Dell Pro 14 Essential

PV14255

Service Manual

Regulatory Model: P185G
Regulatory Type: P185G004
October 2025
Rev. A01

DELL Technologies

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.

Contents

Chapter 1: Working inside your computer 6
Safety instructions 6
Before working inside your computer 6
Safety precautions 7
Electrostatic discharge—ESD protection 7
ESD Field Service kit 8
Transporting sensitive components 9
After working inside your computer 9
BitLocker 9
Recommended tools 9
Screw list 9
Major components of Dell Pro 14 Essential PV14255 11
Customer Replaceable Units (CRUs) and Field Replaceable Units (FRUs) list 12

Chapter 2: Removing and installing Customer Replaceable Units (CRUs) 13
Base cover 13
Removing the base cover (for computers shipped with a plastic chassis) 13
Installing the base cover (for computers shipped with a plastic chassis) 16
Removing the base cover (for computers shipped with an aluminum chassis) 19
Installing the base cover (for computers shipped with an aluminum chassis) 22
Battery 24
Rechargeable Li-ion battery precautions 24
Removing the 3-cell battery 25
Installing the 3-cell battery 25
Removing the 4-cell battery 26
Installing the 4-cell battery 27
Disconnecting the battery cable 28
Connecting the battery cable 29
Memory module 30
Removing the memory module 30
Installing the memory module 31
Solid state drive 33
Removing the solid state drive 33
Installing the solid state drive 34
Wireless card 35
Removing the wireless card 35
Installing the wireless card 36
Fan 37
Removing the fan 37
Installing the fan 38

Chapter 3: Removing and installing Field Replaceable Units (FRUs) 39
Heat sink 39
Removing the heat sink 39

Installing the heat sink 40
Speakers 41
Removing the speakers 41
Installing the speakers 42
Touchpad 44
Removing the touchpad 44
Installing the touchpad 45
Power-adapter port 48
Removing the power-adapter port 48
Installing the power-adapter port 49
I/O-board cable 52
Removing the I/O-board cable 52
Installing the I/O-board cable 53
I/O board 54
Removing the I/O board 54
Installing the I/O board 56
Power button 59
Removing the power button 59
Installing the power button 60
Power button with optional fingerprint reader 61
Removing the power button with the optional fingerprint reader 61
Installing the power button with the optional fingerprint reader 62
Display assembly 63
Removing the display assembly 63
Installing the display assembly 68
Display bezel 71
Removing the display bezel (only for computers shipped with a plastic chassis) 71
Installing the display bezel (only for computers shipped with a plastic chassis) 74
Display panel 75
Removing the display panel (only for computers shipped with a plastic chassis) 75
Installing the display panel (only for computers shipped with a plastic chassis) 79
Display cable 82
Removing the display cable (only for computers shipped with a plastic chassis) 82
Installing the display cable (only for computers shipped with a plastic chassis) 83
Camera 85
Removing the camera (only for computers shipped with a plastic chassis) 85
Installing the camera (only for computers shipped with a plastic chassis) 86
Display back-cover and antenna assembly 87
Removing the display back-cover and antenna assembly (only for computers shipped with a plastic chassis) 87
Installing the display back-cover and antenna assembly (only for computers shipped with a plastic chassis) 88
System board 89
Removing the system board (for computers shipped with a plastic chassis) 89
Installing the system board (for computers shipped with a plastic chassis) 93
Removing the system board (for computers shipped with an aluminum chassis) 98
Installing the system board (for computers shipped with an aluminum chassis) 102
Palm-rest and keyboard assembly 107
Removing the palm-rest and keyboard assembly 107
Installing the palm-rest and keyboard assembly 108

Chapter 4: Software **110**
Operating system 110
Drivers and downloads 110

Chapter 5: BIOS Setup **111**
Entering BIOS Setup program 111
Navigation keys 111
F12 One Time Boot menu 111
BIOS Setup options 112
Updating the BIOS 129
Updating the BIOS in Windows 129
Updating the BIOS using the USB drive in Windows 130
Updating the BIOS from the One-Time boot menu 131
Updating the BIOS in Linux and Ubuntu 131
System and setup password 131
Assigning a System Setup password 131
Deleting or changing an existing system password or setup password 132
Clearing system and setup passwords 132

Chapter 6: Troubleshooting **133**
Handling swollen rechargeable Li-ion batteries 133
Dell SupportAssist Pre-boot System Performance Check diagnostics 133
Running the SupportAssist Pre-Boot System Performance Check 134
Built-in self-test (BIST) 134
Motherboard Built-In Self-Test (M-BIST) 134
Logic Built-in Self-test (L-BIST) 135
LCD Built-in Self-Test (LCD-BIST) 135
System-diagnostic lights 135
Recovering the operating system 136
Real-Time Clock (RTC Reset) 136
Backup media and recovery options 137
Network power cycle 137
Drain flea power (perform hard reset) 137

Chapter 7: Getting help and contacting Dell **139**

Chapter 8: Revision history **140**

1

Working inside your computer

Safety instructions

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

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

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

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

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 shut-down 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.

   CAUTION: To disconnect a network cable, unplug the cable from your computer.

6. Remove any media card and optical disc from your computer, if applicable.

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

. 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, discs, or any other components that you removed before working on your computer.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.

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 will not be recognized the next time that you reboot the computer. You are prompted to enter the recovery key to progress, and the computer displays a prompt for the recovery key on each reboot. If the recovery key is not known, this can result in data loss or an operating system reinstall. For more information, see Knowledge Article: updating the BIOS on Dell computers 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
- Phillips screwdriver #1
- Plastic scribe

Screw list

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

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

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

Table 1. Screw list

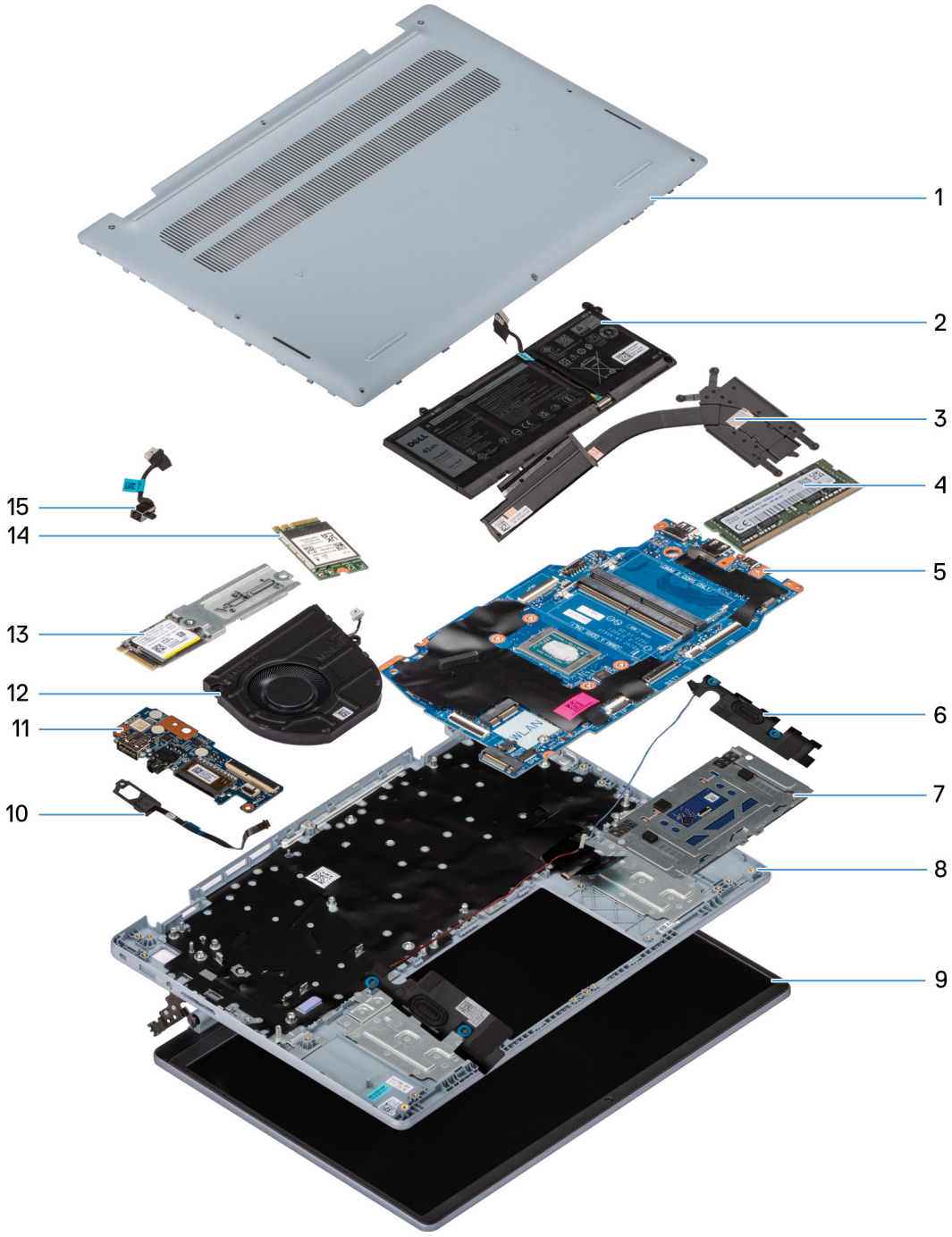
Component	Screw type	Quantity	Screw Torque Strength	Screw image
Base cover	M2x4	Plastic chassis: 6	1.6 kgf-cm	
		Aluminum chassis: 5		
	Captive screw **NOTE:** Screws are part of the base cover.	2	1.6 kgf-cm	
Battery	M2x3	3-cell battery: 3	1.6 kgf-cm	
		4-cell battery: 5		
Solid state drive	M2x3	1	1.6 kgf-cm	
Solid state drive bracket	Plastic chassis: M2x2.5	1	1.6 kgf-cm	
	Aluminum chassis: M2x2			
Wireless-card bracket	M2x3	1	1.6 kgf-cm	
Fan	M2x4	2	1.6 kgf-cm	
Heat sink	Captive screw **NOTE:** Screws are part of the heat sink.	4	1.6 kgf-cm	
Touchpad assembly	Plastic chassis: M2x1.8	2	1.6 kgf-cm	
	Aluminum chassis: M2x2	4		
	Plastic chassis: M1.6x2.5	4	0.7 kgf-cm	
	Aluminum chassis: M2x2.5	1	1.6 kgf-cm	
I/O board	M2x3	2	1.6 kgf-cm	
Power button with optional fingerprint reader	M2x3	1	1.6 kgf-cm	
Display assembly	Plastic chassis: M2.5x4	4	3.0 kgf-cm	
	Aluminum chassis: M2.5x4.5			
USB Type-C bracket	M2x4	Plastic chassis: 3	1.6 kgf-cm	
		Aluminum chassis: 2		
System board	Plastic chassis: M2x2.5	2	1.6 kgf-cm	

Table 1. Screw list (continued)

Component	Screw type	Quantity	Screw Torque Strength	Screw image
	Aluminum chassis: M2x2			

Major components of Dell Pro 14 Essential PV14255

The following image shows the major components of Dell Pro 14 Essential PV14255.



1. Base cover
2. Battery

3. Heat sink
4. Memory module
5. System board
6. Speakers
7. Touchpad
8. Palm-rest and keyboard assembly
9. Display assembly
10. Power button with optional fingerprint reader
11. I/O board
12. Fan
13. Solid state drive
14. Wireless card
15. Power-adapter port

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

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

The replaceable components in Dell Pro 14 Essential PV14255 are either Customer Replaceable Units (CRUs) or Field Replaceable Units (FRUs).

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

Table 2. CRU and FRU list

Customer Replaceable Unit (CRU)	Field Replaceable Unit (FRU)
Base cover	Heat sink
Battery	Speakers
Battery cable	Touchpad
Memory	Power-adapter port
Solid state drive	I/O-board cable
Wireless card	I/O board
Fan	Power button with optional fingerprint reader
	Display assembly
	Display bezel
	Display panel
	Display cable
	Camera
	Display back-cover and antenna assembly
	System board
	Palm-rest and keyboard assembly

2

Removing and installing Customer Replaceable Units (CRUs)

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

CAUTION: Customers can replace only the Customer Replaceable Units (CRUs) following the safety precautions and replacement procedures.

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

Base cover

Removing the base cover (for computers shipped with a plastic chassis)

Prerequisites

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

About this task

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

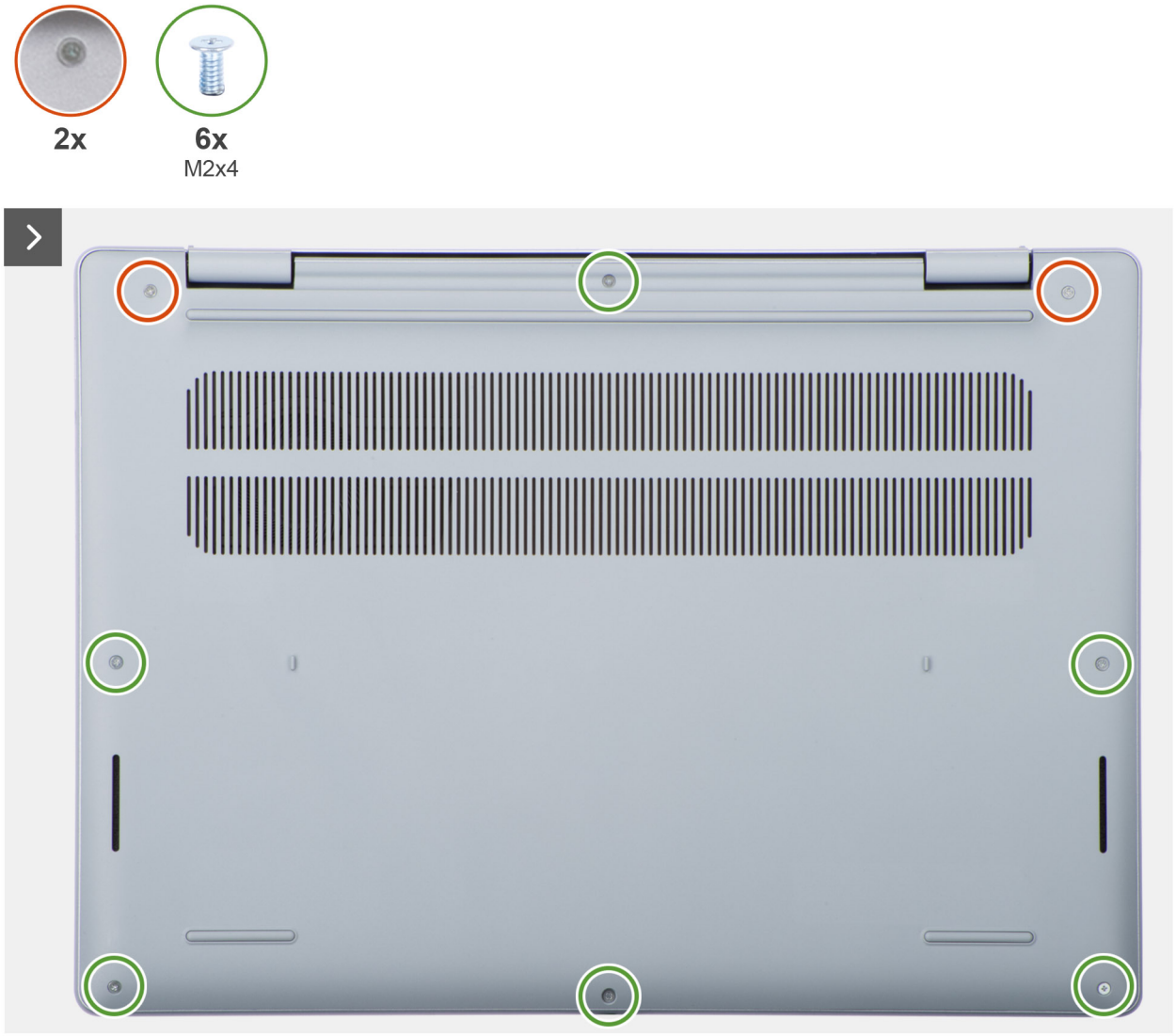


Figure 1. Removing the base cover

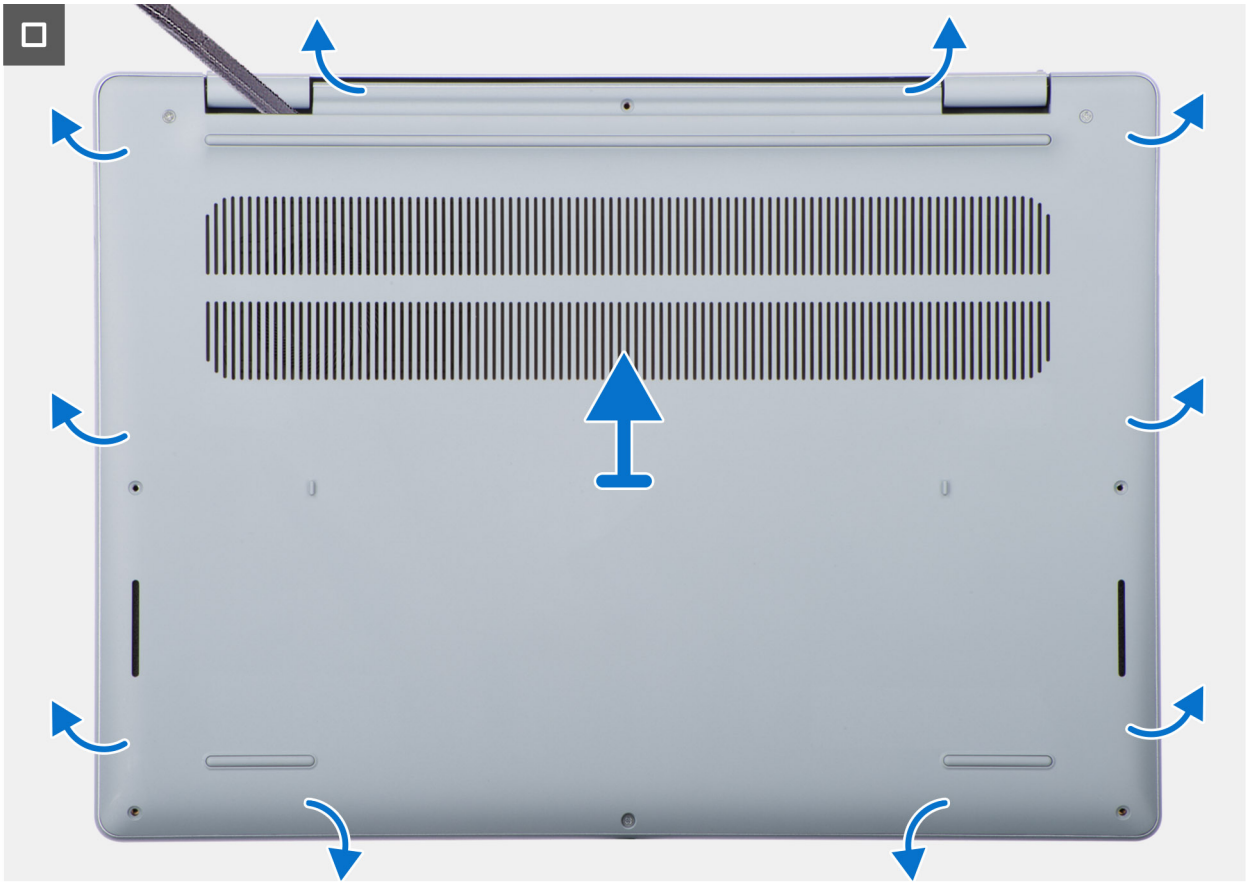


Figure 2. Removing the base cover

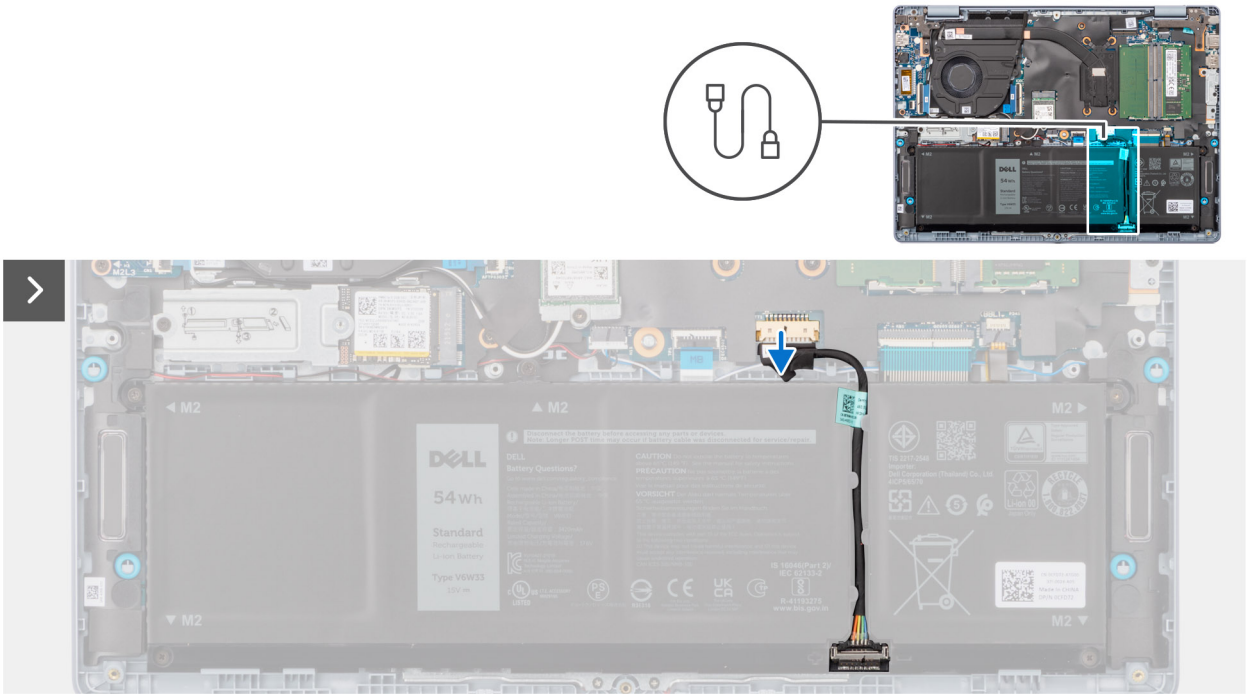


Figure 3. Disconnecting the battery cable

Figure 4. Pressing the power button to drain flea power

Steps

1. Loosen the two captive screws and then remove the six screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
2. Using a plastic scribe, pry open the base cover starting from the recesses, which are located in the U-shaped indents at the top edge of the base cover, near the hinges.

   CAUTION: Do not slide the scribe along the edges of the base cover as it may damage the latches inside the base cover. Instead, insert the scribe at regular intervals and pry open the base cover.
3. Pry open the top of the base cover followed by the left, right, and bottom to release the base cover.
4. Lift the base cover off the palm-rest and keyboard assembly.
5. Disconnect the battery cable from the connector (BATT1) on the system board.
6. Press and hold the power button for 15 to 20 seconds to ground the computer and drain the flea power.

Installing the base cover (for computers shipped with a plastic chassis)

Prerequisites

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

About this task

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

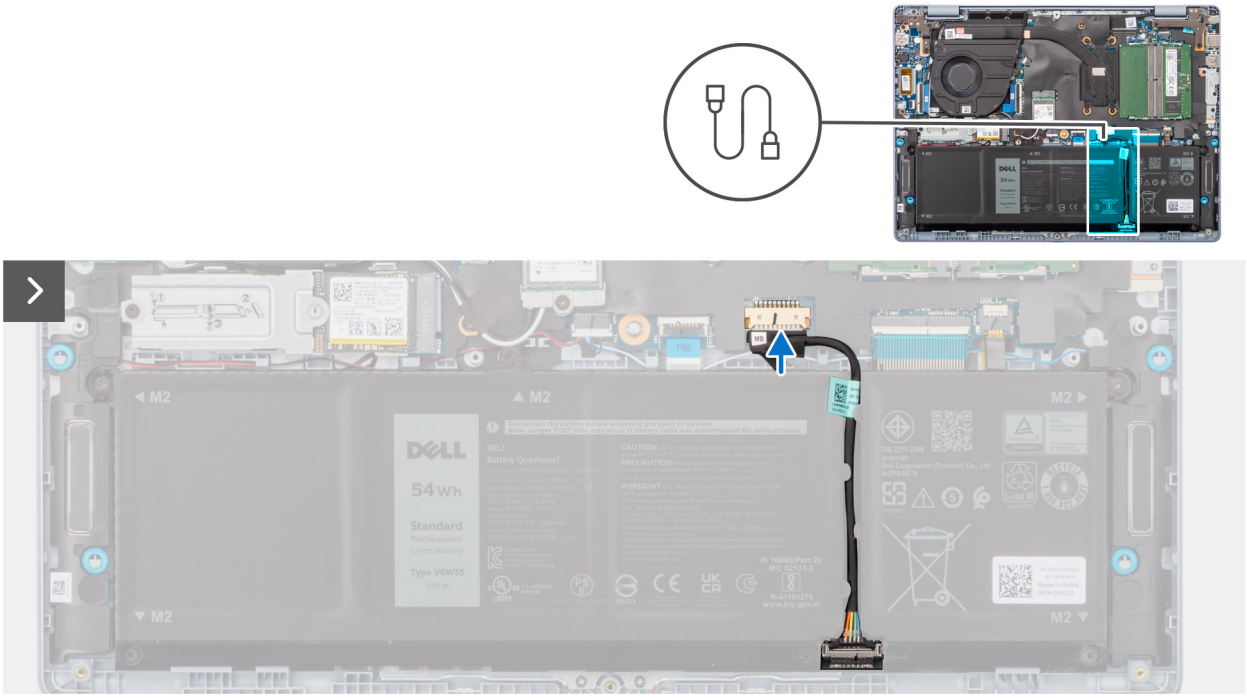


Figure 5. Connecting the battery cable

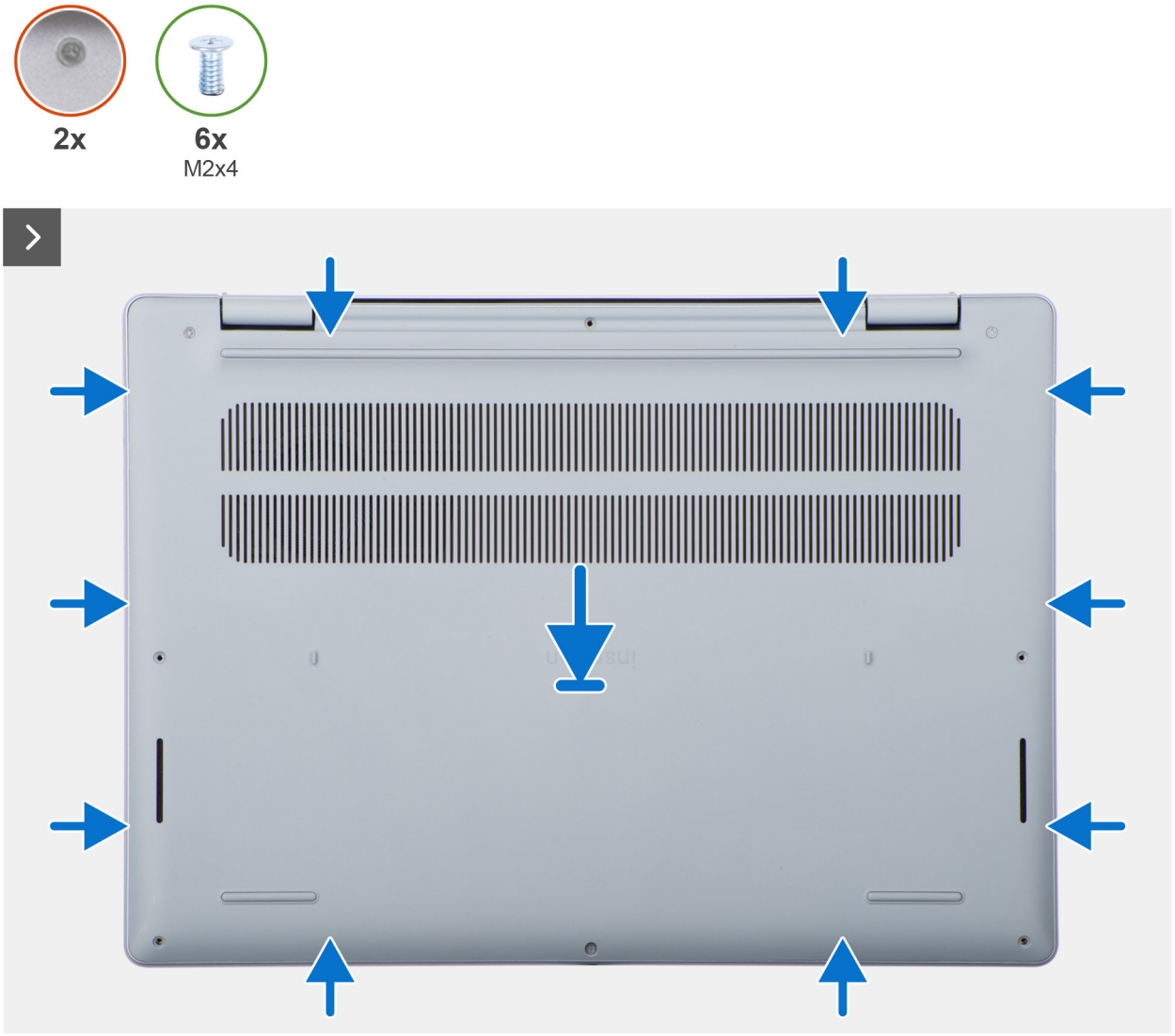


Figure 6. Installing the base cover

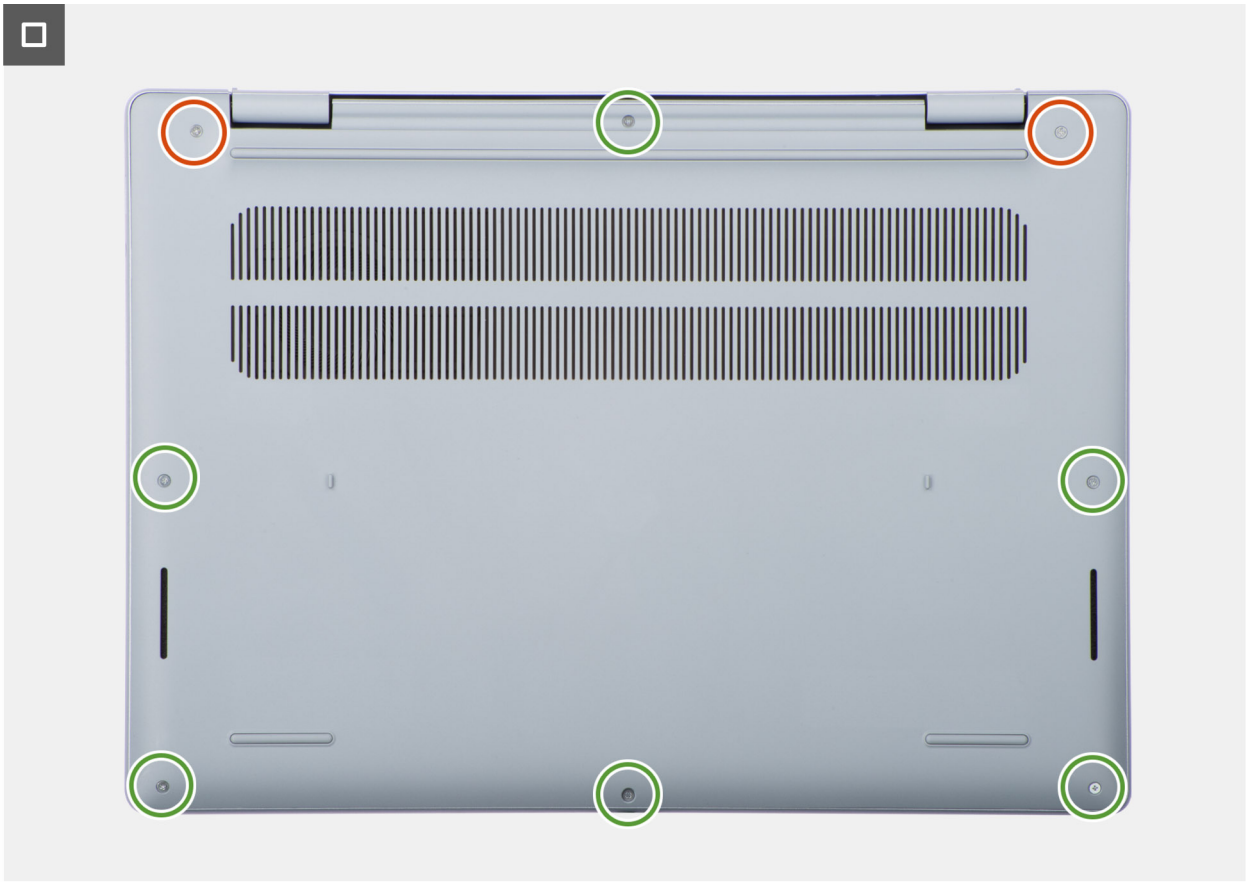


Figure 7. Installing the base cover

Steps

1. Connect the battery cable to the connector (BATT1) on the system board.
2. Place the base cover on top of the palm-rest and keyboard assembly.
3. Align the screw holes on the base cover with the screw holes on the palm-rest and keyboard assembly. Then, snap the base cover latches into place.
4. Tighten the two captive screws and replace the six screws (M2x4) to secure the base cover to the palm-rest and keyboard assembly.

Next steps

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

Removing the base cover (for computers shipped with an aluminum chassis)

Prerequisites

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

About this task

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

Figure 8. Removing the base cover

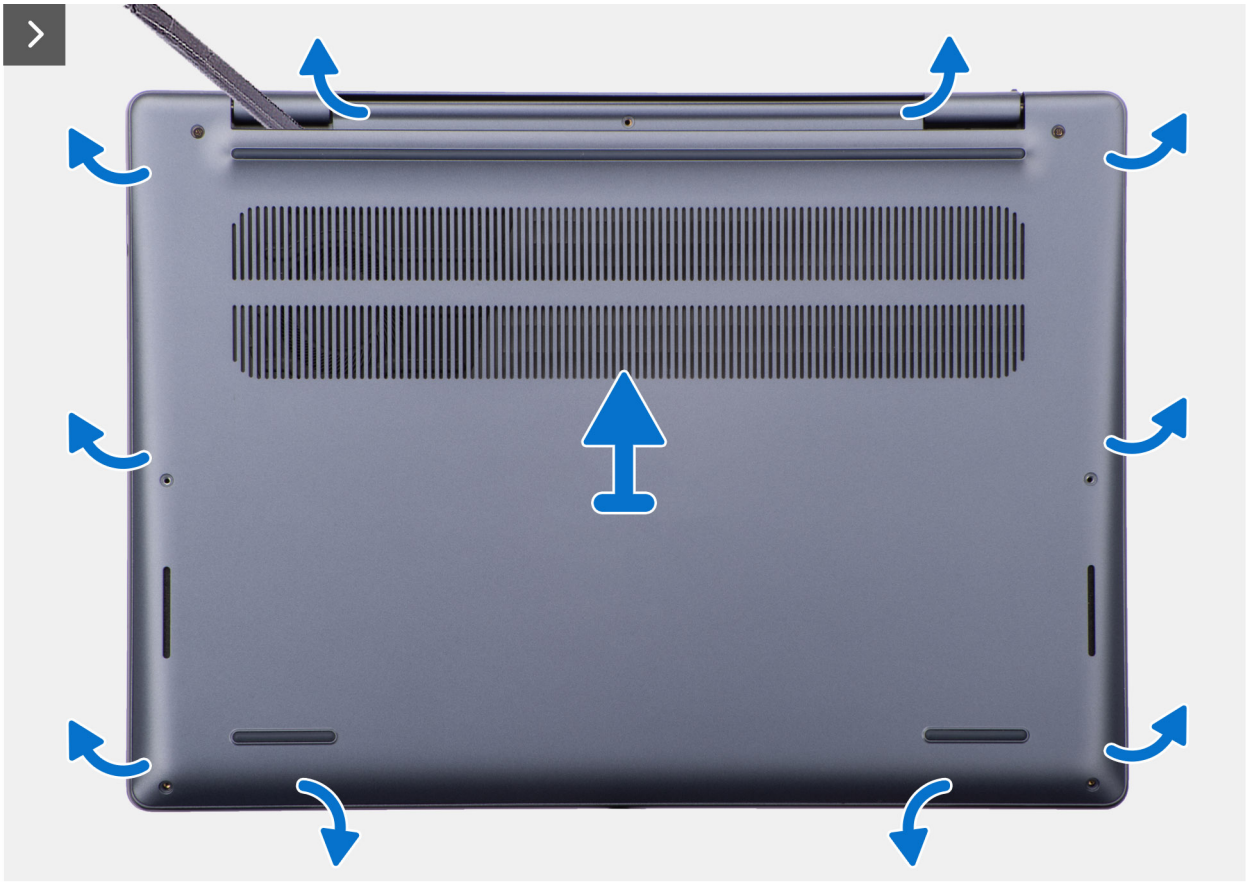


Figure 9. Removing the base cover

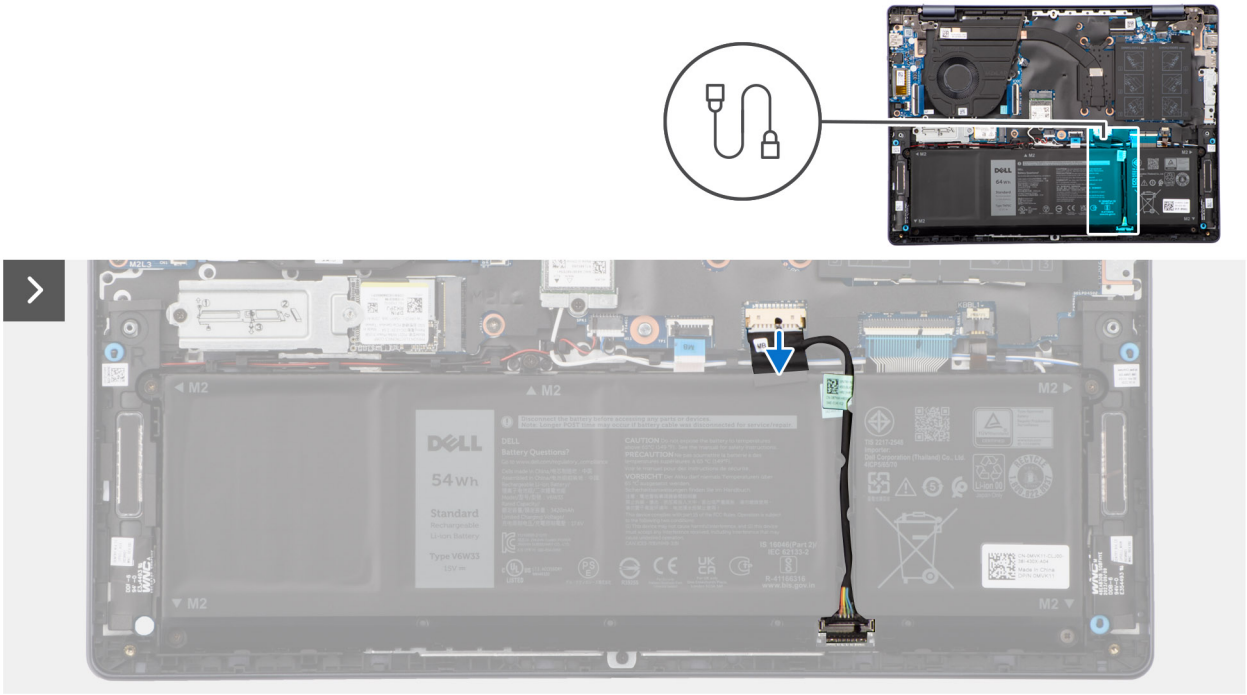


Figure 10. Disconnecting the battery cable

Figure 11. Pressing the power button to drain flea power

Steps

1. Loosen the two captive screws and then remove the five screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
2. Using a plastic scribe, pry open the base cover starting from the recesses, which are located in the U-shaped indents at the top edge of the base cover, near the hinges.

