### Steps

1. Place the I/O board on the palm-rest assembly.
2. Align the screw holes on the I/O board with the screw holes on the palm-rest assembly.
3. Replace the screw (M2x2.5) that secure the I/O board to the palm-rest assembly.
4. For computers shipped with the fingerprint reader, connect the fingerprint-reader cable to the I/O board.
5. Connect the speaker cable to its connector on the I/O board.
6. Replace the two screw (M2.5x4.5) that secures the left display hinge in place.
7. Connect the darwin antenna connector cable from the I/O board.

### Next steps

1. Install the base cover.
2. Install the I/O-bridge board.
3. Install the 5G WWAN card or 4G WWAN card, as applicable.
4. Install the nano-SIM card tray, if applicable.
5. Follow the procedure in After working inside your computer.

# System board

## Removing the system board

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the M.2 2230 or M.2 2280 SSD, as applicable.
5. Remove the 5G WWAN card or 4G WWAN card, as applicable.
6. Remove the WLAN card.
7. Remove the I/O-bridge board.
8. Remove the fan.
9. Remove the display assembly.

### About this task

The following image indicates the system board connectors.

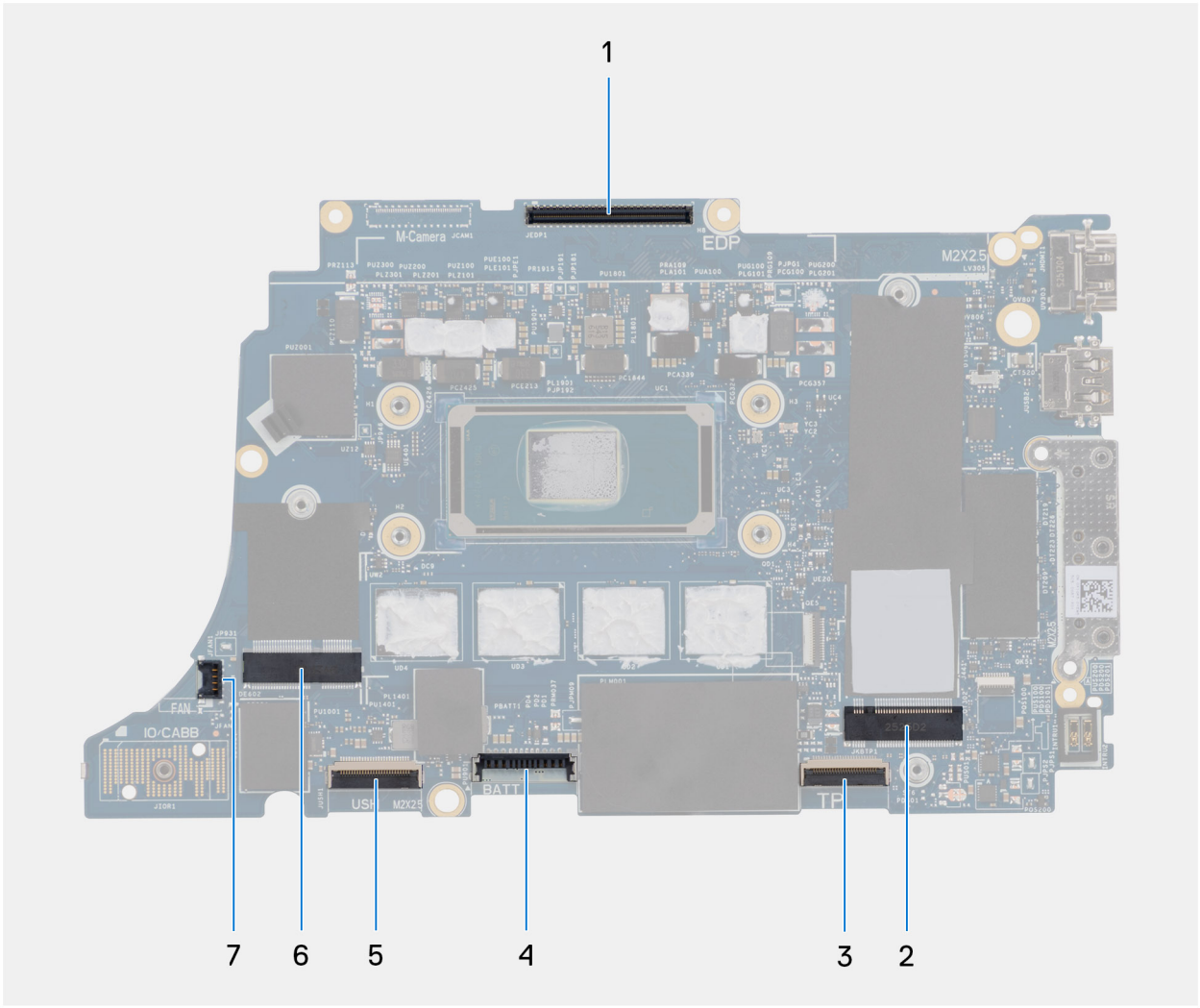



**Figure 47. System board connectors**

1. Display-cable connector (LCD1)
2. Solid state drive slot (SSD1)
3. Touchpad-cable connector (TP)
4. Battery-cable connector (BATT1)
5. USH-board connector (USH)
6. WLAN-card slot (WLAN)

7. Fan-cable connector (FAN)

The following images indicate the location of the system board and provide a visual representation of the removal procedure.

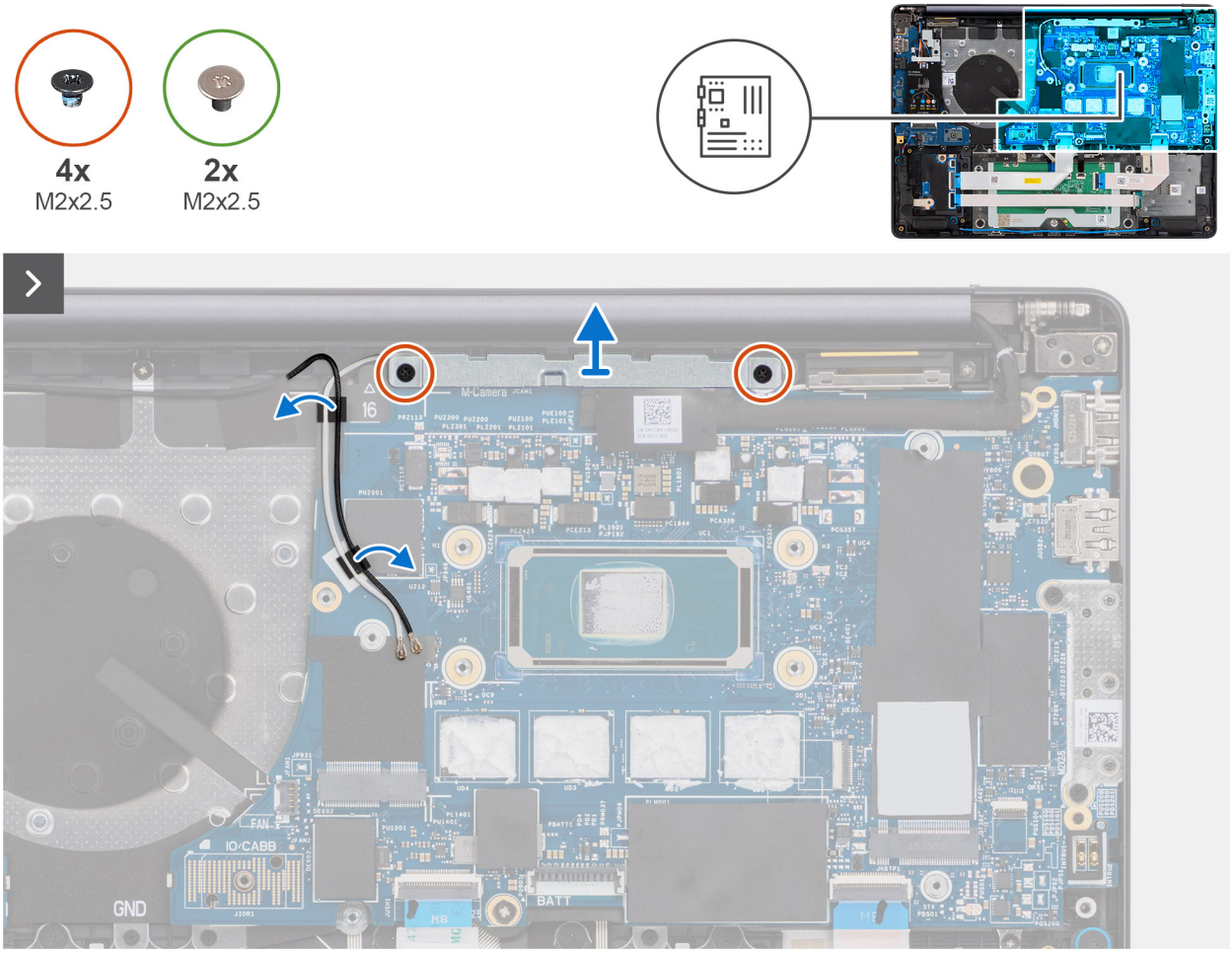



**Figure 48. Removing the system board**

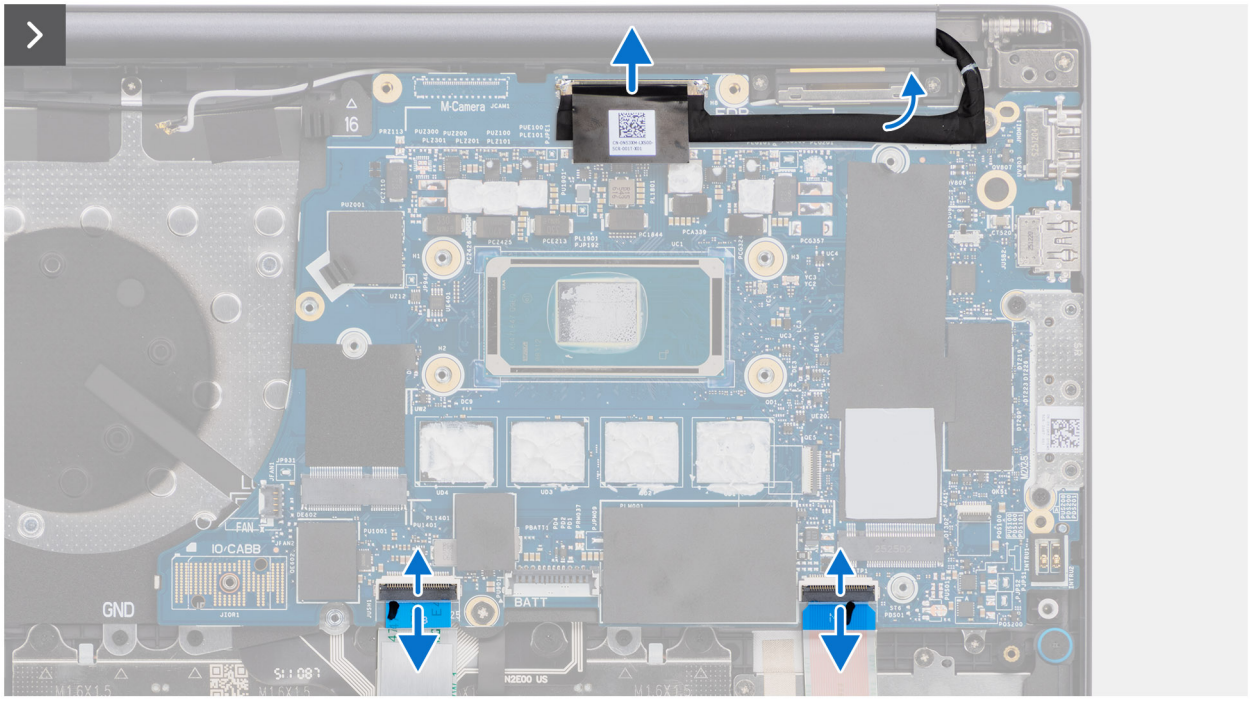



**Figure 49. Removing the system board**

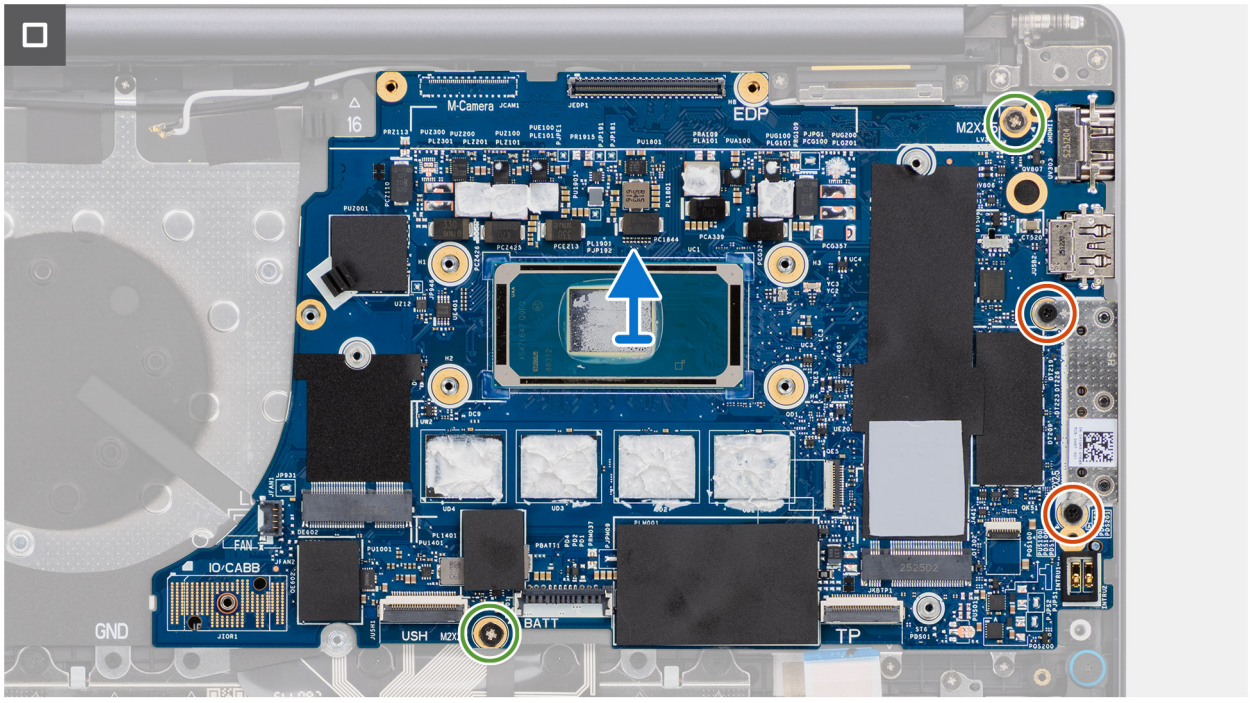



**Figure 50. Removing the system board**

### Steps

1. Disconnect the WLAN antennas from the WLAN card and unrouted the cables.
2. Remove the two screws (M2x2.5) that secure the display-cable bracket to the palm-rest assembly.
3. Lift the display-cable bracket off the palm-rest assembly.
4. Disconnect the display cable from the display cable connector (LCD1) on the system board.
5. Open the latch and disconnect the USH-board cable from the USH board.
6. Open the latch and disconnect the smartcard reader cable from the system board.

7. Remove the two screws (M2x2.5) that secure the USB Type-C connector module to the palm-rest assembly.
8. Remove two (M2x2.5) screws securing the system board to the palm-rest assembly.
9. Lift the system board off the palm-rest assembly.

# Installing the system board

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the system board connectors.

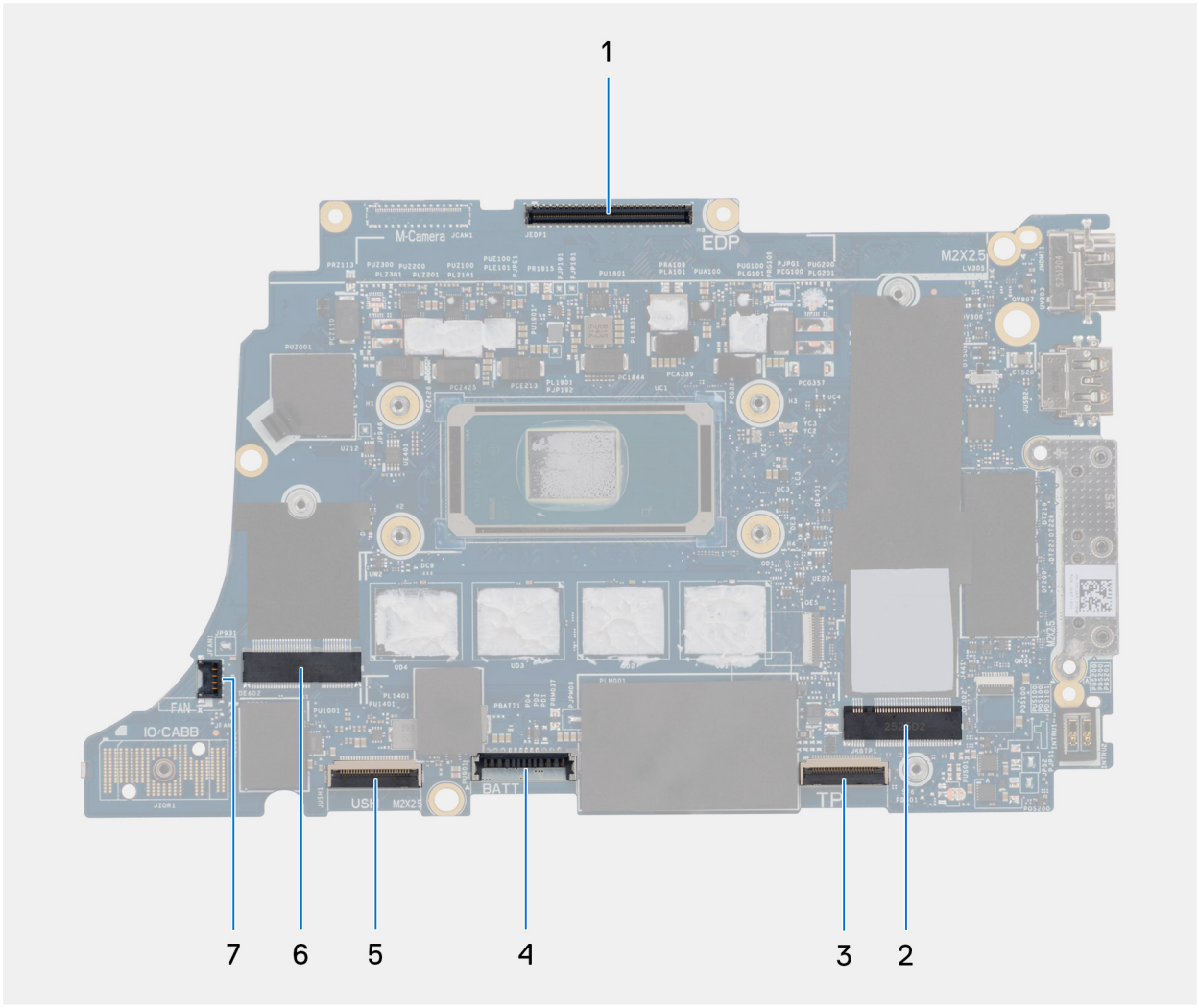



**Figure 51. System board connectors**

1. Display-cable connector (LCD1)
2. Solid state drive slot (SSD1)
3. Touchpad-cable connector (TP)
4. Battery-cable connector (BATT1)
5. USH-board connector (USH)
6. WLAN-card slot (WLAN)
7. Fan-cable connector (FAN)

