Dell Pro 5 16

P516265

Service Manual

Regulatory Model: P151F
Regulatory Type: P151F002
May 2026
Rev. A00

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.

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.

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.

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

   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
- Flat head slotted screwdriver (<4mm)
- 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 image
Base cover	Captive	7	
2230 solid-state drive	M2x4	1	
WLAN card	M2x2.5	1	
WWAN card	M2x3.5	1	
Battery	Captive	5	
Speakers	M1.6x1.5	4	
Fingerprint-reader bracket	M2x2.5	1	
Fan	M2x4	2	
Fingerprint reader	M2x2.5	1	
I/O-bridge board	M2x4	2	
Heatsink	Captive	4	
I/O board	M2x2.5	4	

Table 1. Screw list (continued)

Component	Screw type	Quantity	Screw image
Power button	M1.6x2.5	2	
Display-cable bracket	M2x3.5	2	
Display assembly	M2.5x4.5	5	
Display hinges	M2.5x2.5	6	
Display panel	M1.6x2.2	2	
System board	M2x3	5	
USB Type-C module	M2x5	3	
Wireless-antenna modules	M1.6x2.5	4	
Keyboard	M2x2.2	21	

Major components of Dell Pro 5 16 P516265

The following image shows the major components of Dell Pro 5 16 P516265.

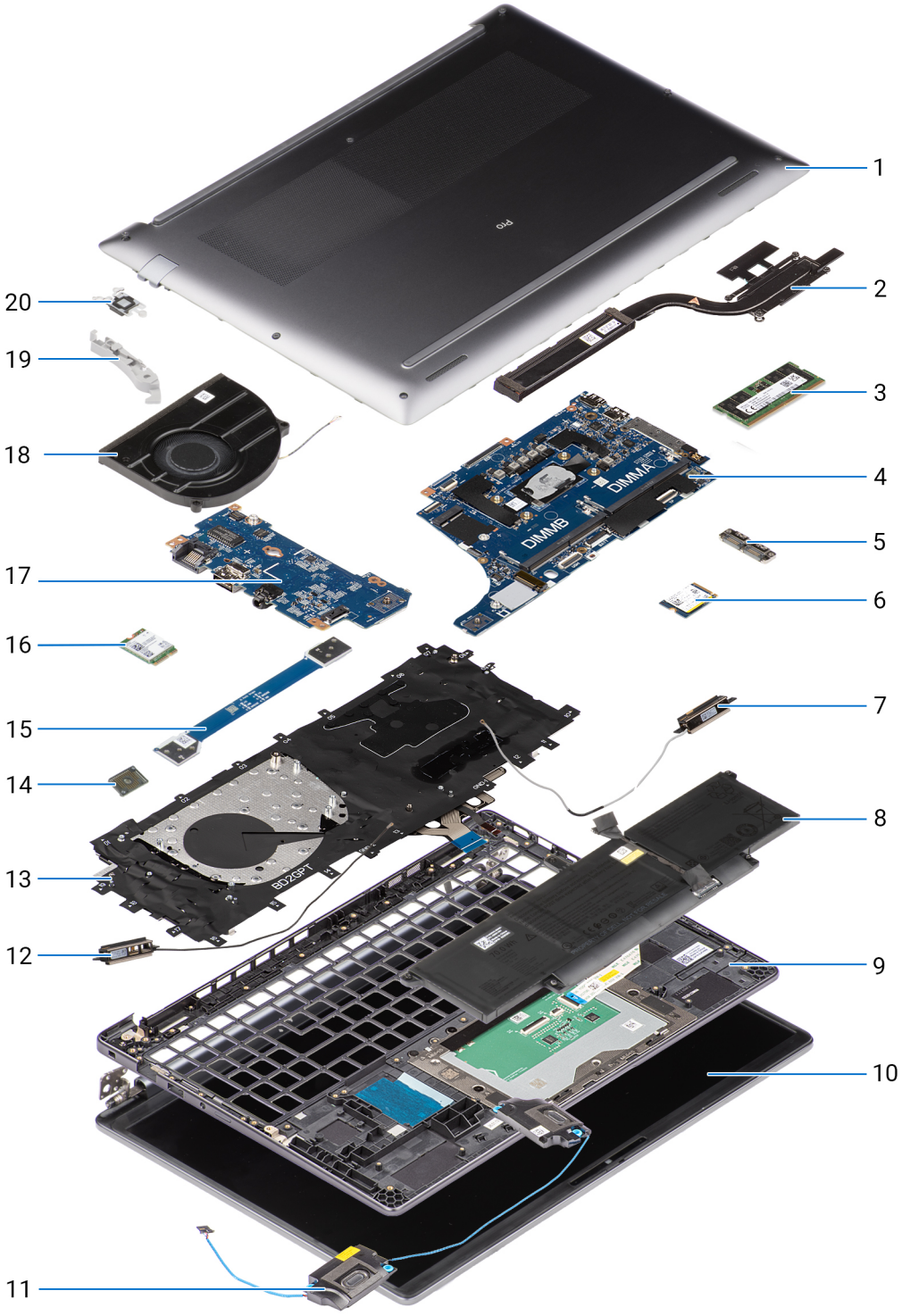


Figure 1. Exploded view

1. Base cover
2. Heatsink
3. Memory module
4. System board
5. USB Type-C module
6. 2230 solid-state drive
7. WLAN antenna module

8. Battery
9. Palm-rest assembly
10. Display assembly
11. Speakers
12. WLAN antenna module
13. Keyboard
14. I/O-bridge board interposer
15. I/O-bridge board
16. WWAN card
17. I/O board
18. Fan
19. Fan-routing guide
20. Power button

NOTE: Dell provides a list of components and their part numbers for the original computer configuration purchased. These parts are available according to warranty coverage purchased by the customer. Contact your Dell sales representative for purchase options.

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

The replaceable components in Dell Pro 5 16 P516265 are either Customer Replaceable Units (CRUs) or Field Replaceable Units (FRUs).

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

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

CAUTION: Replacement of FRUs by persons other than authorized service technicians may result in damage to the computer or data loss.

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.

Table 2. CRU and FRU list

Customer Replaceable Unit (CRU)	Field Replaceable Unit (FRU)
nano-SIM card tray	I/O-bridge board
Base cover	Heat sink
Memory	I/O board
Solid-state drive	Power button with fingerprint reader
WLAN card	Power button
WWAN card	Display assembly
Battery	Display bezel
Battery cable	Display hinges
Speakers (Full Aluminium)	Display panel
Fan	Speakers (Glass Fiber Composite)
	Camera
	Display cable
	Display-back cover

Table 2. CRU and FRU list (continued)

Customer Replaceable Unit (CRU)	Field Replaceable Unit (FRU)
	System board
	USB Type-C module
	Wireless-antenna modules
	Keyboard and Keyboard support plate
	Palm-rest assembly
	USH-board cable (Full Aluminium)
	USH board (Full Aluminium)
	Smart card reader (Full Aluminium)
	Power button
	Power button with fingerprint reader
	Solid-state drive thermal pad
	CABB Connector

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

Removing the nano-SIM card tray

Prerequisites

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

About this task

NOTE: The nano-SIM card tray is available only on computers that are shipped with a WWAN card.

The following image indicates the location of the nano-SIM card tray and provides a visual representation of the removal procedure.

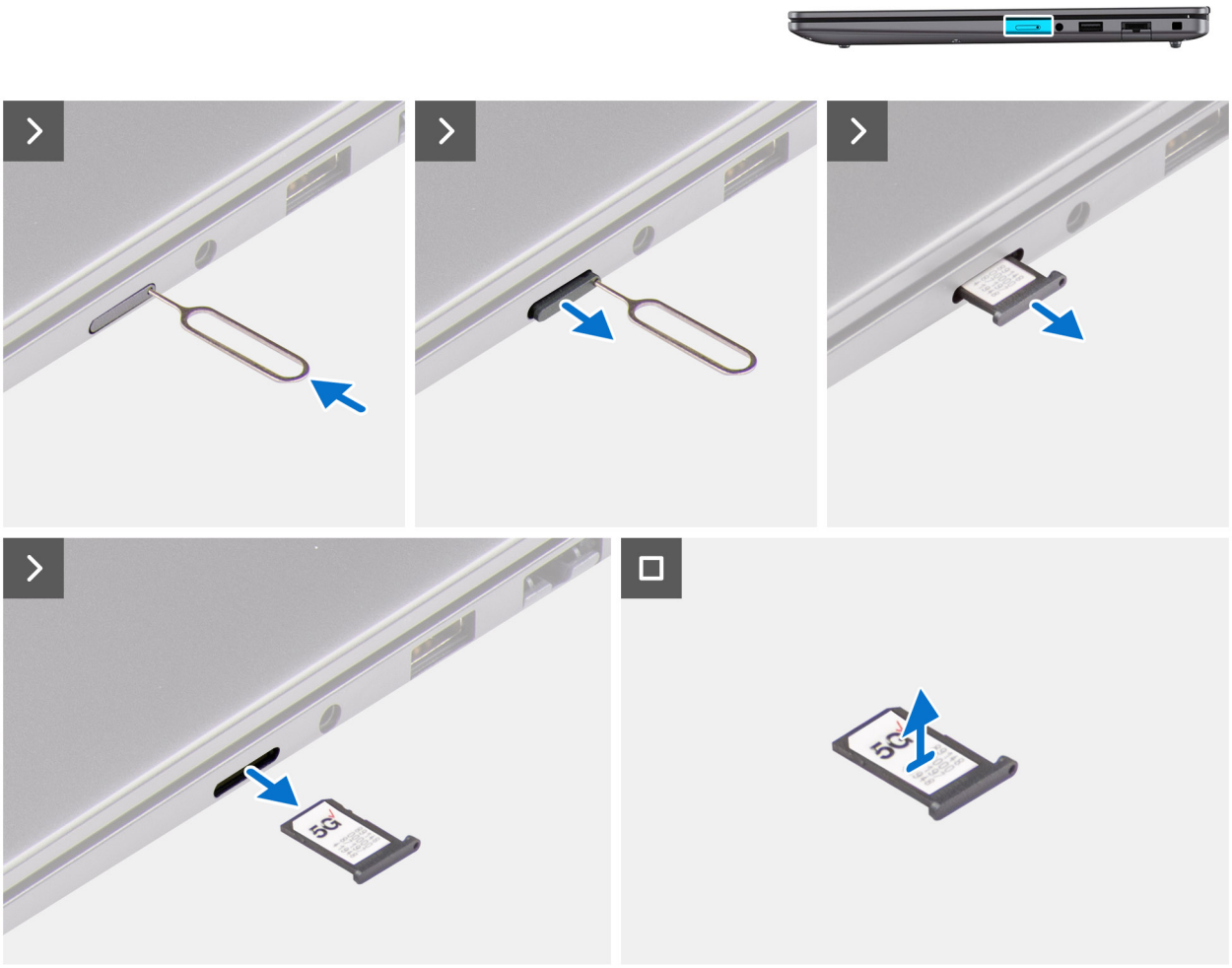


Figure 2. Removing the nano-SIM card tray

NOTE: This step is applicable only if a nano-SIM card has been previously installed on your computer.

Steps

1. Insert a SIM-ejector pin into the release hole to unlock the nano-SIM card tray.
2. Gently push the pin to release and eject the nano-SIM card tray.
3. Slide the nano-SIM card tray out of the slot on the computer.
4. Remove the nano-SIM card from the nano-SIM card tray.

Installing the nano-SIM card tray

Prerequisites

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

About this task

NOTE: This procedure is applicable only for computers that are shipped with a WWAN card.

The following image indicates the location of the nano-SIM card tray and provides a visual representation of the installation procedure.

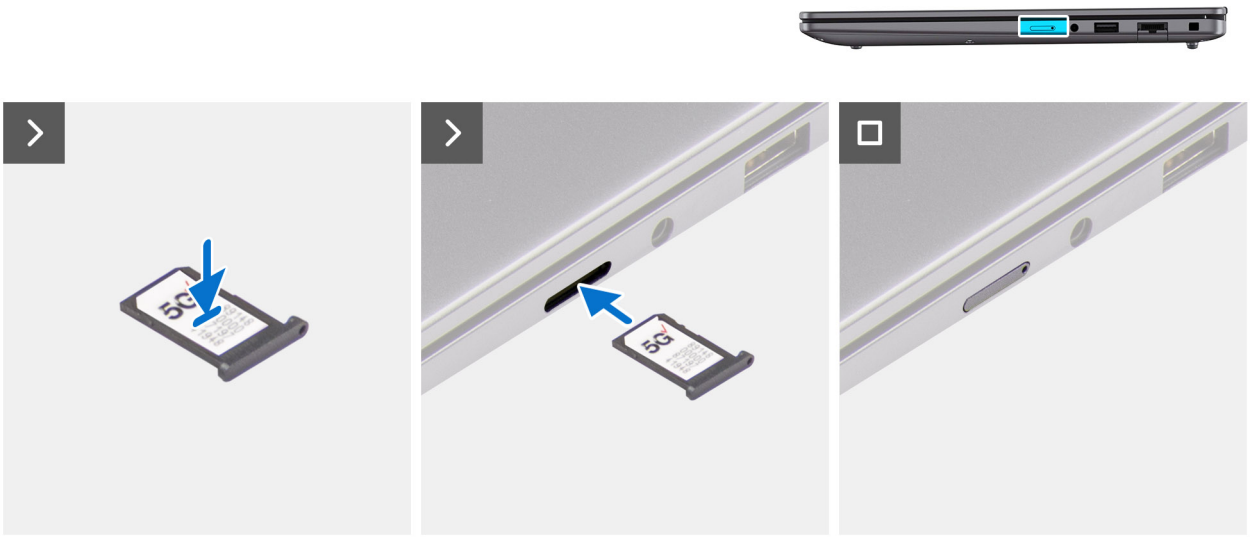


Figure 3. Installing the nano-SIM card tray

Steps

1. Align and place the nano-SIM card on the nano-SIM card tray.

   NOTE: This step is applicable only if you are installing a nano-SIM card into your computer.

2. Align the nano-SIM card tray with the slot on the computer and carefully slide it in.
3. Gently push the nano-SIM card tray until it is fully seated in the slot.

Next steps

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

Base cover

Removing the base cover - Full Aluminium

Prerequisites

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

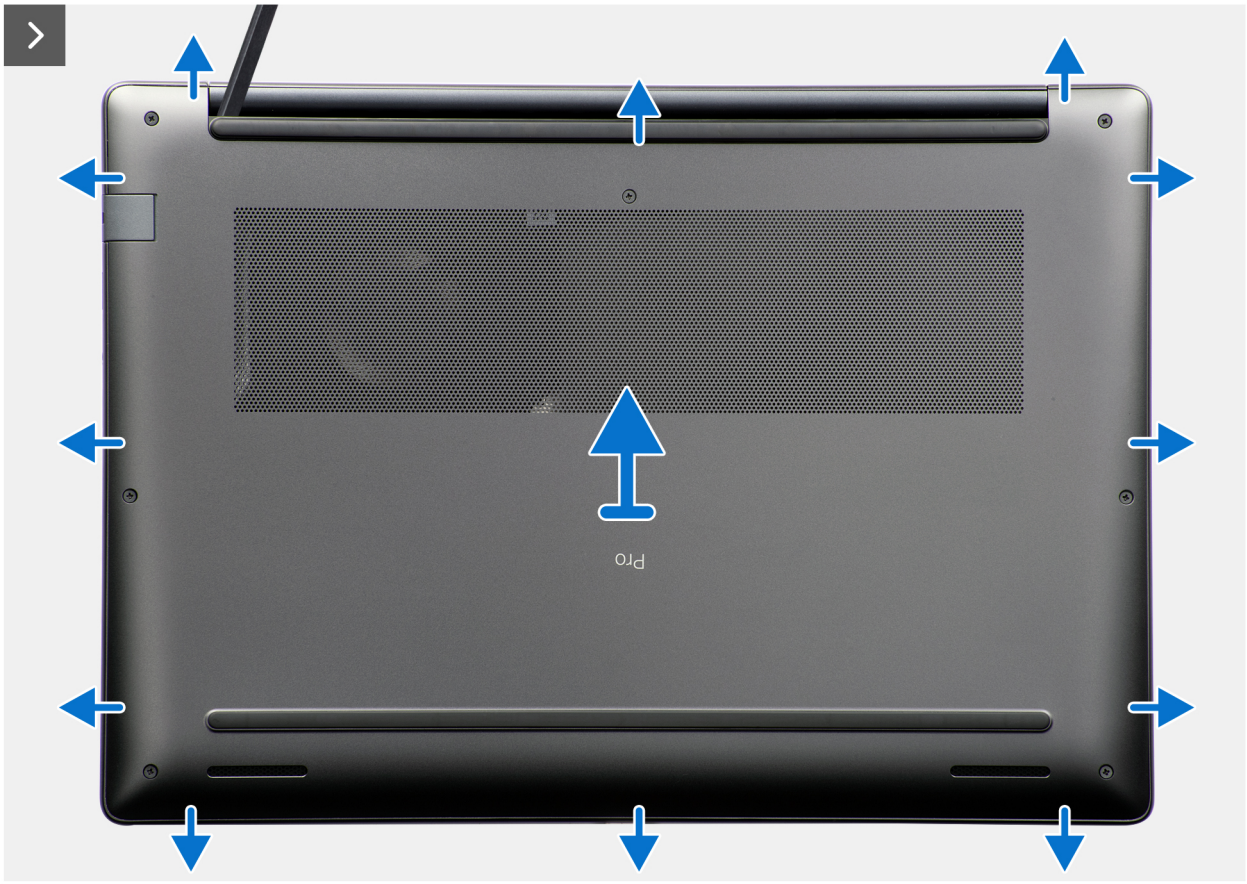


Figure 5. Removing the base cover

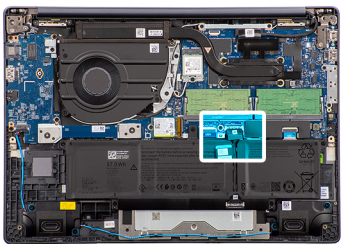




Figure 6. Disconnecting the battery cable

Steps

1. Loosen the seven captive screws that secure the base cover to the palm-rest assembly.
2. Using a plastic scribe, pry open the base cover from the recesses that are located at the top edge of the base cover.
3. Using the plastic scribe, pry around the edges of the base cover releasing it from the palm-rest assembly.
4. Lift the base cover off the palm-rest assembly.
5. Peel the tape that secures the battery-cable to the battery.
6. Disconnect the battery cable from its battery-cable connector (BATT) on the system board. Then flip the computer over and press and hold the power button for five seconds to drain the flea power.

   NOTE: This step is applicable only if your computer is unable to enter Service Mode.

Installing the base cover - Full Aluminium

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 base cover and provide a visual representation of the installation procedure.

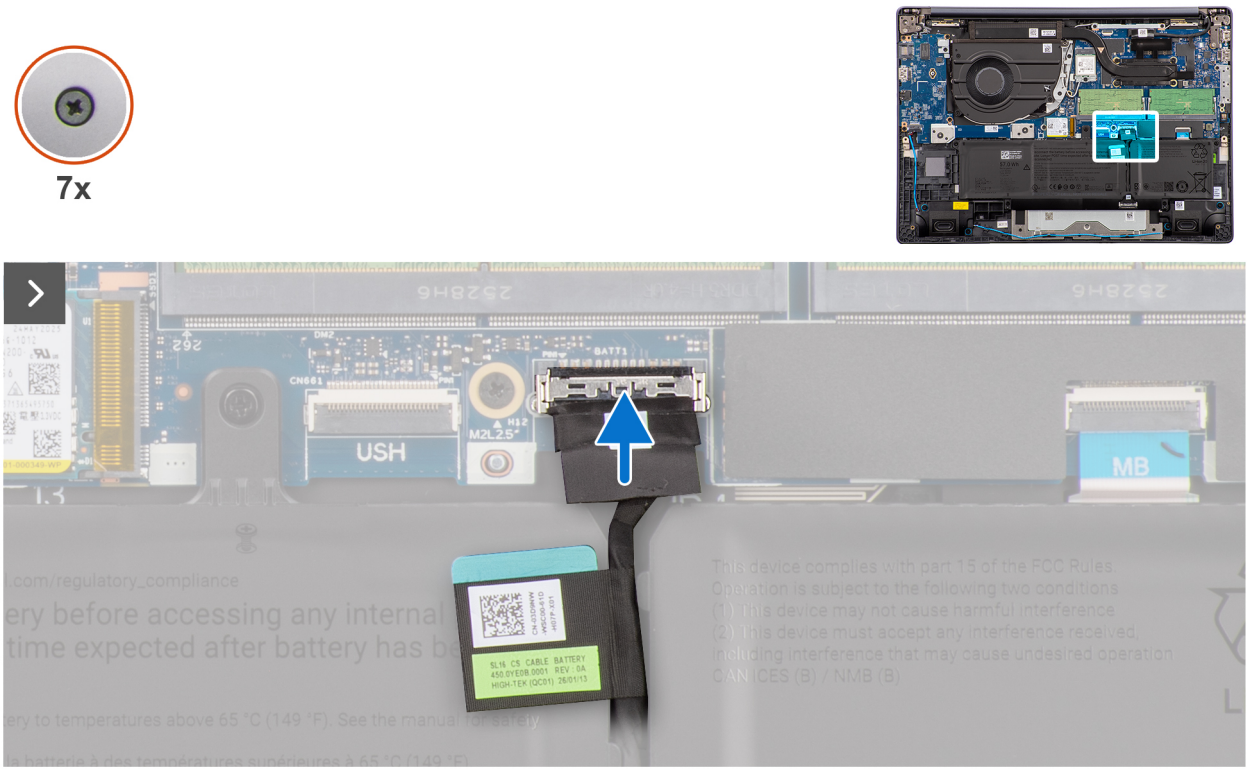


Figure 7. Connecting the battery cable

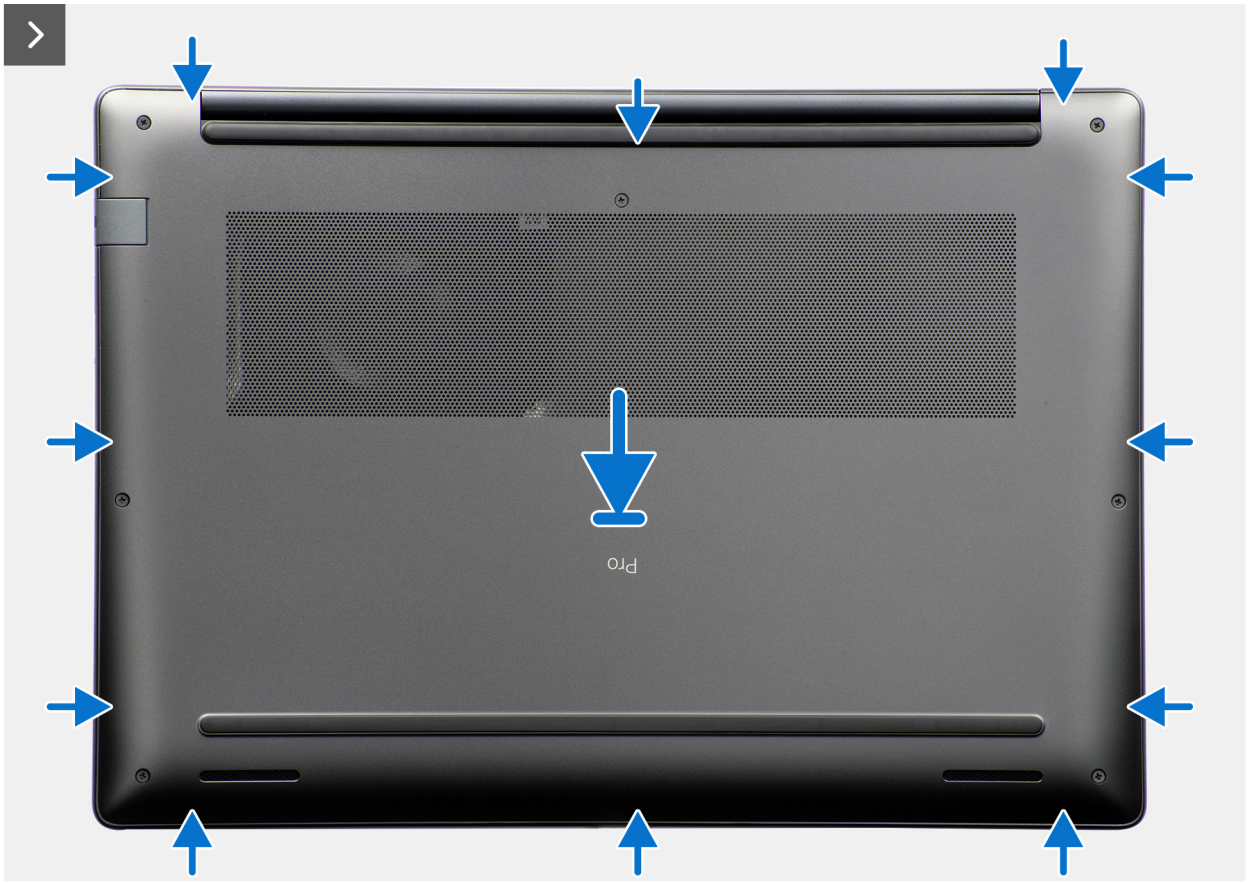


Figure 8. Installing the base cover



Figure 9. Installing the base cover

Steps

1. Connect the battery cable to the battery-cable connector (BATT) on the system board.

   NOTE: This step is applicable only if the battery cable had been disconnected previously.

2. Adhere the tape on the battery cable to the battery.
3. Place the base cover on the palm-rest assembly.
4. 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.
5. Tighten the seven captive screws 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.

Removing the base cover - Glass Fiber Composite

Prerequisites

1. Follow the procedure in Before working inside your computer.
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 10. Removing the base cover

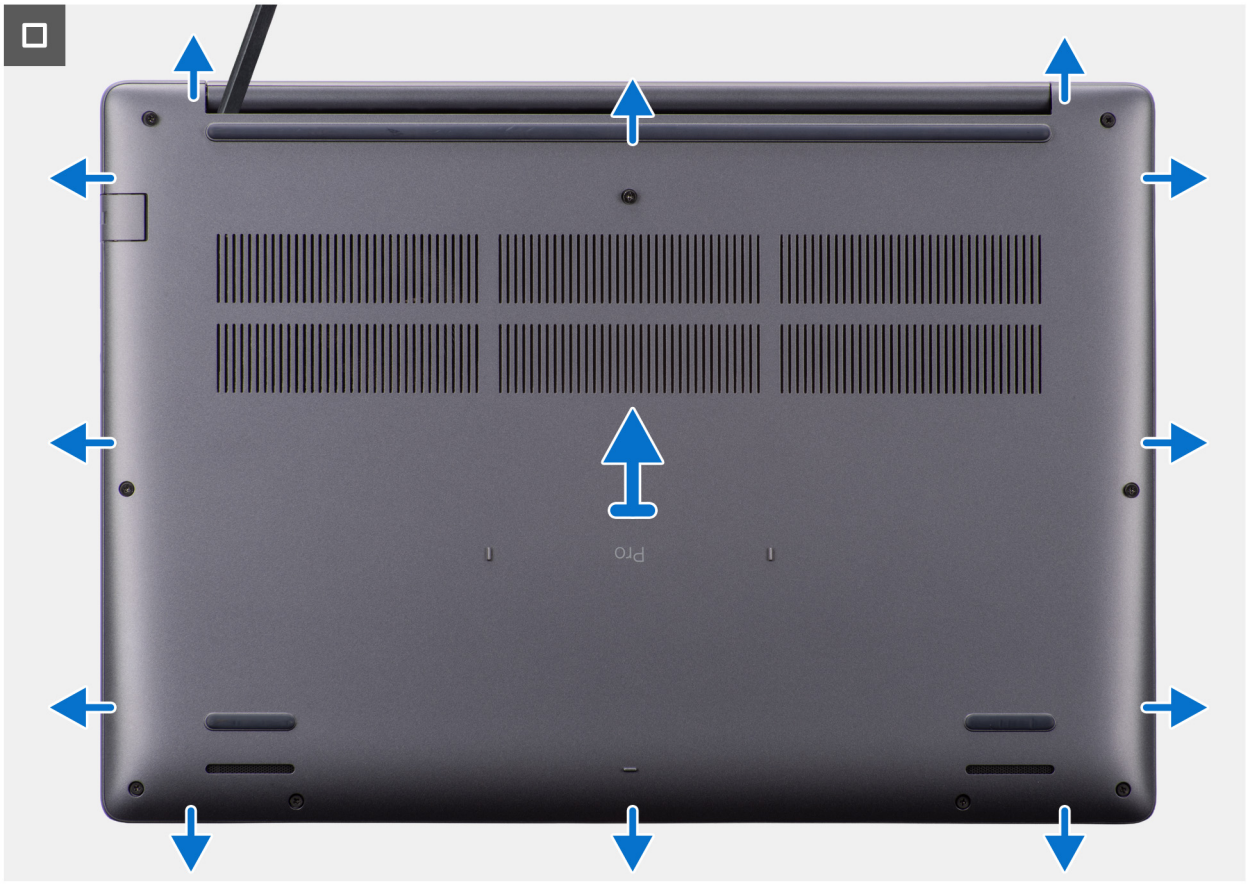


Figure 11. Removing the base cover

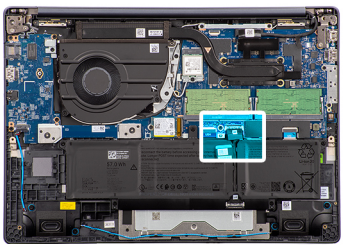




Figure 12. Disconnecting the battery cable

Steps

1. Loosen the nine captive screws that secure the base cover to the palm-rest assembly.
2. Using a plastic scribe, pry open the base cover from the recesses that are located at the top edge of the base cover.
3. Using the plastic scribe, pry around the edges of the base cover releasing it from the palm-rest assembly.
4. Lift the base cover off the palm-rest assembly.
5. Peel the tape that secures the battery-cable to the battery.
6. Disconnect the battery cable from its battery-cable connector (BATT) on the system board. Then flip the computer over and press and hold the power button for five seconds to drain the flea power.

   NOTE: This step is applicable only if your computer is unable to enter Service Mode.

Installing the base cover - Glass Fiber Composite

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 base cover and provide a visual representation of the installation procedure.

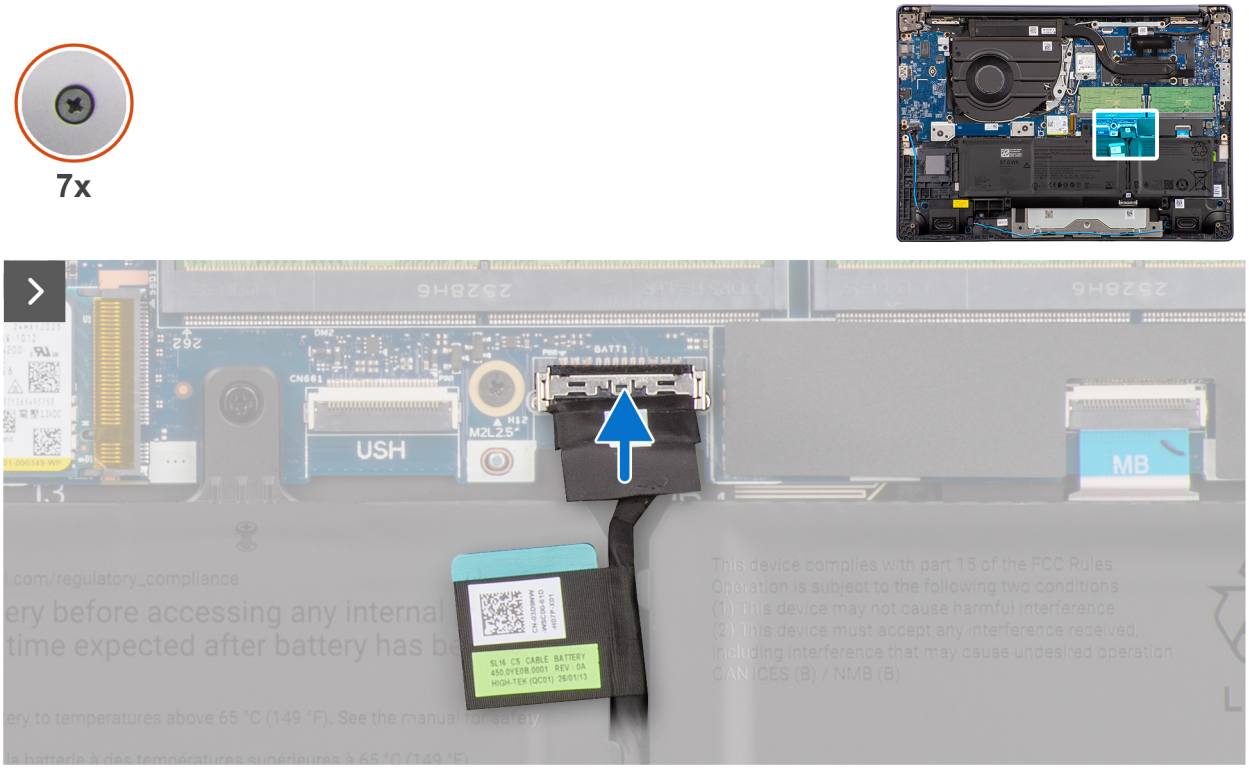


Figure 13. Connecting the battery cable

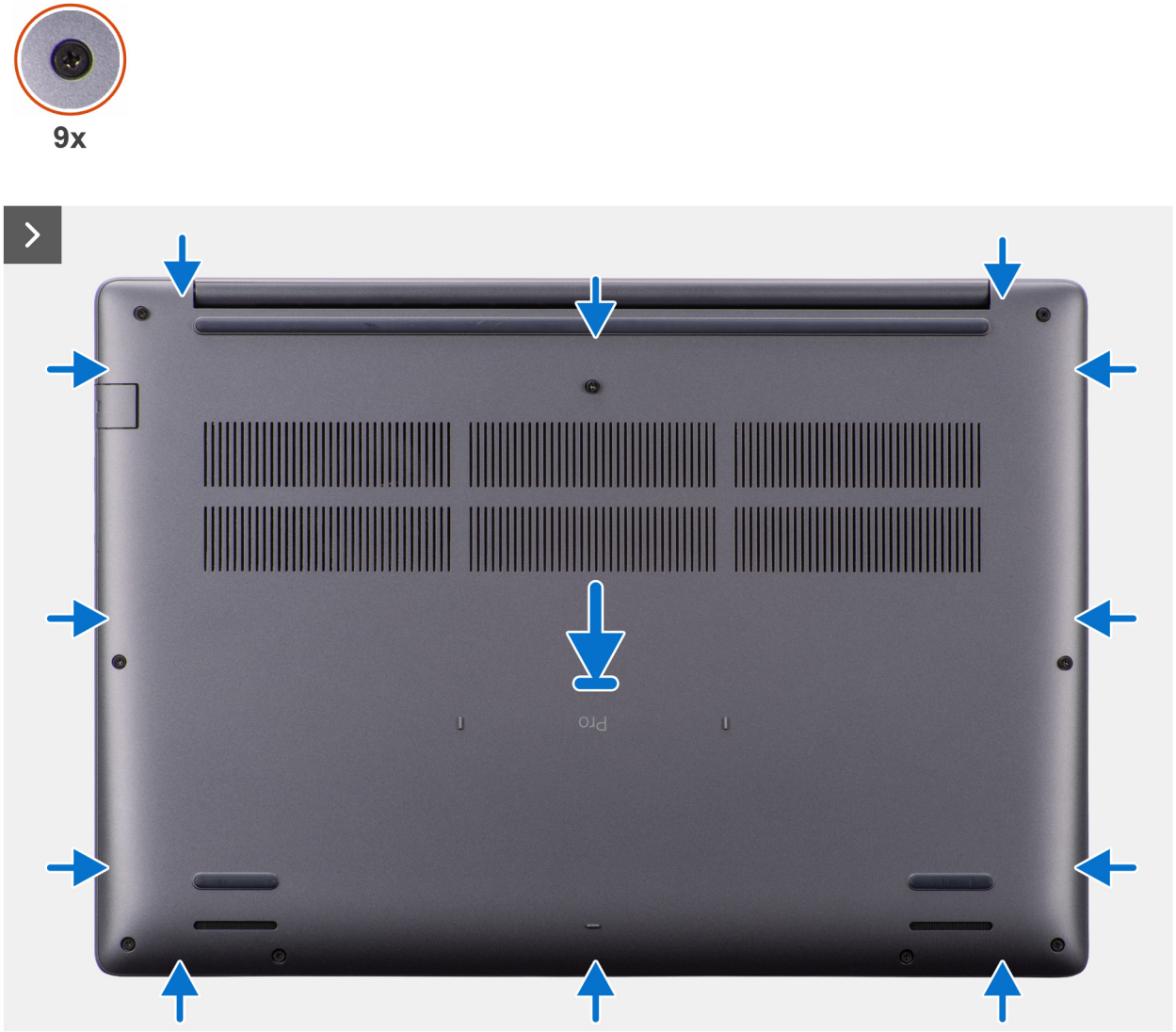


Figure 14. Installing the base cover



Figure 15. Installing the base cover

Steps

1. Connect the battery cable to the battery-cable connector (BATT) on the system board.

   NOTE: This step is applicable only if the battery cable had been disconnected previously.

2. Adhere the tape on the battery cable to the battery.
3. Place the base cover on the palm-rest assembly.
4. 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.
5. Tighten the nine captive screws 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.

Memory

Removing the memory

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: This procedure is applicable only for computers that are shipped with DIMM (Dual In-line Memory Module) memory.

The following image indicates the location of the DIMM memory and provides a visual representation of the removal procedure.

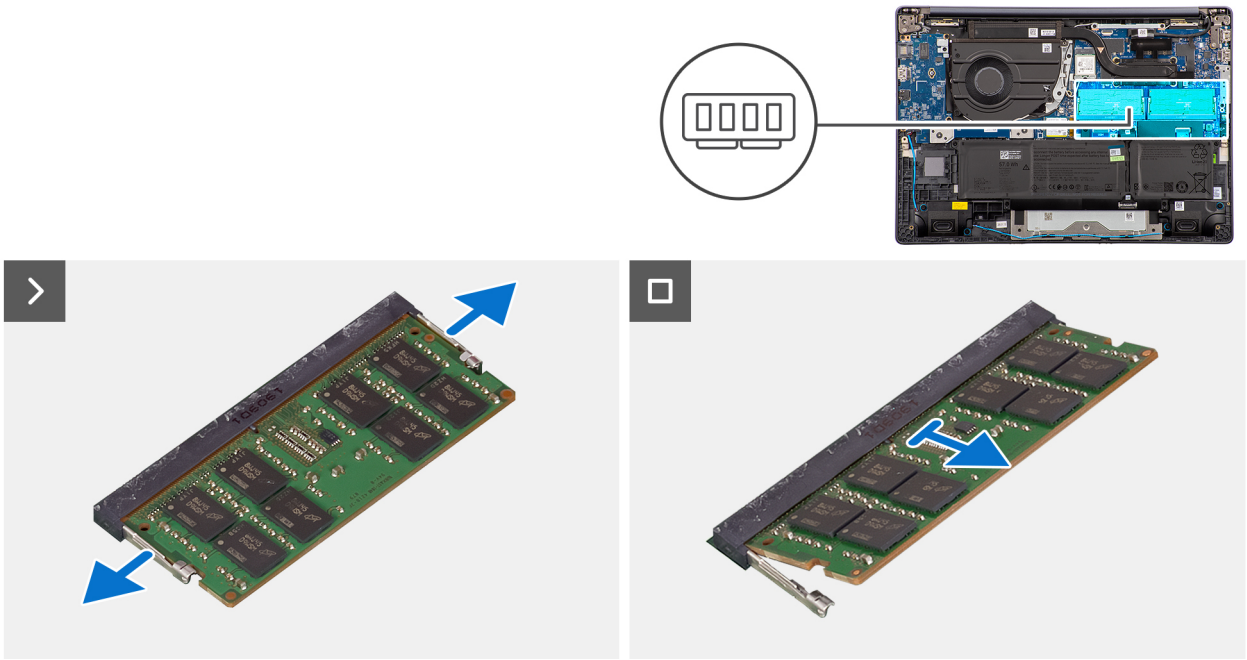


Figure 16. Removing the memory

Steps

1. Push the securing clips on each side of the memory slot (DIMMA/DIMMB) outward to release the memory module.
2. Hold the memory module by its edges near the securing clips, and then gently lift the memory module out of the memory slot.

   NOTE: Repeat steps 1 to 2 for each memory installed on your computer.

Installing the memory

Prerequisites

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

About this task

NOTE: This procedure is applicable only if you are installing DIMM (Dual In-line Memory Module) memory on your computer.

The following image indicates the location of the DIMM memory and provides a visual representation of the installation procedure.

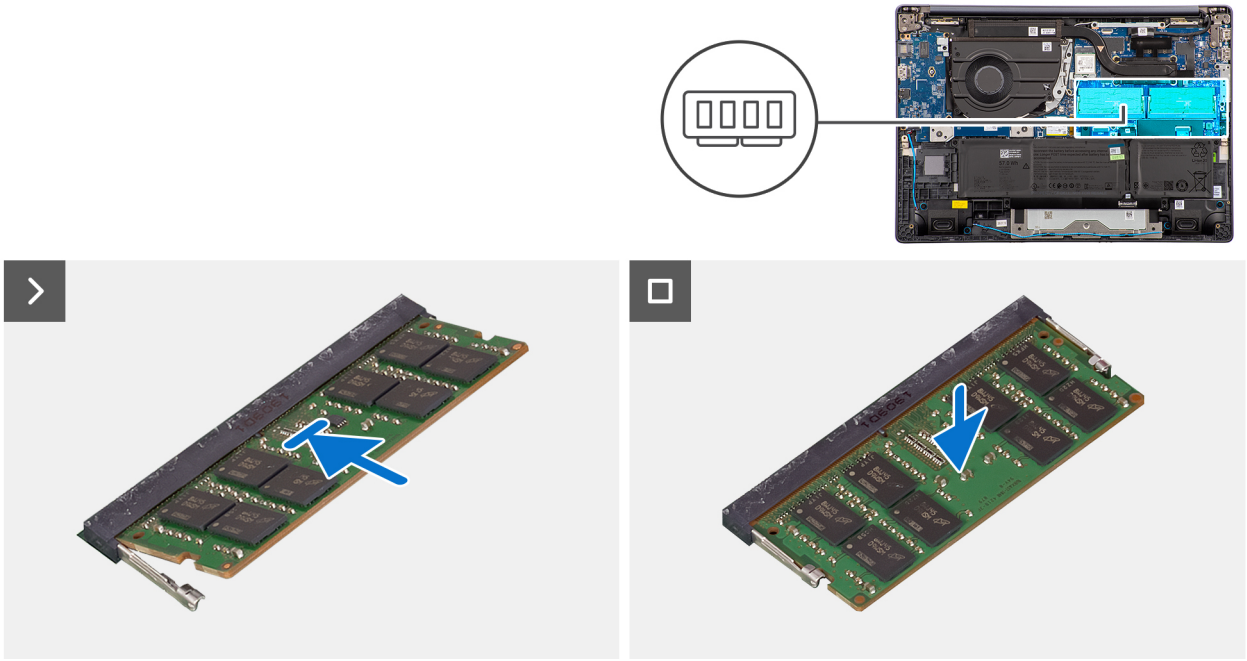


Figure 17. Installing the memory

Steps

1. Hold the memory module by its edges and align the notch on the module with the tab on the memory slot (DIMMA/DIMMB).
2. Insert the memory module into the memory slot.
3. Gently press the memory module into the slot until the securing clips lock into place.

NOTE: Repeat steps 1 to 3 for each memory module to be installed on your computer.

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

Removing the 2230 solid-state drive - Full Aluminium

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: This procedure applies to computers shipped with a 2230 solid-state drive.