   CAUTION: Do not slide the scribe along the edges of the base cover as it may damage the latches inside the base cover. Instead, insert the scribe at regular intervals and pry open the base cover.
3. Pry open the top of the base cover followed by the left, right, and bottom to release the base cover.
4. Lift the base cover off the palm-rest and keyboard assembly.
5. Disconnect the battery cable from the connector (BATT1) on the system board.
6. Press and hold the power button for 15 to 20 seconds to ground the computer and drain the flea power.

Installing the base cover (for computers shipped with an aluminum chassis)

Prerequisites

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

About this task

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

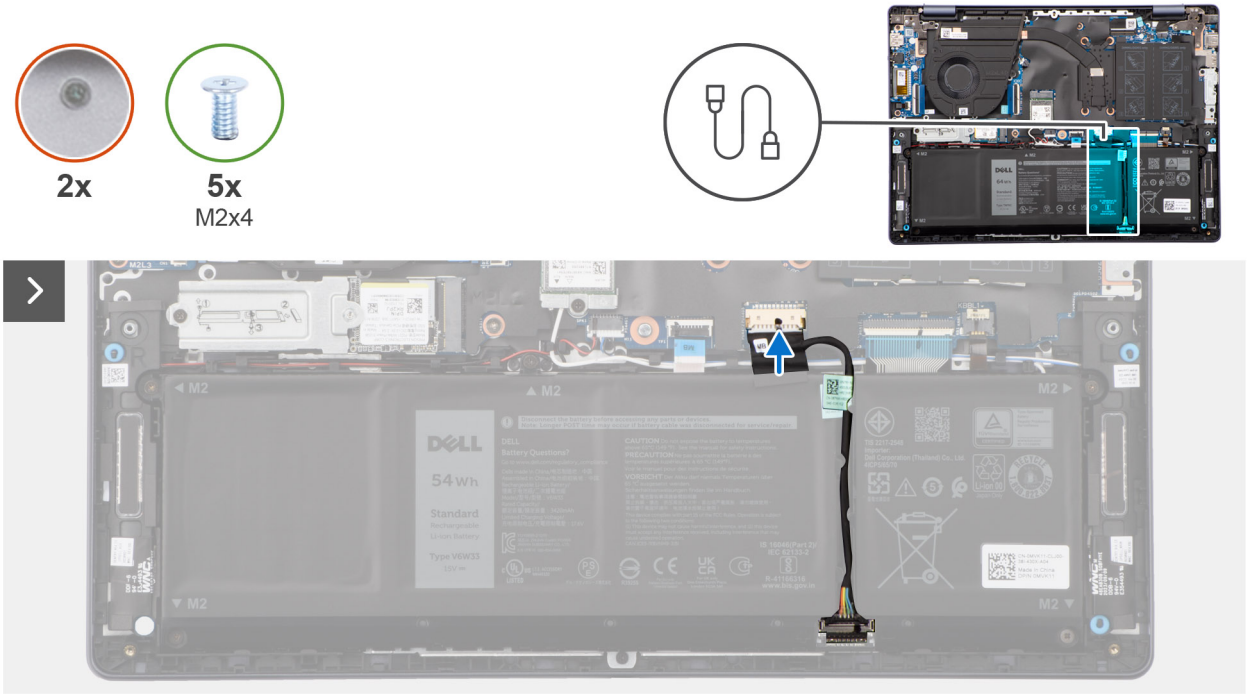


Figure 12. Connecting the battery cable

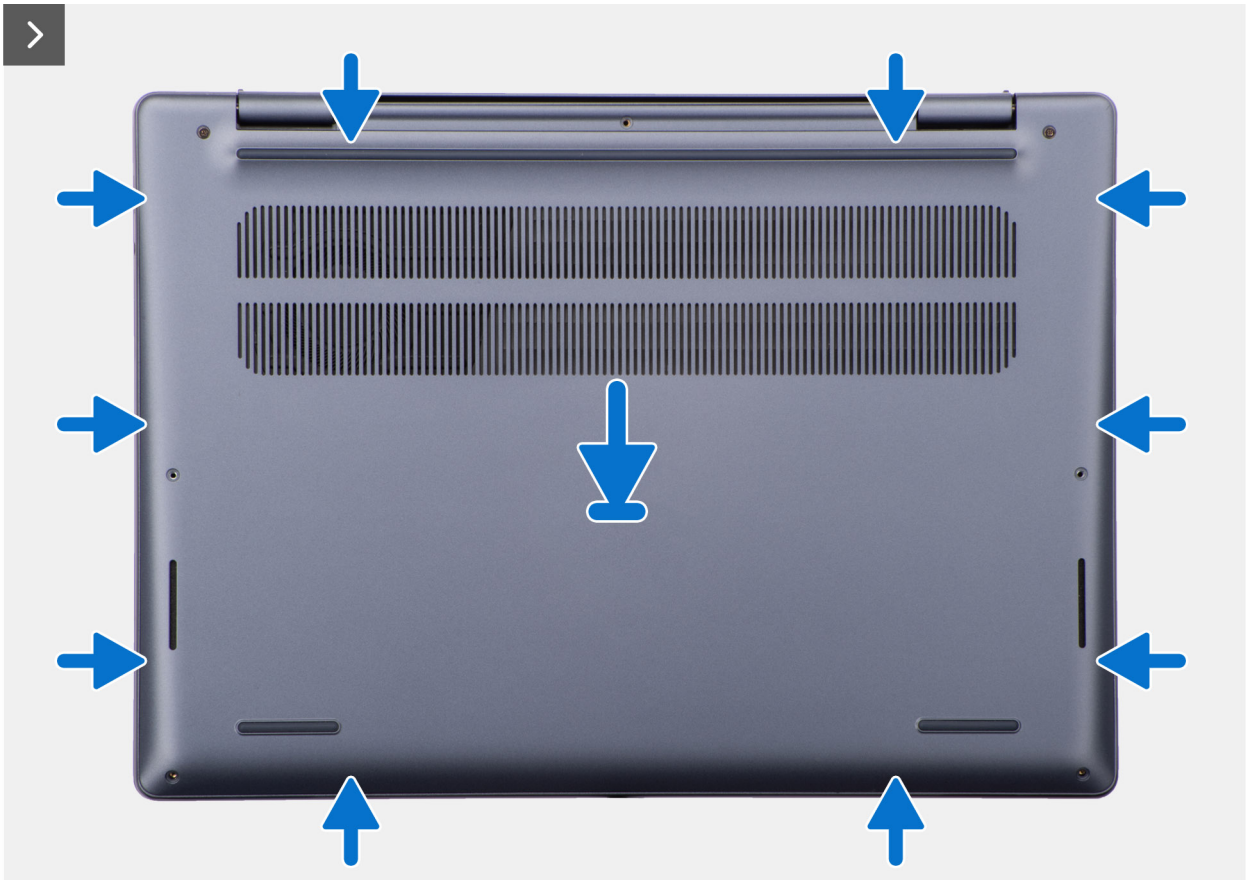


Figure 13. Installing the base cover

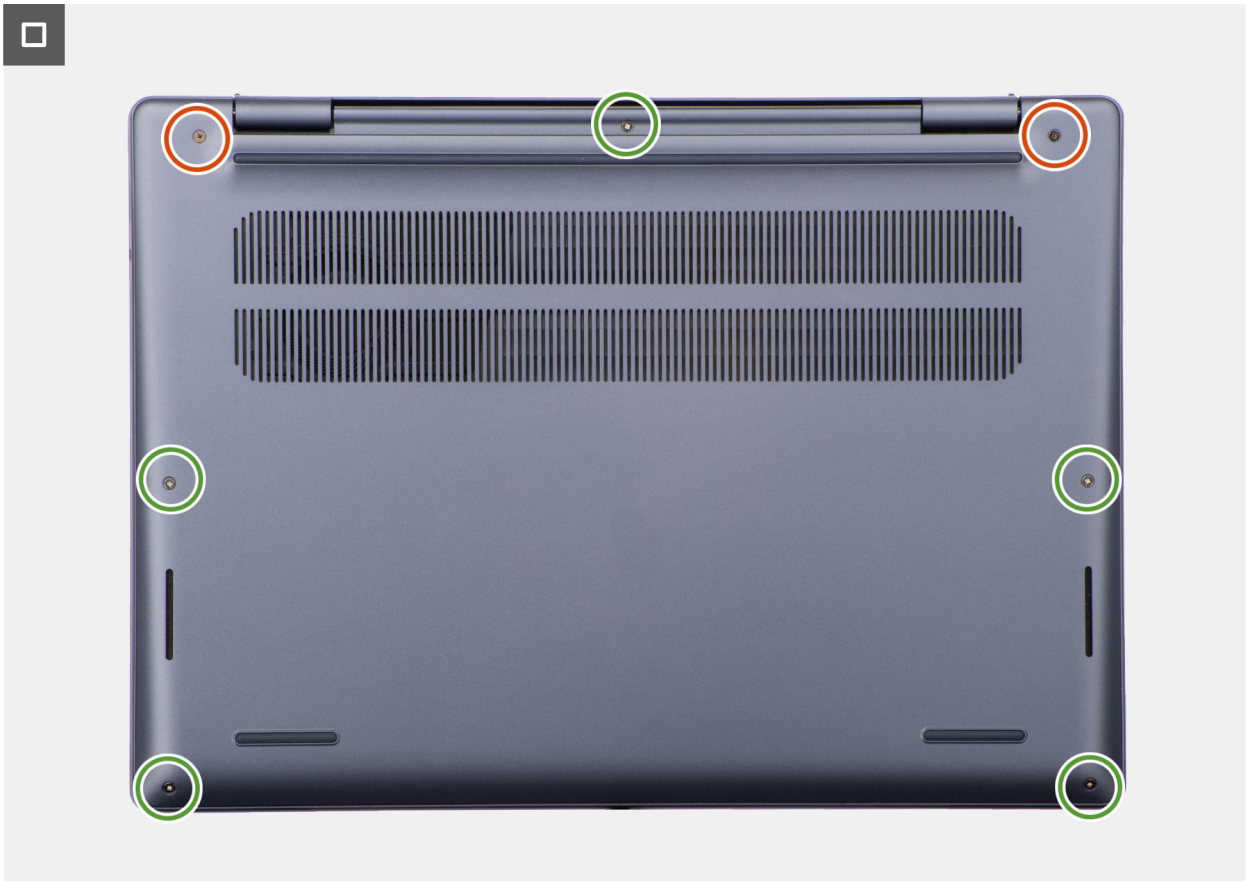


Figure 14. Installing the base cover

Steps

1. Connect the battery cable to the connector (BATT1) on the system board.
2. Place the base cover on top of the palm-rest and keyboard assembly.
3. Align the screw holes on the base cover with the screw holes on the palm-rest and keyboard assembly. Then, snap the base cover latches into place.
4. Tighten the two captive screws and replace the five screws (M2x4) to secure the base cover to the palm-rest and keyboard assembly.

Next steps

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

Battery

Rechargeable Li-ion battery precautions

WARNING:

- **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 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 3-cell battery

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.

About this task

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

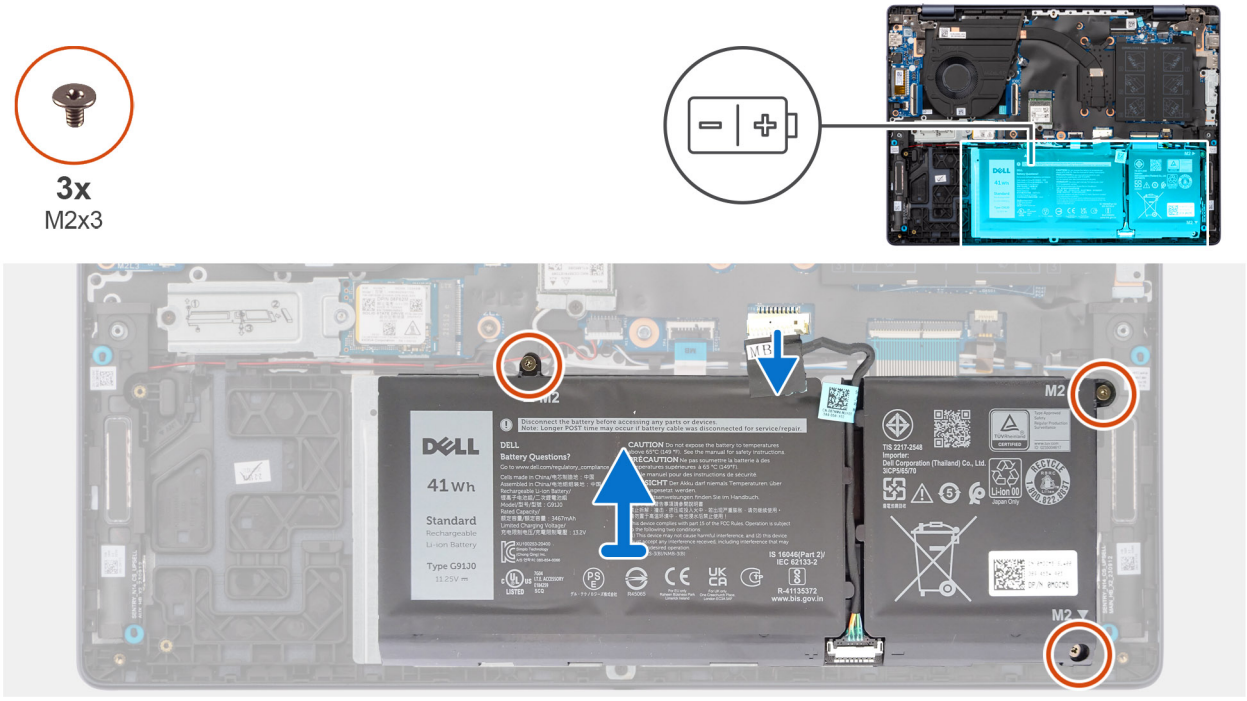


Figure 15. Removing the battery

Steps

1. Remove the three screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
2. Lift the battery, along with the battery cable, off the palm-rest and keyboard assembly.

Installing the 3-cell battery

Prerequisites

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

About this task

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

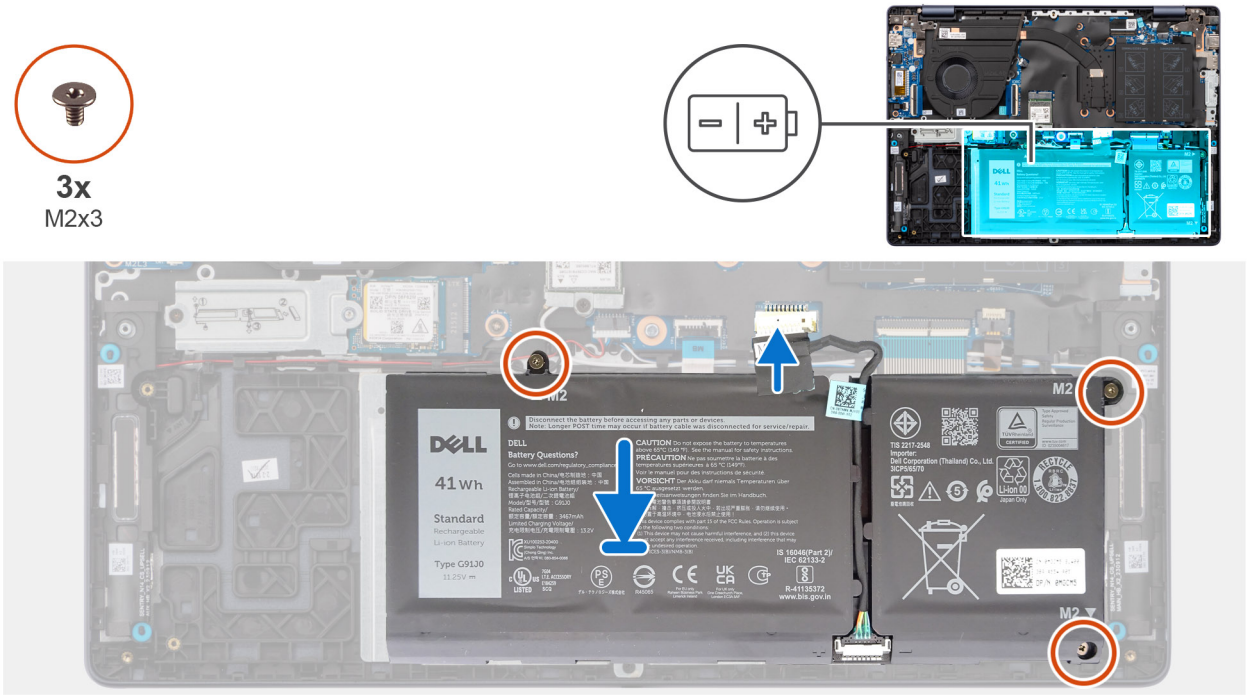


Figure 16. Installing the battery

Steps

1. Place the battery, along with the battery cable, in the slot on the palm-rest and keyboard assembly.
2. Align the screw holes on the battery with the screw holes on the palm-rest and keyboard assembly.
3. Replace the three screws (M2x3) to secure the battery to the palm-rest and keyboard assembly.

Next steps

1. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
2. Follow the procedure in After working inside your computer.

Removing the 4-cell battery

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.

About this task

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

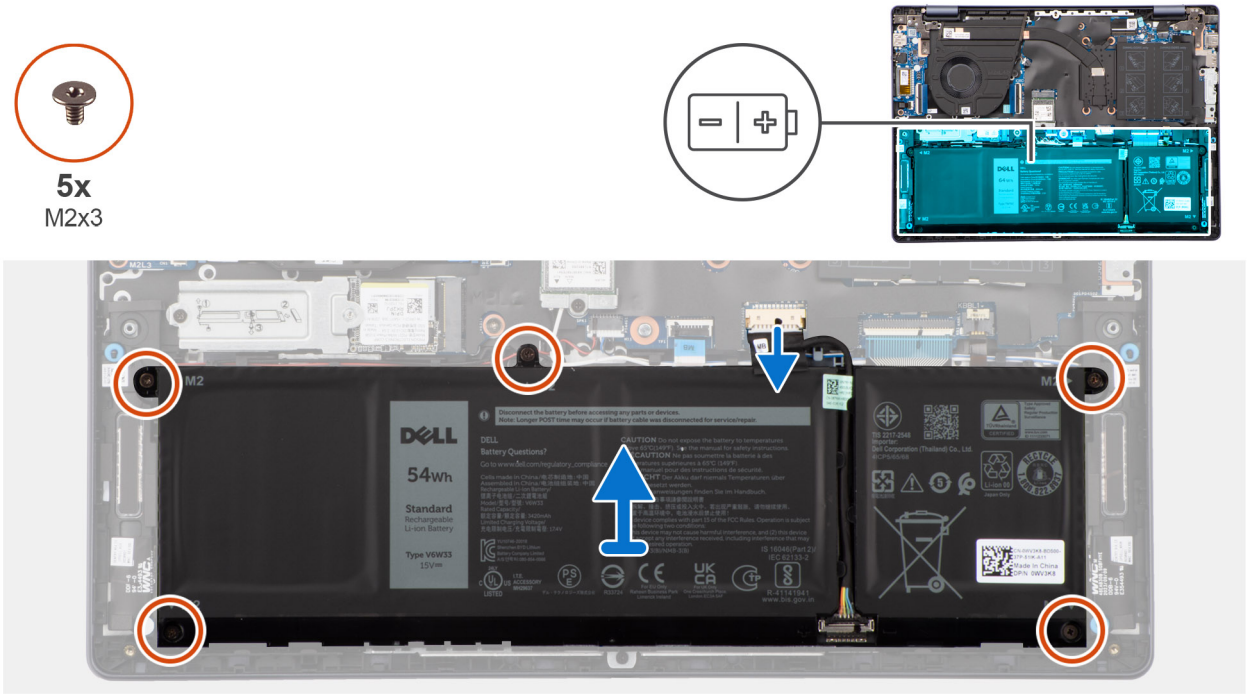


Figure 17. Removing the battery

Steps

1. Remove the five screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
2. Lift the battery, along with the battery cable, off the palm-rest and keyboard assembly.

Installing the 4-cell battery

Prerequisites

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

About this task

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

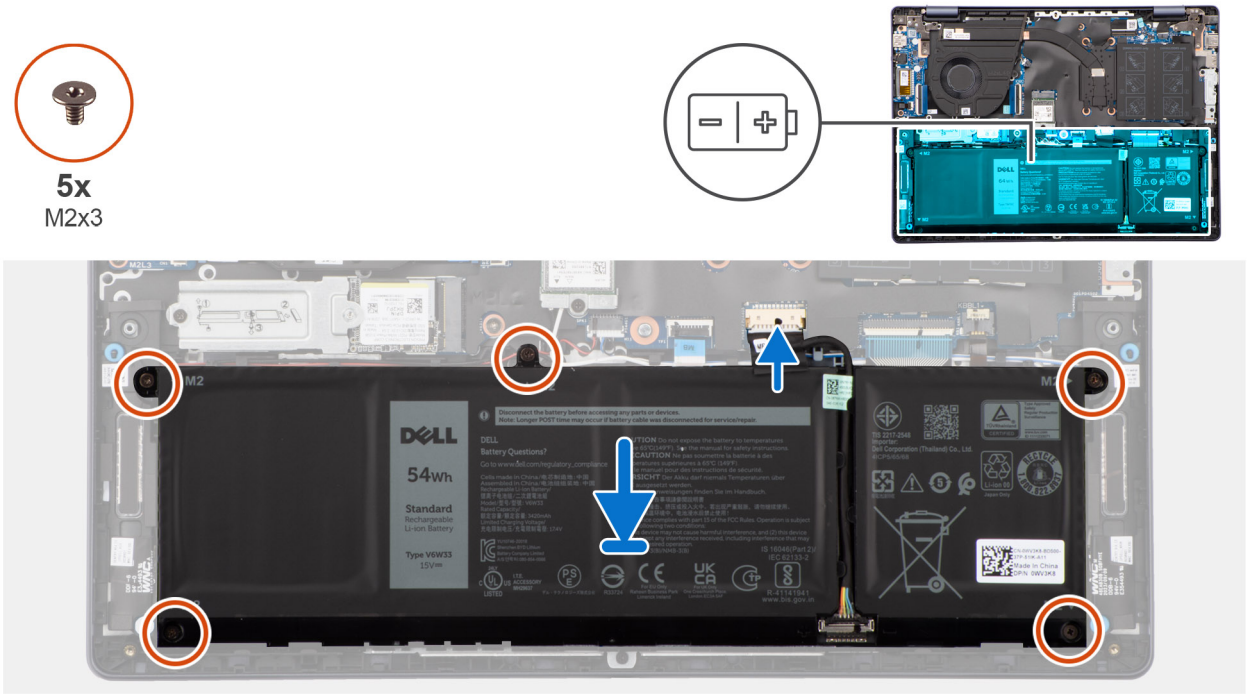


Figure 18. Installing the battery

Steps

1. Place the battery, along with the battery cable, in the slot on the palm-rest and keyboard assembly.
2. Align the screw holes on the battery with the screw holes on the palm-rest and keyboard assembly.
3. Replace the five screws (M2x3) to secure the battery to the palm-rest and keyboard assembly.

Next steps

1. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
2. Follow the procedure in After working inside your computer.

Disconnecting the battery cable

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
3. Remove the 3-cell battery or the 4-cell battery, whichever is applicable.

About this task

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

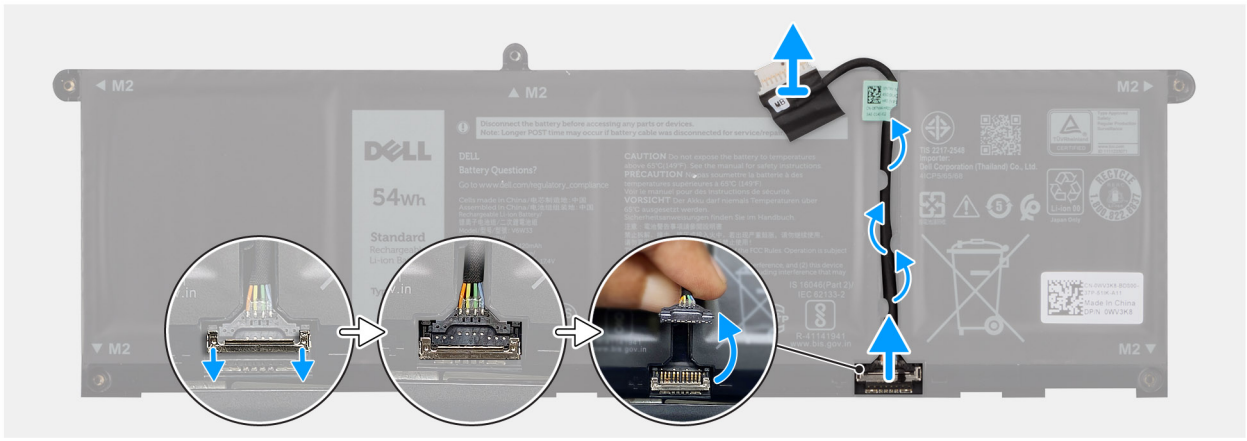


Figure 19. Disconnecting the battery cable

Steps

1. Remove the battery cable from the routing guides on the battery.
2. Open the latch away from the connector. Disconnect the battery cable by pulling it upwards and away from the connector.

   CAUTION: Do not pull the battery cable to disconnect it from the battery, it may damage the battery or the battery cable.

Connecting the battery cable

Prerequisites

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

About this task

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

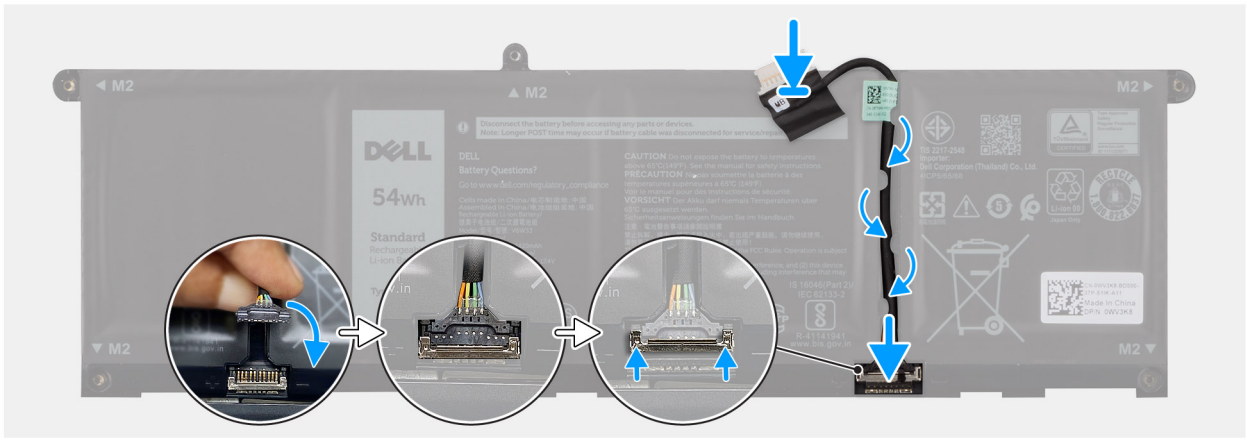


Figure 20. Connecting the battery cable

Steps

1. Connect the battery cable to the connector on the battery and slide the latch closed to lock the cable in place.
2. Route the battery cable through the routing guides on the battery.

Next steps

1. Install the 3-cell battery or the 4-cell battery, whichever is applicable.
2. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
3. Follow the procedure in After working inside your computer.

Memory module

Removing the memory module

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.

About this task

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

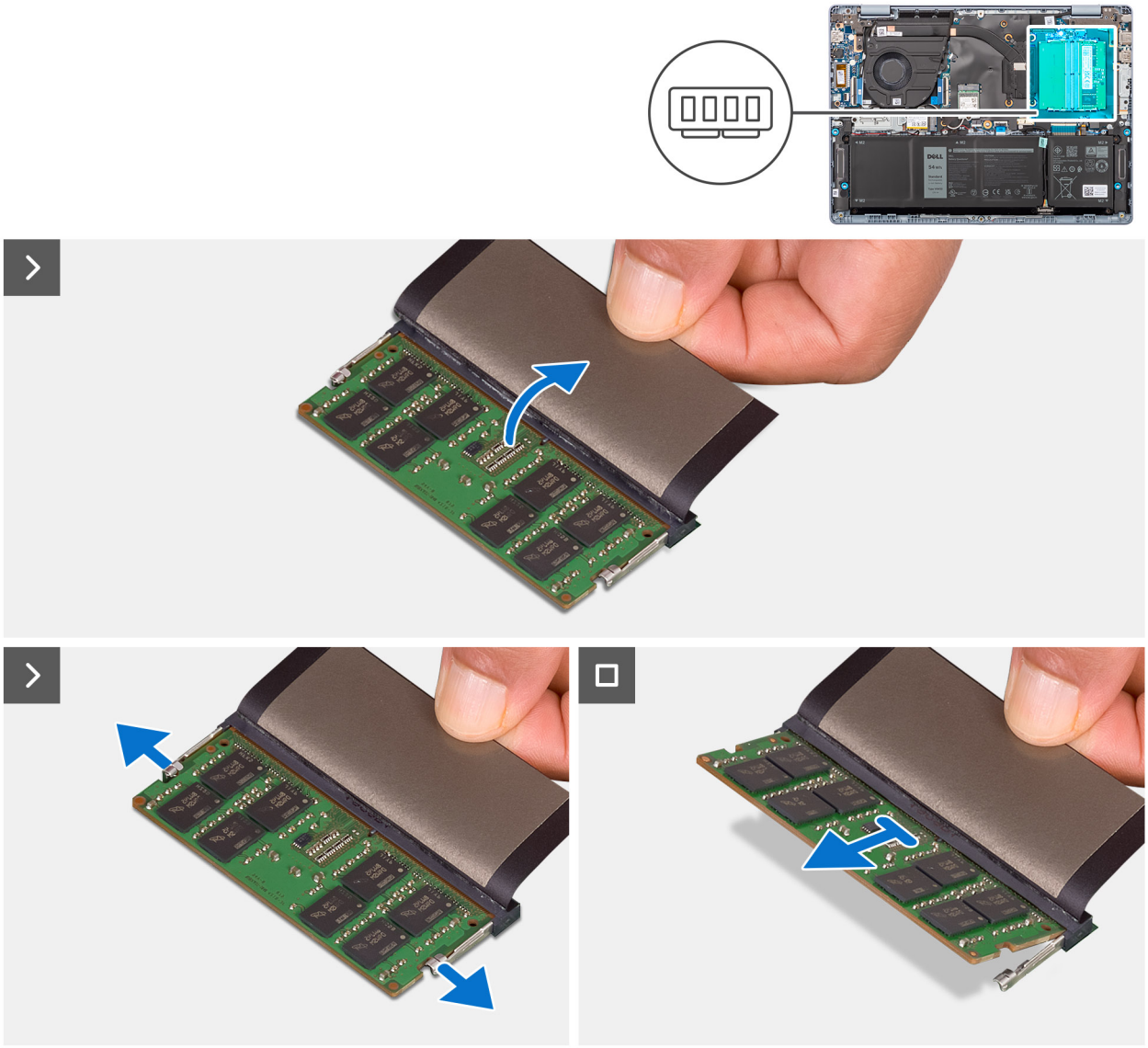


Figure 21. Removing the memory module

Steps

1. Lift the Mylar sheet to access the memory module.

   NOTE: This step applies only to computers shipped with an aluminum chassis.

2. Gently pull the memory-module retention clips away from the memory module until the memory module pops-up.
3. Hold the memory module and remove it from the memory-module slot (DIMM1 or DIMM2, whichever is applicable) on the system board.

   CAUTION: To prevent damage to the memory module, hold the memory module by the edges. Do not touch the components or metallic contacts on the memory module as electrostatic discharge (ESD) can inflict severe damage on the components. To read more about ESD protection, see ESD protection.