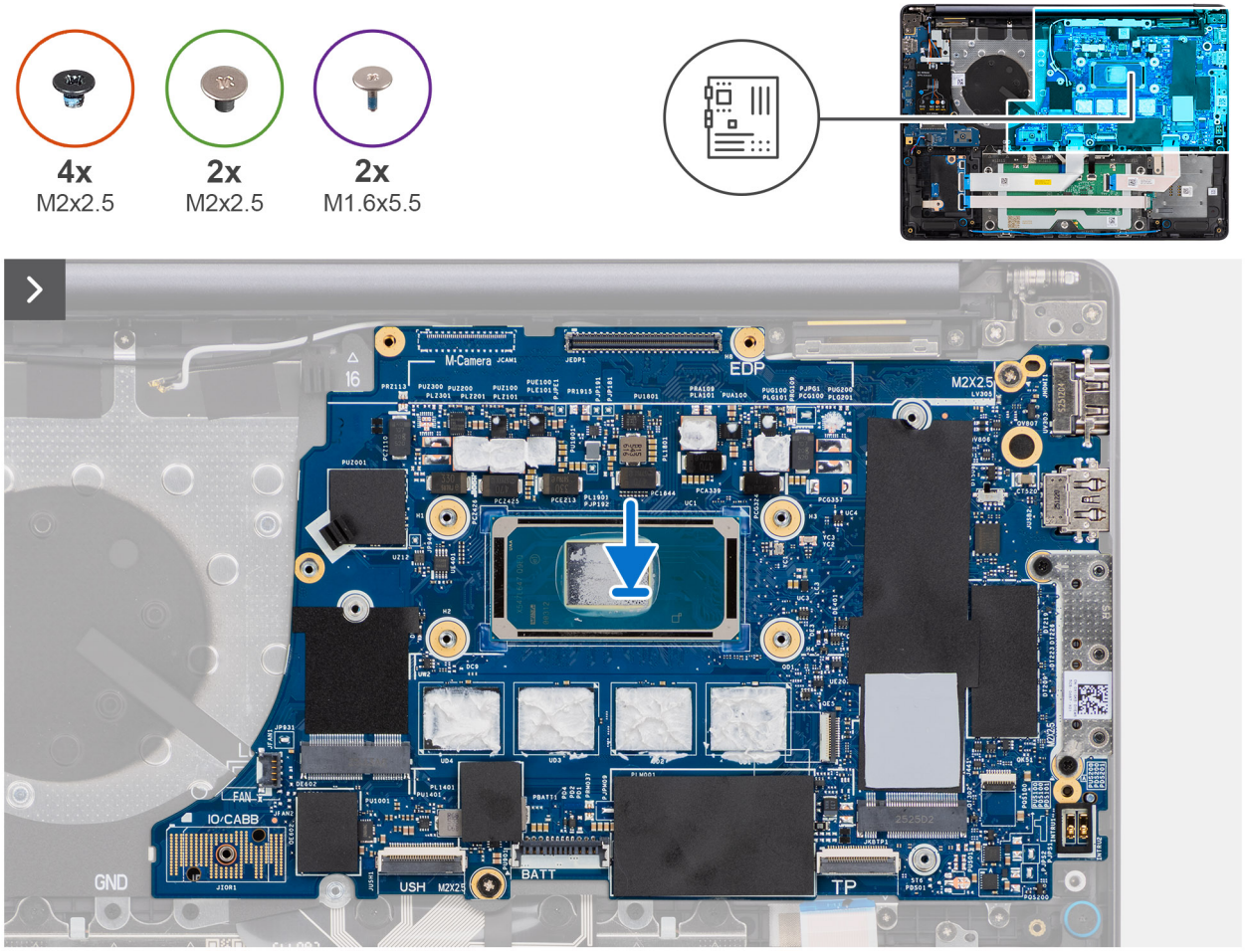



Figure 52. Installing the system board

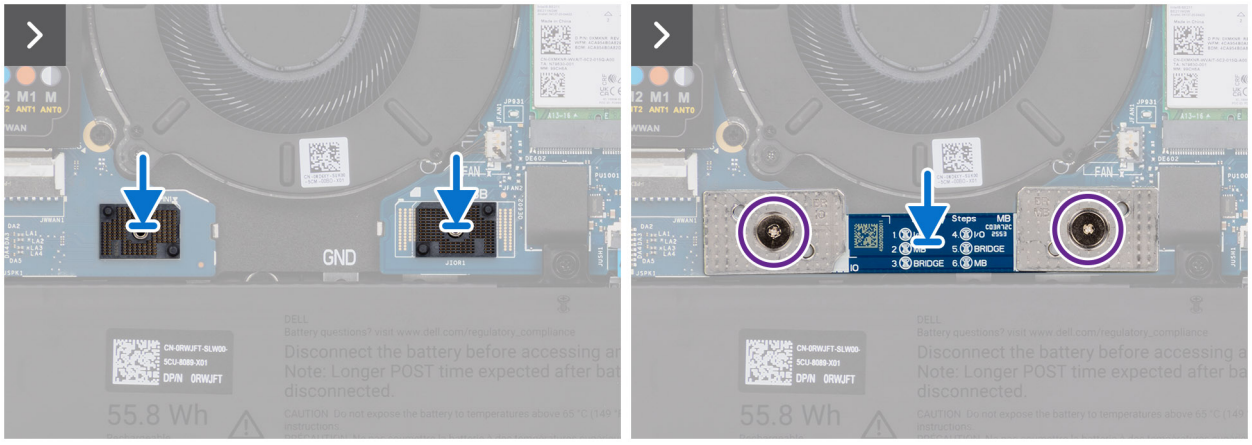



Figure 53. Installing the system board

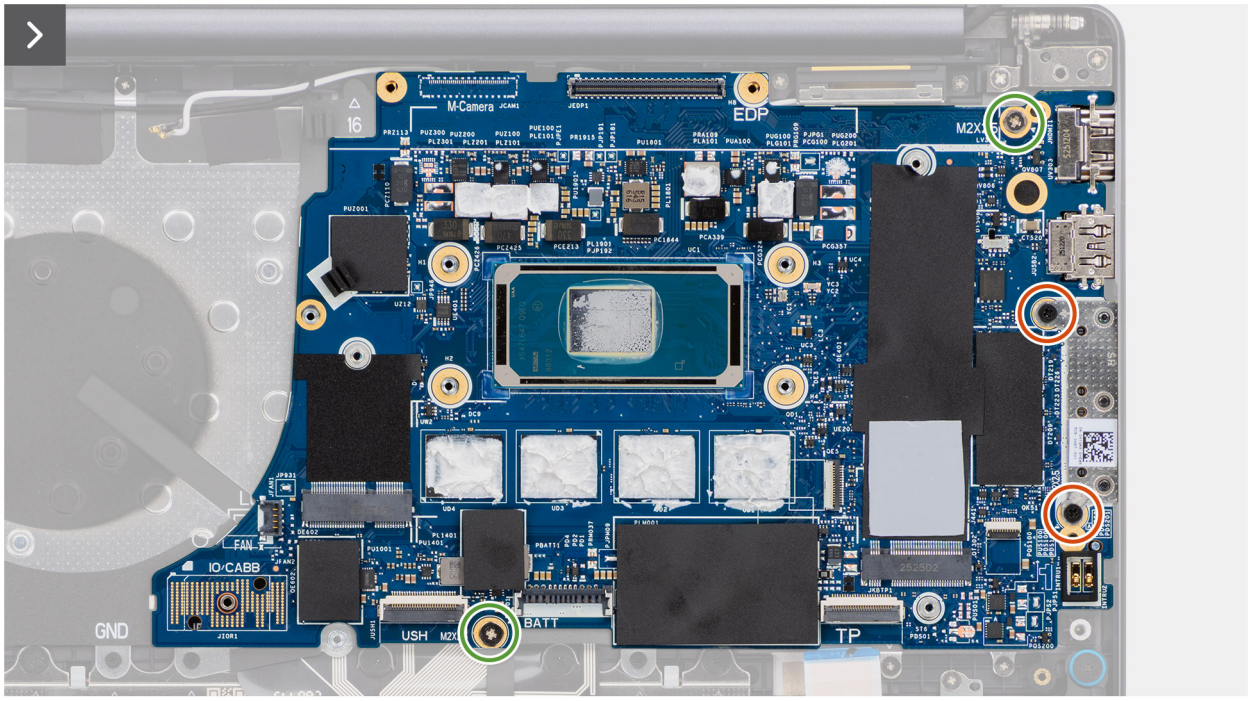



Figure 54. Installing the system board

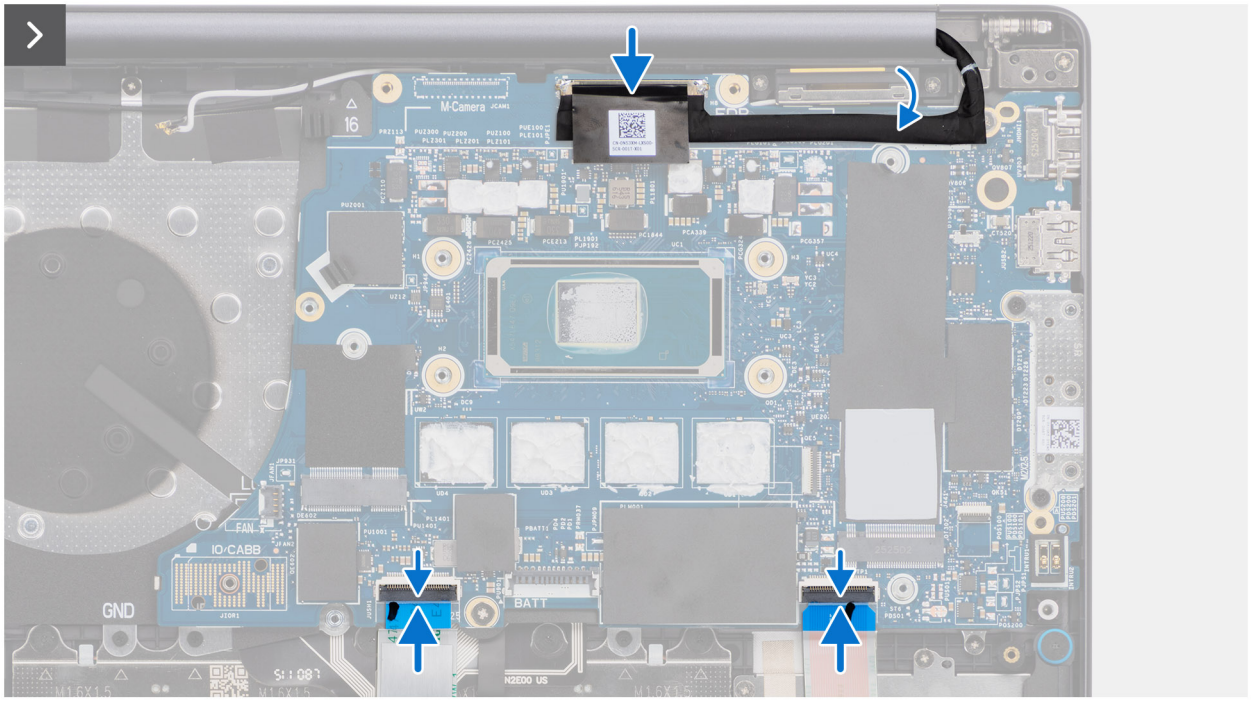



Figure 55. Installing the system board

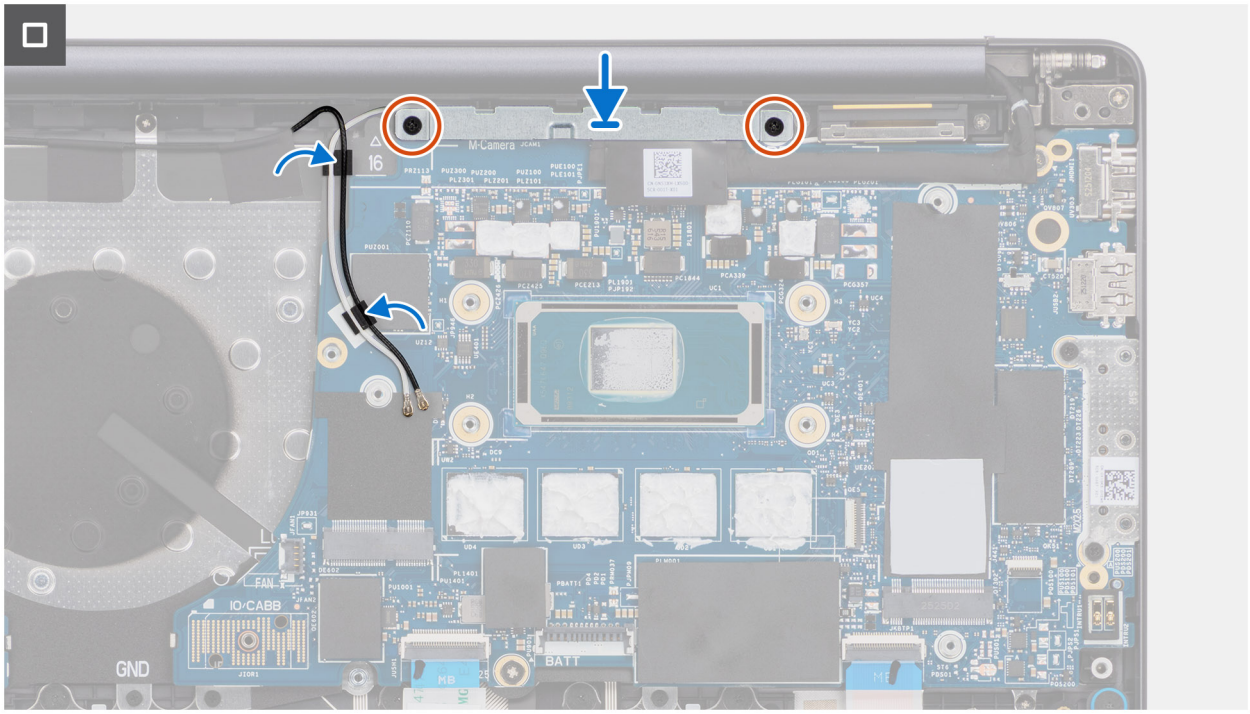



**Figure 56. Installing the system board**

**NOTE:** There is an installation sequence (from left to right) that must be followed when either the I/O daughter board or system board is replaced. This installation sequence is shown on the I/O-bridge board.

**NOTE:** Before installing the screws to the system board, the I/O-bridge board must be seated into location and 2 of the screws for I/O Bridge board must be installed first. After that only the screws of the MB can be installed.




**Figure 57. installation sequence**

### Steps

1. Align the ports on the system board with the slots on the palm-rest assembly and slide them into place.
2. Place the system board on the palm-rest assembly.
3. Align the screw holes on the system board with the screw holes on the palm-rest assembly.
4. Using the alignment posts on the I/O board, place and align the I/O-bridge board interposer onto its connector on the I/O board.
5. Using the alignment posts on the system board, place and align the I/O-bridge board interposer onto its connector on the system board.

   **CAUTION: To avoid bending the pins and damaging the I/O-bridge board interposer, pinch the edges of the interposer while handling it.**

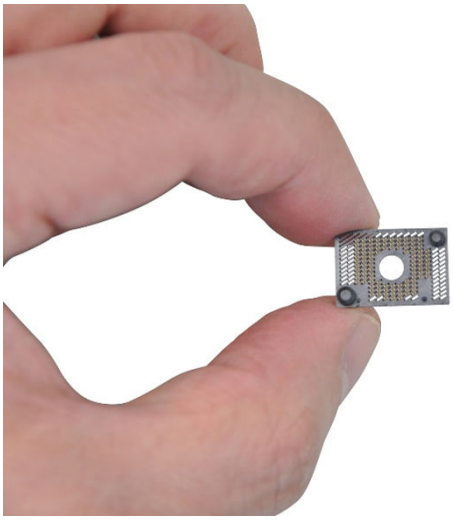


**Figure 58. Proper handling of the I/O-bridge board interposer**

6. Using the alignment posts on the I/O-bridge board interposers, place and align the I/O-bridge board onto the I/O-bridge board interposers on the system board and I/O board.
7. Replace the screws (M1.6x5.5) that secures the I/O-bridge board to its connector on the I/O board.
8. Replace the screws (M1.6x5.5) that secures the I/O-bridge board to its connector on the system board.
9. Replace the two screws (M2x2.5) that secure the system board to the palm-rest assembly.
10. Replace the two screws (M2x2.5) that secure the system board to the palm-rest assembly.
11. Connect the USH-board cable to its connector (MB) on the system board and close the latch to secure the cable.
12. Connect the touchpad cable to its connector (TP) on the system board and close the latch to secure the cable.
13. Route the WLAN-antenna cables through the routing guides on the system board.
14. Connect the display and camera cable to its connector (EDP) on the system board.
15. Place the display-cable bracket over the display connectors on the system board.
16. Align the screw holes on the display-cable bracket to the screw holes on the system board.
17. Replace the two screws (M2x2.5) that secure the display-cable bracket to the system board.

### Next steps

1. Install the display assembly.
2. Install the WLAN card.
3. Install the fan.
4. Install the I/O-bridge board.
5. Install the 5G WWAN card or 4G WWAN card, as applicable.
6. Install the M.2 2230 or M.2 2280 SSD, as applicable.
7. Install the base cover.
8. Install the nano-SIM card tray, if applicable.
9. Follow the procedure in After working inside your computer.

# Power button with optional fingerprint reader

## Removing the power button with an optional fingerprint reader

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the battery.

5. Remove the M.2 2230 or M.2 2280 SSD, as applicable.
6. Remove the 5G WWAN card or 4G WWAN card, as applicable.
7. Remove the WLAN card.
8. Remove the I/O-board bridge.
9. Remove the display assembly.
10. Remove the I/O board.

### About this task

The following images indicate the location of the power button with the optional fingerprint reader and provide a visual representation of the removal procedure.

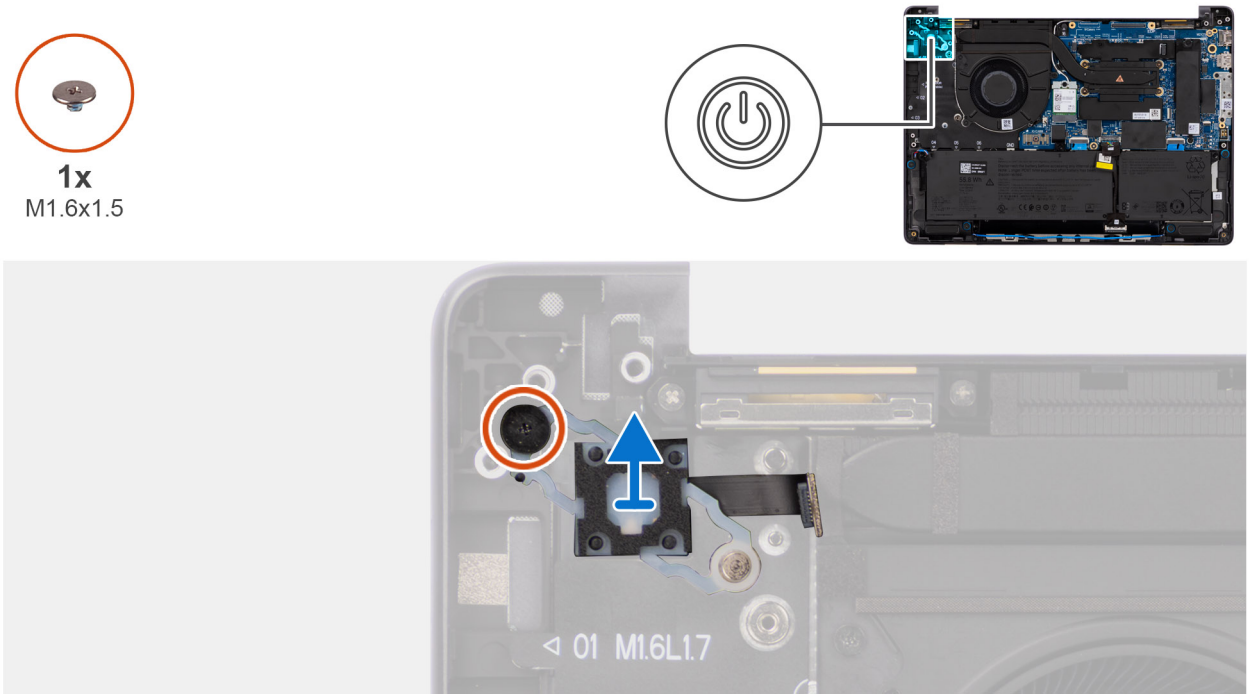



**Figure 59. Removing the power button with an optional fingerprint reader**

### Steps

1. Remove the screw (M1.6x1.5) that secures the power button to the palm-rest assembly.
2. Lift the power button off the palm-rest assembly.

## Installing the power button with optional fingerprint reader

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the location of the power button with optional fingerprint reader and provide a visual representation of the installation procedure.

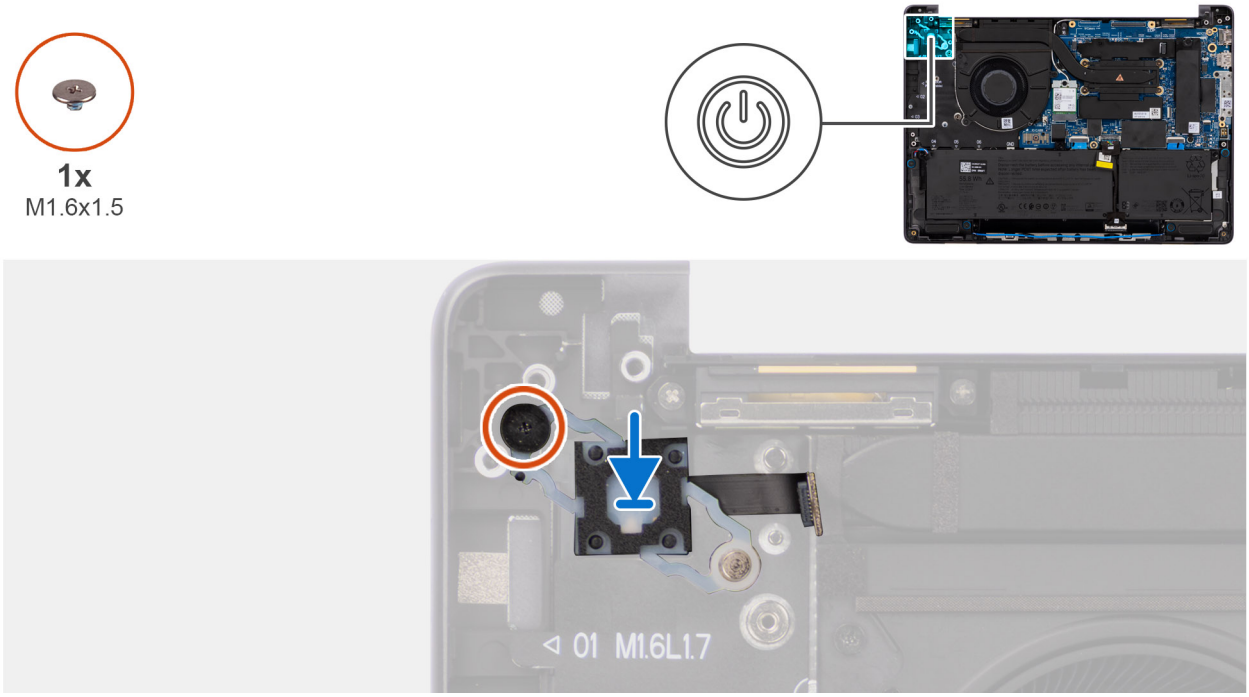



**Figure 60. Installing the power button with optional fingerprint reader**

### Steps

1. Align and place the power button on the palm-rest assembly.
2. Replace the screw (M1.6x1.5) that secures the power button to the palm-rest assembly.

### Next steps

1. Install the I/O board.
2. Install the display assembly.
3. Install the I/O-board bridge.
4. Install the WLAN card.
5. Install the 5G WWAN card or 4G WWAN card, as applicable.
6. Install the M.2 2230 or M.2 2280 SSD, as applicable.
7. Install the battery.
8. Install the base cover.
9. Install the nano-SIM card tray, if applicable.
10. Follow the procedure in After working inside your computer.

# Touchpad cable

## Removing the touchpad cable

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the battery.

### About this task

The following images indicate the location of the touchpad cable and provide a visual representation of the removal procedure.

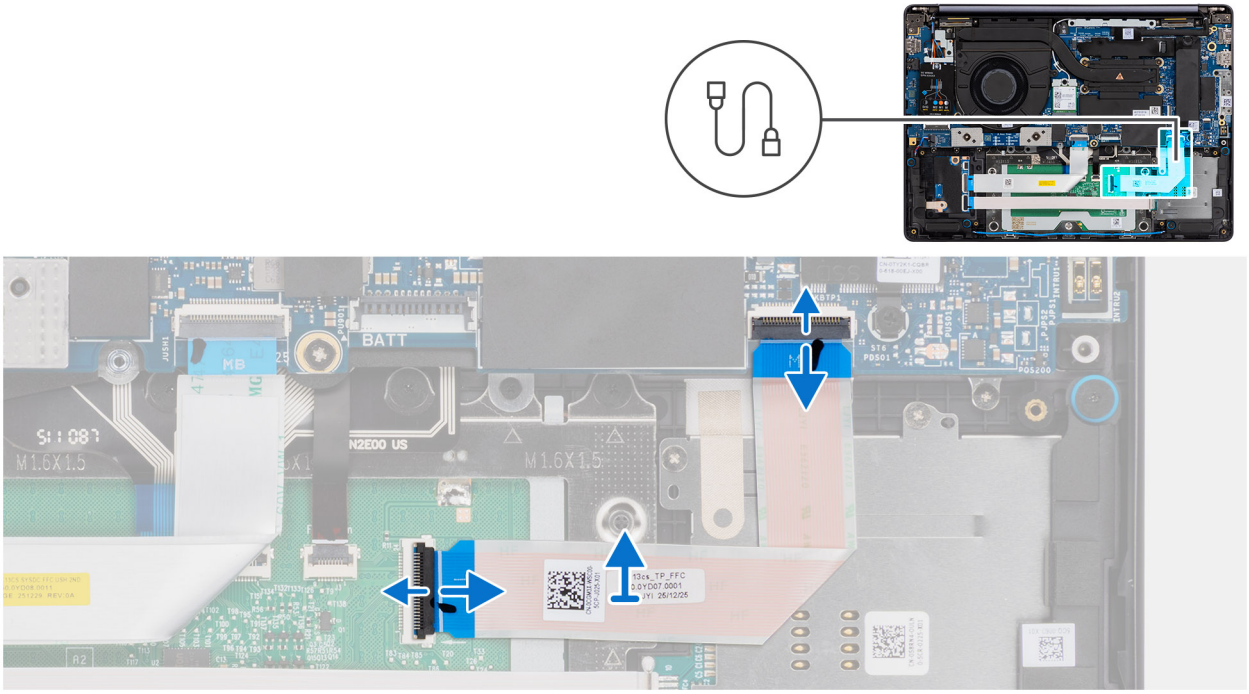



**Figure 61. Removing the touchpad cable**

### Steps

1. Peel the tape that secures the touchpad cable to the palmrest-assembly..
2. Disconnect the touchpad cable from the system board.

# Installing the touchpad cable

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the location of the touchpad cable and provide a visual representation of the installation procedure.

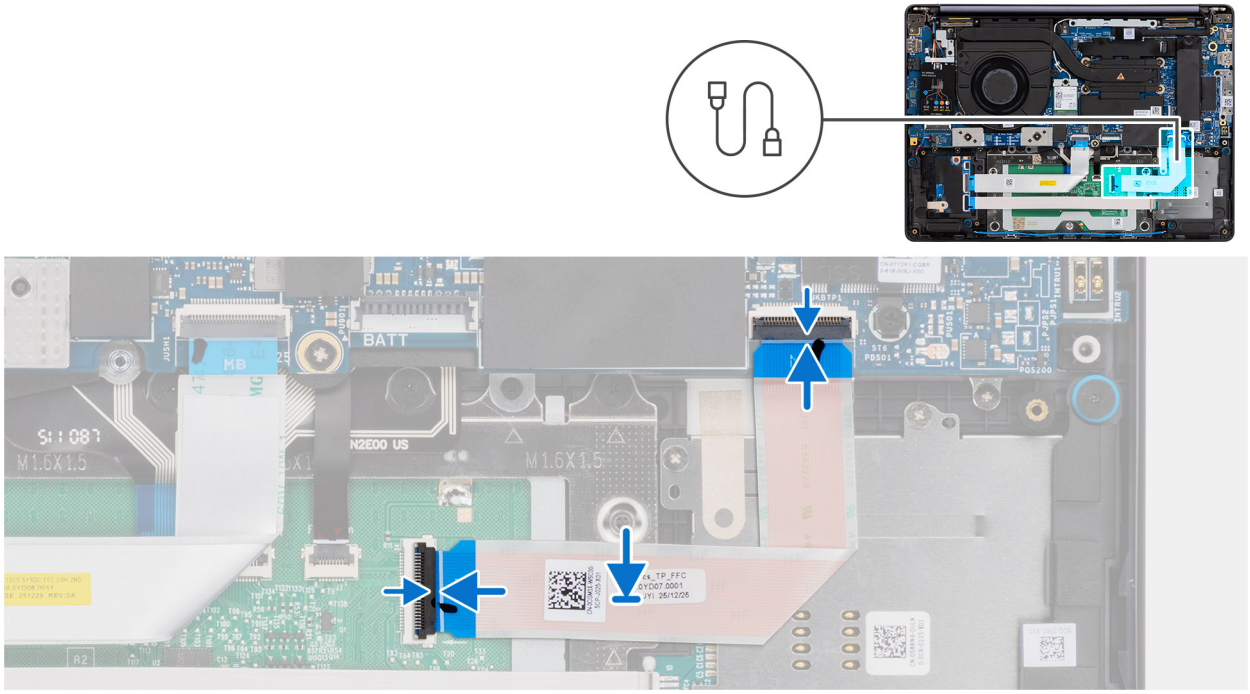



**Figure 62. Installing the touchpad cable**

### Steps

1. Close the latch and connect touchpad cable to the connector on the palm-rest assembly.
2. Adhere the touchpad cable to the system board.