The following image indicates the location of the 2230 solid-state drive and provides a visual representation of the removal procedure.

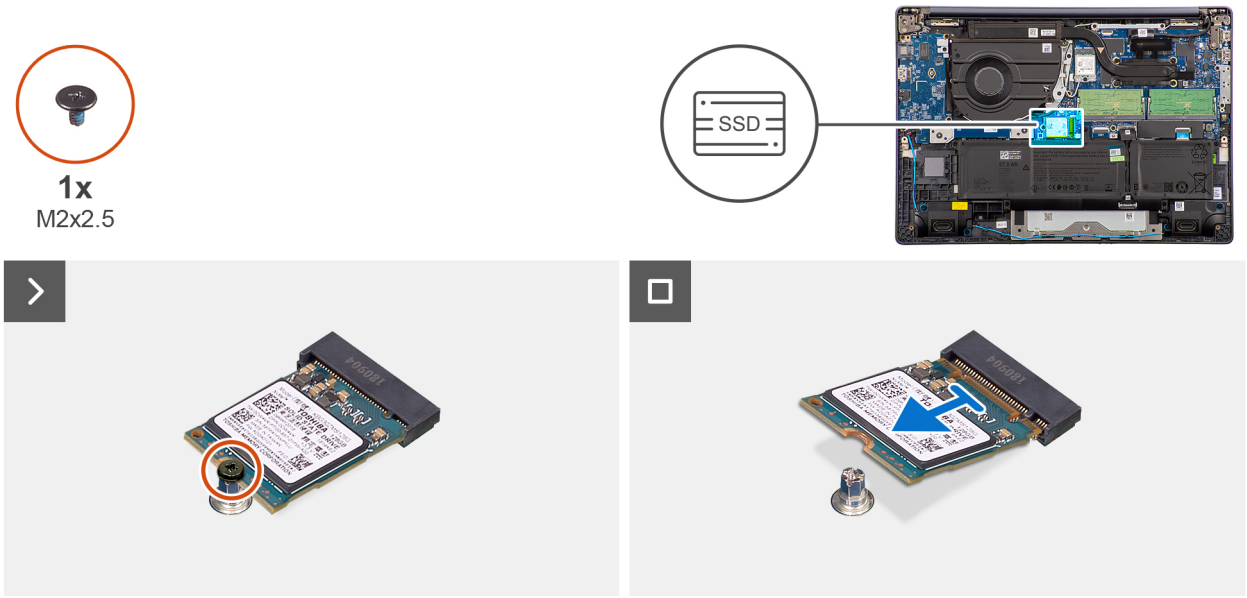


Figure 18. Removing the 2230 solid-state drive

Steps

1. Remove the screw (M2x2.5) that secures the 2230 solid-state drive to the system board.
2. Slide and lift the 2230 solid-state drive off the system board.

Installing the 2230 solid-state drive - Full Aluminium

Prerequisites

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

About this task

NOTE: This procedure applies if you are installing a 2230 solid-state drive on a computer.

The following image indicates the location of the 2230 solid-state drive and provides a visual representation of the installation procedure.

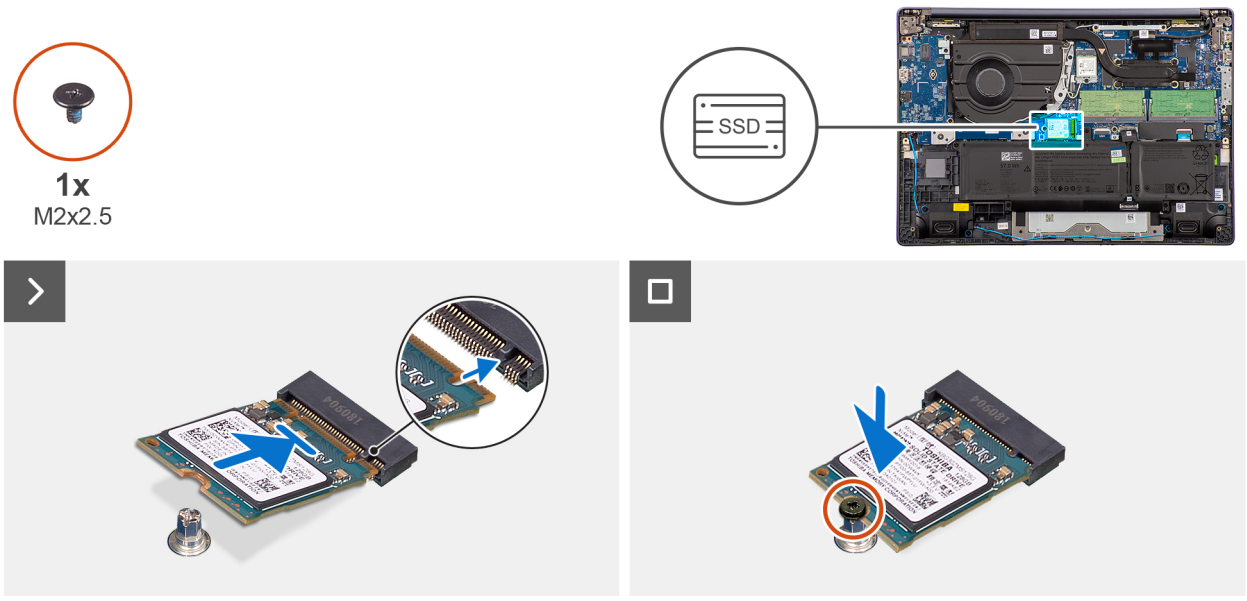


Figure 19. Installing the 2230 solid-state drive

Steps

1. Align the notch on the 2230 solid-state drive with the tab on the M.2 solid-state drive slot.
2. Slide the 2230 solid-state drive into the M.2 solid-state drive on the system board.
3. Replace the screw (M2x2.5) that secures the 2230 solid-state drive 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.

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

NOTE: This procedure is applicable only for computers that are shipped with a WLAN (Wireless Local Area Network) card.

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

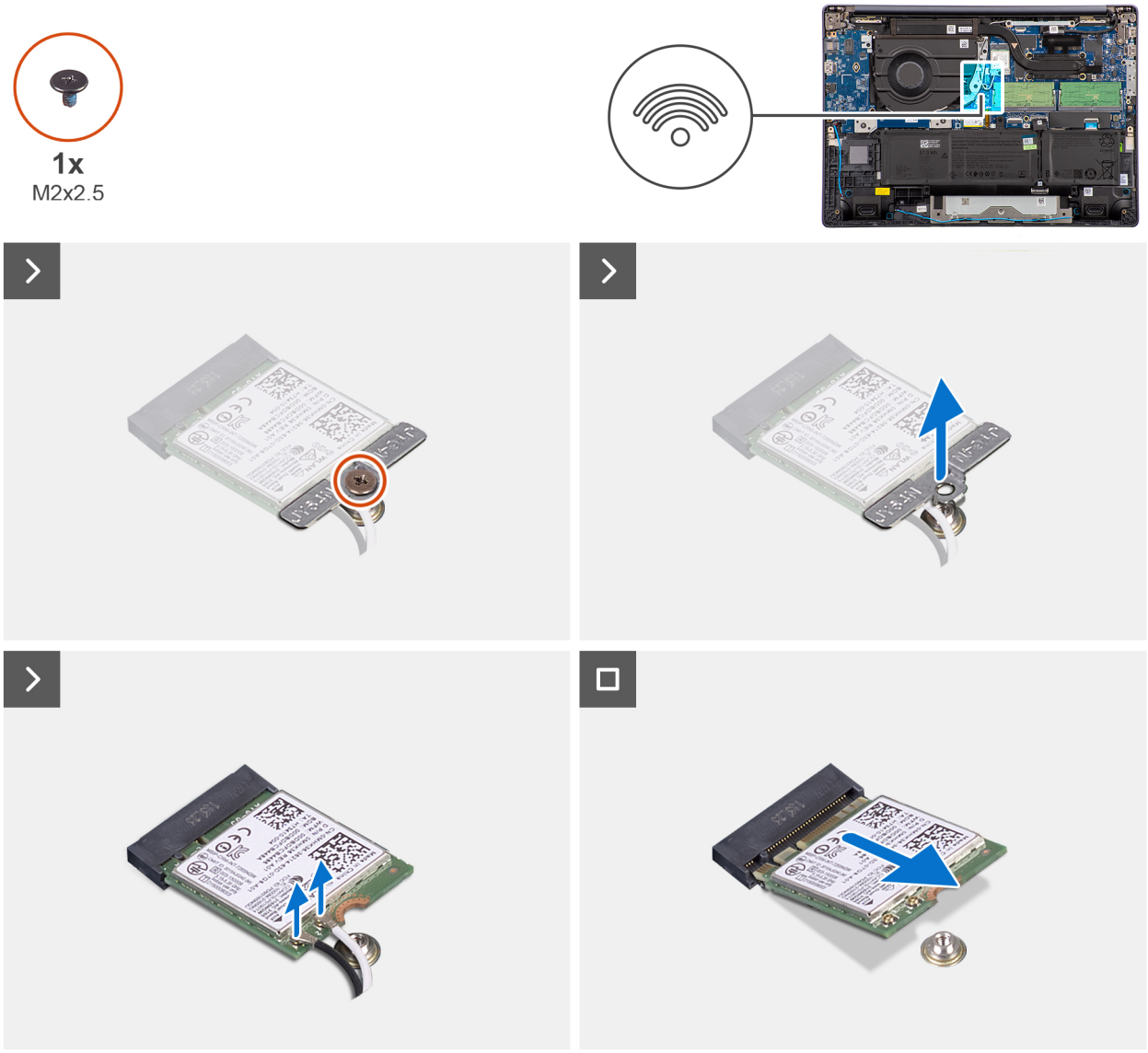


Figure 20. Removing the WLAN card

Steps

1. Remove the screw (M2x2.5) that secures the wireless card to the system board.
2. Slide and lift the wireless-card bracket off the wireless card.
3. Disconnect the antenna cables from the wireless card.
4. Slide and remove the wireless card at an angle from the wireless-card slot (WLAN).

Installing the WLAN card

Prerequisites

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

About this task

NOTE: This procedure is applicable only if you are installing a WLAN (Wireless Local Area Network) card on your computer.

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

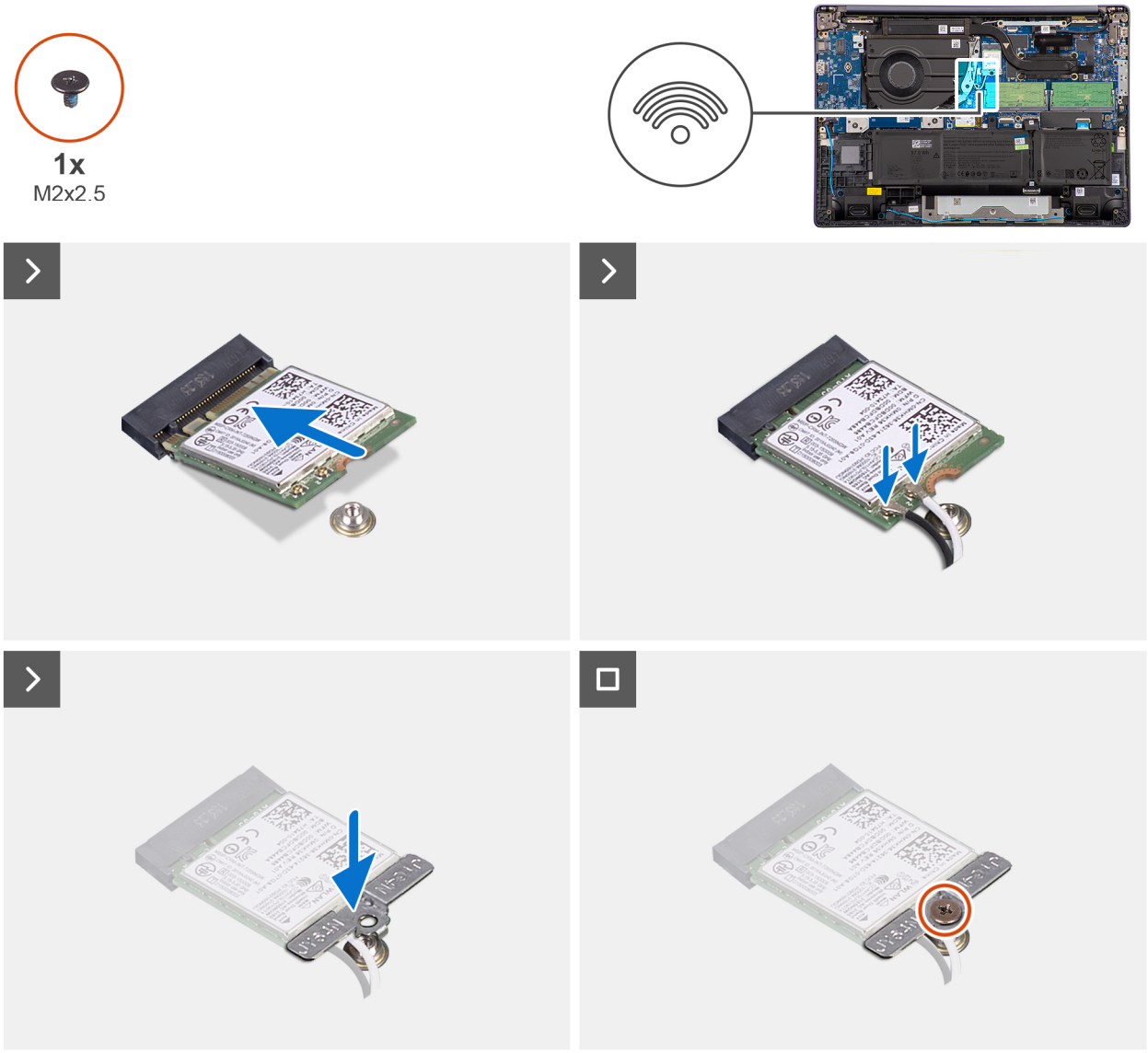


Figure 21. Installing the WLAN card

Steps

1. Align the notch on the wireless card with the tab on the wireless-card slot (WLAN).
2. Slide the wireless card at an angle into the wireless-card slot.
3. Connect the antenna cables to the wireless card.

Table 3. Antenna-cable color scheme

Connector on the wireless card	Antenna-cable color	Silkscreen marking	
Main	White	MAIN	△ (white triangle)
Auxiliary	Black	AUX	▲ (black triangle)

4. Slide and place the wireless-card bracket on the wireless card.
5. Replace the screw (M2x3.5) that secures the wireless 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.

WWAN card

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

NOTE: This procedure is applicable only for computers that are shipped with a 4G WWAN (Wireless Wide Area Network) card.

The following image indicates the location of the 4G WWAN card and provides a visual representation of the removal procedure.



Figure 22. Removing the 4G WWAN card

Steps

1. Remove the screw (M2x3.5) that secures the 4G WWAN-card thermal shield to the I/O board.
2. Lift the 4G WWAN-card thermal shield off the 4G WWAN card.
3. Disconnect the antenna cables from the 4G WWAN card.

   NOTE: The cable color and the number of antenna cables vary depending on the type of WWAN card that is installed on your computer.

4. Lift and slide the 4G WWAN card out of the WWAN-card slot on the I/O board.

   CAUTION: To avoid damaging the WWAN connector on the I/O board, ensure that the angle of removal is not greater than 5 degrees.

5. Remove the 4G WWAN-card holder from the I/O board.

Installing the 4G WWAN card

Prerequisites

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

About this task

NOTE: This procedure is applicable only if you are installing a 4G WWAN (Wireless Wide Area Network) card on your computer.

NOTE: The type of WWAN card that is supported by your computer depends availability of the following antenna connections.

Table 4. Determining the WWAN card support of your computer

WWAN card support	Antenna cables
4G	• One black cable with a thin gray stripe • One white cable with a thin gray stripe

The following image indicates the location of the 4G WWAN card and provides a visual representation of the installation procedure.

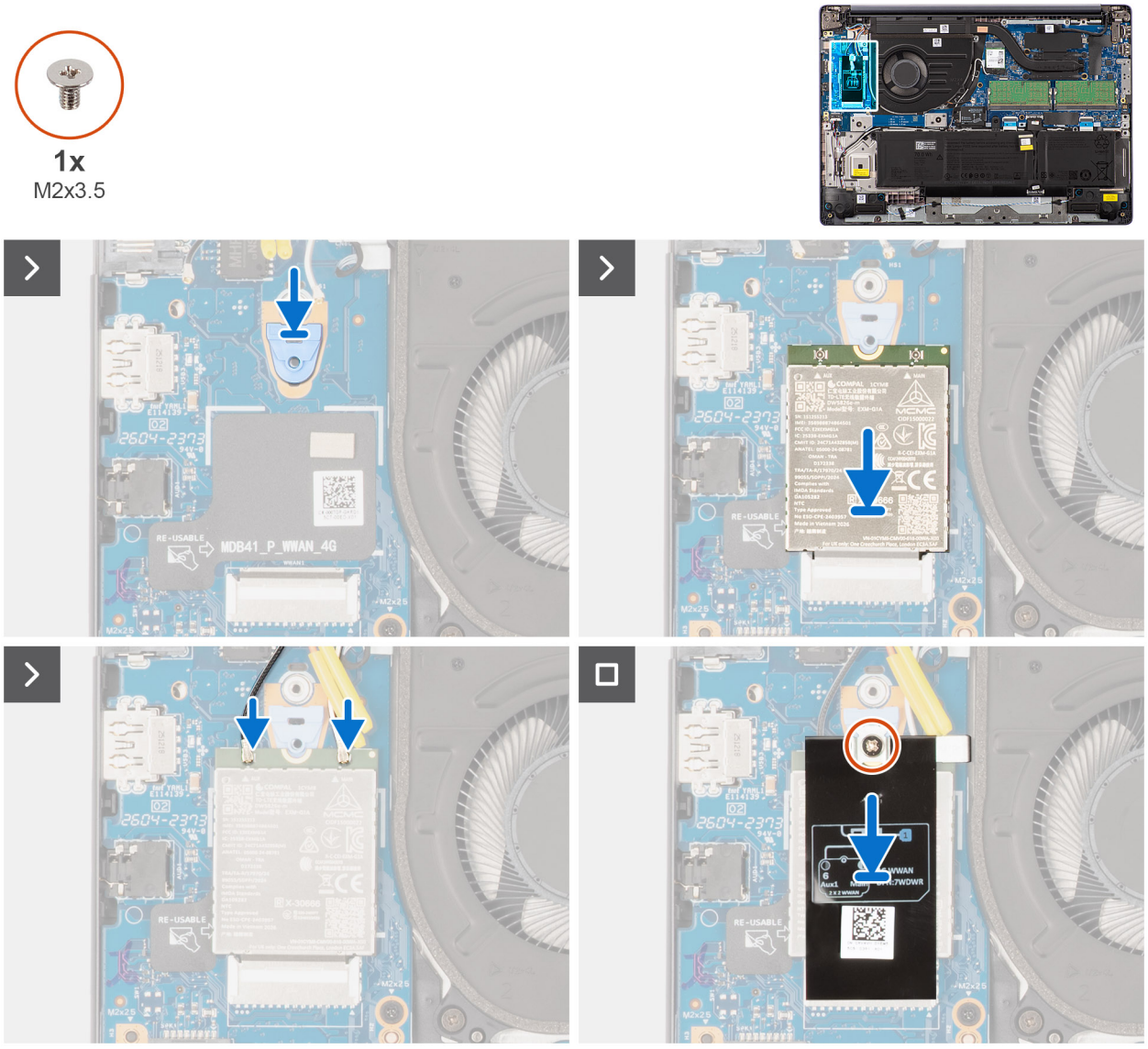


Figure 23. Installing the 4G WWAN card

Steps

1. Place the 4G WWAN-card holder into its slot on the I/O board.
2. Insert the 4G WWAN card at an angle into the WWAN-card slot on the I/O board.

   NOTE: Ensure that the thermal pad is in place before installing the WWAN card.

3. Connect the antenna cables to their respective connectors on the 4G WWAN card.

   NOTE: The cable color and the number of antenna cables to connect vary depending on the type of WWAN card that is being installed on your computer.

Table 5. Antenna-cable color scheme for the WWAN card

4G WWAN Connector	Antenna-cable color
6 Aux1	Black with a thin gray stripe
Not applicable	Blue
Not applicable	Orange
5 Main	White with a thin gray stripe

4. Align the screw hole on the 4G WWAN-card thermal shield with the screw hole on the I/O board.
5. Replace the screw (M2x3.5) that secures the 4G 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.

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: This procedure is applicable only for computers that are shipped with a 5G WWAN (Wireless Wide Area Network) card.

The following image indicates the location of the 5G WWAN card and provides a visual representation of the removal procedure.

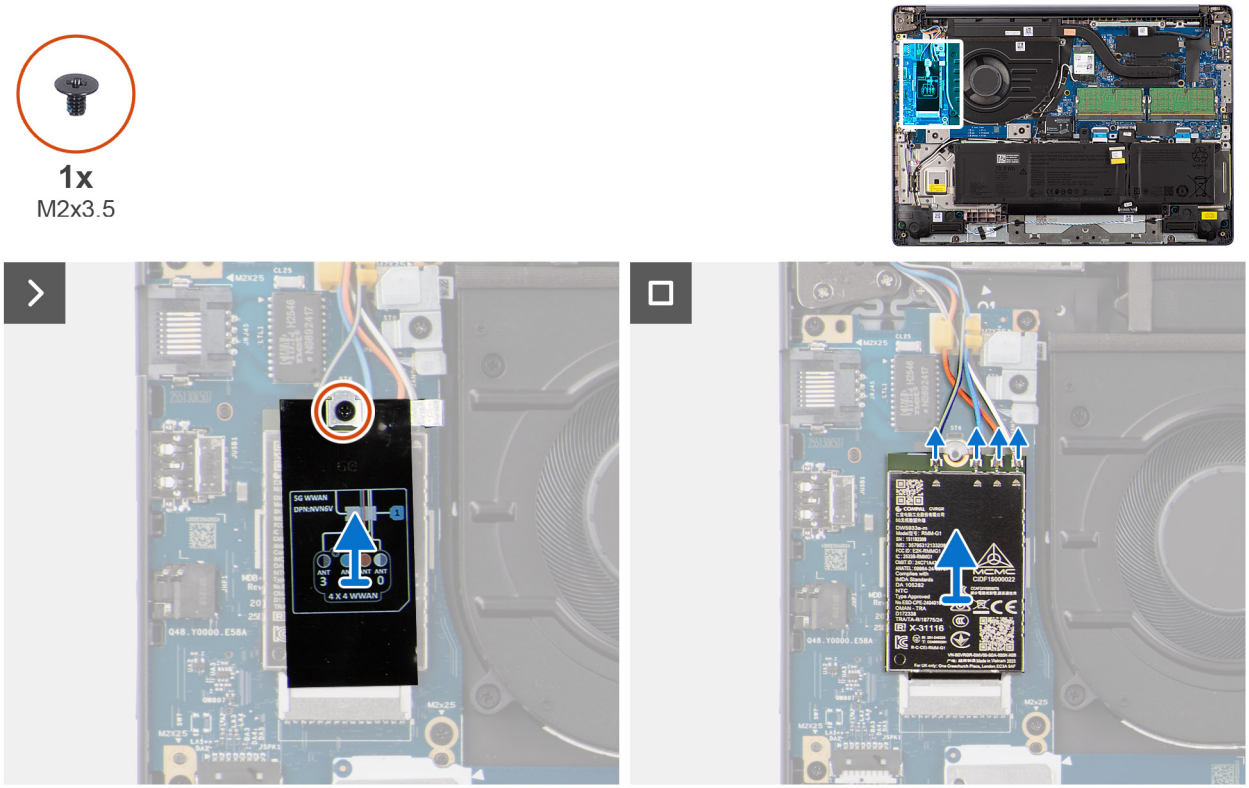


Figure 24. Removing the 5G WWAN card

Steps

1. Remove the screw (M2x3.5) that secures the 5G WWAN-card thermal shield to the I/O board.
2. Lift the 5G WWAN-card thermal shield off the 5G WWAN card.
3. Disconnect the antenna cables from the 5G WWAN card.

   NOTE: The cable color and the number of antenna cables vary depending on the type of WWAN card that is installed on your computer.

your computer.

4. Lift and slide the 5G WWAN card out of the WWAN-card slot on the I/O board.

CAUTION: To avoid damaging the WWAN connector on the I/O board, ensure that the angle of removal is not greater than 5 degrees.

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: This procedure is applicable only if you are installing a 5G WWAN (Wireless Wide Area Network) card on your computer.

NOTE: The type of WWAN card that is supported by your computer is dependent on the availability of the following antenna connections.

Table 6. Determining the WWAN card support of your computer

WWAN card support	Antenna cables
5G	• One black cable with a thin gray stripe • One blue cable • One orange cable • One white cable with a thin gray stripe

The following image indicates the location of the 5G WWAN card and provides a visual representation of the installation procedure.

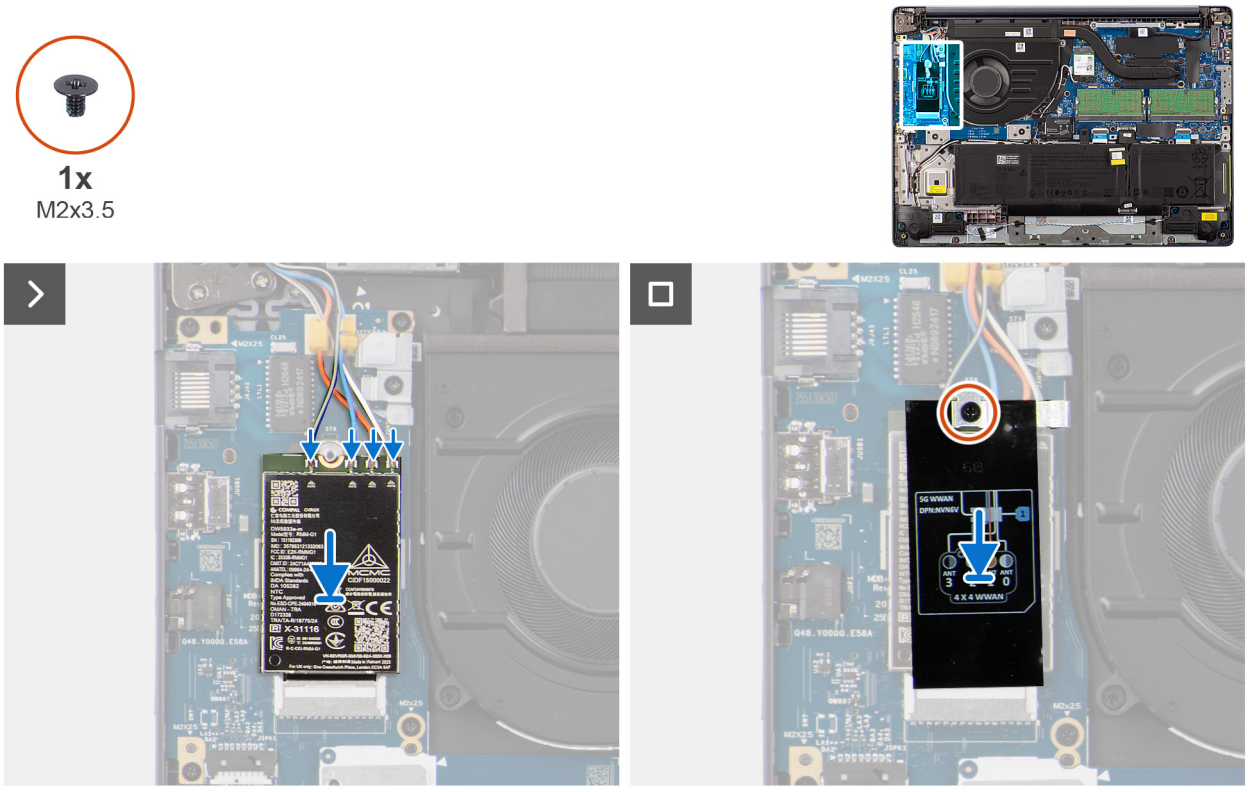


Figure 25. Installing the 5G WWAN card

Steps

1. Insert the 5G WWAN card at an angle into the WWAN-card slot on the I/O board.

   NOTE: Ensure that the thermal pad is in place before installing the WWAN card.

2. Connect the antenna cables to their respective connectors on the 5G WWAN card.

   NOTE: The cable color and the number of antenna cables to connect vary depending on the type of WWAN card that is being installed on your computer.

Table 7. Antenna-cable color scheme for the WWAN card

5G WWAN Connector	Antenna-cable color
D/G	Black with a thin gray stripe
M2	Blue
M1	Orange
M	White with a thin gray stripe

3. Align the screw hole on the 5G WWAN-card thermal shield with the screw hole on the I/O board.
4. Replace the screw (M2x3.5) that secures the 5G 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.

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 settings to default values. It is recommended that you note the BIOS settings before removing the battery.

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

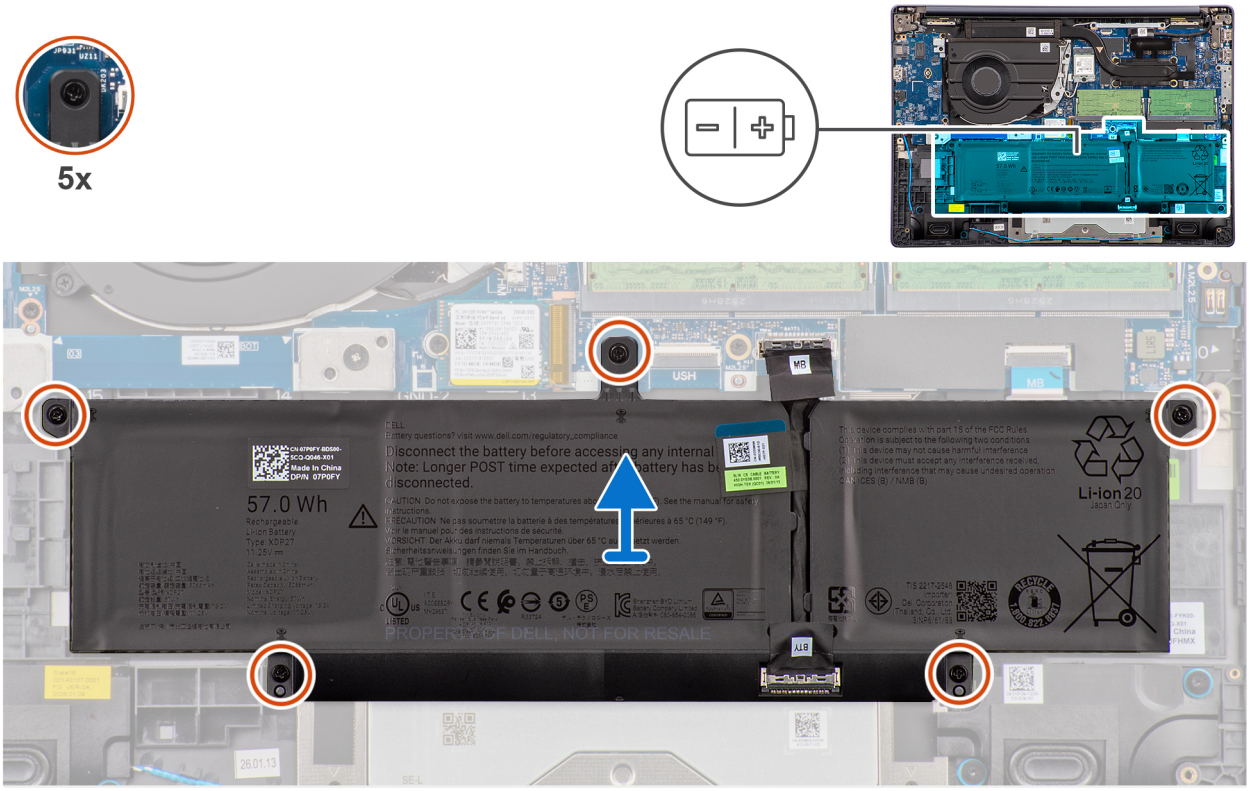


Figure 26. Removing the battery

Steps

1. Disconnect the battery cable from the battery cable connector (BATT) on the system board.
2. Loosen the five captive screws that secure the battery to the palm-rest assembly.
3. Lift the battery off the palm-rest assembly.

Installing the battery

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 battery and provides a visual representation of the installation procedure.

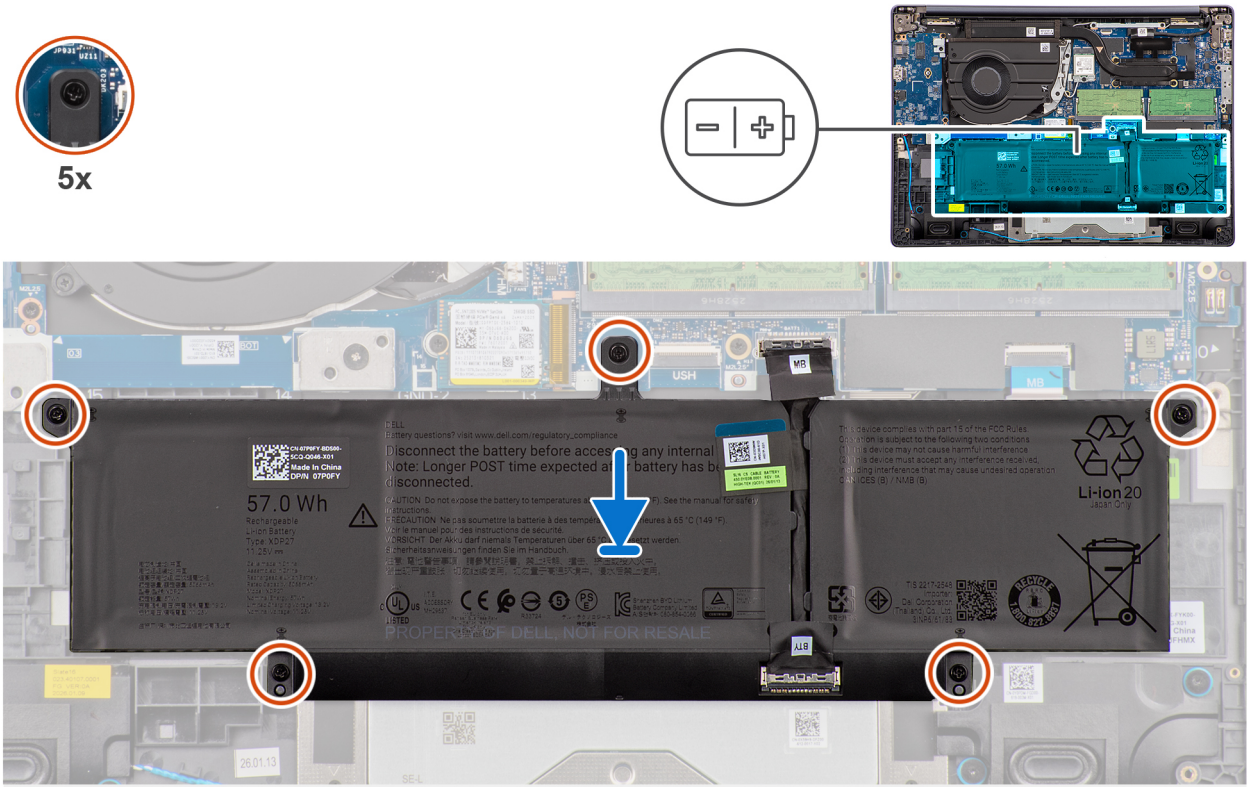


Figure 27. Installing the battery

Steps

1. Using the alignment posts, place the battery on the palm-rest assembly aligning the screw holes on the battery with the screw holes on the palm-rest assembly.
2. Tighten the five captive screws that secure the battery to the palm-rest assembly.
3. Connect the battery cable to the battery cable connector (BATT) on 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.

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.
4. Remove the battery.

About this task

The following image indicates the location of the battery cable and provides a visual representation of the removal procedure.

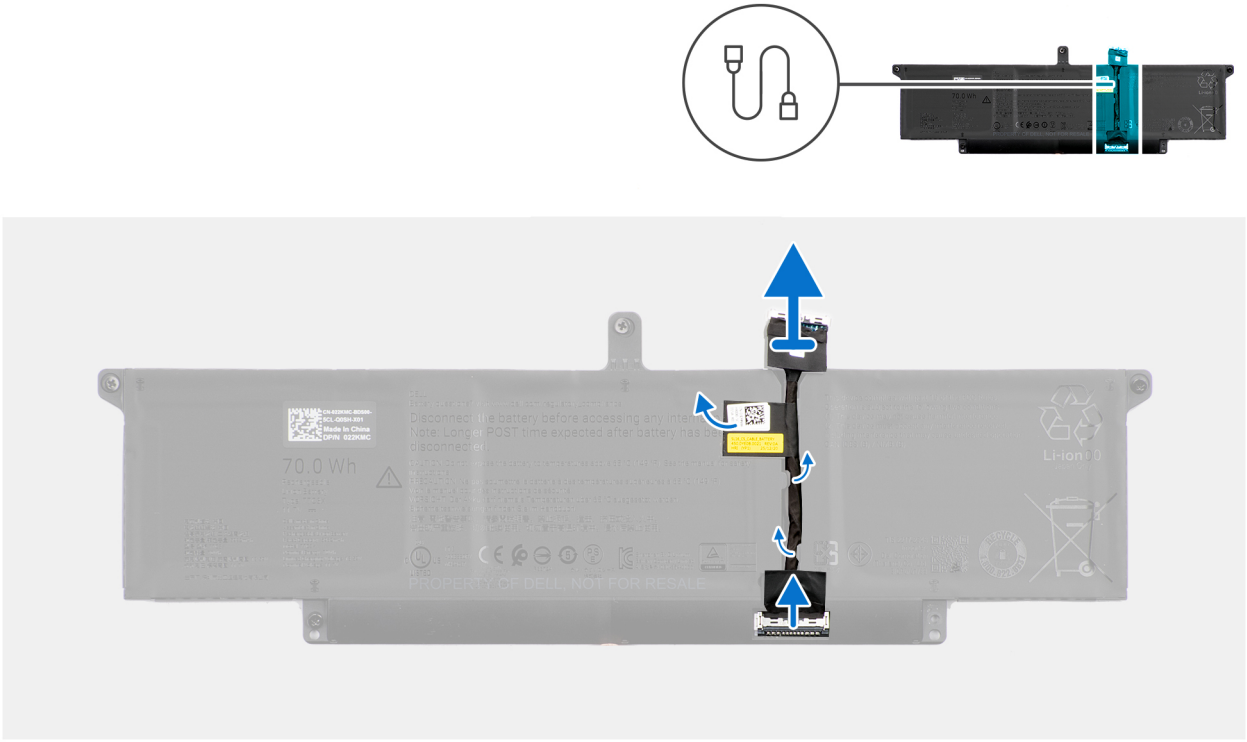


Figure 28. Removing the battery cable

Steps

1. Remove the battery cable from the routing guides on the battery.
2. Peel the tape that secures the battery cable to the battery.
3. Disconnect the battery cable from its connector on the battery and lift the battery cable off the battery.

Installing the battery cable

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 battery cable and provides a visual representation of the installation procedure.

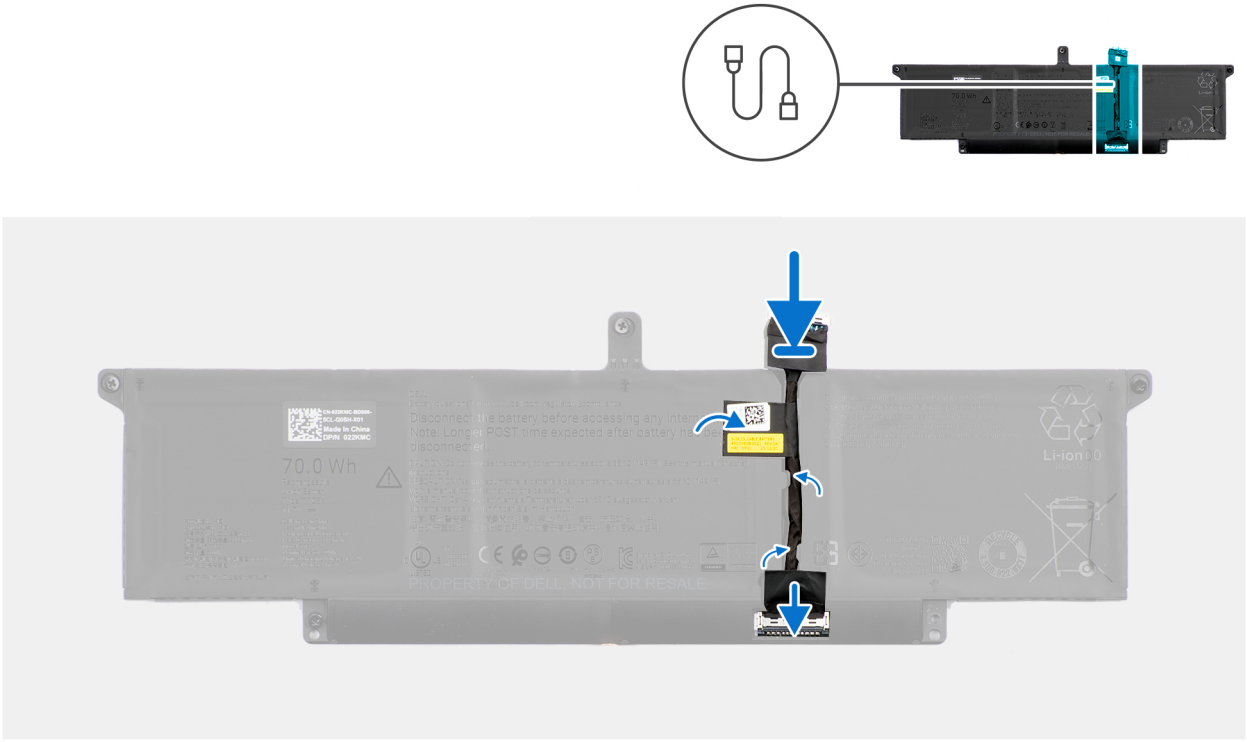


Figure 29. Installing the battery cable

Steps

1. Connect the battery cable to its connector on the battery.
2. Route the battery cable through the routing guides on the battery.

   NOTE: When installing the battery cable, ensure that the cable is properly routed under the securing tabs.

3. Adhere the tape that secures the battery cable to the battery.

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.

Speakers

Removing the speakers - Full Aluminium

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 speakers and provides a visual representation of the removal procedure.