4. Repeat steps 1 to 3 for the second memory module, if installed.

Installing the memory module

Prerequisites

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

About this task

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

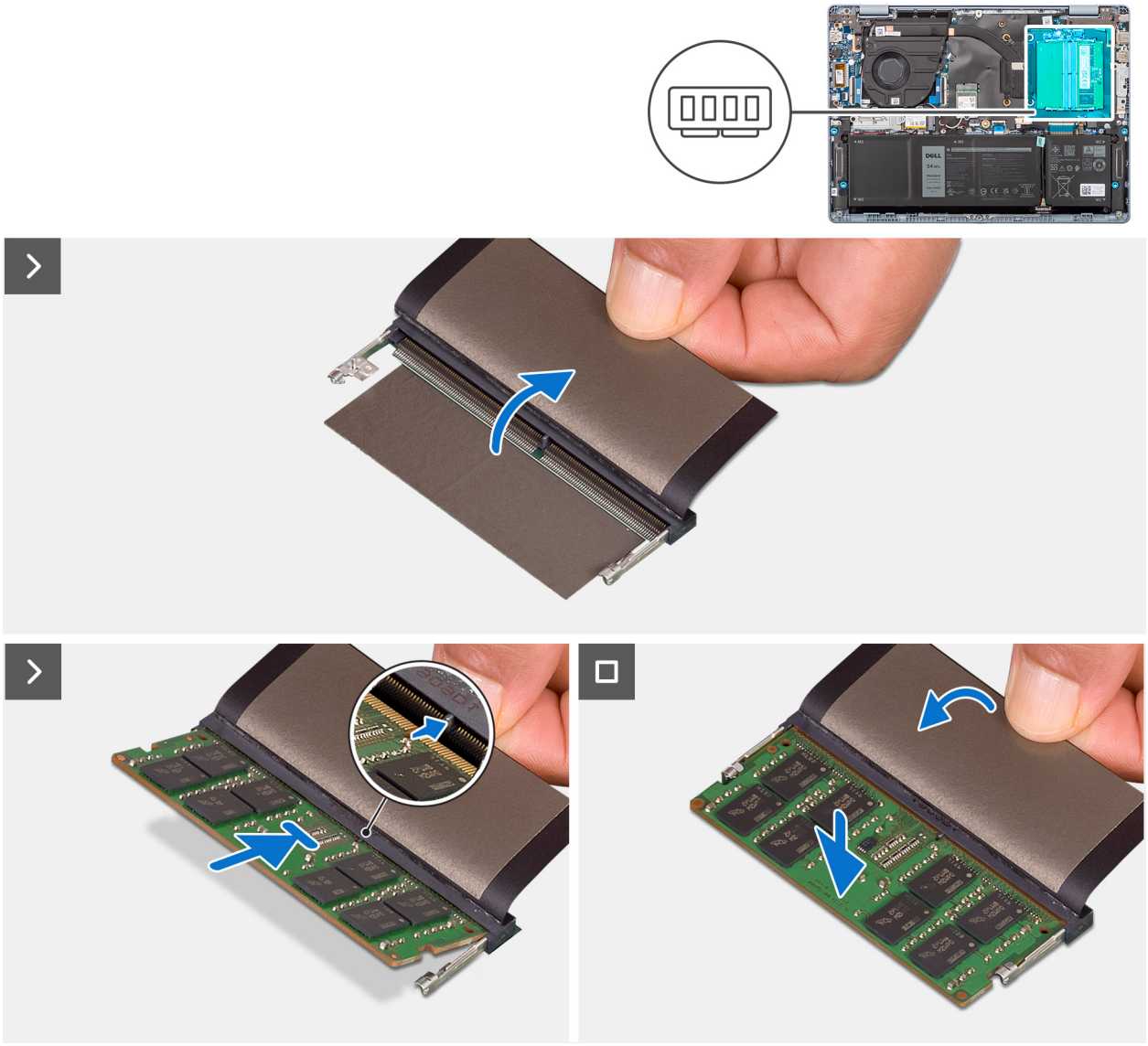


Figure 22. Installing the memory module

Steps

1. Lift the Mylar sheet to access the memory-module connector.

   NOTE: This step applies only to computers shipped with an aluminum chassis.

2. Align the notch on the memory module with the tab on the memory-module slot (DIMM1 or DIMM2, whichever is applicable) on the system board.
3. Slide the memory module firmly into the memory-module slot at an angle.
4. Press down on the memory module until the securing clips firmly click into place.

   CAUTION: To prevent damage to the memory module, hold the memory module by the edges. Do not touch the components or metallic contacts on the memory module as electrostatic discharge (ESD) can inflict severe damage on the components. To read more about ESD protection, see ESD protection.

   NOTE: If you do not hear the click, remove the memory module and reinstall it.

5. Repeat steps 1 to 4 to install the second memory module, if applicable.

Next steps

1. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
2. Follow the procedure in After working inside your computer.

Solid state drive

Removing the solid state drive

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.

About this task

NOTE: If you are replacing the solid state drive with a new solid state drive, use the existing mounting bracket to install the latter.

The following images indicate the location of the solid state drive and provide a visual representation of the removal procedure.

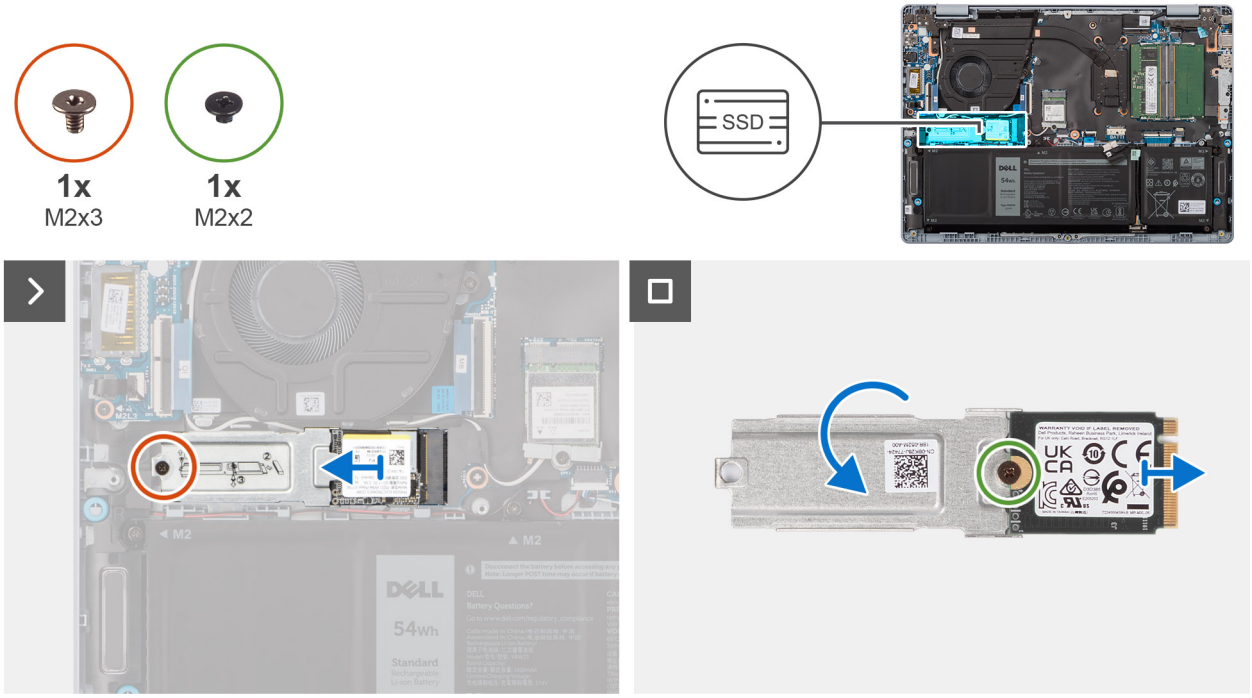


Figure 23. Removing the solid state drive

Steps

1. Remove the screw (M2x3) that secures the solid state drive bracket to the palm-rest and keyboard assembly.
2. Slide and remove the solid state drive bracket, along with the solid state drive, from the M.2 card slot (SSD1) on the system board.
3. Turn over the solid state drive bracket.
4. Remove the screw (M2x2) that secures the solid state drive to the solid state drive bracket.
5. Lift the solid state drive off the solid state drive bracket.

Installing the solid state drive

Prerequisites

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

About this task

NOTE: If you are replacing the solid state drive with a new solid state drive, use the existing mounting bracket to install the latter.

The following images indicate the location of the solid state drive and provide a visual representation of the installation procedure.

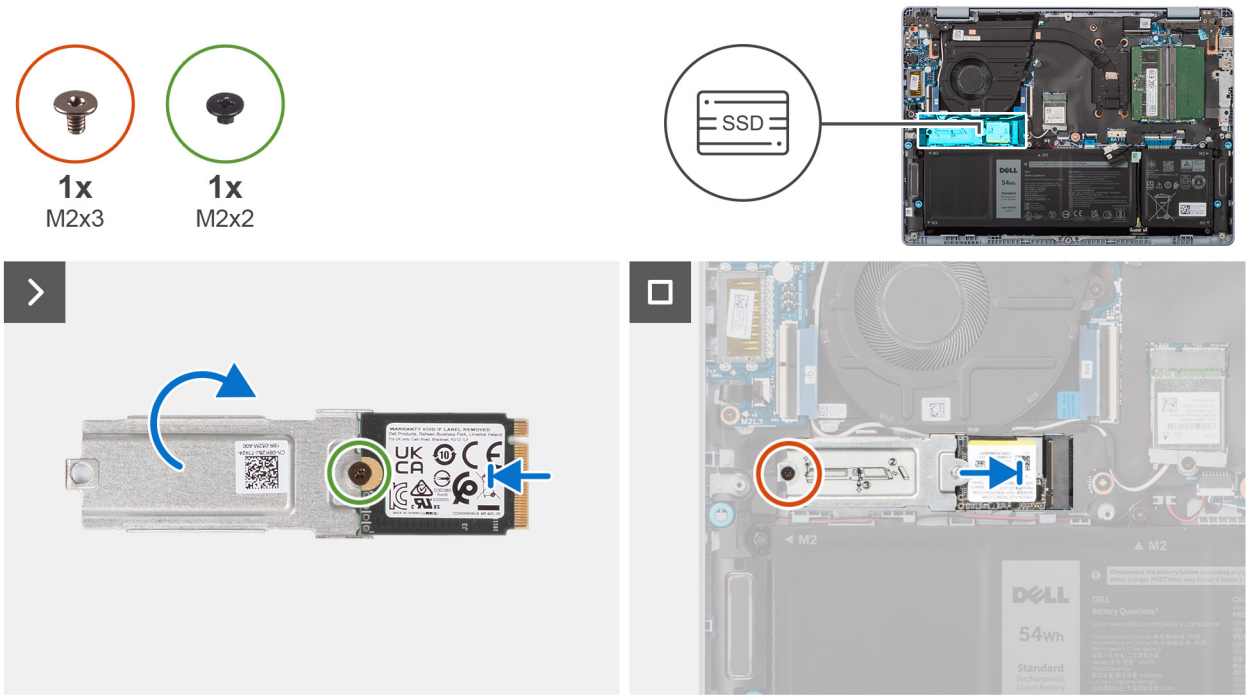


Figure 24. Installing the solid state drive

Steps

1. Align the round notch on the solid state drive with the screw hole on the solid state drive bracket.
2. Replace the screw (M2x2) to secure the solid state drive to the solid state drive bracket.
3. Turn over the solid state drive bracket.
4. Align the notch on the solid state drive with the tab on the M.2 card slot (SSD1) on the system board.
5. At an angle, slide and place the solid state drive bracket, along with the solid state drive, in the M.2 card slot on the system board.
6. Replace the screw (M2x3) to secure the solid state drive bracket to the palm-rest and keyboard assembly.

Next steps

1. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
2. Follow the procedure in After working inside your computer.

Wireless card

Removing the wireless card

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.

About this task

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

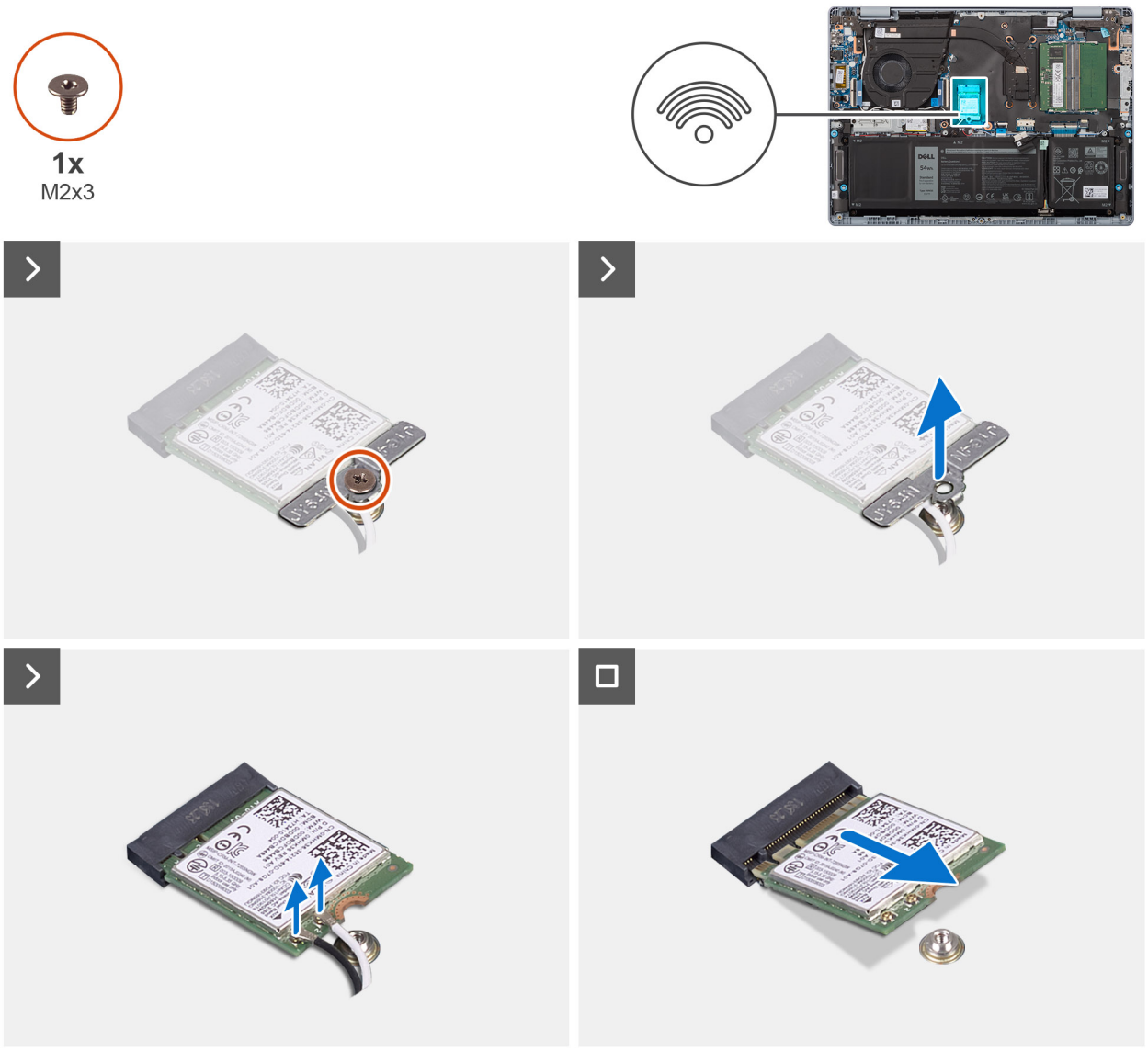


Figure 25. Removing the wireless card

Steps

1. Remove the screw (M2x3) that secures the wireless-card bracket to the wireless card and system board.
2. Lift the wireless-card bracket off the wireless card.
3. Disconnect the wireless-antenna cables from the connectors on the wireless card.
4. Slide and remove the wireless card from the wireless-card slot (WLAN1) on the system board.

Installing the wireless card

Prerequisites

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

About this task

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

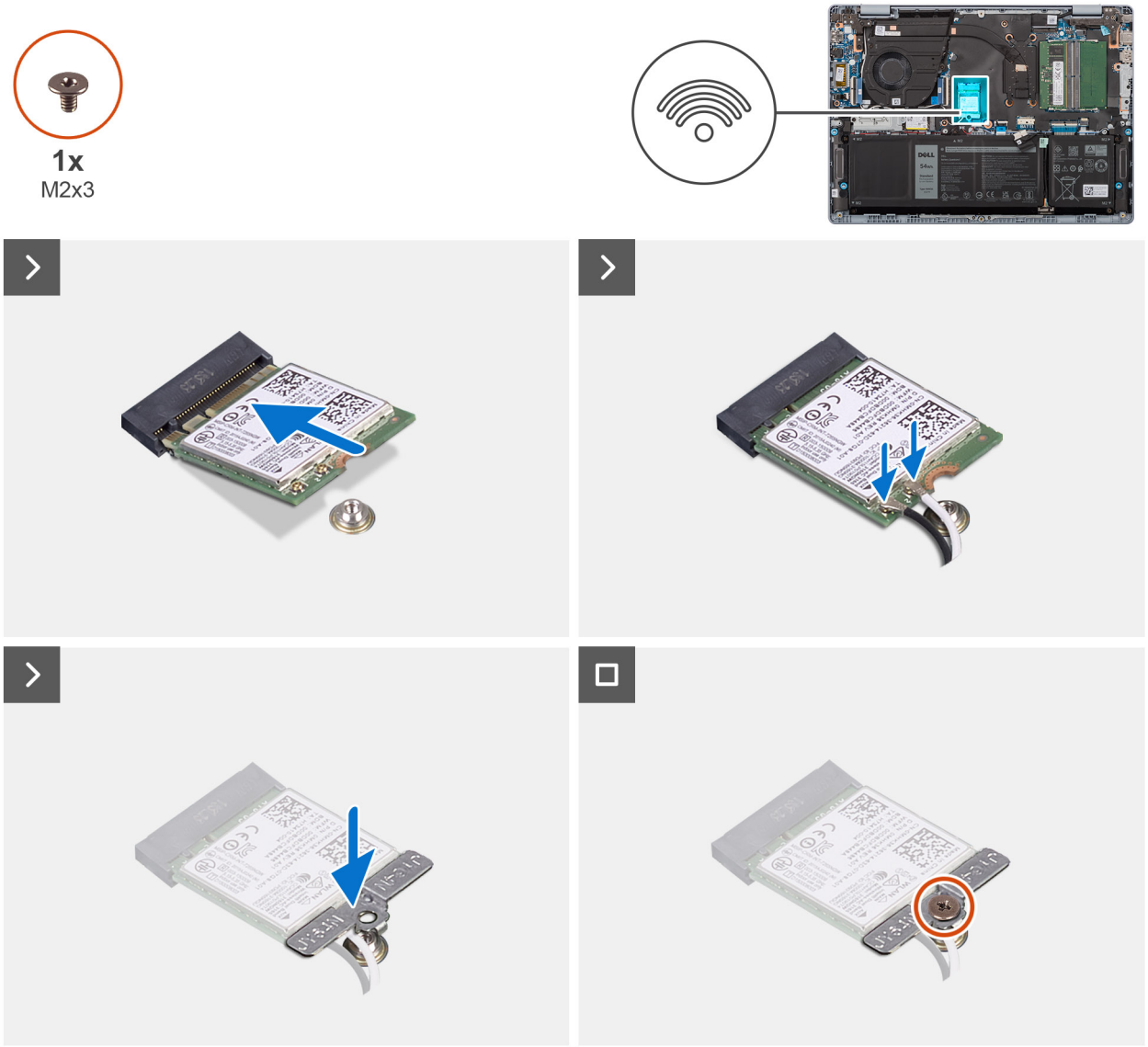


Figure 26. Installing the wireless card

Steps

1. Align the notch on the wireless card with the tab on the wireless-card slot (WLAN1) on the system board.
2. Slide the wireless card at an angle into the wireless-card slot on the system board.
3. Connect the wireless-antenna cables to the connectors on the wireless card.

Table 3. Antenna-cable color scheme

Connector on the wireless card	Antenna-cable color	Silkscreen marking	
Main	White	MAIN	△ (white triangle)

Table 3. Antenna-cable color scheme (continued)

Connector on the wireless card	Antenna-cable color	Silkscreen marking	
Auxiliary	Black	AUX	▲ (black triangle)

4. Place the wireless-card bracket on the wireless card.
5. Align the screw hole on the wireless-card bracket with the screw hole on the system board.
6. Replace the screw (M2x3) to secure the wireless card and the wireless-card bracket to the system board.

Next steps

1. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
2. 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 base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.

About this task

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

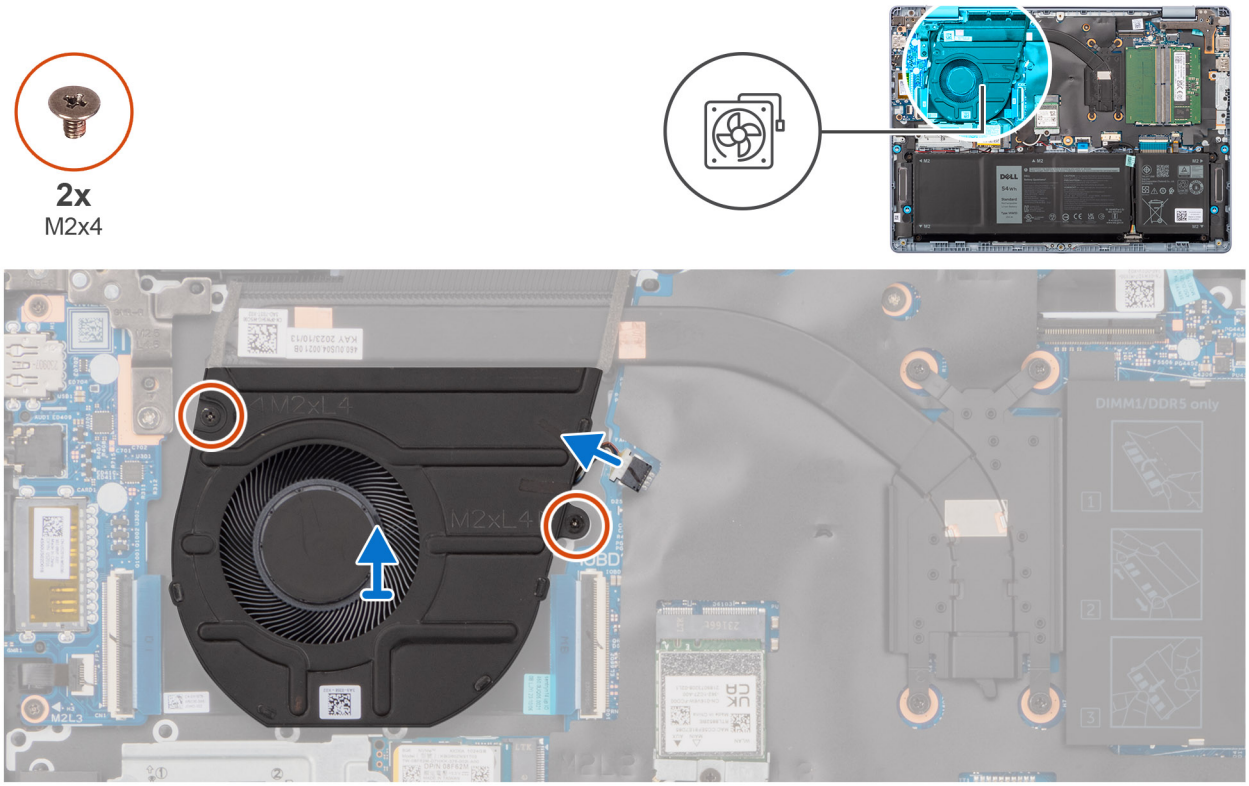


Figure 27. Removing the fan

Steps

1. Disconnect the fan cable from the connector (FAN1) on the system board.

2. Remove the two screws (M2x4) that secure the fan to the palm-rest and keyboard assembly.
3. Lift the fan off the palm-rest and keyboard assembly.

Installing the fan

Prerequisites

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

About this task

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

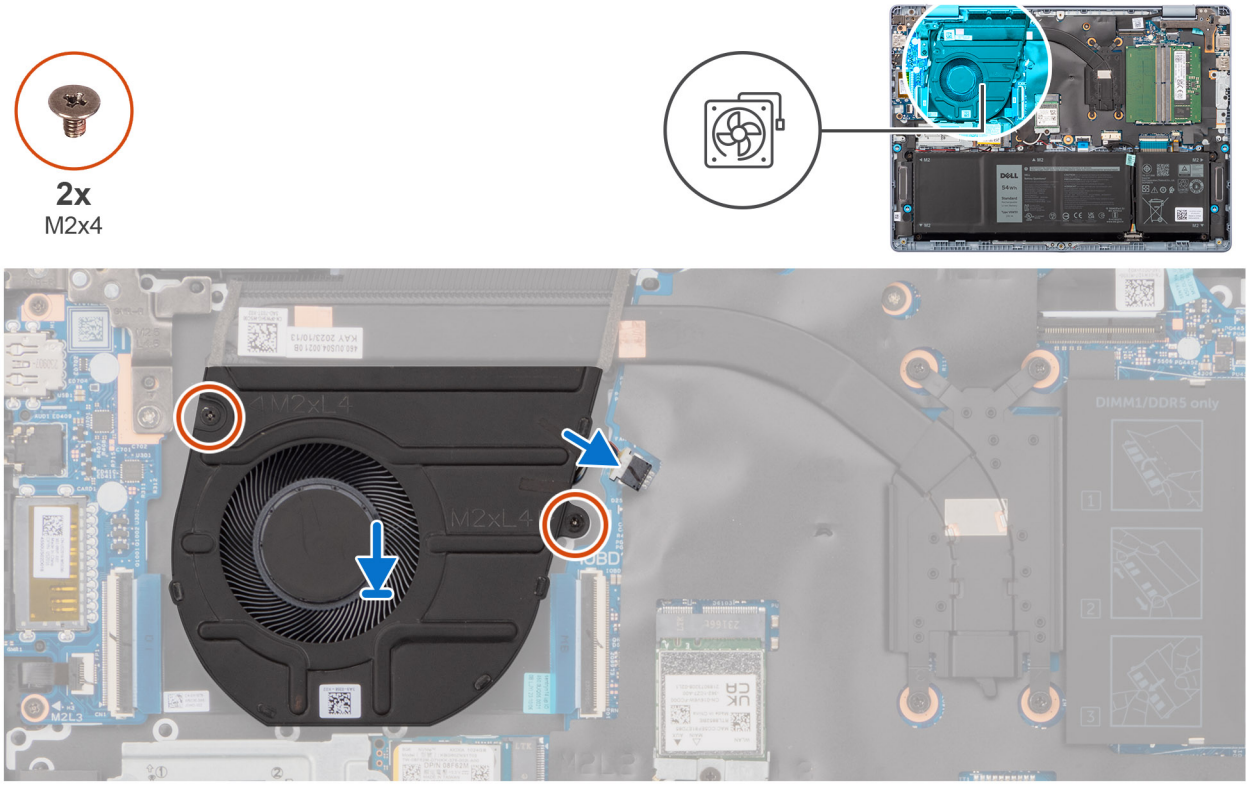


Figure 28. Installing the fan

Steps

1. Place the fan on the palm-rest and keyboard assembly.
2. Align the screw holes on the fan with the screw holes on the palm-rest and keyboard assembly.
3. Replace the two screws (M2x4) to secure the fan to the palm-rest and keyboard assembly.
4. Connect the fan cable to the connector (FAN1) on the system board.

Next steps

1. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
2. 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: The information in this removing and installing FRUs section is intended for authorized service technicians only.

CAUTION: To avoid any potential damage to the component or loss of data, Dell Technologies recommends that an authorized service technician replaces the Field Replaceable Units (FRUs).

CAUTION: Your warranty does not cover damages that may occur during FRU repairs that are not authorized by Dell Technologies.

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

Heat sink

Removing the heat sink

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.

About this task

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

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

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

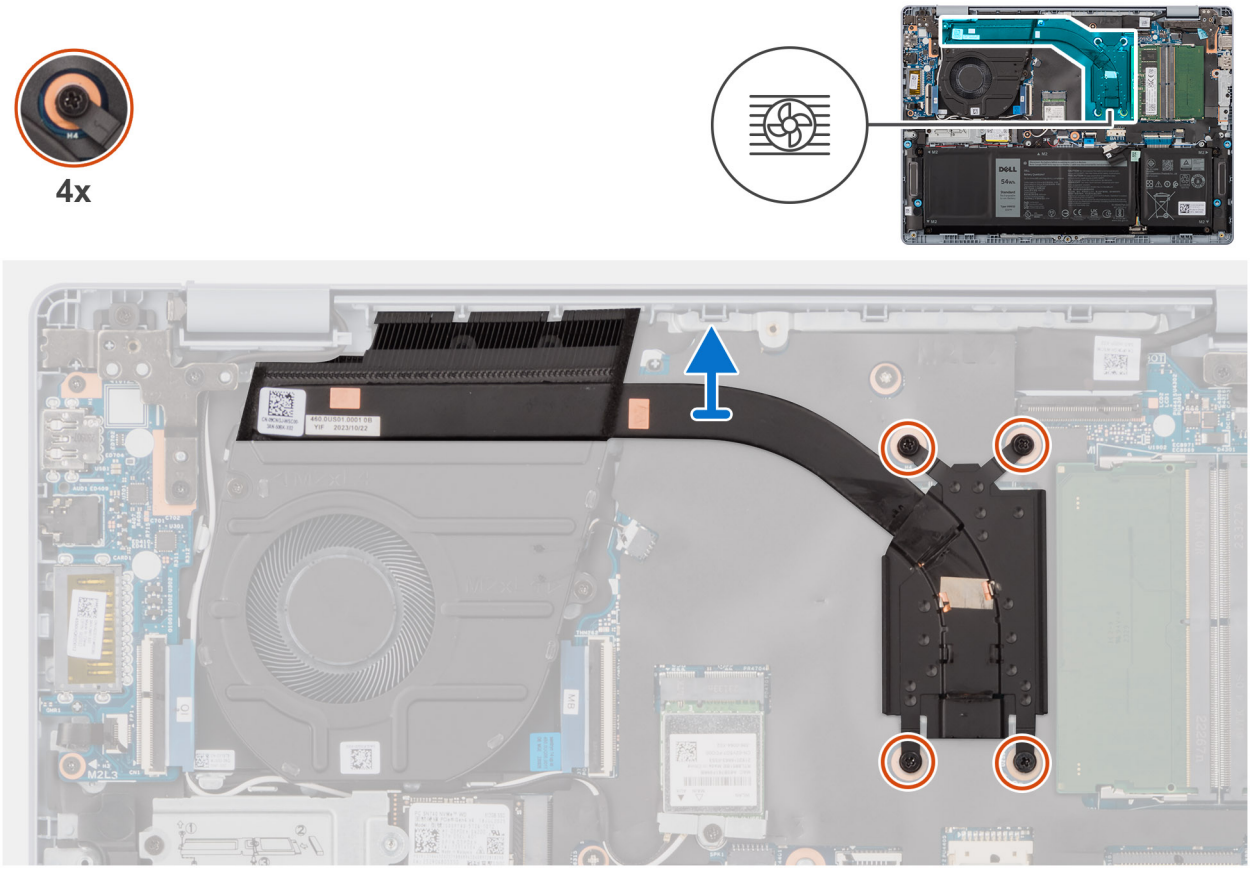


Figure 29. Removing the heat sink

Steps

1. In reverse sequential order (4 > 3 > 2 > 1), loosen the four captive screws that secure the heat sink to the system board. The screw numbers are etched on the heat sink.
2. Lift and remove the heat sink from the system board.

Installing the heat sink

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

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

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

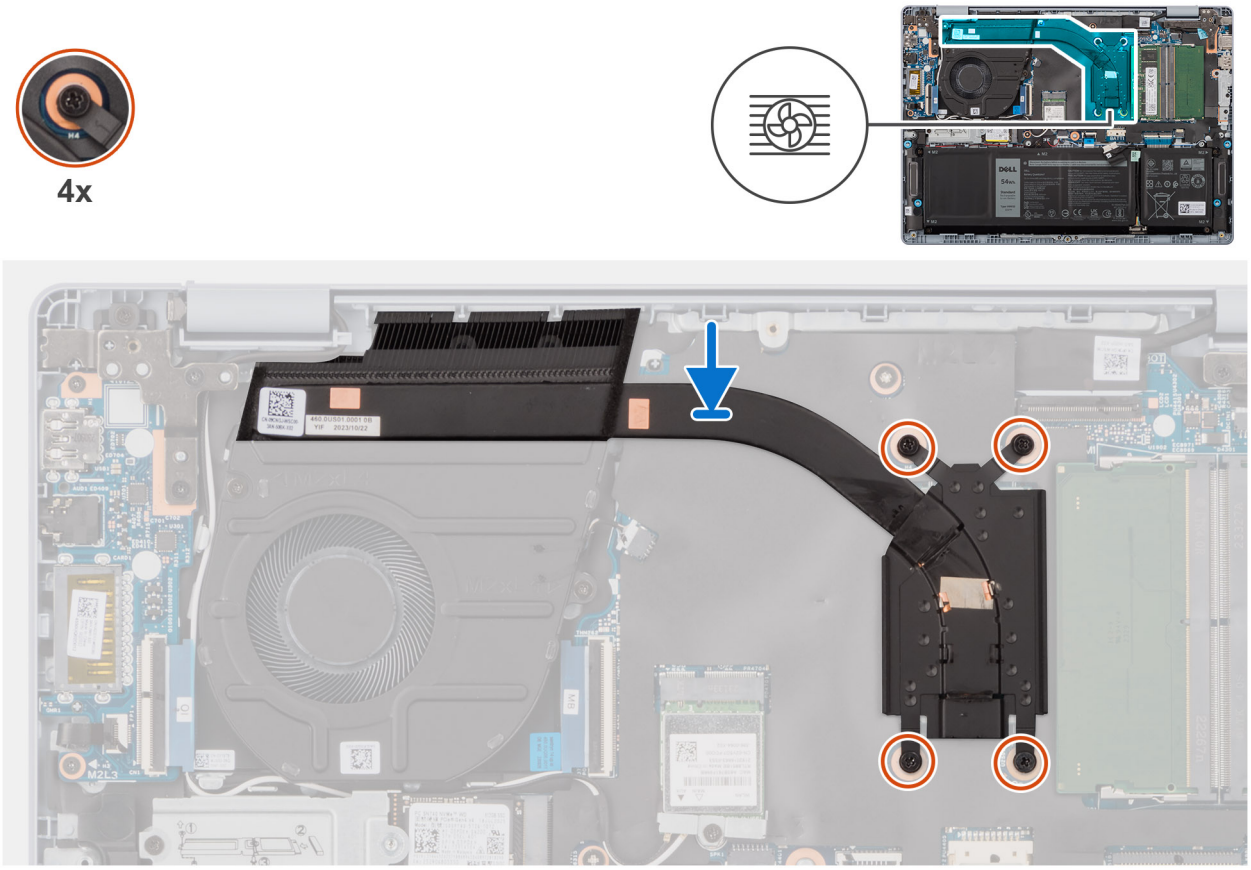


Figure 30. Installing the heat sink

Steps

1. Place the heat sink on the system board.
2. Align the screw holes on the heat sink with the screw holes on the system board.
3. In sequential order (1 > 2 > 3 > 4), tighten the four captive screws to secure the heat sink to the system board. The screw numbers are etched on the heat sink.

Next steps

1. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
2. Follow the procedure in After working inside your computer.

Speakers

Removing the speakers

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
3. Remove the 3-cell battery or the 4-cell battery, whichever is applicable.

About this task

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

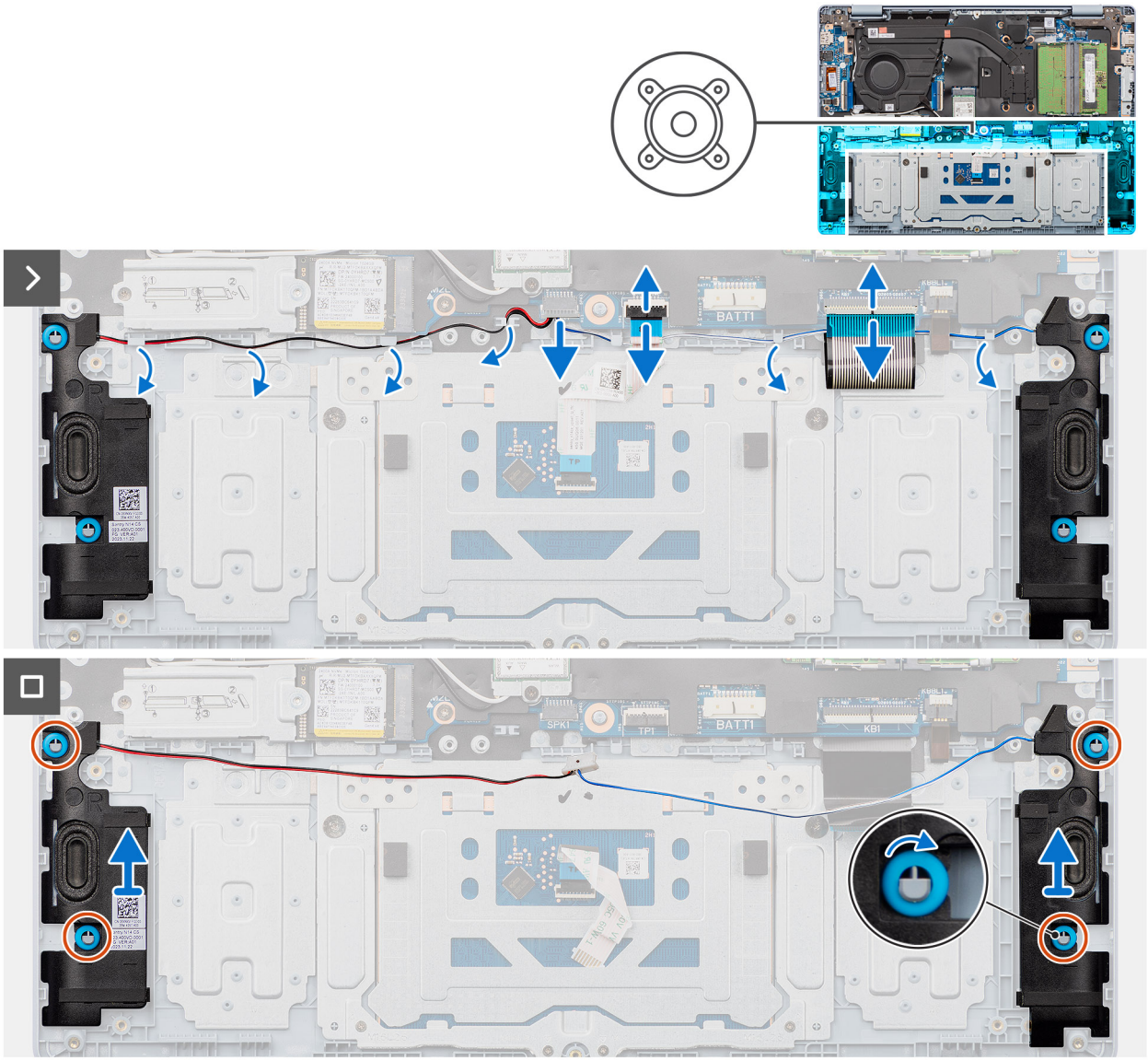


Figure 31. Removing the speakers

Steps

1. Disconnect the speaker cable from the connector (SPK1) on the system board.
2. Remove the speaker cables from the routing guides on the palm-rest and keyboard assembly.
3. Lift the speakers, along with the cables, off the palm-rest and keyboard assembly.