### Next steps

1. Install the battery.
2. Install the base cover.
3. Install the nano-SIM card tray, if applicable.
4. Follow the procedure in After working inside your computer.

# Keyboard

## Removing the keyboard

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the battery.
5. Remove the M.2 2230 or M.2 2280 SSD, as applicable.
6. Remove the 5G WWAN card or 4G WWAN card, as applicable.
7. Remove the WLAN card.
8. Remove the I/O-bridge board.
9. Remove the fan.
10. Remove the display assembly.
11. Remove the system board.

**NOTE:** The system board can be removed and installed with the heat sink to preserve the thermal bond.

12. Remove the I/O board.

### About this task

The following images indicate the location of the keyboard and provide a visual representation of the removal procedure.

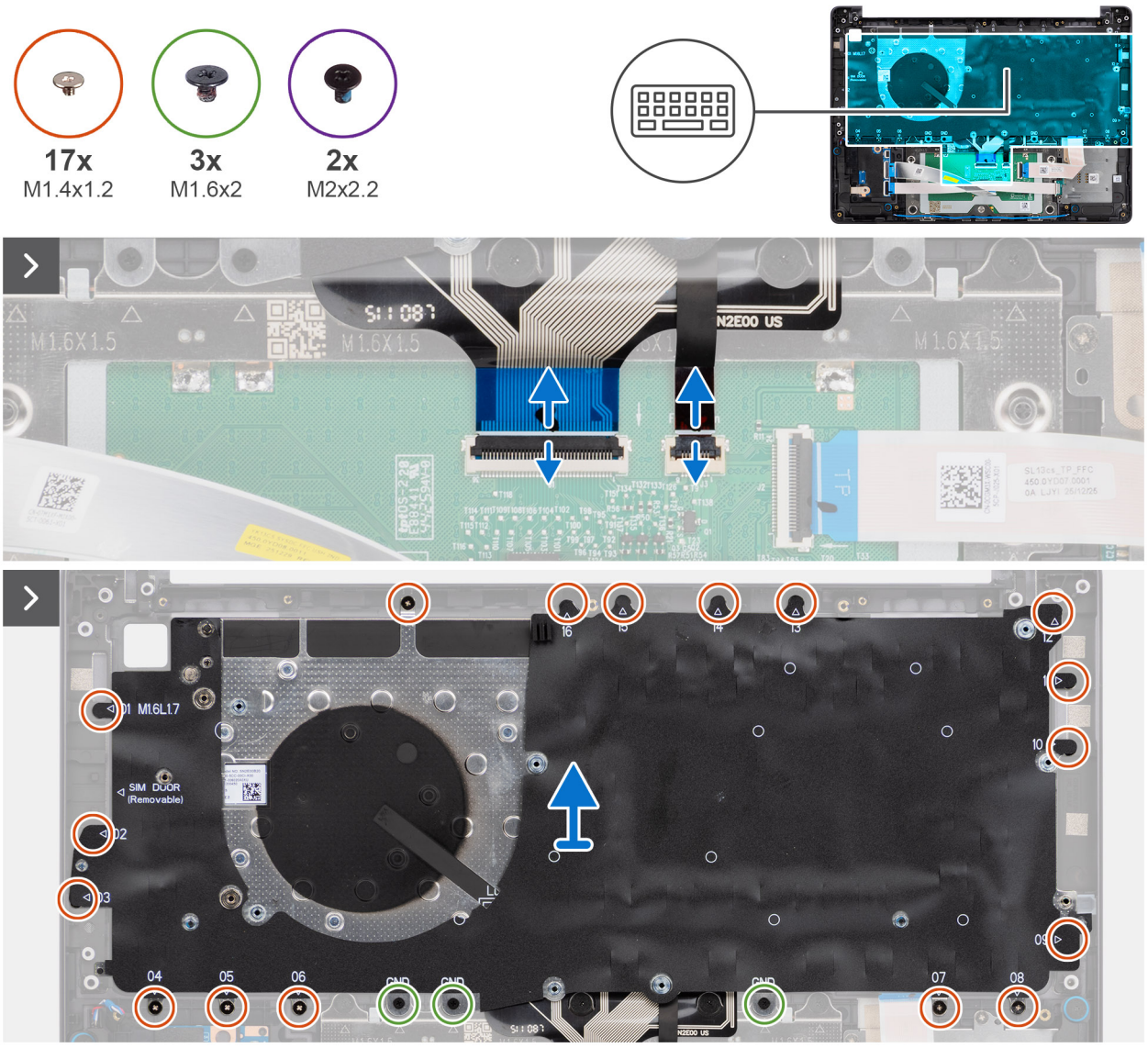



**Figure 63. Removing the keyboard**




**Figure 64. Removing the keyboard**

### Steps

1. Open the latch and disconnect the keyboard cable from the touchpad.

   **NOTE:** For the keyboard, the latch is the "black" portion of the connector.

2. Flip Open the latch and disconnect the keyboard-backlight cable from the touchpad.

   **NOTE:** For the keyboard-backlight, the latch is the "black" portion of the connector.

3. Remove the 17 screws (M1.4x1.2) and three (M1.6x2) screws that secure the keyboard bracket to the palm-rest assembly.
4. Lift the keyboard bracket off the palm-rest assembly.
5. Turn the keyboard bracket over.
6. Remove the two screws (M2x2.2) that secure the keyboard to the keyboard bracket.
7. Lift the keyboard off the keyboard bracket.

# Installing the keyboard

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the location of the keyboard and provide a visual representation of the installation procedure.

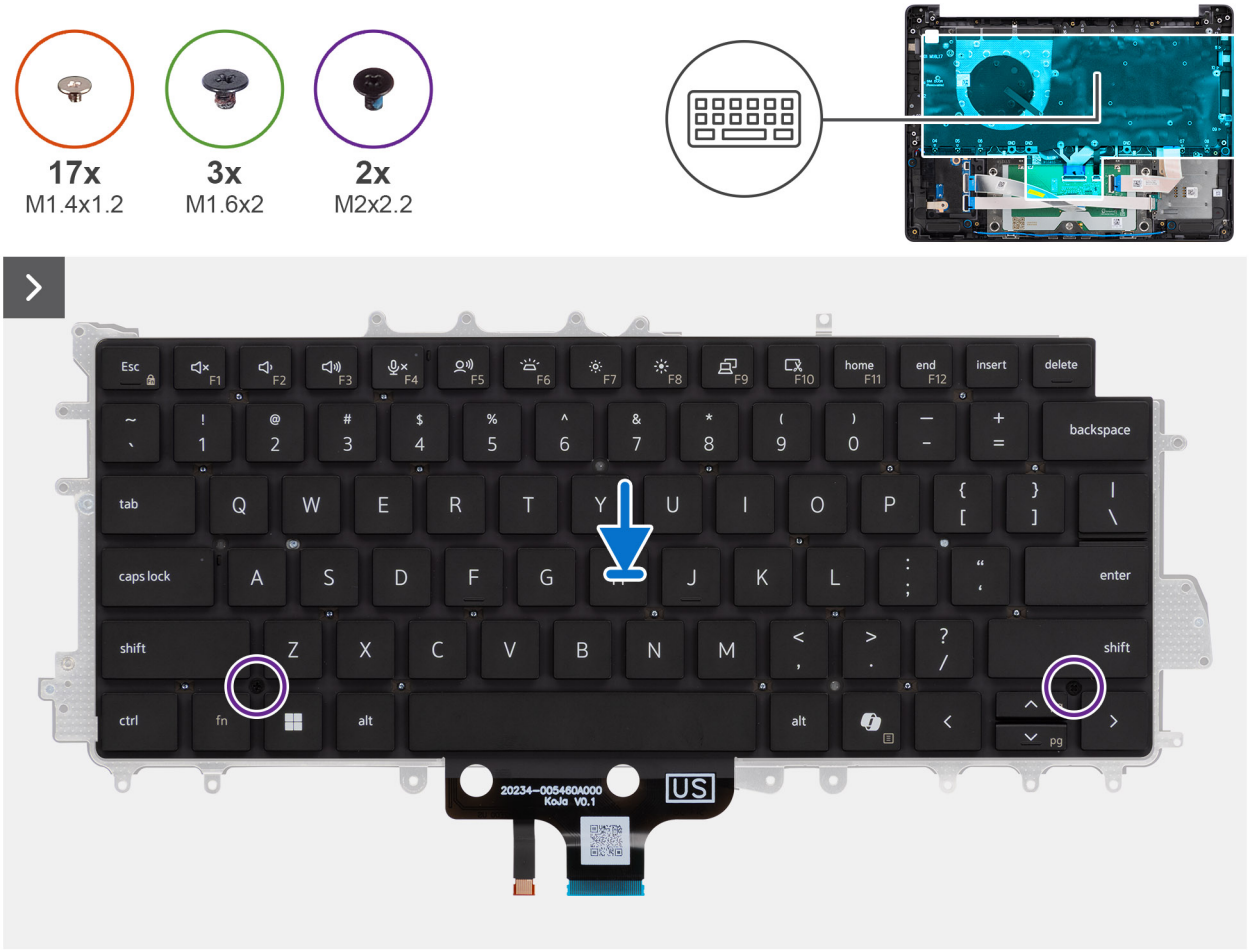



**Figure 65. Installing the keyboard**

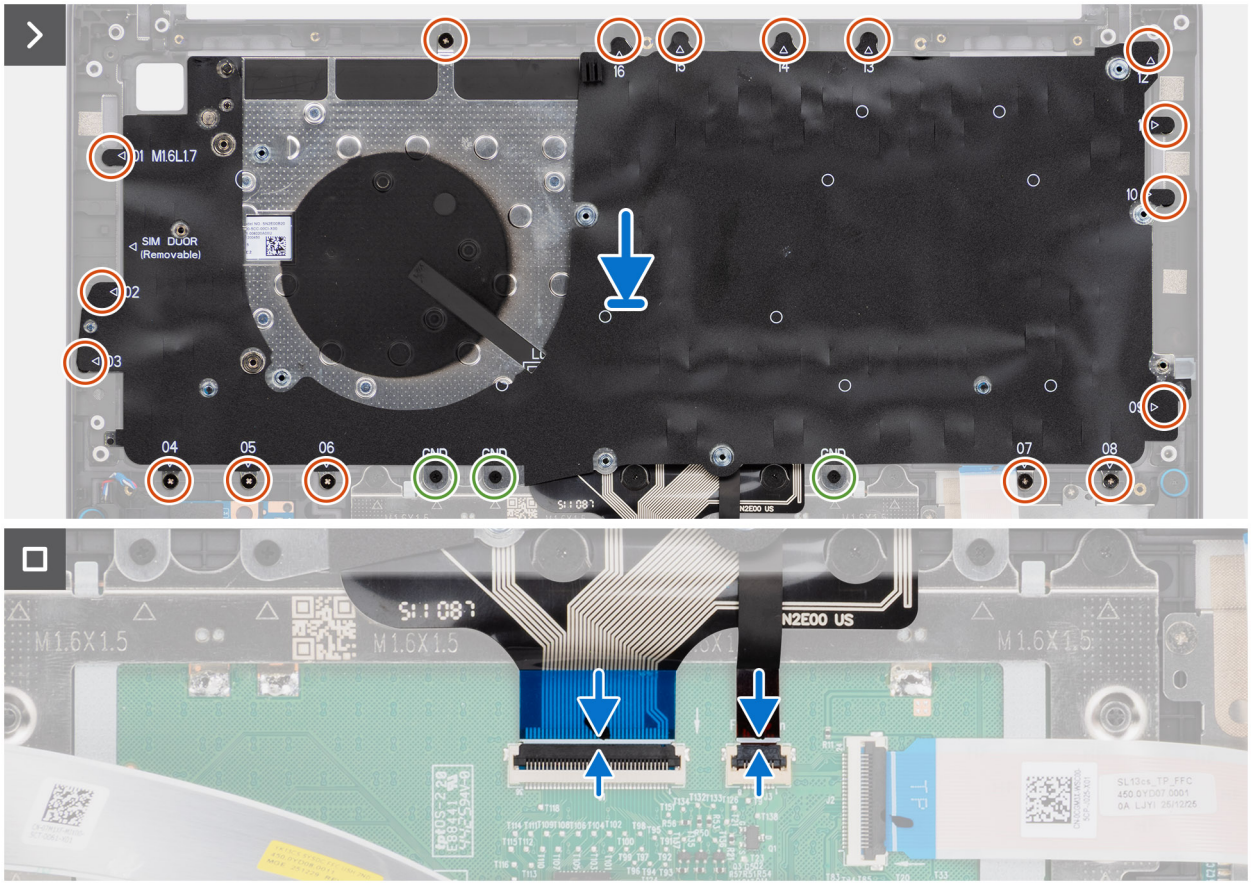



**Figure 66. Installing the keyboard**

### Steps

1. Align and place the keyboard on the keyboard bracket.
2. Replace the two screws (M2x2.2) to secure the keyboard to the keyboard bracket.
3. Turn the keyboard bracket over.
4. Align and place the keyboard bracket on the palm-rest assembly.
5. Replace the 17 screws (M1.4x1.2) and three (M1.6x2) screws that secure the keyboard bracket to the palm-rest assembly.
6. Connect the keyboard-backlight cable to the connector on the touchpad and close the latch to secure the cable.

   **NOTE:** The system board can be removed and installed with the heat sink to preserve the thermal bond.

   **NOTE:** For the keyboard-backlight, the latch is the "black" portion of the connector.

7. Connect the keyboard cable to the connector on the touchpad and close the latch to secure the cable.

   **NOTE:** For the keyboard, the latch is the "black" portion of the connector.

### Next steps

1. Install the I/O board.
2. Install the system board.

   **NOTE:** The system board can be removed and installed with the heat sink to preserve the thermal bond.

3. Install the display assembly.
4. Install the I/O-bridge board.
5. Install the WLAN card.
6. Install the fan.

7. Install the 5G WWAN card or 4G WWAN card, as applicable.
8. Install the M.2 2230 or M.2 2280 SSD, as applicable.
9. Install the battery.
10. Install the base cover.
11. Install the nano-SIM card tray, if applicable.
12. Follow the procedure in After working inside your computer.

# Nano-SIM card dummy filler

## Removing the nano-SIM card dummy filler

### Prerequisites

1. Follow the procedure in Before working inside your computer.

**NOTE:** This procedure is applicable only if your computer is shipped with a WWAN module.

**CAUTION: Removing the SIM card when the computer is turned on can cause data loss or damage to the card. Ensure that your computer is turned off or the network connections are disabled.**

### About this task

The following images indicate the location of the nano-SIM card dummy filler and provide a visual representation of the removal procedure.

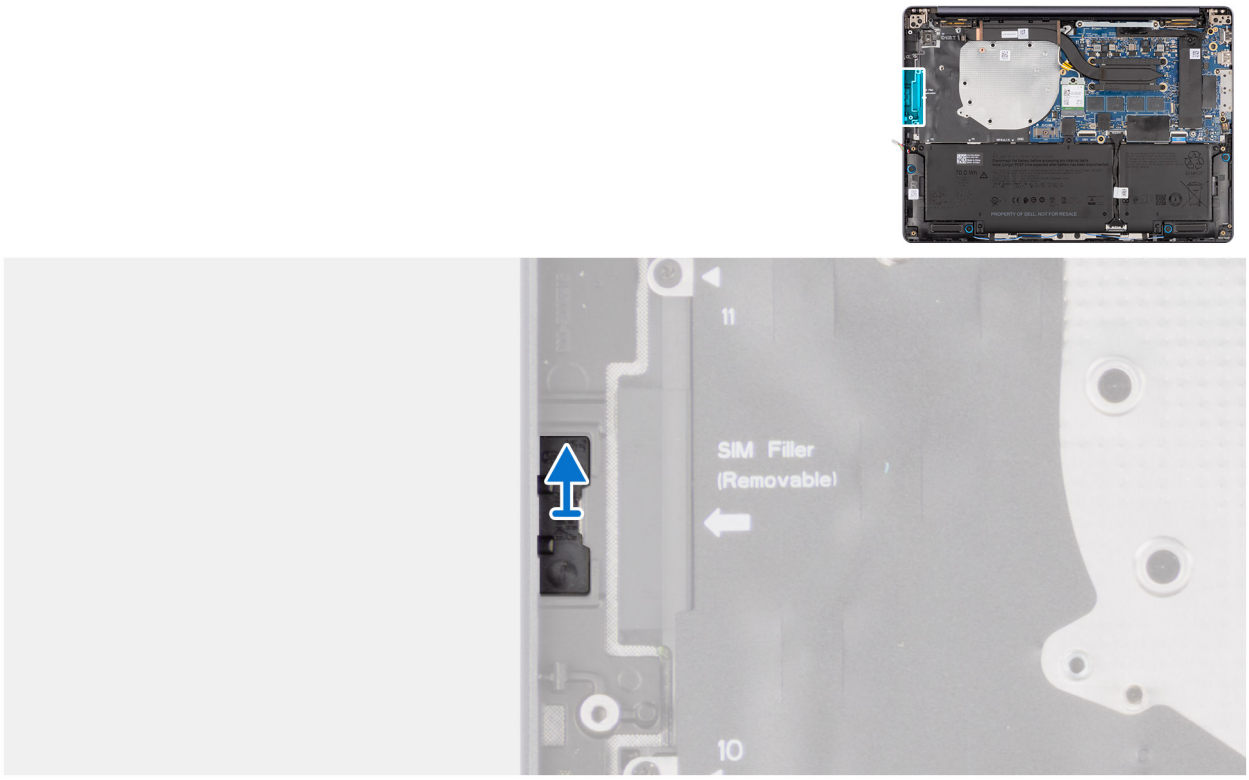



**Figure 67. Removing the nano-SIM card dummy filler**

### Steps

1. Identify the dummy filler installed in the SIM slot.
2. Using a fingertip, gently push or pull the dummy filler outward in the direction indicated by the arrow.

# Installing the nano-SIM card dummy filler

### Prerequisites

**NOTE:** This procedure is applicable only if your computer is shipped with a WWAN module.

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following images indicate the location of the nano-SIM card dummy filler and provide a visual representation of the installation procedure.

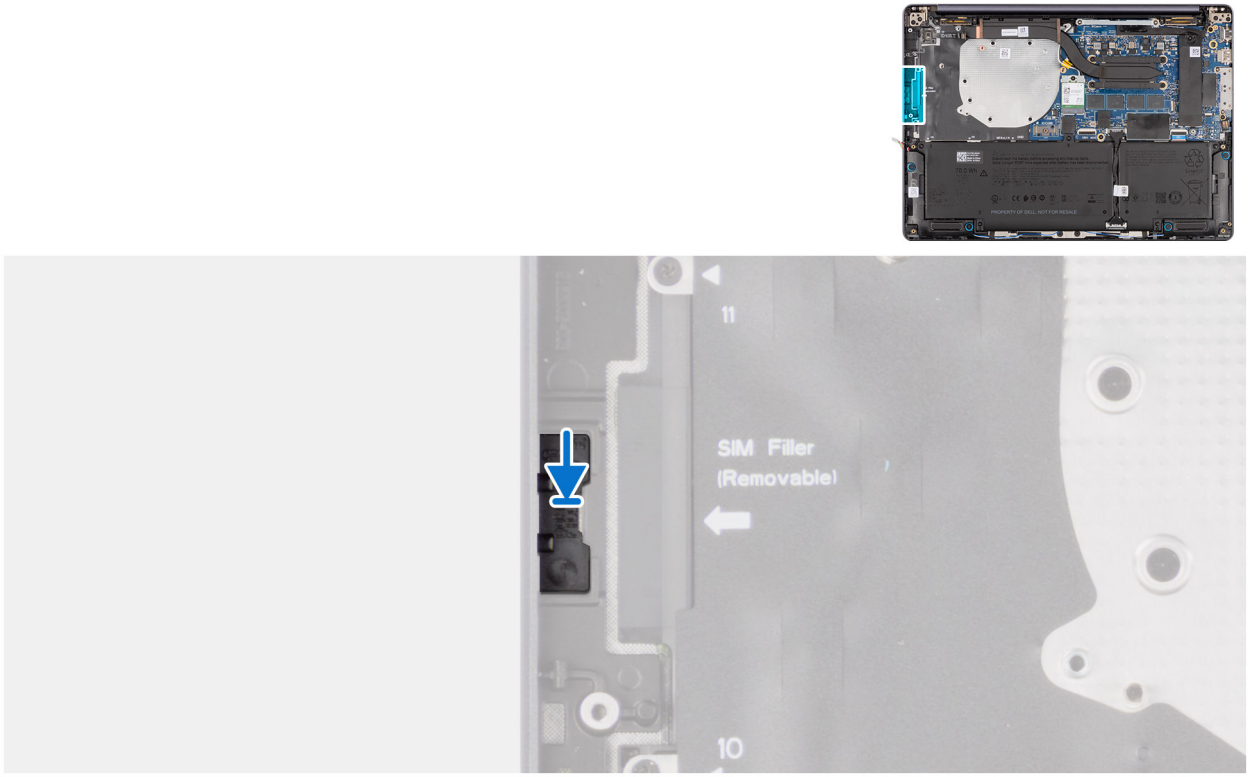



**Figure 68. Installing the nano-SIM card dummy filler**

### Steps

1. Align the dummy filler with the nano-SIM slot.
2. Gently insert the dummy filler into the slot.

### Next steps

1. Follow the procedure in After working inside your computer.

# Palm-rest assembly

## Removing the palm-rest assembly

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.

4. Remove the battery.
5. Remove the M.2 2230 or M.2 2280 SSD, as applicable.
6. Remove the 5G WWAN card or 4G WWAN card, as applicable.
7. Remove the WLAN card.
8. Remove the I/O-bridge board.
9. Remove the speakers.
10. Remove the fan.
11. Remove the USH-board cable.
12. Remove the smart-card reader.
13. Remove the display assembly.
14. Remove the system board.

**NOTE:** The system board can be removed and installed with the heat sink to preserve the thermal bond.

15. Remove the I/O board.
16. Remove the power button with an optional fingerprint reader.
17. Remove the WLAN antenna module.
18. Remove the keyboard.
19. Remove the nano-SIM card slot dummy filler, if applicable.

### About this task

**NOTE:** The palm-rest assembly is an assembly that contains the following components. To replace any of the components listed below, replace the entire palm-rest assembly.

- touchpad
- touchpad cable
- palm-rest assembly
- USH board
- USH-board cable

**NOTE:** When replacing the palm-rest assembly, transfer the dummy SIM filler to the new palm-rest. assembly.

**NOTE:** For computers shipped with WLAN configuration only, the nano-SIM card slot dummy filler is a separate service part and is not included with replacement palm-rest assembly. Hence, the nano-SIM card slot dummy filler must be removed and then reinstalled when replacing the palm-rest assembly.

The following image indicates the location of the palm-rest assembly and provides a visual representation of the removal procedure.