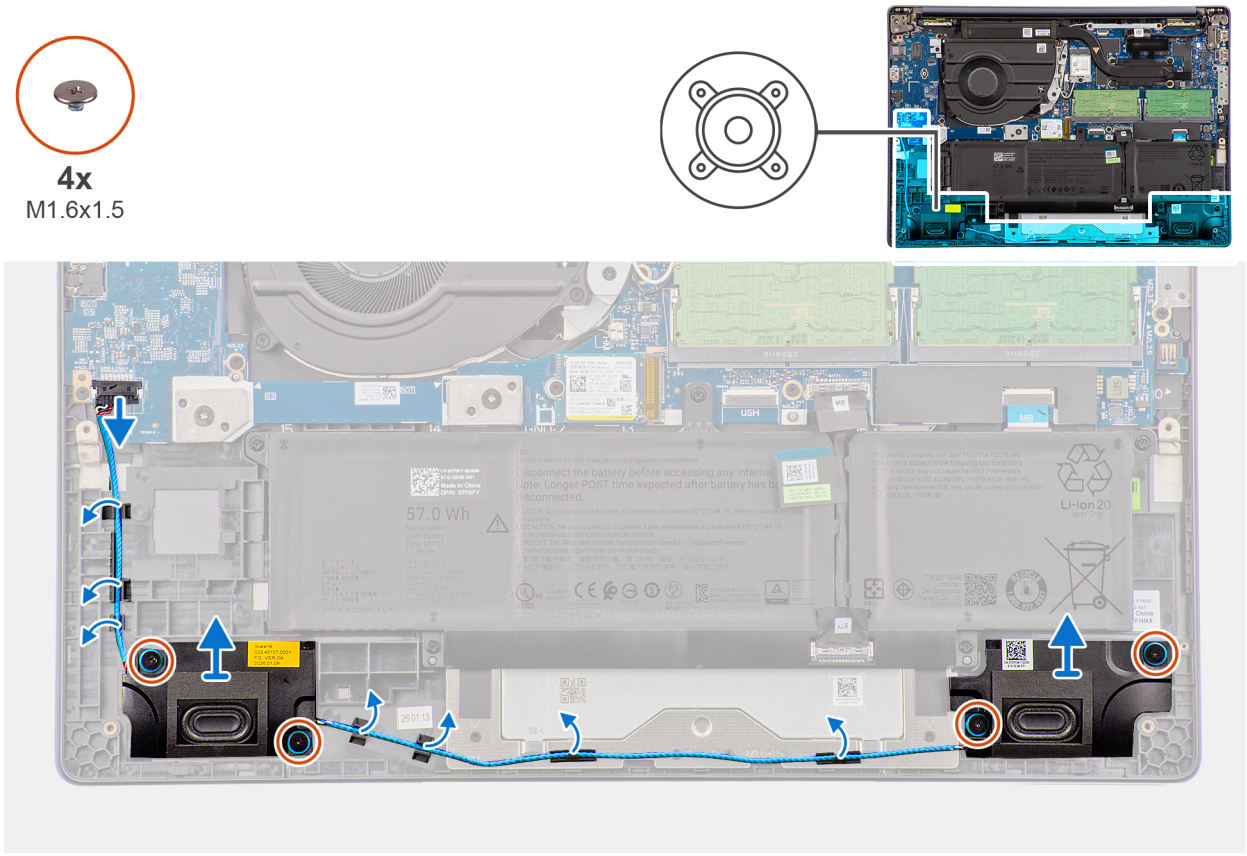


Figure 30. Removing the speakers

Steps

1. Disconnect the speaker cable from its connector (SPK) on the I/O board.
2. Remove the four screws (M1.6x1.5) that secure the speakers to the palm-rest assembly.
3. Peel the tape that secures the speaker cable to the palm-rest assembly.
4. Remove the speaker cable from the routing guides on the palm-rest assembly.
5. Lift the speakers off the palm-rest assembly.

Installing the speakers - Full Aluminium

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 speakers and provides a visual representation of the installation procedure.

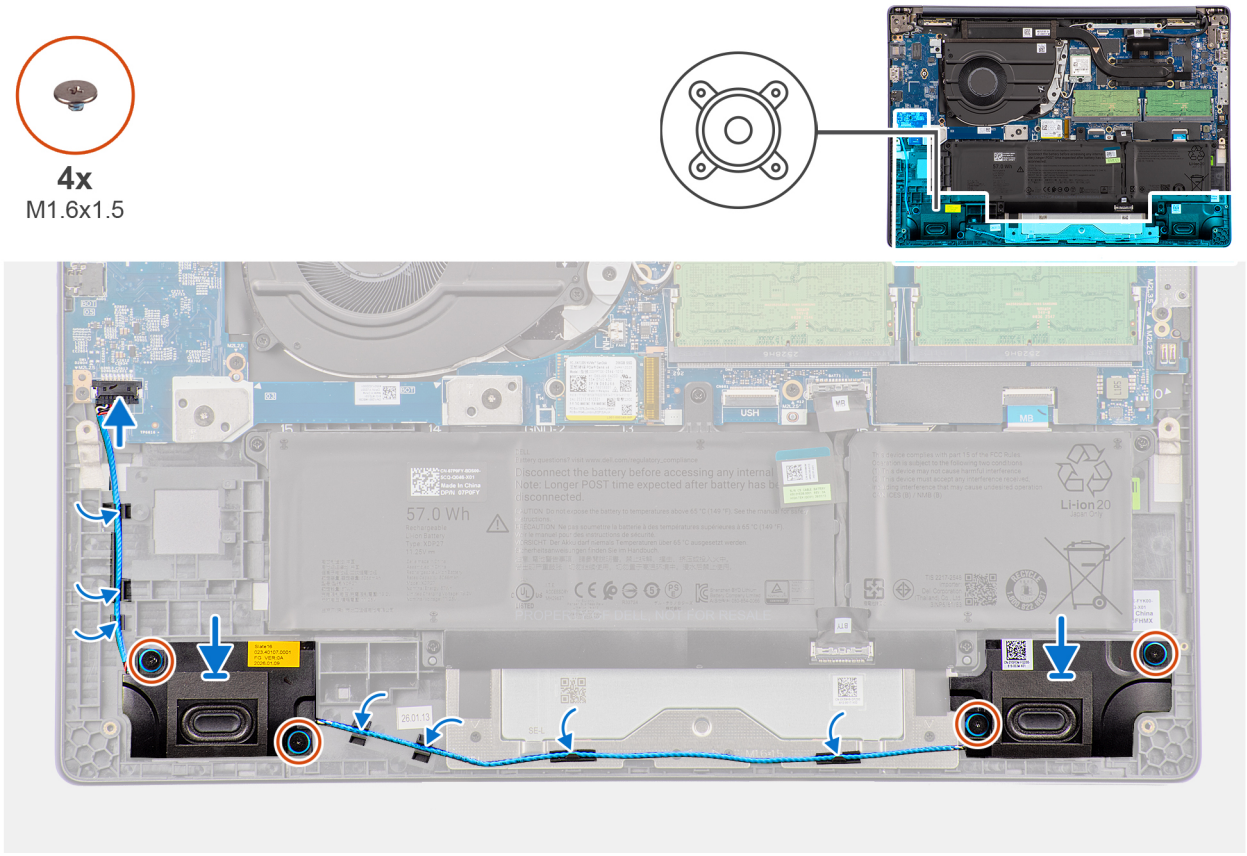


Figure 31. Installing the speakers

Steps

1. Threading the alignment posts through the rubber grommets, place the left and right speakers into their slots on the palm-rest assembly.

   NOTE: To ensure that the speakers are properly seated, secure the rubber grommets into the hooks on the alignment posts.

2. Route the speaker cable through the routing guides on the palm-rest assembly.
3. Replace the four screws (M1.6x1.5) that secure the speakers to the palm-rest assembly.
4. Adhere the tape that secures the speaker cable to the palm-rest assembly.
5. Connect the speaker cable to its connector (SPK) on 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 speakers - Glass Fiber Composite

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 wlan card.

About this task

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

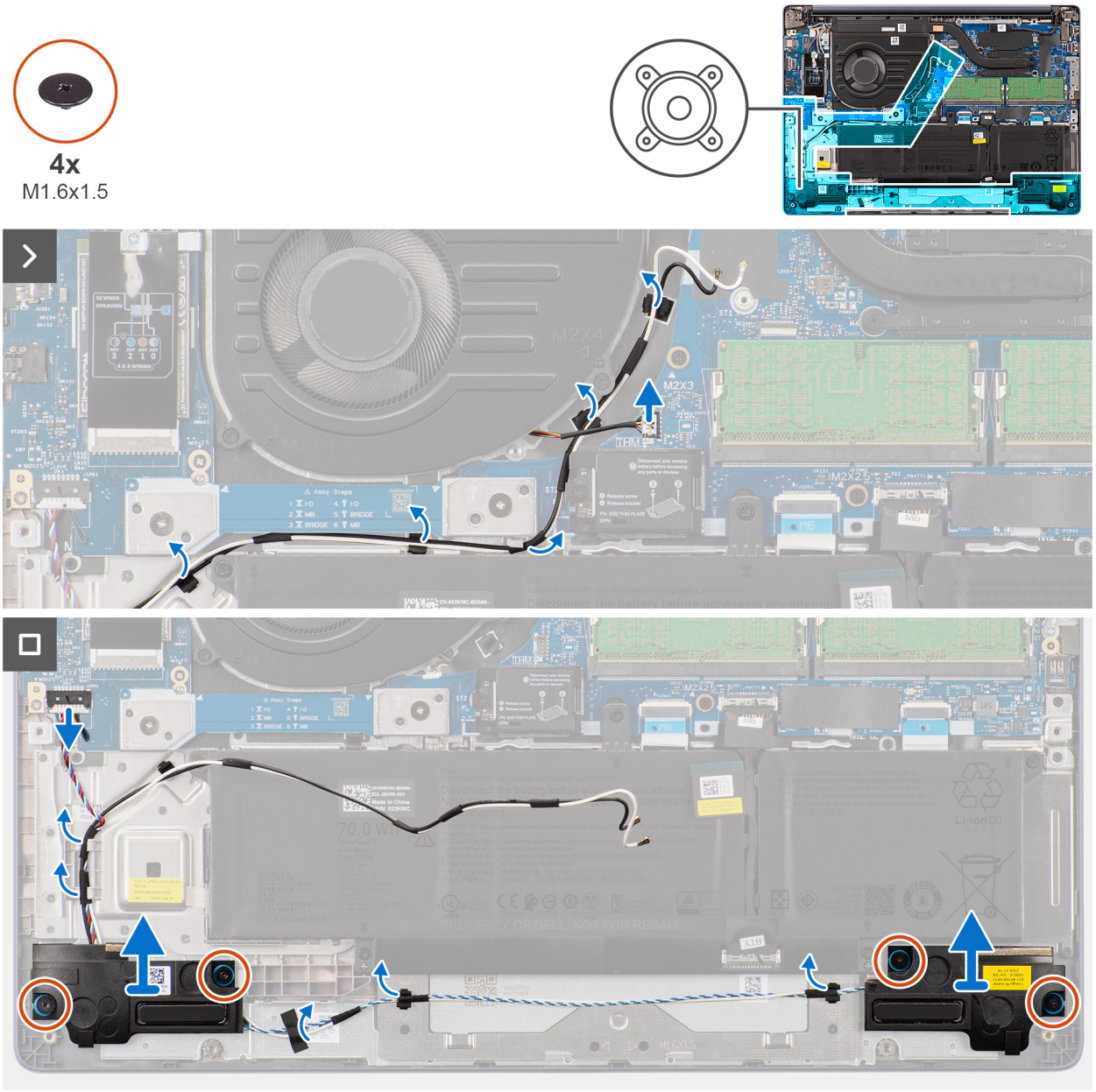


Figure 32. Removing the speakers

Steps

1. Disconnect the fan cable from its connector (FAN) on the system board.
2. Unroute the antenna cables from the routing guides on the palm-rest assembly.
3. Disconnect the speaker cable from its connector (SPK) on the I/O board.
4. Remove the four screws (M1.6x1.5) that secure the speakers to the palm-rest assembly.
5. Peel the tape that secures the speaker cable to the palm-rest assembly.
6. Remove the speaker cable from the routing guides on the palm-rest assembly.
7. Lift the speakers off the palm-rest assembly.

Installing the speakers - Glass Fiber Composite

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 speakers and provides a visual representation of the installation procedure.

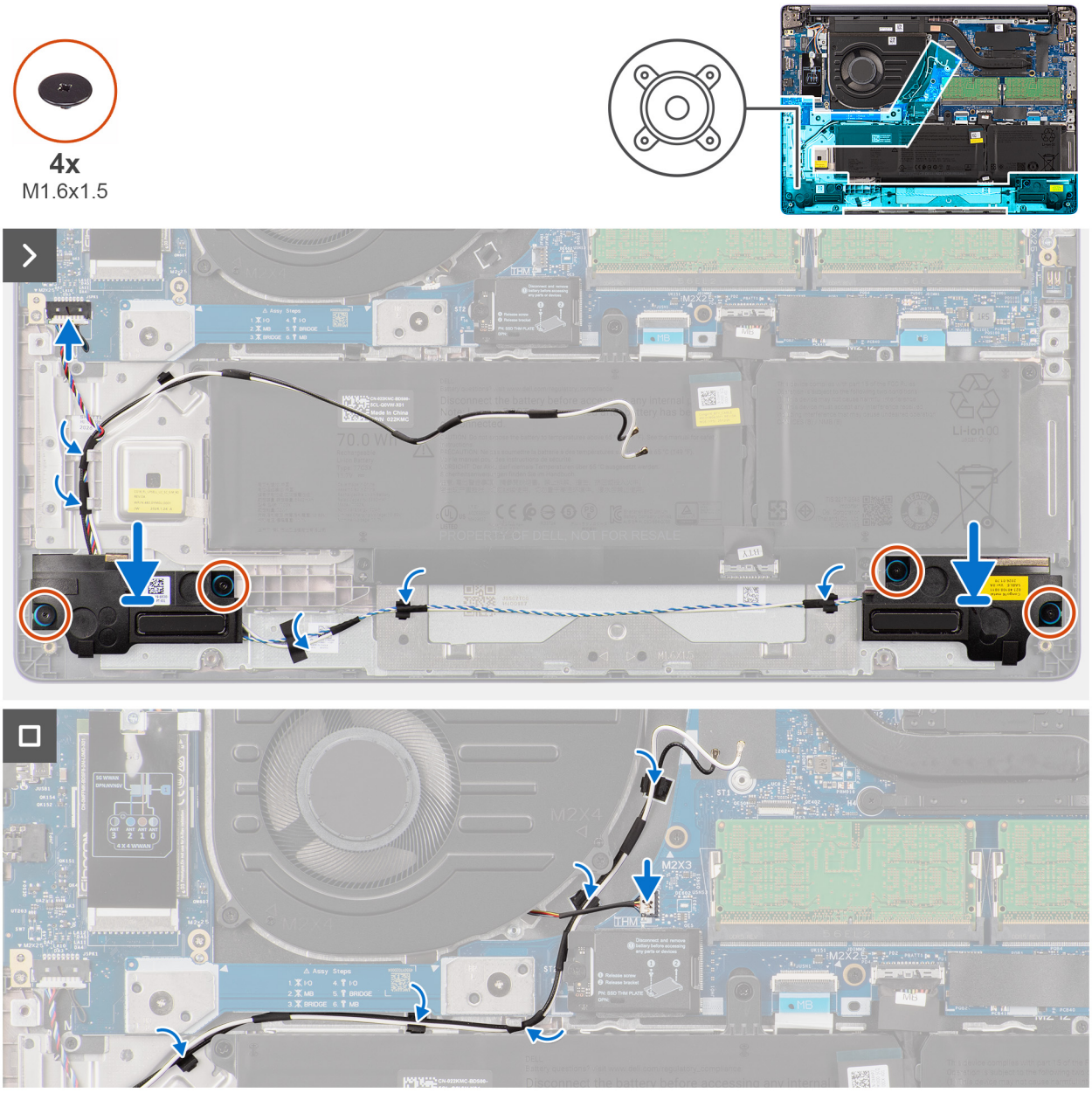


Figure 33. Installing the speakers

Steps

1. Threading the alignment posts through the rubber grommets, place the left and right speakers into their slots on the palm-rest assembly.

   NOTE: To ensure that the speakers are properly seated, secure the rubber grommets into the hooks on the alignment posts.

2. Route the speaker cable through the routing guides on the palm-rest assembly.

3. Replace the four screws (M1.6x1.5) that secure the speakers to the palm-rest assembly.
4. Adhere the tape that secures the speaker cable to the palm-rest assembly.
5. Connect the speaker cable to its connector (SPK) on the I/O board.
6. Reroute the antenna cables into the routing guides on the palm-rest assembly.
7. Connect the fan cable to its connector (FAN) on the system board.

Next steps

1. Install the wlan card.
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 image indicates the location of the fan and provides a visual representation of the removal procedure.

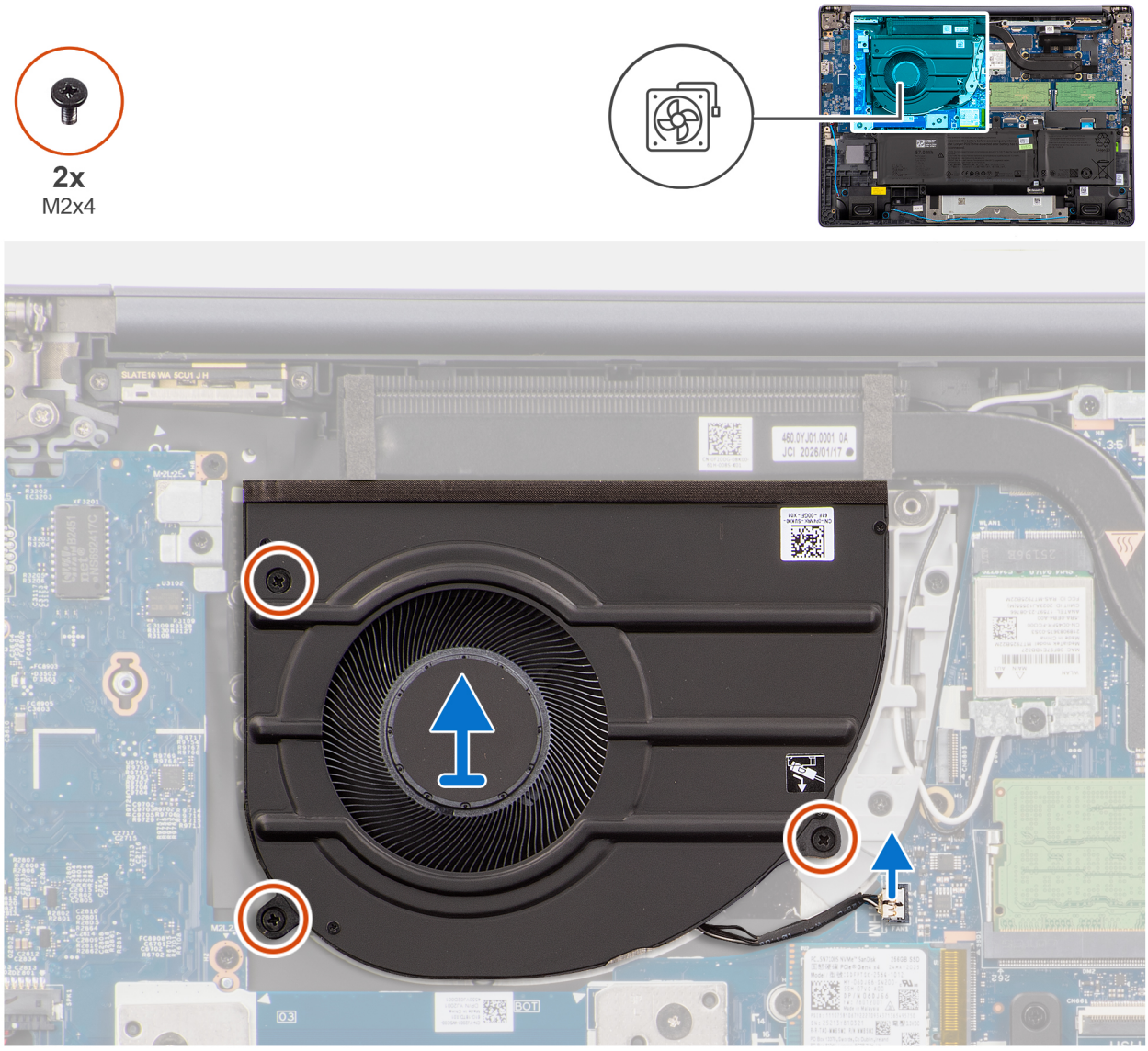


Figure 34. Removing the fan

Steps

1. Remove the screw (M2x2.5) that secures the fingerprint-reader bracket to the palm-rest assembly.
2. Lift the fingerprint reader bracket off the palm-rest assembly.
3. Disconnect the fan cable from its connector (FAN1) on the system board.
4. Remove the two screws (M2x4) that secure the fan to the palm-rest assembly.
5. 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 image indicates the location of the fan and provides a visual representation of the installation procedure.

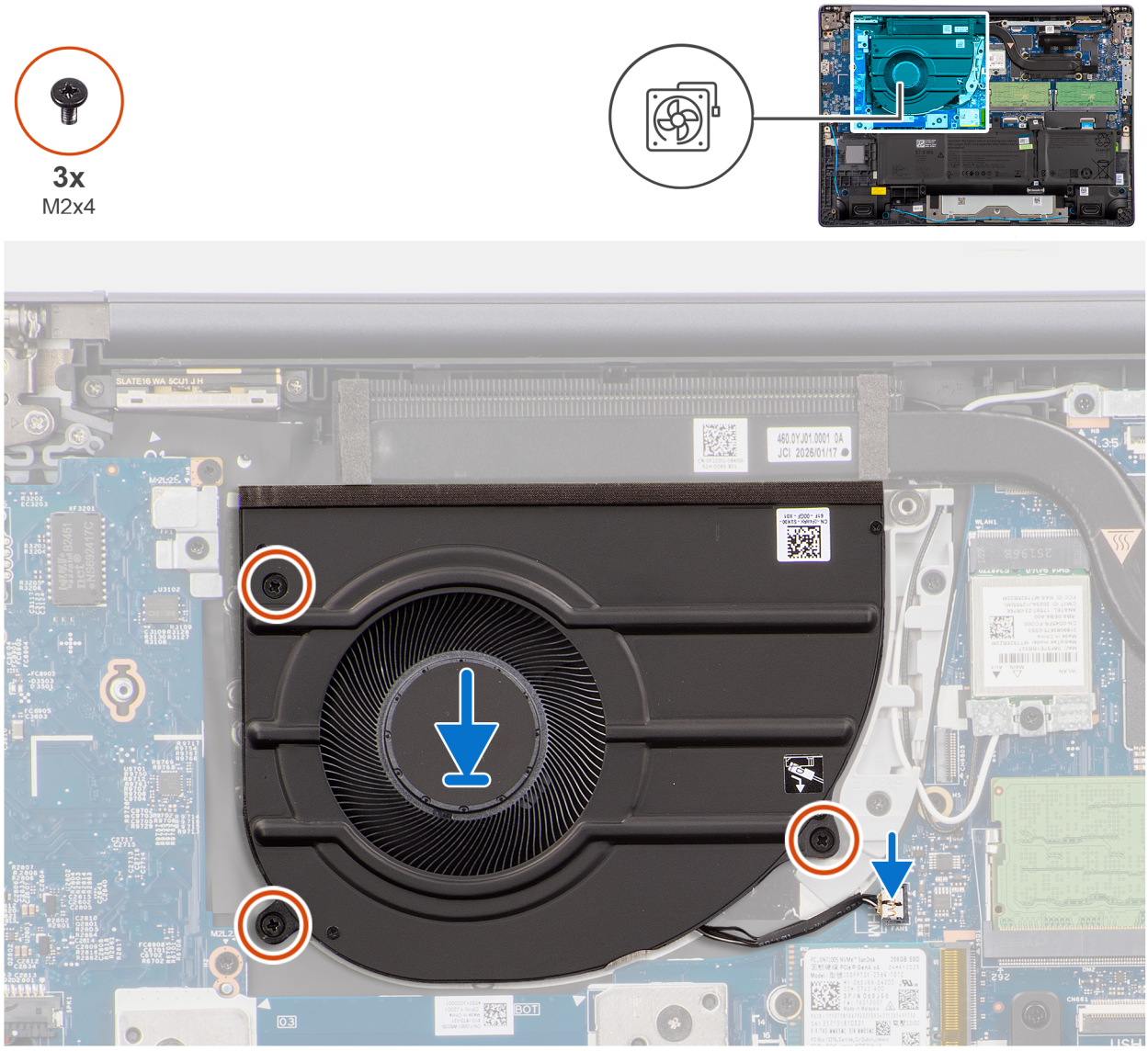


Figure 35. Installing the fan

Steps

1. Place the fan on the palm-rest assembly.
2. Align the screw holes on the fan with the screw holes on the palm-rest assembly.
3. Replace the two screws (M2x4) that secure the fan to the palm-rest assembly.
4. Connect the fan cable to its connector (FAN1) on the system board.
5. Place and align the fingerprint reader bracket on the palm-rest assembly.
6. Replace the screw (M2x2.5) that secures the fingerprint-reader bracket 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.

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 - Full Aluminium

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.

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

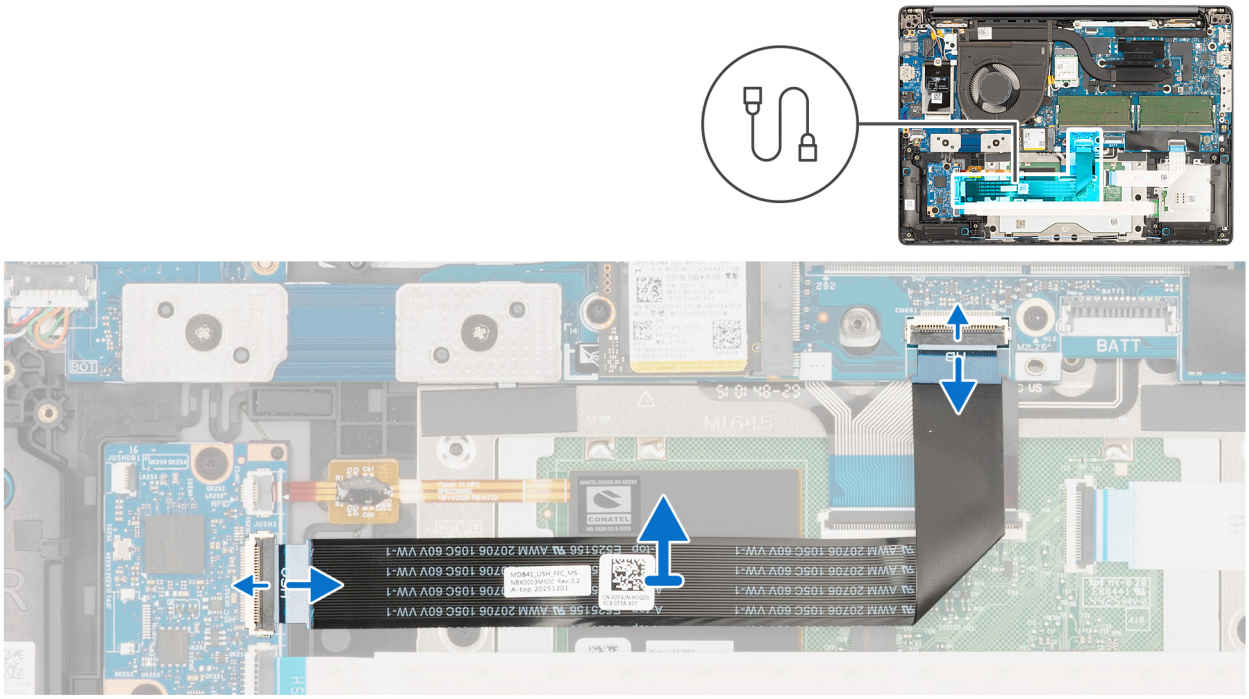


Figure 36. Removing the USH-board cable

Steps

1. Open the latch and disconnect the USH-board cable from the connector on the system board.
2. Lift the USH-board cable off the chassis.

Installing the USH-board cable - Full Aluminium

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

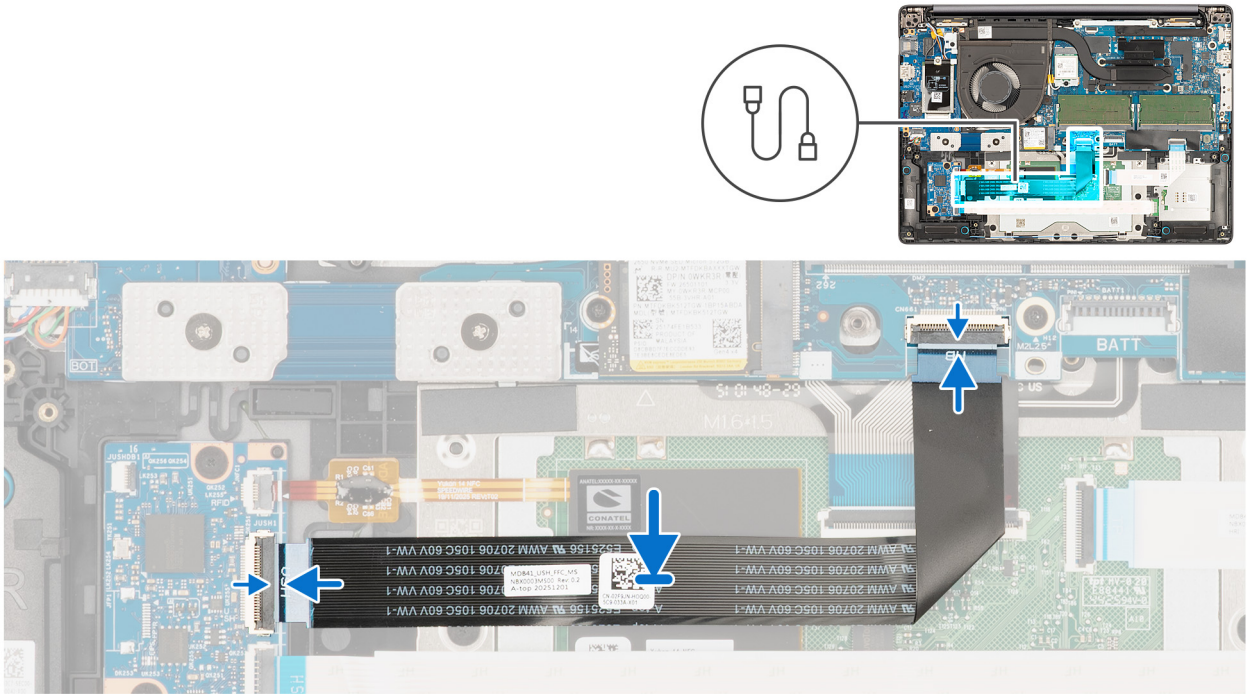


Figure 37. Installing the USH-board cable

Steps

1. Place the USH-board cable on the chassis.
2. Place the latch and connect the USH-board cable from the connector on the system board.

Next steps

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

Smart-card reader

Removing the smart-card reader

NOTE: The smart-card reader is available only on certain configurations.

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.

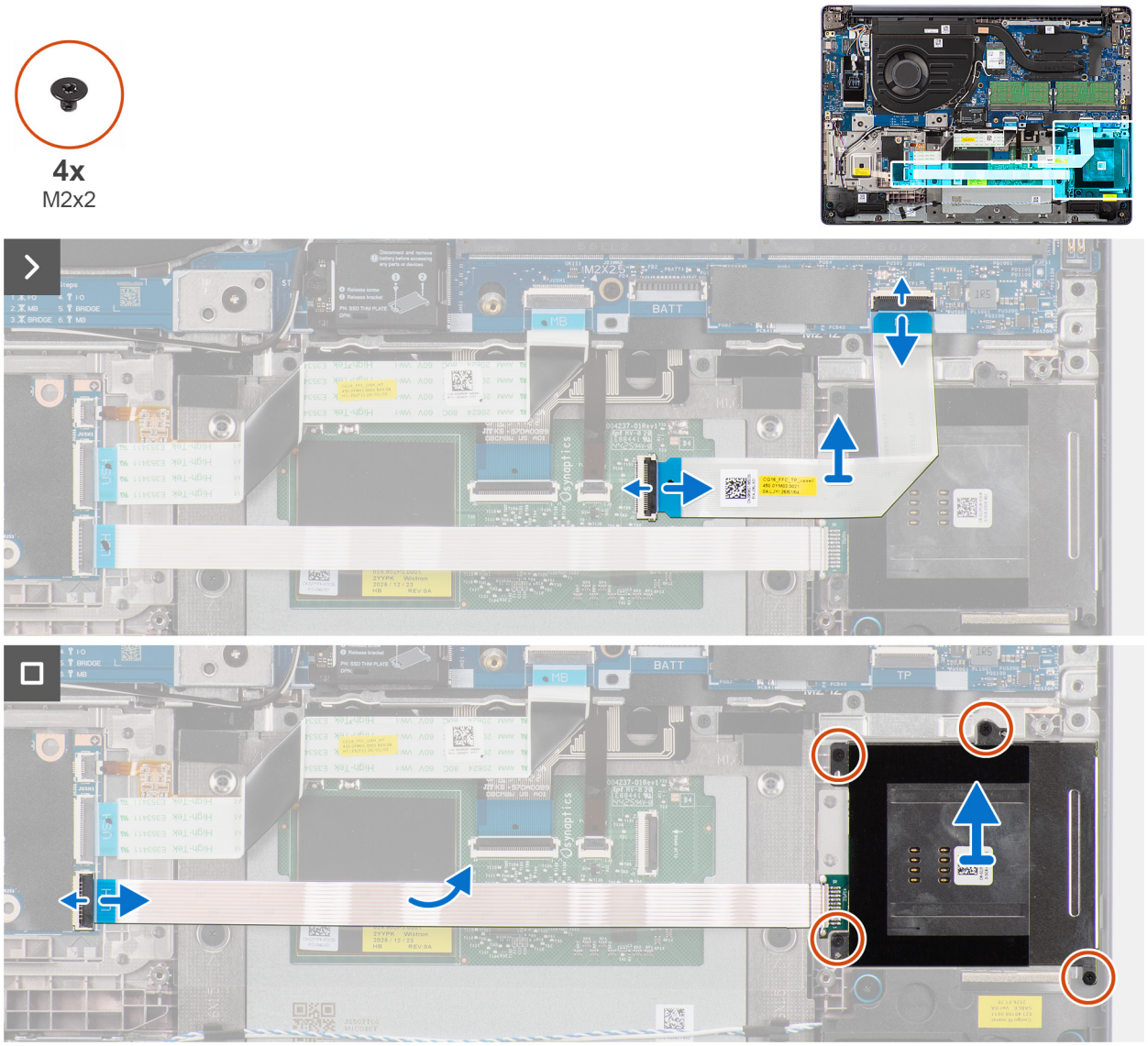


Figure 38. Removing the smart-card reader

Steps

1. Open the latch and disconnect the touchpad cable from the connector on the system board.
2. Open the latch and disconnect the smart-card reader cable from the connector on the USH board.
3. Gently peel the smart-card reader cable from the palm-rest assembly.
4. Remove the four screws (M2.0x2.0) 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.

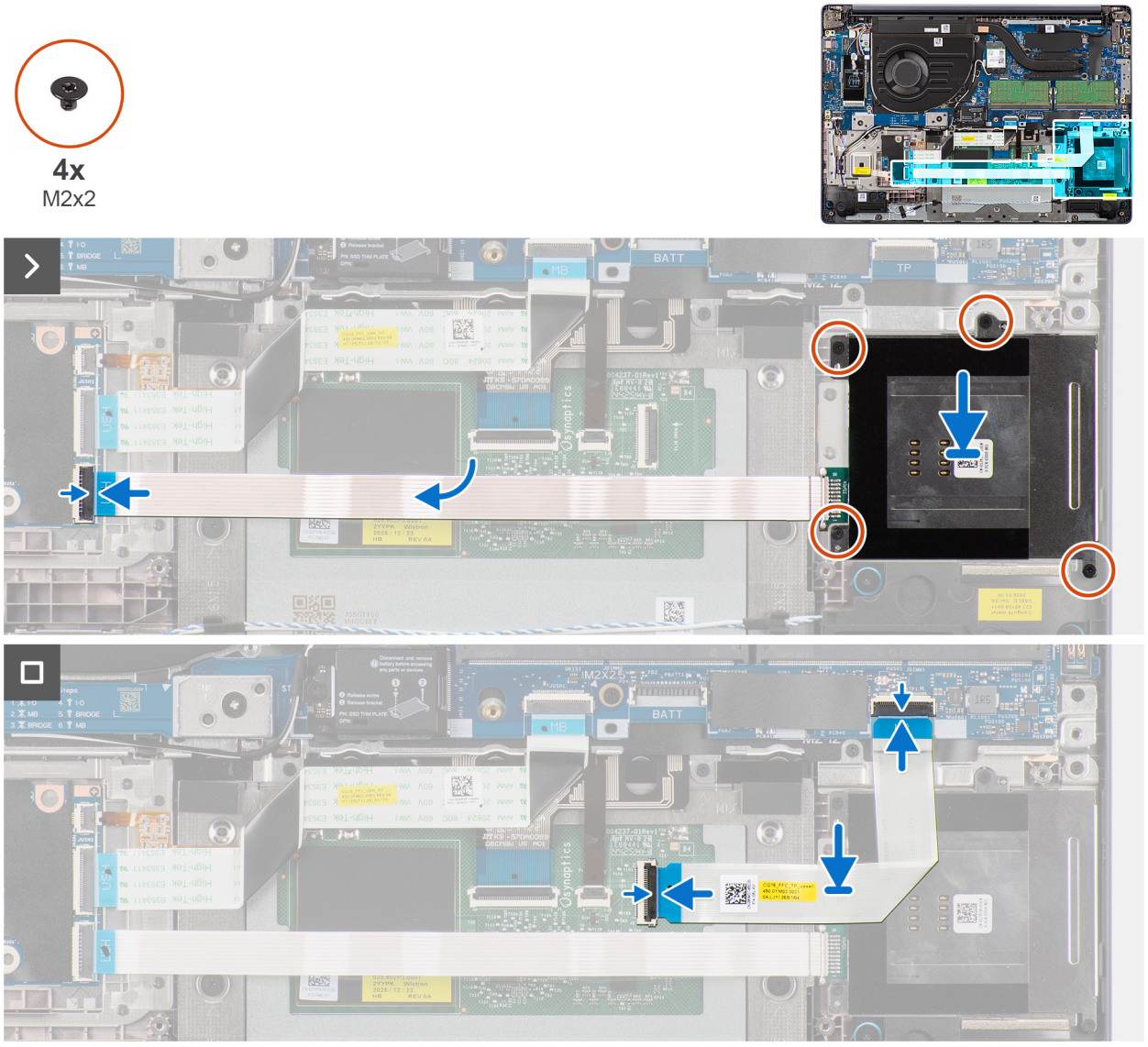


Figure 39. Installing the smart-card reader

Steps

1. Connect the touchpad cable to the connector on the system board
2. Align and place the smart-card reader on its slot on the palm-rest assembly.
3. Replace the four screws (M2.0x2.0) 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 battery.
2. Install the speakers.
3. Install the base cover.
4. Install the nano-SIM card tray, if applicable.
5. 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

NOTE: Depending on the type of memory installed on your computer, the I/O-bridge board may vary in appearance.

The following image indicates the location of the I/O-bridge board and provides a visual representation of the removal procedure.

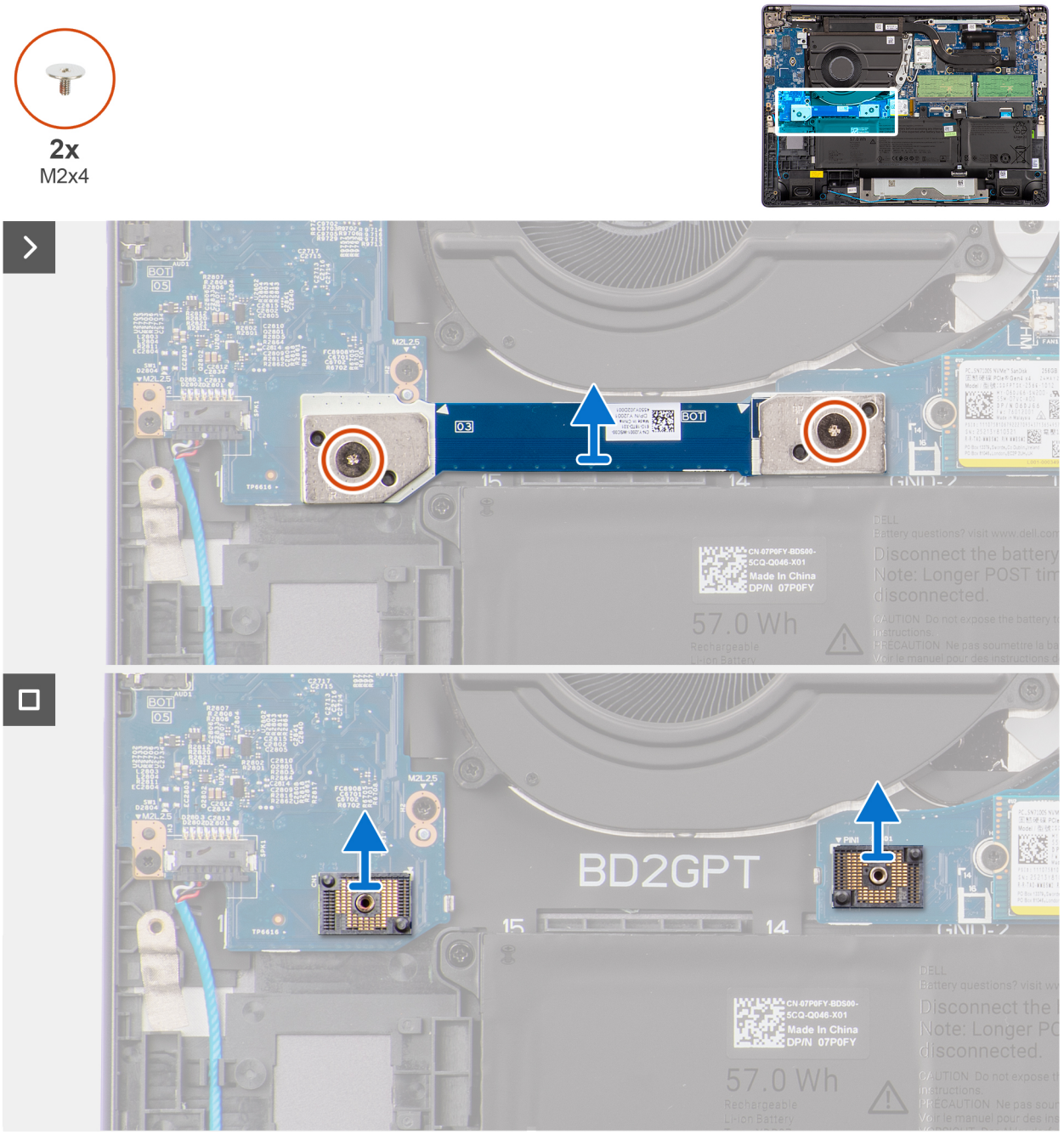


Figure 40. Removing the I/O-bridge board

Steps

1. Remove the screw (M2x4) that secures the I/O-bridge board to its connector on the I/O board.
2. Remove the screw (M2x4) that secures the I/O-bridge board to its connector on the system board.
3. Lift the I/O-bridge board off the I/O board and system board.
4. Remove the I/O-bridge board interposer from its connector on the I/O board.
5. Remove the I/O-bridge board interposer from 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.

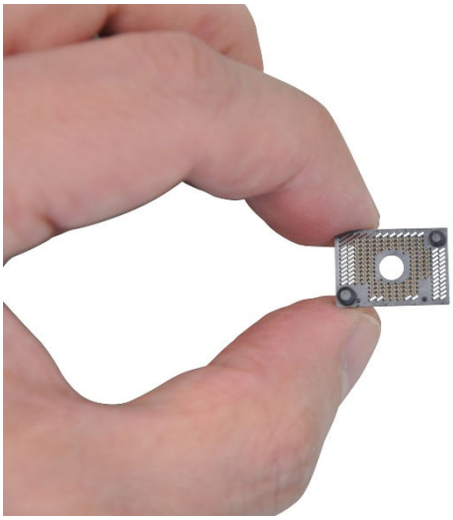


Figure 41. Proper handling of the I/O-bridge board interposer

Installing the I/O-bridge board

Prerequisites

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

About this task

NOTE: Depending on the type of memory installed on your computer, the I/O-bridge board may vary in appearance.