Installing the speakers

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

NOTE: If the rubber grommets are pushed out when removing the speakers, push them back in before replacing the speakers.

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

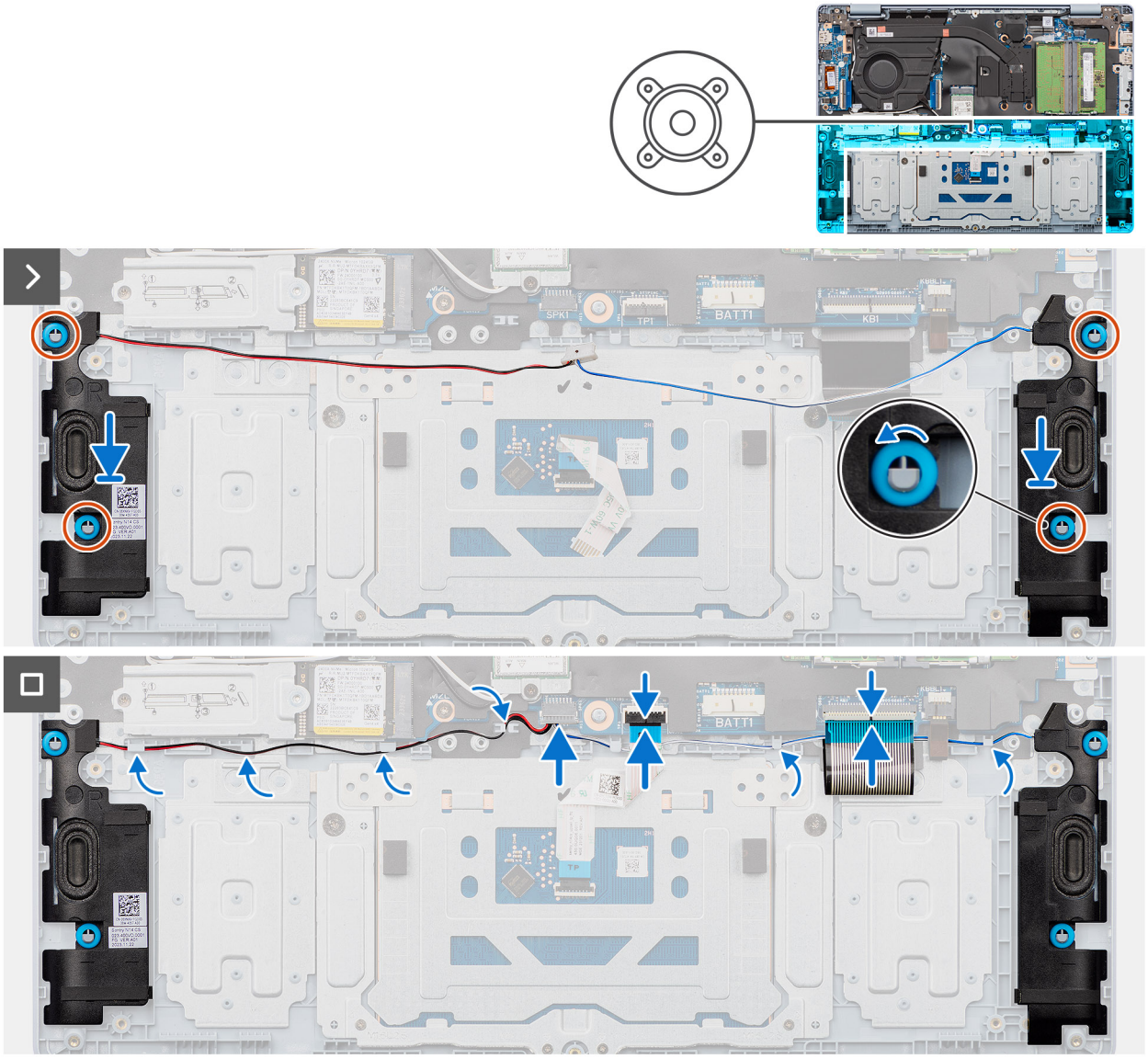


Figure 32. Installing the speakers

Steps

1. Thread the rubber grommets through the alignment posts to place the left and right speakers on the palm-rest and keyboard assembly.

   NOTE: Ensure that the rubber grommets on the speakers are threaded through the alignment posts and the four rubber grommets are seated into the slot and installed on the speakers properly.

2. Route the speaker cable through the routing guides on the palm-rest and keyboard assembly.
3. Connect the speaker cable to the connector (SPK1) on the system board.

Next steps

1. Install the 3-cell battery or the 4-cell battery, whichever is applicable.
2. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
3. Follow the procedure in After working inside your computer.

Touchpad

Removing the touchpad

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
3. Remove the 3-cell battery or the 4-cell battery, whichever is applicable.

About this task

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

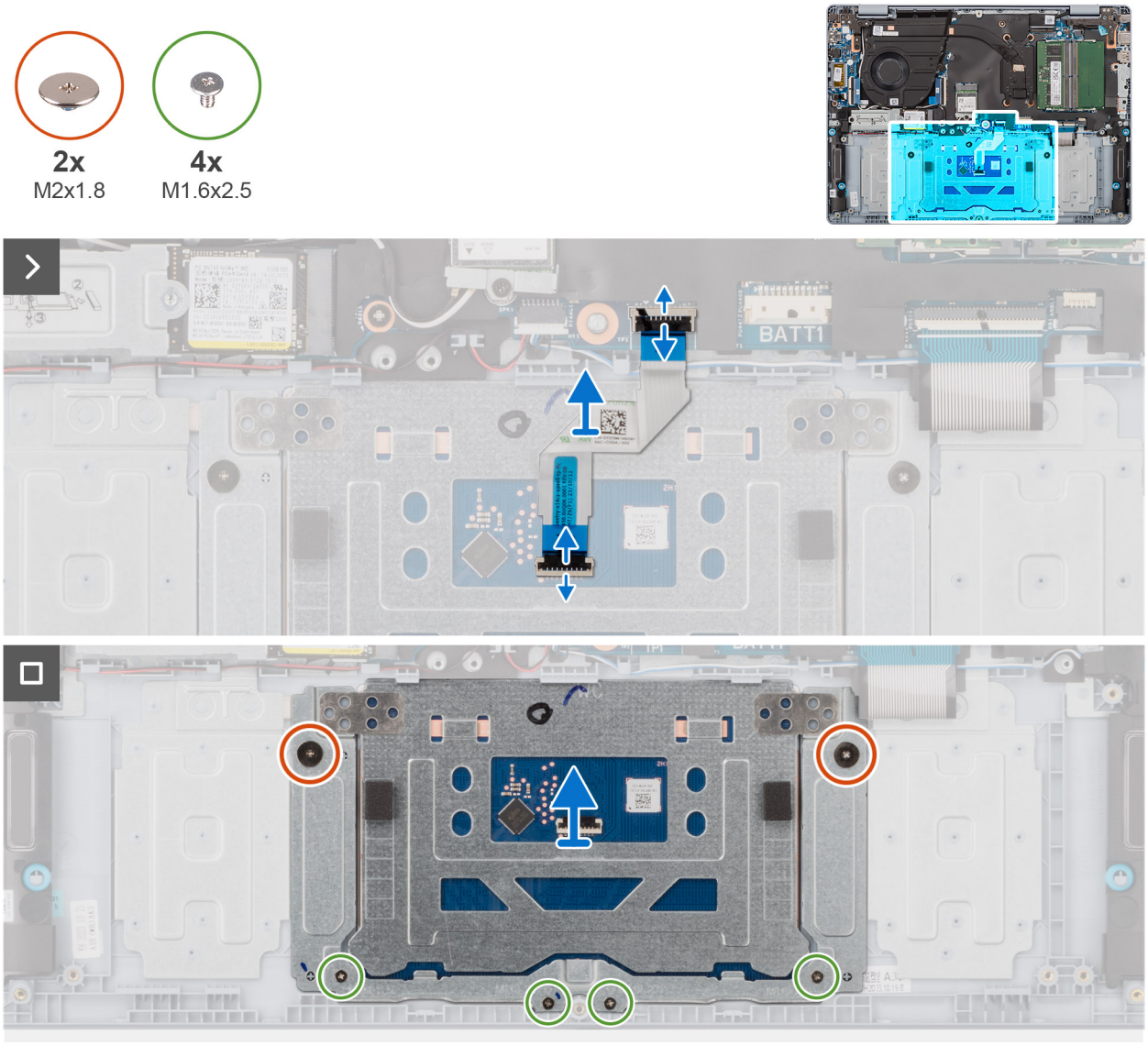


Figure 33. Removing the touchpad (for computers shipped with a plastic chassis)

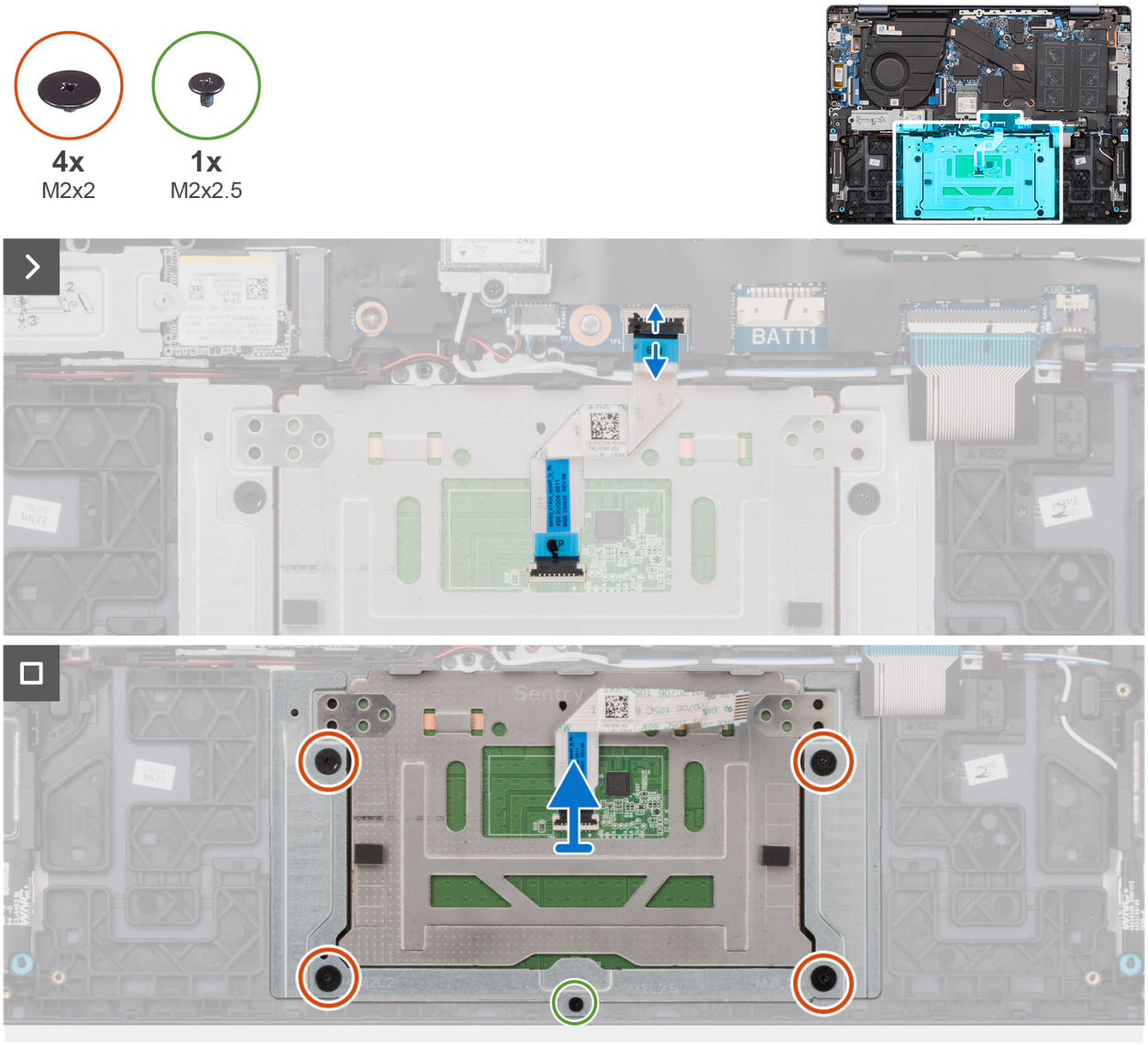


Figure 34. Removing the touchpad (for computers shipped with an aluminum chassis)

Steps

1. Open the latch and disconnect the touchpad cable from the connector (TP1) on the system board.
2. Open the latch and disconnect the touchpad cable from the connector on the touchpad.
3. Remove the four screws (M1.6x2.5) and the two screws (M2x1.8) that secure the touchpad to the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with a plastic chassis.

4. Remove the four screws (M2x2) and the screw (M2x2.5) that secure the touchpad to the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with an aluminum chassis.

5. Lift the touchpad off the palm-rest and keyboard assembly.

Installing the touchpad

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

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

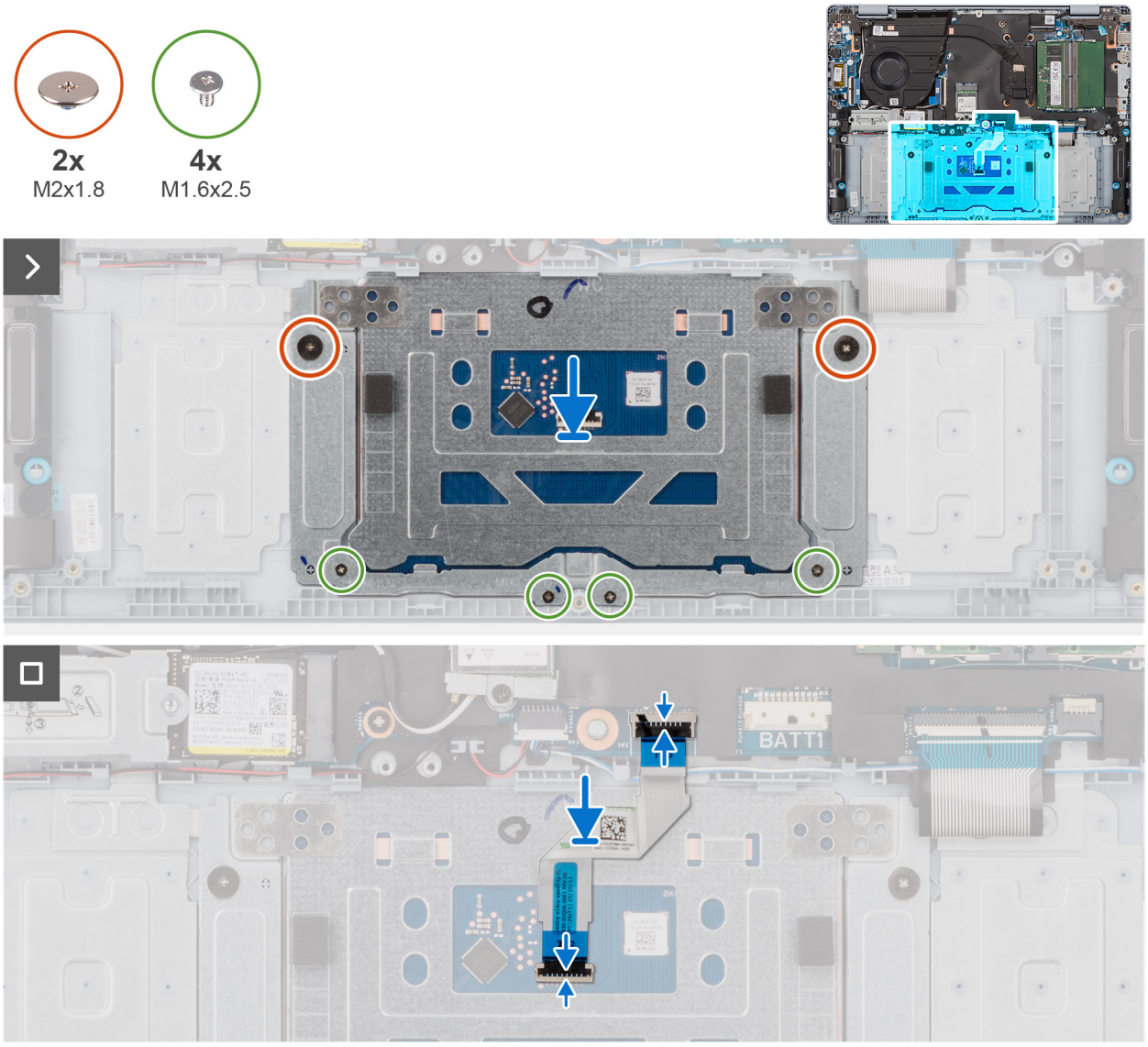


Figure 35. Installing the touchpad (for computers shipped with a plastic chassis)

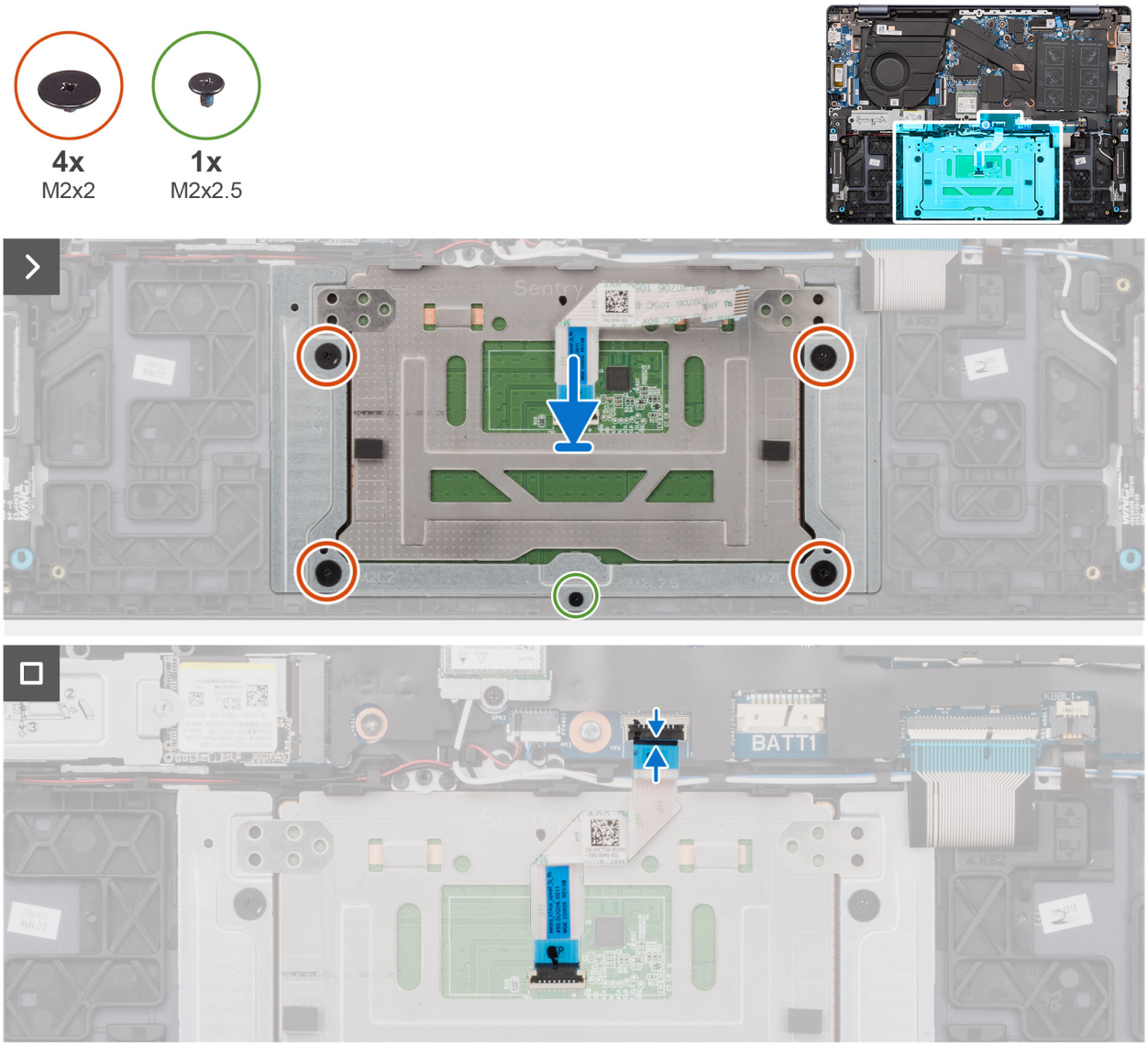


Figure 36. Installing the touchpad (for computers shipped with an aluminum chassis)

Steps

1. Align and place the touchpad in the slot on the palm-rest and keyboard assembly.
2. Align the screw holes on the touchpad with the screw holes on the palm-rest and keyboard assembly.
3. Replace the four screws (M1.6x2.5) and the two screws (M2x1.8) to secure the touchpad to the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with a plastic chassis.

4. Replace the four screws (M2x2) and the screw (M2x2.5) to secure the touchpad to the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with an aluminum chassis.

5. Connect the touchpad cable to the connector on the touchpad and close the latch.
6. Connect the touchpad cable to the connector (TP1) on the system board and close the latch.

Next steps

1. Install the 3-cell battery or the 4-cell battery, whichever is applicable.
2. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
3. Follow the procedure in After working inside your computer.

Power-adapter port

Removing the power-adapter port

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.

About this task

The following images indicate the location of the power-adapter port and provide a visual representation of the removal procedure.

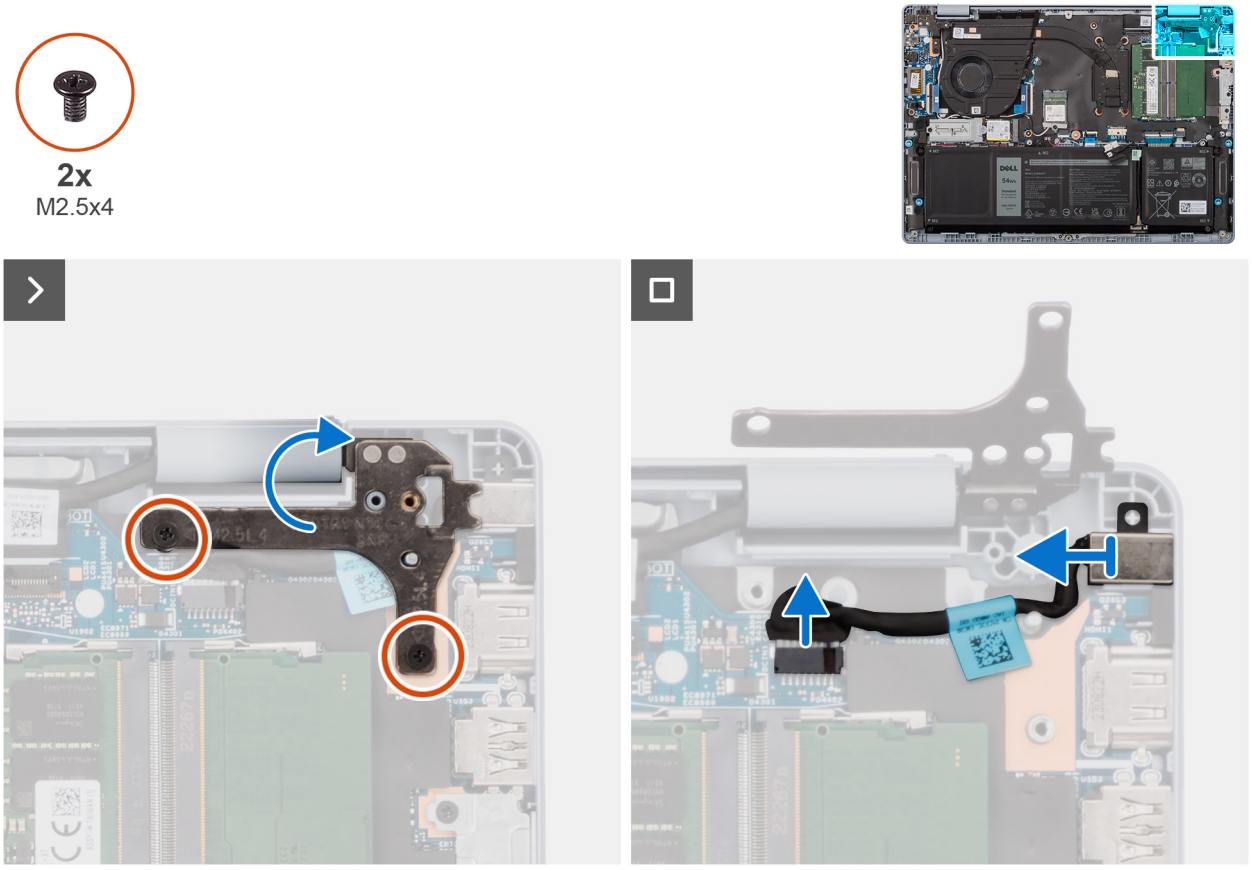


Figure 37. Removing the power-adapter port (for computers shipped with a plastic chassis)

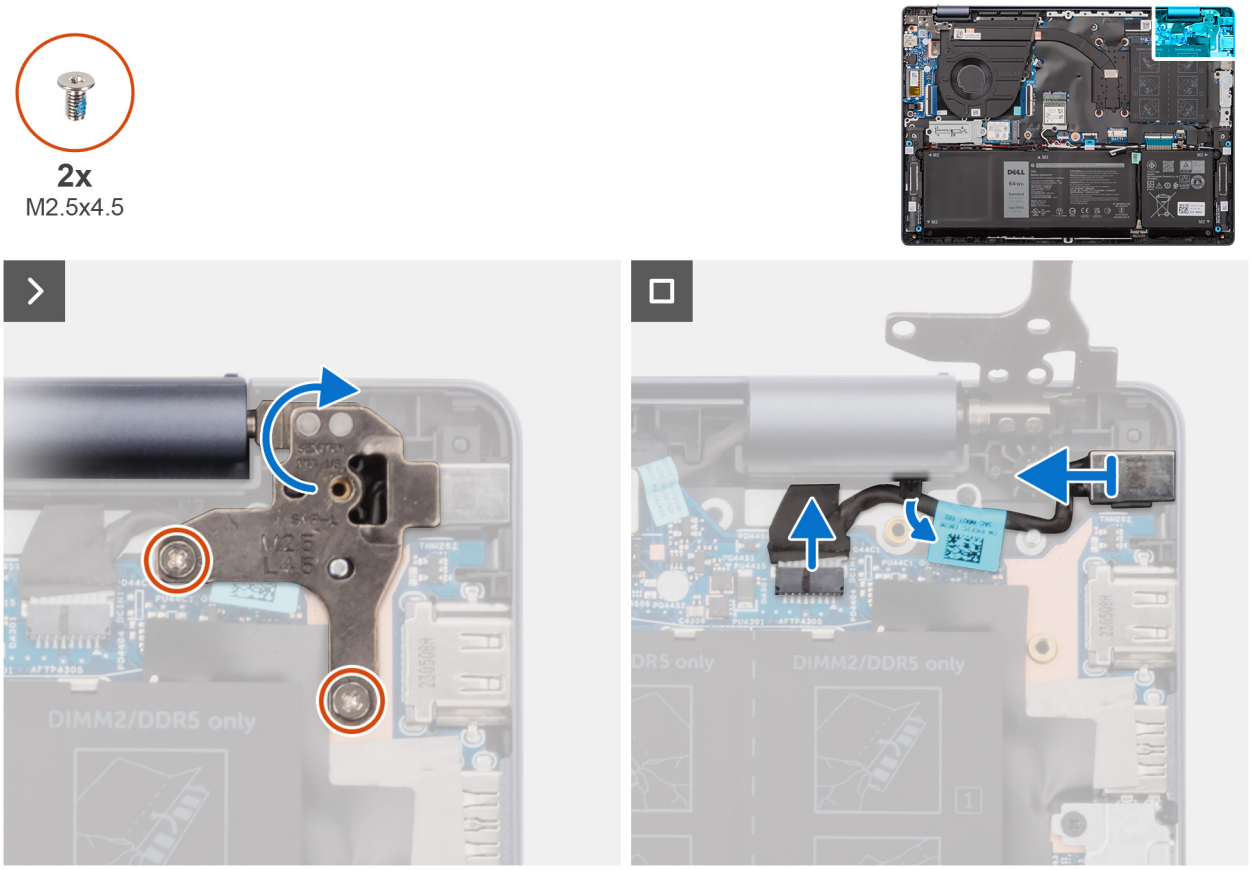


Figure 38. Removing the power-adapter port (for computers shipped with an aluminum chassis)

Steps

1. Remove the two screws (M2.5x4) that secure the right display hinge to the system board and the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with a plastic chassis.

2. Remove the two screws (M2.5x4.5) that secure the right display hinge to the system board and the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with an aluminum chassis.

3. Using a plastic scribe, lift the right display hinge to an angle of 90 degrees from the palm-rest and keyboard assembly to access the power-adapter port.
4. Disconnect the power-adapter port cable from the connector (DCIN1) on the system board.
5. Remove the power-adapter port cable from the routing guide on the palm-rest and keyboard assembly.
6. Lift the power-adapter port off the palm-rest and keyboard assembly.

Installing the power-adapter port

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

The following images indicate the location of the power-adapter port and provide a visual representation of the installation procedure.

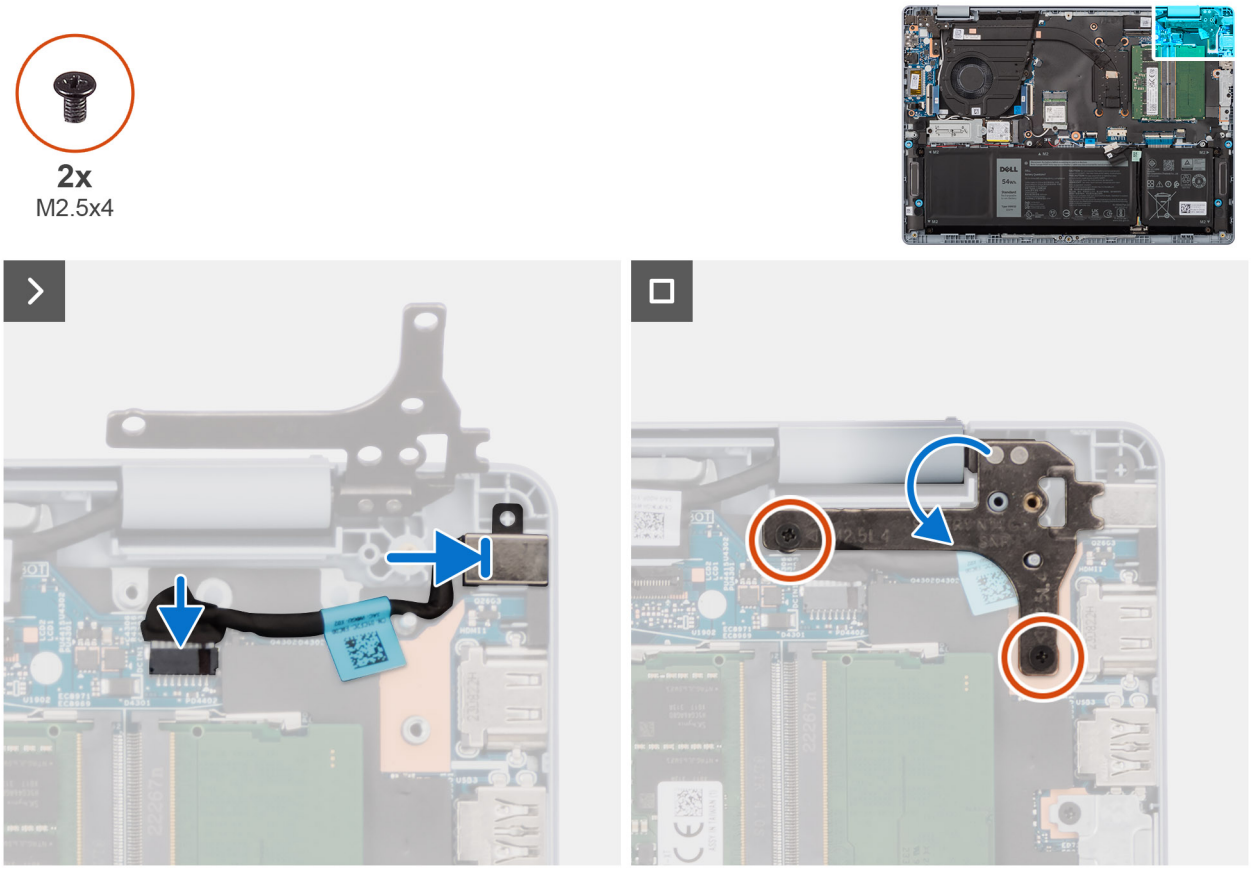


Figure 39. Installing the power-adapter port (for computers shipped with a plastic chassis)

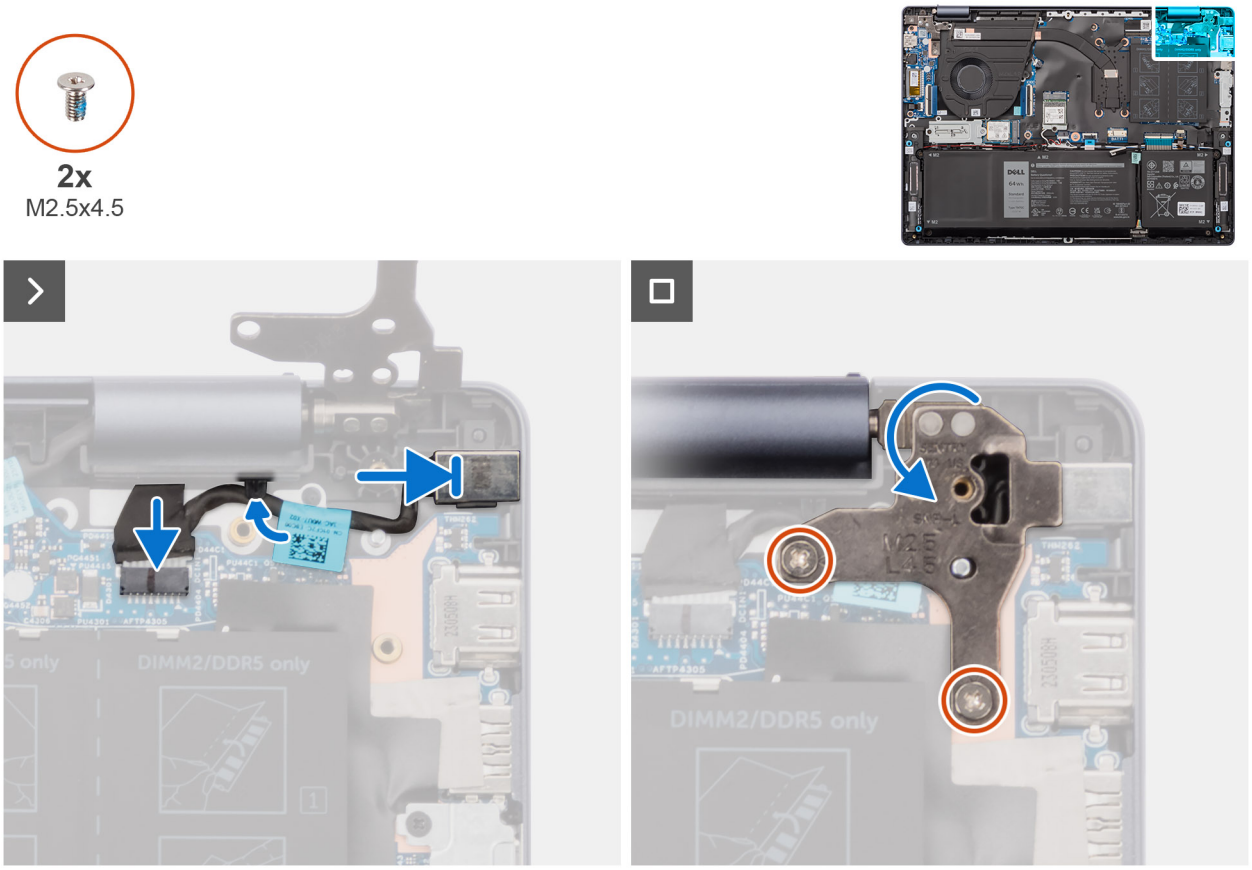


Figure 40. Installing the power-adapter port (for computers shipped with an aluminum chassis)

Steps

1. Align and place the power-adapter port in the slot on the palm-rest and keyboard assembly.
2. Route the power-adapter port cable through the routing guide on the palm-rest and keyboard assembly.
3. Connect the power-adapter port cable to the connector (DCIN1) on the system board.
4. Close the right display hinge to align the screw holes on the right display hinge with the screw holes on the system board and the palm-rest and keyboard assembly.
5. Replace the two screws (M2.5x4) to secure the right display hinge to the system board and the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with a plastic chassis.