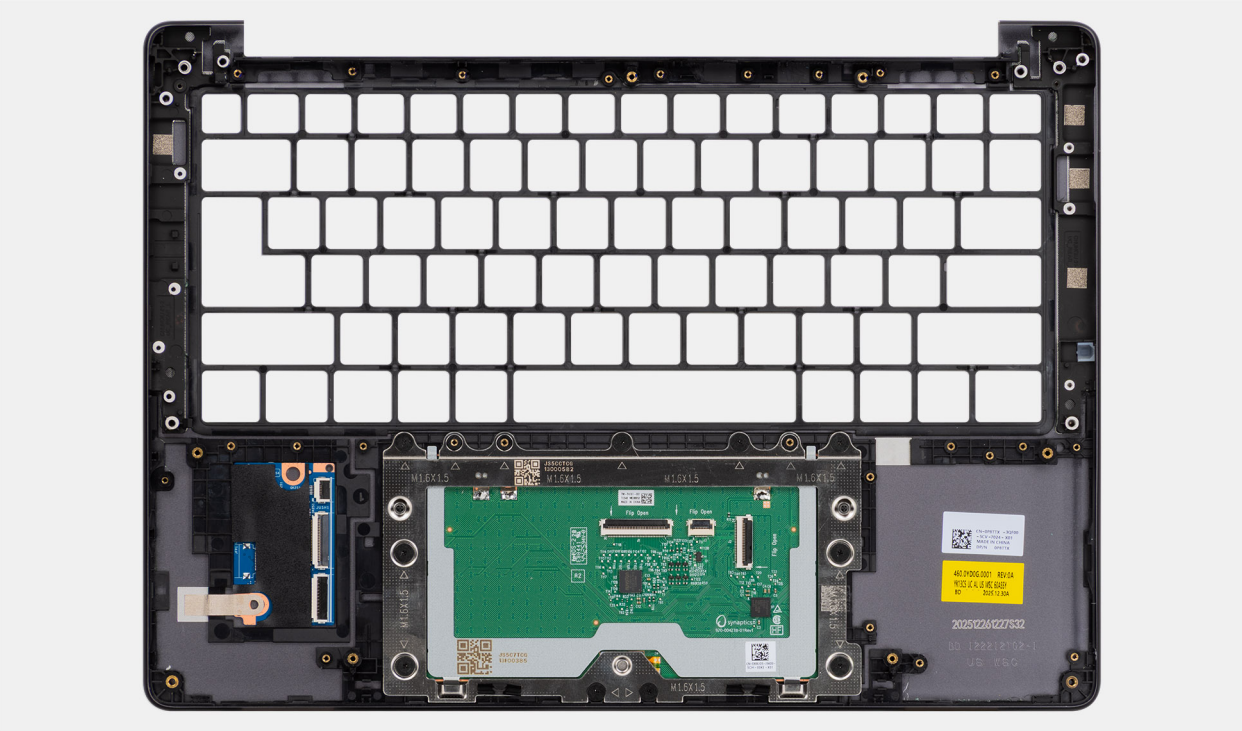


**Figure 69. Removing the palm-rest assembly**

### Steps

Remove all the components mentioned in the pre-requisites to get the palm-rest assembly.

**NOTE:** Do not remove the touchpad from the palm-rest assembly.

**NOTE:** Security-cable slot (wedge-shaped) is part of palm-rest assembly.

**NOTE:** For computers shipped with WLAN configuration only, the nano-SIM card slot dummy filler is a separate service part and is not included with replacement palm-rest assembly. Hence, the nano-SIM card slot dummy filler must be removed and then reinstalled when replacing the palm-rest assembly.

# Installing the palm-rest assembly

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following image indicates the location of the palm-rest assembly and provides a visual representation of the installation procedure.

**NOTE:** The palm-rest assembly is an assembly that contains the following components. To replace any of the components listed below, replace the entire palm-rest assembly.

- touchpad
- touchpad cable
- palm-rest assembly
- USH board
- USH-board cable

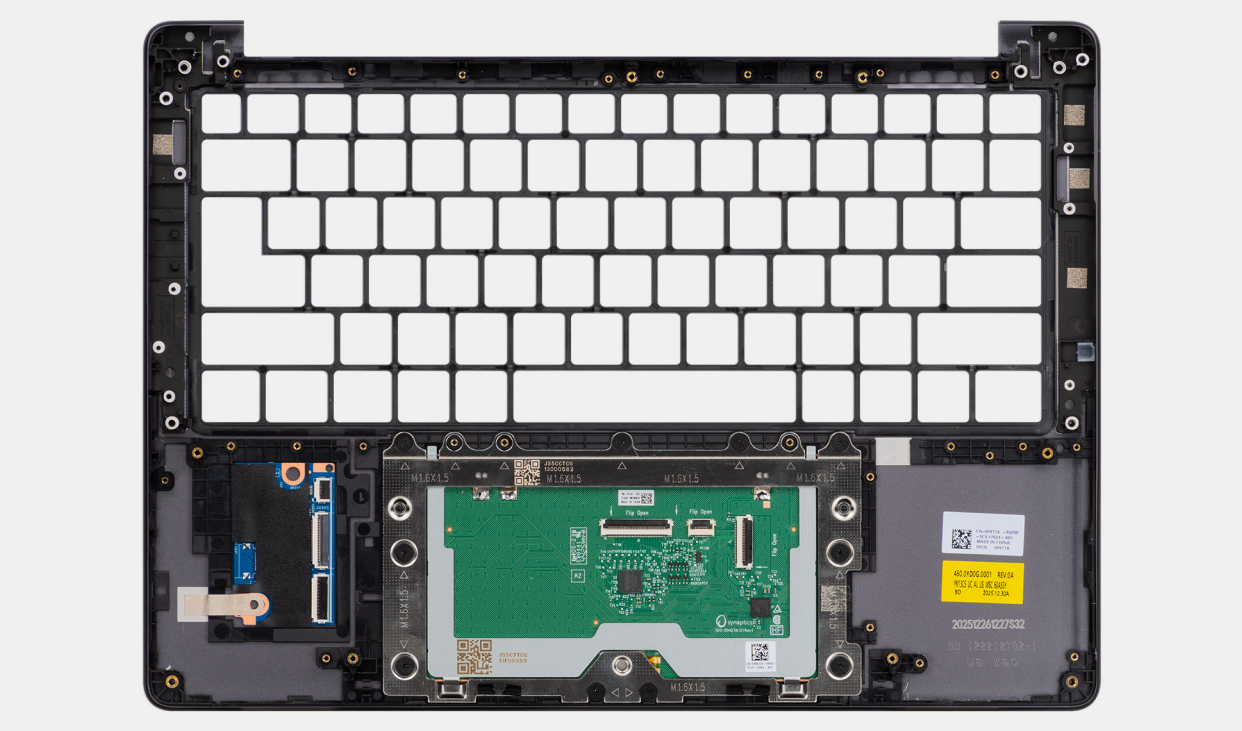


**Figure 70. Installing the palm-rest assembly**

### Steps

Place the palm-rest assembly on a clean and flat surface.

**NOTE:** The touchpad is pre-assembled with the palm-rest assembly.

**NOTE:** Security-cable slot (wedge-shaped) is part of palm-rest assembly.

**NOTE:** For computers shipped with WLAN configuration only, the nano-SIM card slot dummy filler is a separate service part and is not included with replacement palm-rest assembly. Hence, the nano-SIM card slot dummy filler must be removed and then reinstalled when replacing the palm-rest assembly.

### Next steps

1. Install the nano-SIM card slot dummy filler, if applicable.
2. Install the keyboard.
3. Install the WLAN-antenna module.
4. Install the power button with an optional fingerprint reader.
5. Install the I/O board.
6. Install the system board.

   **NOTE:** The system board can be removed and installed with the heat sink to preserve the thermal bond.

7. Install the display assembly.
8. Install the smart card reader.
9. Install the USH-board cable.
10. Install the I/O-bridge board.
11. Install the fan.
12. Install the speakers.
13. Install the WLAN card.
14. Install the 5G WWAN card or 4G WWAN card, as applicable.
15. Install the M.2 2230 or M.2 2280 SSD, as applicable.

16. Install the battery.
17. Install the base cover.
18. Install the nano-SIM card tray, if applicable.
19. Follow the procedure in After working inside your computer.

# Display assembly

## Removing the display assembly

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the battery.
5. Remove the 5G WWAN card or 4G WWAN card, as applicable.

### About this task

The following images indicate the location of the display assembly and provide a visual representation of the removal procedure.

**NOTE:** The procedures in this section only apply to computers shipped with WWAN configuration.

**NOTE:** The display assembly is an assembly consisting of the following components:

- display bezel
- display hinges
- display panel
- camera
- display cable
- display-back cover

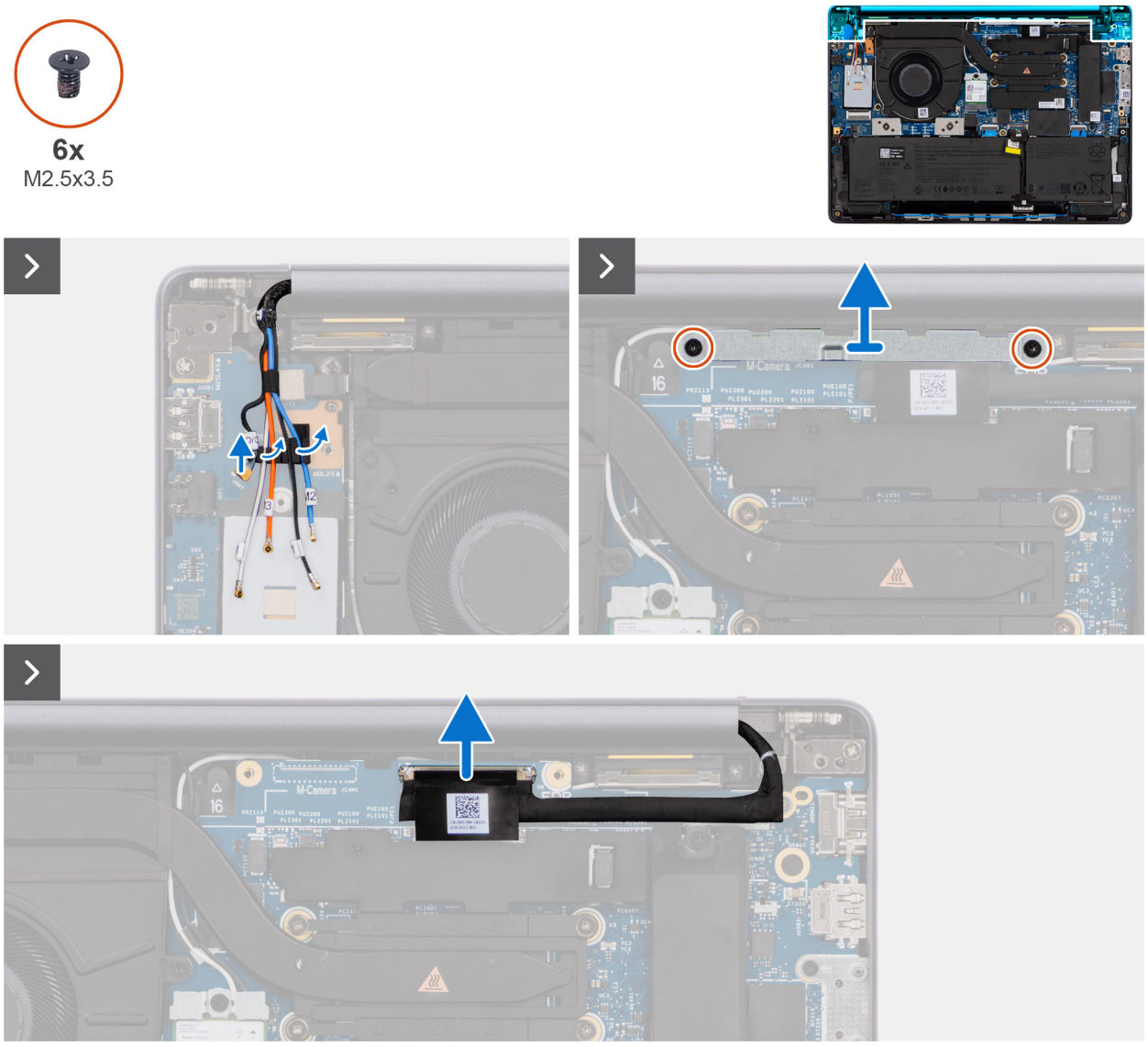



Figure 71. Removing the display assembly

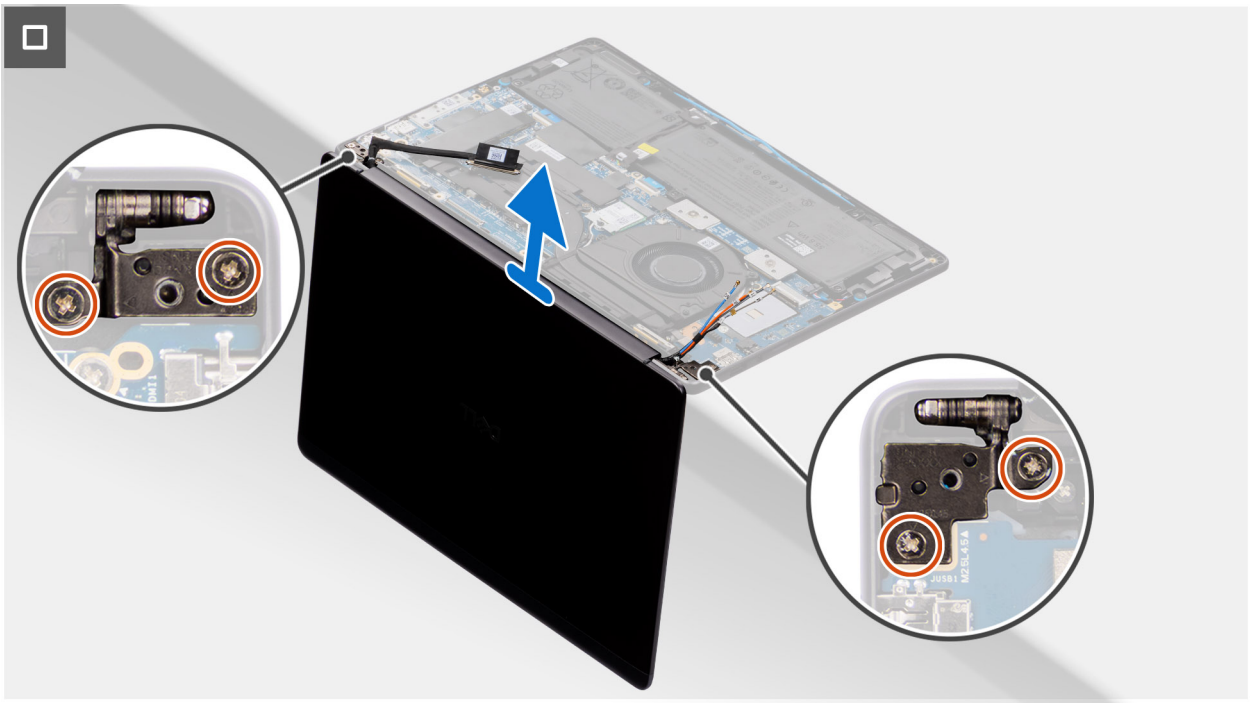


Figure 72. Removing the display assembly

### Steps

1. Disconnect the WWAN card cables from the WWAN card.
2. Remove the two (M2.5x3.5) screws that secure the display-cable bracket to the system board.
3. Lift the display-cable bracket away from the palm-rest assembly.
4. Disconnect the display cable from the display cable connector (LCD1) on the system board.
5. Remove the display cable from the routing guides on the system board.
6. Lift the black flap near the antenna cables to uncover the sensor-board cable.
7. Disconnect the sensor-board cable from the connector on the system board.
8. Remove the antenna cables (where applicable) from the routing guides on the system board.
9. Open the display assembly to 90 degrees and then continue opening it until the display lies completely flat on the table.
10. Remove the four screws (M2.5x3.5) that secure the left and right display hinges to the palm-rest assembly.
11. Lift the display assembly from the palm-rest assembly.
12. Place the display assembly on a clean, flat surface.

## Installing the display assembly

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the location of the display assembly and provide a visual representation of the installation procedure.

**NOTE:** The procedures in this section only apply to computers shipped with WWAN configuration.

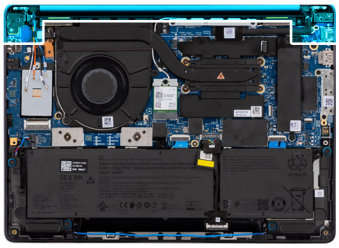
**NOTE:** The display assembly is an assembly consisting of the following components:

- display bezel
- display hinges
- display panel
- camera

- display cable
- display-back cover



**6x**
M2.5x3.5



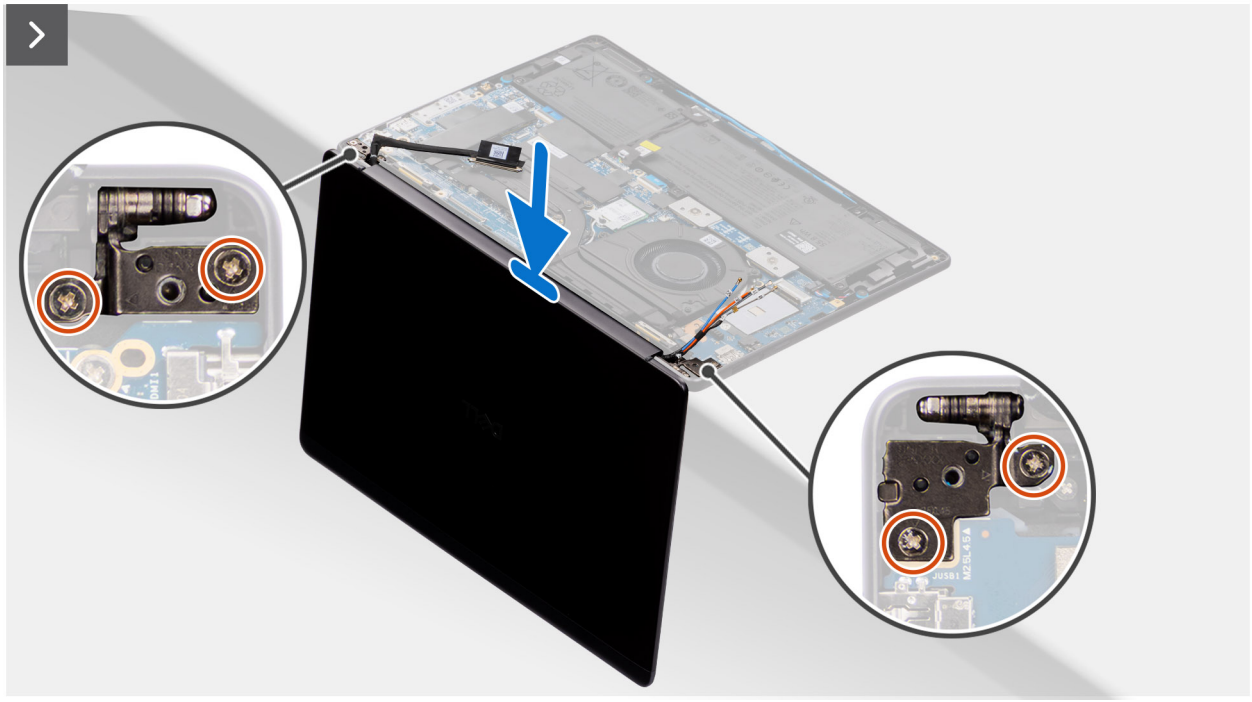


**Figure 73. Installing the display assembly**

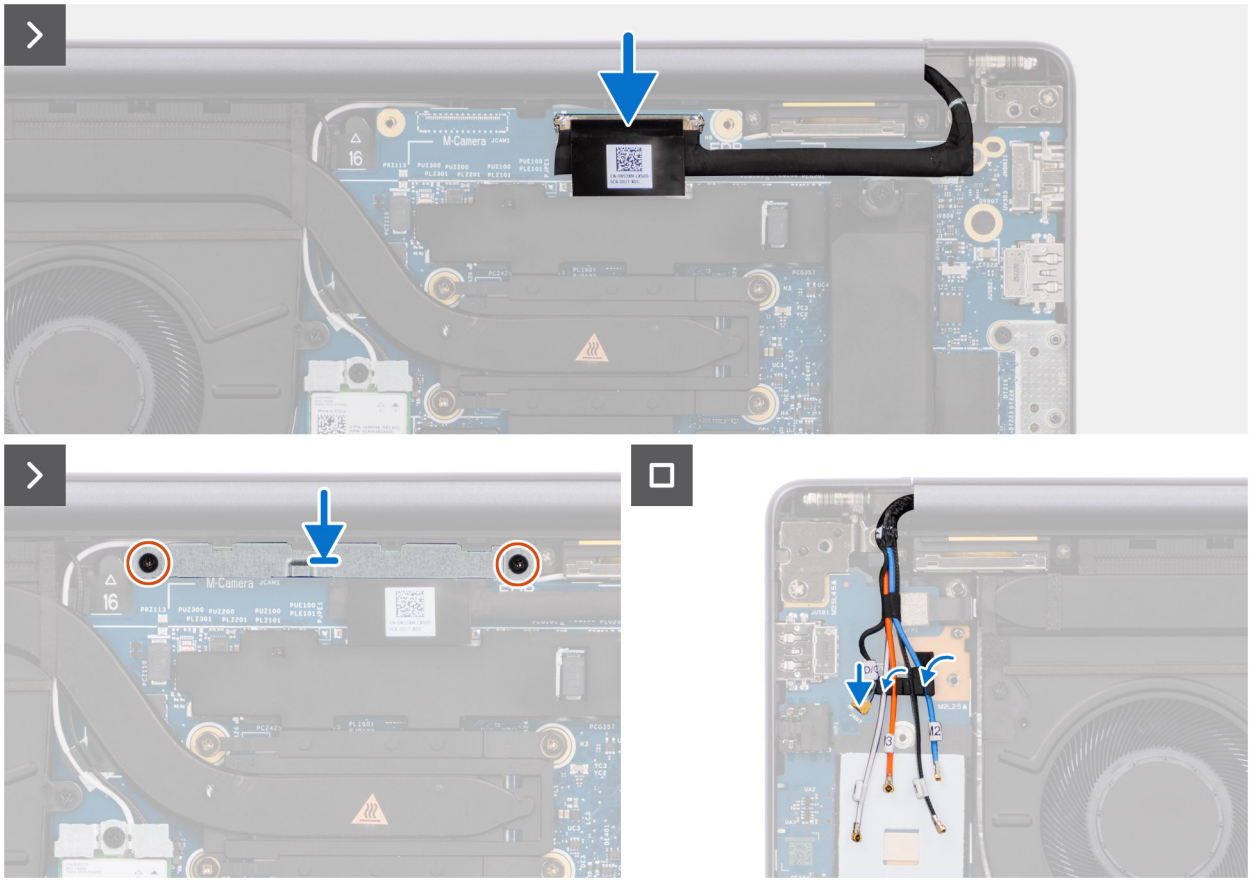


Figure 74. Installing the display assembly

### Steps

1. Place the display assembly flat on the palm-rest assembly and align the hinges with the hinge mounts on the palm rest. Ensure that the system is opened and positioned flat on the table.
2. Align the screw holes on the palm-rest assembly with the screw holes on the display hinges.
3. Replace the four screws (M2.5x3.5) that secure the left and right display hinges to the palm-rest assembly.
4. Connect the sensor-board cable to the connector on the system board.
5. Cover the sensor-board cable with the black flap near the antenna cables.
6. Route the antenna cables (where applicable) from the routing guides on the system board.
7. Connect the display cable and the display cable to the respective connectors (LCD1) on the system board.
8. Adhere the tape that secures the display cable to the system board.
9. Align the screw holes on the display-cable bracket with the screw holes on the system board.
10. Replace the two (M2.5x3.5) screws that secure the display cable bracket to the system board.
11. Connect the 5G/4G WWAN card cables off the WWAN card.

### Next steps

1. Install the 5G WWAN card or 4G WWAN card, as applicable.
2. Install the battery.
3. Install the base cover.
4. Install the nano-SIM card tray, if applicable.
5. Follow the procedure in After working inside your computer.

# Display bezel

## Removing the display bezel

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the battery.
5. Remove the 5G WWAN card or 4G WWAN card, as applicable.
6. Remove the display assembly.

### About this task

The following images indicate the location of the display bezel and provide a visual representation of the removal procedure.