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

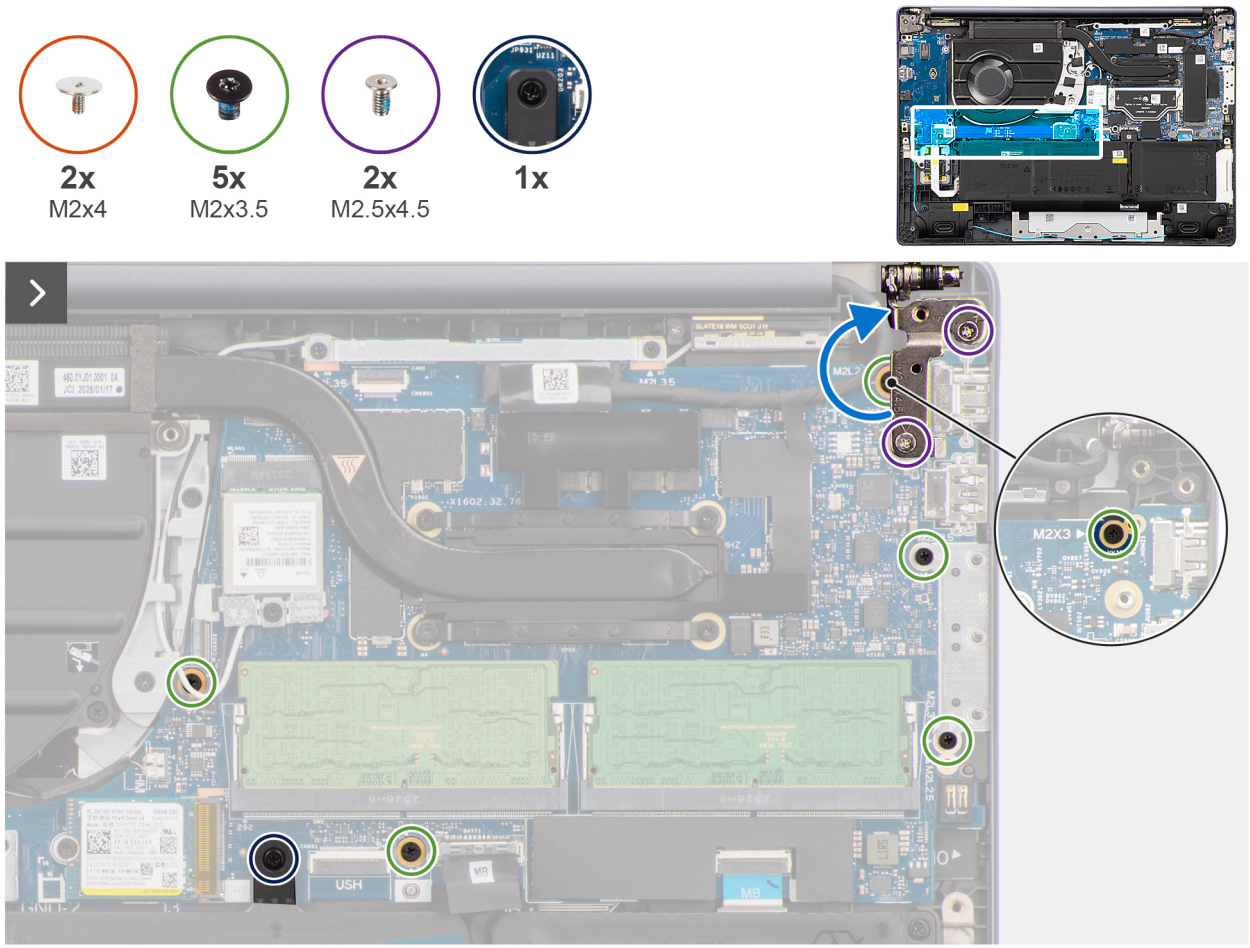


Figure 42. Installing the I/O-bridge board

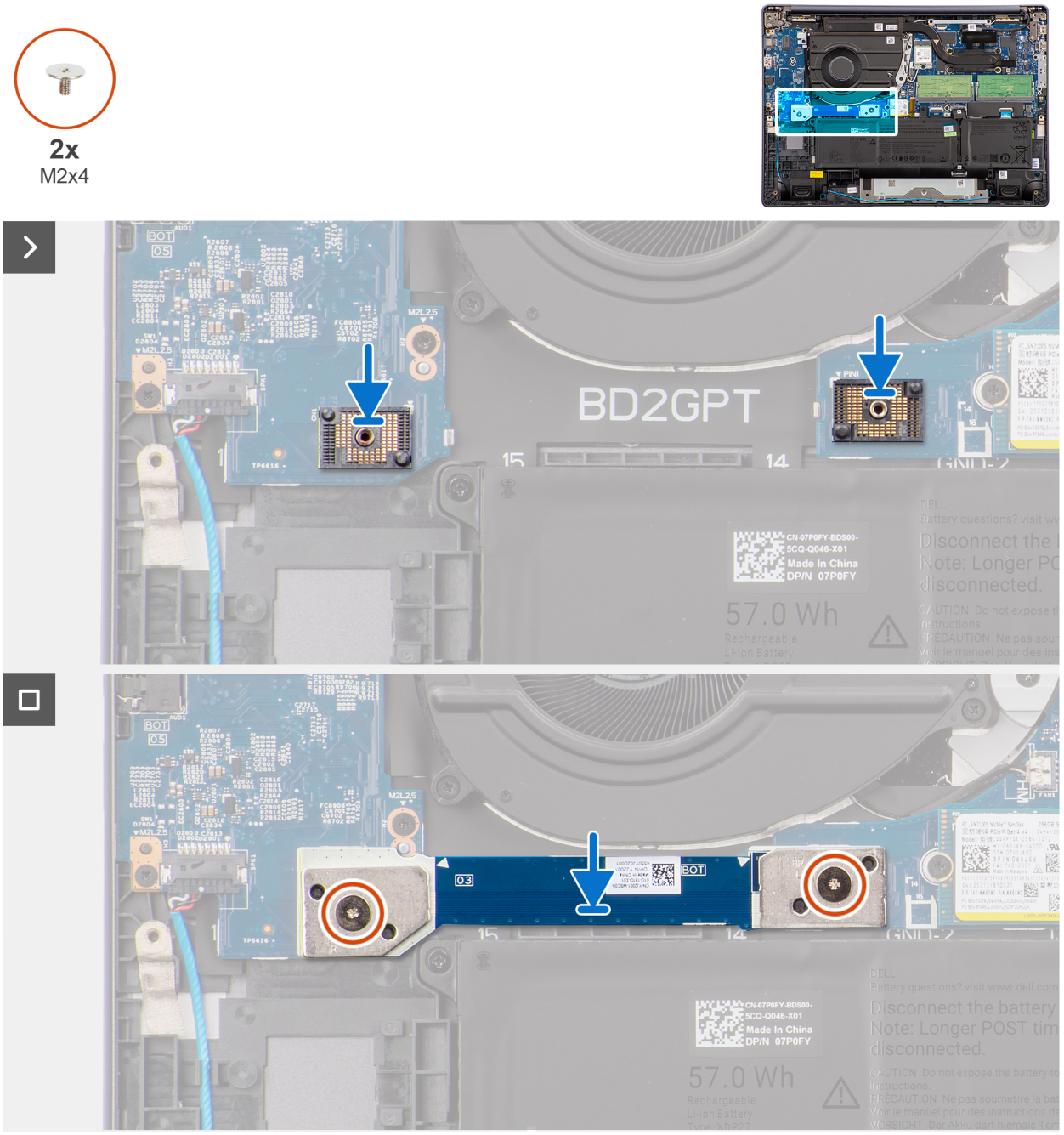


Figure 43. Installing the I/O-bridge board

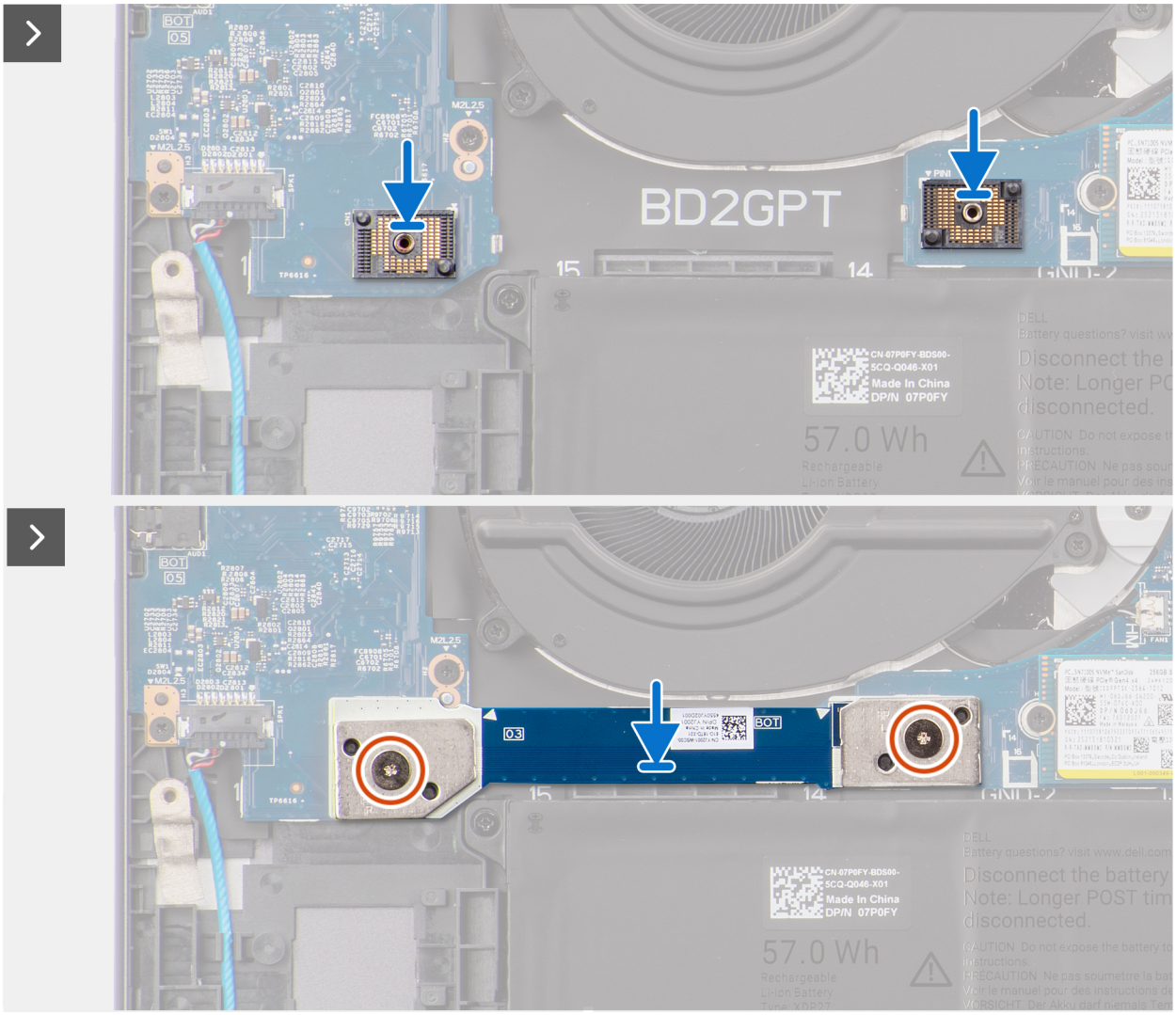


Figure 44. Installing the I/O-bridge board

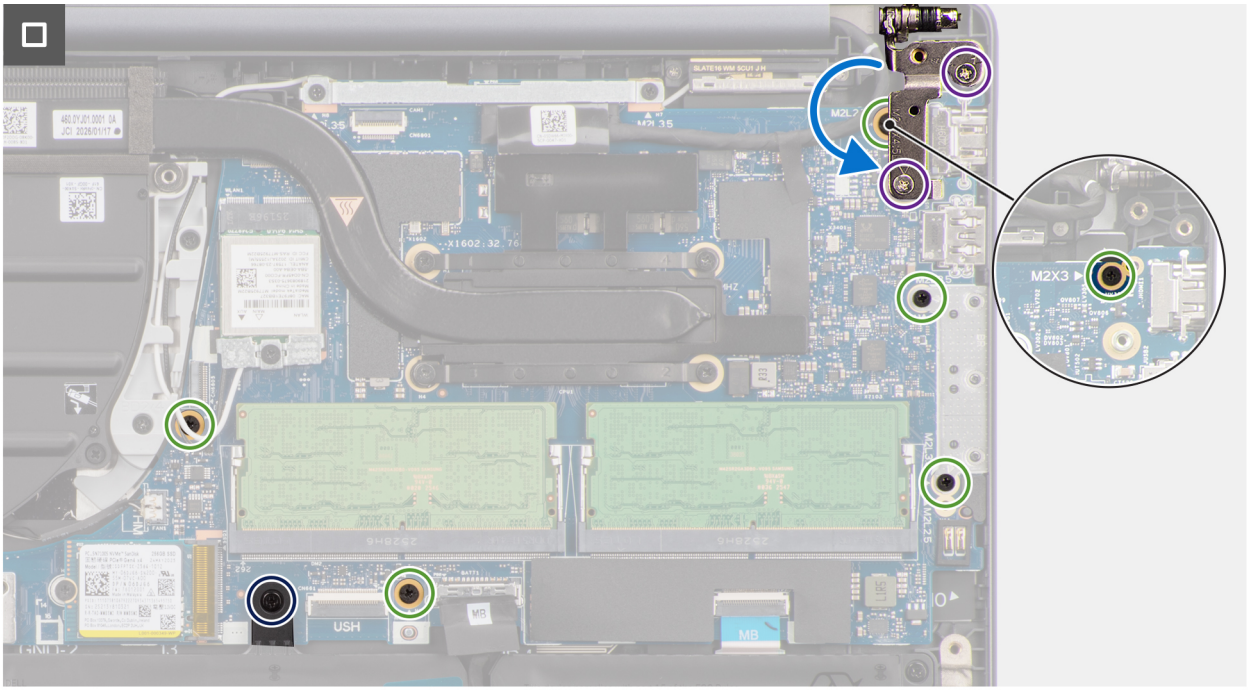


Figure 45. Installing the I/O-bridge board

Steps

1. Loosen the captive screw that secures the battery to the palm-rest assembly.
2. Remove the screw (M2x4) that secures the fan to the palm-rest assembly.
3. Remove the three screws (M2x2.5) that secure the system board to the palm-rest assembly.
4. Remove the two screws (M2x3.5) that secure the system board to the palm-rest assembly.
5. 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.
6. 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.

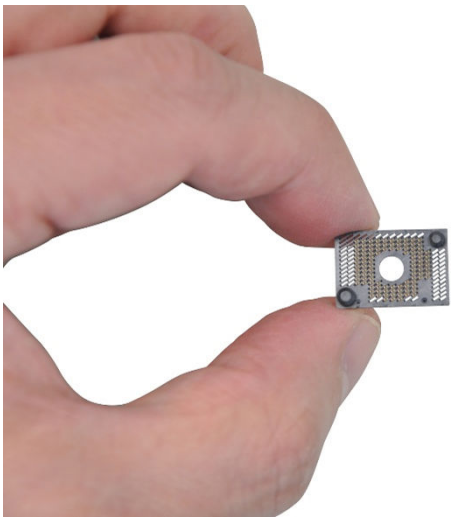


Figure 46. Proper handling of the I/O-bridge board interposer

7. 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.

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

NOTE:

When replacing the I/O board, follow the sequence (from left to right) shown below to ensure that the bridge connector is properly connected between the system board and the I/O board. The installation sequence shown below is also marked on the bridge connector.



Figure 47. Bridge board

12. Replace the screw (M2x4) that secures the fan to the palm-rest assembly.
13. Tighten the captive screw that secures 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.

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

The following image indicates the location of the heat sink and provides a visual representation of the removal procedure.

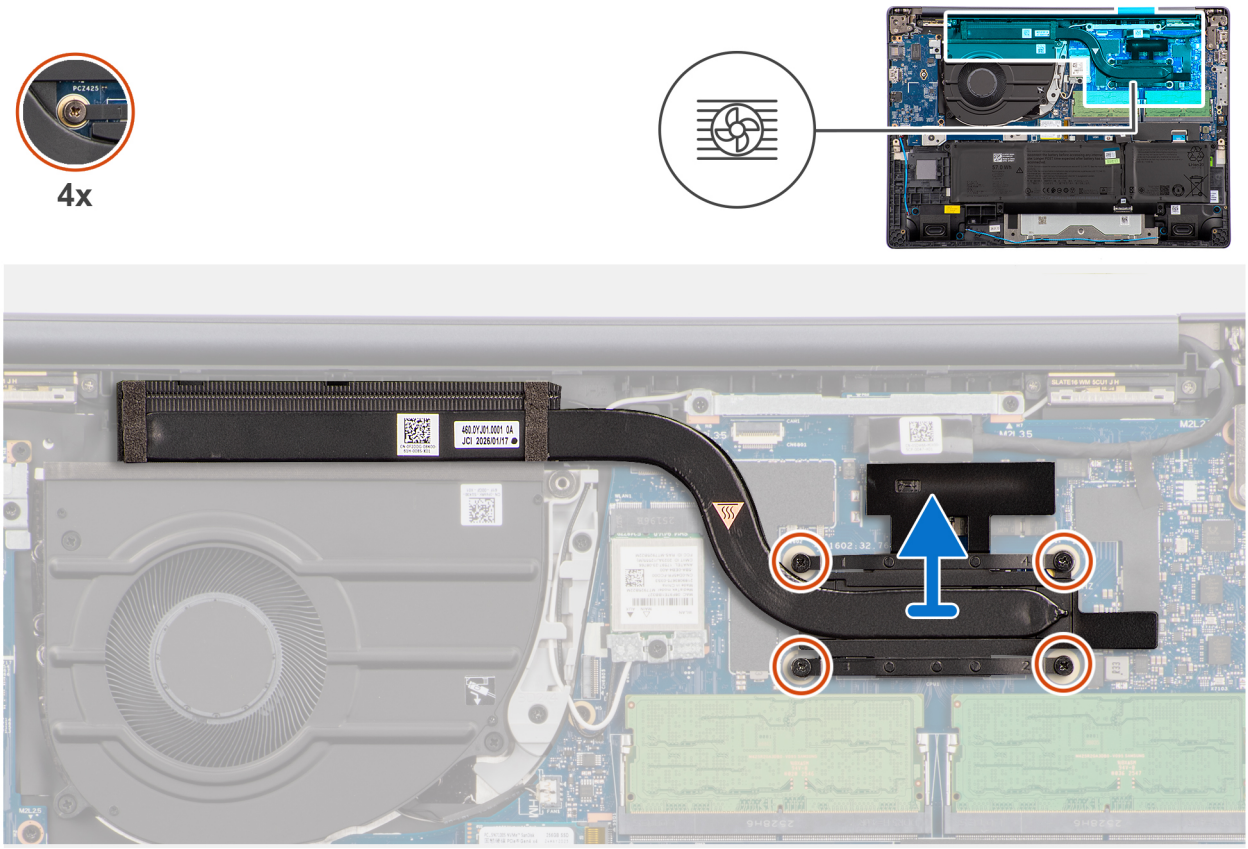


Figure 48. Removing the heat sink

Steps

1. In the reverse sequential order on the heat sink (4 > 3 > 2 > 1), loosen the four captive screws that secure the heat sink to the system board.
2. Lift the heat sink off 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

The following image indicates the location of the heat sink and provides a visual representation of the installation procedure.

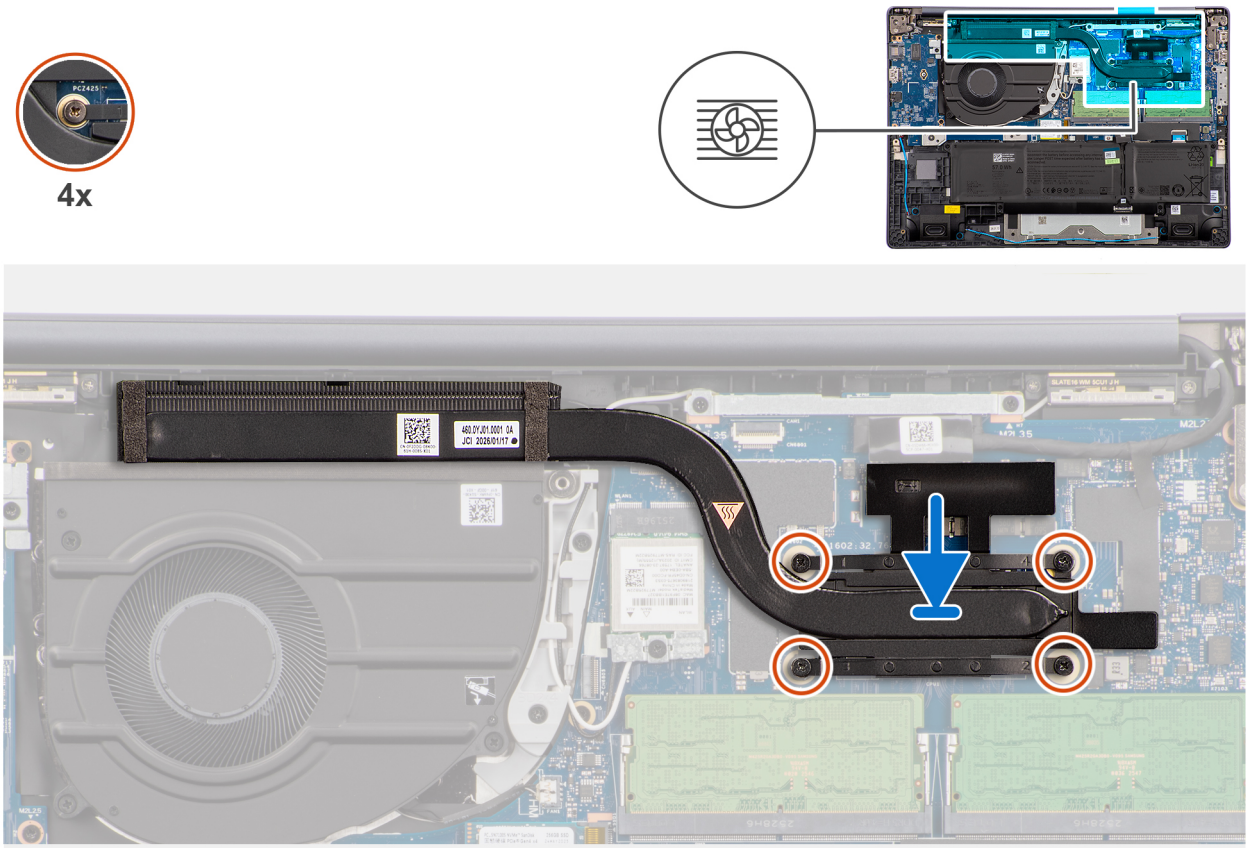


Figure 49. Installing the heat sink

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.
2. In sequential order on the heat sink (1 > 2 > 3 > 4), tighten the four captive screws (M2x3) that secure the heat sink 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.

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 4G WWAN card or the 5G WWAN card, whichever applicable.
5. Remove the fan.
6. Remove the I/O-bridge board.

About this task

The following image indicates the location of the I/O board and provides a visual representation of the removal procedure.

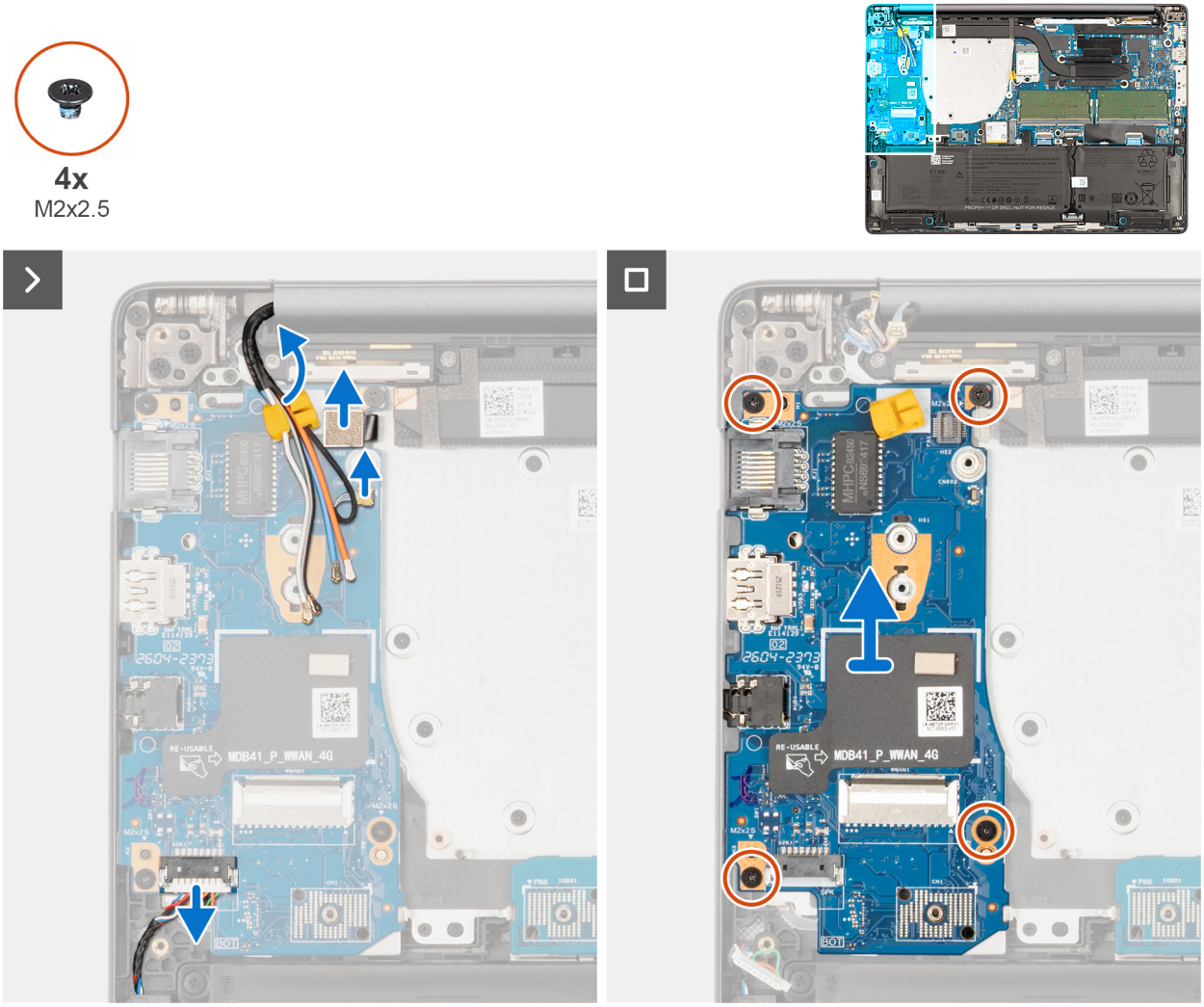


Figure 50. Removing the I/O board

Steps

1. Remove the WWAN antenna cables from the routing guides on the I/O board and move it away from the I/O board.
2. Disconnect the fingerprint-reader cable from its connector (FP1) on the I/O board.

   NOTE: This step is applicable only for computers shipped with the optional fingerprint reader.

3. Disconnect the Darwin cable from its connector on the I/O board.

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

4. Disconnect the speaker cable from its connector (SPK) on the I/O board.
5. Peel the WWAN-card thermal pad and Mylar tape off the I/O board.

   NOTE: This step is applicable only if your computer has a WWAN card installed and you are replacing the I/O board on your computer with a new one.

6. Remove the four screws (M2x2.5) that secure the I/O board to the palm-rest assembly.
7. Lift the I/O board off the palm-rest assembly.

Installing the I/O 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 location of the I/O board and provide a visual representation of the installation procedure.

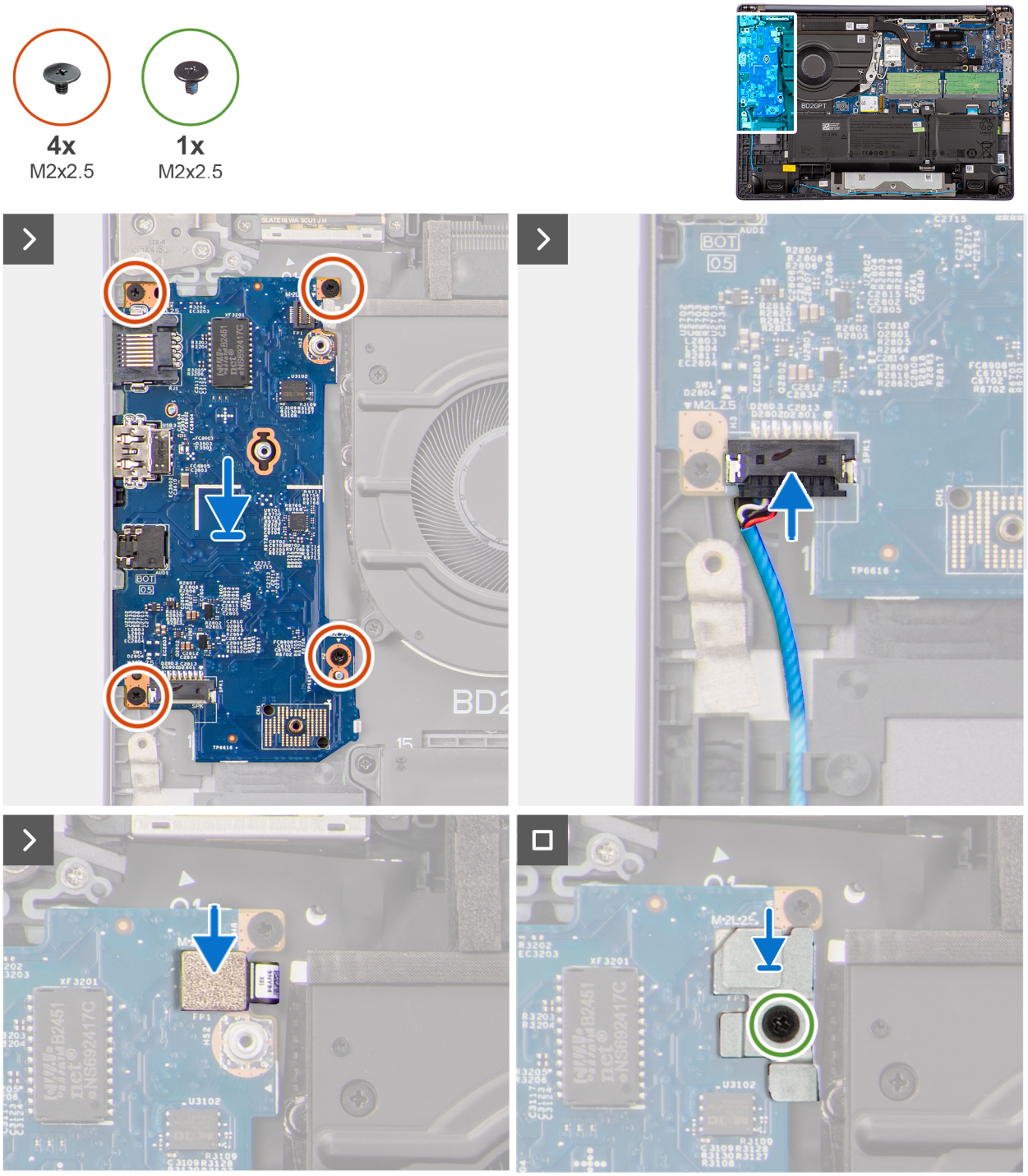


Figure 51. Installing the I/O board

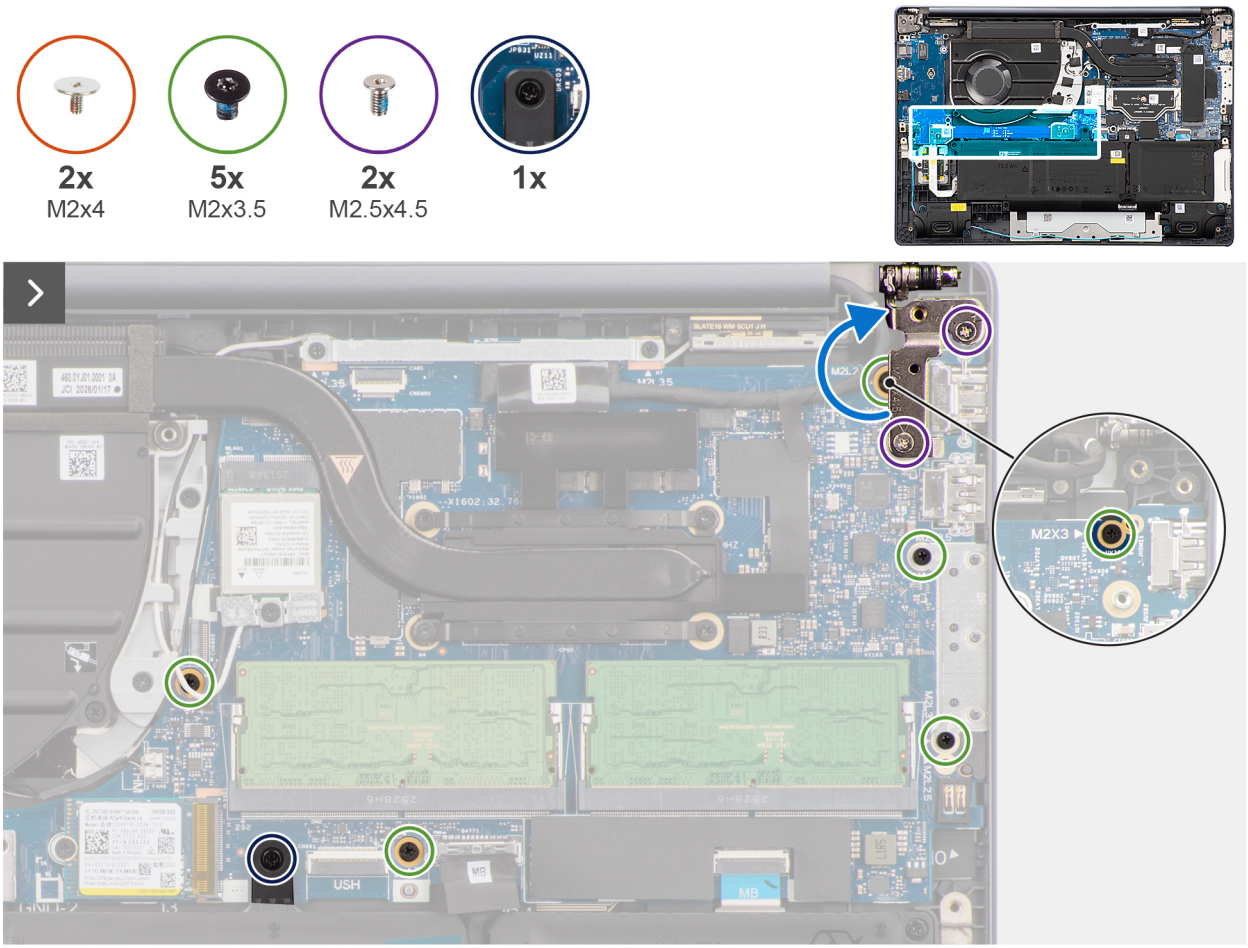


Figure 52. Installing the I/O board

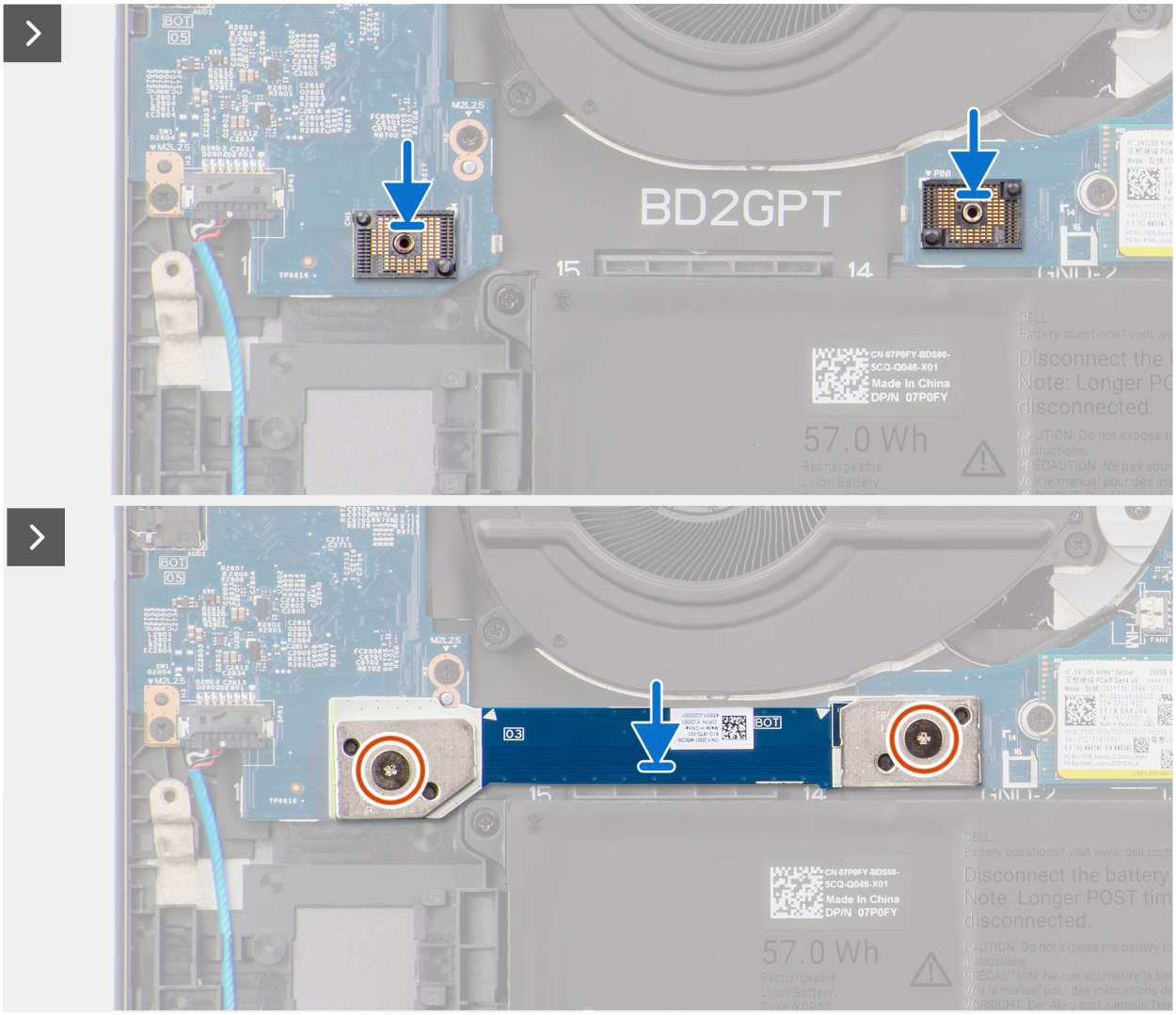


Figure 53. Installing the I/O board

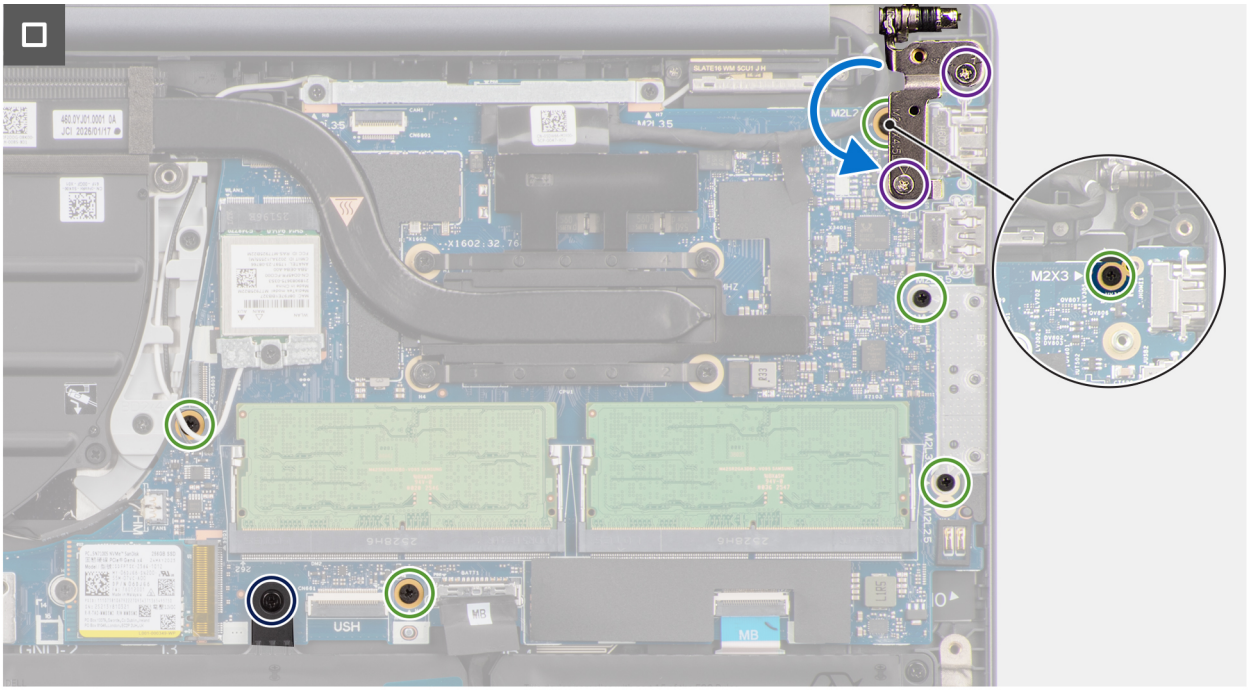


Figure 54. Installing the I/O board

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. Adhere the WWAN-card thermal pad and Mylar tape on the I/O board.

   NOTE: This step is applicable only if your computer has a WWAN card installed and you are replacing the I/O board on your computer with another one.

4. Replace the four screws (M2x2.5) that secure the I/O board to the palm-rest assembly.
5. Connect the speaker cable to its connector (SPK) on the I/O board.

   NOTE: This step is applicable only for computers shipped with the optional fingerprint reader.

6. Connect the fingerprint-reader cable to its connector (FP1) on the I/O board.

   NOTE: This step is applicable only for computers shipped with the optional fingerprint reader.

7. Route the WWAN antenna cables and Darwin cable through its routing guides on the I/O board.
8. Connect the Darwin cable to its connector on the I/O board.
9. Place and align the fingerprint-reader bracket on the palm-rest assembly.
10. Replace the screw (M2x2.5) that secures the fingerprint-reader bracket to the palm-rest assembly.
11. Remove the two screws (M2.5x4.5) that secure the right display hinge to the palm-rest assembly.
12. Pry open the right display hinge at a 90-degree angle.
13. Loosen the captive screw that secures the battery to the palm-rest assembly.
14. Remove the three screws (M2x3.5) that secure the system board to the palm-rest assembly.
15. Remove the five screws (M2x3.5) that secure the system board to the palm-rest assembly.

    NOTE:

    When replacing the I/O board, follow the sequence (from left to right) shown below to ensure that the bridge connector is properly connected between the system board and the I/O board. The installation sequence shown below is also marked on the bridge connector.



Figure 55. Bridge board

16. 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.
17. 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, hold the interposer by the edges while handling it.

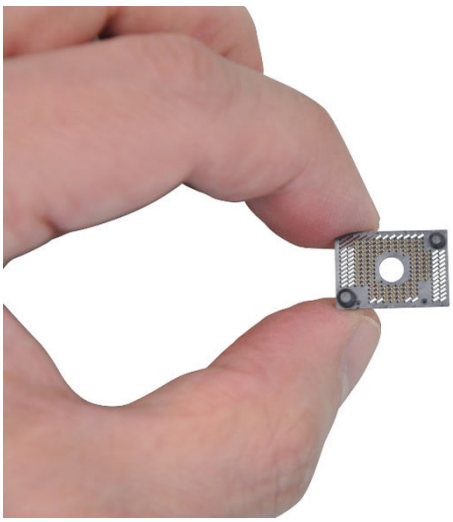


Figure 56. Proper handling of the I/O-bridge board interposer

18. 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.
19. Replace the screw (M2x4) that secures the I/O-bridge board to its connector on the I/O board.
20. Replace the screw (M2x4) that secures the I/O-bridge board to its connector on the system board.
21. Replace the three screws (M2x3.5) that secure the system board to the palm-rest assembly.
22. Replace the two screws (M2x3.5) that secure the system board to the palm-rest assembly.
23. Tighten the captive screw that secures the battery to the palm-rest assembly.
24. Close the right display hinge.
25. Using the alignment posts, align the screw holes on the right display hinge with the screw holes on the palm-rest assembly before fully closing the hinge.
26. Replace the two screws (M2.5x4.5) that secure the right display hinge to the palm-rest assembly.