6. Replace the two screws (M2.5x4.5) to secure the right display hinge to the system board and the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with an aluminum chassis.

Next steps

1. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
2. Follow the procedure in After working inside your computer.

I/O-board cable

Removing the I/O-board cable

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
3. Remove the fan.

About this task

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

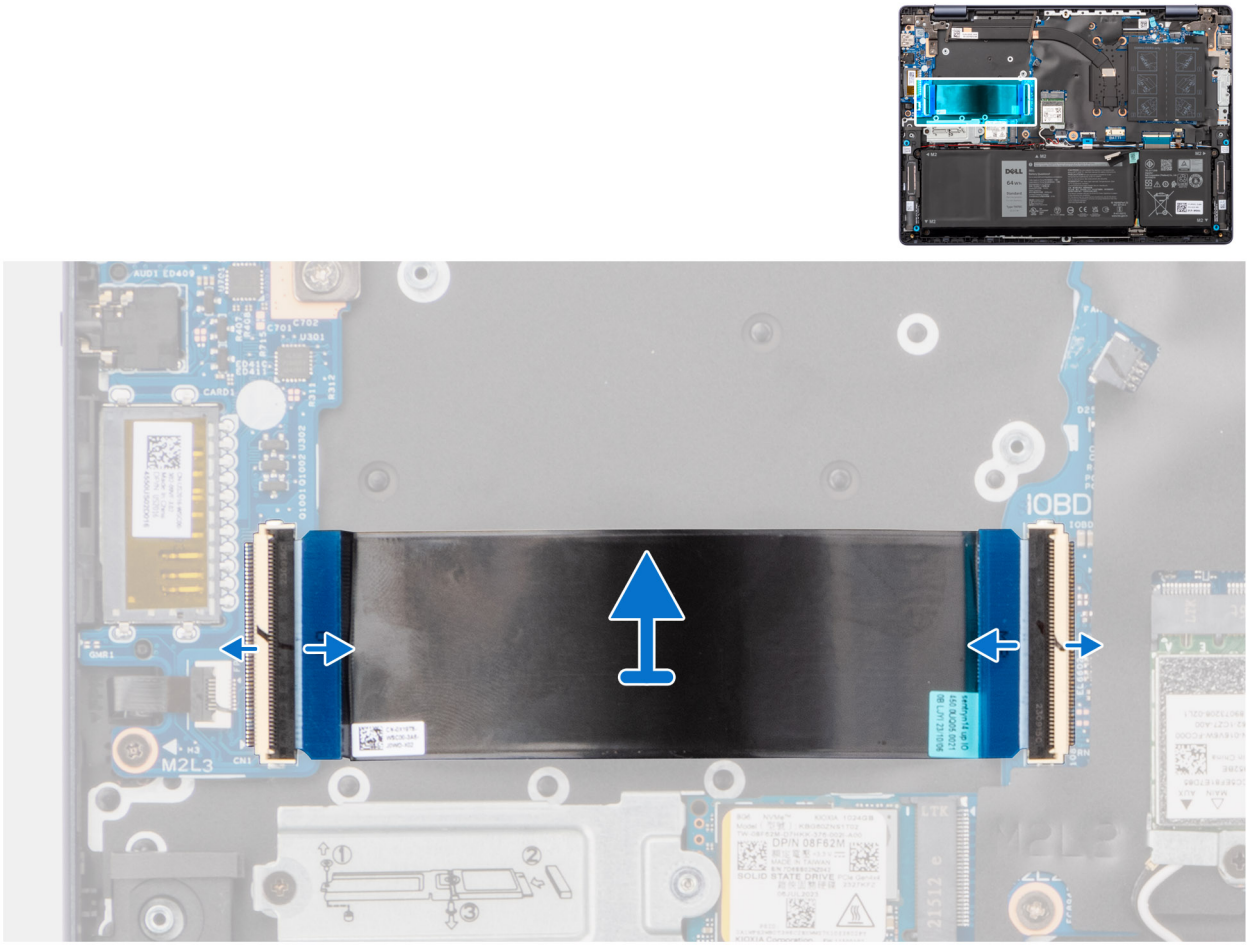


Figure 41. Removing the I/O-board cable

Steps

1. Open the latch and disconnect the I/O-board cable from the connector (IOBD1) on the system board.
2. Open the latch and disconnect the I/O-board cable from the connector on the I/O board.
3. Remove the I/O-board cable from the palm-rest and keyboard assembly.

Installing the I/O-board cable

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

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

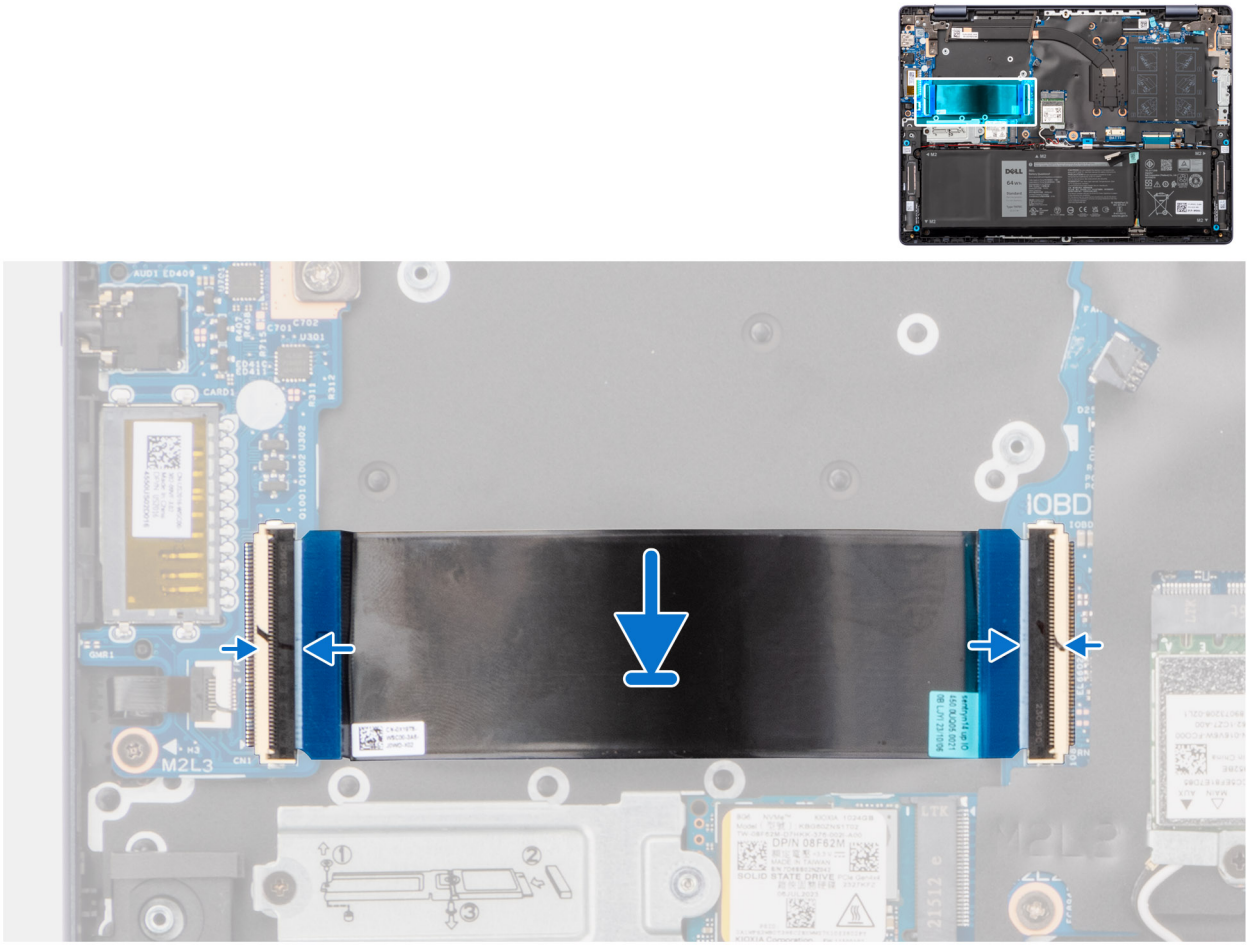


Figure 42. Installing the I/O-board cable

Steps

1. Place the I/O-board cable on the palm-rest and keyboard assembly.
2. Connect the I/O-board cable to the connector on the I/O board and close the latch.
3. Connect the I/O-board cable to the connector (IOBD1) on the system board and close the latch.

Next steps

1. Install the fan.
2. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
3. Follow the procedure in After working inside your computer.

I/O board

Removing the I/O board

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
3. Remove the fan.

About this task

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

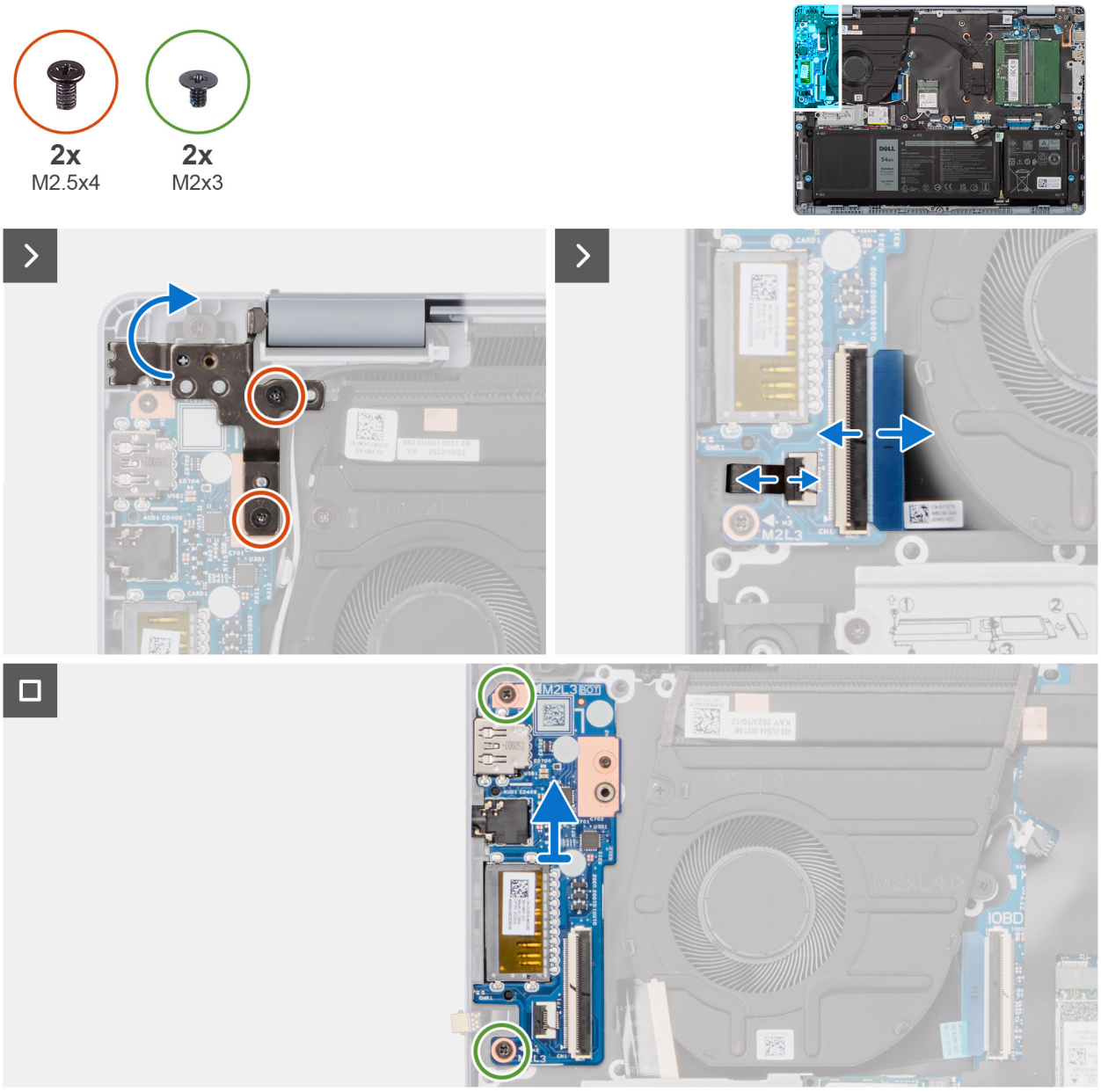


Figure 43. Removing the I/O board (for computers shipped with a plastic chassis)

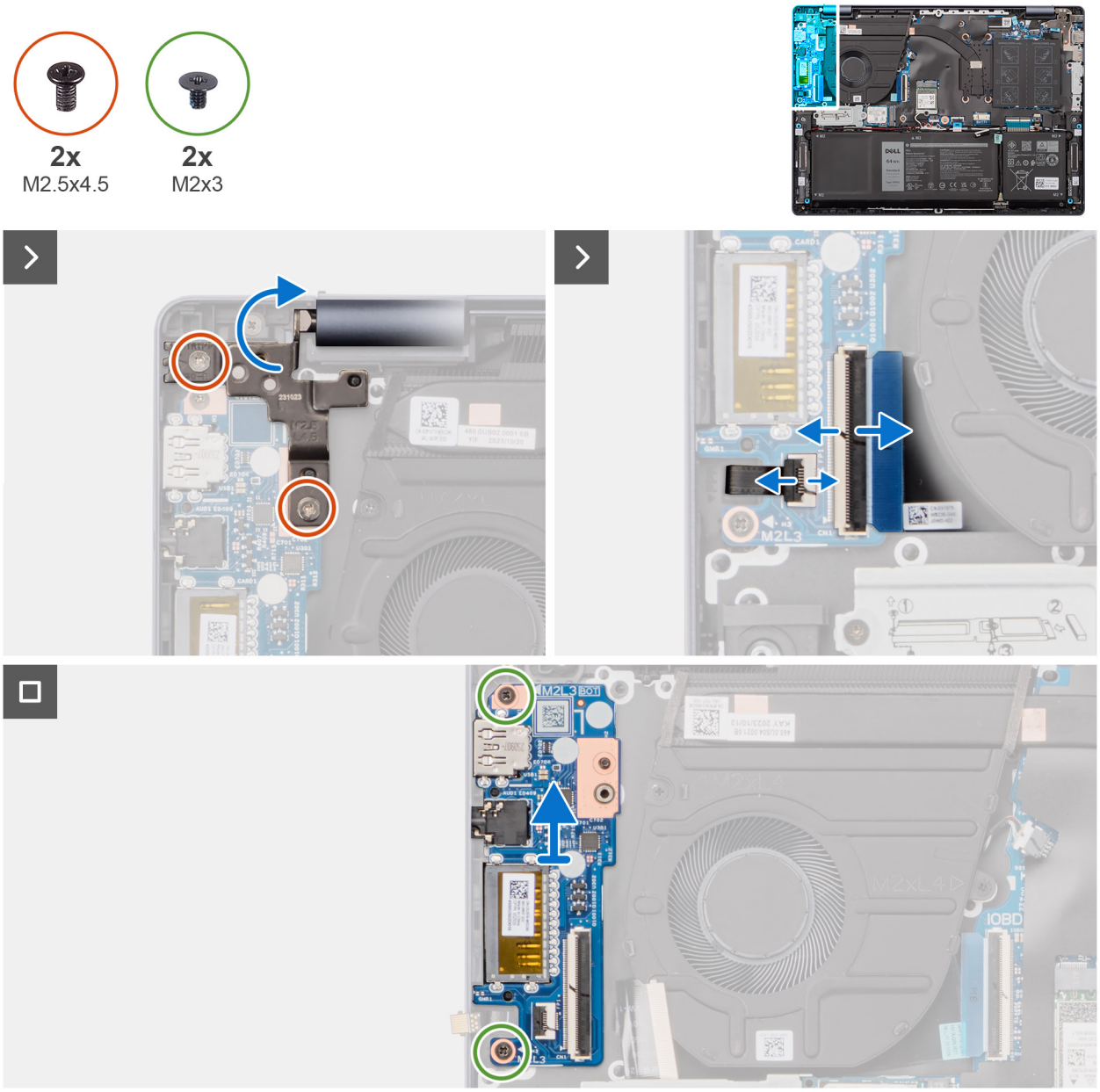


Figure 44. Removing the I/O board (for computers shipped with an aluminum chassis)

Steps

1. Remove the two screws (M2.5x4) that secure the left display hinge to the I/O board and the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with a plastic chassis.

2. Remove the two screws (M2.5x4.5) that secure the left display hinge to the I/O board and the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with an aluminum chassis.

3. Using a plastic scribe, lift the left display hinge to an angle of 90 degrees from the palm-rest and keyboard assembly to access the I/O board.
4. Open the latch and disconnect the I/O-board cable from the connector on the I/O board.
5. Open the latch and disconnect the fingerprint-reader cable from the connector on the I/O board.

NOTE: This step applies only to computers shipped with a power button with fingerprint reader installed.

6. Remove the two screws (M2x3) that secure the I/O board to the palm-rest and keyboard assembly.
7. Carefully slide and remove the I/O board at an angle, from the palm-rest and keyboard assembly, to clear the ports from the port slots.

Installing the I/O board

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

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

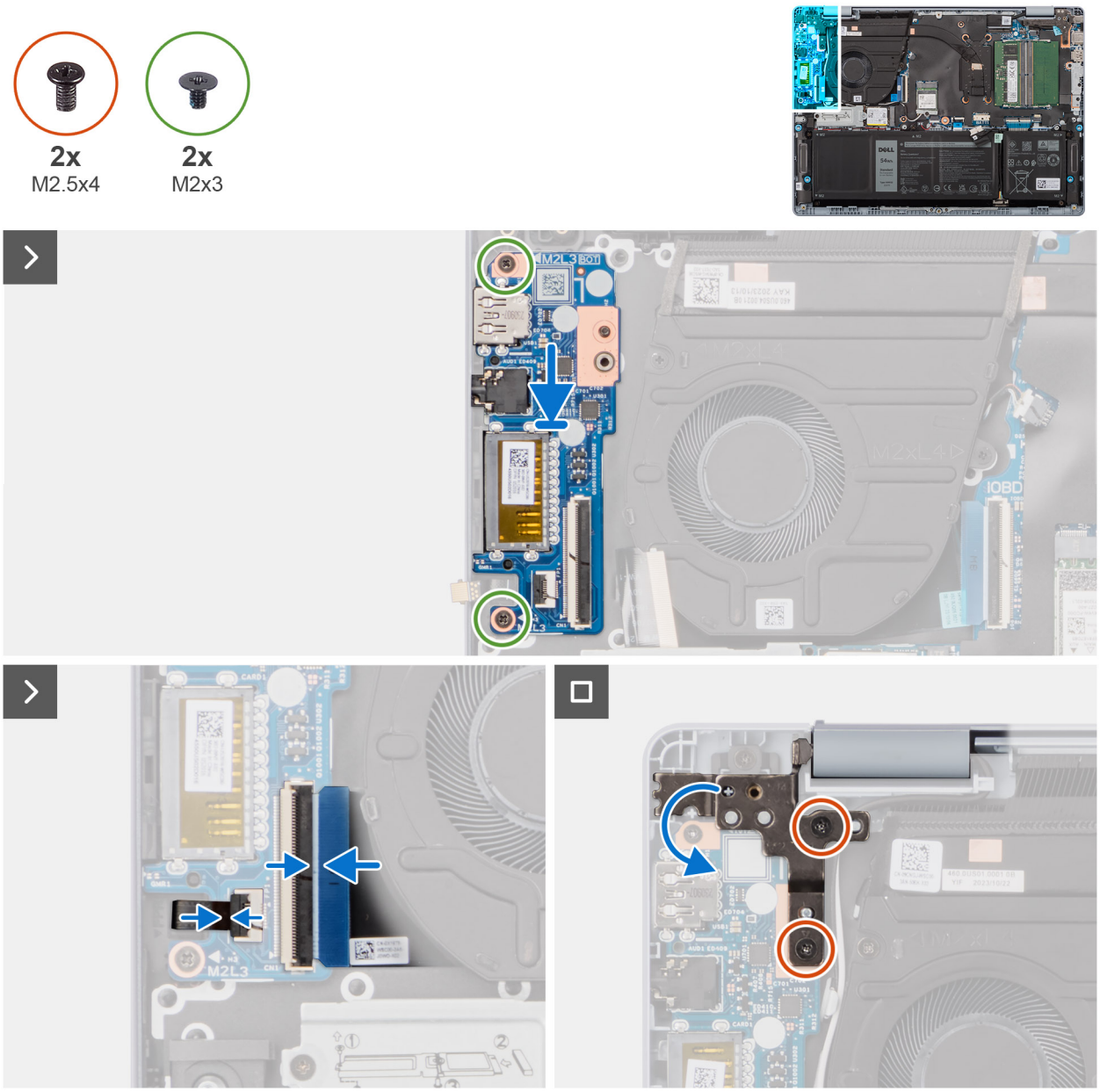


Figure 45. Installing the I/O board (for computers shipped with a plastic chassis)

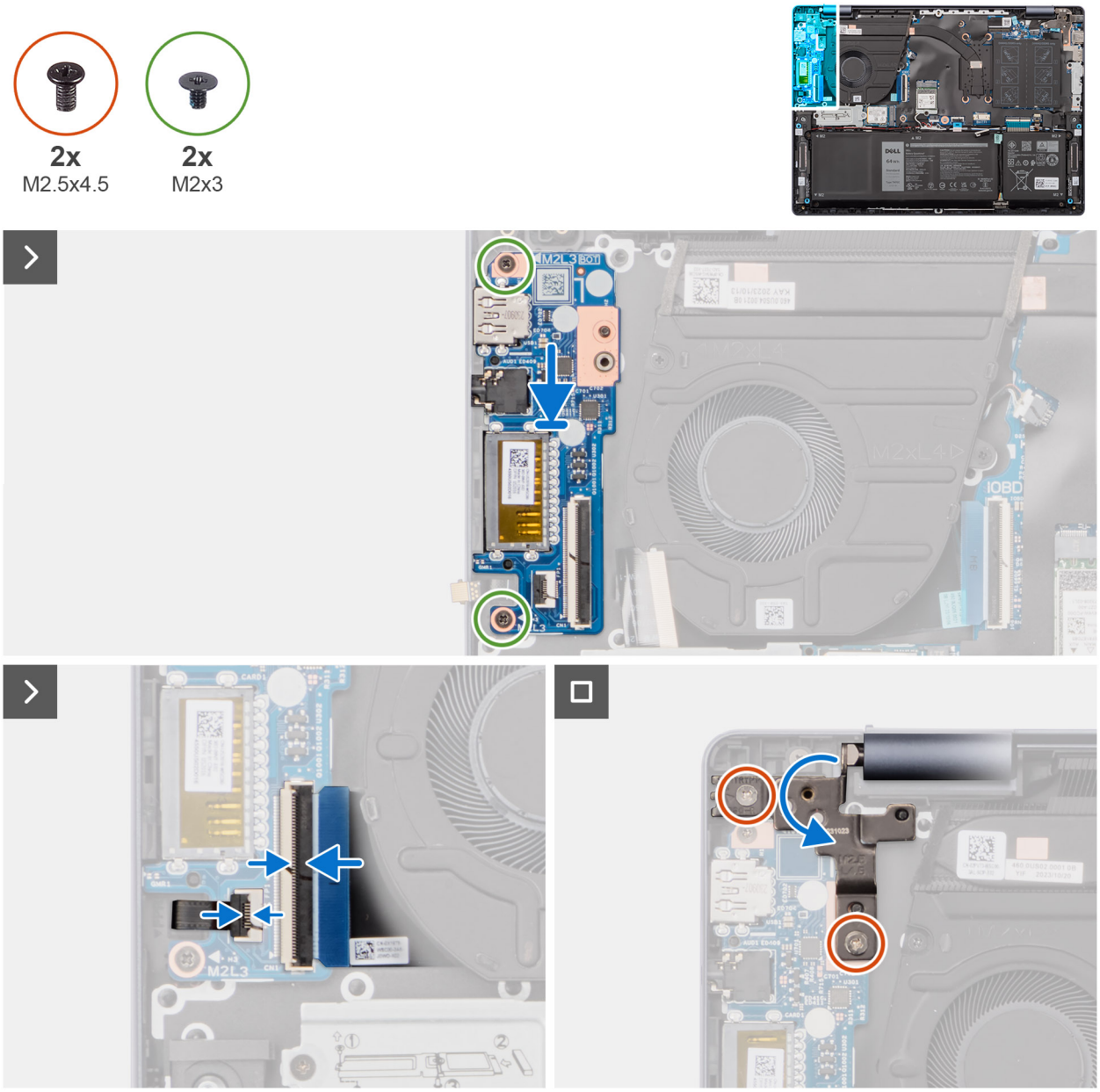


Figure 46. Installing the I/O board (for computers shipped with an aluminum chassis)

Steps

1. Align the ports on the I/O board with the port slots and place the I/O board on the palm-rest and keyboard assembly.
2. Align the screw holes on the I/O board with the screw holes on the palm-rest and keyboard assembly.
3. Replace the two screws (M2x3) to secure the I/O board to the palm-rest and keyboard assembly.
4. Connect the fingerprint-reader cable to the connector on the I/O board and close the latch.

   NOTE: This step applies only to computers shipped with a power button with fingerprint reader installed.

5. Connect the I/O-board cable to the connector on the I/O board and close the latch.
6. Close the left display hinge to align the screw holes on the left display hinge with the screw holes on the I/O board and the palm-rest and keyboard assembly.
7. Replace the two screws (M2.5x4) to secure the left display hinge to the I/O board and the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with a plastic chassis.

8. Replace the two screws (M2.5x4.5) to secure the left display hinge to the I/O board and the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with am aluminum chassis.

Next steps

1. Install the fan.
2. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
3. Follow the procedure in After working inside your computer.

Power button

Removing the power button

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
3. Remove the fan.
4. Remove the I/O board.

About this task

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

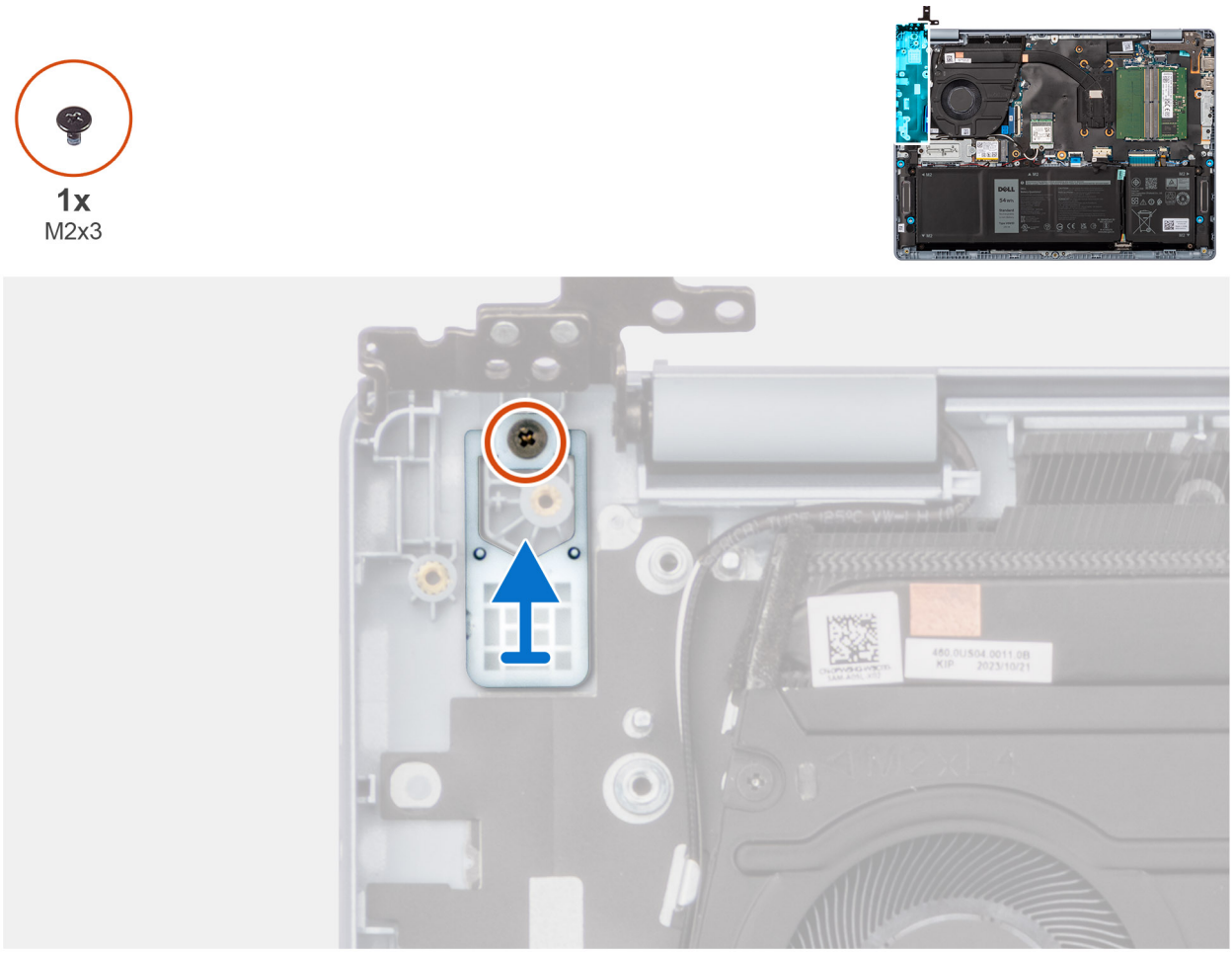


Figure 47. Removing the power button

Steps

1. Remove the screw (M2x3) that secures the power button to the palm-rest and keyboard assembly.
2. Lift the power button off the slot on the palm-rest and keyboard assembly.

Installing the power button

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

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

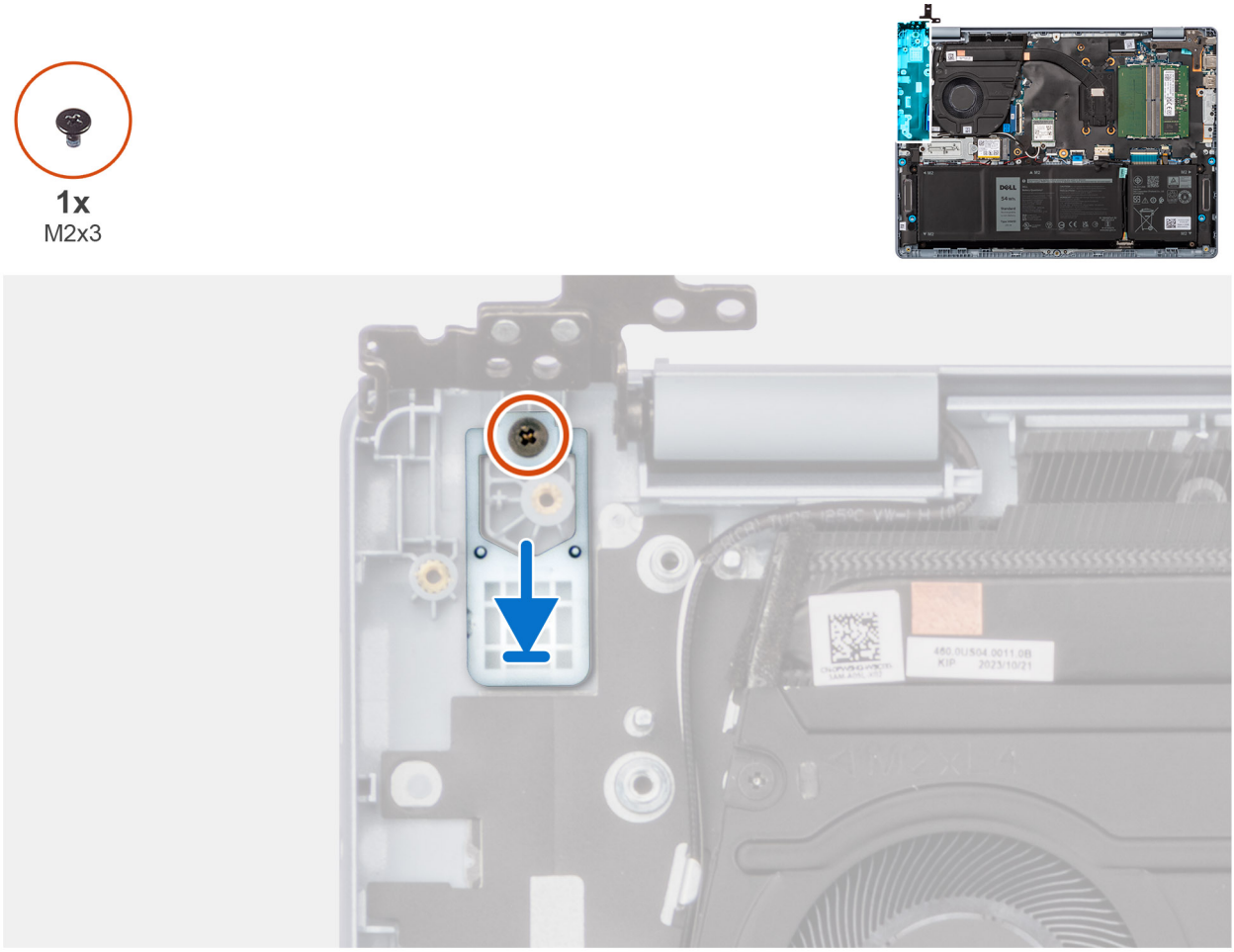


Figure 48. Installing the power button

Steps

1. Place the power button in the slot on the palm-rest and keyboard assembly.
2. Align the screw hole on the power button with the screw hole on the palm-rest and keyboard assembly.
3. Replace the screw (M2x3) to secure the power button to the palm-rest and keyboard assembly.

Next steps

1. Install the I/O board.
2. Install the fan.
3. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
4. Follow the procedure in After working inside your computer.

Power button with optional fingerprint reader

Removing the power button with the optional fingerprint reader

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
3. Remove the fan.

4. Remove the I/O board.

About this task

NOTE: For computers shipped with a fingerprint reader, the power button includes a fingerprint reader module.

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

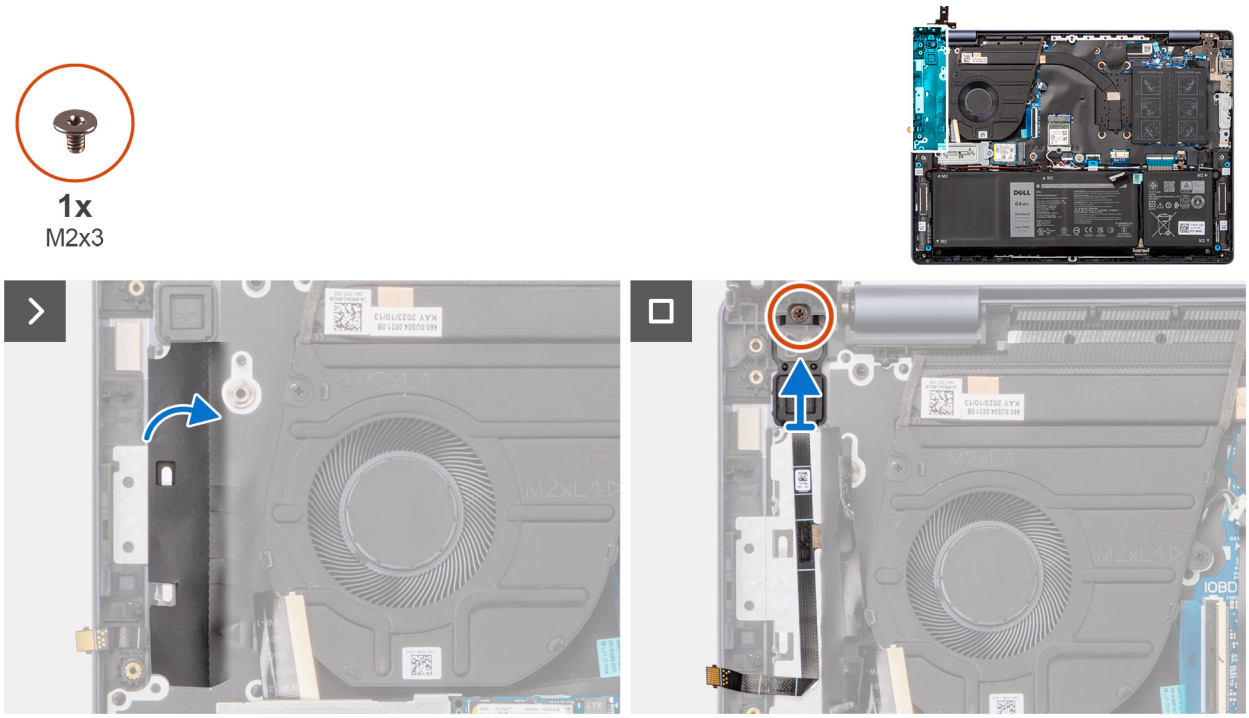


Figure 49. Removing the power button with the optional fingerprint reader

Steps

1. Turn over the Mylar sheet to access the fingerprint-reader cable.
2. Carefully peel off the tape that secures the fingerprint-reader cable to the palm-rest and keyboard assembly.
3. Remove the screw (M2x3) that secures the power button with the optional fingerprint reader to the palm-rest and keyboard assembly.
4. Lift the power button with the optional fingerprint reader off the slot on the palm-rest and keyboard assembly.