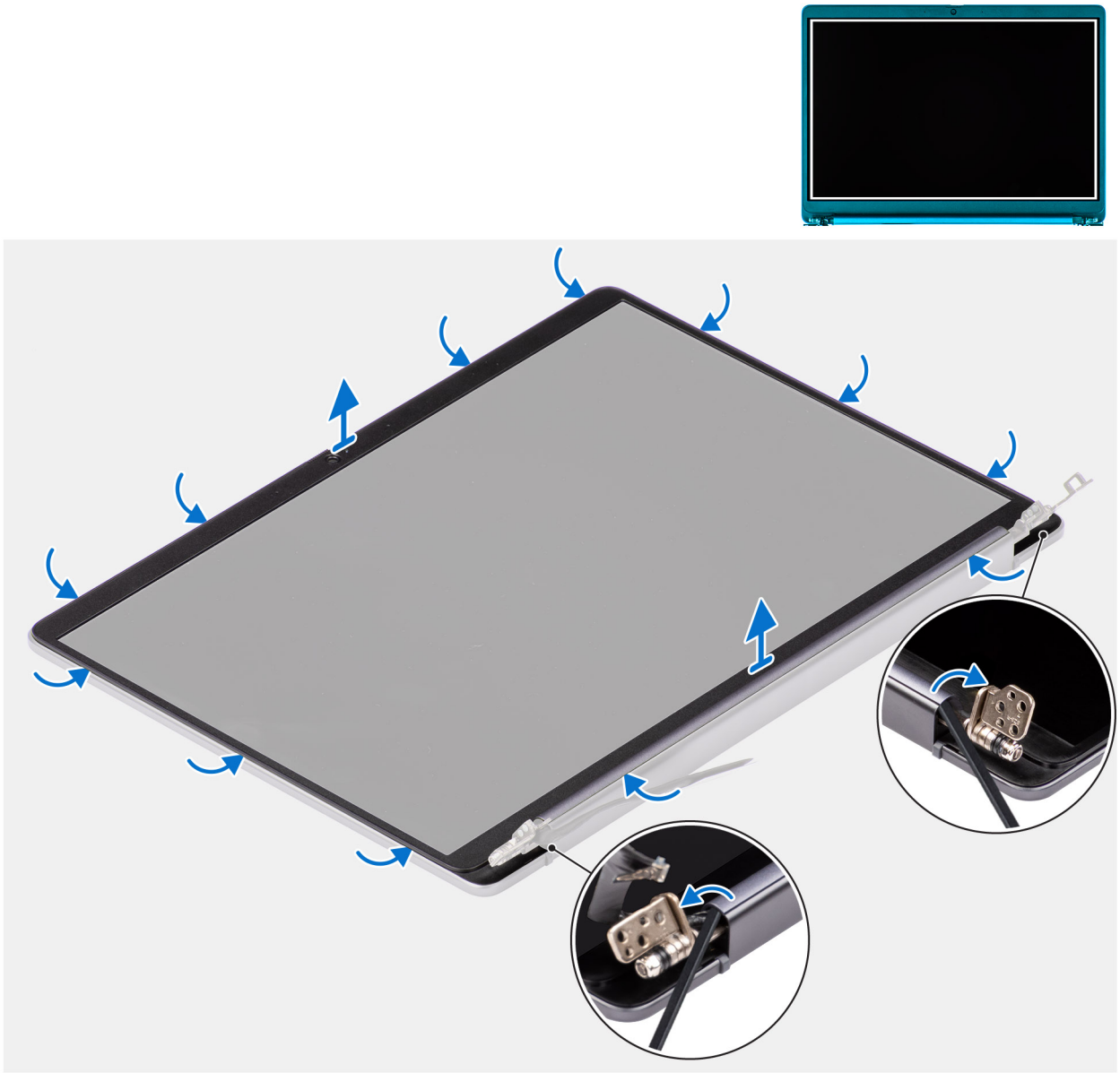


Figure 75. Removing the display bezel

**Steps**

1. Pry open the display hinges.
2. Insert a flat-head slotted screwdriver (maximum width: 4 mm) into the slots on the display bezel near the hinges, and gently apply pressure to release the bezel at both ends, creating a gap.

   **NOTE:** This action deforms the bezel plastics. Dell will ship a new display bezel in the replacement kit where the display bezel is removed as part of the procedure.

3. Insert the flat end of the scribe into the gap created under the display bezel.

   **CAUTION: Use a flat head (slotted <4mm) screwdriver to pry from the recess next to left and right hinge covers. This action will deform and damage the bezel plastics which is the expected outcome. The bezel is a consumable part and is also-ship for replacement.**

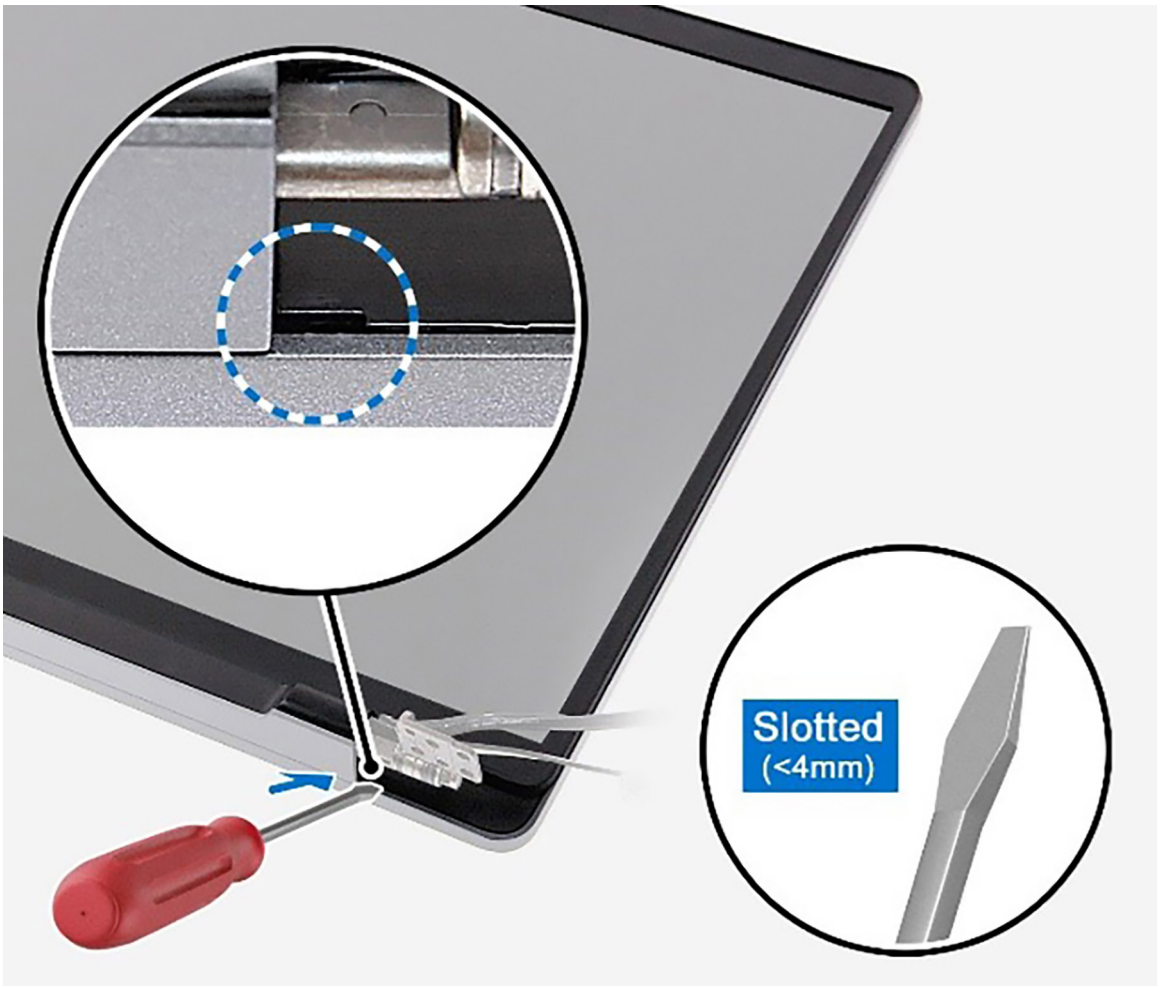



**Figure 76. Bezel Prying**

4. Keeping the scribe parallel to the display, carefully slide it along the bottom edge of the bezel to release the latches on the lower side.
5. Insert the scribe diagonally into the hinge section to carefully release the portion of the bezel above the hinge.

   **CAUTION: Do not lift the scribe vertically as it will damage the screen. Slide the scribe horizontally to disengage the adhesive and release the bezel upwards.**

6. Insert the scribe into the corner of the display bezel near the hinge. Keeping the scribe parallel to the display, carefully slide the scribe along the edges from one corner to the other (right to left or left to right).
7. Lift the display bezel from the display assembly.

# Installing the display bezel

### Prerequisites

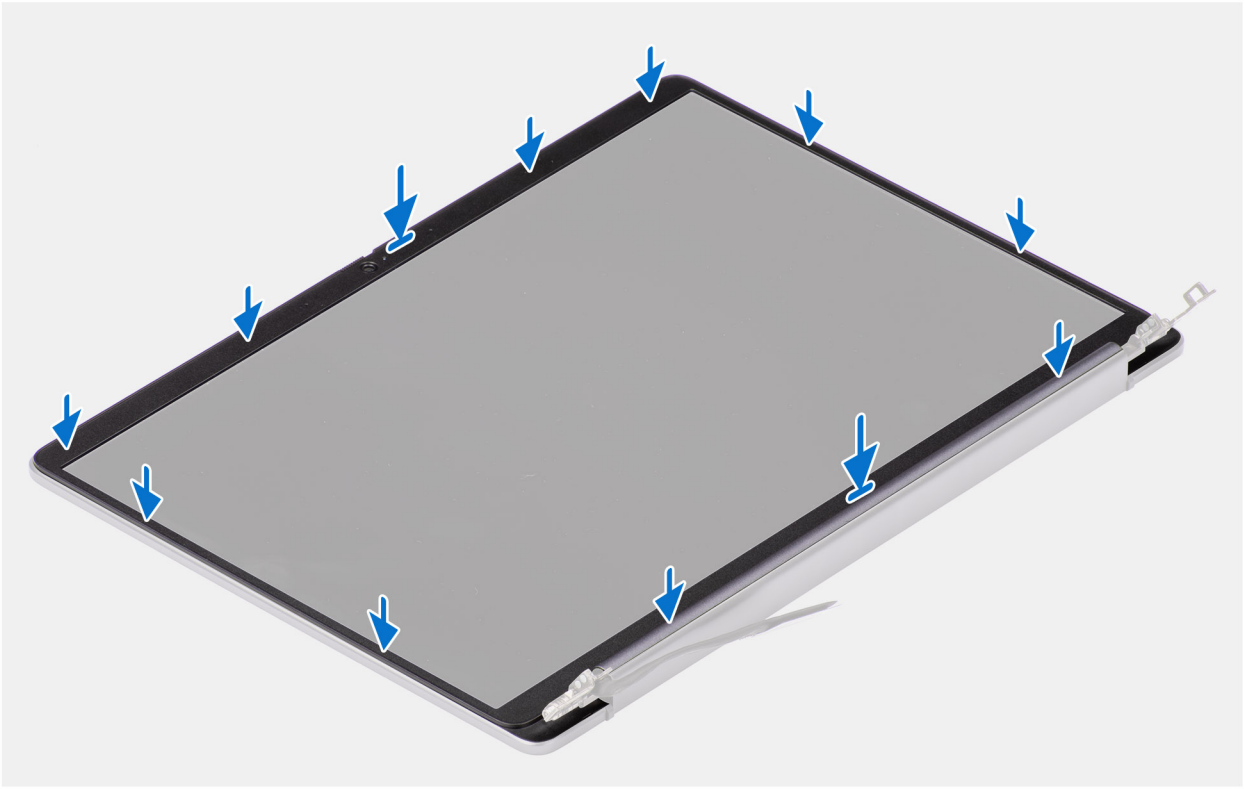
If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the location of the display bezel and provide a visual representation of the installation procedure.

**Figure 77. Installing the display bezel**





### Steps

1. Place the display assembly on a clean and flat surface.
2. Align and place the display bezel on the display assembly.
3. Starting from the bottom corner, press the display bezel and work around the entire bezel until it snaps onto the display assembly.

### Next steps

1. Install the display assembly.
2. Install the 5G WWAN card or 4G WWAN card, as applicable.
3. Install the battery.
4. Install the base cover.
5. Install the nano-SIM card tray, if applicable.

6. Follow the procedure in After working inside your computer.

# Display hinges

## Removing the display hinges

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the battery.
5. Remove the 5G WWAN card or 4G WWAN card, as applicable.
6. Remove the display assembly.
7. Remove the display bezel.

### About this task

The following images indicate the location of the display hinges and provide a visual representation of the removal procedure.

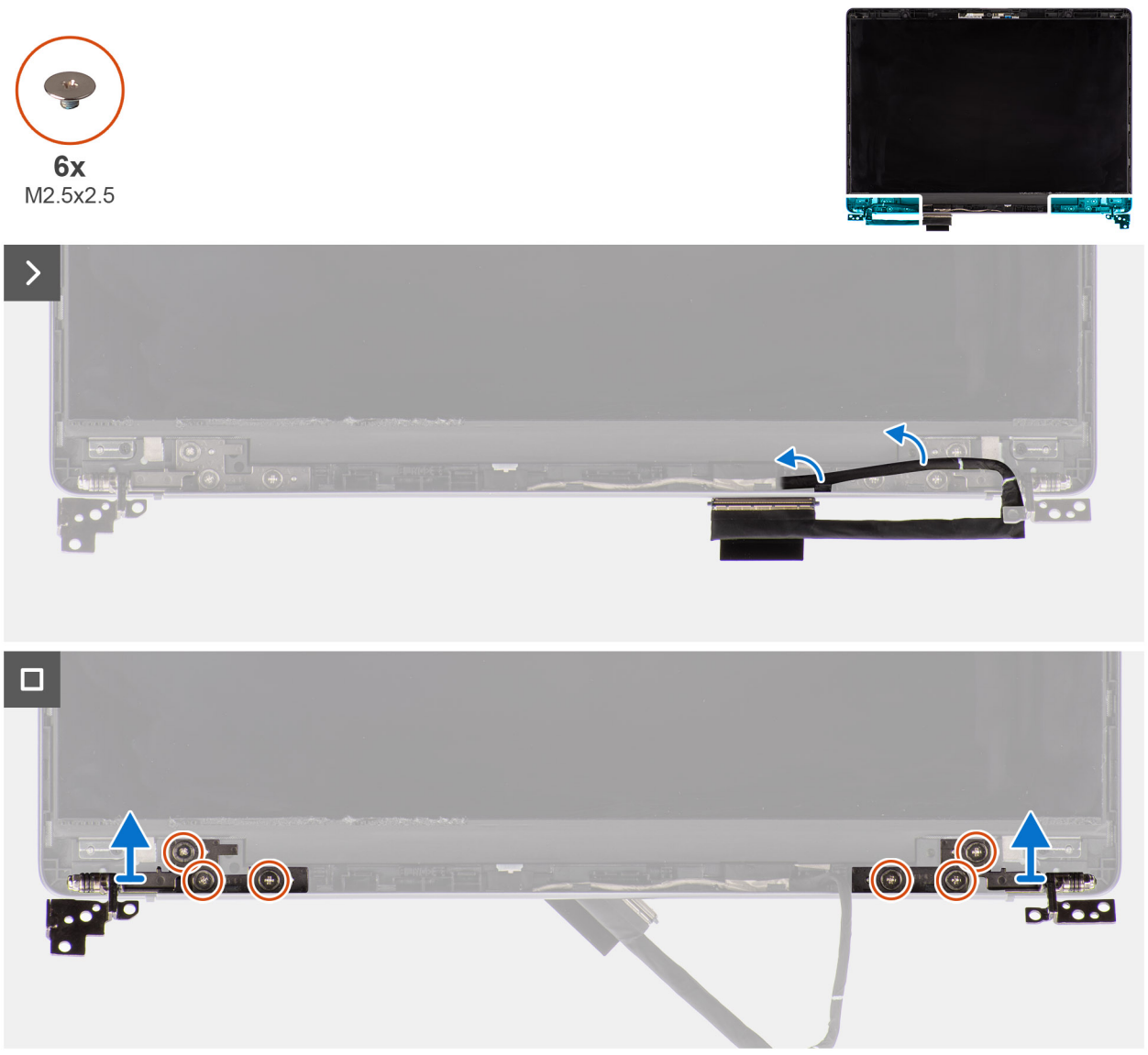



Figure 78. Removing the display hinges

### Steps

1. Remove the display and camera cable from the routing guides on the display-back cover.
2. Remove the three screws (M2.5x2.5) that secure the left display hinge to the display-back cover.
3. Lift the left display hinge off the display hinge cover.
4. Remove the three screws (M2.5x2.5) that secure the right display hinge to the display-back cover.
5. Lift the right display hinge off the display hinge cover.

## Installing the display hinges

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the location of the display hinges and provide a visual representation of the installation procedure.

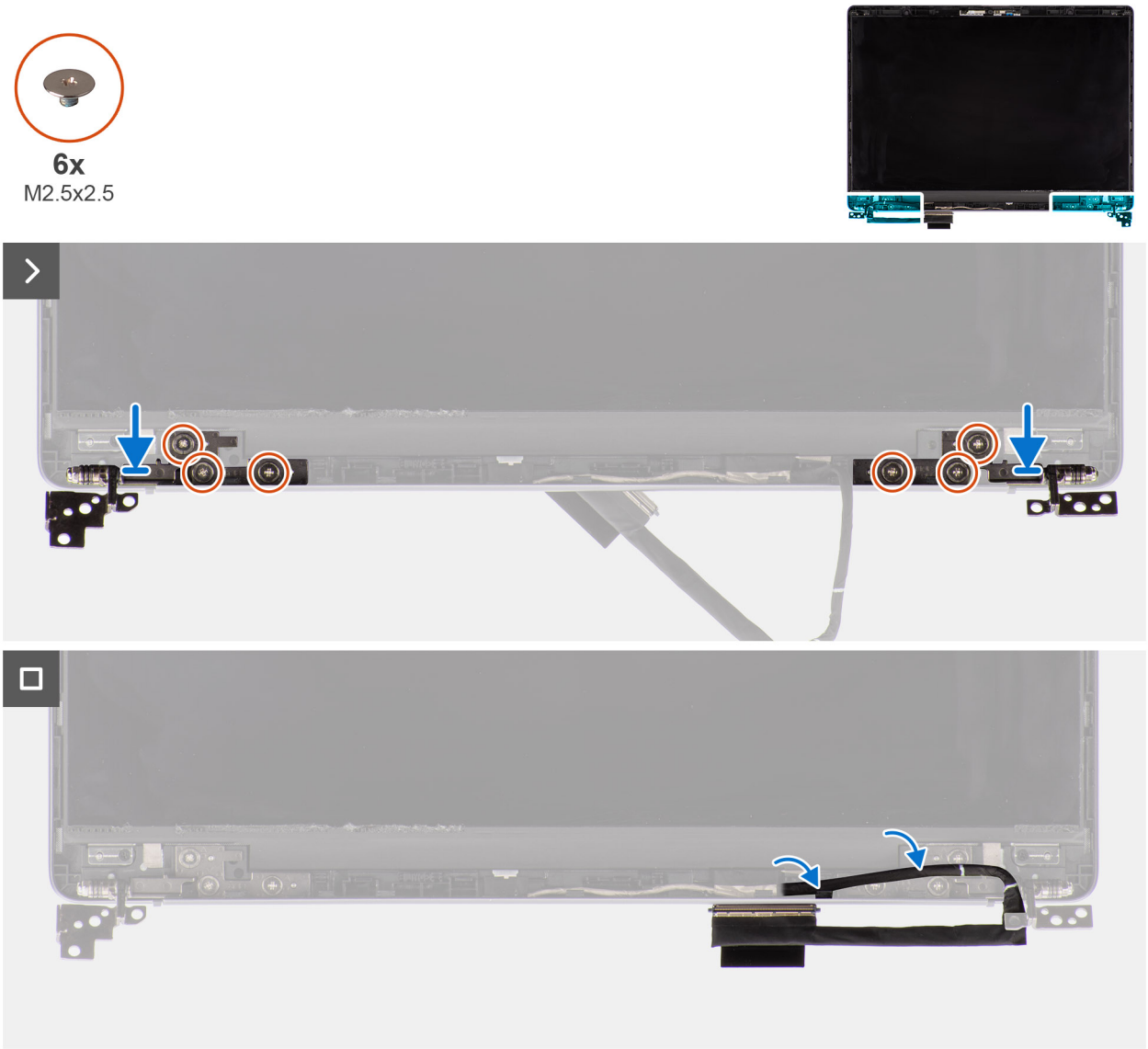



**Figure 79. Installing the display hinge**

### Steps

1. Place the left hinge on the display-back cover.

2. Using the alignment posts, align the screw holes on the left hinge with the screw holes on the back cover.
3. Replace the three screws (M2.5x2.5) that secure the left display hinge to the display-back cover.
4. Place the right hinge on the display-back cover.
5. Using the alignment posts, align the screw holes on the right hinge with the screw holes on the back cover.
6. Replace the three screws (M2.5x2.5) that secure the right display hinge to the display-back cover.
7. Route the display and camera cable through the routing guides on the display-back cover.

### Next steps

1. Install the display bezel.
2. Install the display assembly.
3. Install the 5G WWAN card or 4G WWAN card, as applicable.
4. Install the battery.
5. Install the base cover.
6. Install the nano-SIM card tray, if applicable.
7. Follow the procedure in After working inside your computer.

# Display panel

## Removing the display panel

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the battery.
5. Remove the 5G WWAN card or 4G WWAN card, as applicable.
6. Remove the display assembly.
7. Remove the display bezel.
8. Remove the display hinges.

### About this task

The following images indicate the location of the display panel and provide a visual representation of the removal procedure.




Figure 80. Removing display panel

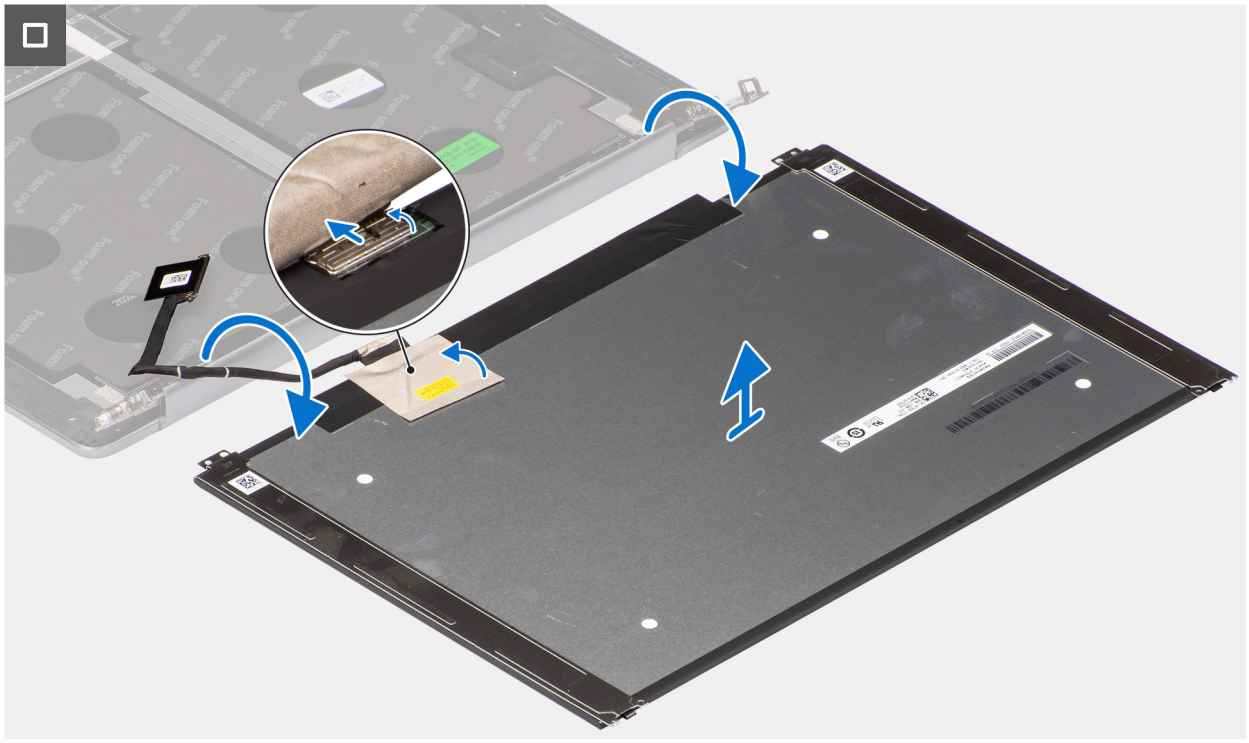


Figure 81. Removing display panel

### Steps

1. Remove the two screws (M2x2) that secure the display panel to the display-back cover.
2. Gently hold on the top side of the display panel and flip it over.
3. Peel the tape that secures the display cable to the back of the display panel.
4. Lift the latch and disconnect the display cable from its connector on the display panel.
5. Lift the display panel off the display-back cover.

**NOTE:** The display panel is assembled with the display-panel brackets as a single service part.

**CAUTION: To avoid damaging your computer, do not pull the two pieces of elastic tape and separate the brackets from the panel.**

## Installing the display panel

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the location of the display panel and provide a visual representation of the installation procedure.




Figure 82. Installing the display panel



**Figure 83. Installing the display panel**

### Steps

1. Place the display panel face down on a clean and flat surface.
2. Connect the display cable to its connector on the display panel and close the latch to secure the cable.
3. Adhere the tape that secures the display cable to the display panel.
4. Gently lift and flip over the display panel, taking care not to apply tension on the display cable.
5. Place the display panel into its slot on the display-back cover.
6. Align the screw holes on the display panel to the screw holes on the display-back cover.
7. Replace the two screws (M2x2) that secure the display panel to the display-back cover.