Next steps

1. Install the I/O-bridge board.
2. Install the fan.
3. Install the 4G WWAN card or the 5G WWAN card, whichever applicable.

4. Install the base cover.
5. Install the nano-SIM card tray, if applicable.
6. Follow the procedure in After working inside your computer.

Power button

Removing the power button

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 4G WWAN card or the 5G WWAN card, whichever applicable.
5. Remove the fan.
6. Remove the I/O-bridge board.
7. Remove the I/O board.

About this task

NOTE: The procedure to remove the power button or the power button with an optional fingerprint reader is exactly the same.

The following image indicates the location of the power button and provides a visual representation of the removal procedure.

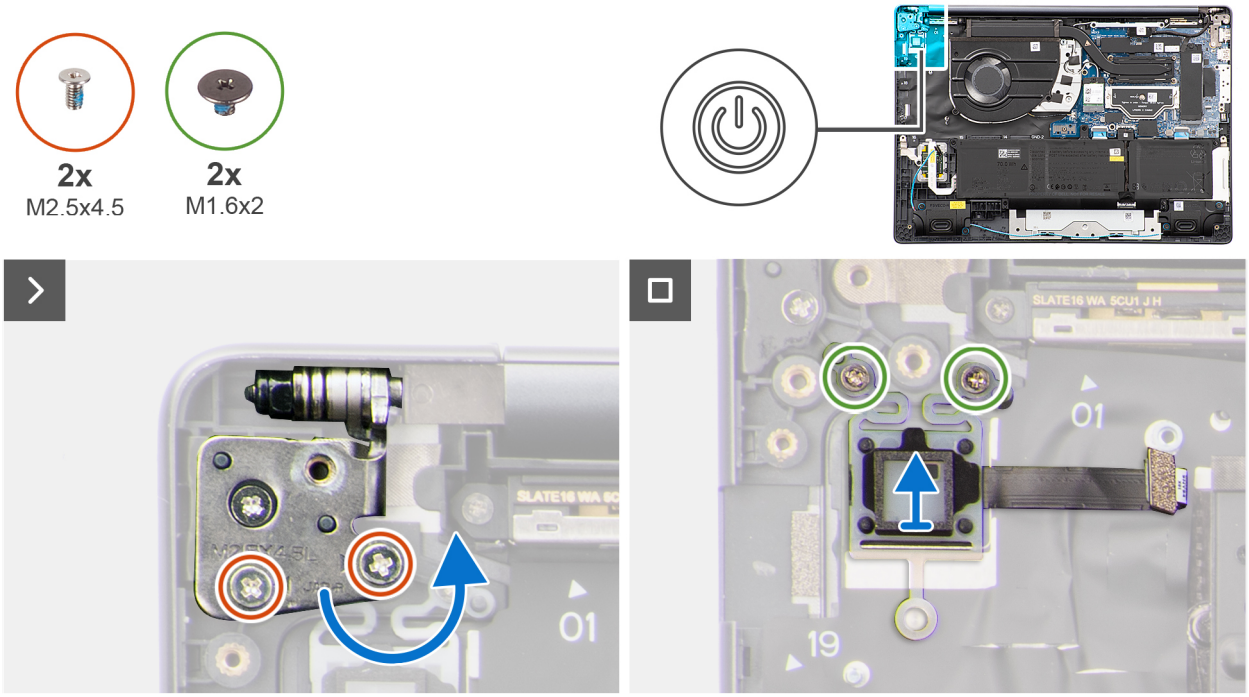


Figure 57. Removing the power button

Steps

1. Remove the three screws (M2.5x4.5) that secure the left display hinge to the palm-rest assembly.
2. Pry open the left display hinge at a 90-degree angle.
3. Remove the two screws (M1.6x2.5) that secure the power button to the palm-rest assembly.
4. Lift the power button off the palm-rest assembly.

Installing the power button

Prerequisites

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

About this task

NOTE: The procedure to install the power button or the power button with an optional fingerprint reader is exactly the same.

The following image indicates the location of the power button and provides a visual representation of the installation procedure.

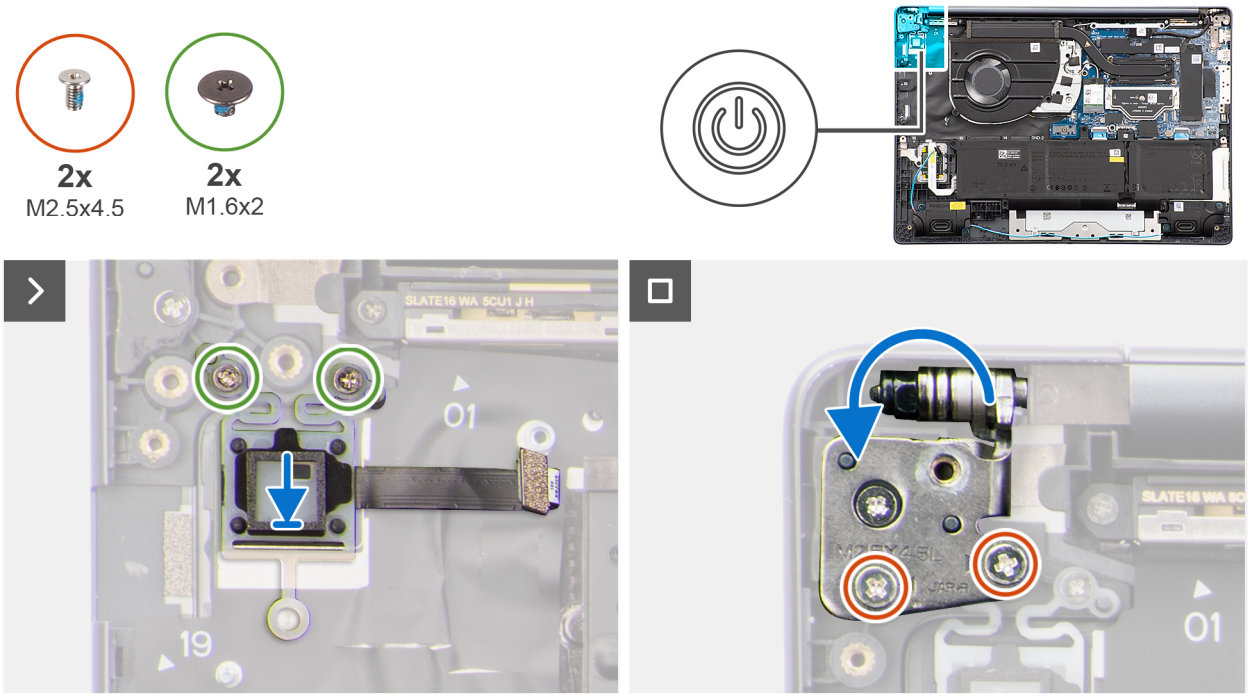


Figure 58. Installing the power button

Steps

1. Place the power button into its slot on the palm-rest assembly.
2. Replace the two screws (M1.6x2.5) that secure the power button to the palm-rest assembly.
3. Close the left display hinge.
4. Using the alignment posts, align the screw holes on the right display hinge with the screw holes on the palm-rest assembly before fully closing the hinge.
5. Replace the three screws (M2.5x4.5) that secure the left display hinge to the palm-rest assembly.

Next steps

1. Install the I/O board.
2. Install the I/O-bridge board.
3. Install the fan.
4. Install the 4G WWAN card or the 5G WWAN card, whichever applicable.
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 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 4G WWAN card or the 5G WWAN card, whichever applicable.

About this task

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

- display bezel
- display hinges
- display panel
- camera
- display cable
- display-back cover
- WWAN-antenna module, if applicable

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

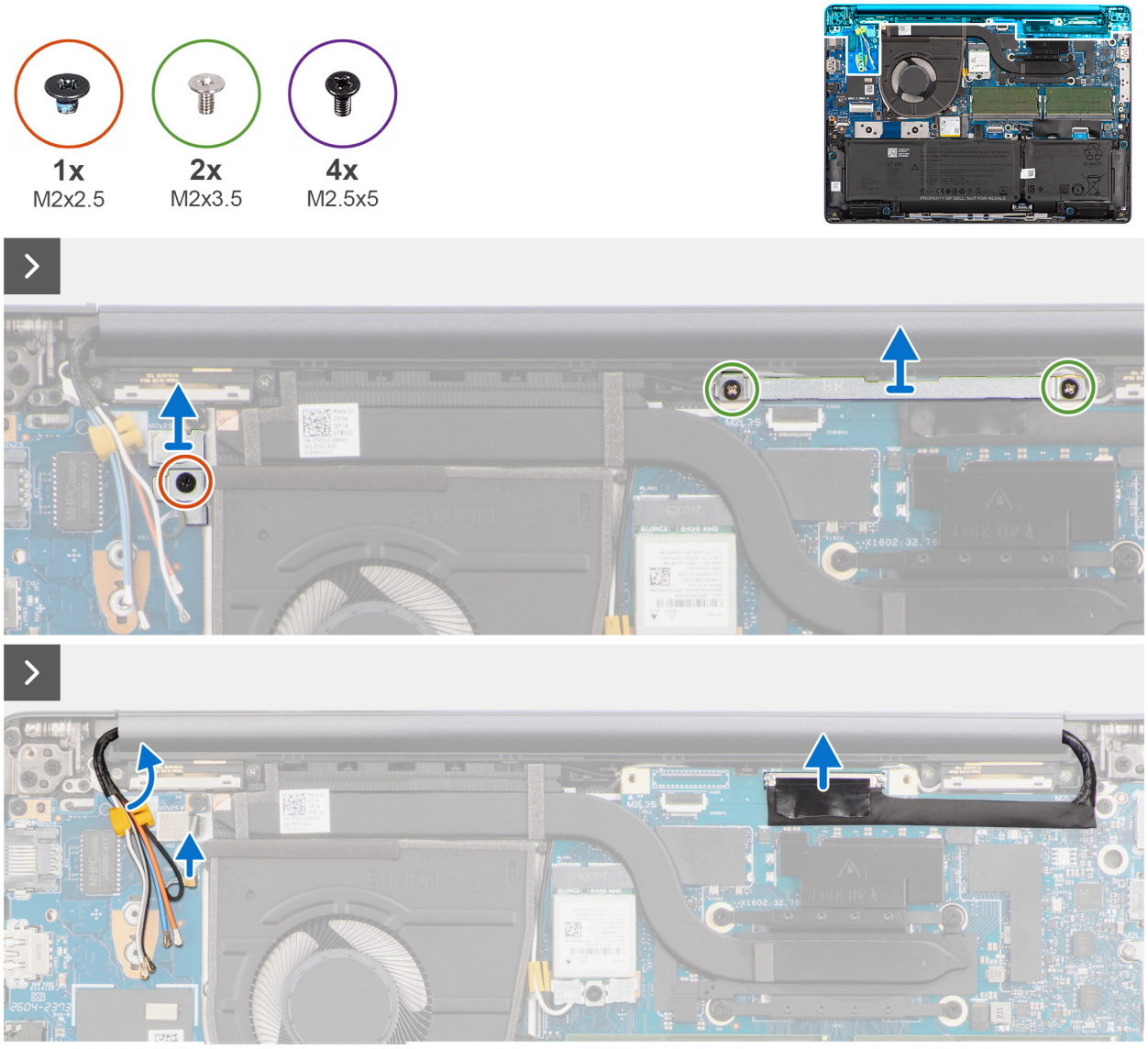


Figure 59. Removing the display assembly



Figure 60. Removing the display assembly

Steps

1. Remove the screw (M2x2.5) that secures the fingerprint-reader bracket to the palm-rest assembly.
2. Lift the fingerprint-reader bracket off the palm-rest assembly.
3. Disconnect the Darwin cable from its connector on the I/O board.

   NOTE: Steps 1 to 3 are applicable only for computers shipped with a WWAN card.

4. Remove the two screws (M2x3.5) that secure the display-cable bracket to the system board.
5. Lift the display-cable bracket off the system board.
6. Disconnect the display and camera cable from its connector (EDP) on the system board.
7. Open the display assembly at an angle of 90 degrees.
8. Place the computer on the edge of a clean and flat surface so the display assembly extends below the edge of the surface.
9. Remove the four screws (M2.5x5) that secure the left and right display hinges to the palm-rest assembly.
10. Lift the display assembly off the palm-rest assembly.

Installing the display assembly

Prerequisites

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

About this task

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

- display bezel
- display hinges

- display panel
- camera
- display cable
- display-back cover
- WWAN-antenna module, if applicable

NOTE: For computers shipped with OLED configurations, the display assembly is a HUD (Hinge-Up Display) and cannot be further disassembled. If any of the components of the display assembly need to replaced, replace the entire display assembly.

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

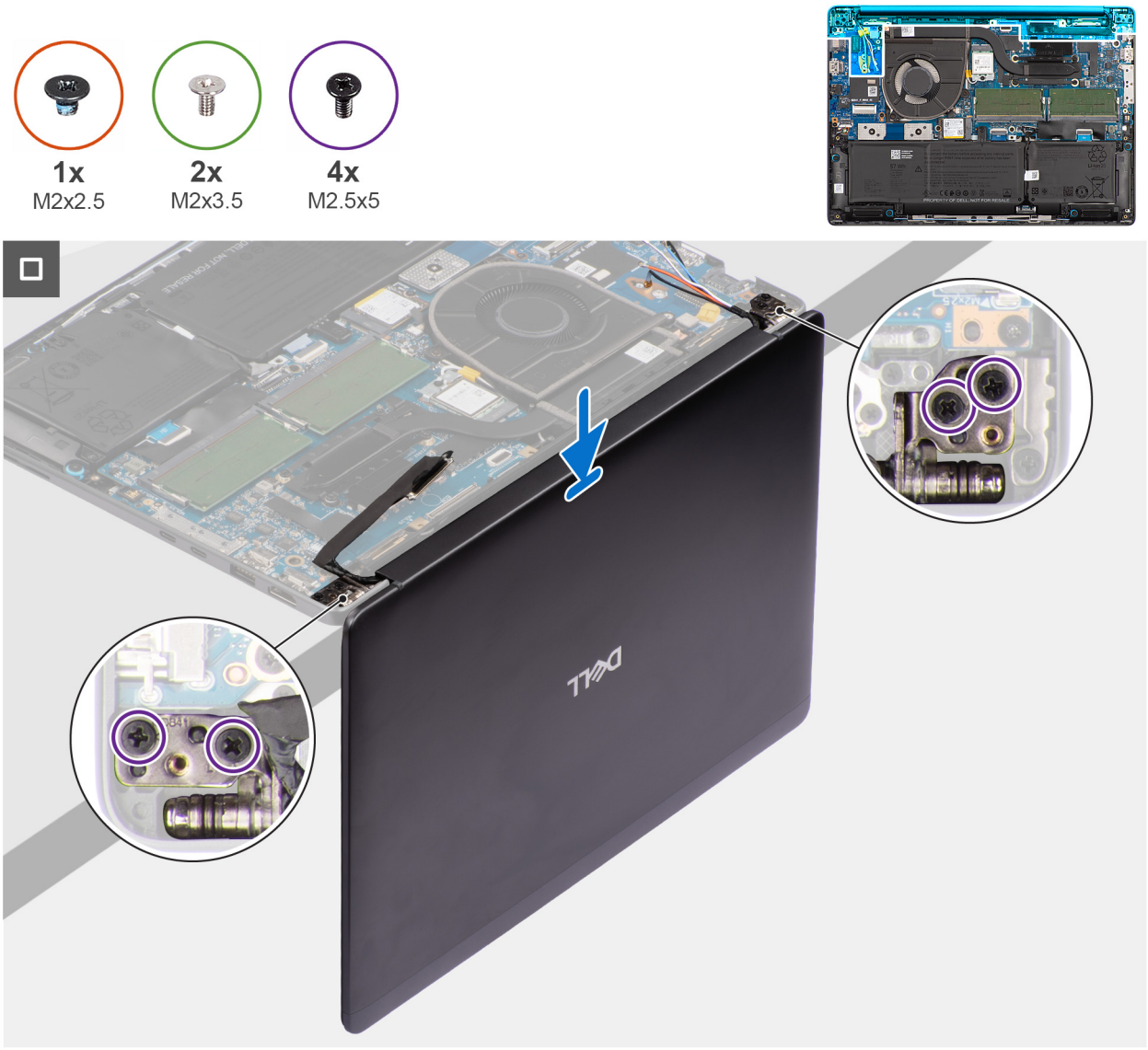


Figure 61. Installing the display assembly

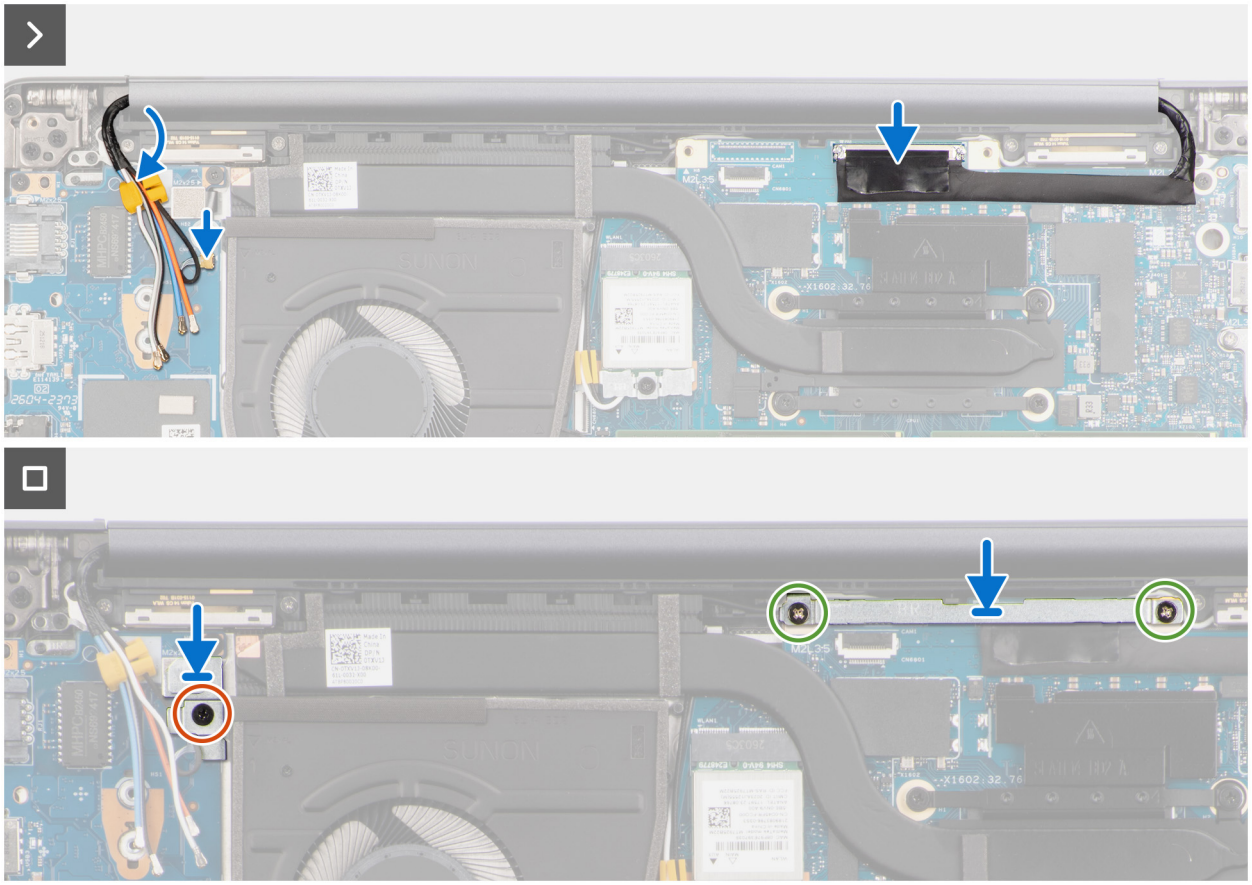


Figure 62. Installing the display assembly

Steps

1. Place the palm-rest assembly on the edge of a clean, flat surface.
2. Open the left and right display hinges at a 90 degree angle.
3. Place the display assembly over the palm-rest assembly, aligning the screw holes on the display assembly with the screw holes on the palm-rest assembly.
4. Replace the four screws (M2.5x5) that secure the left and right display hinges to the palm-rest assembly.
5. Connect the display and camera cable to its connector (EDP) on the system board.
6. Place the display-cable bracket over the display connectors on the system board.
7. Align the screw holes on the display-cable bracket to the screw holes on the system board.
8. Replace the two screws (M2x3.5) that secure the display-cable bracket to the system board.
9. Connect the Darwin cable to its connector on the I/O board.
10. Place the fingerprint reader bracket on the palm-rest assembly.
11. Align the screw holes on the fingerprint reader bracket to the screw holes on the I/O board.
12. Replace the screw (M2x2.5) that secures the fingerprint-reader bracket to the palm-rest assembly.

NOTE: Steps 10 to 12 are applicable only for computers shipped with a WWAN card.

Next steps

1. Install the display assembly.
2. Install the 4G WWAN card or the 5G WWAN card, whichever applicable.
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 4G WWAN card or the 5G WWAN card, whichever applicable.
5. 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 63. Removing the display bezel

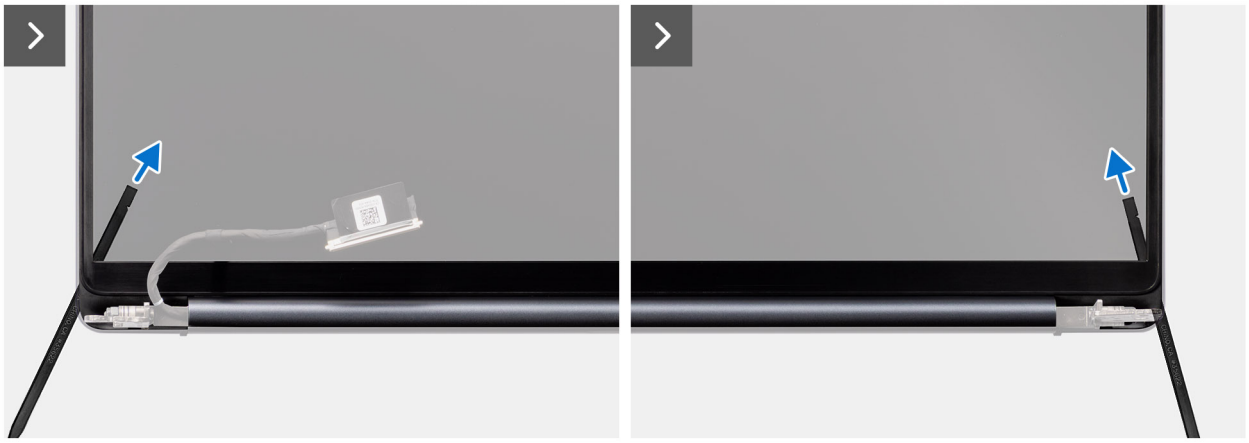


Figure 64. Removing the display bezel

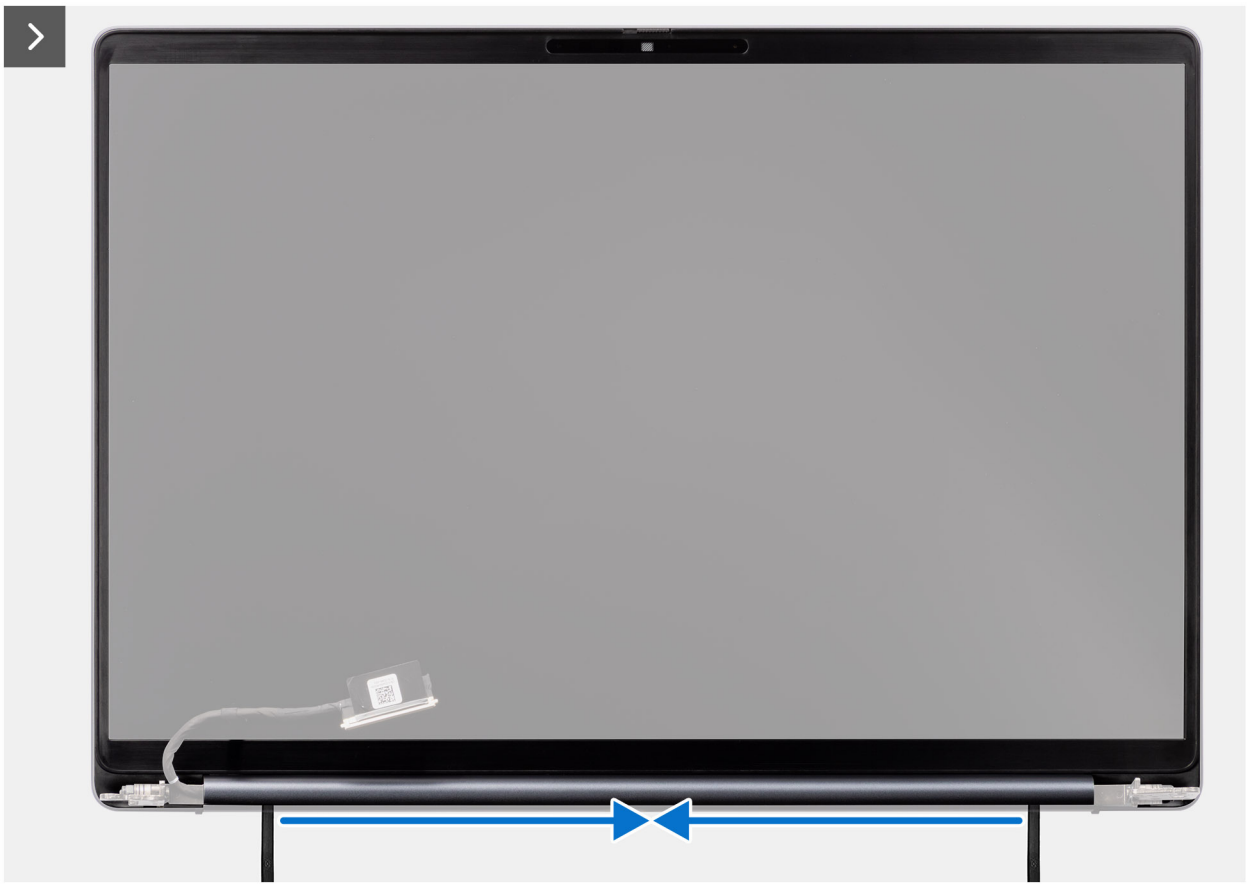


Figure 65. Removing the display bezel

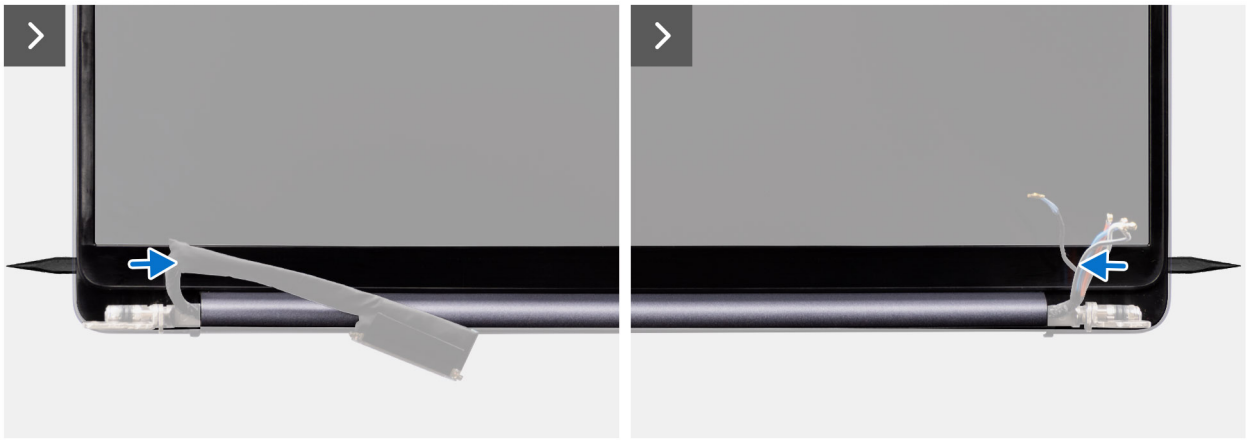


Figure 66. Removing the display bezel

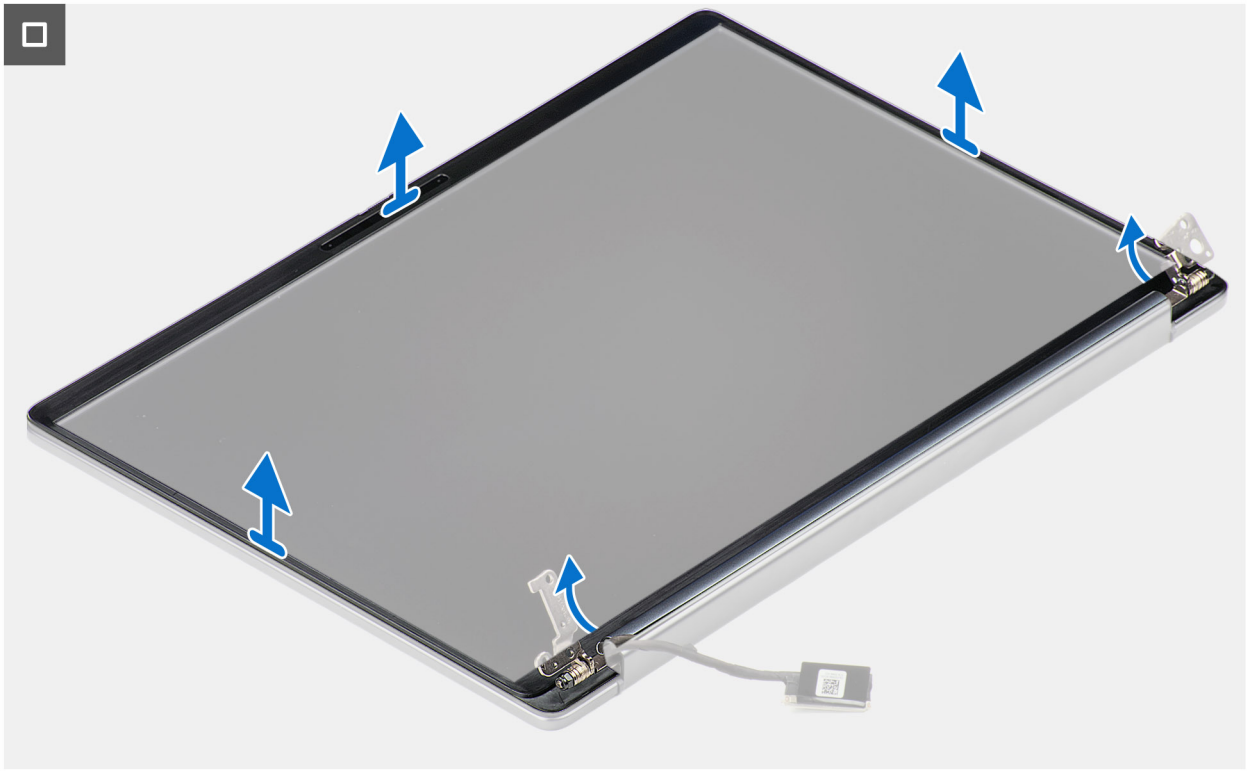


Figure 67. Removing the display bezel

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 when 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: When inserting the scribe into the bezel, keep it parallel to the display. Pressing it downward can damage the display. Do not use the flat-head (slotted) screwdriver to release the rest of the bezel. Switch to the plastic scribe to continue prying along the bezel.

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.
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

NOTE: Install the new display bezel supplied in your replacement kit instead of the old display bezel that was removed from your computer.

The following image indicates the location of the display bezel and provides a visual representation of the installation procedure.

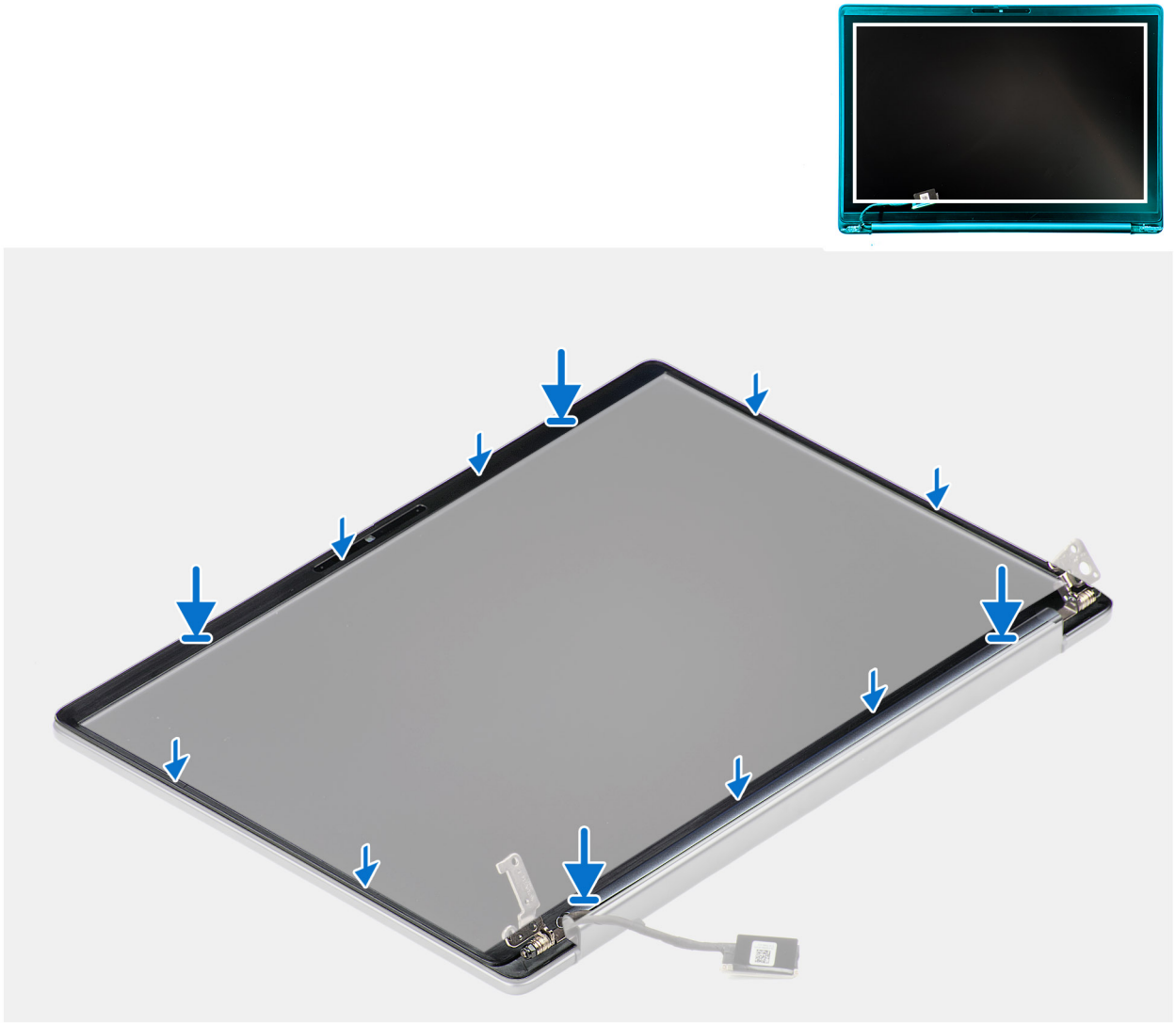


Figure 68. Installing the display bezel

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 4G WWAN card or the 5G WWAN card, whichever applicable.
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 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 4G WWAN card or the 5G WWAN card, whichever applicable.
5. Remove the display assembly.
6. Remove the display bezel.

About this task

The following image indicates the location of the display hinges and provides a visual representation of the removal procedure.

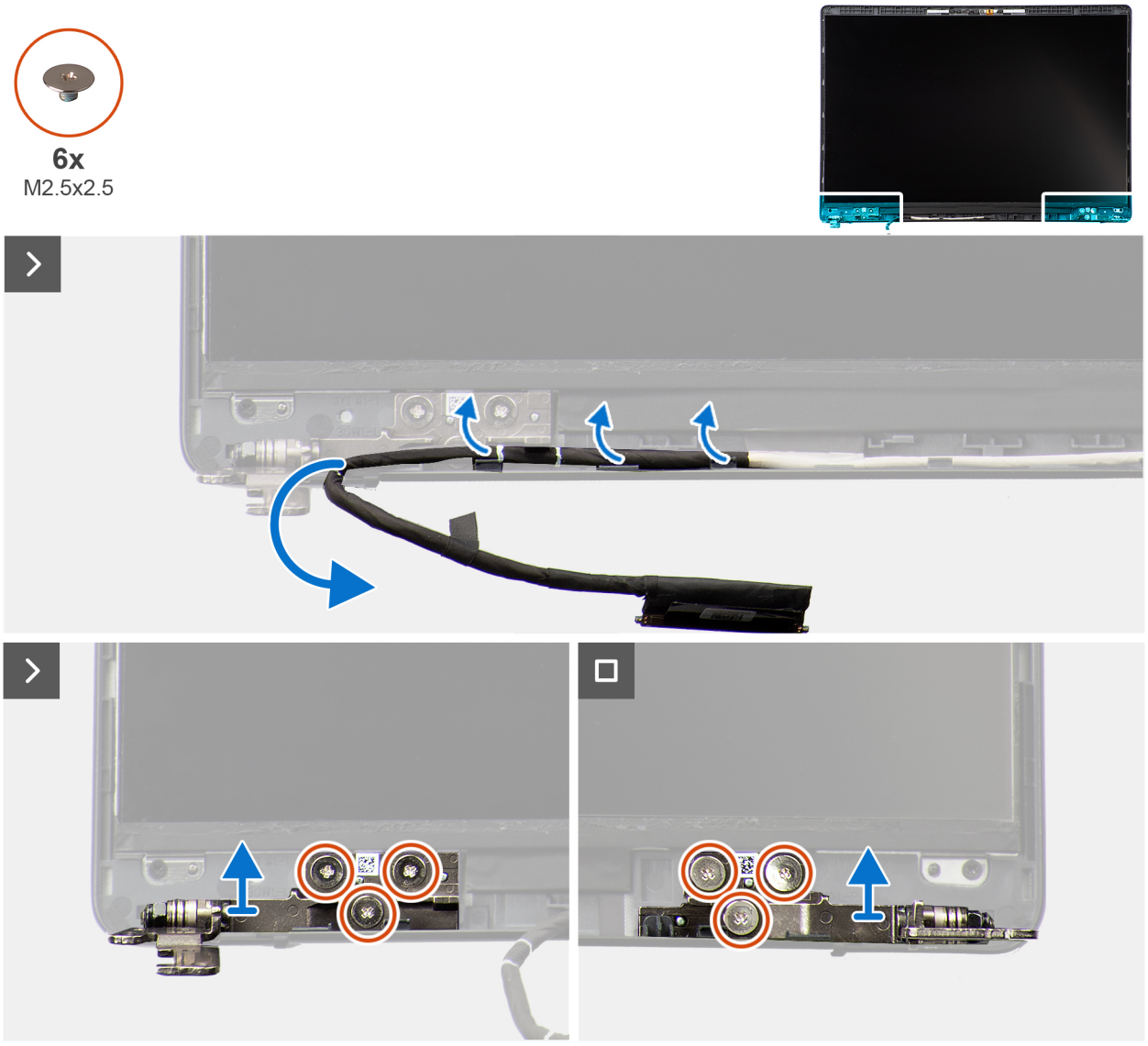


Figure 69. Removing the display hinges

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 image indicates the location of the display hinges and provides a visual representation of the installation procedure.

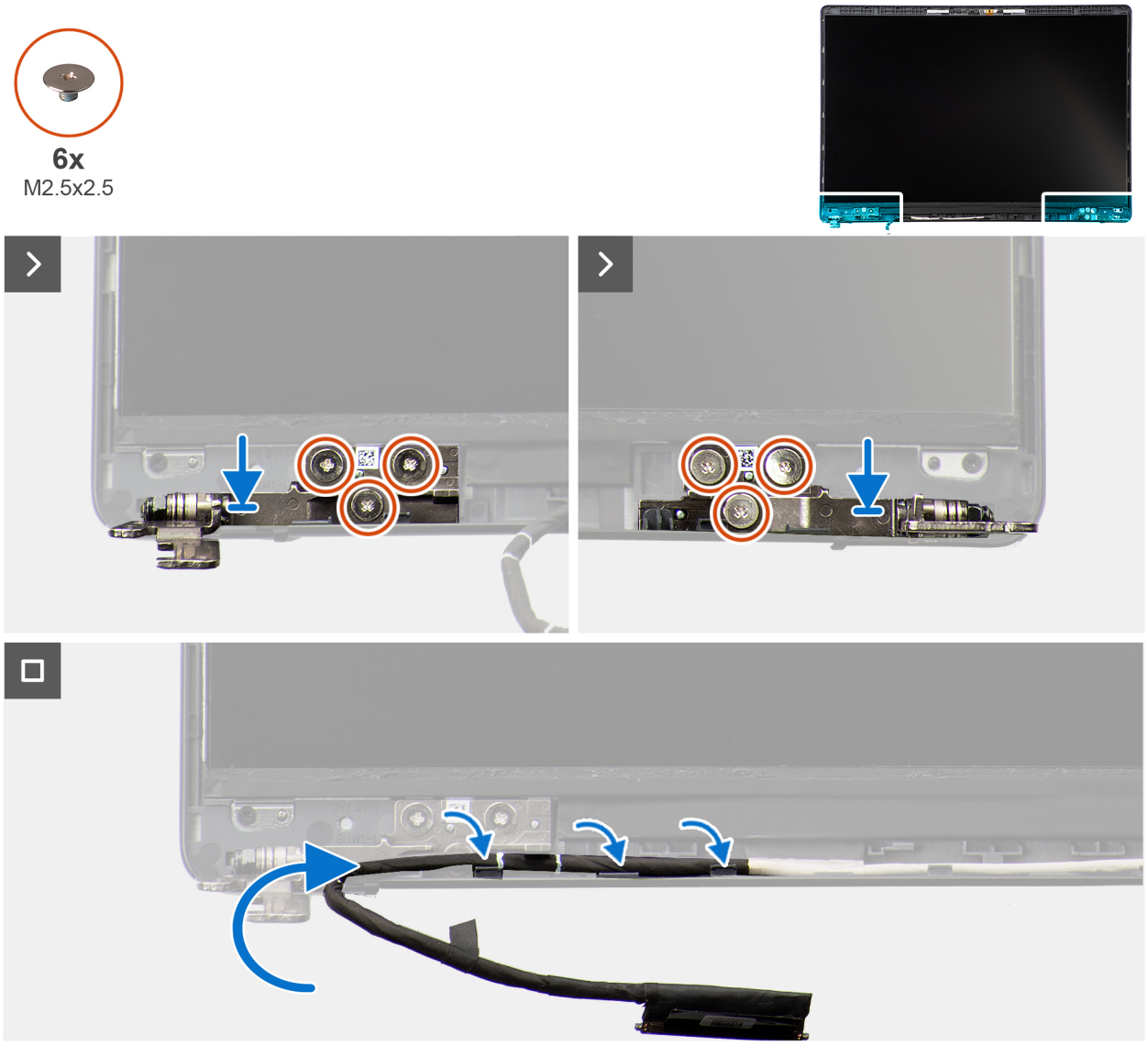


Figure 70. Installing the display hinges

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 4G WWAN card or the 5G WWAN card, whichever applicable.
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 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 4G WWAN card or the 5G WWAN card, whichever applicable.
5. Remove the display assembly.
6. Remove the display bezel.
7. Remove the display hinges.