Installing the power button with the optional fingerprint reader

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

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

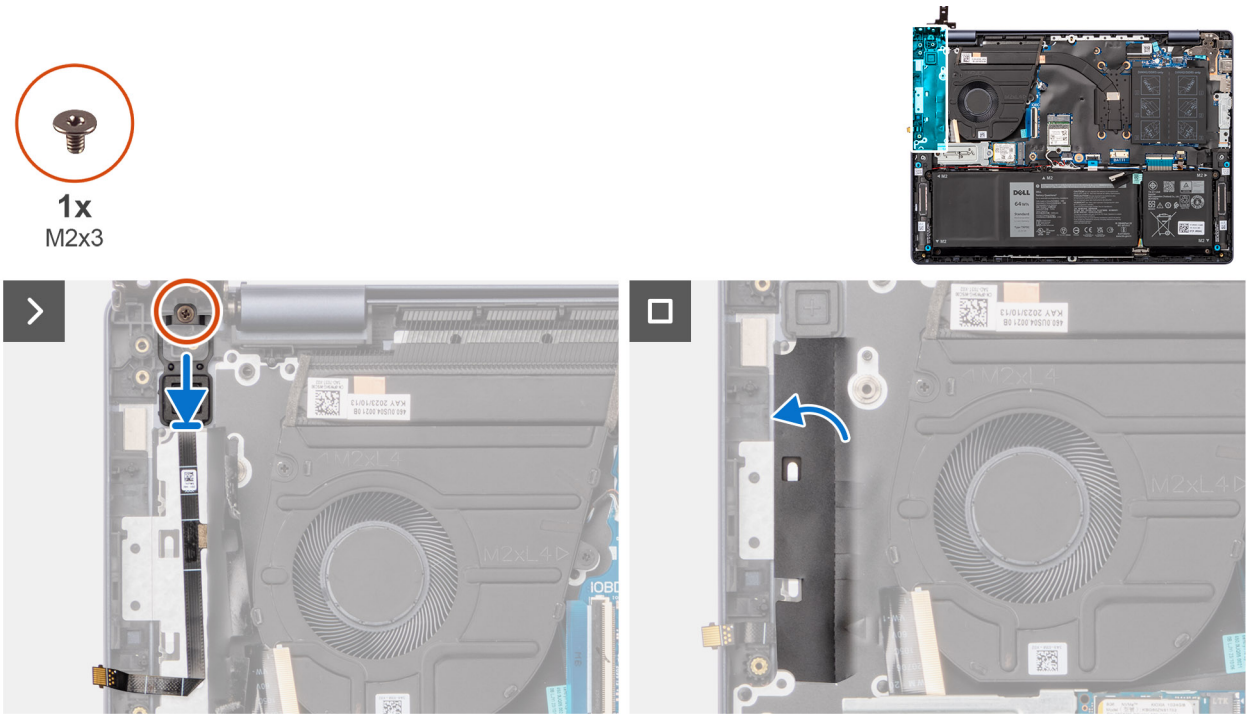


Figure 50. Installing the power button with the optional fingerprint reader

Steps

1. Place the power button with the optional fingerprint reader in the slot on the palm-rest and keyboard assembly.
2. Align the screw hole on the power button with the optional fingerprint reader to the screw hole on the palm-rest and keyboard assembly.
3. Replace the screw (M2x3) to secure the power button with the optional fingerprint reader to the palm-rest and keyboard assembly.
4. Adhere the tape to secure the fingerprint-reader cable to the palm-rest and keyboard assembly.
5. Turn over the Mylar sheet to secure the fingerprint-reader cable.

Next steps

1. Install the I/O board.
2. Install the fan.
3. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
4. Follow the procedure in After working inside your computer.

Display assembly

Removing the display assembly

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
3. Remove the solid state drive.
4. Remove the wireless card.

About this task

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

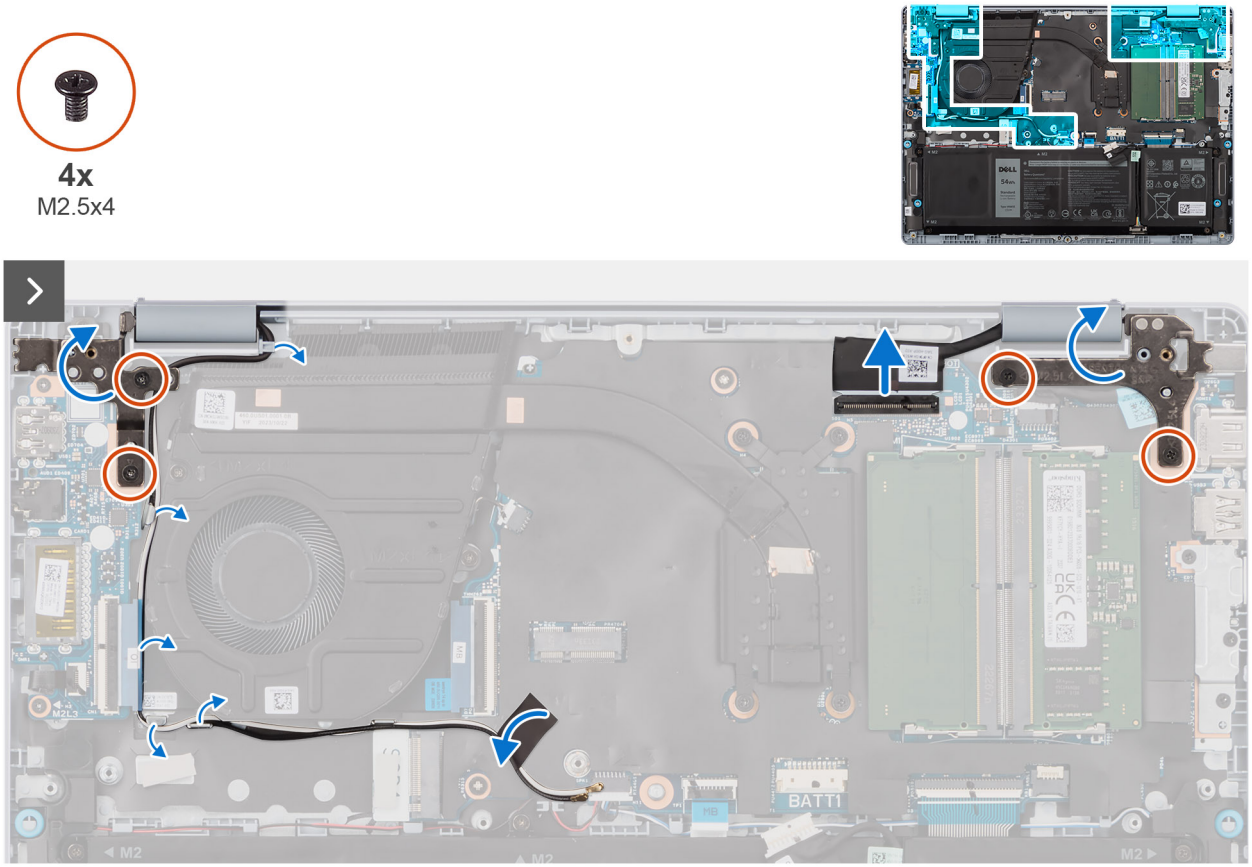


Figure 51. Removing the display assembly

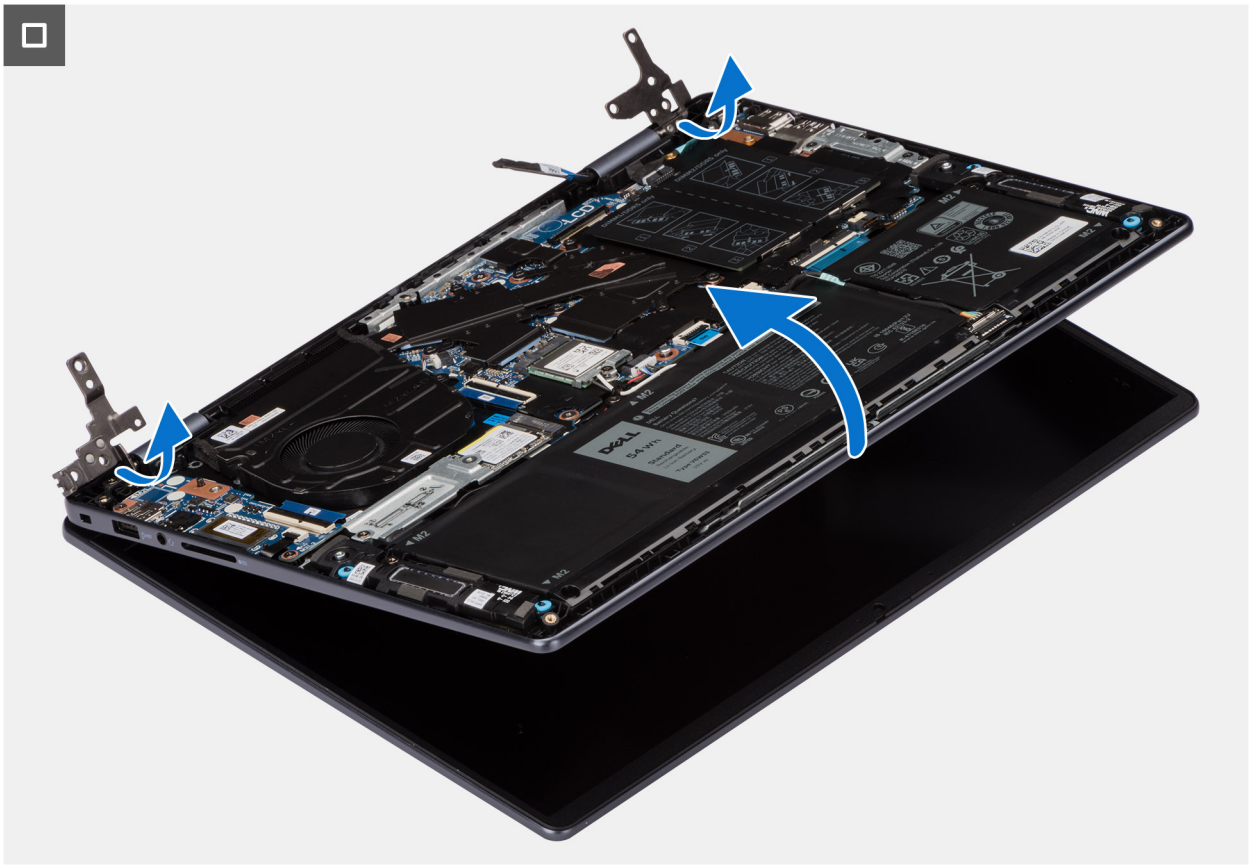


Figure 52. Removing the display assembly

Figure 53. Display assembly (for computers shipped with a plastic chassis)

Figure 54. Display assembly (for computers shipped with an aluminum chassis)

Steps

1. Open the latch and disconnect the display cable from the connector (LCD) on the system board.
2. Remove the two screws (M2.5x4) that secure the right display hinge to the I/O daughter-board and palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with a plastic chassis.

3. Using a plastic scribe, lift the right hinge to an angle of 90 degrees from the palm-rest and keyboard assembly.
4. Remove the two screws (M2.5x4) that secure the left display hinge to the system board and palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with a plastic chassis.

5. Using a plastic scribe, lift the left hinge to an angle of 90 degrees from the palm-rest and keyboard assembly.
6. Remove the two screws (M2.5x4.5) that secure the right display hinge to the I/O daughter-board and palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with an aluminum chassis.

7. Using a plastic scribe, lift the right hinge to an angle of 90 degrees from the palm-rest and keyboard assembly.
8. Remove the two screws (M2.5x4.5) that secure the left display hinge to the system board and palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with an aluminum chassis.

9. Using a plastic scribe, lift the left hinge to an angle of 90 degrees from the palm-rest and keyboard assembly.

10. Peel back the tape that secures the wireless-antenna cables to the system board.

    NOTE: This step applies only to computers shipped with a plastic chassis.

11. Remove the wireless-antenna cables from the routing guides on palm-rest and keyboard assembly.

    NOTE: This step applies only to computers shipped with a plastic chassis.

12. Gently lift the palm-rest and keyboard assembly at an angle and remove the palm-rest and keyboard assembly from the display assembly.

    CAUTION: To avoid damaging the display, do not slide the palm-rest and keyboard assembly over the display assembly.

    NOTE: For computers shipped with an aluminum chassis, the display assembly is a Hinge-Up Design (HUD) and cannot be further disassembled once it has been removed from the computer. If any of the components within the display assembly is faulty, replace the entire display assembly.

Installing the display assembly

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

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

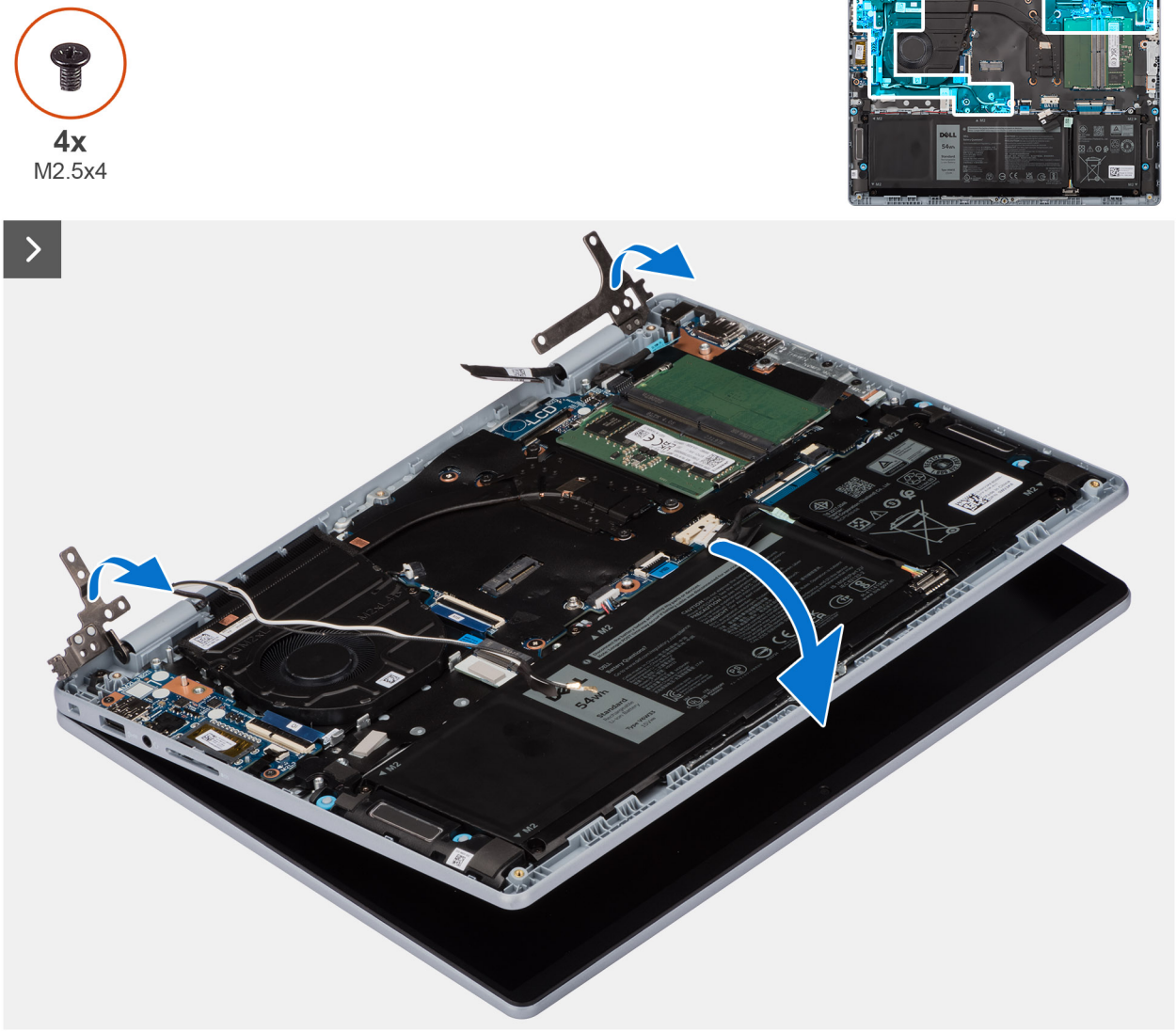


Figure 55. Installing the display assembly

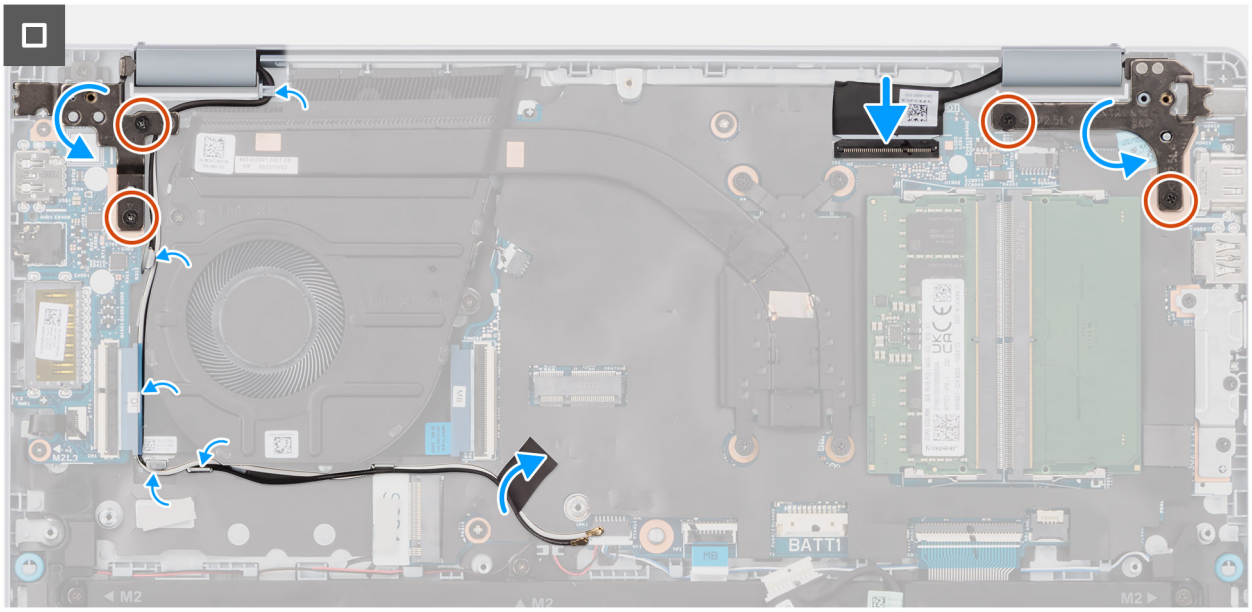


Figure 56. Installing the display assembly

Steps

1. Place the display assembly on a clean and flat surface with the display panel facing up.
2. Hold the palm-rest and keyboard assembly at an angle and slide the palm-rest and keyboard assembly under the display hinges.

   CAUTION: To avoid damaging the display, do not slide the palm-rest and keyboard assembly over the display assembly.

3. Route the wireless-antenna cables through the routing guides on the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with a plastic chassis.

4. Adhere the tape to secure the wireless-antenna cables to the system board.

   NOTE: This step applies only to computers shipped with a plastic chassis.

5. Gently close the left display hinge and align the screw holes on the left display hinge with the screw holes on the I/O daughter-board and the palm-rest and keyboard assembly.
6. Replace the two screws (M2.5x4) to secure the left display hinge to the I/O daughter-board and the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with a plastic chassis.

7. Replace the two screws (M2.5x4.5) to secure the left display hinge to the I/O daughter-board and the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with an aluminum chassis.

8. Gently close the right display hinge and align the screw holes on the right display hinge with the screw holes on the system board and the palm-rest and keyboard assembly.
9. Replace the two screws (M2.5x4) to secure the right display hinge to the system board and the palm-rest and keyboard assembly.

   NOTE: This step applies only to computers shipped with a plastic chassis.

10. Replace the two screws (M2.5x4.5) to secure the right display hinge to the system board and the palm-rest and keyboard assembly.

    NOTE: This step applies only to computers shipped with an aluminum chassis.

11. Connect the display cable to the connector (LCD) on the system board and close the latch.

Next steps

1. Install the wireless card.
2. Install the solid state drive.
3. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
4. Follow the procedure in After working inside your computer.

Display bezel

Removing the display bezel (only for computers shipped with a plastic chassis)

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis).
3. Remove the solid state drive.
4. Remove the wireless card.
5. Remove the display assembly.

About this task

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

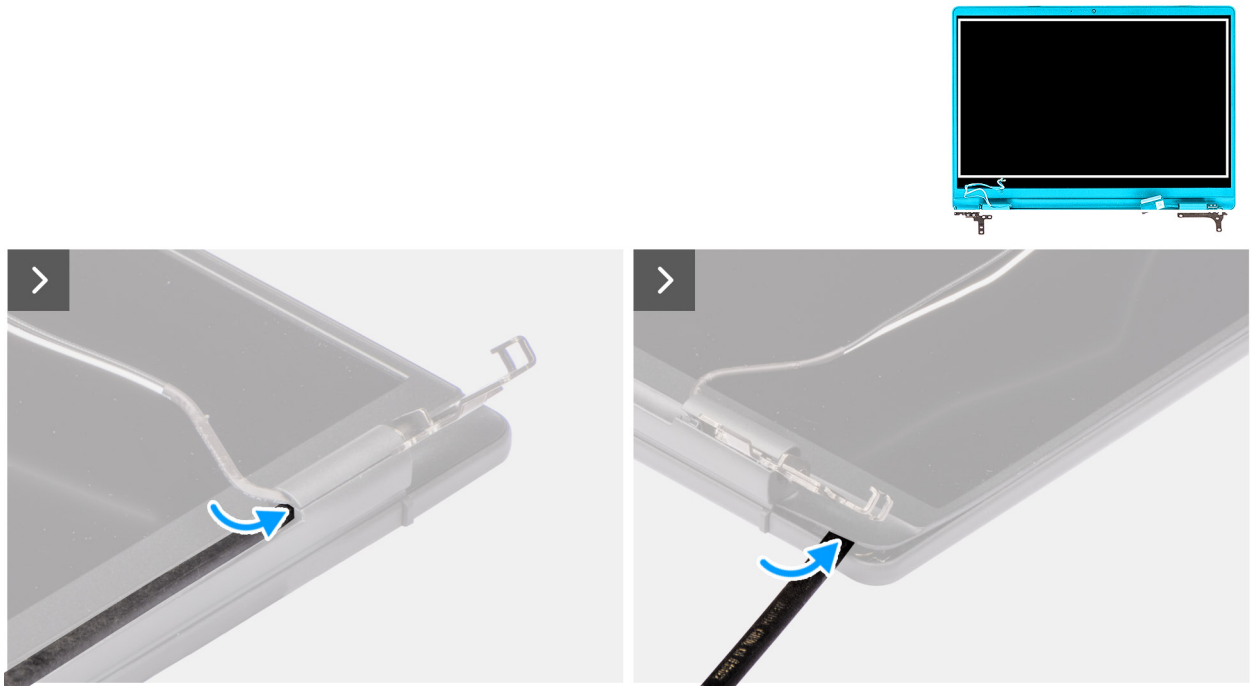


Figure 57. Removing the display bezel

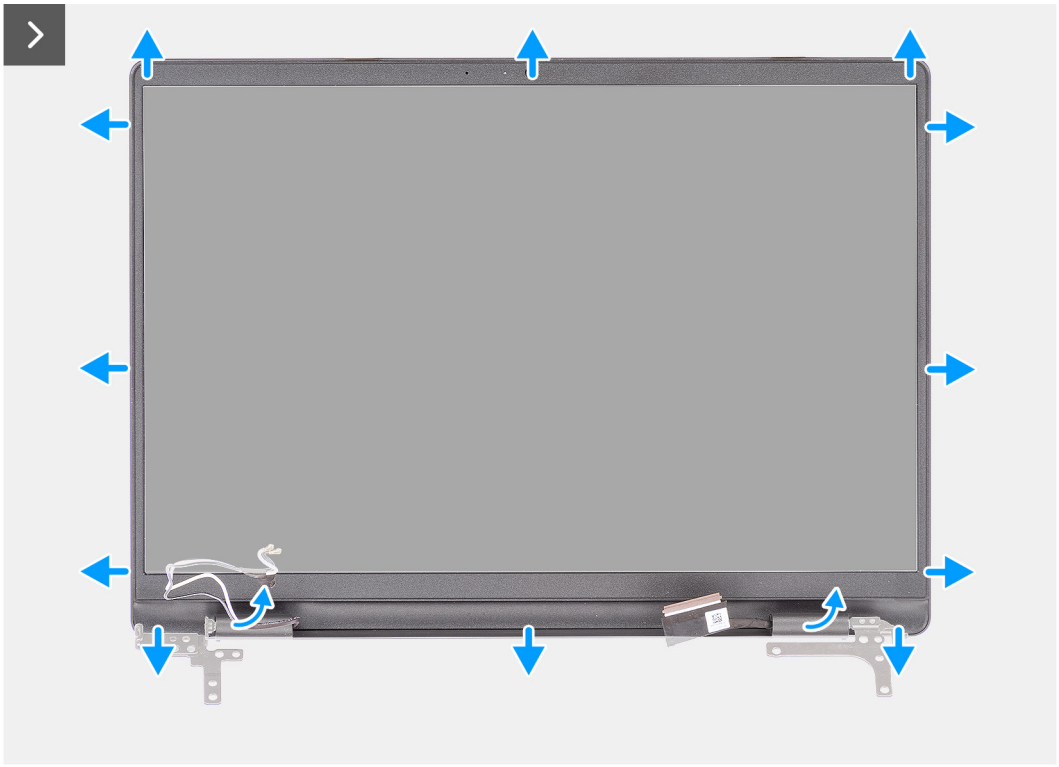


Figure 58. Removing the display bezel

Figure 59. Removing the display bezel

NOTE: The display-hinge caps are a part of the display bezel.

Steps

1. Place the display assembly on a clean, flat surface and gently open the display hinges to at least 90 degrees.

2. Using a plastic scribe, pry open the left display-hinge cap from its right side and pry open the right display-hinge cap from its left side.
3. Carefully pry open the outer edge at the base of the display bezel.
4. Gently pry open the outside edge of the left, right, and top sides of the display bezel.
5. Using your fingers, gently work your way around the display bezel and lift the display bezel off the display assembly.

CAUTION: Do not use a plastic scribe or any other objects to pry up the display bezel in the manner shown below, as the pressure applied on the display panel by the scribe may damage the display panel.

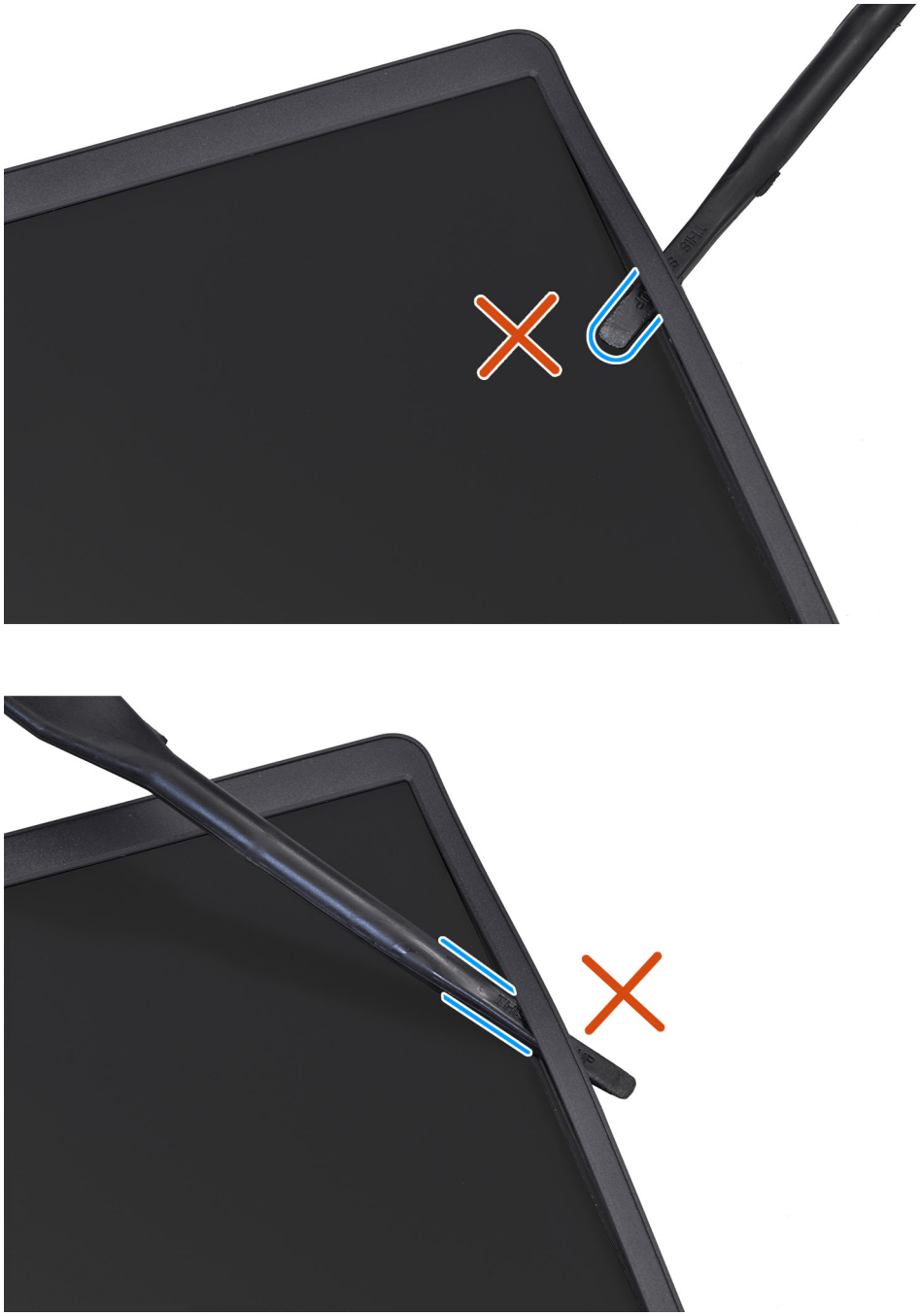


Figure 60. Removing the display bezel

Installing the display bezel (only for computers shipped with a plastic chassis)

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

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

Figure 61. Installing the display bezel

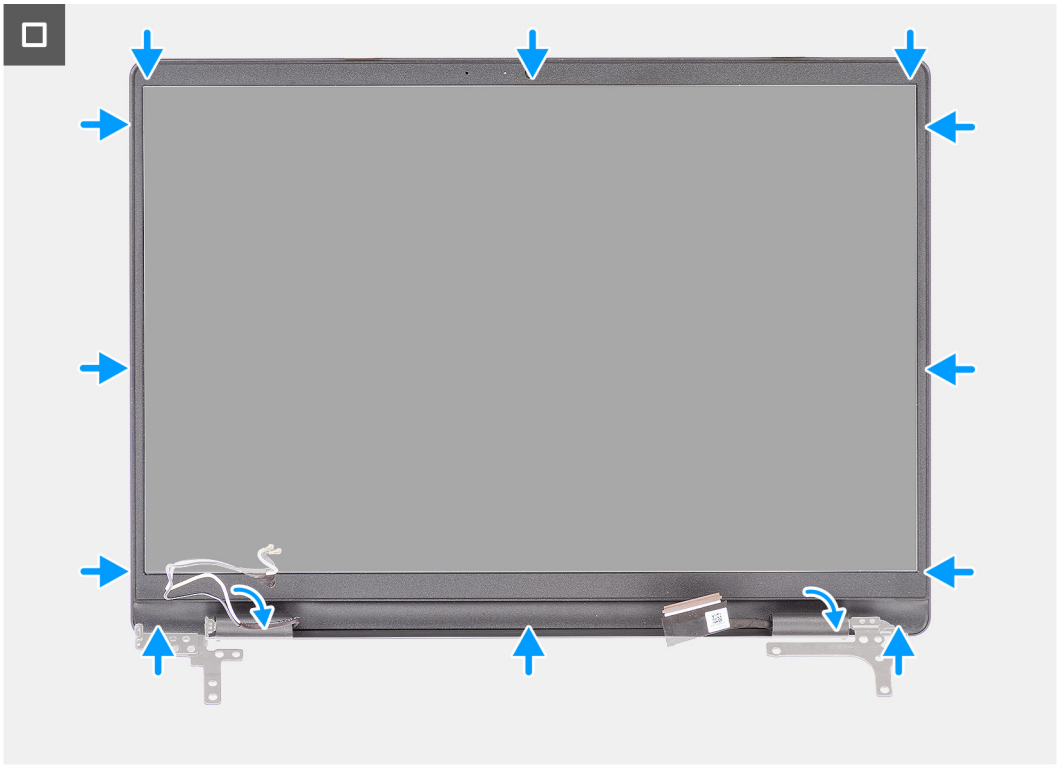


Figure 62. Installing the display bezel

NOTE: The display-hinge caps are a part of 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. Press the display-hinge caps down on the display hinges, until they click in place.
4. 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 wireless card.
3. Install the solid state drive.
4. Install the base cover (plastic chassis).
5. Follow the procedure in After working inside your computer.

Display panel

Removing the display panel (only for computers shipped with a plastic chassis)

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

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

2. Remove the base cover (plastic chassis).
3. Remove the solid state drive.
4. Remove the wireless card.
5. Remove the display assembly.
6. Remove the display bezel.