### Next steps

1. Install the display panel.
2. Install the display bezel.
3. Install the display assembly.
4. Install the 5G WWAN card or 4G WWAN card, as applicable.
5. Install the battery.
6. Install the base cover.
7. Install the nano-SIM card tray, if applicable.
8. Follow the procedure in After working inside your computer.

# Camera

## Removing the camera module

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the battery.
5. Remove the 5G WWAN card or 4G WWAN card, as applicable.
6. Remove the display assembly.
7. Remove the display bezel.
8. Remove the display hinges.
9. Remove the display panel.

### About this task

The following images indicate the location of the camera module and provide a visual representation of the removal procedure.

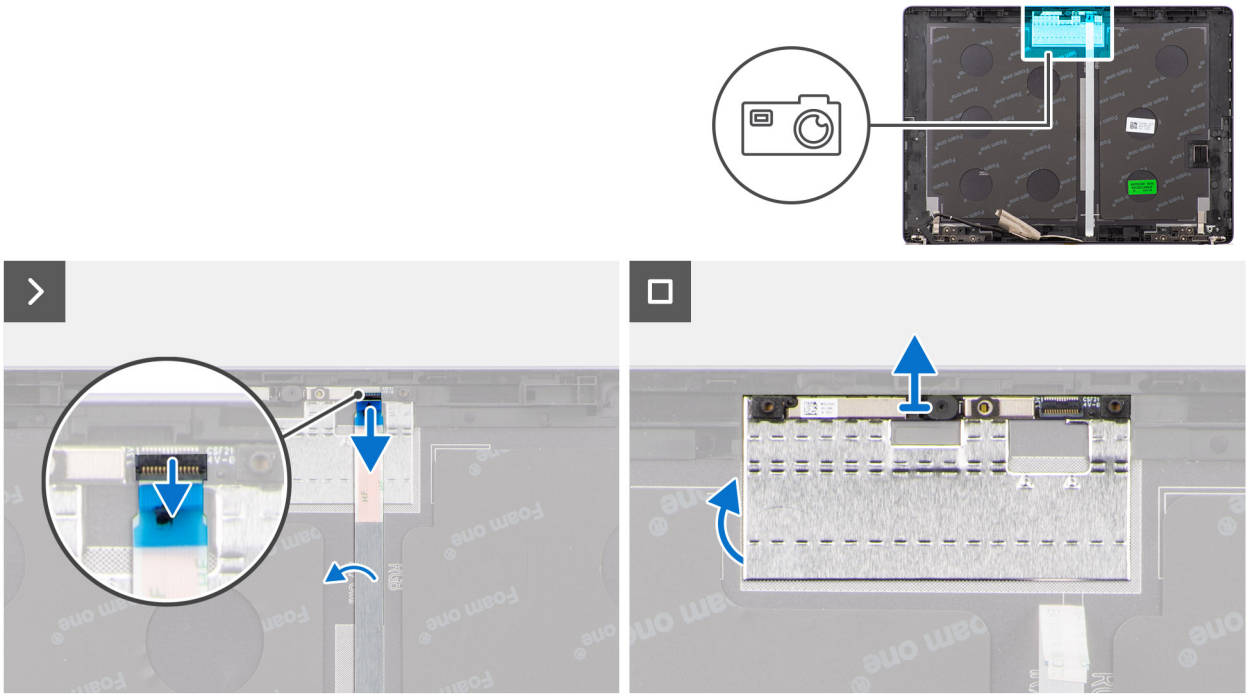


Figure 84. Removing the camera module

### Steps

1. Lift the tab to disconnect the camera cable from its connector on the camera.
2. Peel the Mylar off the display-back cover.

   **NOTE:** This step is applicable only to computers shipped with a WWAN card.

3. Peel the camera cable off the display-back cover.
4. Peel the camera off the display back cover.
5. Lift the camera off the display-back cover.

# Installing the camera module

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the location of the camera module and provide a visual representation of the installation procedure.

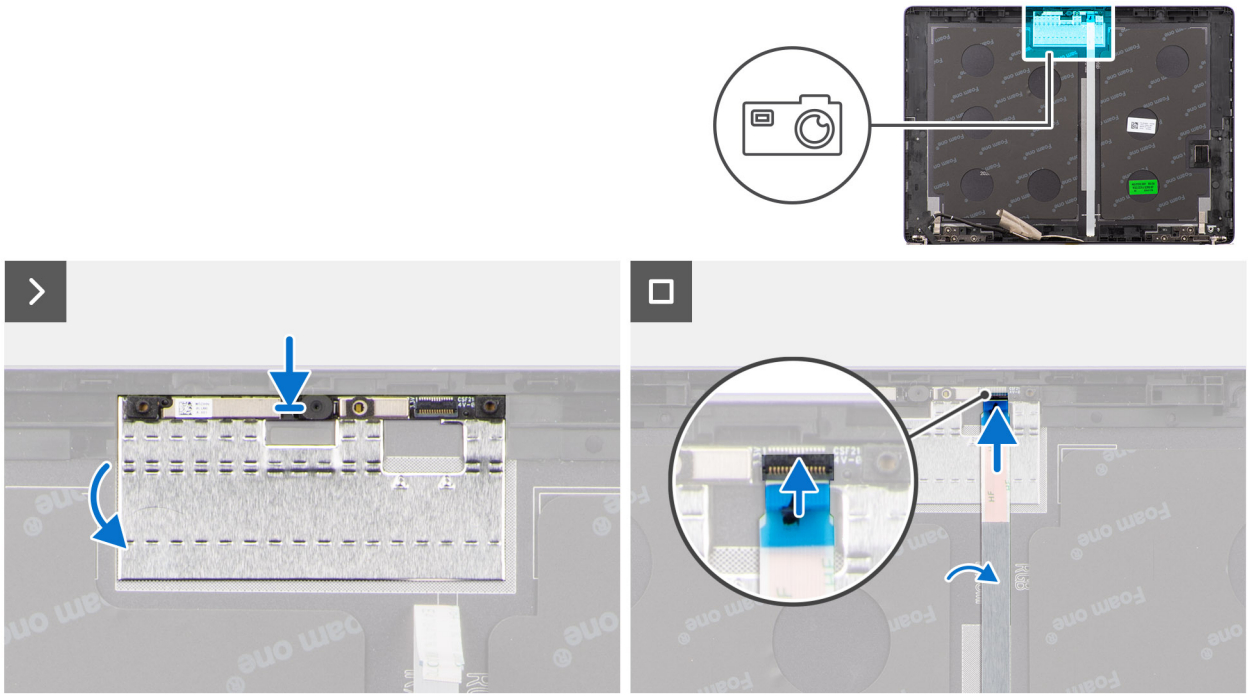


**Figure 85. Installing the camera module**

### Steps

1. Place and align the camera on the marked location on the display-back cover.
2. Press gently to adhere the camera to the display-back cover.
3. Adhere the Mylar over the display-back cover.

   **NOTE:** This step is applicable only to computers shipped with a WWAN card.

4. Connect the camera cable to its connector on the camera and press down on it to secure the cable.
5. Adhere the camera cable to the display-back cover.

### Next steps

1. Install the display panel.
2. Install the display hinges.
3. Install the display bezel.
4. Install the display assembly.
5. Install the 5G WWAN card or 4G WWAN card, as applicable.
6. Install the battery.
7. Install the base cover.
8. Install the nano-SIM card tray, if applicable.
9. Follow the procedure in After working inside your computer.

# Display cable

## Removing the display cable

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the battery.
5. Remove the 5G WWAN card or 4G WWAN card, as applicable.
6. Remove the display assembly.
7. Remove the display bezel.
8. Remove the display hinges.
9. Remove the display panel.
10. Remove the display camera.

### About this task

The following images indicate the location of the display cable and provide a visual representation of the removal procedure.

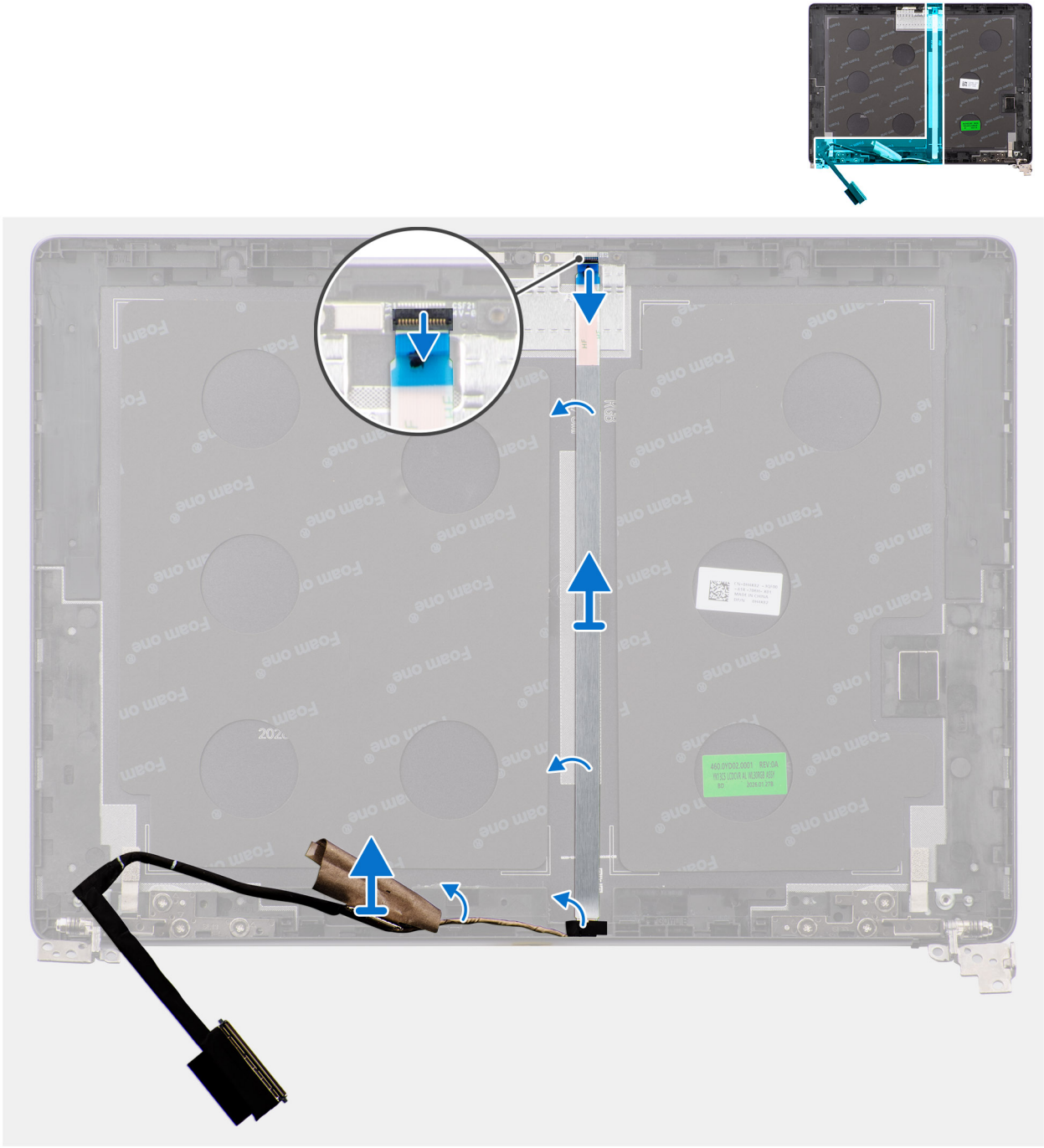


Figure 86. Removing the display cable

### Steps

1. Disconnect the camera cable from its connector on the camera.
2. Remove the display and camera cable from the routing guides on the display-back cover.
3. Peel off the display and camera cable off the display-back cover.
4. Lift the display and camera cable off the display-back cover.

## Installing the display cable

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation process.

### About this task

The following images indicate the location of the display cable and provide a visual representation of the installation procedure.

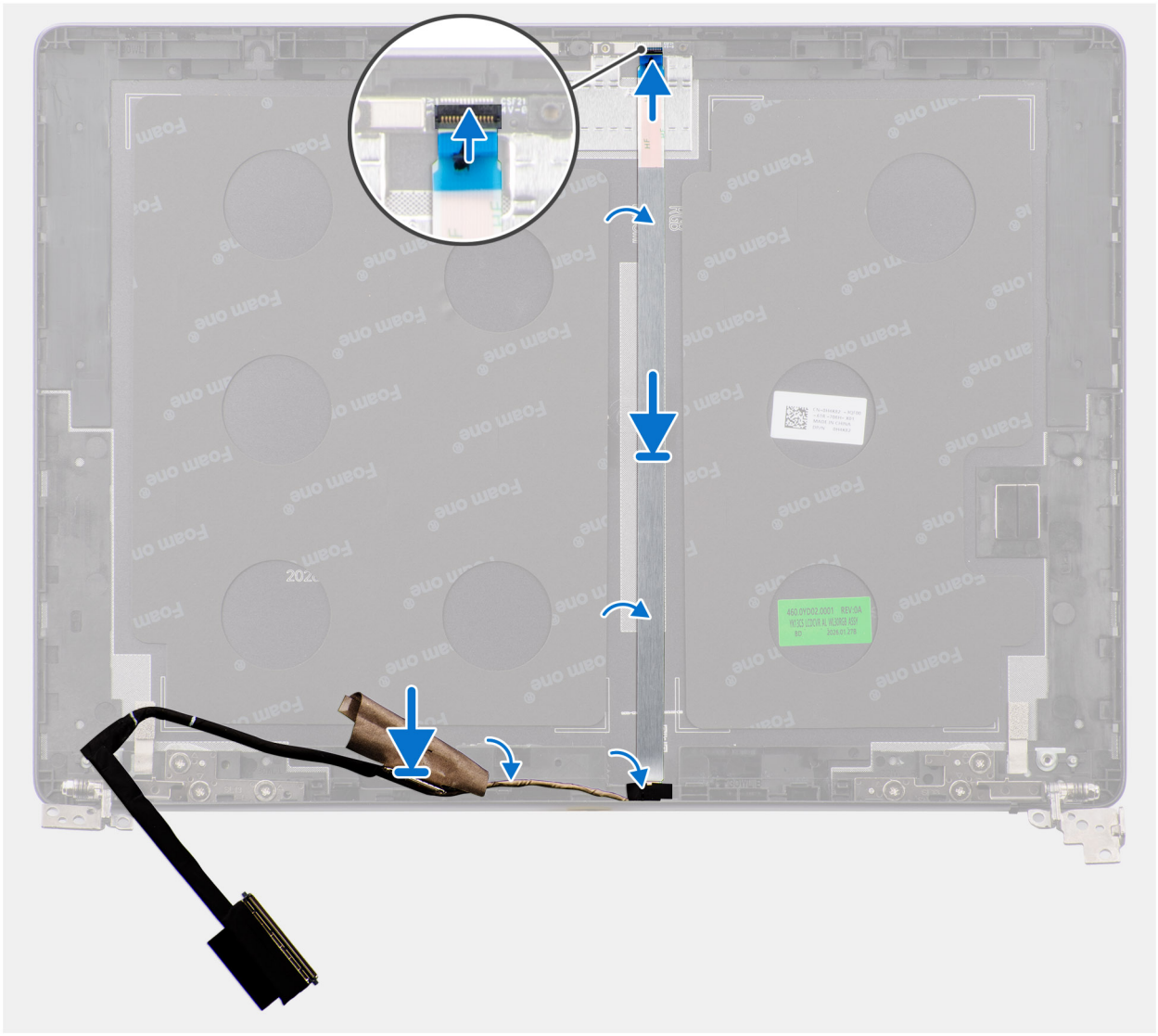


**Figure 87. Installing the display cable**

### Steps

1. Place and align the display and camera cable on the marked locations on the display-back cover.
2. Route the display and camera cable through the routing guides on the display-back cover.
3. Press down and adhere the display and camera cable to the marked locations on the display-back cover.
4. Connect the camera cable to its connector on the camera.

### Next steps

1. Install the display camera.

2. Install the display panel.
3. Install the display hinges.
4. Install the display bezel.
5. Install the display assembly.
6. Install the 5G WWAN card or 4G WWAN card, as applicable.
7. Install the battery.
8. Install the base cover.
9. Install the nano-SIM card tray, if applicable.
10. Follow the procedure in After working inside your computer.

# Display back-cover

## Removing the display back cover

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the nano-SIM card tray, if applicable.
3. Remove the base cover.
4. Remove the battery.
5. Remove the 5G WWAN card or 4G WWAN card, as applicable.
6. Remove the display assembly.
7. Remove the display bezel.
8. Remove the display hinges.
9. Remove the display panel.
10. Remove the display camera.
11. Remove the display cable.

### About this task

The following images indicate the location of the display back cover and provide a visual representation of the removal procedure.

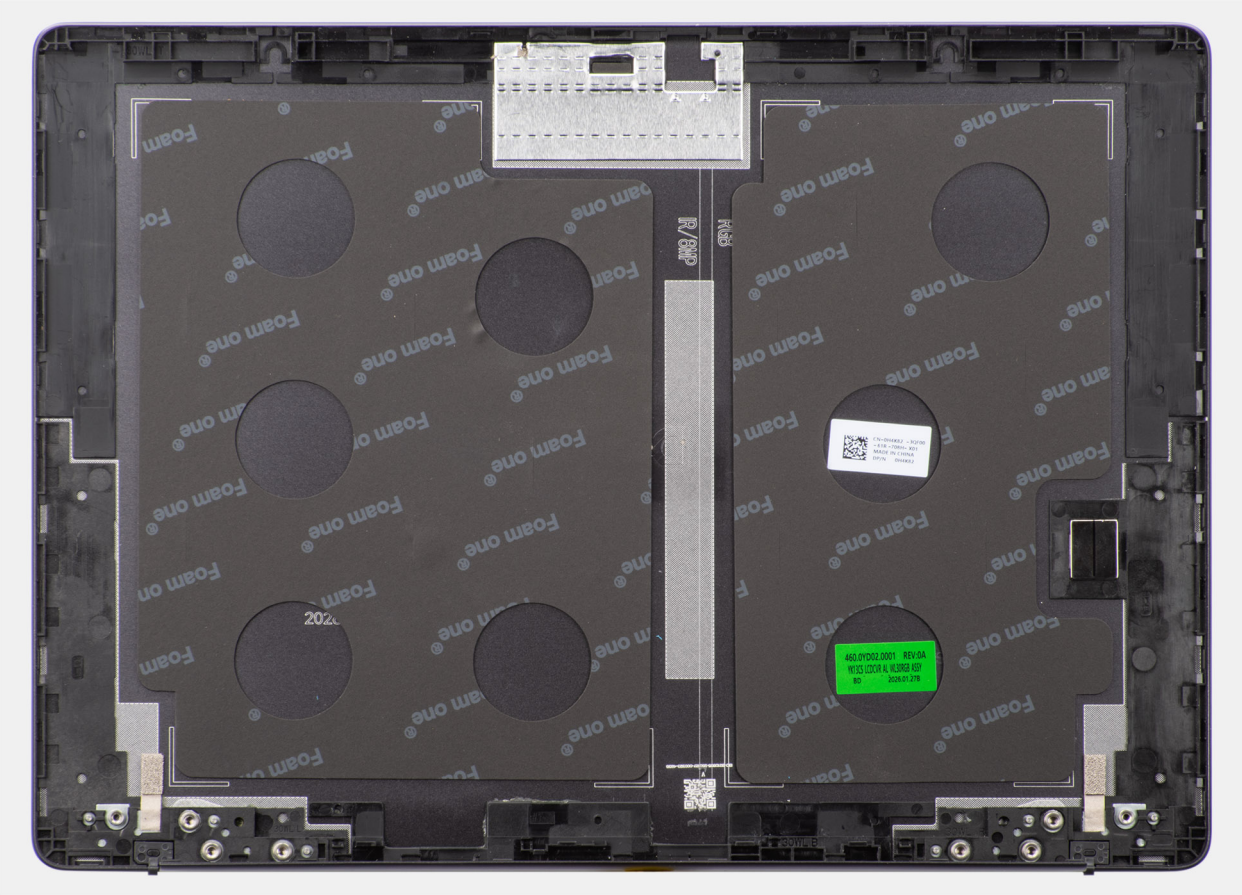


**Figure 88. Removing the display back cover**

### Steps

Remove all the components mentioned in the pre-requisites to get the display back cover.

# 4

# Software

This chapter details the supported operating systems along with instructions on how to install the drivers.

## Operating system

Your Dell Pro 7 13 P713260 supports the following operating systems:

- Windows 11 Professional
- Windows 11 Home
- Ubuntu Linux 24.04 LTS

## Drivers and downloads

When troubleshooting, downloading, or installing drivers, it is recommended that you read the Dell Knowledge Base article Drivers and Downloads FAQs.

# 5

# BIOS Setup

**CAUTION: Certain changes can make your computer work incorrectly. Before you change the settings in BIOS Setup, it is recommended that you note down the original settings for future reference.**

**NOTE:** Depending on the computer and the installed devices, the options that are listed in below may differ.

Use BIOS Setup for the following purposes:

- Get information about the hardware installed in your computer, such as the amount of RAM and the capacity of the storage device.
- Change the system configuration information.
- Set or change user-selectable options such as the user password, enabling or disabling base devices, and configuring hard drive settings.

## Entering BIOS Setup program

Turn on or restart your computer and press F2 immediately.

## Navigation keys

**NOTE:** For most of the BIOS Setup options, changes that you make are recorded but do not take effect until you restart the computer.

### Table 6. Navigation keys

| Keys | Navigation |
|---|---|
| Up arrow | Moves to the previous field. |
| Down arrow | Moves to the next field. |
| Enter | Selects a value in the selected field (if applicable) or follows the link in the field. |
| Spacebar | Expands or collapses a drop-down list, if applicable. |
| Tab | Moves to the next focus area. |
| Esc | Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restart the computer. |

## F12 One Time Boot menu

To enter the One Time Boot menu, turn on or restart your computer, and then press F12 immediately.

**NOTE:** If you are unable to enter the One Time Boot menu, repeat the above action.

The One Time Boot menu displays the devices that you can boot from and also display the options to start diagnostics. The boot menu options are:

- Removable Drive (if available)
- STXXXX Drive (if available)

**NOTE:** XXX denotes the SATA drive number.

- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

The One Time Boot menu screen also displays the option to access BIOS Setup.

# View Advanced Setup options

**About this task**

Some BIOS Setup options are only visible by enabling **Advanced Setup** mode, which is disabled by default.

**NOTE:** BIOS Setup options, including **Advanced Setup** options, are described in the **System setup options** option.

**To enable Advanced Setup:**

**Steps**

1. Enter BIOS Setup.
   The Overview menu appears.
2. Click the **Advanced Setup** option to move it to the **ON** mode.
   Advanced BIOS Setup options are displayed.

# View Service options

**About this task**

Service options are hidden by default and only visible by entering a hotkey command.

**NOTE:** Service options are described in BIOS Setup options.

**To view Service options:**

**Steps**

1. Enter BIOS Setup.
   The **Overview** menu appears.
2. Enter the hotkey combination **Ctrl + Alt + S** to view the **Service** options.
   **Service** options are displayed.

# BIOS Setup options

**NOTE:** For most of the System Setup options, changes that you make are recorded but do not take effect until you restart the computer.