About this task

The following image indicates the location of the display panel and provides a visual representation of the removal procedure.

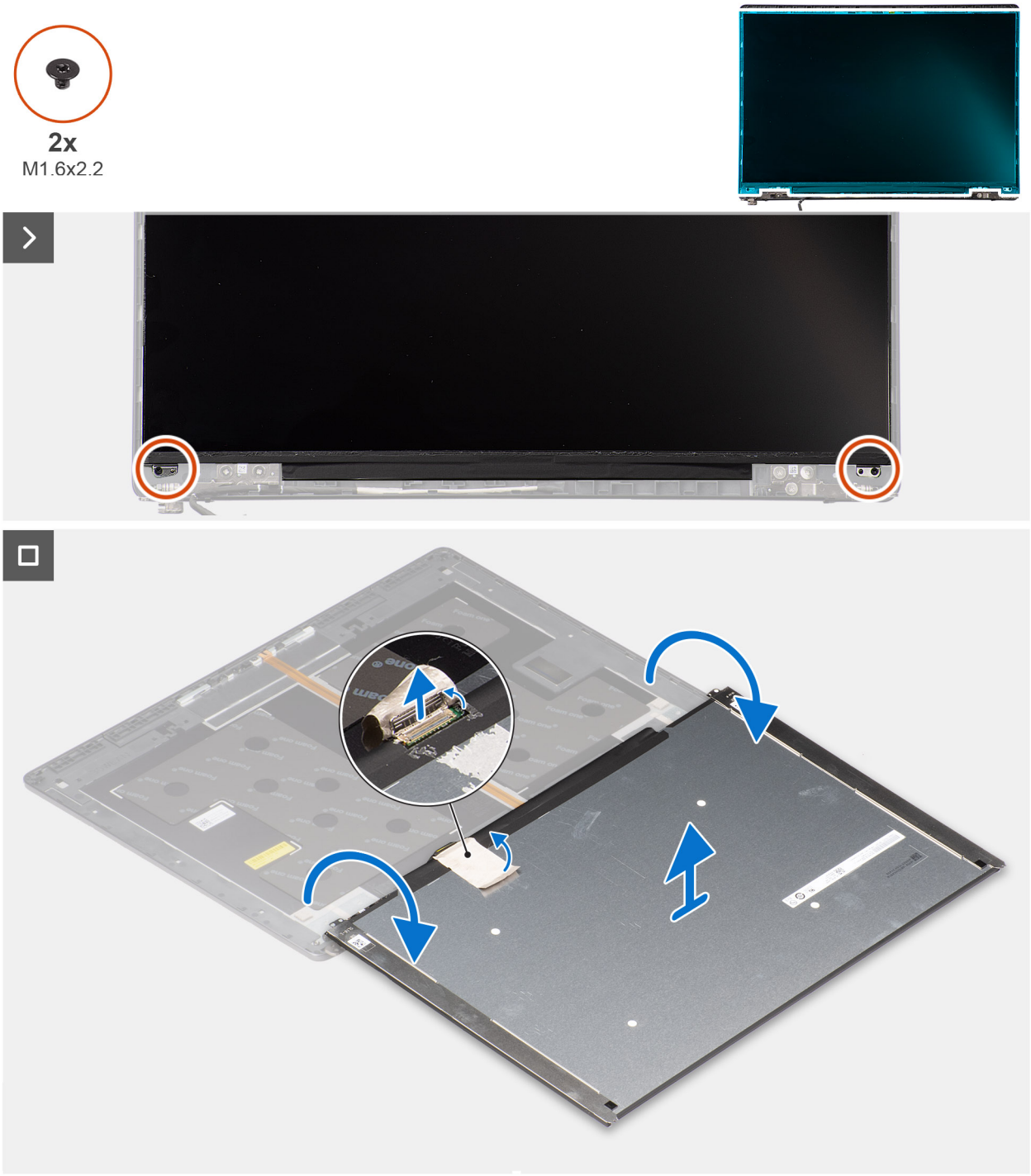


Figure 71. Removing the display panel

Steps

1. Remove the two screws (M1.6x2.2) 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 image indicates the location of the display panel and provides a visual representation of the installation procedure.

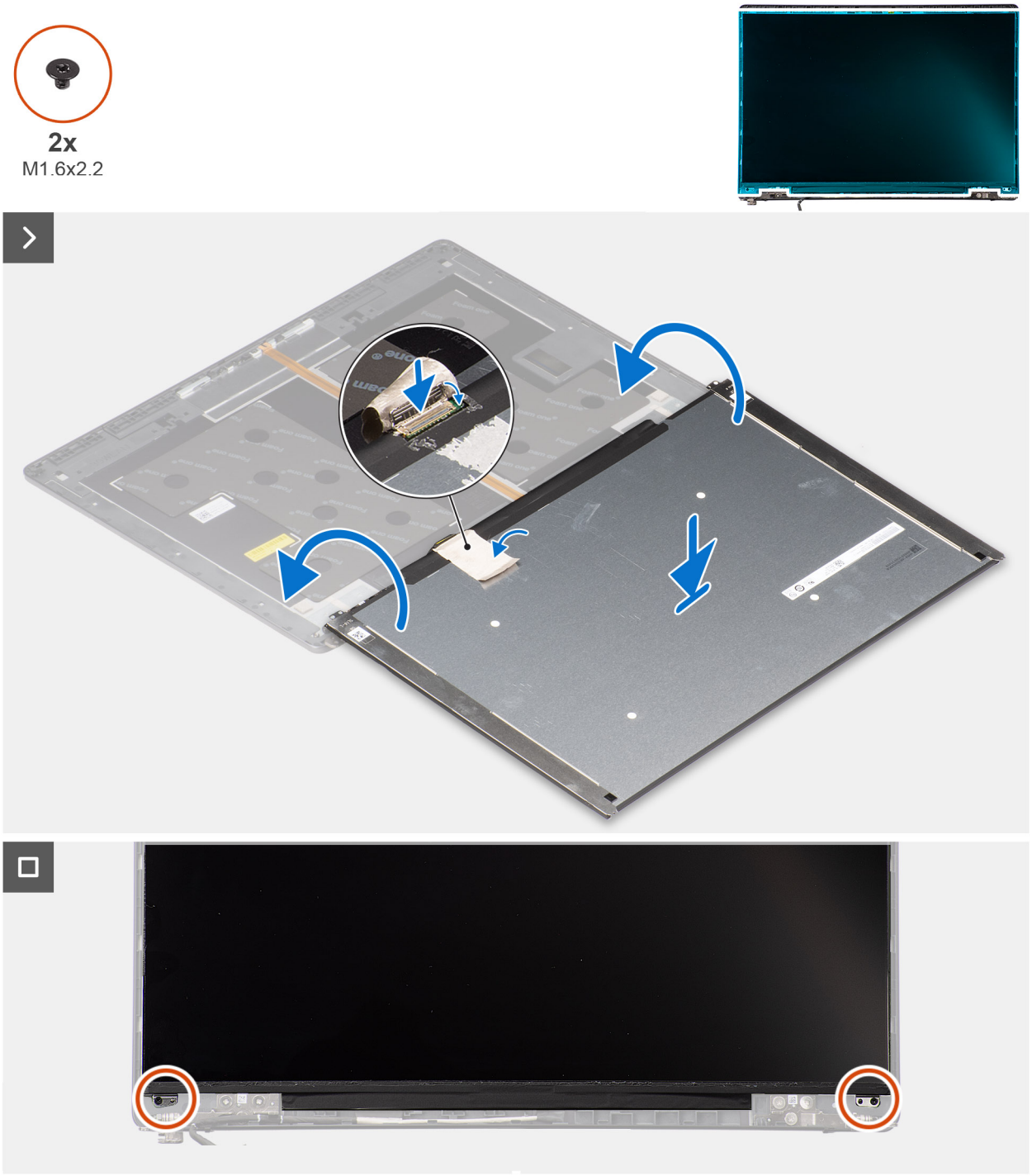


Figure 72. Installing the display panel

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 (M1.6x2.2) that secure the display panel 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 4G WWAN card or the 5G WWAN card, whichever applicable.
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

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 4G WWAN card or the 5G WWAN card, whichever applicable.
5. Remove the display assembly.
6. Remove the display bezel.
7. Remove the display hinges.
8. Remove the display panel.

About this task

NOTE: Depending on the type of camera installed the removal procedure may vary. Refer to the image that best represents your product on hand.

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

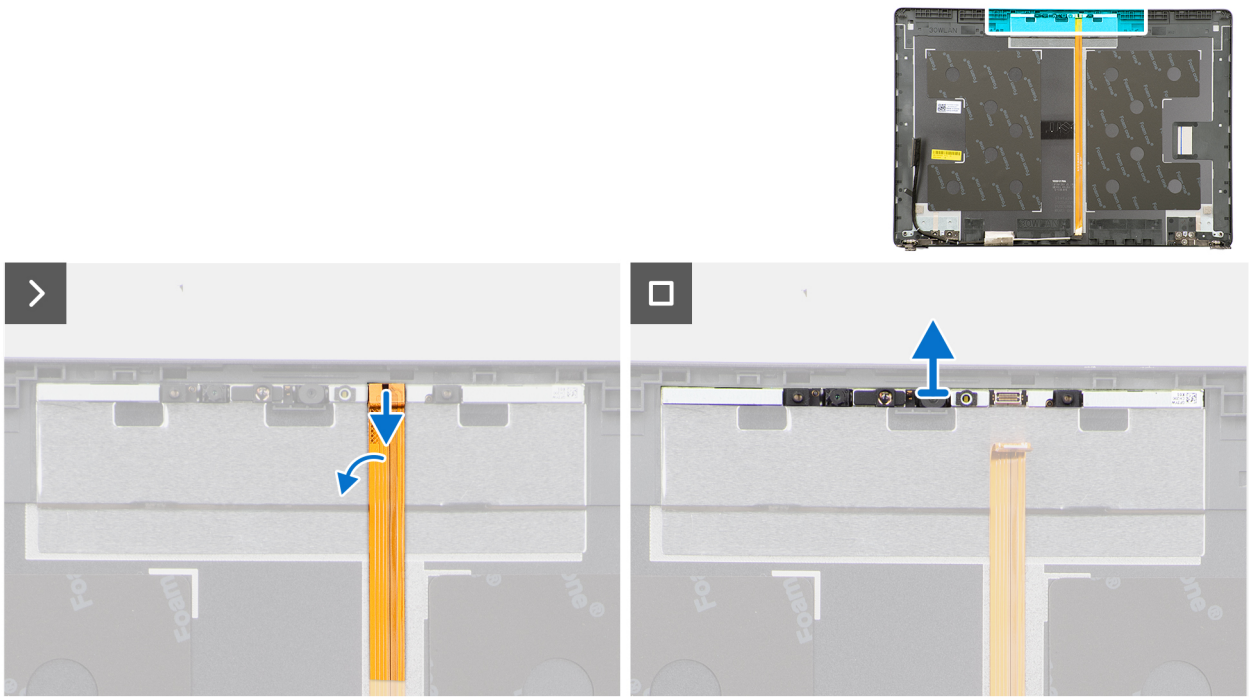


Figure 73. Removing the camera

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

Prerequisites

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

About this task

NOTE: Depending on the type of camera you are installing the installation procedure may vary. Refer to the image that best represents your product on hand.

NOTE: The type of camera you can install depends the type of camera that was previously installed on your computer. To change to a different camera, replace the entire display assembly.

The following image indicates the location of the camera and provides a visual representation of the installation procedure.

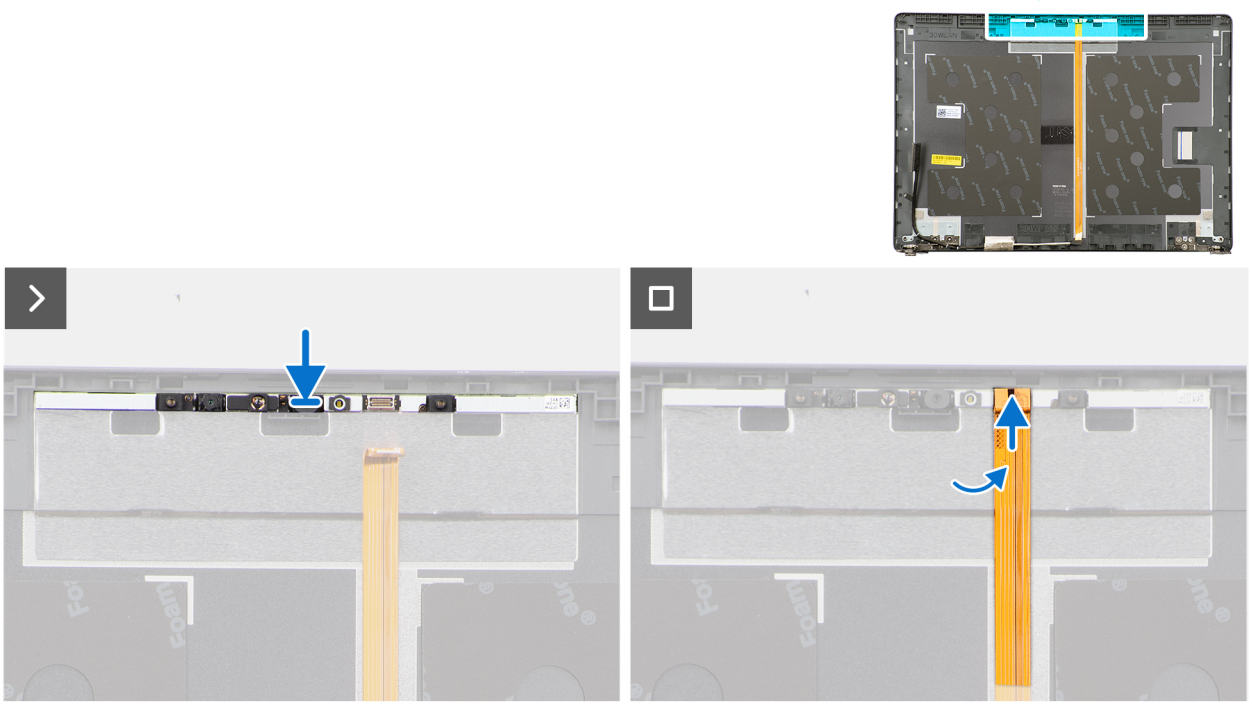


Figure 74. Installing the camera

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 4G WWAN card or the 5G WWAN card, whichever applicable.
6. Install the base cover.
7. Install the nano-SIM card tray, if applicable.
8. 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 4G WWAN card or the 5G WWAN card, whichever applicable.
5. Remove the display assembly.
6. Remove the display bezel.
7. Remove the display hinges.
8. Remove the display panel.

About this task

The following image indicates the location of the display cable and provides a visual representation of the removal procedure.

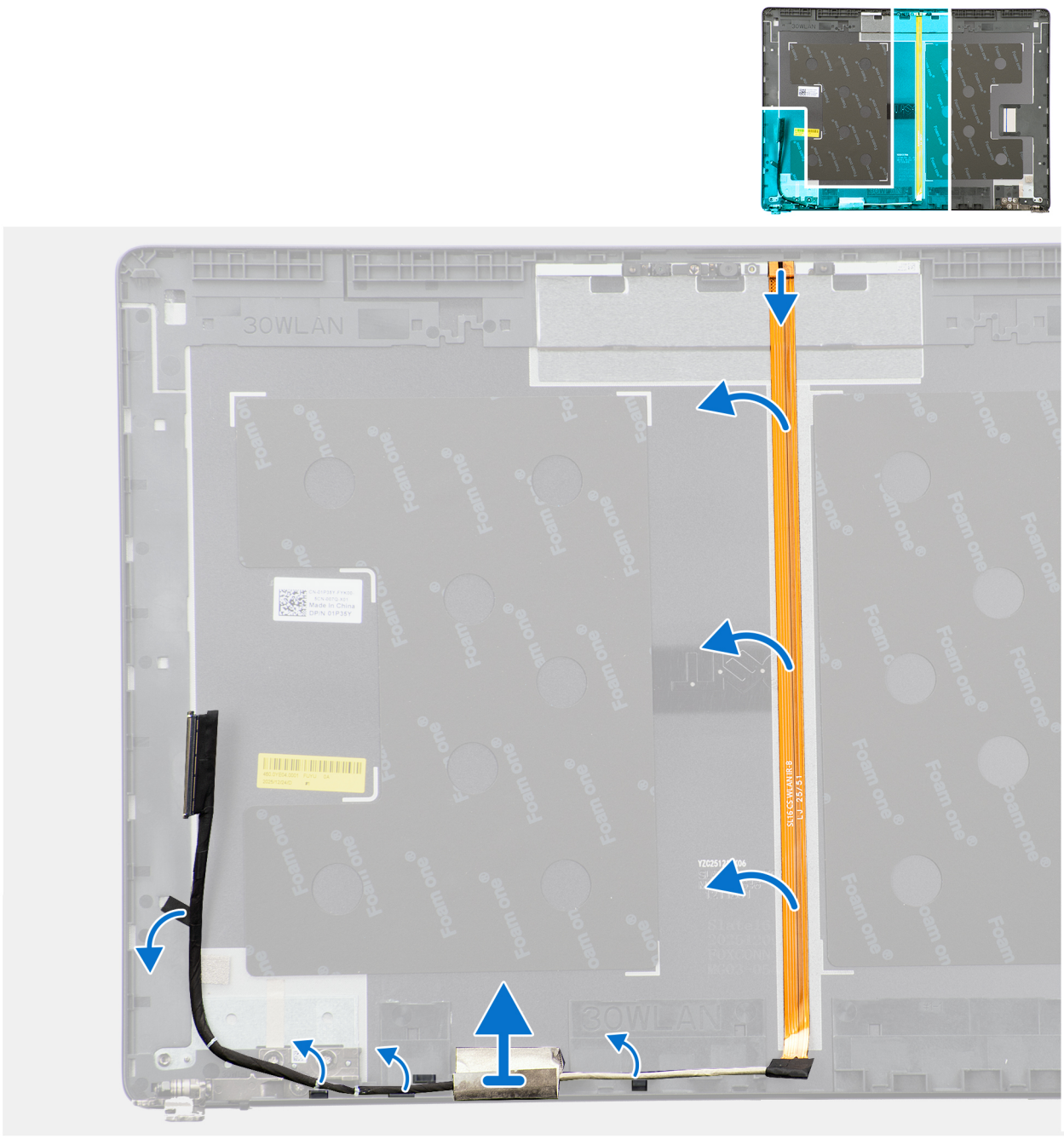


Figure 75. Removing the display cable

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 image indicates the location of the display cable and provides a visual representation of the installation procedure.

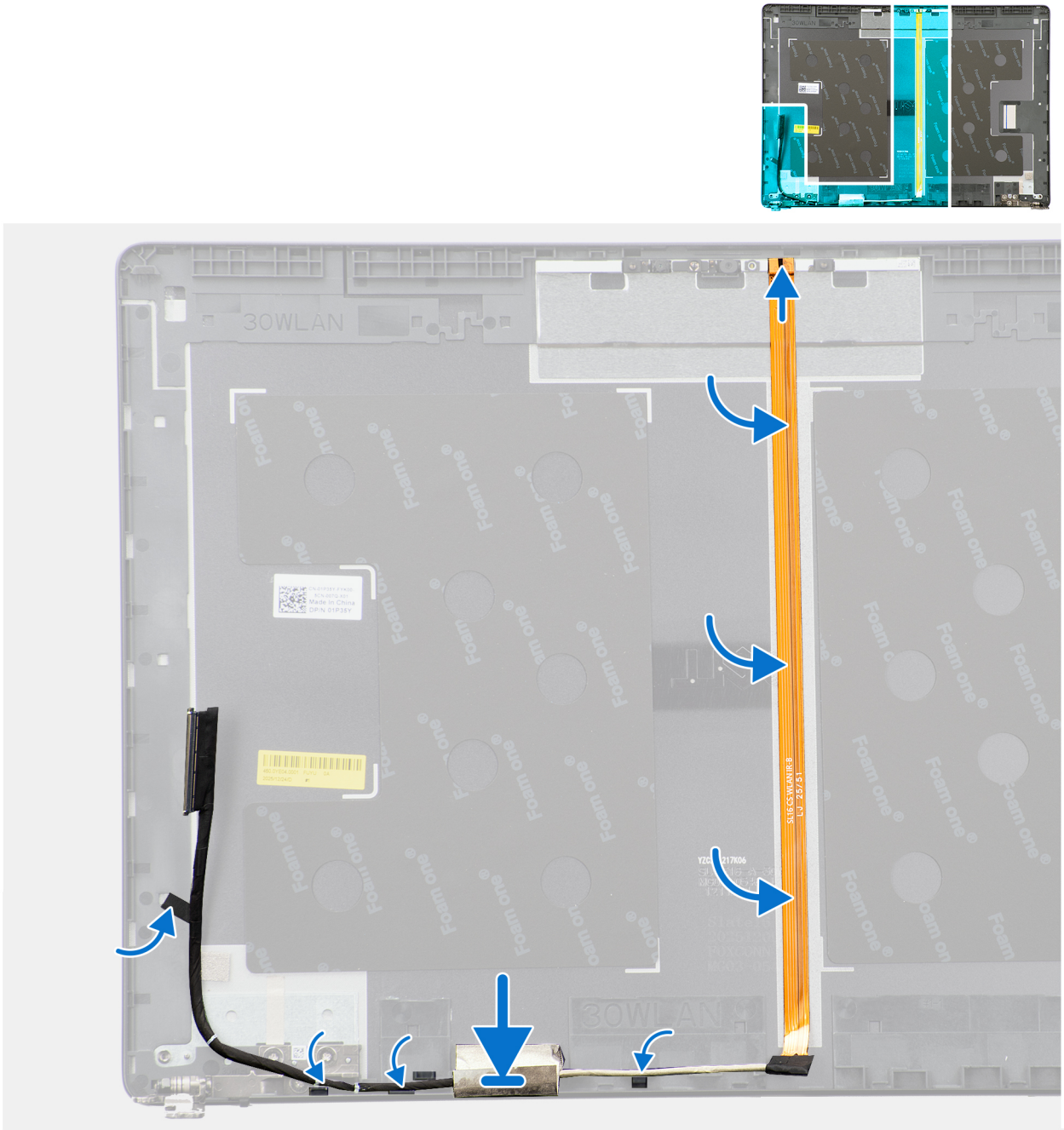


Figure 76. Installing the display cable

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 panel.
2. Install the display hinges.

3. Install the display bezel.
4. Install the display assembly.
5. Install the 4G WWAN card or the 5G WWAN card, whichever applicable.
6. Install the base cover.
7. Install the nano-SIM card tray, if applicable.
8. 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 4G WWAN card or the 5G WWAN card, whichever applicable.
5. Remove the display assembly.
6. Remove the display bezel.
7. Remove the display hinges.
8. Remove the display panel.
9. Remove the display cable.
10. Remove the camera, if applicable.

About this task

The following image indicates the location of the display-back cover and provides a visual representation of the removal procedure.

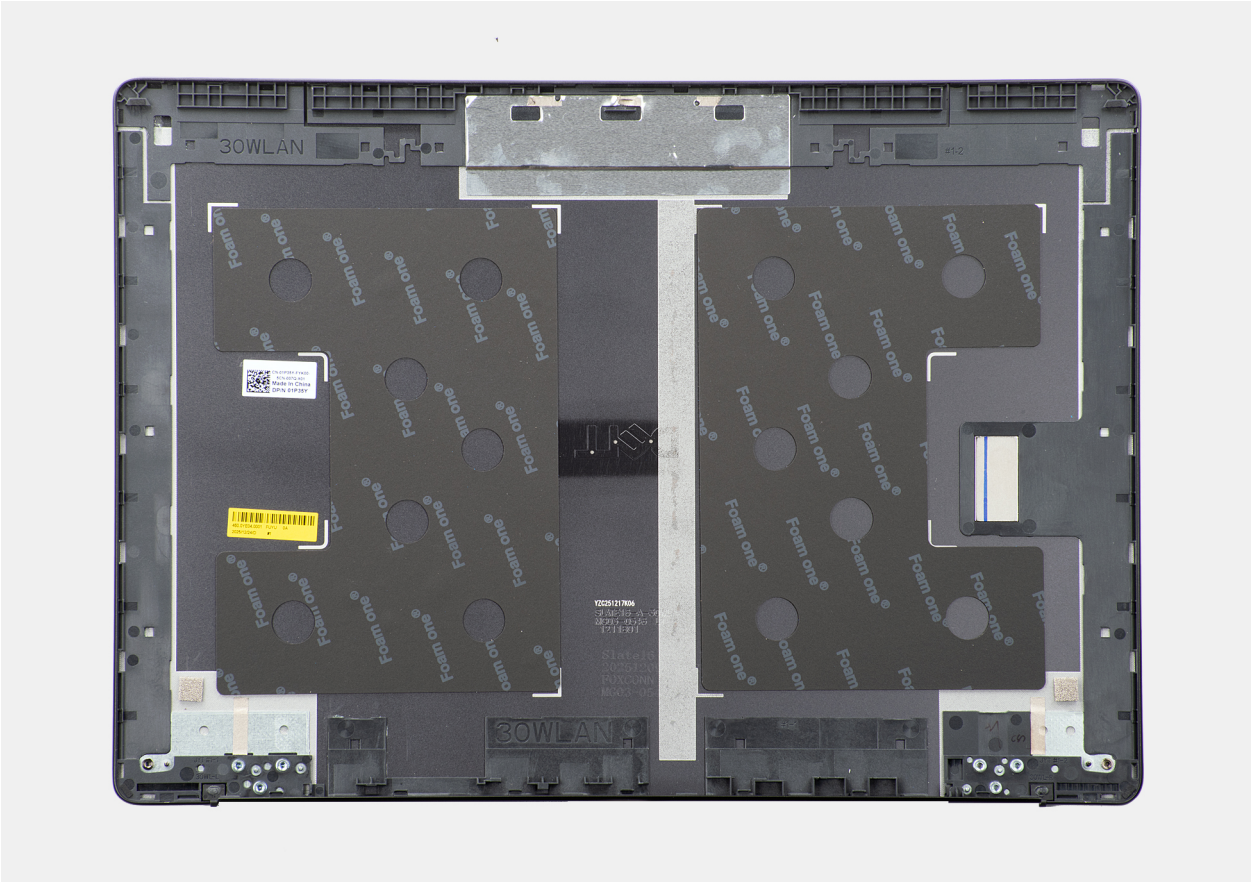


Figure 77. Removing the display-back cover

Steps

After performing the steps in the pre-requisites, you are left with the display-back cover.

Installing the display-back cover

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 display-back cover and provides a visual representation of the installation procedure.

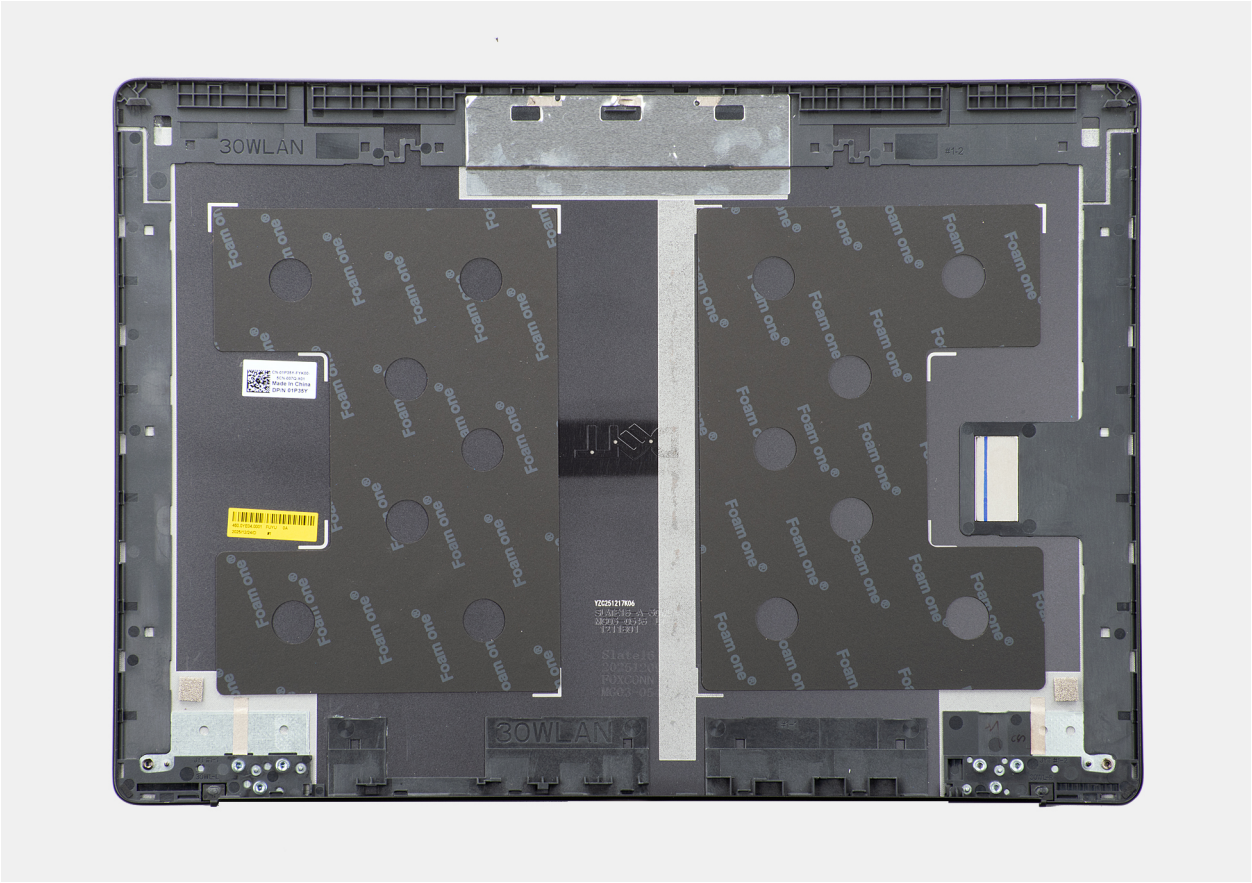


Figure 78. Installing the display-back cover

Steps

1. Place the display-back cover on a clean and flat surface.
2. Follow the steps in the post-requisites to install the display-back cover.

Next steps

1. Install the camera, if applicable.
2. Install the display cable.
3. Install the display panel.
4. Install the display hinges.
5. Install the display bezel.
6. Install the display assembly.
7. Install the 4G WWAN card or the 5G WWAN card, whichever applicable.
8. Install the base cover.
9. Install the nano-SIM card tray, if applicable.
10. 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 memory.
5. Remove the 2230 solid-state drive .
6. Remove the WLAN card.
7. Remove the 4G WWAN card or the 5G WWAN card, whichever applicable.
8. Remove the battery.
9. Remove the fan.
10. Remove the I/O-bridge board.
11. Remove the heat sink

About this task

NOTE: Replacing the system board removes any changes that you have made to the BIOS using the BIOS setup program. You must make the appropriate changes again after you replace the system board.

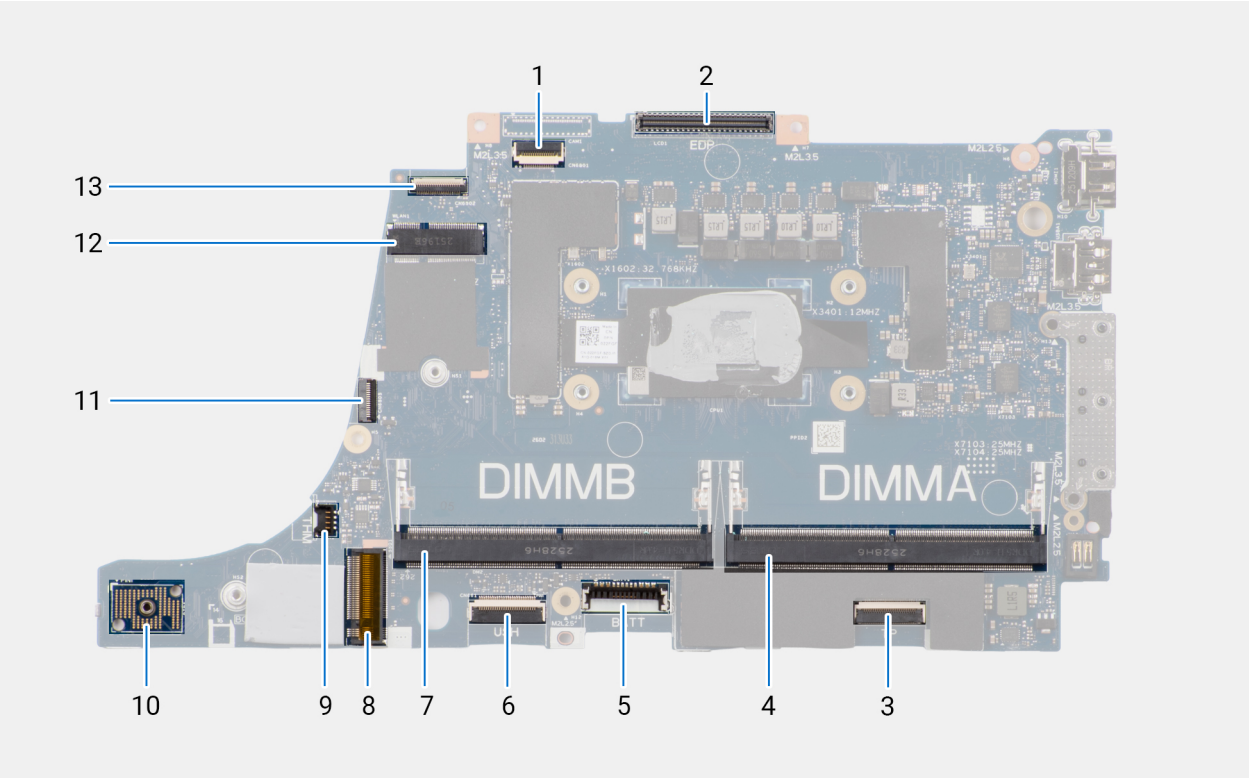


Figure 79. System board callouts

1. Wireless card slot (WLAN)
2. Display and camera cable (EDP)
3. Touchpad cable (TP)
4. SODIMM slots (DIMMB/DIMMA)
5. Battery cable (BATT)
6. USH-board cable (USH)
7. M.2 2230 solid-state drive slot (SSD)
8. Fan cable (THM)
9. I/O-bridge board (CN1)

The following image indicates the location of the system board and provides a visual representation of the removal procedure.

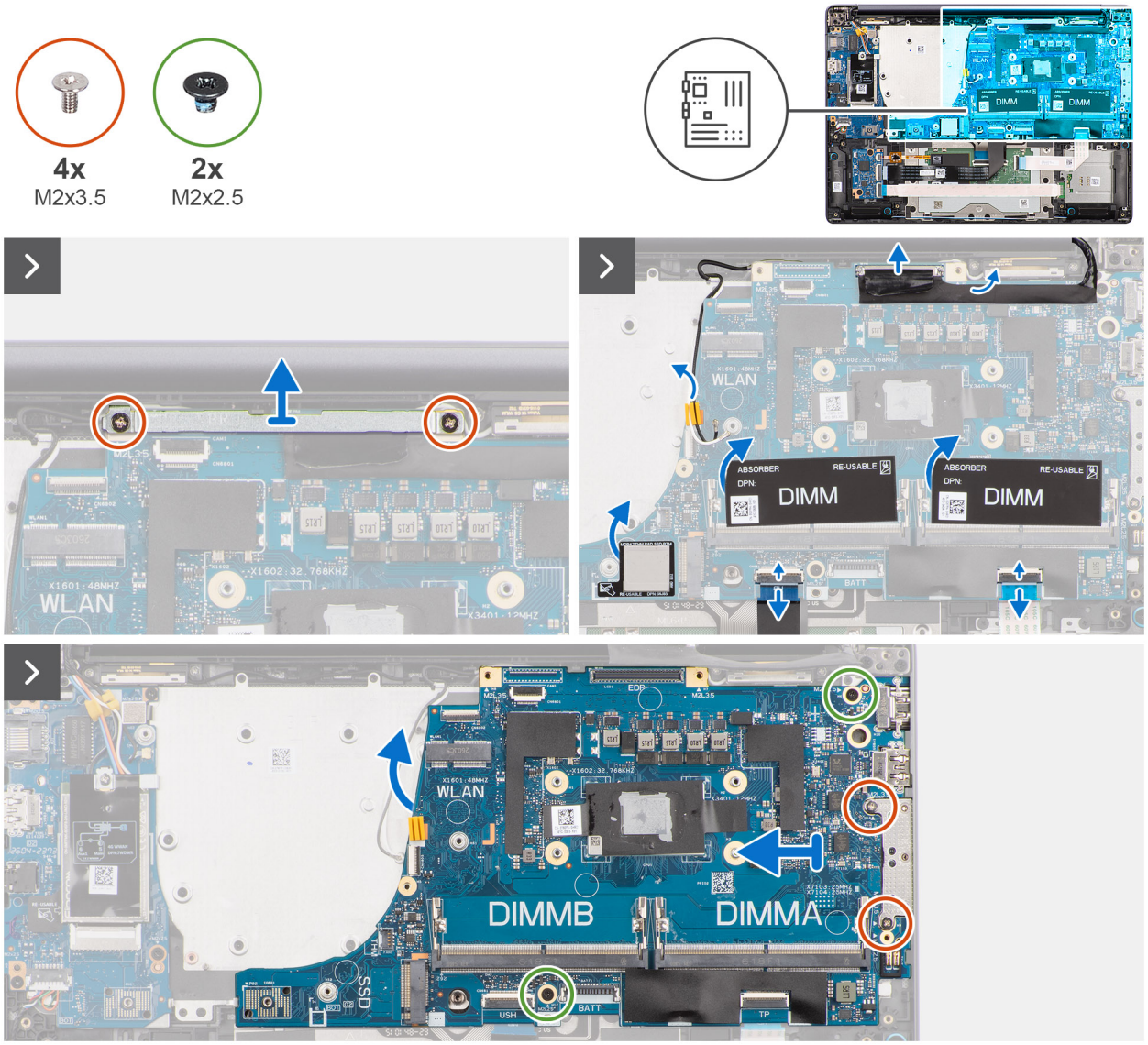


Figure 80. Removing the system board

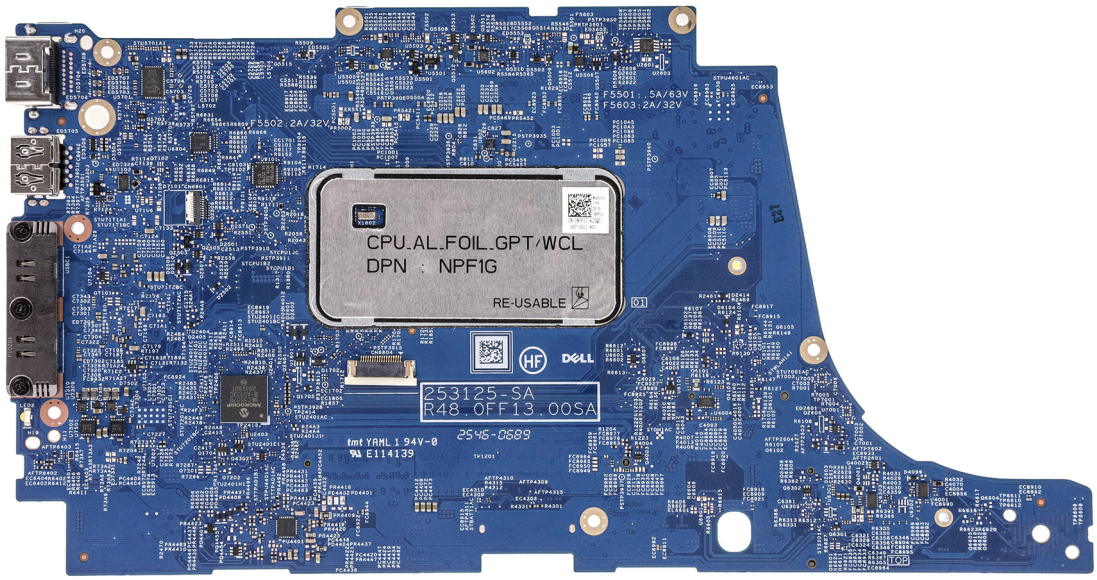


Figure 81. Removing the system board

Steps

1. Remove the two screws (M2x3.5) that secure the display-cable bracket to the system board.
2. Lift the display-cable bracket off the system board.
3. Remove the WLAN-antenna cables from the routing guide on the system board.
4. Disconnect the display and camera cable from its connector (EDP) on the system board.
5. Lift the latch and disconnect the touchpad cable from its connector (TP) on the system board.
6. Lift the latch and disconnect the USH-board cable from its connector (USH) on the system board.
7. Remove the three screws (M2x2.5) that secure the system board to the palm-rest assembly.
8. Remove the two screws (M2x3.5) that secure the system board to the palm-rest assembly.
9. Lift the system board at an angle and slide the ports on the system board out of the slots on the palm-rest assembly.
10. Lift the system board off the palm-rest assembly.
11. Peel the M.2 SSD thermal pad off the system board.
12. Peel the SODIMM Mylars off the system board.
13. Flip the system board over.
14. Peel the CPU-thermal Mylar off the system board.

NOTE: Steps 11 to 14 are only applicable if you are replacing the system board with a new one.

Installing the system board

Prerequisites

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

About this task

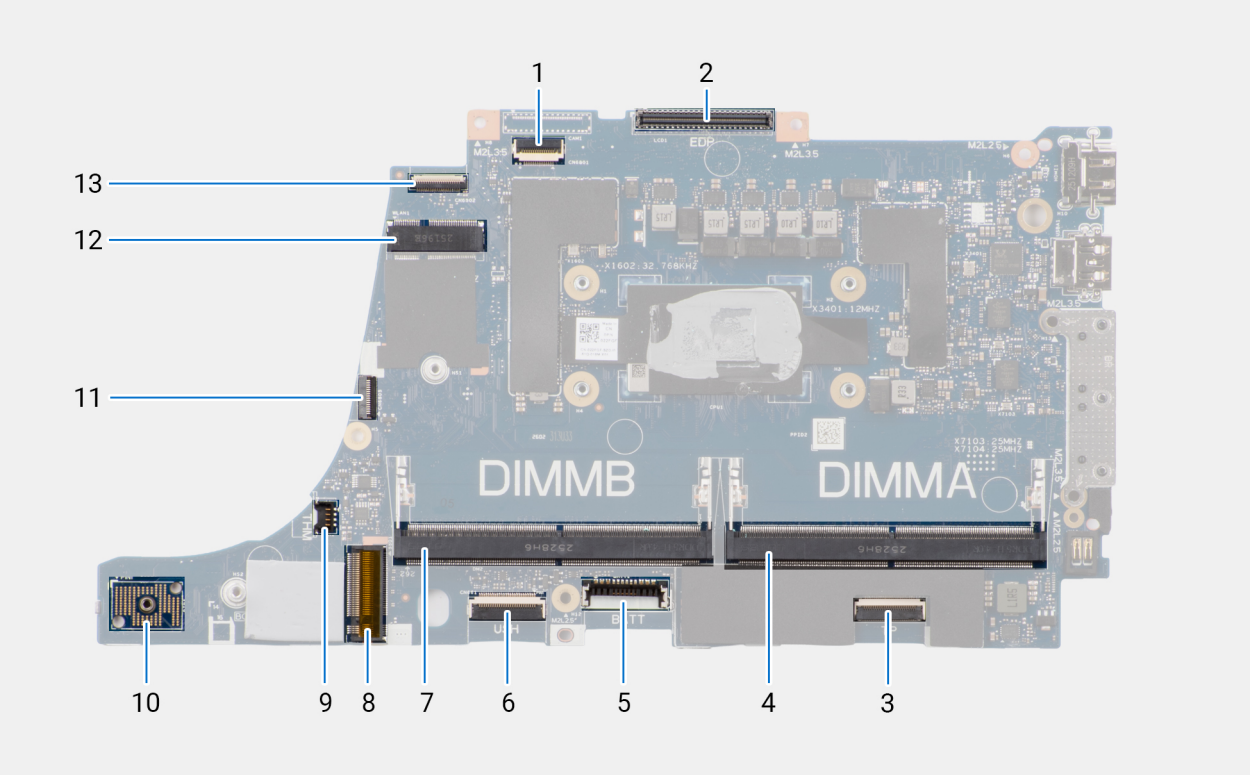


Figure 82. System board callouts

1. Wireless card slot (WLAN)
2. Display and camera cable (EDP)
3. Touchpad cable (TP)
4. SODIMM slots (DIMMA/DIMMB)
5. Battery cable (BATT)
6. USH-board cable (USH)
7. M.2 2230 solid-state drive slot (SSD)
8. Fan cable (THM)
9. I/O-bridge board (CN1)

The following image indicates the location of the system board and provides a visual representation of the installation procedure.