About this task

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

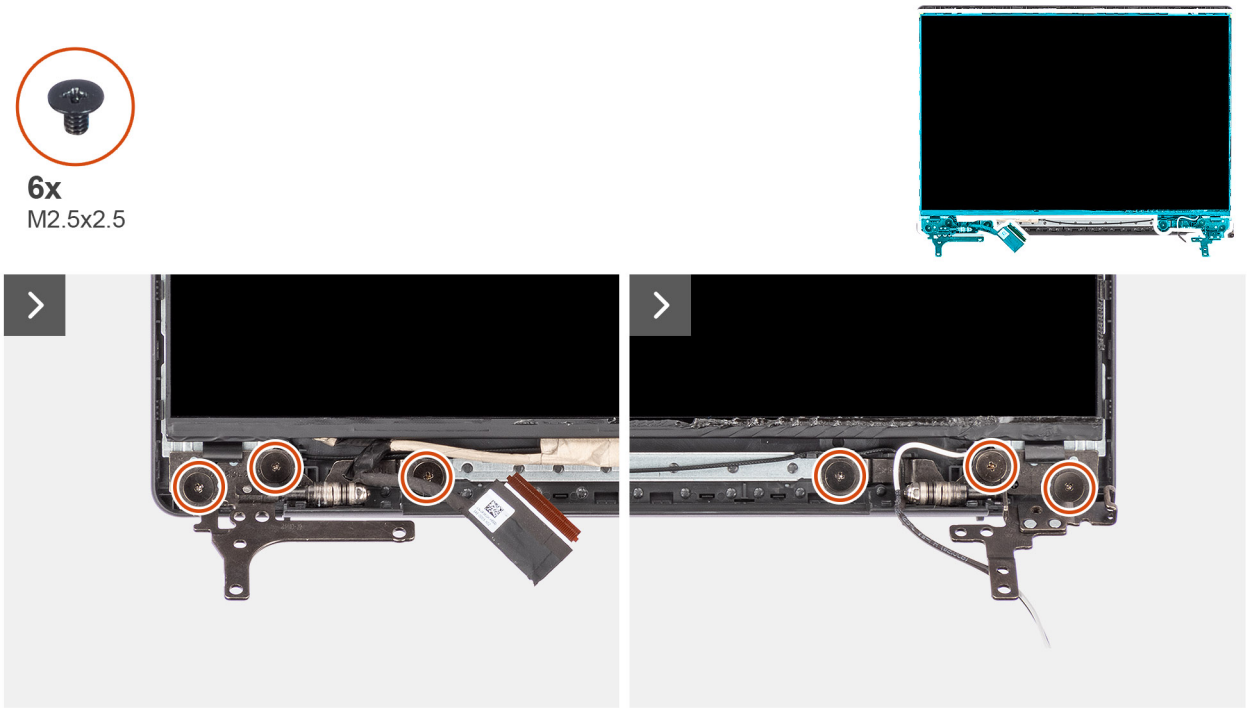


Figure 63. Removing the display panel

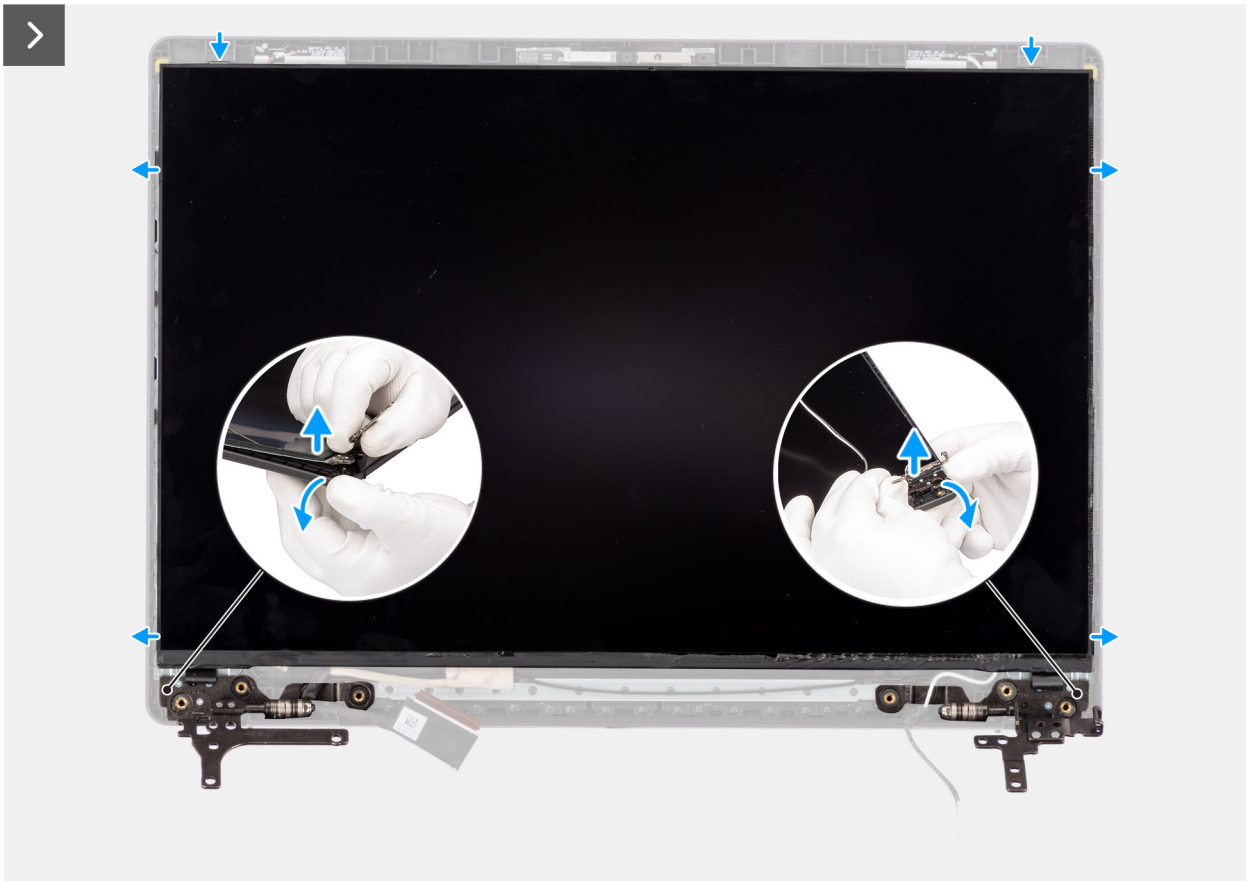


Figure 64. Removing the display panel

Figure 65. Removing the display panel

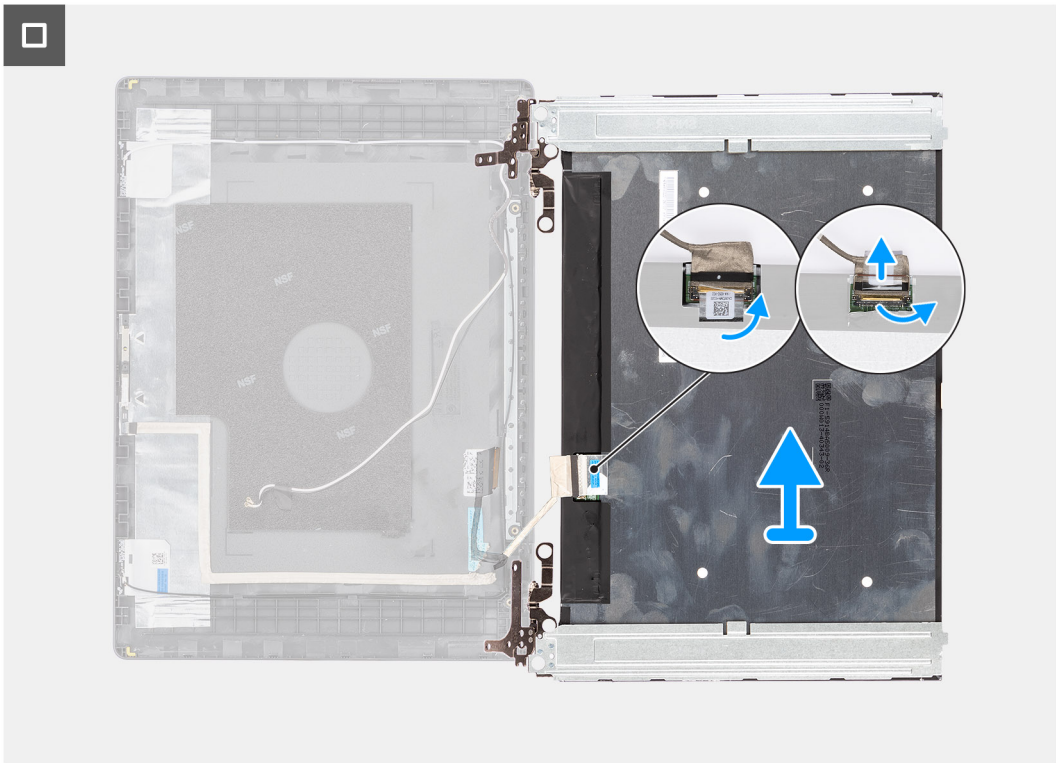


Figure 66. Removing the display panel

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

Steps

1. Remove the six screws (M2.5x2.5) that secure the display hinges to the display back-cover and antenna assembly.
2. Using a plastic scribe, pry the display hinges from the corners to release them from the display back-cover and antenna assembly.
3. Holding the right display hinge, gently bend the bottom corner of the display back-cover and antenna assembly to release the right display hinge.
4. Repeat step 3 to release the left display hinge from the display back-cover and antenna assembly.
5. Holding the display hinges, slide the display panel down to release it from the securing tabs on the top of the display back-cover and antenna assembly.
6. Gently flip the display panel assembly forward and place the display panel assembly, facing down, on a flat surface.

   CAUTION: Ensure that the panel has a clean and smooth surface to rest on, to prevent damage.

7. Peel back the tape that secures the display cable to the connector on the rear of the display panel.
8. Lift the latch and disconnect the display cable from the connector on the display panel and remove the display panel.

   CAUTION: The display panel is assembled with the display brackets and display hinges as a single service part. Do not pull the two pieces of elastic tape and separate the brackets from the panel.

Figure 67. Removing the display panel

Installing the display panel (only for computers shipped with a plastic chassis)

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

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

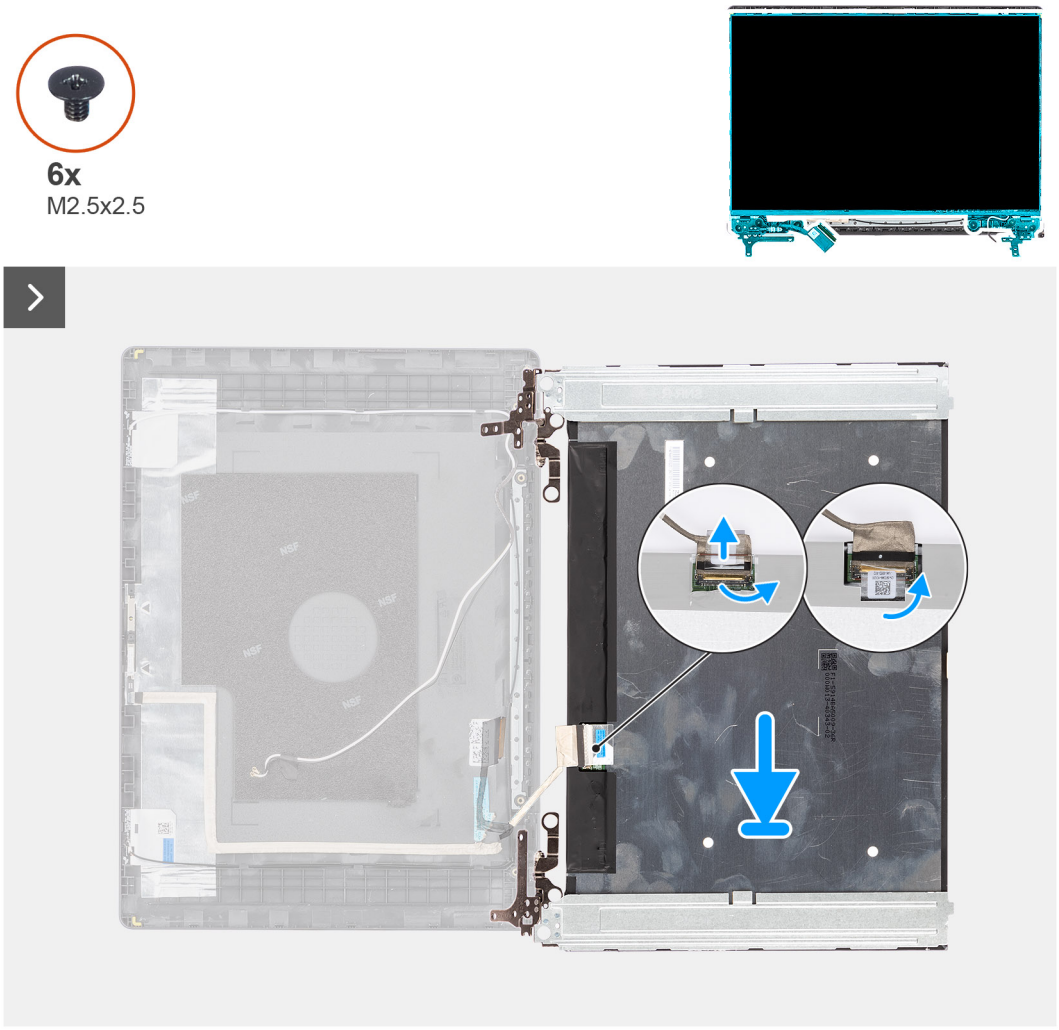


Figure 68. Installing the display panel

Figure 69. Installing the display panel

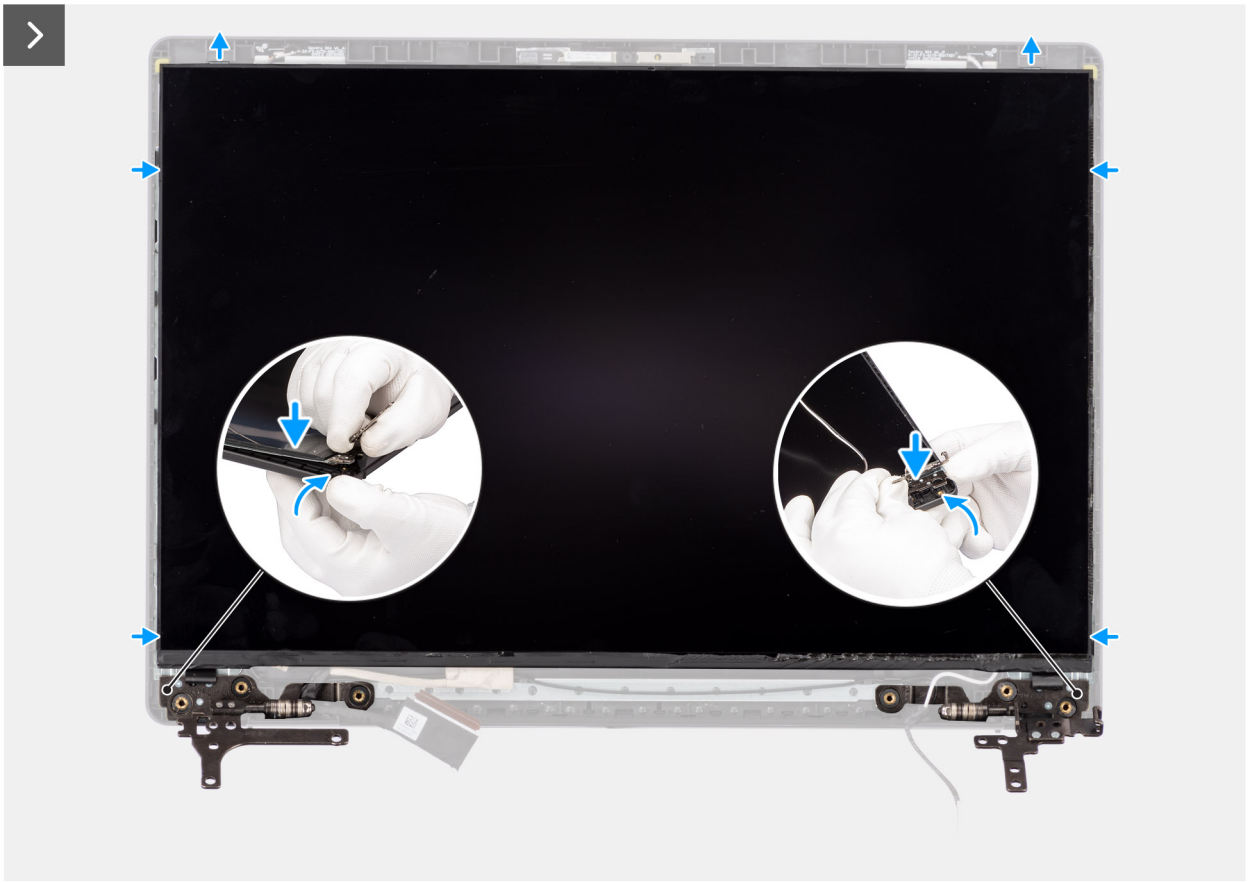


Figure 70. Installing the display panel

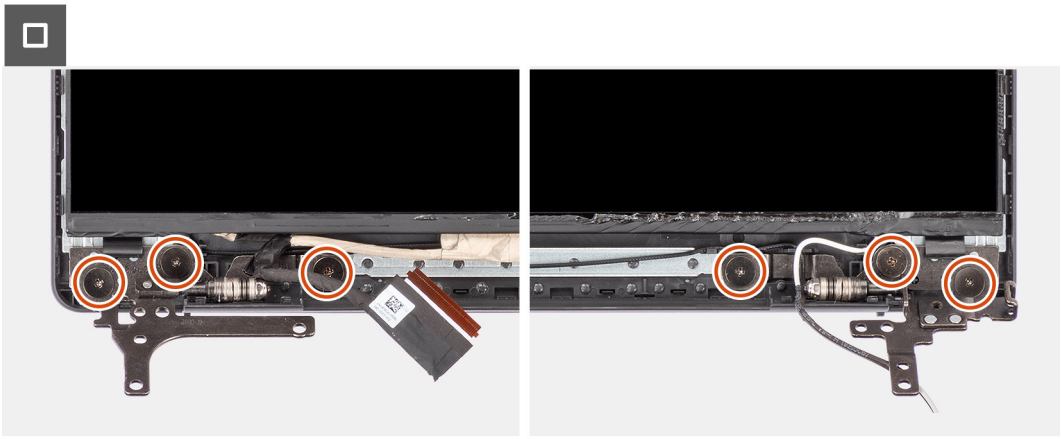


Figure 71. Installing the display panel

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

Steps

1. Place the display panel and display back-cover on a clean and flat surface.

   CAUTION: Ensure that the display panel is facing down and has a clean and smooth surface to rest on, to prevent damage.

2. Connect the display cable to the connector on the display panel and close the latch.
3. Adhere the tape to secure the display cable to the connector on the display panel.
4. Gently turn the display panel over and place the display panel on the display back-cover.
5. Holding the display hinges, lift the display panel and slide the metal-bracket extensions into the slots at the top edge of the display back-cover and antenna assembly.
6. Gently bend the bottom corner of the display back-cover and antenna assembly and push down on the right display hinges until it is secured in place on the display back-cover and antenna assembly.
7. Repeat step 6 to secure the left display hinge in place on the display back-cover and antenna assembly.
8. Replace the six screws (M2.5x2.5) to secure the display hinges to the display back-cover and antenna assembly.

Next steps

1. Install the display bezel.
2. Install the display assembly.
3. Install the wireless card.
4. Install the solid state drive.
5. Install the base cover (plastic chassis).
6. Follow the procedure in After working inside your computer.

Display cable

Removing the display cable (only for computers shipped with a plastic chassis)

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis).

3. Remove the solid state drive.
4. Remove the wireless card.
5. Remove the display assembly.
6. Remove the display bezel.
7. 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.

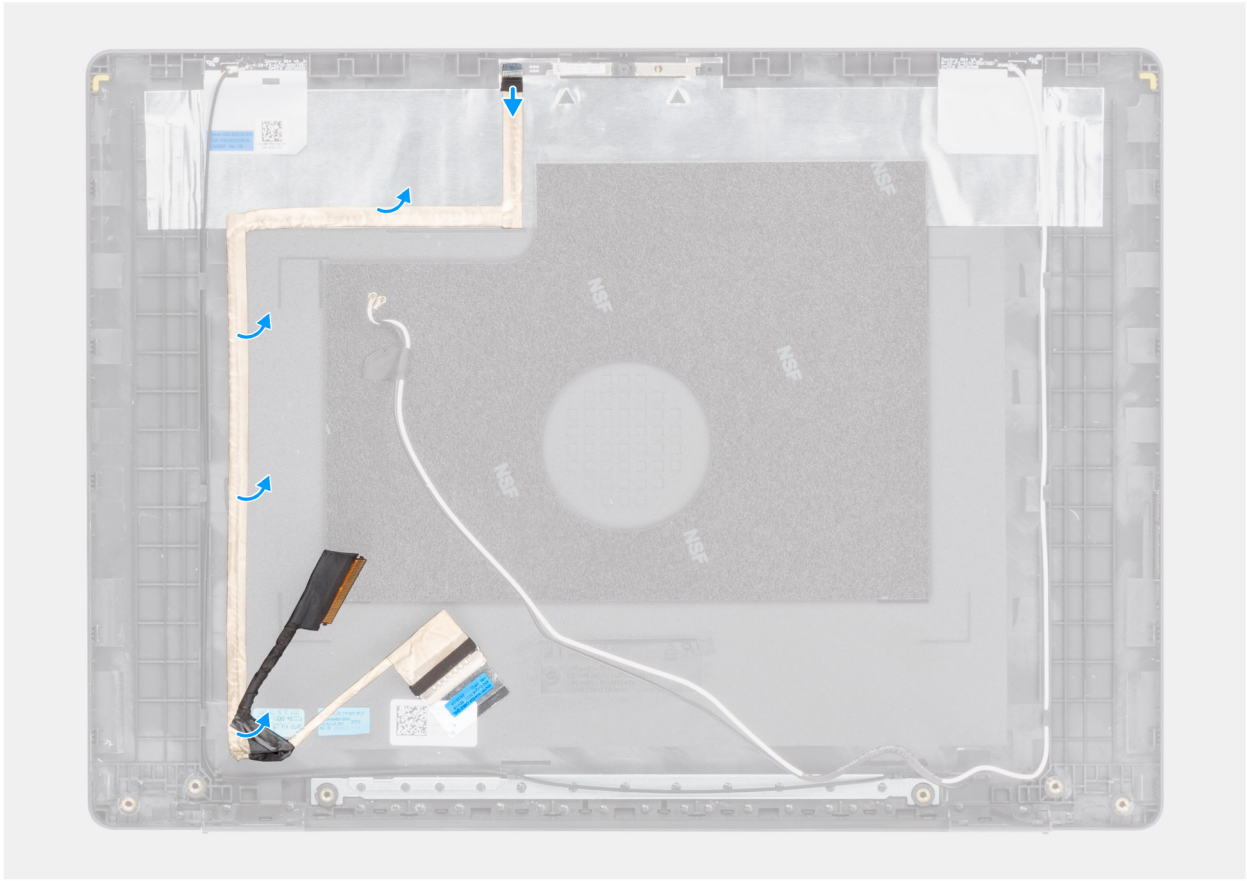


Figure 72. Removing the display cable

Steps

1. Disconnect the display eDP cable from the connector on the camera module.
2. Carefully peel back and remove the display eDP cable from the display back-cover and antenna assembly.

Installing the display cable (only for computers shipped with a plastic chassis)

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

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

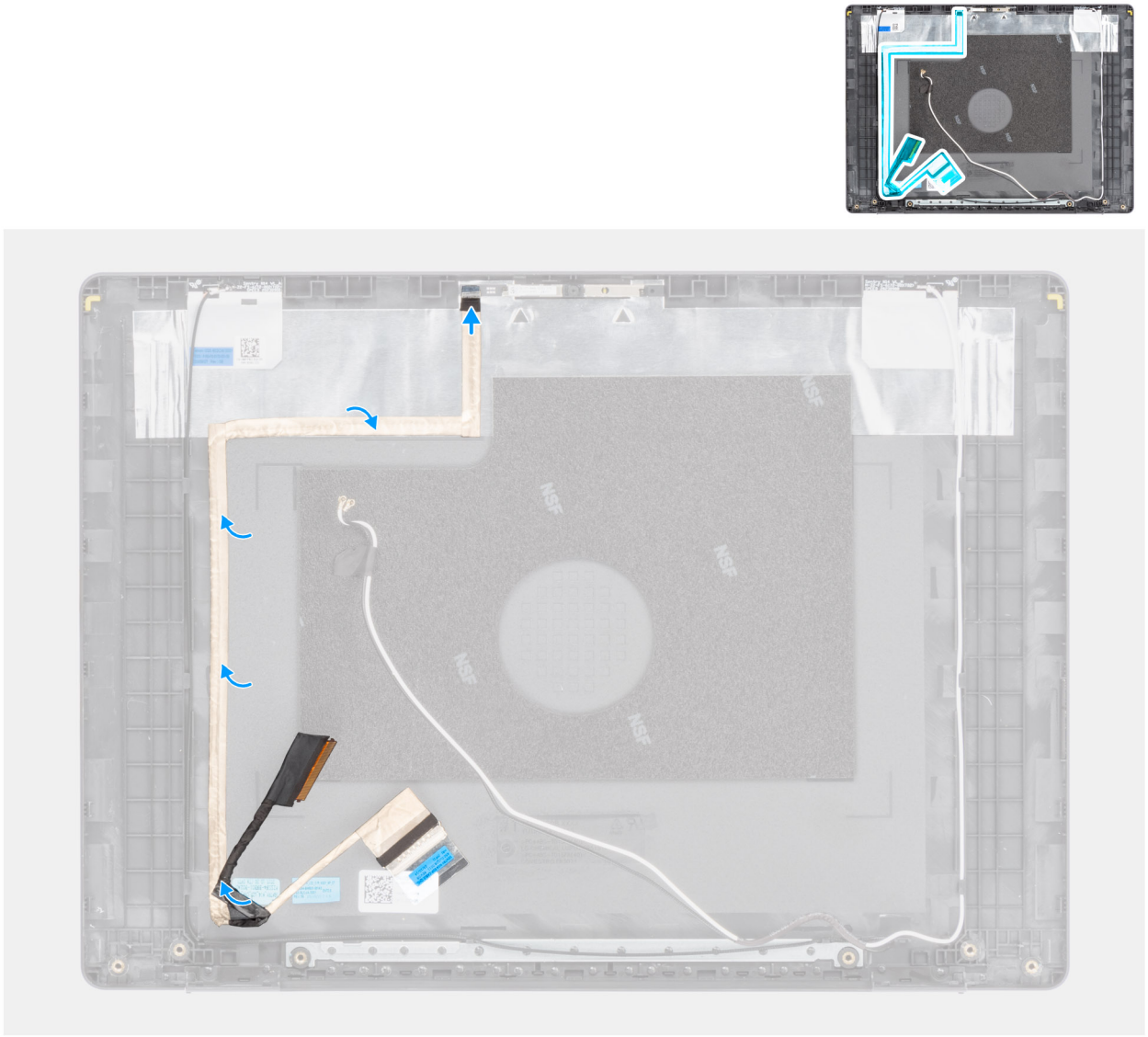


Figure 73. Installing the display cable

Steps

1. Adhere the display eDP cable to the display back-cover and antenna assembly.
2. Connect the display eDP cable to the connector on the camera module.

Next steps

1. Install the display panel.
2. Install the display bezel.
3. Install the display assembly.
4. Install the wireless card.
5. Install the solid state drive.
6. Install the base cover (plastic chassis).
7. Follow the procedure in After working inside your computer.

Camera

Removing the camera (only for computers shipped with a plastic chassis)

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis).
3. Remove the solid state drive.
4. Remove the wireless card.
5. Remove the display assembly.
6. Remove the display bezel.
7. Remove the display panel.

About this task

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

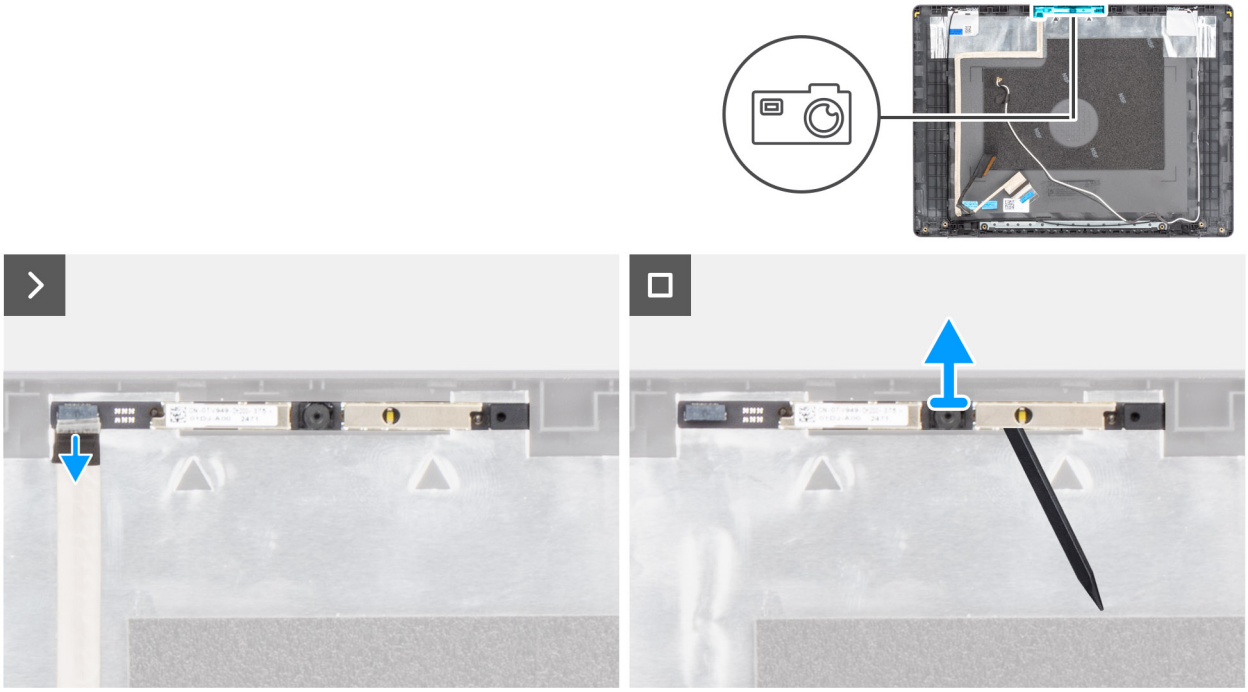


Figure 74. Removing the camera

Steps

1. Disconnect the display eDP cable from the connector on the camera module.
2. Using a plastic scribe, gently pry the camera off the display back-cover and antenna assembly.
3. Remove the camera module from the display assembly.

Installing the camera (only for computers shipped with a plastic chassis)

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

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

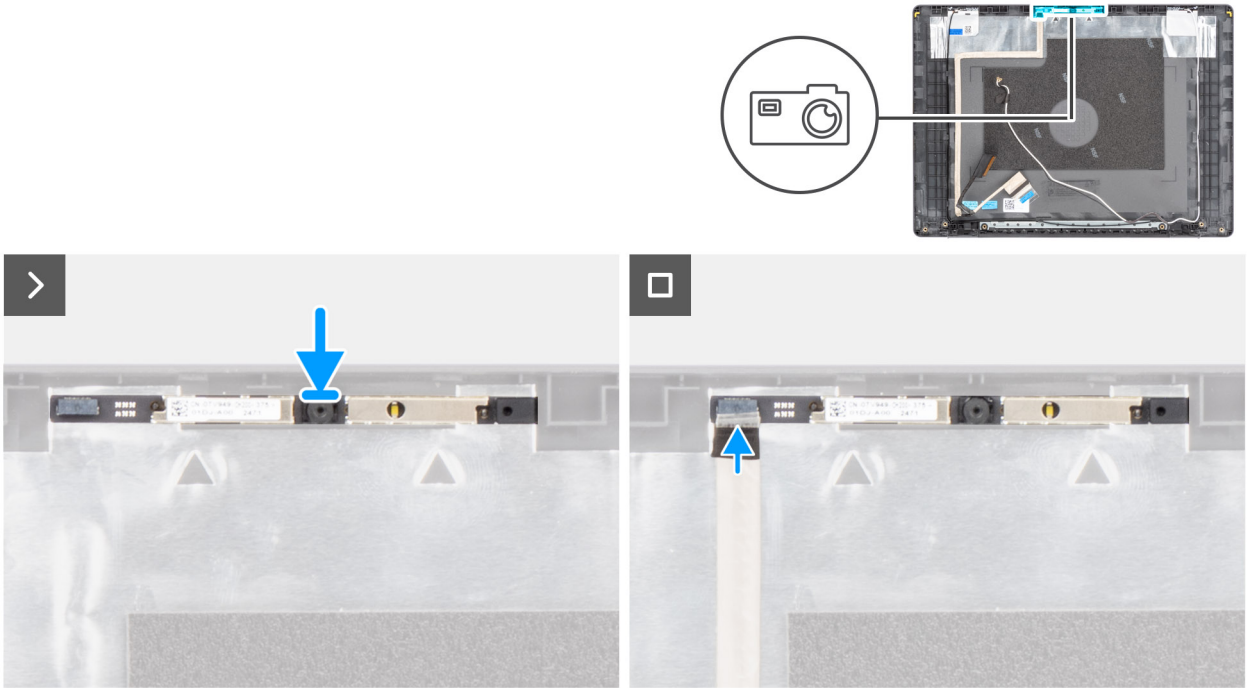


Figure 75. Installing the camera

Steps

1. Using the alignment post, adhere the camera module on the display back-cover and antenna assembly.
2. Connect the display eDP cable to the connector on the camera module.

Next steps

1. Install the display panel.
2. Install the display bezel.
3. Install the display assembly.
4. Install the wireless card.
5. Install the solid state drive.
6. Install the base cover (plastic chassis).
7. Follow the procedure in After working inside your computer.

Display back-cover and antenna assembly

Removing the display back-cover and antenna assembly (only for computers shipped with a plastic chassis)

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis).
3. Remove the solid state drive.
4. Remove the wireless card.
5. Remove the display assembly.
6. Remove the display bezel.
7. Remove the display panel.
8. Remove the display cable.
9. Remove the camera.

About this task

NOTE: The display back-cover and antenna assembly cannot be further disassembled once all the **`Prerequisites`** are completed. If the wireless antennas are malfunctioning and are required to be replaced, replace the entire display back-cover and antenna assembly.

The image below shows the display back-cover and antenna assembly after the **`Prerequisites`** have been performed.

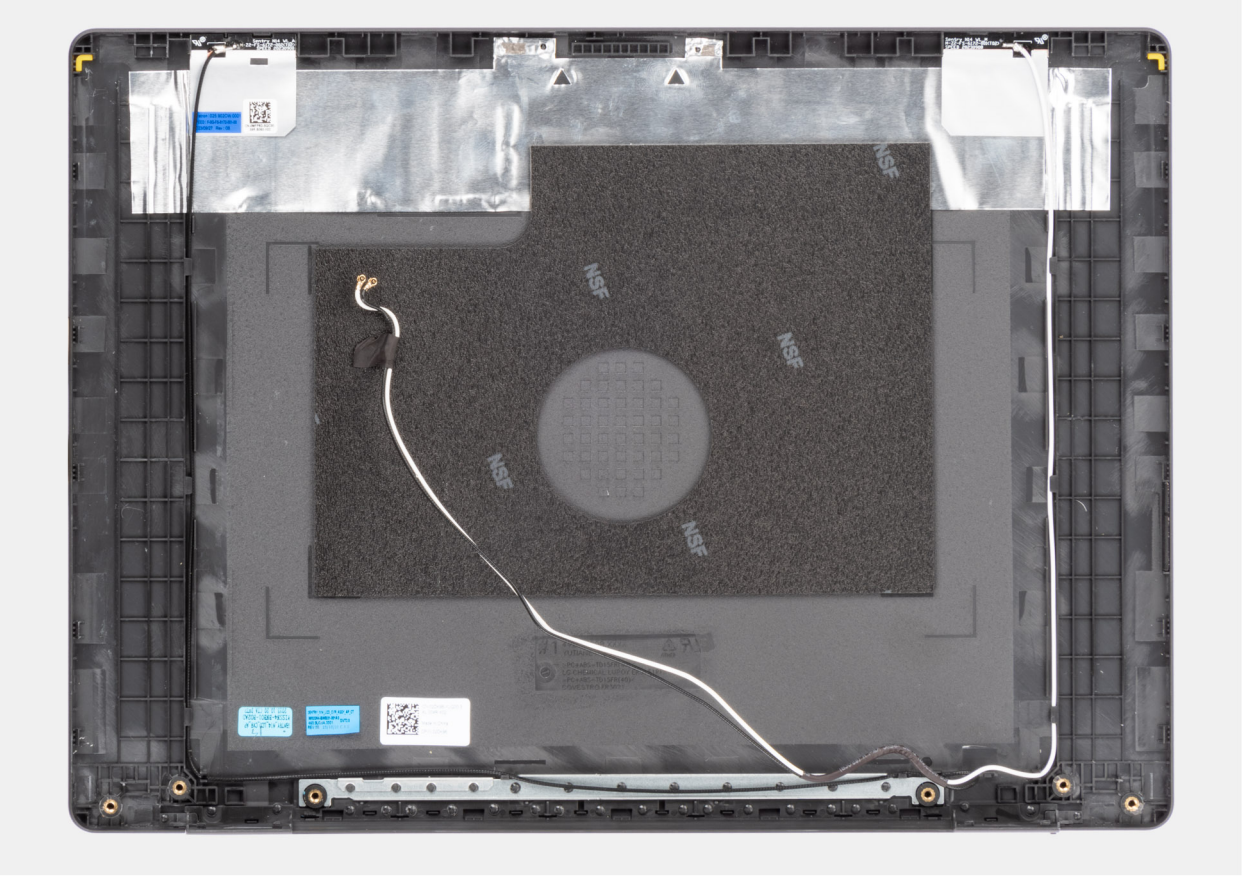


Figure 76. Display back-cover and antenna assembly

Steps

After performing the **Prerequisites**, you are left with the display back-cover and antenna assembly.

Installing the display back-cover and antenna assembly (only for computers shipped with a plastic chassis)

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

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

Figure 77. Display back-cover and antenna assembly

Steps

Place the display back-cover and antenna assembly on a flat surface and perform the **Next steps** to install the display back-cover and antenna assembly.

Next steps

1. Install the camera.
2. Install the display cable.
3. Install the display panel.
4. Install the display bezel.

5. Install the display assembly.
6. Install the wireless card.
7. Install the solid state drive.
8. Install the base cover (plastic chassis).
9. Follow the procedure in After working inside your computer.

System board

Removing the system board (for computers shipped with a plastic chassis)

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis).
3. Remove the memory module.
4. Remove the solid state drive.
5. Remove the wireless card.
6. Remove the fan.
7. Remove the 3-cell battery or the 4-cell battery, whichever is applicable.
8. Remove the heat sink.