**NOTE:** Depending on your computer and its installed devices, the items that are listed in this section may differ.

### Table 7. System Setup options—Overview menu

| Overview | Description |
|---|---|
| Dell Pro 7 13 P713260 | |
| BIOS Version | Displays the BIOS version number. |
| Service Tag | Displays the Service Tag of the computer. |
| Asset Tag | Displays the Asset Tag of the computer. |

### Table 7. System Setup options—Overview menu (continued)

| Overview | Description |
|---|---|
| Manufacture Date | Displays the manufacture date of the computer. |
| Ownership Date | Displays the ownership date of the computer. |
| Express Service Code | Displays the Express Service Code of the computer. |
| Ownership Tag | Displays the Ownership Tag of the computer. |
| System UUID | Displays the System UUID of the computer. |
| **BATTERY** Information | |
| Primary | Displays the primary battery of the computer. |
| Battery Level | Displays the battery level of the computer. |
| Battery State | Displays the battery state of the computer. |
| Health | Displays the battery health of the computer. |
| AC Adapter | Displays whether an AC adapter is connected. If connected, displays the type of AC adapter that is connected. |
| Battery Life Type | Displays the battery life type of the computer. |
| **PROCESSOR** Information | |
| Processor Type | Displays the processor type. |
| Maximum Clock Speed | Displays the maximum processor clock speed.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Core Count | Displays the number of cores on the processor. |
| Processor ID | Displays the processor identification code. |
| Processor L2 Cache | Displays the processor Processor L2 Cache. |
| Processor L3 Cache | Displays the processor Processor L3 Cache. |
| Microcode Version | Displays the microcode version.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Intel Hyper-Threading Capable | Displays whether the processor is Hyper-Threading (HT) capable.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Intel vPro technology | Displays the processor technology. |
| **MEMORY** Information | |
| Memory Installed | Displays the total memory installed on the computer. |
| Memory Available | Displays the total memory available on the computer. |
| Memory Speed | Displays the memory speed.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Memory Technology | Displays the technology that is used for the memory. |
| **DEVICES** Information | |
| Panel Type | Displays the type of display panel available on the computer. |
| Panel Revision | Displays the type of display revision available on the computer. |
| Privacy Screen | Displays if the computer supports privacy screen. |

### Table 7. System Setup options—Overview menu (continued)

| Overview | Description |
|---|---|
| Video Controller | Displays the type of video controller available on the computer. |
| Video Memory | Displays the video memory information of the computer. |
| Wi-Fi Device | Displays the wireless device information of the computer. |
| Native Resolution | Displays the native resolution of the computer. |
| Video BIOS Version | Displays the video BIOS version of the computer.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Audio Controller | Displays the audio controller information of the computer. |
| Bluetooth Device | Displays the Bluetooth device information of the computer. |
| Pass Through MAC Address | Displays the MAC address of the video pass-through. |

### Table 8. System Setup options—Boot Configuration menu

| Boot Configuration | |
|---|---|
| **Boot Sequence** | |
| Boot Mode: UEFI only | Displays the boot mode of the computer.<br>**NOTE:** To view this option, enable **Service** options as described in View Service options. |
| **Enable PXE Boot Priority** | Displays if the PXE boot option is avaible on the computer. |
| **UEFI Network Boot Order** | This option is used to select the IPv4 ands Plv6 option boot order. |
| Boot Sequence | Displays the boot sequence. |
| **Secure Boot** | Secure Boot is a method of guaranteeing the integrity of the boot path by performing additional validation of the operating system and PCI add-in cards. The computer stops booting to the operating system when a component is not authenticated during the boot process. Secure Boot can be enabled in BIOS setup or using management interfaces like Dell Command\|Configure, but can only be disabled from BIOS setup. |
| Enable Secure Boot | Enables the computer to boot using only validated boot software.<br>By default, this **Enable Secure Boot** option is disabled. For additional security, Dell Technologies recommends keeping the **Secure Boot** option enabled to ensure that the UEFI firmware validates the operating system during the boot process.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options.<br>**NOTE:** To enable Secure Boot, the computer must be in UEFI boot mode and the Enable Legacy Option ROMs option must be turned off. |
| Enable Microsoft UEFI CA | When disabled, the UEFI CA is removed from the BIOS UEFI Secure Boot database.<br>**CAUTION: If you disable Microsoft UEFI CA, the computer may not boot, computer graphics may not function, some devices may not function properly, and the computer could become unrecoverable.**<br>By default, the **Enable Microsoft UEFI CA** option is enabled.<br>For additional security, Dell Technologies recommends keeping the **Enable Microsoft UEFI CA** option enabled to ensure the broadest compatibility with devices and operating systems. |
| Secure Boot Mode | Enables or disables the Secure Boot operation mode. |

### Table 8. System Setup options—Boot Configuration menu (continued)

| Boot Configuration | |
|---|---|
| | By default, the **Deployed Mode** is selected. **Deployed Mode** should be selected for normal operation of Secure Boot.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Expert Key Management** | |
| Enable Custom Mode | Enables or disables the keys in the PK, KEK, db, and dbx security key databases to be modified.<br>By default, the **Enable Custom Mode** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Custom Mode Key Management | Selects the custom values for expert key management.<br>By default, the **Reset All key Delete All key** option is selected.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |

### Table 9. System Setup options—Integrated Devices menu

| Integrated Devices | |
|---|---|
| **Date/Time** | |
| Date | Sets the computer date in MM/DD/YYYY format. Changes to the date format take effect immediately. |
| Time | Sets the computer time in HH/MM/SS 24-hour format. You can select between a 12-hour or 24-hour clock. Changes to the time format take effect immediately. |
| **Camera** | |
| Enable Camera | Enables the camera.<br>By default, the **Enable Camera** option is enabled.<br>**NOTE:** Depending on the configuration ordered, the camera setup option may not be available. |
| **Audio** | |
| Enable Audio | Enables all integrated audio controller.<br>By default, all the options are enabled. |
| Enable Microphone | Enables the microphone.<br>By default, the **Enable Microphone** option is enabled.<br>**NOTE:** Depending on the configuration ordered, the microphone setup option may not be available. |
| Enable Internal Speaker | Enables the internal speaker.<br>By default, the **Enable Internal Speaker** option is enabled. |
| **USB/Thunderbolt Configuration** | |
| Enable USB Boot Support | Enables booting from USB mass storage devices that are connected to external USB ports.<br>By default, the **Enable USB Boot Support** option is enabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |

**Table 9. System Setup options—Integrated Devices menu (continued)**

| **Integrated Devices** | |
|---|---|
| Enable External USB Ports | Enables the external USB ports.<br>By default, the **Enable External USB Ports** option is enabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Enable Thunderbolt Technology Support** | |
| Enable Thunderbolt Technology Support | Enables the associated ports and adapters for Thunderbolt Technology support.<br>By default, the **Enable Thunderbolt Technology Support** option is enabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Enable Thunderbolt Boot Support** | |
| Enable Thunderbolt Boot Support | Enables the Thunderbolt adapter-peripheral device and USB devices that are connected to the Thunderbolt adapter to be used during BIOS Preboot.<br>By default, the **Enable Thunderbolt Boot Support** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Disable USB4 PCIE Tunneling** | Disables the USB4 PCIE Tunneling option.<br>By default, the **Disable USB4 PCIE Tunneling** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in Entering BIOS Setup program. |
| **Video/Power only on Type-C Ports** | Enables or disables the Type-C port functionality to video or only power.<br>By default, the **Video/Power only on Type-C Ports** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Type-C Dock** | |
| Type-C Dock Override | Enables or disables to use connected Type-C Dell Dock to provide data stream with external USB ports disabled. When Type-C Dock override is enabled, the Video/Audio/LAN submenu is activated.<br>By default, the **Type-C Dock Override** option is enabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in Entering BIOS Setup program. |
| Type-C Dock Audio | Enables or disables the usage of audio inputs and outputs from the connected Type-C Dell docking station.<br>By default, the **Type-C Dock Audio** option is enabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Type-C Dock LAN | Enables or disables the usage of LAN on the external ports of the connected Type-C Dell docking station.<br>By default, the **Type-C Dock LAN** option is enabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Miscellaneous Devices** | |

### Table 9. System Setup options—Integrated Devices menu (continued)

| Integrated Devices | |
|---|---|
| Enable Fingerprint Reader Device | Enables or disables the Fingerprint Reader Device option.<br>By default, the **Enable Fingerprint Reader Device** option is enabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Unobtrusive Mode | Enables or disables the unobtrusive mode. When enabled, all system LEDs, LCD panel backlight and audio devices of the computer are turned off.<br>By default, the **Unobtrusive Mode** option is disabled.<br>**NOTE:** On computers with collaboration touchpad, the Collaboration Touchpad is disabled when the **Unobtrusive Mode** option is enabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Dust Filter Mainteninace | This field enables or disables BIOS messages for maintianingthe optionl dust filter. |

### Table 10. System Setup options—Storage menu

| Storage | |
|---|---|
| **SATA/NVMe Operation** | |
| **Storage Interface** | Displays the information of various onboard drives. |
| Port Enablement | Enables or disables the M.2 PCIe SSD option.<br>By default, the **M.2 PCIe SSD** option is enabled. |
| Smart Reporting | Enables or disables the Smart reporting option.<br>By default, the **Smart Reporting** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Drive Information** | Displays the information of onboard drives. |

### Table 11. System Setup options—Display menu

| Display | |
|---|---|
| **Touchscreen** | Enables or disables the touch screen option.<br>By default, the **Touchscreen** option is enabled.<br>**NOTE:** Only available on computers with touch screen displays.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Full Screen Logo** | Enables or disables the computer to display full screen logo, if the image matches screen resolution.<br>By default, the **Full Screen Logo** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |

### Table 12. System Setup options—Connection menu

| Connection |
|---|
| **Wireless Device Enable** |

### Table 12. System Setup options—Connection menu (continued)

| Connection | |
|---|---|
| WLAN | Enables or disables the internal WLAN device.<br>By default, the **WLAN** option is enabled. |
| Bluetooth | Enables or disables the internal Bluetooth device.<br>By default, the **Bluetooth** option is enabled. |
| **Wireless Radio Control** | |
| Control WLAN Radio | Allows the computer to detect a wired network connection and then disable the selected wireless radios (WLAN and/or WWAN). Upon disconnection from the wired network, the selected wireless radios are re-enabled.<br>By default, the **Control WLAN Radio** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Control WWAN Radio | Enables to sense the connection of the computer to a wired network and then disables the selected WWAN radios.<br>By default, the **Control WWAN Radio** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| HTTP(s) Boot | When enabled, supports HTTP(s) boot on the client BIOS, which offers wired or wireless and HTTP/HTTPS connection options.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| HTTP(s) Boot Modes | In Auto Mode, the boot URL is obtained from the DHCP response; the boot URL specifies the HTTP Boot Server and location of the Network Boot Program (NBP) file. In Manual mode, the user enters the URL in the text box, which must start with `http://` or `https://` and end with the NBP file name.<br>By default, **Auto Mode** is selected.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| CA Certificate | Upload or delete the CA certificate.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |

### Table 13. System Setup options—Power menu

| Power | |
|---|---|
| **Battery Configuration** | Enables or disables the computer to run on battery during peak power usage hours. Use the table **Custom Charge Start** and **Custom Charge Stop**, to prevent AC power usage between certain times of each day.<br>By default, the **Adaptive** option is selected. Battery settings are adaptively optimized based on your typical battery usage pattern. |
| **Advanced Configuration** | |
| Enable Advanced Battery Charge Configuration | Enables Advanced Battery Charge Configuration from the beginning of the day to a specified work period. When enabled, Advanced Battery Charged maximizes battery health while still supporting heavy use during the work day.<br>By default, the **Enable Advanced Battery Charge Configuration** option is disabled. |

### Table 13. System Setup options—Power menu (continued)

| Power | |
|---|---|
| | **NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Peak Shift** | |
| Enable Peak Shift | Enables the computer to switch to battery power automatically during peak energy usage hours.<br>By default, the **Enable Peak Shift** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Enable USB PowerShare | Enables or disables the USB PowerShare on the computer.<br>By default, the **USB Powershare** option is disabled. |
| **Thermal Management** | Allows you to manage the fan settings to regulate processor temperature and control computer performance, noise, and thermal levels.<br>By default, the **Optimized** option is selected. |
| **USB Wake Support** | |
| Wake on Dell USB-C Dock | When enabled, connecting a Dell USB-C Dock wakes the computer from Standby, Hibernate, and Power Off.<br>By default, the **Wake on Dell USB-C Dock** option is enabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Block Sleep** | Enables or disables the computer from entering Sleep (S3) mode in the operating system.<br>By default, the **Block Sleep** option is disabled.<br>**NOTE:** When enabled, the computer does not go to Sleep, Intel Rapid Start is disabled automatically, and the operating system power option is blank if it was set to Sleep.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Lid Switch** | |
| Enable Lid Switch | Enables or disables the Lid Switch.<br>By default, the **Enable Lid Switch** option is enabled. |

### Table 14. System Setup options—Security menu

| Security | |
|---|---|
| **TPM 2.0 Security** | Trusted Platform Module (TPM) is a security device that stores computer-generated keys for encryption and features such as BitLocker, Virtual Secure Mode, remote Attestation.<br>By default, the **TPM 2.0 Security** option is enabled.<br>For additional security, Dell Technologies recommends keeping the Trusted Platform Module (TPM) enabled to allow these security technologies to fully function. |
| TPM 2.0 Security On | Enables or disables the TPM.<br>By default, the **TPM 2.0 Securty On** option is enabled. |

**Table 14. System Setup options—Security menu (continued)**

| Security | |
|---|---|
| | For additional security, Dell Technologies recommends keeping TPM enabled to allow these security technologies to fully function.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Attestation Enable | The **Attestation Enable** option controls the endorsement hierarchy of TPM. Disabling the **Attestation Enable** option prevents TPM from being used to digitally sign certificates.<br>By default, the **Attestation Enable** option is enabled.<br>For additional security, Dell Technologies recommends keeping the **Attestation Enable** option enabled.<br>**NOTE:** When disabled, this feature may cause compatibility issues or loss of functionality in some operating systems.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Key Storage Enable | The **Key Storage Enable** option controls the storage hierarchy of TPM, which is used to store digital keys. Disabling the **Key Storage Enable** option restricts the ability of TPM to store owner's data.<br>By default, the **Key Storage Enable** option is enabled.<br>For additional security, Dell Technologies recommends keeping the **Key Storage Enable** option enabled.<br>**NOTE:** When disabled, this feature may cause compatibility issues or loss of functionality in some operating systems.<br>**NOTE:** To view this option, enable **Service** options as described in View Service options. |
| SHA-256 | Enables selection of the hashing algorithm that is used by the TPM. When enabled, the BIOS and TPM use the SHA-256 hash algorithm to extend measurements into the TPM PCRs during BIOS boot. When disabled, the BIOS and TPM use the SHA-1 hash algorithm to extend measurements into the TPM PCRs during BIOS boot.<br>By default, the **SHA-256** option is enabled.<br>For additional security, Dell Technologies recommends keeping the **SHA-256** option enabled.<br>**NOTE:** To view this option, enable **Service** options as described in View Service options. |
| Clear | When enabled, the **Clear** option clears information that is stored in the TPM after exiting the system's BIOS. This option returns to the disabled state when the computer restarts.<br>By default, the **Clear** option is disabled.<br>Dell Technologies recommends enabling the **Clear** option only when TPM data is required to be cleared.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Physical Presence Interface (PPI) Bypass for Clear Commands | The PPI Bypass for Clear Commands option allows the operating system to manage certain aspects of PTT. When enabled, you are not prompted to confirm changes to the PTT configuration.<br>By default, the **PPI Bypass for Clear Commands** option is disabled. |

**Table 14. System Setup options—Security menu (continued)**

| Security | |
|---|---|
| | For additional security, Dell Technologies recommends keeping the **PPI Bypass for Clear Commands** option disabled. |
| Intel Total Memory Encryption | Enables or disables the processor's memory encryption feature.<br>By default, the **Intel Total Memory Encryption** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Chassis Intrusion** | |
| Chassis Intrusion | Enables or disables the detection of chassis intrusion events. This feature notifies the user when the base cover has been removed from the computer.<br>When set to **Enabled**, a notification is displayed on the next boot and the event is logged in the BIOS Events log.<br>When set to **Disabled**, no notification is displayed and no event is logged in the BIOS Events log.<br>When set to **On-Silent**, the event is logged in the BIOS Events log, but no notification is displayed.<br>By default, the **Chassis Intrusion Detection** option is disabled.<br>For additional security, Dell Technologies recommends keeping the **Chassis Intrusion** option enabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Block Boot Until Cleared | The **Block Boot Until Clear** option is enabled when **Chassis Intrusion** is enabled. When enabled, the computer does not boot until the chassis intrusion is cleared.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **SMM Security Mitigation** | Enables or disables additional UEFI SMM Security Mitigation protections. This option uses the Windows SMM Security Mitigations Table (WSMT) to confirm to the operating system that security best practices have been implemented by the UEFI firmware.<br>By default, the **SMM Security Mitigation** option is enabled.<br>For additional security, Dell Technologies recommends keeping the **SMM Security Mitigation** option enabled unless you have a specific application which is not compatible.<br>**NOTE:** This feature may cause compatibility issues or loss of functionality with some legacy tools and applications.<br>**NOTE:** To view this option, enable **Service** options as described in View Service options. |
| **Data Wipe on Next Boot** | |
| Start Data Wipe | Data Wipe is a secure wipe operation that deletes information from a storage device.<br>**CAUTION: The secure Data Wipe operation deletes information in a way that it cannot be reconstructed.**<br>Commands such as delete and format in the operating system may remove files from showing up in the file system. However, they can be reconstructed through forensic means as they are still represented on the physical media. Data Wipe prevents this reconstruction and the data can no longer be recovered. |

**Table 14. System Setup options—Security menu (continued)**

| Security | |
|---|---|
| | When enabled, the data wipe option provides prompts to wipe any storage devices that are connected to the computer on the next boot.<br>By default, the **Start Data Wipe** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Absolute** | Absolute Software provides various cyber security solutions, some requiring software preloaded on Dell computers and integrated into the BIOS. To use these features, you must enable the Absolute BIOS setting and contact Absolute forconfiguration and activation.<br>By default, the **Absolute** option is enabled.<br>For additional security, Dell Technologies recommends keeping the **Absolute** option enabled.<br>**WARNING: The Permanently Disabled option can only be selected once. When Permanently Disabled is selected, Absolute Persistence cannot be reenabled. No further changes to the Enable/Disable states are allowed.**<br>**NOTE:** The Enable/Disable options are unavailable while the computer is in the activated state.<br>**NOTE:** When the Absolute features are activated, the Absolute integration cannot be disabled from the BIOS Setup screen. |
| **UEFI Boot Path Security** | Enables or disables the computer to prompt the user to enter the Administrator password (if set) when booting to a UEFI boot path device from the F12 boot menu.<br>By default, the **Always Except Internal HDD** option is enabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Authenticated BIOS Interface** | Enables or disables authenticated BIOS interface. |
| **Legacy Manageability Interface Access** | Enables or disables legacy manageability interface access. |
| **Firmware Device Tamper Detection** | Allows you to control the firmware device tamper detection feature. This feature notifies the user when the firmware device is tampered. When enabled, a screen warning message is displayed on the computer and a tamper detection event is logged in the BIOS Events log. The computer fails to reboot until the event is cleared.<br>By default, the **Firmware Device Tamper Detection** option is enabled.<br>For additional security, Dell Technologies recommends keeping the **Firmware Device Tamper Detection** option enabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Clear Firmware Device Tamper Detection | Allows you to clear the events that are logged when tampering of firmware device is detected.<br>By default, the **Clear Firmware Device Tamper Detection** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Pluton Security Processor | Enables or disables Pluton Security Processor. |

### Table 15. System Setup options—Passwords menu

| Passwords | |
|---|---|
| **Administrator Password** | The Administrator Password prevents unauthorized access to the BIOS Setup options. Once the administrator password is set, the BIOS Setup options can only be modified after providing the correct password.<br>The following rules and dependencies apply to the Administrator Password -<br>● The administrator password cannot be set if computer and/or internal storage device passwords are already set.<br>● The administrator password can be used in place of the system and/or internal storage passwords.<br>● When set, the administrator password must be provided during a firmware update.<br>● Clearing the administrator password also clears the system password (if set).<br>Dell Technologies recommends using an administrator password to prevent unauthorized changes to BIOS Setup options. |
| **System Password** | The System Password prevents the computer from booting to an operating system without entering the correct password.<br>The following rules and dependencies apply when the System Password is used -<br>● The computer shuts down when idle for approximately 10 minutes at the system password prompt.<br>● The computer shuts down after three incorrect attempts to enter the system password.<br>● The computer shuts down when the **Esc** key is pressed at the **System Password** prompt.<br>● The system password is not prompted when the computer resumes from standby mode.<br>Dell Technologies recommends using the system password in situations where it is likely that a computer may be lost or stolen. |
| **M.2 PCIe SSD-0 Password** | **M.2 PCIe SSD-0 Password**<br>● The SSD password option cannot be accessed when the hard drive is disabled in the BIOS Setup.<br>● The computer shuts down when idle for approximately 10 minutes at the hard drive password prompt.<br>● The computer shuts down after three incorrect attempts to enter the SSD password and treats the SSD as not available.<br>● The SSD does not accept password unlock attempts after five incorrect attempts to enter the SSD password from the BIOS Setup. The SSD password must be reset for the new password unlock attempts.<br>● The computer treats the SSD as not available when the **Esc** key is pressed at the hard drive password prompt.<br>● The SSD password is not prompted when the computer resumes from standby mode. When the hard drive is unlocked by the user before the computer goes into standby mode, it remains unlocked after the computer resumes from standby mode.<br>● If the system and SSD passwords are set to the same value, the SSD unlocks after the correct system password is entered.<br>Dell Technologies recommends using a SSD password to protect unauthorized data access. |
| **Password Configuration** | The Password configuration page includes several options for changing the requirements of BIOS passwords. You can modify the minimum and maximum length of the passwords as well as require passwords to contain certain character classes (upper case, lower case, digit, special character).<br>When the **Lower Case Letter** option is enabled, the password requires at least one lower case letter. |

### Table 15. System Setup options—Passwords menu (continued)

| Passwords | |
|---|---|
| | When the **Upper Case Letter** option is enabled, the password requires at least one upper case letter.<br>When the **Digit** option is enabled, the password requires at least one numeric digit.<br>When the **Special Character** option is enabled, the password requires at least one special character from the set: !"#$%&'()*+,-./:;<=>?@[\]^_`{\|}~.<br>When setting **Minimum Characters** for password length, Dell Technologies recommends setting the minimum password length to at least eight characters.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Enable Master Password Lockout** | The **Master Password Lockout** option allows you to disable the Recovery Password feature. If the system, administrator, or hard drive password is forgotten, the computer becomes unusable.<br>**NOTE:** When the owner password is set, the Master Password Lockout option is not available.<br>**NOTE:** When an internal hard drive password is set, it must first be cleared before Master Password Lockout can be changed.<br>By default, the **Enable Master Password Lockout** option is disabled.<br>Dell Technologies does not recommend enabling the **Master Password Lockout** unless you have implemented your own password recovery system.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |

### Table 16. System Setup options—Update, Recovery menu

| Update, Recovery | |
|---|---|
| **BIOS Downgrade** | |
| Allow BIOS Downgrade | Allows downgrading of the system firmware to previous revisions.<br>By default, the **Allow BIOS Downgrade** option is enabled. |
| **SupportAssist OS Recovery** | Enables or disables the boot flow for SupportAssist OS Recovery tool if certain system errors occur.<br>By default, the **SupportAssist OS Recovery** option is enabled. |
| **BIOSConnect** | Enables or disables cloud service operating system recovery if the main operating system fails to boot with the number of failures equal to or greater than the value specified by the Auto OS Recovery Threshold setup option and local service operating system does not boot or is not installed.<br>By default, the **BIOSConnect** option is enabled. |
| **Dell Auto OS Recovery Threshold** | Allows the control of the automatic boot flow for the SupportAssist System Resolution Console and the Dell OS Recovery Tool.<br>By default, the **Dell Auto OS Recovery Threshold** value is set to **2**.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |

### Table 17. System Setup options—System Management menu

| System Management | |
|---|---|
| **Service Tag** | Displays the Service Tag of the computer. |

### Table 17. System Setup options—System Management menu (continued)

| System Management | |
|---|---|
| **Asset Tag** | Creates a computer Asset Tag that an IT administrator can use to uniquely identify a particular computer.<br>**NOTE:** Once set in the BIOS, the Asset Tag cannot be changed. |
| **Wake on AC** | Enables or disables the computer to turn on and go to boot when AC power is supplied to the computer.<br>By default, the **Wake on AC** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Wake on LAN** | Enables or disables the computer to turn on by a special LAN signal.<br>By default, the **Wake on LAN** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Auto On Time** | Enable to set the computer to turn on automatically every day or on a preselected date and time. This option can be configured only if the Auto On Time is set to Everyday, Weekdays, or Selected Days.<br>By default, the **Auto On Time** option is disabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |

### Table 18. System Setup options—Keyboard menu

| Keyboard | |
|---|---|
| **Fn Lock Options** | Enables or disables the Fn Lock option.<br>By default, the **Fn Lock** option is enabled. |
| **Lock Mode** | By default, the **Lock Mode Secondary** option is enabled. With this option, the F1-F12 keys scan the code for their secondary functions. |
| **Keyboard Backlight Timeout on Battery** | Sets the timeout value for the keyboard backlight when the computer is running only on the battery power. The keyboard backlight timeout value is only effective when the backlight is enabled.<br>By default, the **10 seconds** option is selected.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Device Configuration HotKey Access** | Allows you to control whether you can access device configuration screens through hotkeys during system startup.<br>By default, the **Device Configuration HotKey Access** option is enabled.<br>**NOTE:** This setting controls only the Intel RAID (CTRL+I), MEBX (CTRL+P), and LSI RAID (CTRL+C) Option ROMs. Other preboot Option ROMs, which support entry using a key sequence, are not affected by this setting.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |