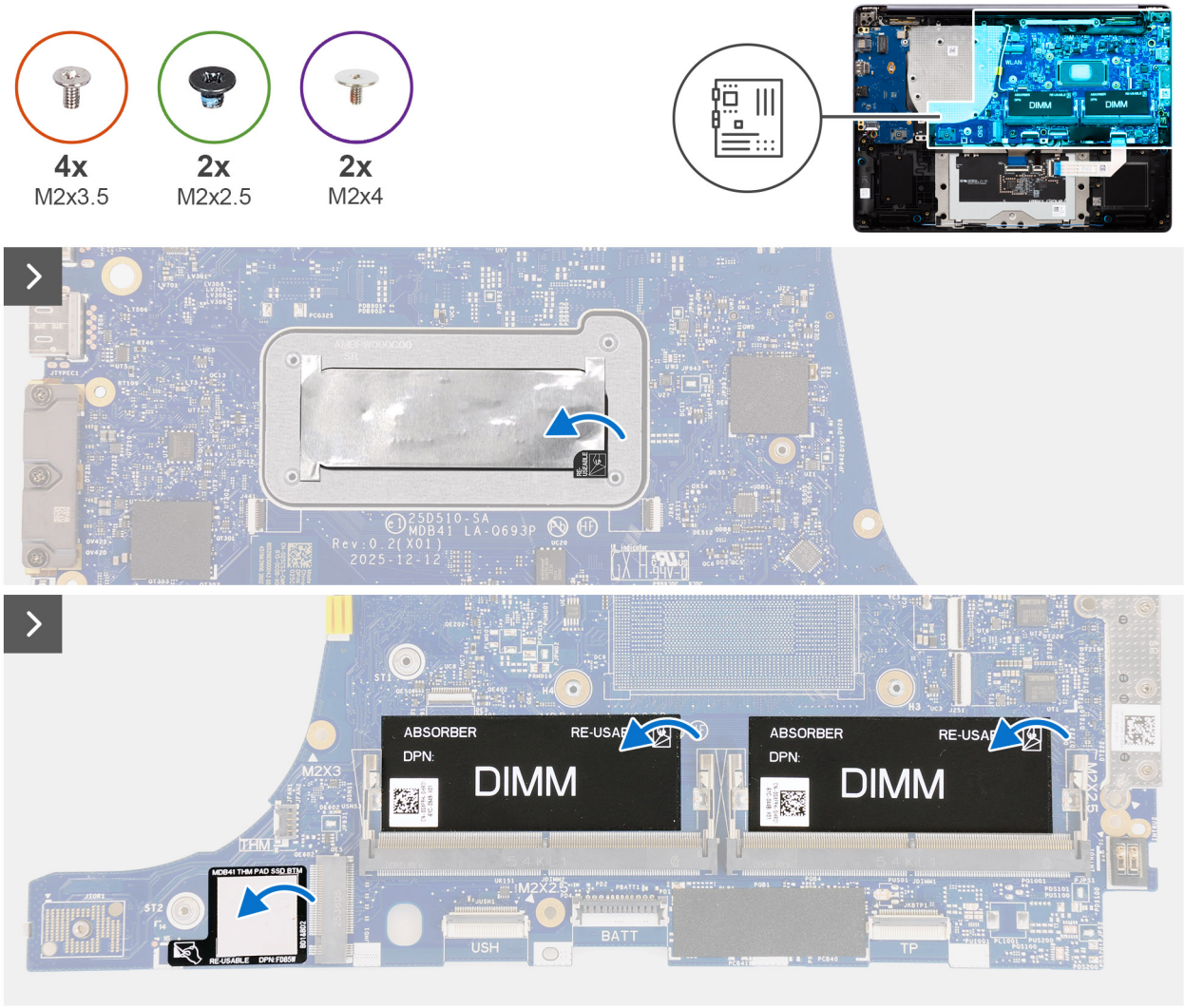


Figure 83. Installing the system board

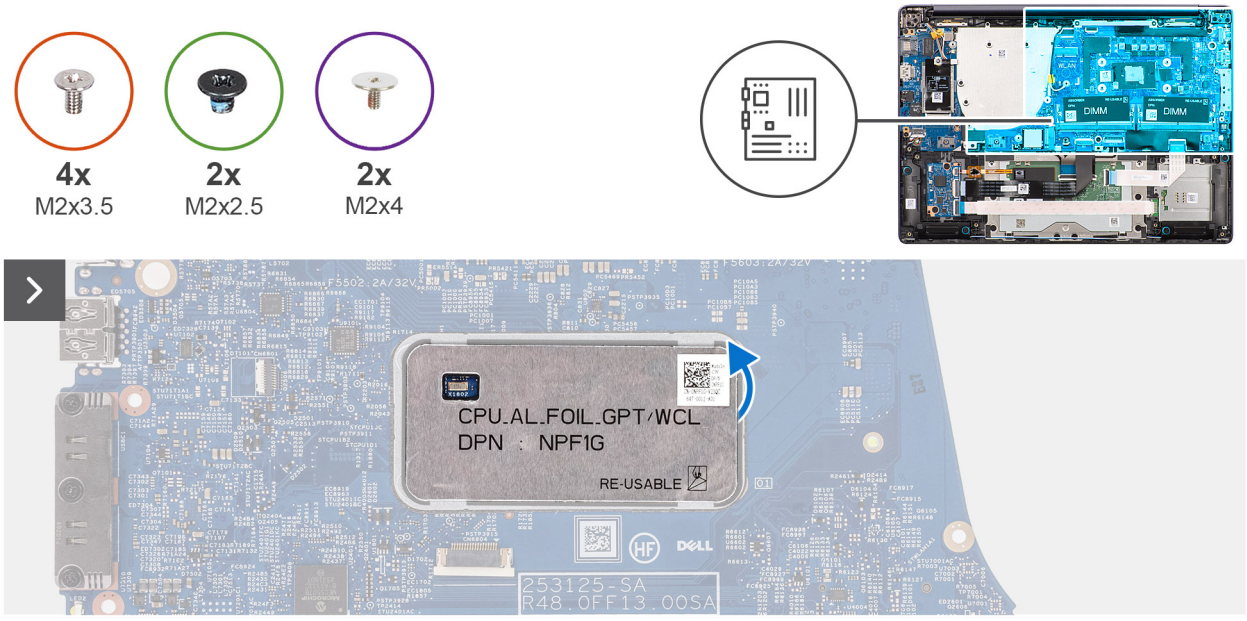


Figure 84. Installing the system board

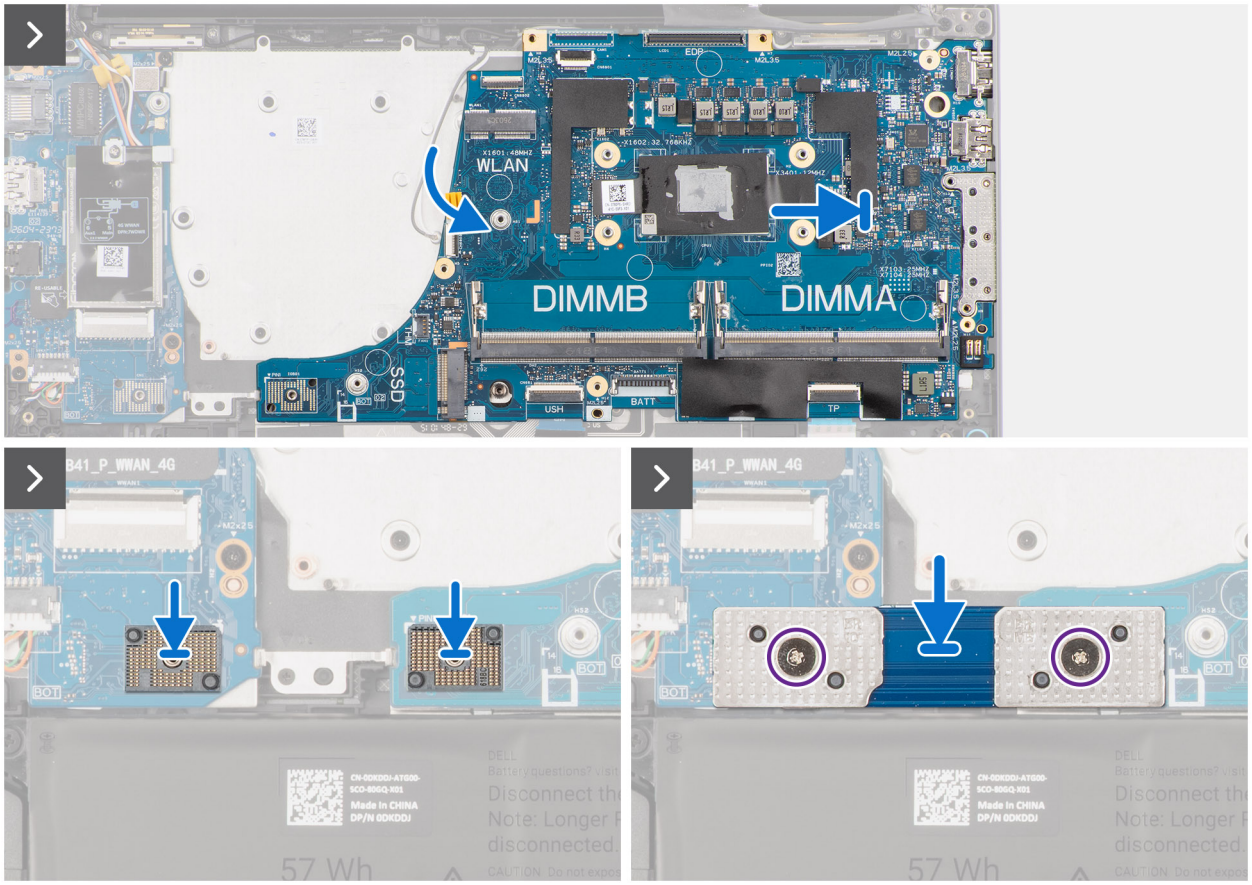


Figure 85. Installing the system board

Steps

1. Flip the system board over.
2. Adhere the CPU-thermal Mylar to the system board.
3. Flip the system board over.
4. Adhere the memory-module Mylars to the system board.
5. Adhere the M.2 SSD thermal pad to the system board.

   NOTE: Steps 1 to 5 are only applicable if you are replacing the system board with a new one.

6. Align the ports on the system board with the slots on the palm-rest assembly and slide them into place.
7. Place the system board on the palm-rest assembly.
8. Align the screw holes on the system board with the screw holes on the palm-rest assembly.
9. 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.
10. 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.

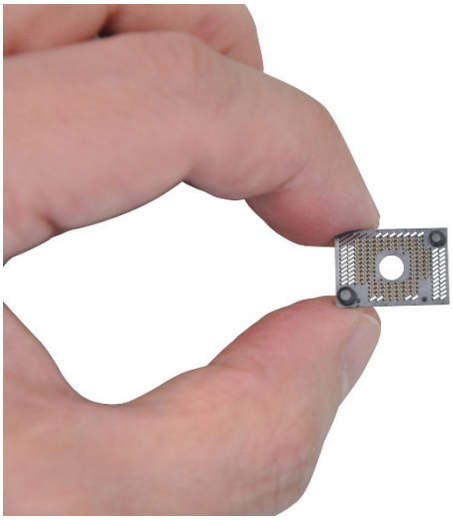


Figure 86. Proper handling of the I/O-bridge board interposer

11. 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.
12. Replace the screw (M2x4) that secures the I/O-bridge board to its connector on the I/O board.
13. Replace the screw (M2x4) that secures the I/O-bridge board to its connector on the system board.
14. Replace the three screws (M2x2.5) that secure the system board to the palm-rest assembly.
15. Replace the two screws (M2x3.5) that secure the system board to the palm-rest assembly.
16. Remove the two screws (M2x3.5) that secure the system board to the palm-rest assembly.

NOTE:

When replacing the I/O board, follow the sequence (from left to right) shown below to ensure that the bridge connector is properly connected between the system board and the I/O board. The installation sequence shown below is also marked on the bridge connector.



Figure 87. Bridge board

17. Connect the USH-board cable to its connector (MB) on the system board and close the latch to secure the cable.
18. Connect the touchpad cable to its connector (TP) on the system board and close the latch to secure the cable.
19. Route the WLAN-antenna cables through the routing guide on the system board.
20. Disconnect the display and camera cable from its connector (EDP) on the system board.
21. Place the display-cable bracket over the display connectors on the system board.
22. Align the screw holes on the display-cable bracket to the screw holes on the system board.
23. Replace the two screws (M2x3.5) that secure the display-cable bracket to the system board.

Next steps

1. Install the heat sink.
2. Install the fan.
3. Install the battery.
4. Install the 4G WWAN card or the 5G WWAN card, whichever applicable.
5. Install the WLAN card.
6. Install the 2230 solid-state drive
7. Install the memory
8. Install the base cover.
9. Install the nano-SIM card tray, if applicable.
10. Follow the procedure in After working inside your computer.

USB Type-C module

Removing the USB Type-C 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 memory.
5. Remove the 2230 solid-state drive .
6. Remove the WLAN card.
7. Remove the 4G WWAN card or the 5G WWAN card, whichever applicable.
8. Remove the battery.
9. Remove the fan.
10. Remove the I/O-bridge board.
11. Remove the system board

NOTE: The system board can be removed with the heat sink attached in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.

About this task

The following image indicates the location of the USB Type-C module and provides a visual representation of the removal procedure.

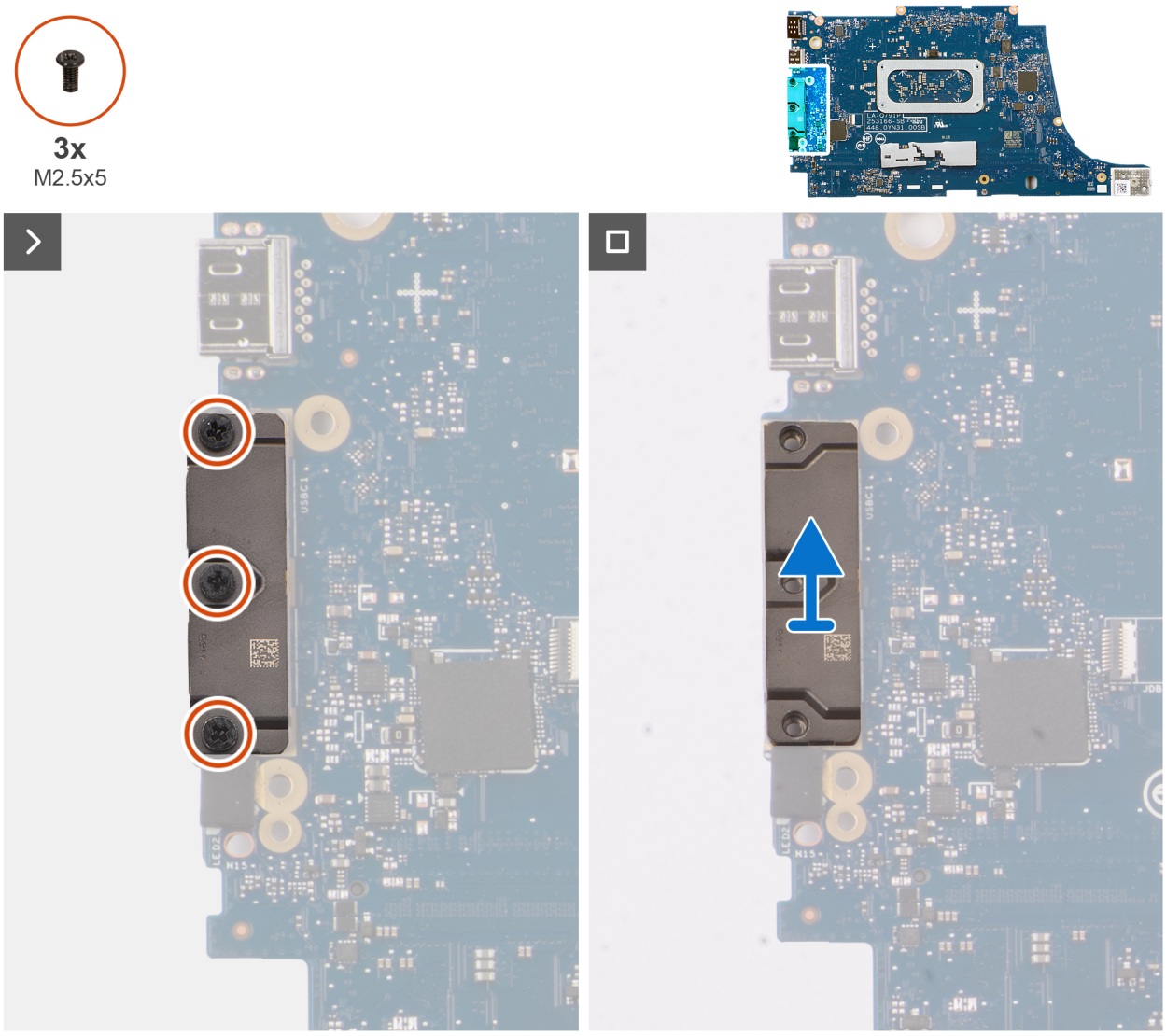


Figure 88. Removing the USB Type-C module

Steps

1. Turn the system board over.
2. Remove the three screws (M2x3.5) that secure the USB Type-C connector module to the system board.
3. Lift the USB Type-C module off the system board.

Installing the USB Type-C module

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 USB Type-C module and provides a visual representation of the installation procedure.

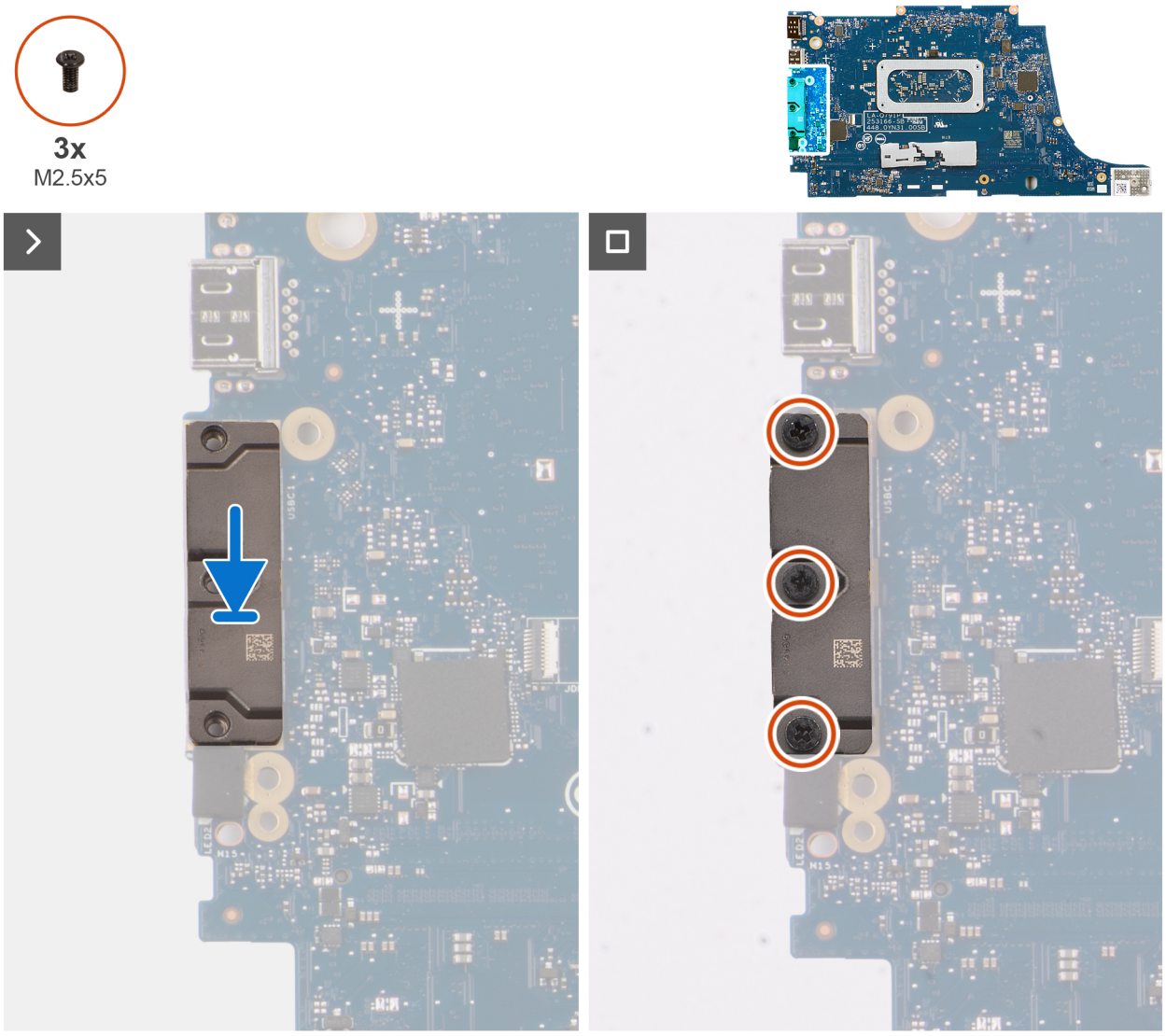


Figure 89. Installing the USB Type-C module

Steps

1. Place the USB Type-C module onto the slot on the bottom side of the system board.
2. Replace the three screws (M2x3.5) that secure the USB Type-C connector module to the bottom side of the system board.
3. Turn the system board over.

Next steps

1. Install the system board

   NOTE: The system board can be installed with the heat sink attached in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.

2. Install the fan.
3. Install the battery.
4. Install the 4G WWAN card or the 5G WWAN card, whichever applicable.
5. Install the WLAN card.
6. Install the 2230 solid-state drive
7. Install the memory
8. Install the base cover.
9. Install the nano-SIM card tray, if applicable.

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

Wireless-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 memory.
5. Remove the 2230 solid-state drive .
6. Remove the WLAN card.
7. Remove the 4G WWAN card or the 5G WWAN card, whichever applicable.
8. Remove the battery.
9. Remove the fan.
10. Remove the I/O-bridge board.
11. Remove the system board

NOTE: The system board can be removed with the heat sink attached in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.

About this task

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



Figure 90. Removing the wireless-antenna modules



Figure 91. Removing the wireless-antenna modules

Steps

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

About this task

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

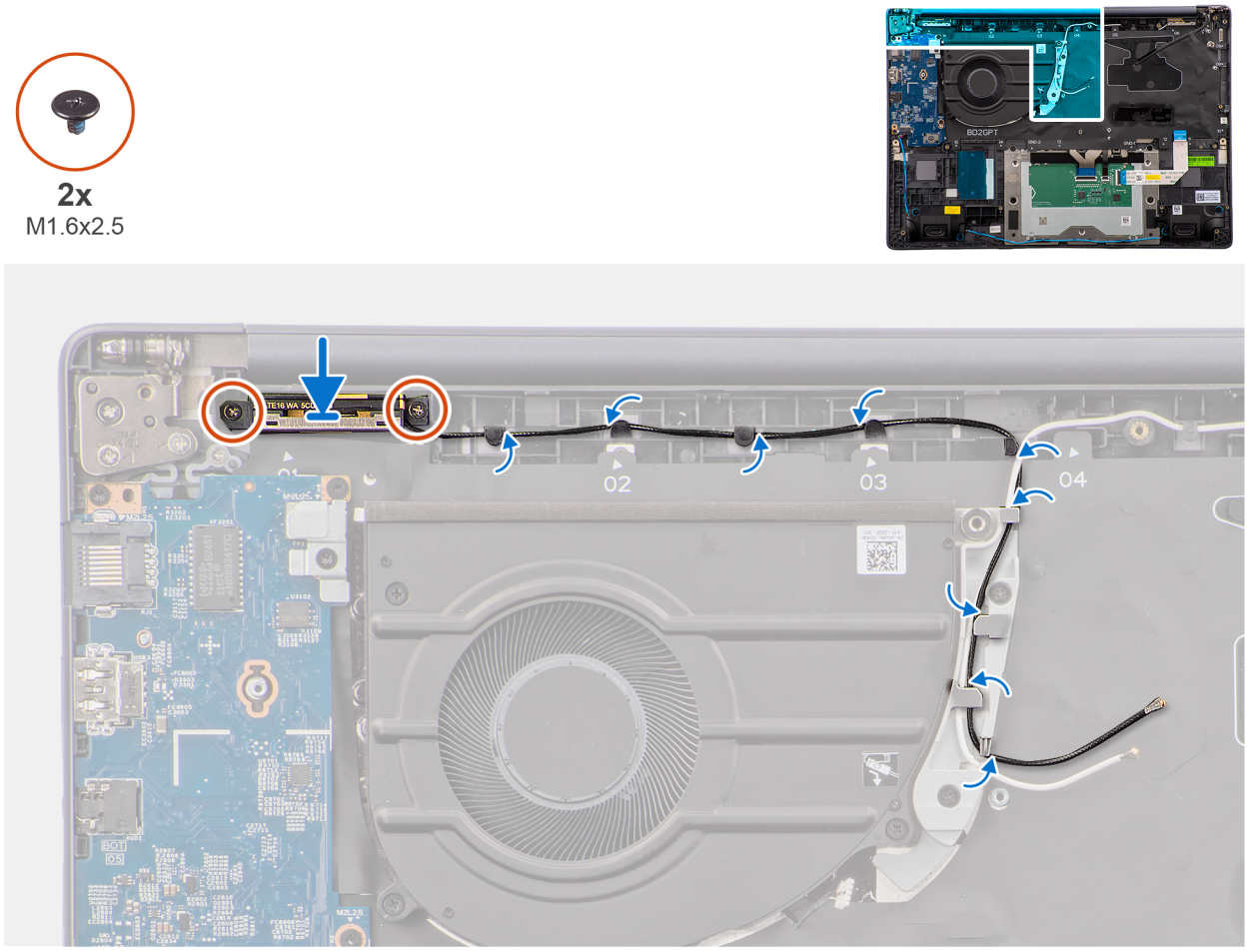


Figure 92. Installing the wireless-antenna modules

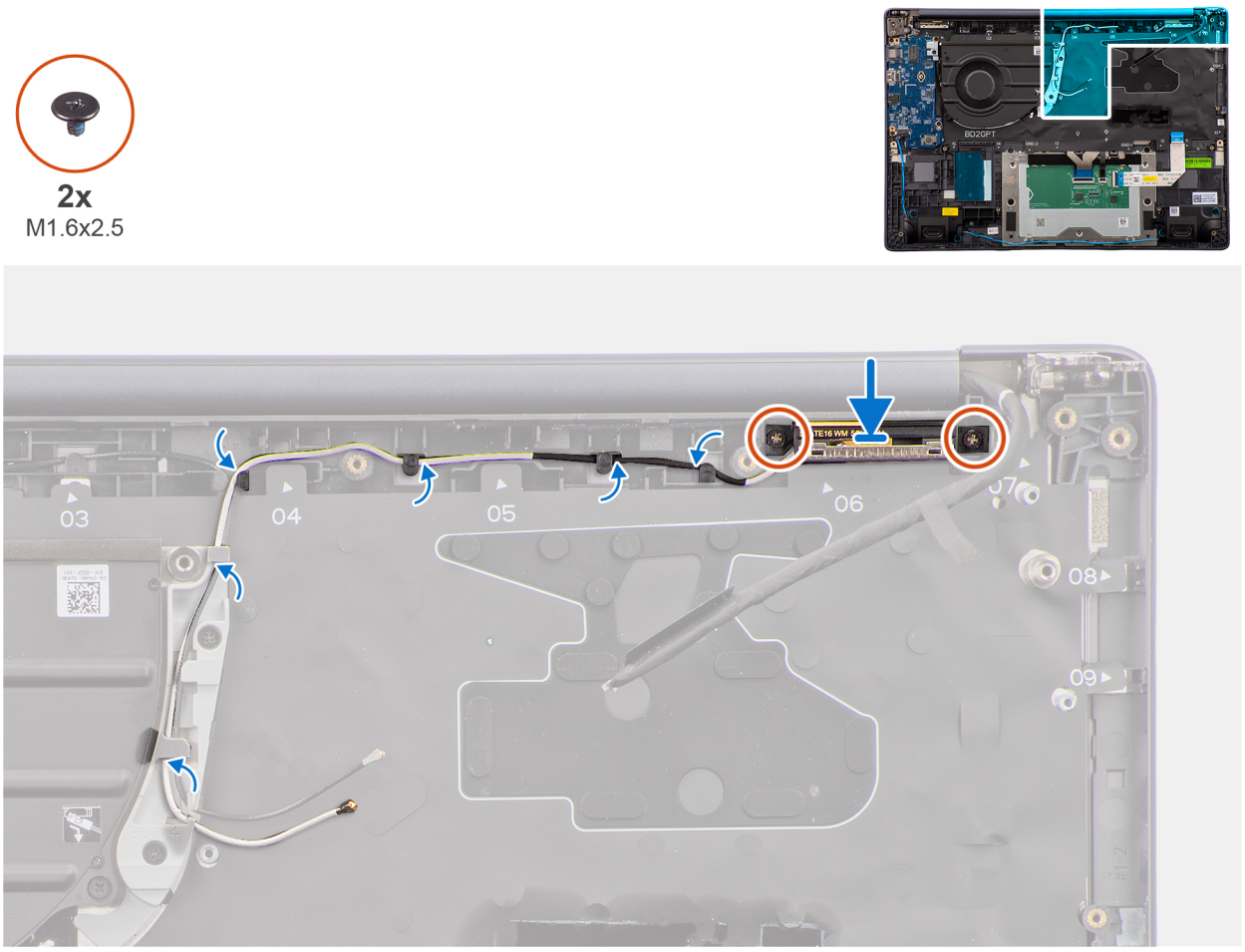


Figure 93. Installing the wireless-antenna modules

Steps

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

Next steps

1. Install the system board

   NOTE: The system board can be installed with the heat sink attached in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.

2. Install the fan.
3. Install the battery.
4. Install the 4G WWAN card or the 5G WWAN card, whichever applicable.
5. Install the WLAN card.
6. Install the 2230 solid-state drive
7. Install the memory
8. Install the base cover.
9. Install the nano-SIM card tray, if applicable.
10. Follow the procedure in After working inside your computer.

Keyboard

Removing the keyboard - Full Aluminium

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 memory.
5. Remove the 2230 solid-state drive .
6. Remove the WLAN card.
7. Remove the 4G WWAN card or the 5G WWAN card, whichever applicable.
8. Remove the battery.
9. Remove the speakers.
10. Remove the fan.
11. Remove the I/O-bridge board.
12. Remove the I/O board.
13. Remove the power button.
14. Remove the system board

> **NOTE:** The system board can be removed with the heat sink attached in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.

15. Remove the wireless-antenna modules.

About this task

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

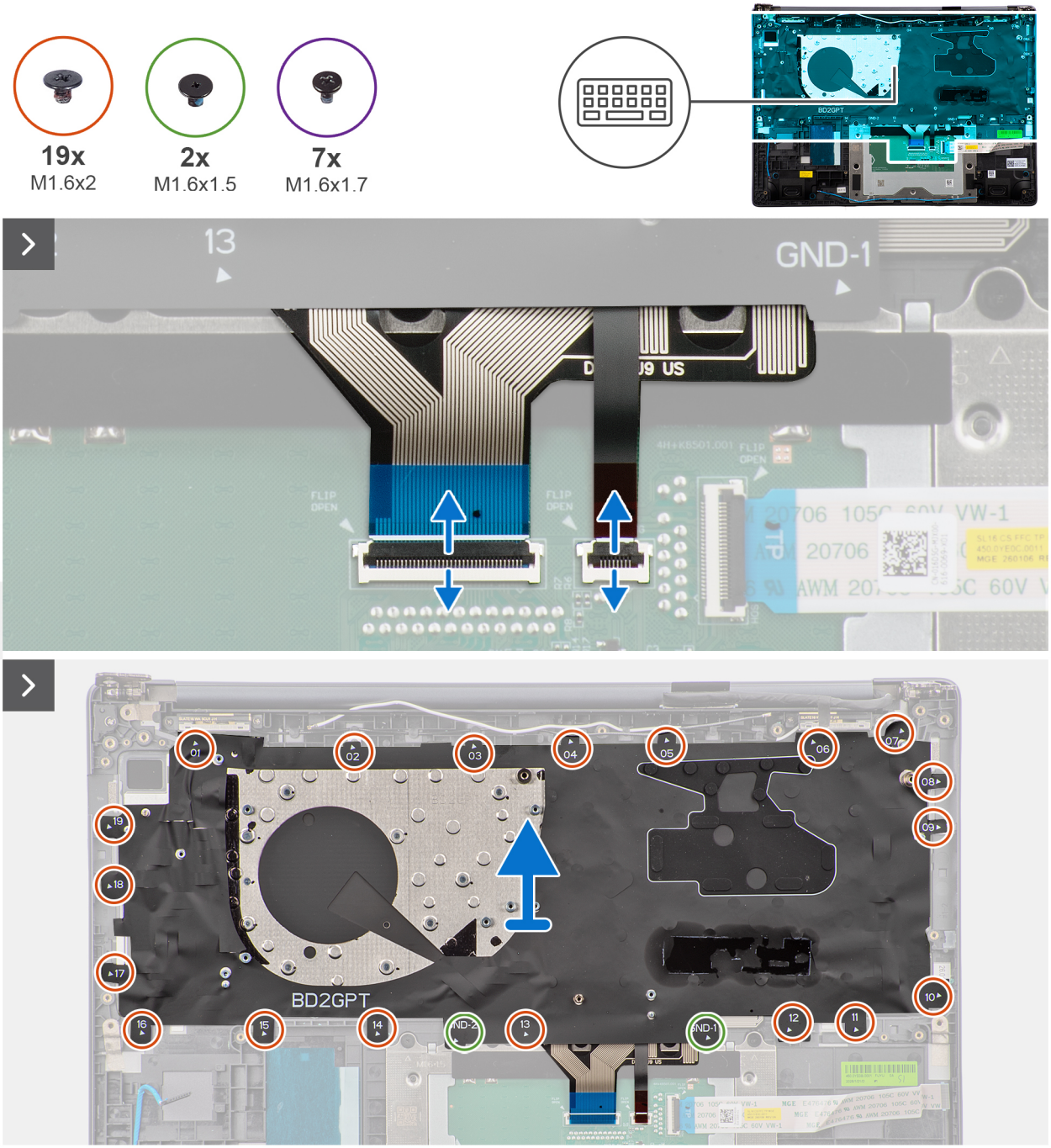


Figure 94. Removing the keyboard



Figure 95. Removing the keyboard

Steps

1. Peel the tape that secures the WLAN-antenna cables to the routing guide.
2. Remove the WLAN-antenna cables from the routing guide.
3. Remove the two screws (M2x2.5) that secure the WLAN-antenna cable routing guide to the keyboard bracket.
4. Lift the WLAN-antenna cable routing guide off the keyboard bracket.
5. Lift the latch and disconnect the keyboard cable from the touchpad.
6. Lift the latch and disconnect the keyboard-backlight cable from the touchpad.
7. Remove the 21 screws (M2x2.2) that secure the keyboard assembly to the palm-rest assembly
8. Lift the keyboard assembly off the palm-rest assembly.
9. Flip over the keyboard assembly.
10. Remove the seven screws (M1.6x2) that secure the keyboard to the keyboard bracket.
11. Lift the keyboard off the keyboard bracket.

Installing the keyboard - Full Aluminium

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 96. Installing the keyboard

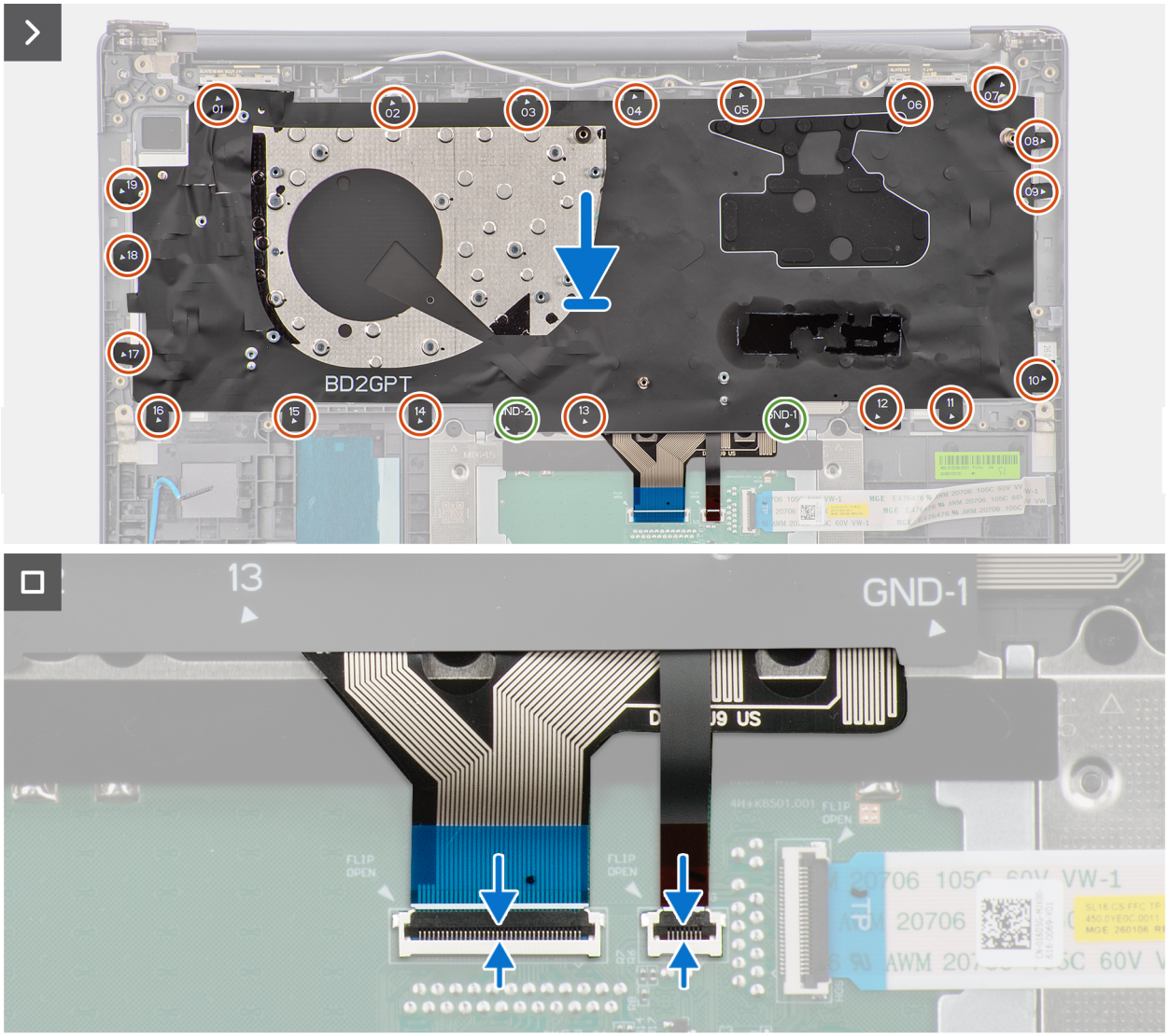


Figure 97. Installing the keyboard

Steps

1. Place the keyboard bracket on a clean and flat surface.
2. Place and align the keyboard on the keyboard bracket.
3. Replace the seven screws (M1.6x2) that secure the keyboard to the keyboard bracket.
4. Flip over the keyboard assembly.
5. Place the keyboard assembly on the palm-rest assembly.

   CAUTION: To avoid damaging your computer, ensure that the WLAN antenna cables are not pinched under the keyboard.

6. Align the screws on the keyboard assembly to the screws on the palm-rest assembly.
7. Replace the 21 screws (M2x2.2) that secure the keyboard assembly to the palm-rest assembly
8. Connect the keyboard-backlight cable from the touchpad and close the latch to secure the cable.
9. Connect the keyboard cable from the touchpad and close the latch to secure the cable.
10. Using the alignment posts, place and align the WLAN-antenna cable routing guide onto the keyboard bracket.
11. Replace the two screws (M2x2.5) that secure the WLAN-antenna cable routing guide to the keyboard vracket.
12. Route the WLAN-antenna cables through the routing guide.
13. Adhere the tape that secures the WLAN-antenna cables to the routing guide.

Next steps

1. Perform steps 1 to 8 of Installing the I/O board.
2. Install the wireless-antenna modules.
3. Install the system board

   NOTE: The system board can be installed with the heat sink attached in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.

4. Install the power button.
5. Install the fan.
6. Install the speakers.
7. Install the battery.
8. Install the 4G WWAN card or the 5G WWAN card, whichever applicable.
9. Install the WLAN card.
10. Install the 2230 solid-state drive
11. Install the memory
12. Install the base cover.
13. Install the nano-SIM card tray, if applicable.
14. Follow the procedure in After working inside your computer.

Removing the keyboard - Glass Fiber Composite

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 memory.
5. Remove the 2230 solid-state drive .
6. Remove the WLAN card.
7. Remove the 4G WWAN card or the 5G WWAN card, whichever applicable.
8. Remove the battery.
9. Remove the speakers.
10. Remove the fan.
11. Remove the I/O-bridge board.
12. Remove the I/O board.
13. Remove the power button.
14. Remove the system board

    NOTE: The system board can be removed with the heat sink attached in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.

15. Remove the wireless-antenna modules.

About this task

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

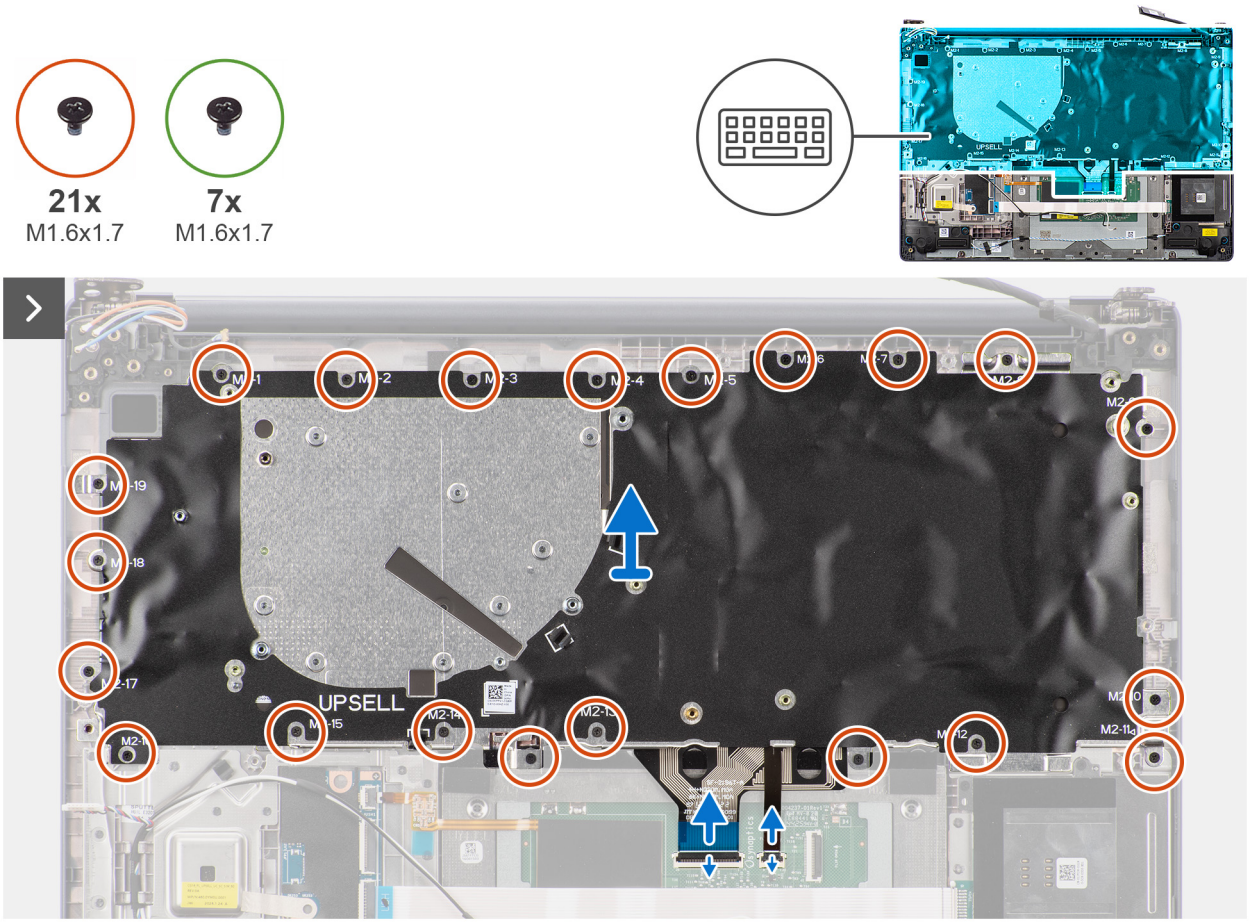


Figure 98. Removing the keyboard

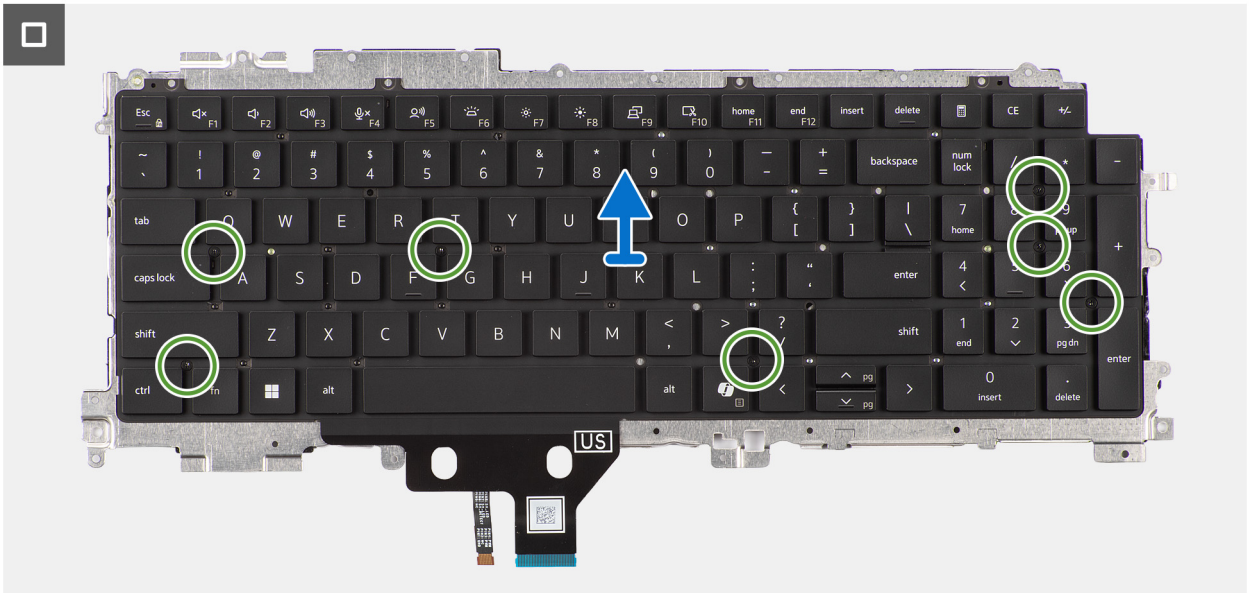


Figure 99. Removing the keyboard

Steps

1. Peel the tape that secures the WLAN-antenna cables to the routing guide.
2. Remove the WLAN-antenna cables from the routing guide.
3. Remove the twenty-one screws (M1.6x1.7) that secure the keyboard assembly to the palm-rest assembly.

4. Lift the WLAN-antenna cable routing guide off the keyboard bracket.
5. Lift the latch and disconnect the keyboard cable from the touchpad.
6. Lift the latch and disconnect the keyboard-backlight cable from the touchpad.
7. Lift the keyboard assembly off the palm-rest assembly.
8. Flip over the keyboard assembly.
9. Remove the seven screws (M1.6x1.7) that secure the keyboard to the keyboard bracket.
10. Lift the keyboard off the keyboard bracket.

Installing the keyboard - Glass Fiber Composite

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.

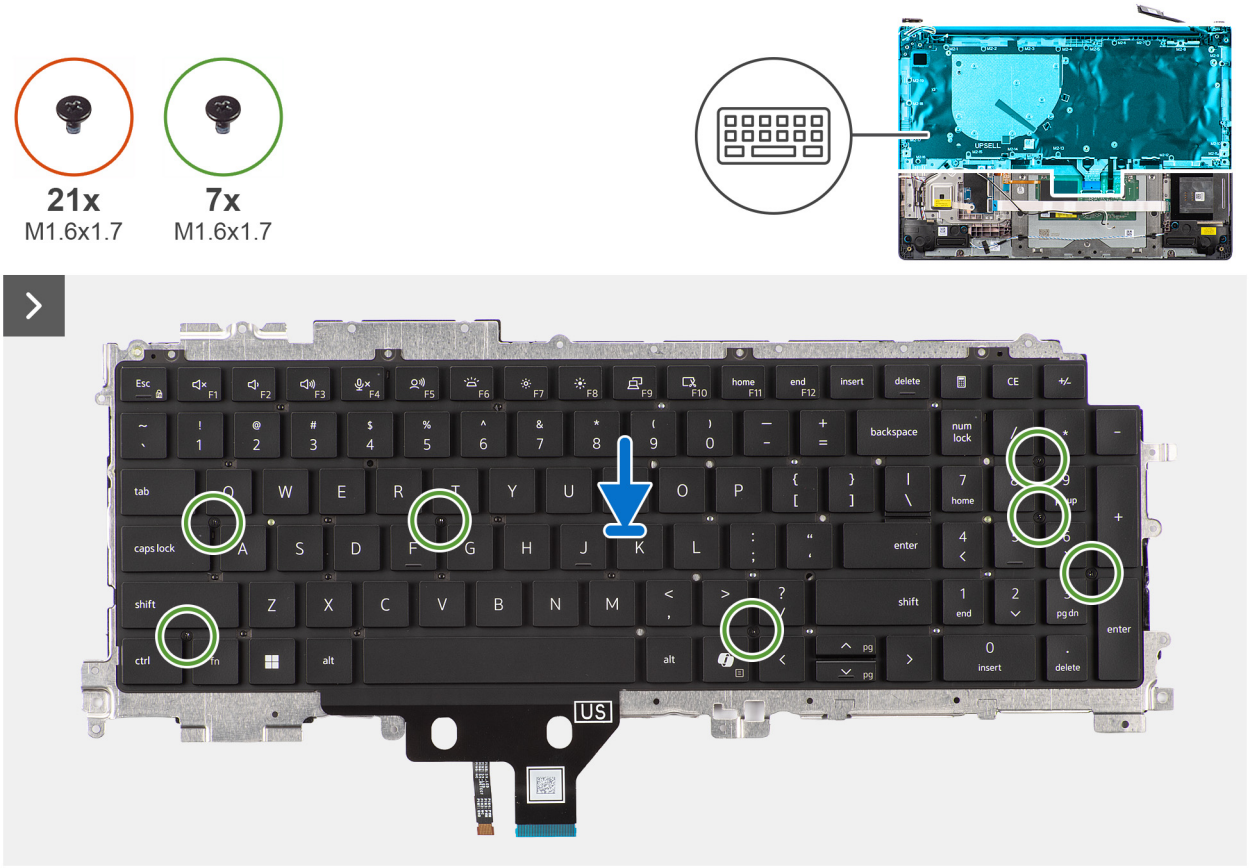


Figure 100. Installing the keyboard

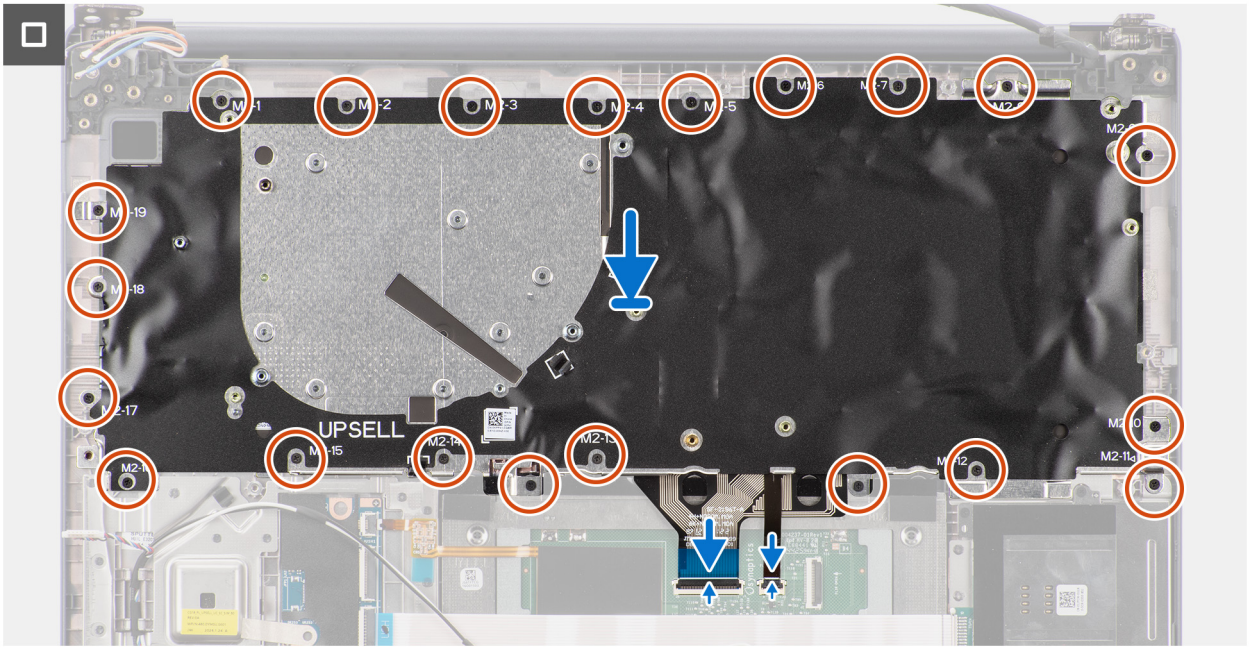


Figure 101. Installing the keyboard

Steps

1. Place the keyboard bracket on a clean and flat surface.
2. Place and align the keyboard on the keyboard bracket.
3. Replace the seven screws (M1.6x1.7) that secure the keyboard to the keyboard bracket.
4. Flip over the keyboard assembly.
5. Place the keyboard assembly on the palm-rest assembly.

   CAUTION: To avoid damaging your computer, ensure that the WLAN antenna cables are not pinched under the keyboard.

6. Align the screws on the keyboard assembly to the screws on the palm-rest assembly.
7. Replace the 21 screws (M1.6x1.7) that secure the keyboard assembly to the palm-rest assembly
8. Connect the keyboard-backlight cable from the touchpad and close the latch to secure the cable.
9. Connect the keyboard cable from the touchpad and close the latch to secure the cable.
10. Using the alignment posts, place and align the WLAN-antenna cable routing guide onto the keyboard bracket.
11. Route the WLAN-antenna cables through the routing guide.
12. Adhere the tape that secures the WLAN-antenna cables to the routing guide.

Next steps

1. Perform steps 1 to 8 of Installing the I/O board.
2. Install the wireless-antenna modules.
3. Install the system board

   NOTE: The system board can be installed with the heat sink attached in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.

4. Install the power button.
5. Install the fan.
6. Install the speakers.
7. Install the battery.
8. Install the 4G WWAN card or the 5G WWAN card, whichever applicable.
9. Install the WLAN card.
10. Install the 2230 solid-state drive
11. Install the memory

12. Install the base cover.
13. Install the nano-SIM card tray, if applicable.
14. 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 memory.
5. Remove the 2230 solid-state drive .
6. Remove the WLAN card.
7. Remove the 4G WWAN card or the 5G WWAN card, whichever applicable.
8. Remove the battery.
9. Remove the speakers.
10. Remove the fan.
11. Remove the I/O-bridge board.
12. Remove the I/O board.
13. Remove the power button.
14. Remove the display assembly.
15. Remove the system board

NOTE: The system board can be removed with the heat sink attached in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.

16. Remove the wireless-antenna modules.
17. Remove the keyboard.

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
- smart-card reader
- USH-board cable
- USH board
- palm rest

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

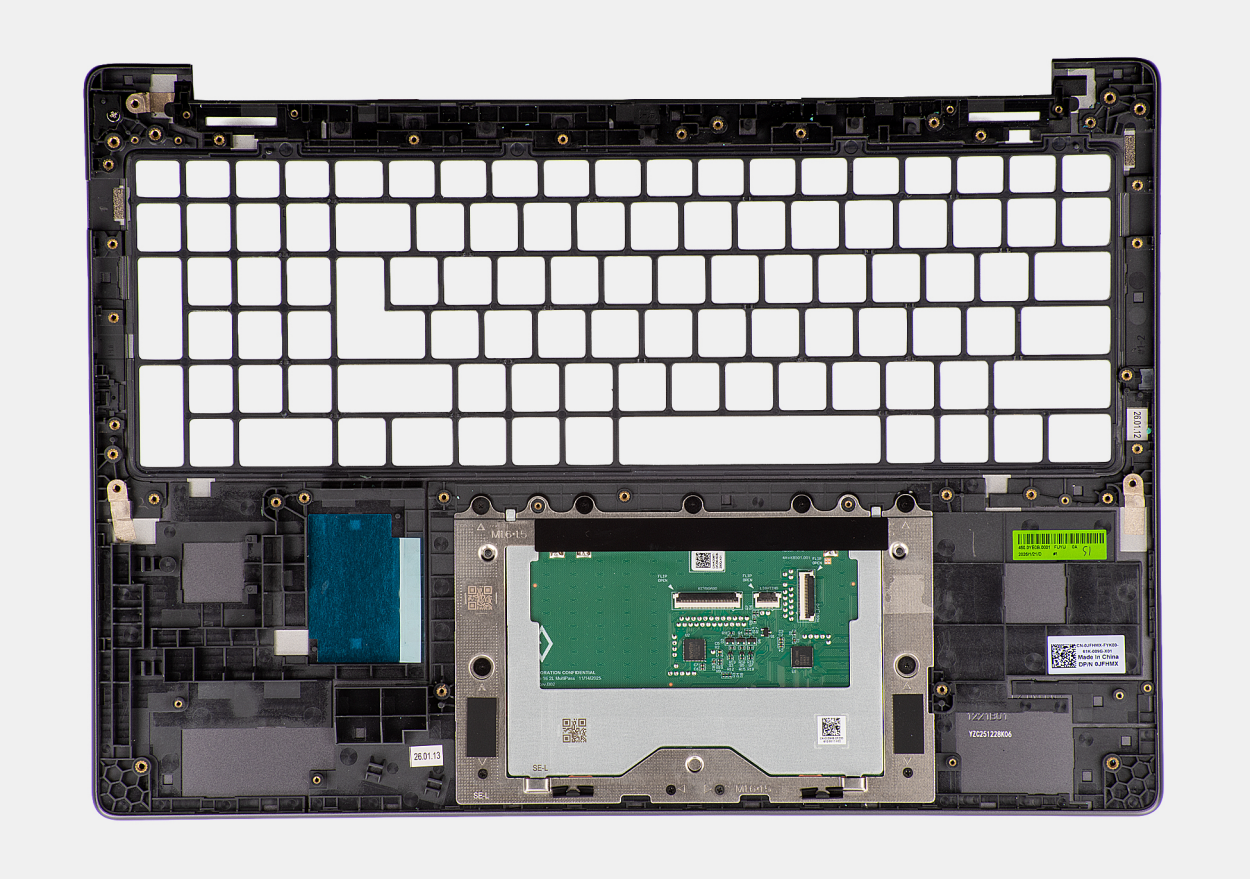


Figure 102. Removing the palm-rest assembly

Steps

1. Using a plastic scribe, pry off the nano-SIM card slot filler from the palm-rest assembly.

   NOTE: This step is applicable only for computer shipped without a WWAN module.

2. After performing the steps in the pre-requisites and step 1, you are left with 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

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
- smart-card reader
- USH-board cable
- USH board
- palm rest

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

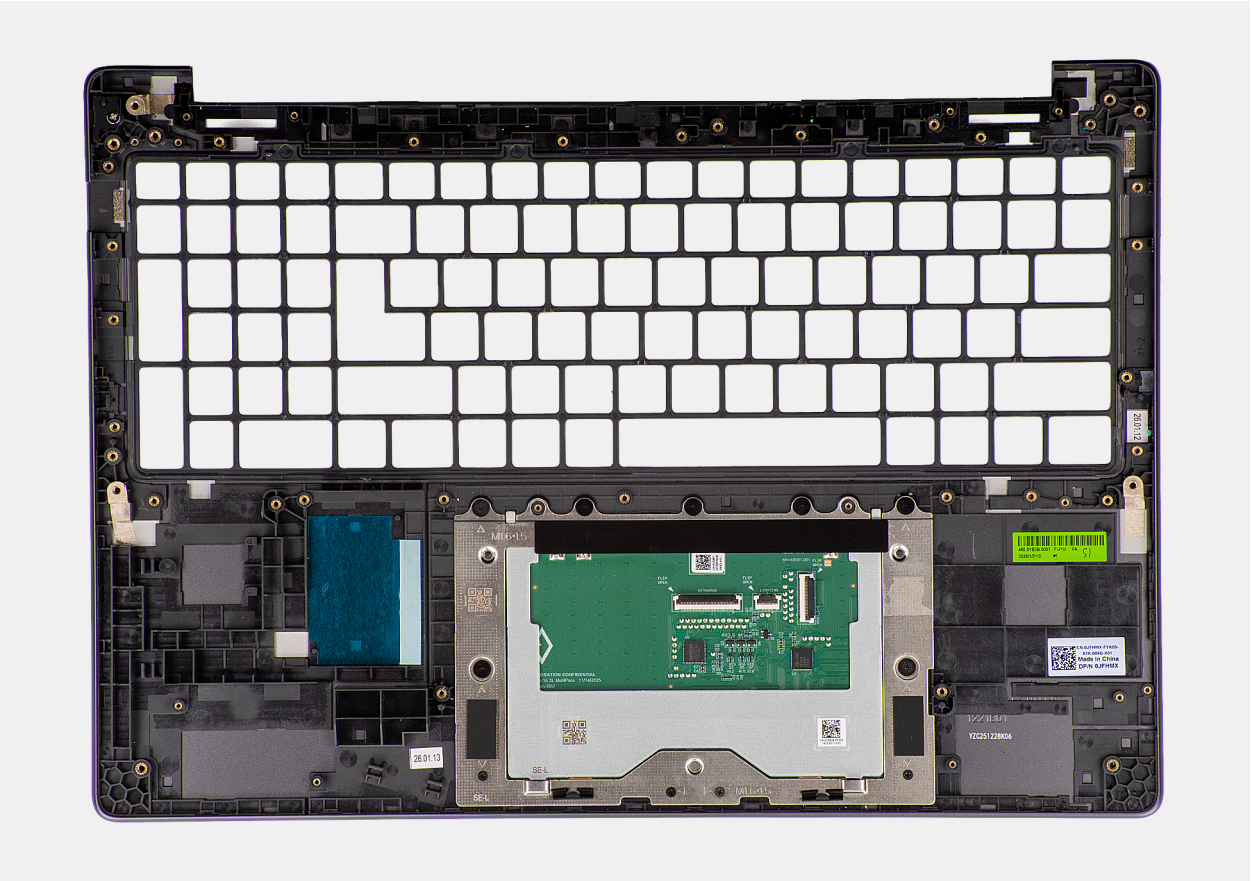


Figure 103. Installing the palm-rest assembly

Steps

1. Place the palm-rest assembly on a clean and flat surface.
2. Place and align the nano-SIM card slot filler into its slot on the palm-rest assembly, then press it into place.

   NOTE: This step is applicable only for computer shipped without a WWAN module.

Next steps

1. Install the keyboard.
2. Perform steps 1 to 8 of Installing the I/O board.
3. Install the wireless-antenna modules.
4. Install the system board

   NOTE: The system board can be installed with the heat sink attached in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.

5. Install the display assembly.
6. Install the power button.
7. Install the fan.
8. Install the speakers.
9. Install the battery.
10. Install the 4G WWAN card or the 5G WWAN card, whichever applicable.
11. Install the WLAN card.
12. Install the 2230 solid-state drive
13. Install the memory
14. Install the base cover.
15. Install the nano-SIM card tray, if applicable.
16. Follow the procedure in After working inside your computer.

4

Software

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

Operating system

Your Dell Pro 5 16 P516265 supports the following operating systems:

- Windows 11 Home
- Windows 11 Pro
- 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 8. 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 9. System Setup options—Overview menu

Overview	
Dell Pro 5 16 P516265	
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 9. System Setup options—Overview menu (continued)

Overview	
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.
PROCESSOR Information	
Processor Type	Displays the processor type.
Maximum Clock Speed	Displays the maximum processor clock speed. **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 L2 cache size.
Processor L3 Cache	Displays the processor L3 cache size.
Microcode Version	Displays the microcode version. **NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options.
Simultaneous Multi-Threading Capable	Displays whether the processor is Multi-Threading (MT) capable.
MEMORY Information	
Memory Installed	Displays the total memory that is installed on the computer.
Memory Available	Displays the total memory available on the computer.
Memory Speed	Displays the memory speed. **NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options.
Memory Channel Mode	Displays single or dual channel mode. **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 panel revision of the computer.
Privacy Screen	Displays the type of panel screen of the computer.

Table 9. System Setup options—Overview menu (continued)

Overview	
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. **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.
LOM MAC Address	Displays the MAC address of the LOM (LAN on Motherboard) interface.
Pass Through MAC Address	Displays the MAC address of the video pass-through.
Cellular Device	Displays the cellular devices that are connected on the computer.

Table 10. System Setup options—Boot Configuration menu

Boot Configuration	
Boot Sequence	
Boot Mode: UEFI only	Displays the boot mode of the computer. **NOTE:** To view this option, enable **Service** options as described in View Service options.
Boot Sequence	Displays the boot sequence.
Enable PXE Boot Priority	Enables or disables the new PXE boot option. Allows loading an operating system over a network connection. By default, the **Enable PXE Boot Priority** option is disabled.
UEFI Network Boot Priority	This option is used to select IPv4 and IPv6 option boot order.
Extended IPv4 PXE Boot Timeout	Enter the Extended IPv4 PXE Boot Timeout value only if the IPv4 PXE Boot fails with standard timeouts.
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. 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. **NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options. **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.

Table 10. System Setup options—Boot Configuration menu (continued)

	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. By default, the **Enable Microsoft UEFI CA** option is enabled. 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. By default, the **Deployed Mode** is selected. **Deployed Mode** should be selected for normal operation of Secure Boot. **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. By default, the **Enable Custom Mode** option is disabled. **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. By default, the **PK** option is selected. **NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options.

Table 11. 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. By default, the **Enable Camera** option is enabled. **NOTE:** Depending on the configuration ordered, the camera setup option may not be available.
Audio	
Enable Audio	Enables all integrated audio controller. By default, all the options are enabled.
Enable Microphone	Enables the microphone. By default, the **Enable Microphone** option is enabled. **NOTE:** Depending on the configuration ordered, the microphone setup option may not be available.
Enable Internal Speaker	Enables the internal speaker. By default, the **Enable Internal Speaker** option is enabled.

Table 11. System Setup options—Integrated Devices menu (continued)

Integrated Devices	
USB/Thunderbolt Configuration	
Enable External USB Ports	Enables the external USB ports. By default, the **Enable External USB Ports** option is enabled.
Enable USB Boot Support	Enables booting from USB mass storage devices that are connected to external USB ports. By default, the **Enable USB Boot Support** option is enabled. **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. By default, the **Enable Thunderbolt Technology Support** option is enabled. **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. By default, the **Enable Thunderbolt Boot Support** option is disabled. **NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options.
Enable Thunderbolt (and PCIe behind TBT) pre-boot modules	Enables the PCIe devices that are connected through a Thunderbolt adapter to run the PCIe devices UEFI Option ROM (if present) during preboot. By default, the **Enable Thunderbolt (and PCIe behind TBT) pre-boot modules** option is disabled. **NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options.
Video/Power only on Type-C Ports	Enables or disables the Type-C port functionality to video or only power. By default, the **Video/Power only on Type-C Ports** option is disabled. **NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options.
Miscellaneous Devices	
Enable Fingerprint Reader Device	Enables or disables the Fingerprint Reader Device option. By default, the **Enable Fingerprint Reader Device** option is enabled. **NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options.
Dust Filter Maintenance	
Dust Filter Maintenance	Enable or disable the dust filter maintenance. By default, the **Disabled** option is enabled.

Table 12. System Setup options—Storage menu

Storage
SATA/NVMe Operation

Table 12. System Setup options—Storage menu (continued)

Storage	
SATA/NVMe Operation	Sets the operating mode of the integrated SATA hard drive controller. By default, the **Raid On** option is selected.
Storage Interface	Displays the information of various onboard drives.
Port Enablement	Enables or disables the M.2 PCIe SSD option. By default, the **M.2 PCIe SSD** option is enabled.
Drive Information	Displays the information of onboard drives.

Table 13. System Setup options—Display menu

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

Table 14. System Setup options—Connection menu

Connection	
Network Controller Configuration	
Integrated NIC	This option controls the on-board LAN Controller. By default, the **Enabled with PXE** option is enabled.
Wireless Device Enable	
WLAN	Enables or disables the internal WLAN device. By default, the **WLAN** option is enabled.
Bluetooth	Enables or disables the internal Bluetooth device. By default, the **Bluetooth** option is enabled.
Contactless Smartcard/NFC	Enables or disables the smartcard device. By default, the **Contactless Smartcard/NFC** option is enabled. **NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options.
Enable UEFI Network Stack	
Enable UEFI Network Stack	Enables or disables the UEFI Network Stack and controls the onboard LAN Controller. By default, the **Auto-Enabled** option is enabled.

Table 14. System Setup options—Connection menu (continued)

Connection	
IPv4 PXE Boot	When enabled, the IPv4 PXE Boot option is available. When disabled, the IPv4 PXE Boot option is not available.
IPv6 PXE Boot	When enabled, the IPv6 PXE Boot option is available. When disabled, the IPv4 PXE Boot option is not available.
Wireless Radio Control	
Control WLAN Radio	Enables to sense the connection of the computer to a wired network and then disables the selected wireless radios (WLAN and/or WWAN). Upon disconnection from the wired network, the selected wireless radios are reenabled. By default, the **Control WLAN Radio** option is disabled.
HTTP(s) Boot Feature	
HTTP(s) Boot	When enabled, supports HTTP(s) boot on the client BIOS, which offers wired or wireless and HTTP/HTTPS connection options. **NOTE:** To view this option, enable **HTTP(s) Boot** 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. By default, **Auto Mode** is selected. **NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options.

Table 15. System Setup options—Power menu

Power	
Battery Configuration	
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. 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. By default, the **Enable Advanced Battery Charge Configuration** option is disabled.
Peak Shift	
Enable Peak Shift	Enables the computer to run on battery during peak power usage hours. By default, the **Enable Peak Shift** option is disabled.
Type-C Connector Power	
Type-C Connector Power	Enables us to set the maximum power that can be drawn on the Type-C connector on the computer.
USB PowerShare	
Enable USB PowerShare	Enables or disables the USB PowerShare on the computer.

Table 15. System Setup options—Power menu (continued)

Power	
	By default, the **Enable USB Powershare** option is disabled.
Thermal Management	
Thermal Management	Enables or disables cooling of fan and manages processor heat to adjust the computer performance, noise, and temperature. By default, the **Optimized** option is selected. Standard setting for balanced performance, noise, and temperature.
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. By default, the **Wake on Dell USB-C Dock** option is enabled.
Lid Switch	
Enable Lid Switch	Enables or disables the Lid Switch. By default, the **Enable Lid Switch** option is enabled.

Table 16. System Setup options—Security menu

Security	
TPM 2.0 Security On	Allows you to enable or disable TPM. By default, the **TPM 2.0 Security On** option is enabled. For additional security, Dell Technologies recommends keeping **TPM 2.0 Security On** enabled to allow these security technologies to fully function.
Physical Presence Interface (PPI) Bypass for Clear Commands	By default, the **PPI Bypass for Clear Commands** option is disabled. For additional security, Dell Technologies recommends keeping the **PPI Bypass for Clear Commands** option disabled.
Chassis intrusion	
Chassis Intrusion	The chassis intrusion detection enables a physical switch that triggers an event when the computer cover is opened. When set to **Enabled**, a notification is displayed on the next boot and the event is logged in the BIOS Events log. When set to **On-Silent**, the event is logged in the BIOS Events log, but no notification is displayed. When set to **Disabled**, no notification is displayed and no event is logged in the BIOS Events log. By default, the **Chassis Intrusion** option is enabled. For additional security, Dell Technologies recommends keeping the **Chassis Intrusion Detection** option is disabled.
Clear	When enabled, the **Clear** option clears information that is stored in the TPM after exiting the computer's BIOS. This option returns to the disabled state when the computer restarts. By default, the **Clear** option is disabled. Dell Technologies recommends enabling the **Clear** option only when TPM data is required to be cleared.
AMD Memory Guard	

Table 16. System Setup options—Security menu (continued)

Security	
AMD Memory Guard	Enables or disables memory encryption. AMD Memory Guard encrypts the contents of RAM to provide enhanced protection against unauthorized access. While enabling this feature may make detecting RAM errors more difficult during testing, it will not produce false errors. Enabling AMD Memory Guard may have a small performance impact on memory. This feature is only available on CPUs with AMD Pro technology. By default, the **AMD Memory Guard** option is disabled.
Data Wipe on Next Boot	
Start Data Wipe	Data Wipe is a secure wipe operation that deletes information from a storage device. **CAUTION: The secure Data Wipe operation deletes information in a way that it cannot be reconstructed.** 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. When enabled, the data wipe option provides prompts to wipe any storage devices that are connected to the computer on the next boot. By default, the **Start Data Wipe** option is disabled.
Absolute	
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 for configuration and activation. By default, the **Absolute** option is enabled. For additional security, Dell Technologies recommends keeping the **Absolute** option is enabled. **NOTE:** When the Absolute features are activated, the Absolute integration cannot be disabled from the BIOS setup screen.
UEFI Boot Path Security	
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. By default, the **Always Except Internal HDD** option is enabled.
Authenticated BIOS Interface	
Enable Authenticated BIOS Interface	Allows the administrator to control access to BIOS configuration through an authenticated interface. When enabled, this option ensures that BIOS configuration changes are secured by authentication. By default, the **Enable Authenticated BIOS Interface** option is disabled.
Legacy Manageability Interface Access	Allows the administrator to control the access to BIOS configuration through the Legacy Manageability Interface option. When enabled, this prevents the BIOS Administrator password-based manageability tools from running, prevents some Dell software applications from reading configuration settings, and/or prevents changes to the BIOS configuration settings. When enabled, this option only supports the Authenticated BIOS Manageability Interface (ABI) for managing the BIOS configuration changes. To support this feature, ABI must be enabled and provisioned.

Table 16. System Setup options—Security menu (continued)

Security	
	When set to **Enabled** , the Legacy Manageability Interface can be used to read and change BIOS configuration settings. When set to **Read-Only** , BIOS configuration settings can be read, but cannot be changed through the Legacy Manageability Interface. When set to **Disabled** , the Legacy Manageability Interface is disabled. BIOS configuration reads and writes are blocked.
Firmware Device Tamper Detection	
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 messages are 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. By default, the **Silent** option is enabled. For additional security, Dell Technologies recommends keeping the **Firmware Device Tamper Detection** option is enabled.
Clear Firmware Device Tamper Detection	Allows you to clear the events that are logged when tampering of firmware device is detected. By default, the **Clear Firmware Device Tamper Detection** option is disabled. **NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options.
Pluton Security Processor	
Pluton Security Processor	Enables or disables the utilization of the Pluton Security Processor by the operating system to provide security services such as Key Storage Provider functionality. By default, the **Pluton Security Processor** option is enabled. **NOTE:** For additional security, Dell Technologies recommends keeping the **Pluton Security Processor** option enabled.

Table 17. System Setup options—Passwords menu

Passwords	
Admin 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. The following rules and dependencies apply to the Administrator Password - ● The administrator password cannot be set if computer and/or internal storage passwords are previously set. ● The administrator password can be used in place of the computer and/or internal storage passwords. ● When set, the administrator password must be provided during a firmware update. ● Clearing the administrator password also clears the computer password (if set). 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. The following rules and dependencies apply when the System Password is used -

Table 17. System Setup options—Passwords menu (continued)

Passwords	
	• The computer shuts down when idle for approximately 10 minutes at the computer password prompt. • The computer shuts down after three incorrect attempts to enter the computer password. • The computer shuts down when the **Esc** key is pressed at the System Password prompt. • The computer password is not prompted when the computer resumes from standby mode. Dell Technologies recommends using the computer password in situations where it is likely that a computer may be lost or stolen.
M.2 PCIe SSD-0	The hard drive password can be set to prevent unauthorized access of the data stored on the solid-state drive. The computer prompts for the hard drive password during boot in order to unlock the drive. A password-secured hard drive stays locked even when removed from the computer or placed into another computer. It prevents an attacker from accessing data on the drive without authorization. The following rules and dependencies apply when the **Hard Drive Password** or **M.2 PCIe SSD-0 Password** option is used. • The hard drive password option cannot be accessed when the hard drive is disabled in the BIOS Setup. • The computer shuts down when idle for approximately 10 minutes at the hard drive password prompt. • The computer shuts down after three incorrect attempts to enter the hard drive password and treats the hard drive as not available. • The hard drive does not accept password unlock attempts after five incorrect attempts to enter the hard drive password from the BIOS Setup. The hard drive password must be reset for the new password unlock attempts. • The computer treats the hard drive as not available when the **Esc** key is pressed at the hard drive password prompt. • The hard drive 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. • If the system and hard drive passwords are set to the same value, the hard drive unlocks after the correct system password is entered. Dell Technologies recommends using a hard drive 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 and require passwords to contain certain character classes (upper case, lower case, digit, special character). Dell Technologies recommends setting the minimum password length to at least eight characters.
Admin Setup Lockout	The **Admin Setup Lockout** option prevents an end user from even viewing the BIOS setup configuration without first entering the administrator password (if set). By default, the **Admin Setup Lockout** option is disabled. For additional security, Dell Technologies recommends keeping the **Admin Setup Lockout** option disabled.
Master Password Lockout	

Table 17. System Setup options—Passwords menu (continued)

Passwords	
Enable Master Password Lockout	The Master Password Lockout setting allows you to disable the Recovery Password feature. If the computer, administrator, or hard drive password is forgotten, the computer becomes unusable. **NOTE:** When the owner password is set, the Master Password Lockout option is not available. **NOTE:** When an internal hard drive password is set, it must first be cleared before Master Password Lockout can be changed. By default, the **Enable Master Password Lockout** option is disabled. Dell does not recommend enabling the **Master Password Lockout** unless you have implemented your own password recovery computer.

Table 18. System Setup options—Update, Recovery menu

Update, Recovery	
BIOS Downgrade	
Allow BIOS Downgrade	Controls flashing of the computer firmware to previous revisions. By default, the **Allow BIOS Downgrade** option is enabled.
SupportAssist OS Recovery	Enables or disables the boot flow for SupportAssist OS Recovery tool in the event of certain computer errors. 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 the local Service operating system does not boot or is not installed. By default, the **BIOSConnect** option is enabled.
Dell Auto OS Recovery Threshold	Allows you to control the automatic boot flow for SupportAssist System Resolution Console and for Dell OS Recovery Tool. By default, the **Dell Auto OS Recovery Threshold** value is set to 2.

Table 19. System Setup options—System Management menu

System Management	
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Creates a computer Asset Tag that can be used by an IT administrator to uniquely identify a particular computer. **NOTE:** Once set in the BIOS, the Asset Tag cannot be changed.
AC Behavior	
Wake on AC	Enables or disables the computer to turn on and go to boot when AC power is supplied to the computer. By default, the **Wake on AC** option is disabled.
Wake on LAN/WLAN	Enables or disables the computer to turn on by a special LAN signal. By default, the **Wake on LAN/WLAN** option is disabled.
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. By default, the **Auto On Time** option is disabled.

Table 19. System Setup options—System Management menu (continued)

System Management	
First Power On Date	
Set Ownership Date	Create an ownership date for the computer.
DASH Support	Enable or disable support for the desktop and mobile architecture for system hardware (DASH) management via Platform Level Data Model (PLDM) exchanges. By default, the **DASH Support** option is disabled.

Table 20. System Setup options—Keyboard menu

Keyboard	
Fn Lock Options	Enables or disables the Fn Lock option. 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 AC	Sets the timeout value for the keyboard backlight when an AC adapter is connected to the computer. By default, the **10 seconds** option is selected.
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. By default, the **10 seconds** option is selected.

Table 21. System Setup options—Pre-boot Behavior menu

Preboot Behavior	
Adapter Warnings	
Enable Adapter Warnings	Enables the warning messages during boot when the adapters with less power capacity are detected. By default, the **Enable Adapter Warnings** option is enabled.
Warnings and Errors	Enables or disables the action to be taken when a warning or error is encountered. By default, the **Prompt on Warnings and Errors** option is selected. **NOTE:** Errors deemed critical to the operation of the computer hardware stop the functioning of the computer.
USB-C Warnings	
Enable Dock Warning Messages	Enables the warning messages during boot when the USB-C adapters with less power capacity are detected. By default, the **Enable Dock Warning Messages** option is enabled. **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. By default, the **0 seconds** option is selected.
MAC Address Pass-Through	Replaces the external NIC MAC address (in a supported dock or dongle) with the selected MAC address from the computer. By default, the **System Unique MAC Address** option is selected.

Table 21. System Setup options—Pre-boot Behavior menu (continued)

Preboot Behavior	
Sign of Life	
Early Audio Beep	Early Audio Beep Sign of Life. By default, the **Early Audio Beep** option is enabled.
Show Ownership Tag with Logo	Shows the feature of system Ownership Tag in addition to the BIOS Boot logo.
Unsupported hardware warning	
Unsupported hardware warning	Enables or disables the alert at startup if the computer detects hardware that may not work as expected.

Table 22. System Setup options—Virtualization menu

Virtualization	
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. **NOTE:** This option is not available when the virtualization setting for IOMMU is disabled (VT-d/AMD Vi). By default, the **Enable Pre-Boot DMA Support** option is enabled. For additional security, Dell Technologies recommends keeping the **Enable Pre-Boot DMA Support** option is enabled. **NOTE:** This option is provided only for compatibility purposes, since some older hardware is not DMA capable.
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. **NOTE:** This option is not available when the virtualization setting for IOMMU is disabled (VT-d/AMD Vi). By default, the **Enable OS Kernel DMA Support** option is enabled. **NOTE:** This option is provided only for compatibility purposes, since some older hardware is not DMA capable.
Internal Port DMA Compatability Mode	Allows you to control the boot compatibility for integrated PCIe peripherals by disabling PCIe DMA protection on internal PCIe ports. When enabled, BIOS will notify the operating system that the internal ports are not DMA capable. This option is to help with devices that have operating system DMA compatibility issues. This option does not directly enable DMA protection in the operating system. **NOTE:** This option is not available when the virtualization setting for IOMMU is disabled (VT-d/AMD Vi). By default, the **Internal Port DMA Compatibility Mode** option is enabled. **NOTE:** This option is provided only for compatibility purposes, since some older hardware is not DMA capable.

Table 23. System Setup options—Performance menu

Performance
AMD Simultaneous Multithreading

Table 23. System Setup options—Performance menu (continued)

Performance	
Enable AMD Simultaneous Multithreading	Enables or disables the AMD Simultaneous Multithreading mode of the processor. When enabled, the AMD Simultaneous Multithreading increases the efficiency of the processor resources when multiple threads run on each core. By default, the **Enable AMD Simultaneous Multithreading** option is enabled. **NOTE:** To view this option, enable **Advanced Setup** mode as described in View Advanced Setup options.

Table 24. System Setup options—System Logs menu

System Logs	
BIOS Event Log	
Clear BIOS Event Log	Allows you to select option to keep or clear BIOS events logs. By default, the **Keep Log** option is selected.
Thermal Event Log	
Clear Thermal Event Log	Allows you to select option to keep or clear thermal events logs. By default, the **Keep Log** option is selected.
Power Event Log	
Clear Power Event Log	Allows you to select option to keep or clear power events logs. By default, the **Keep Log** option is selected.

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 25. 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.

Clearing CMOS settings

About this task

CAUTION: Clearing CMOS settings resets the BIOS settings on your computer.

Steps

1. Remove the base cover.
2. Disconnect the battery cable from the system board.
3. Remove the coin-cell battery.
4. Wait for one minute.
5. Replace the coin-cell battery.
6. Connect the battery cable to the system board.
7. Replace the base cover.

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.

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 26. 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.

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 (screen) of the Dell laptop or with the video card (GPU) and computer settings.

When you notice screen abnormalities like 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. Connect only the AC adapter (charger) to the computer.
3. Ensure that the LCD (screen) is clean (no dust particles on the surface of the screen).
4. Press and hold the **D** key and press the power button to enter LCD-BIST mode. Continue to hold the **D** key until the computer boots up.
5. The screen displays solid colors and changes colors on the entire screen to white, black, red, green, and blue twice.
6. Then it displays the colors white, black, and red.
7. 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.

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 5 16 P516265.

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 27. 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
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
5,2	EC detects an invalid platform ID
5,3	The I/O board is not detected, or the I/O ports are not functioning properly.

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.

   CAUTION: If the battery is a Field Replaceable Unit (FRU), the removal and installation procedures are intended for authorized service technicians only.

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.

7

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 28. Self-help resources

Resources	Location
Dell product and service information	Go to Dell Site
Contact Support	In Windows search, type `Contact Support`, and press Enter.
Operating system help	Windows: Go to the Windows Support Site. Linux: Go to the Linux Support Site.
General Dell support	Go to the Dell Support Site. Enter your Service Tag or Express Service Code to access system-specific resources such as drivers, downloads, diagnostics, videos, and documentation. For more information, see Locate the Service Tag on your computer.
Dell Knowledge Base	1. Go to Dell Support Site. 2. From the top menu, select **Support** > **Support Library**. 3. In the search field, enter a keyword, topic, or model number, and then select the search icon to view 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.

8

Revision history

This section records all updates made to the document, including the revision number, date, and a brief description of each change. It provides a clear history of modifications for traceability and reference.

Table 29. Revision history

Revision	Date	Description
A00	May 2026	Original publish date.