### Table 19. System Setup options—Pre-boot Behavior menu

| Pre-boot Behavior |
|---|
| **Adapter Warnings** |

### Table 19. System Setup options—Pre-boot Behavior menu (continued)

| Pre-boot Behavior | |
|---|---|
| Enable Adaptor Warning | Enables the warning messages during boot when the adapters with less power capacity are detected.<br>By default, the **Enable Adaptor Warning Messages** option is enabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Warnings and Errors** | Enables or disables the action to be taken when a warning or error is encountered.<br>By default, the **Prompt on Warnings and Errors** option is selected.<br>**NOTE:** Errors deemed critical to the operation of the computer hardware stop the functioning of the computer.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Extend BIOS POST Time** | Sets the BIOS POST (Power-On Self-Test) load time.<br>By default, the **0 seconds** option is selected.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **MAC Address Pass-Through** | Replaces the external NIC MAC address (in a supported dock or dongle) with the selected MAC address from the computer.<br>By default, the **System Unique MAC Address** option is selected. |
| Show Ownership Tag with Logo | Displays the Ownership Tag with Logo. |
| Unsupported hardware warning | Enables or disables the Unsupported hardware warning. |

### Table 20. System Setup options—Virtualization menu

| Virtualization Support | |
|---|---|
| **DMA Protection** | |
| Enable Pre-Boot DMA Support | Allows you to control the Pre-Boot DMA protection for both internal and external ports. This option does not directly enable DMA protection in the operating system.<br>**NOTE:** This option is not available when the virtualization setting for IOMMU is disabled (VT-d/AMD Vi).<br>By default, the **Enable Pre-Boot DMA Support** option is enabled.<br>For additional security, Dell Technologies recommends keeping the **Enable Pre-Boot DMA Support** option enabled.<br>**NOTE:** This option is provided only for compatibility purposes, since some older hardware is not DMA capable.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Enable OS Kernel DMA Support | Allows you to control the Kernel DMA protection for both internal and external ports. This option does not directly enable DMA protection in the operating system. For operating systems that support DMA protection, this setting indicates to the operating system that the BIOS supports the feature.<br>**NOTE:** This option is not available when the virtualization setting for IOMMU is disabled (VT-d/AMD Vi).<br>By default, the **Enable OS Kernel DMA Support** option is enabled. |

### Table 20. System Setup options—Virtualization menu (continued)

| Virtualization Support | |
|---|---|
| | **NOTE:** This option is provided only for compatibility purposes, since some older hardware is not DMA capable.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| Internal Port DMA Compatibility Mode | When enabled, BIOS will notify the OS that the internal ports are not AMD compatible. |

### Table 21. System Setup options—Performance menu

| Performance | |
|---|---|
| **Intel SpeedStep** | |
| Enable Intel SpeedStep Technology | Enables the computer to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production.<br>By default, the **Enable Intel SpeedStep Technology** option is enabled.<br>**NOTE:** To view this option, enable **Service** options as described in View Service options. |
| **PCIe Resizeable Base Address Register (BAR)** | |
| Enable C-State Control | Enables or disables the PCIe Resizeable Base Address Register (BAR)<br>By default, the **PCIe Resizeable Base Address Register (BAR)** option is enabled.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |

### Table 22. System Setup options—System Logs menu

| System Logs | |
|---|---|
| **BIOS Event Log** | |
| Clear BIOS Event Log | Select the option to keep or clear BIOS events logs.<br>By default, the **Keep Log** option is selected.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Thermal Event Log** | |
| Clear Thermal Event Log | Select the option to keep or clear thermal events logs.<br>By default, the **Keep Log** option is selected.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |
| **Power Event Log** | |
| Clear Power Event Log | Select the option to keep or clear power events logs.<br>By default, the **Keep Log** option is selected.<br>**NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. |

# Updating the BIOS

## Updating the BIOS in Windows

**About this task**

**CAUTION: If BitLocker is not suspended before updating the BIOS, the BitLocker key is not recognized the next time you reboot the computer. You will then be prompted to enter the recovery key to proceed, and the computer displays a prompt for the recovery key on each reboot. Failure to provide the recovery key can result in data loss or an operating system reinstall. For more information, refer Updating the BIOS on Dell systems with BitLocker enabled.**

**CAUTION: Do not turn off the computer during the BIOS flash update process. The computer may not boot if you turn off your computer.**

**Steps**

1. Go to Dell Support Site.
2. Go to **Identify your product or ask support**. In the box, enter the product identifier, model, service request or describe what you are looking for, and then click **Search**.

   **NOTE:** If you do not have the Service Tag, click **Detect This PC**. The site automatically detects your device, and you can then click **Explore Product Support** to go to the support page for your device. You can also use the product ID or manually browse for your computer model.

3. Click **Drivers & Downloads**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, navigate to the folder where the BIOS update file has been saved.
8. Double-click the BIOS update file and follow the on-screen instructions.

   For more information, search Dell Support Site.

## Updating the BIOS using the USB drive in Windows

**About this task**

**CAUTION: If BitLocker is not suspended before updating the BIOS, the BitLocker key is not recognized the next time you reboot the computer. You will then be prompted to enter the recovery key to proceed, and the computer displays a prompt for the recovery key on each reboot. Failure to provide the recovery key can result in data loss or an operating system reinstall. For more information, refer Updating the BIOS on Dell systems with BitLocker enabled.**

**CAUTION: Do not turn off the computer during the BIOS flash update process. The computer may not boot if you turn off your computer.**

**Steps**

1. Go to Dell Support Site.
2. Go to **Identify your product or ask support**. In the box, enter the product identifier, model, service request or describe what you are looking for, and then click **Search**.

   **NOTE:** If you do not have the Service Tag, click **Detect This PC**. The site automatically detects your device, and you can then click **Explore Product Support** to go to the support page for your device. You can also use the product ID or manually browse for your computer model.

3. Click **Drivers & Downloads**.

4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. Create a bootable USB drive. For more information, search Dell Support Site.
8. Copy the BIOS setup program file to the bootable USB drive.
9. Connect the bootable USB drive to the computer that needs the BIOS update.
10. Restart the computer and press **F12**.
11. Select the USB drive from the **One Time Boot Menu**.
12. Type the BIOS setup program filename and press **Enter**.
    The **BIOS Update Utility** appears.
13. Follow the on-screen instructions to complete the BIOS update.

## Updating the BIOS from the One-Time boot menu

To update the BIOS from the One-Time boot menu, see Updating the BIOS from the One Time Boot Menu at Dell Support Site.

## Updating the BIOS in Linux and Ubuntu

To update the system BIOS on a computer that is installed with Linux or Ubuntu, see How to Update the Dell BIOS in the Ubuntu or Linux Environment at Dell Support Site.

# System and setup password

**CAUTION: The password features provide a basic level of security for the data on your computer.**

**CAUTION: Ensure that your computer is locked when it is not in use. Anyone can access the data that is stored on your computer, when left unattended.**

### Table 23. System and setup password

| Password type | Description |
|---|---|
| System password | Password that you must enter to boot to your operating system. |
| Setup password | Password that you must enter to access and change the BIOS settings of your computer. |

You can create a system password and a setup password to secure your computer.

**NOTE:** The System and setup password feature is disabled by default.

## Assigning a System Setup password

### Prerequisites

You can assign a new System or Admin Password only when the status is set to **Not Set**. To enter BIOS System Setup, press F2 immediately after a power-on or reboot.

### Steps

1. To enter the **System Setup**, press **F2** immediately after a power-on or reboot.
2. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
   The **Security** screen is displayed.
3. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to create the system password:

- Password can be up to 32 characters.
- Password must contain at least one special character: "( ! " # $ % & ' * + , - . / : ; < = > ? @ [ \ ] ^ _ ` { | } )"
- The password can contain numbers from 0 to 9.
- The password can contain alphabets A to Z and a to z.

4. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
5. Press Y to save the changes.
   The computer restarts.

## Deleting or changing an existing system password or setup password

### Prerequisites

Ensure that the **Password Status** is Unlocked in the System Setup before attempting to delete or change the existing system password and/or setup password. You cannot delete or change an existing system password or setup password if the **Password Status** is Locked. To enter the System Setup, press F2 immediately after a power-on or reboot.

### Steps

1. To enter the **System Setup**, press **F2** immediately after a power-on or reboot.
2. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
   The **System Security** screen is displayed.
3. In the **System Security** screen, verify that the **Password Status** is Unlocked.
4. Select **System Password**. Update or delete the existing system password, and press Enter or Tab.
5. Select **Setup Password**. Update or delete the existing setup password, and press Enter or Tab.

   **NOTE:** If you change the system password and/or setup password, reenter the new password when prompted. If you delete the system password and/or setup password, confirm the deletion when prompted.

6. Press Esc. A message prompts you to save the changes.
7. Press Y to save the changes and exit from **System Setup**.
   The computer restarts.

# Clearing system and setup passwords

### About this task

To clear the system or setup passwords, contact Dell technical support as described at Contact Support.

**NOTE:** For information about how to reset Windows or application passwords, see the documentation accompanying Windows or your application.

# 6

# Troubleshooting

## Handling swollen rechargeable Li-ion batteries

Like most laptops, Dell laptops use Lithium-ion batteries. One type of Lithium-ion battery is the rechargeable Li-ion battery. Rechargeable Li-ion batteries have increased in popularity in recent years and have become a standard in the electronics industry due to customer preferences for a slim form factor (especially with newer ultra-thin laptops) and long battery life. Inherent to rechargeable Li-ion battery technology is the potential for swelling of the battery cells.

A swollen battery may impact the performance of the laptop. To prevent possible further damage to the device enclosure or internal components leading to malfunction, discontinue the use of the laptop and discharge it by disconnecting the AC adapter and letting the battery drain.

Swollen batteries should not be used and must be replaced and disposed of properly. We recommend contacting Dell Support for options to replace a swollen battery under the terms of the applicable warranty or service contract, including options for replacement by a Dell authorized service technician.

The guidelines for handling and replacing rechargeable Li-ion batteries are as follows:

- Exercise caution when handling rechargeable Li-ion batteries.
- Discharge the battery before removing it from the laptop. To discharge the battery, unplug the AC adapter from the computer and operate the computer only on battery power. The battery is fully discharged when the computer no longer turns on when the power button is pressed.
- Do not crush, drop, mutilate, or penetrate the battery with foreign objects.
- Do not expose the battery to high temperatures, or disassemble battery packs and cells.
- Do not apply pressure to the surface of the battery.
- Do not bend the battery.
- Do not use tools of any type to pry on or against the battery.
- If a battery gets stuck in a device as a result of swelling, do not try to free it as puncturing, bending, or crushing a battery can be dangerous.
- Do not attempt to reassemble a damaged or swollen battery into a laptop.
- Swollen batteries that are covered under warranty should be returned to Dell in an approved shipping container (provided by Dell)—this is to comply with transportation regulations. Swollen batteries that are not covered under warranty should be disposed of at an approved recycling center. Contact Dell Support at Dell Support Site for assistance and further instructions.
- Using a non-Dell or incompatible battery may increase the risk of fire or explosion. Replace the battery only with a compatible battery purchased from Dell that is designed to work with your Dell computer. Do not use a battery from other computers with your computer. Always purchase genuine batteries from Dell Site or otherwise directly from Dell.

Rechargeable Li-ion batteries can swell for various reasons such as age, number of charge cycles, or exposure to high heat. For more information about how to improve the performance and lifespan of the laptop battery and to minimize the possibility of occurrence of the issue, search Dell laptop battery at Dell Support Site.

## Quick charge support on power adapters with detachable Type-C cables

For some Dell power adapters, there is a detachable Type-C cable that connects the power adapter to your computer. To ensure that Quick Charge is supported, the Type-C cable must be able to support a current higher than 3 A.

When the computer is connected to an adapter and turned on, it takes up to three seconds to detect the adapter. When the Type-C cable does not support Quick Charge, the power-adapter LED light flashes for about five seconds before resuming operation.

**NOTE:** Dell Power adapters are always shipped with a Type-C cable that supports Quick Charge. When using third-party cables, check and ensure that Quick Charge is supported by observing the LED light behavior of the power adapter.

# Dell SupportAssist Pre-boot System Performance Check diagnostics

**About this task**

SupportAssist diagnostics (also known as system diagnostics) performs a complete check of your hardware. The Dell SupportAssist Pre-boot System Performance Check diagnostics is embedded within the BIOS and launched by the BIOS internally. The embedded system diagnostics provides options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode.
- Repeat the tests.
- Display or save test results.
- Run thorough tests to add more options and obtain details about any failed devices.
- View status messages that inform you when the tests are completed successfully.
- View error messages that inform you of problems encountered during testing.

**NOTE:** Some tests for specific devices require user interaction. Always ensure that you are present at the computer when the diagnostic tests are performed.

For more information, see How to Run Dell Preboot Diagnostics and Hardware Tests on Your Dell Computer.

## Running the SupportAssist Pre-Boot System Performance Check

**Steps**

1. Turn on your computer.
2. As the computer boots, press the F12 key.
3. On the boot menu screen, select **Diagnostics**.
   The quick diagnostic test begins.
   **NOTE:** For more information about running the SupportAssist Pre-Boot System Performance Check on a specific device, see Dell Support Site.
4. If there are any issues, error codes are displayed.
   Note the error code and validation number and contact Dell.

# Built-in self-test (BIST)

## Motherboard Built-In Self-Test (M-BIST)

M-BIST is the system board onboard self-test diagnostics tool that improves the diagnostics accuracy of system board Embedded Controller (EC) failures.

**NOTE:** M-BIST can be manually initiated before Power On Self-Test (POST).

### How to run M-BIST

**NOTE:** Before initiating M-BIST, ensure that the computer is in a power-off state.

1. Press and hold both the **M** key and the power button to initiate M-BIST.
2. The battery-status light may exhibit two states:
   - Off: No fault was detected.
   - Amber and White: Indicates a problem with the system board.
3. If there is a failure with the system board, the battery-status light flashes one of the following error codes for 30 seconds:

### Table 24. LED error codes

| Blinking Pattern | | Possible Problem |
|---|---|---|
| **Amber** | **White** | |
| 2 | 1 | Processor Failure |
| 2 | 8 | LCD Power rail failure |
| 1 | 1 | TPM detection failure |
| 2 | 4 | Memory/RAM failure |

4. If there is no failure with the system board, the LCD cycles through the solid color screens (that are described in the LCD-BIST) for 30 seconds and then turn off.

# Enhanced LCD Built-in Self-Test (LCD-BIST)

Dell laptops have a built-in diagnostic tool that helps you determine if the screen abnormality you are experiencing is an inherent problem with the LCD (display panel) of the Dell laptop or with the video card (GPU) and computer settings.

When you notice screen abnormalities like cracks, flickering, distortion, clarity issues, fuzzy or blurry image, horizontal or vertical lines, color fade, it is always a good practice to isolate the LCD (screen) by running the LCD-BIST.

## How to invoke the LCD-BIST

1. Turn off your computer.
2. Disconnect any peripherals that are connected to the computer.
3. Connect the AC adapter (charger) to the computer.
4. Ensure that the LCD screen is clean (no dust particles on the surface of the screen).
5. Press and hold the **D** key and press the power button to enter LCD Built-In Self-Test (BIST) mode. Continue to hold the **D** key until the computer boots up.
6. The screen displays solid colors and changes colors on the entire screen to white, black, red, green, and blue twice.

   **NOTE:** Refer to table below for diagnosis.

7. The screen will then display the colours in the following order of white, black and red. Carefully inspect the screen for abnormalities (any lines, fuzzy color, or distortion on the screen).
8. At the end of the last solid color (red), the computer shuts down.

### Table 25. Enhanced LCD BIST behavior table

| Diagnostic Event | Problem description |
|---|---|
| Enhanced LCD BIST displays white and black.<br>The system's Power/Battery LED alternates between White and Off for approximately 25 seconds<br>**NOTE:** The LCD Screen will attempt to alternate between Black (OFF) and White. However, when panels are damaged, they may show various colors, lines, or distortions. On systems with updated BIOS that supports **Enhanced LCD BIST Crack Glass diagnostics**, the Power/Battery LED can be used to determine if damage has occurred. The screen can be used to visually check for damage. | Potential cracked LCD panel / glass.<br>**NOTE:** In some cases, the screen can be damaged or cracked underneath the LCD Bezel. In this scenario the crack may not be visible in the viewable area |
| LCD BIST displays white, black, red, green and blue but with display anomalies and visible crack present. | Potential cracked LCD panel / glass. |
| LCD BIST displays white, black, red, green and blue | LCD panel passed |

**NOTE:** Dell SupportAssist Preboot diagnostics upon launch initiates an LCD-BIST first, expecting a user intervention to confirm functionality of the LCD.

## Logic Built-in Self-test (L-BIST)

L-BIST is an enhancement to the single LED error code diagnostics and is automatically initiated during POST. L-BIST will check the LCD power rail. If there is no power being supplied to the LCD (that is if the L-BIST circuit fails), the battery status LED flashes either an error code [2,8] or an error code [2,7].

**NOTE:** If L-BIST fails, LCD-BIST cannot function as no power will be supplied to the LCD.

### How to invoke the L-BIST

1. Turn on your computer.
2. If the computer does not start up look at the battery status LED:
   - If the battery status LED flashes an error code [2,7], the display cable may not be connected properly.
   - If the battery status LED flashes an error code [2,8], there is a failure on the LCD power rail of the system board, hence there is no power that is supplied to the LCD.
3. For cases, when a [2,7] error code is shown, check to see if the display cable is properly connected.
4. For cases when a [2,8] error code is shown, replace the system board.

# System-diagnostic lights

This section lists the system-diagnostic lights of your Dell Pro 7 13 P713260.

The following table shows different Service LED blinking patterns and associated problems. The diagnostic light codes consist of a two-digit number, and the digits are separated by a comma. The number stands for a blinking pattern; the first digit shows the number of blinks in amber color, and the second digit shows the number of blinks in white color. The Service LED blinks in the following manner:

- The Service LED blinks the number of times equal to the value of the first digit and turns off with a short pause.
- After that, the Service LED blinks the number of times equal to the value of the second digit.
- The Service LED turns off again with a longer pause.
- After the second pause, the blinking pattern will be repeated.

**Table 26. Diagnostic light codes**

| Diagnostic light codes (Amber, White) | Problem description |
|---|---|
| 1,1 | TPM Detection Failure |
| 1,2 | Unrecoverable SPI Flash Failure |
| 1,3 | The camera-cable overcurrent protection (OCP1) was triggered. The camera module along with its cable may be damaged. |
| 1,4 | The hinge-cable overcurrent protection (OCP) was triggered. The hinge cable may be damaged. |
| 1,5 | EC unable to program i-Fuse |
| 1,6 | Generic catch-all for ungraceful EC code flow errors |
| 1,7 | Non-RPMC Flash on Boot Guard fused system |
| 1,8 | Chipset “Catastrophic Error” signal has tripped |
| 2,1 | CPU configuration or CPU failure |
| 2,2 | System board: BIOS or Read-Only Memory (ROM) failure |
| 2,3 | No memory, or Random-Access Memory (RAM) detected |
| 2,4 | Memory, or Random-Access Memory (RAM) failure |

**Table 26. Diagnostic light codes (continued)**

| Diagnostic light codes (Amber, White) | Problem description |
|---|---|
| 2,5 | Invalid memory module |
| 2,6 | System board/Chipset Error |
| 2,7 | LCD failure SBIOS message |
| 2,8 | Display power-rail failure on the system board |
| 3,1 | CMOS battery failure |
| 3,2 | PCI of Video card/chip failure |
| 3,3 | Recovery image not found |
| 3,4 | Recovery image found but invalid |
| 3,5 | EC power-rail error |
| 3,6 | Flash corruption detected by SBIOS |
| 3,7 | Timeout waiting on ME to reply to HECI message |
| 4,1 | Memory DIMM power rail failure |
| 4,2 | CPU Power cable connection issue |
| 4,4 | Power rail failure at system board side |
| 4,5 | LCD Panel Failure and Power rail failure at system board side. |
| 5,3 | I/O board is not detected, or I/O ports are not functioning properly. |
| 6,1 | The power adapter is not detected, and the battery-charge level is at 2% or less |
| 6,2 | The Dell power adapter is underpowered and unable to power up the computer |
| 6,3 | The non-Dell power adapter is underpowered and unable to power up the computer |

# Recovering the operating system

When your computer is unable to boot to the operating system even after repeated attempts, it automatically starts Dell SupportAssist OS Recovery.

Dell SupportAssist OS Recovery is a standalone tool that is preinstalled on Dell computers running the Windows operating system. It consists of tools to diagnose and troubleshoot issues that may occur before your computer boots to the operating system. It enables you to diagnose hardware issues, repair your computer, back up your files, and restore your computer to its factory state.

You can also download it from the Dell Support website to troubleshoot and fix your computer when it fails to boot into the primary operating system due to software or hardware failures.

For more information about the Dell SupportAssist OS Recovery, see *Dell SupportAssist OS Recovery User's Guide* at Serviceability Tools at the Dell Support Site. Click **SupportAssist** and then click **SupportAssist OS Recovery**.

**NOTE:** Windows 11 IoT Enterprise LTSC 2024 and Dell ThinOS 10 do not support Dell SupportAssist. For more information about recovering ThinOS 10, see Recovery mode using R-Key.

# Real-Time Clock (RTC Reset)

The Real-Time Clock (RTC) reset function enables you or the service technician to recover Dell computers from No POST/No Power/No Boot situations.

Start the RTC reset with the computer powered off and connected to AC power. Press and hold the power button for twenty-five seconds. The computer RTC Reset occurs after you release the power button.

# Backup media and recovery options

It is recommended to create a recovery drive to troubleshoot and fix problems that may occur with Windows. Dell provides multiple options for recovering the Windows operating system on your Dell computer. For more information, see Dell Windows Backup Media and Recovery Options.

# Network power cycle

### About this task

If your computer is unable to access the Internet due to network connectivity issues, reset your network devices by performing the following steps:

### Steps

1. Turn off the computer.
2. Turn off the modem.
   **NOTE:** Some Internet service providers (ISPs) provide a modem and router combo device.
3. Turn off the wireless router.
4. Wait for 30 seconds.
5. Turn on the wireless router.
6. Turn on the modem.
7. Turn on the computer.

# Drain flea power (perform hard reset)

### About this task

Flea power is the residual static electricity that remains in the computer even after it has been powered off and the battery is removed.

For your safety, and to protect the sensitive electronic components in your computer, you must drain residual flea power before removing or replacing any components in your computer.

Draining flea power, also known as a performing a "hard reset," is also a common troubleshooting step if your computer does not turn on or boot into the operating system.

Perform the following steps to drain the flea power:

### Steps

1. Turn off the computer.
2. Disconnect the power adapter from the computer.
3. Remove the base cover.
4. Remove the battery.
5. Press and hold the power button for 20 seconds to drain the flea power.
6. Install the battery.
7. Install the base cover.
8. Connect the power adapter to the computer.
9. Turn on the computer.

**NOTE:** For more information about performing a hard reset, go to Dell Support Site. On the menu bar at the top of the Support page, select Support > Support Library. In the Search field on the Support Library page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles.

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# Getting help and contacting Dell

## Self-help resources

You can get information and help on Dell products and services using these self-help resources:

**Table 27. Self-help resources**

| Self-help resources | Resource location |
|---|---|
| Information about Dell products and services | Dell Site |
| Contact Support | In Windows search, type `Contact Support`, and press Enter. |
| Online help for operating system | Windows Support Site<br>Linux Support Site |
| Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals, and documents. | Your Dell computer is uniquely identified using a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, enter the Service Tag or Express Service Code at Dell Support Site.<br>For more information about how to find the Service Tag for your computer, see Locate the Service Tag on your computer. |
| Dell knowledge base articles | 1. Go to Dell Support Site.<br>2. On the menu bar at the top of the Support page, select **Support** > **Support Library**.<br>3. In the Search field on the Support Library page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles. |

## Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see Contact Support at Dell Support Site.

**NOTE:** Availability of the services may vary depending on the country or region, and product.

**NOTE:** If you do not have an active Internet connection, you can find contact information in your purchase invoice, packing slip, bill, or Dell product catalog.

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# Revision history

Tracks all updates that are made to the document. It typically includes the date of change, version number, and a brief description of the modification. This log helps maintain transparency, accountability, and a clear timeline of progress.

**Table 28. Revision history**

| Revision | Date | Description |
|---|---|---|
| A04 | October | • Updated system-diagnostic lights topic.<br>• Updated CRU and FRU topics. |
| A03 | September 2026 | Updated System-diagnostic lights topic. |
| A02 | June 2026 | • Added Quick charge support on power adapters with detachable Type-C cables topic.<br>• Updated display specifications.<br>• Updated processor specifications.<br>• Updated CRU and FRU removal and installation procedures. |
| A01 | May 2026 | • Added display tear down topic.<br>• Updated system board topic. |
| A00 | May 2026 | Original publish date. |