NOTE: The system board can be removed and installed along with the heat sink, when replacing the palm-rest and keyboard assembly. This simplifies the removal and installation procedure and prevents damage to the thermal bond between the system board and heat sink.

About this task

The following image indicates the connectors on your system board.

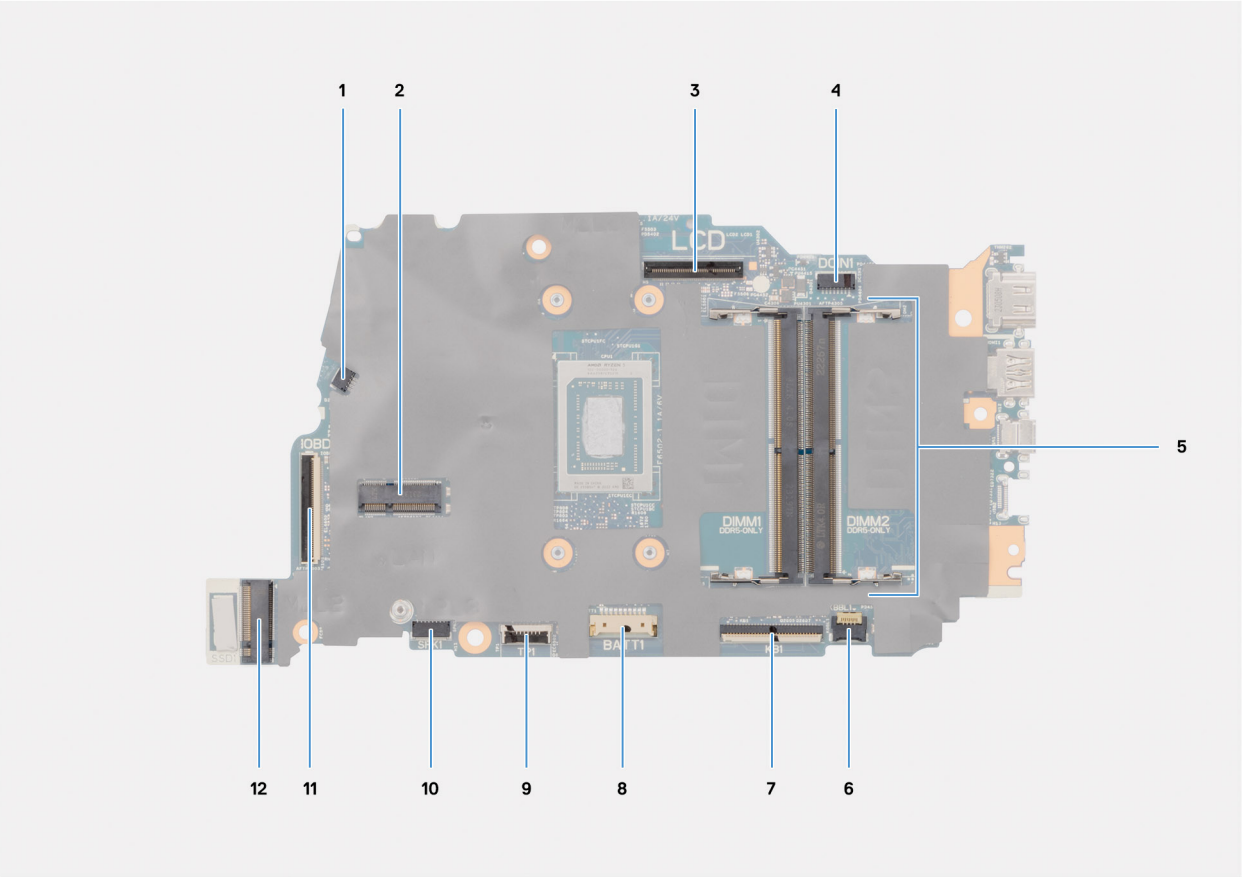


Figure 78. System board connectors

1. Fan cable connector (FAN1)
2. Wireless card connector (WLAN1)
3. eDP cable connector (LCD)
4. Power-adapter port connector (DCIN1)
5. Memory module connector (DIMM1 and DIMM2)
6. Keyboard-backlight cable connector (KBBL1)
7. Keyboard cable connector (KB1)
8. Battery connector (BATT1)
9. Touchpad cable connector (TP1)
10. Speaker cable connector (SPK1)
11. I/O-board cable connector (IOBD1)
12. Solid state drive connector (SSD1)

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

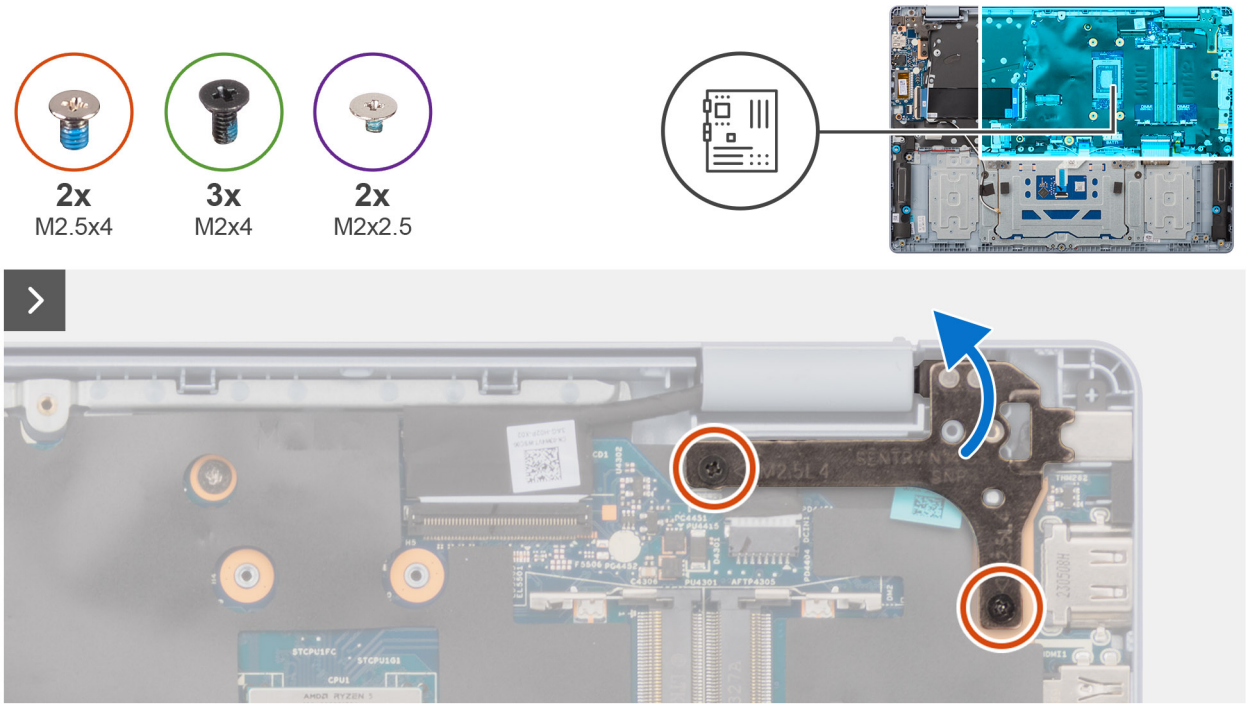


Figure 79. Removing the system board (for computers shipped with a plastic chassis)

Steps

1. Remove the two screws (M2.5x4) that secure the right display hinge to the system board and the palm-rest and keyboard assembly.
2. Using a plastic scribe, lift the right display hinge to an angle of 90 degrees from the palm-rest and keyboard assembly.
3. Disconnect the following cables from the system board:
   a. I/O-board cable (IOBD1)
   b. eDP cable (LCD)
   c. Power-adapter port cable (DCIN1)
   d. Keyboard-backlight cable (KBBL1)

      NOTE: This step applies only to computers that are shipped with a keyboard backlight installed.

   e. Keyboard cable (KB1)
   f. Touchpad cable (TP1)
   g. Speaker cable (SPK1)

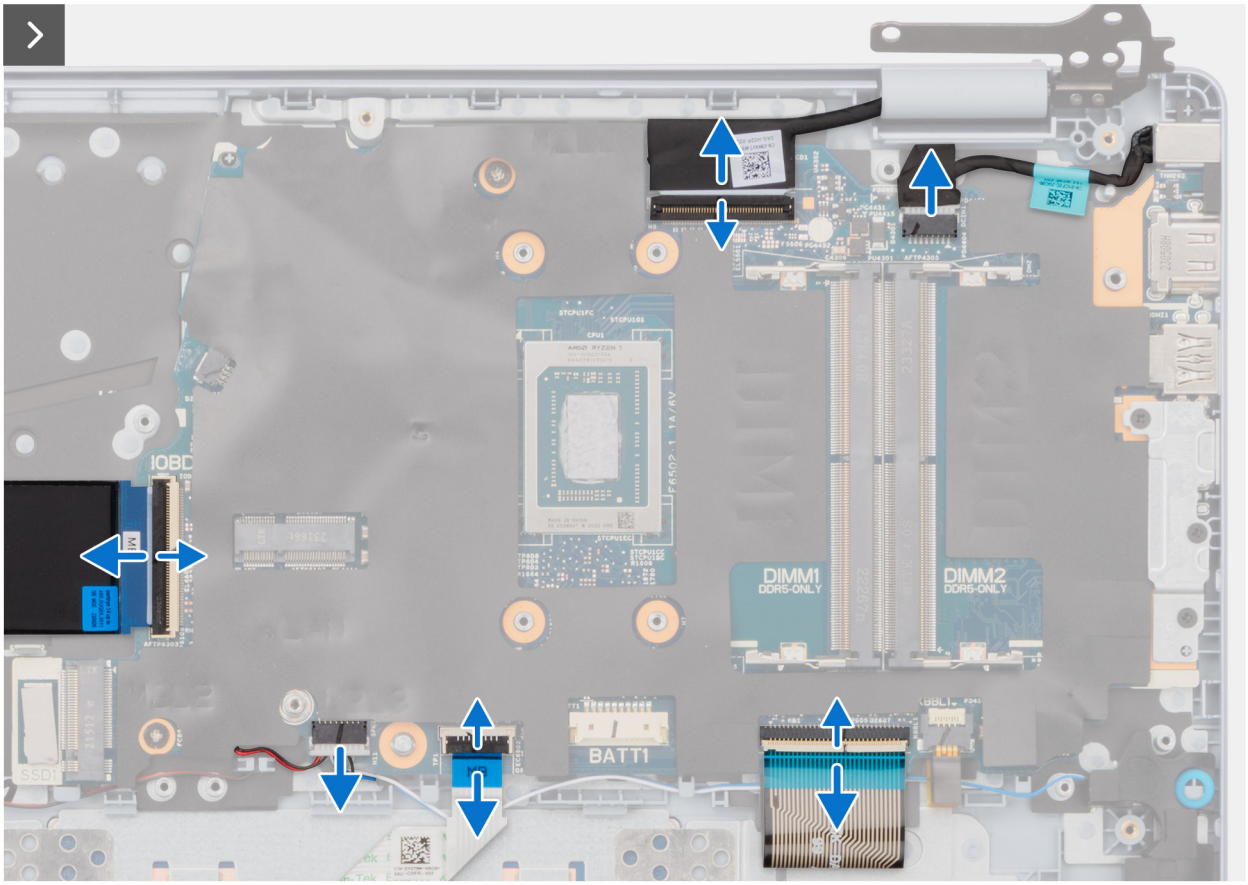


Figure 80. Removing the system board (for computers shipped with a plastic chassis)

4. Remove the three screws (M2x4) that secure the USB Type-C port bracket to the system board. Then, remove the two screws (M2x2.5) that secure the system board to the palm-rest and keyboard assembly.

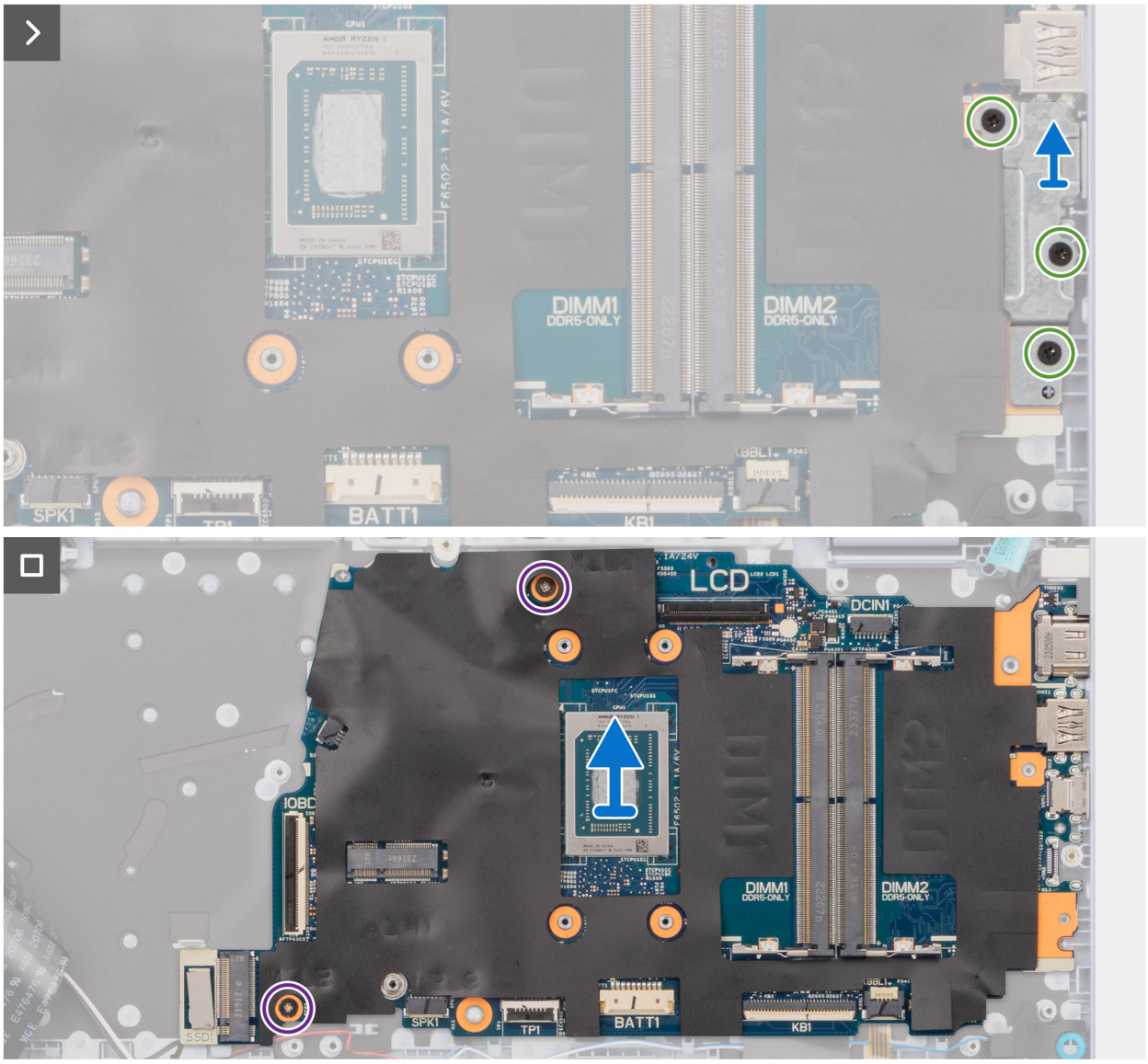


Figure 81. Removing the system board (for computers shipped with a plastic chassis)

5. Lift and remove the USB Type-C port bracket from the system board.
6. Carefully lift and remove the system board at angle, from the palm-rest and keyboard assembly, to clear the ports from the port slots.

Installing the system board (for computers shipped with a plastic chassis)

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

The following image indicates the connectors on your system board.

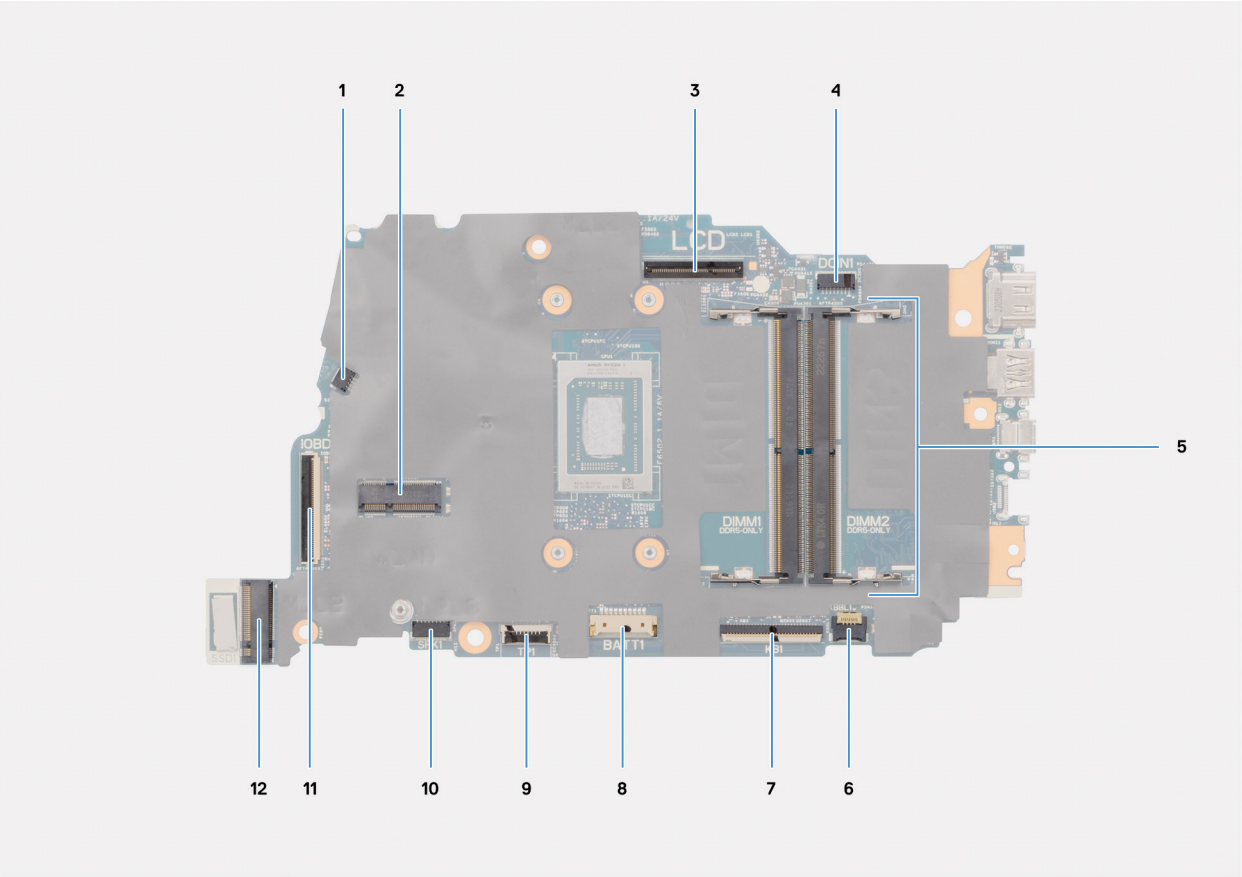


Figure 82. System board connectors

1. Fan cable connector (FAN1)
2. Wireless card connector (WLAN1)
3. eDP cable connector (LCD)
4. Power-adapter port connector (DCIN1)
5. Memory module connector (DIMM1 and DIMM2)
6. Keyboard-backlight cable connector (KBBL1)
7. Keyboard cable connector (KB1)
8. Battery connector (BATT1)
9. Touchpad cable connector (TP1)
10. Speaker cable connector (SPK1)
11. I/O-board cable connector (IOBD1)
12. Solid state drive connector (SSD1)

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

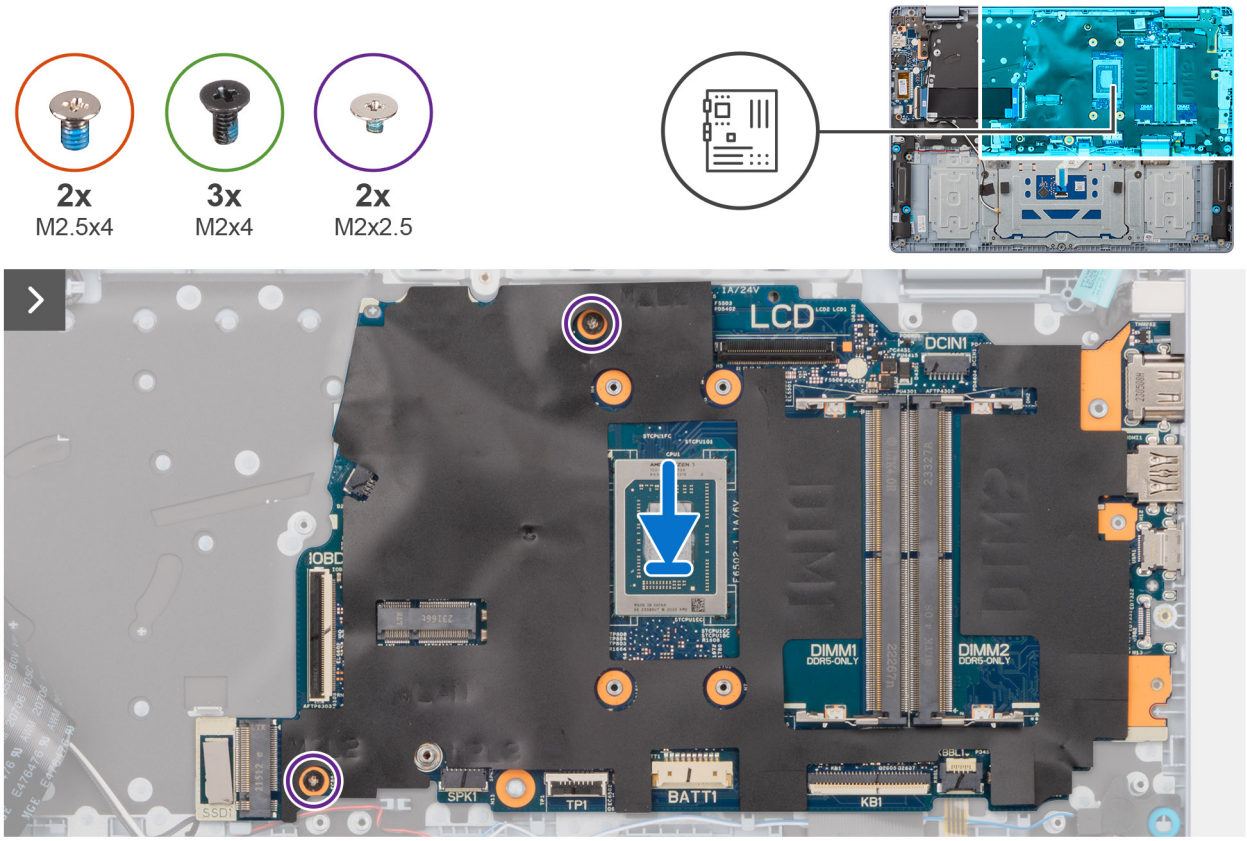


Figure 83. Installing the system board (for computers shipped with a plastic chassis)

Steps

1. Align the ports on the system board with the port slots and place the system board on the palm-rest and keyboard assembly.
2. Align the screw holes on the system board with the screw holes on the palm-rest and keyboard assembly.
3. Replace the two screws (M2x2.5) to secure the system board to the palm-rest and keyboard assembly.
4. Place the USB Type-C port bracket in the slot on the system board.
5. Align the screw holes on the USB Type-C port bracket with the screw holes on the system board.
6. Replace the three screws (M2x4) to secure the USB Type-C port bracket to the system board.

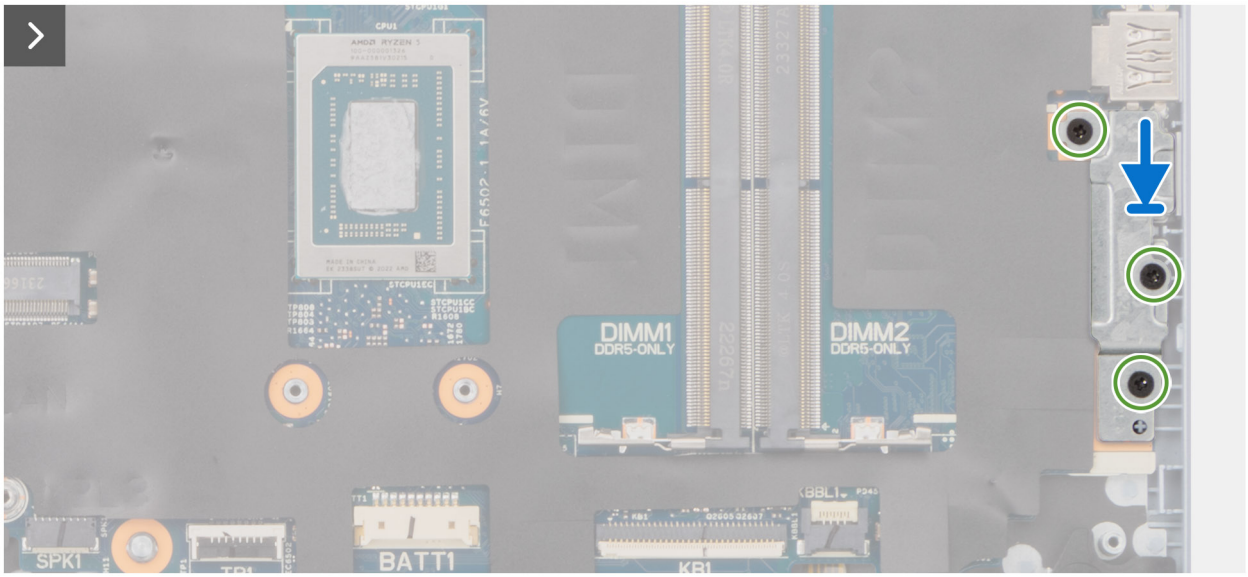


Figure 84. Installing the system board (for computers shipped with a plastic chassis)

7. Connect the following cables to the connectors on the system board:
   a. I/O-board cable (IOBD1)
   b. eDP cable (LCD)
   c. Power-adapter port cable (DCIN1)
   d. Keyboard-backlight cable (KBBL1)

      NOTE: This step applies only to computers that are shipped with a keyboard backlight installed.

   e. Keyboard cable (KB1)
   f. Touchpad cable (TP1)
   g. Speaker cable (SPK1)

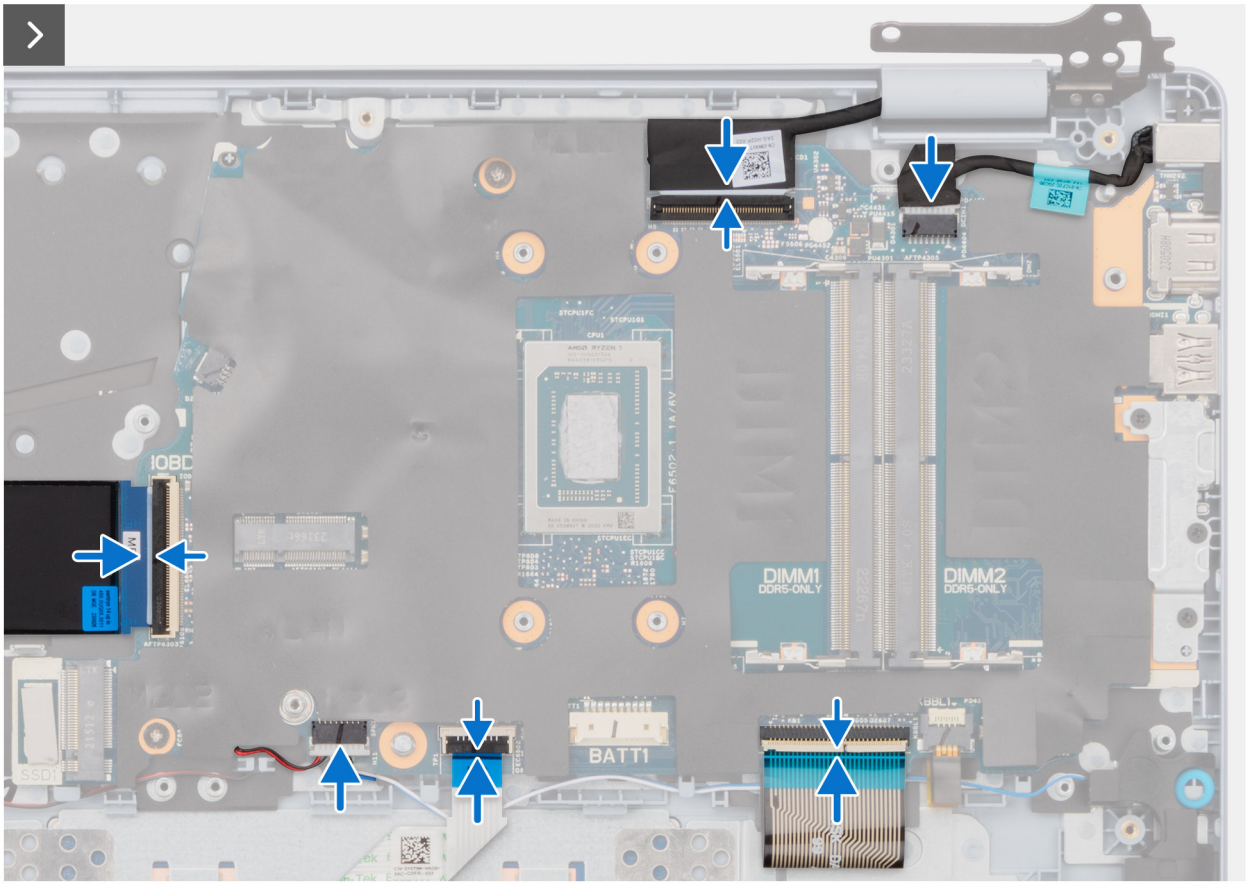


Figure 85. Installing the system board (for computers shipped with a plastic chassis

8. Close the right display hinge to align the screw holes on the right display hinge with the screw holes on the system board and the palm-rest and keyboard assembly.
9. Replace the two screws (M2.5x4) to secure the right display hinge to the system board and the palm-rest and keyboard assembly.

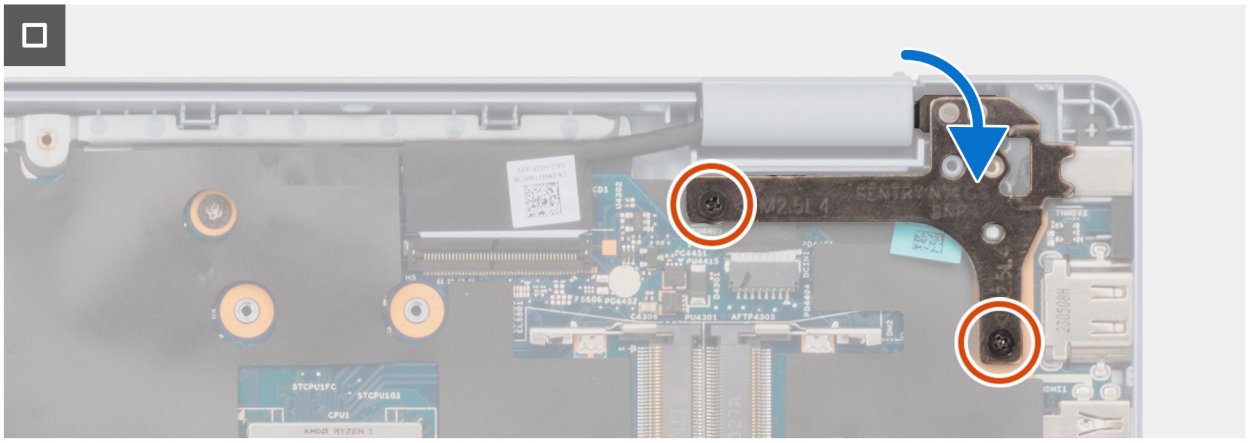


Figure 86. Installing the system board

Next steps

1. Install the heat sink.
2. Install the 3-cell battery or the 4-cell battery, whichever is applicable.
3. Install the fan.
4. Install the wireless card.

5. Install the solid state drive.
6. Install the memory module.
7. Install the base cover (plastic chassis).
8. Follow the procedure in After working inside your computer.

Removing the system board (for computers shipped with an aluminum chassis)

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (aluminum chassis).
3. Remove the memory module.
4. Remove the solid state drive.
5. Remove the wireless card.
6. Remove the fan.
7. Remove the 3-cell battery or the 4-cell battery, whichever is applicable.
8. Remove the heat sink.

NOTE: The system board can be removed and installed along with the heat sink, when replacing the palm-rest and keyboard assembly. This simplifies the removal and installation procedure and prevents damage to the thermal bond between the system board and heat sink.

About this task

The following image indicates the connectors on your system board.

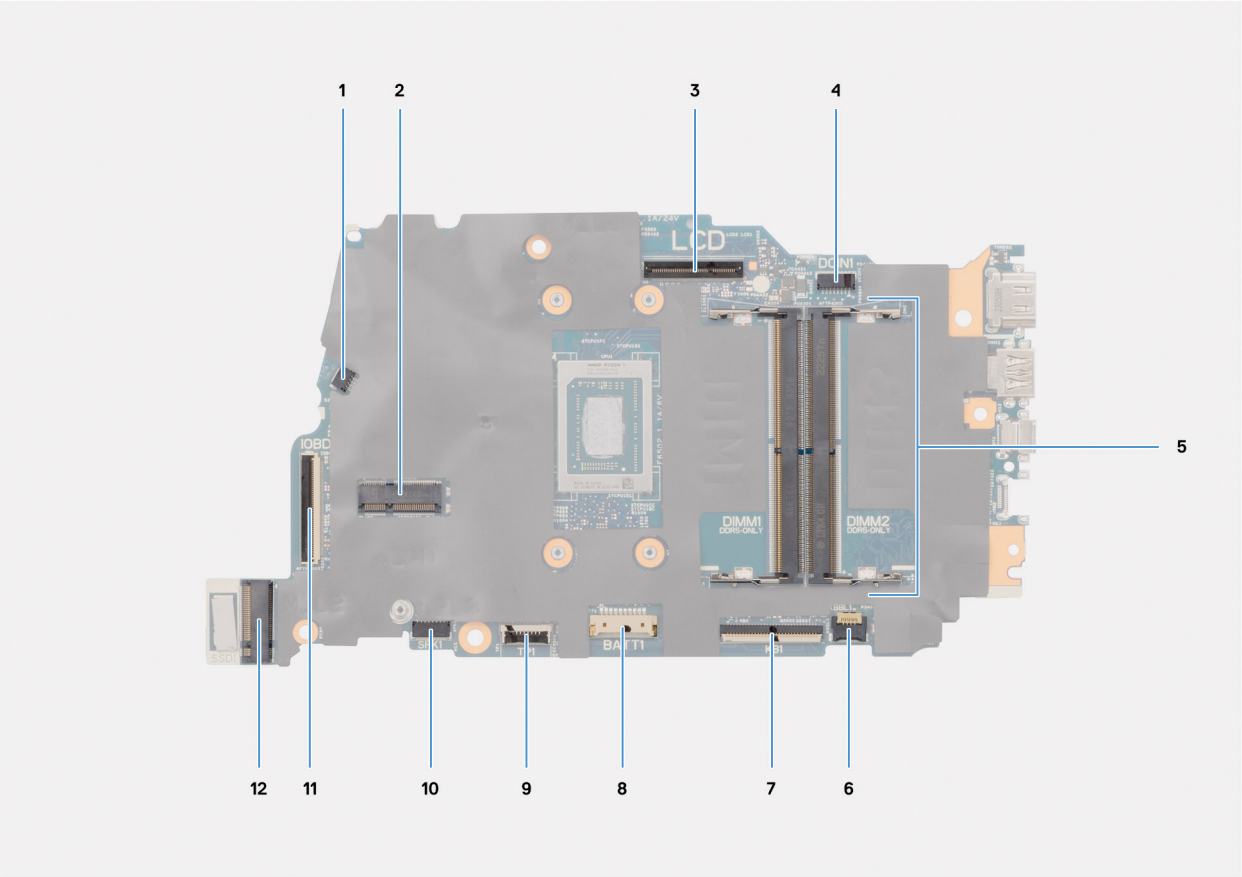


Figure 87. System board connectors

1. Fan cable connector (FAN1)
2. Wireless card connector (WLAN1)
3. eDP cable connector (LCD)
4. Power-adapter port connector (DCIN1)
5. Memory module connector (DIMM1 and DIMM2)
6. Keyboard-backlight cable connector (KBBL1)
7. Keyboard cable connector (KB1)
8. Battery connector (BATT1)
9. Touchpad cable connector (TP1)
10. Speaker cable connector (SPK1)
11. I/O-board cable connector (IOBD1)
12. Solid state drive connector (SSD1)

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

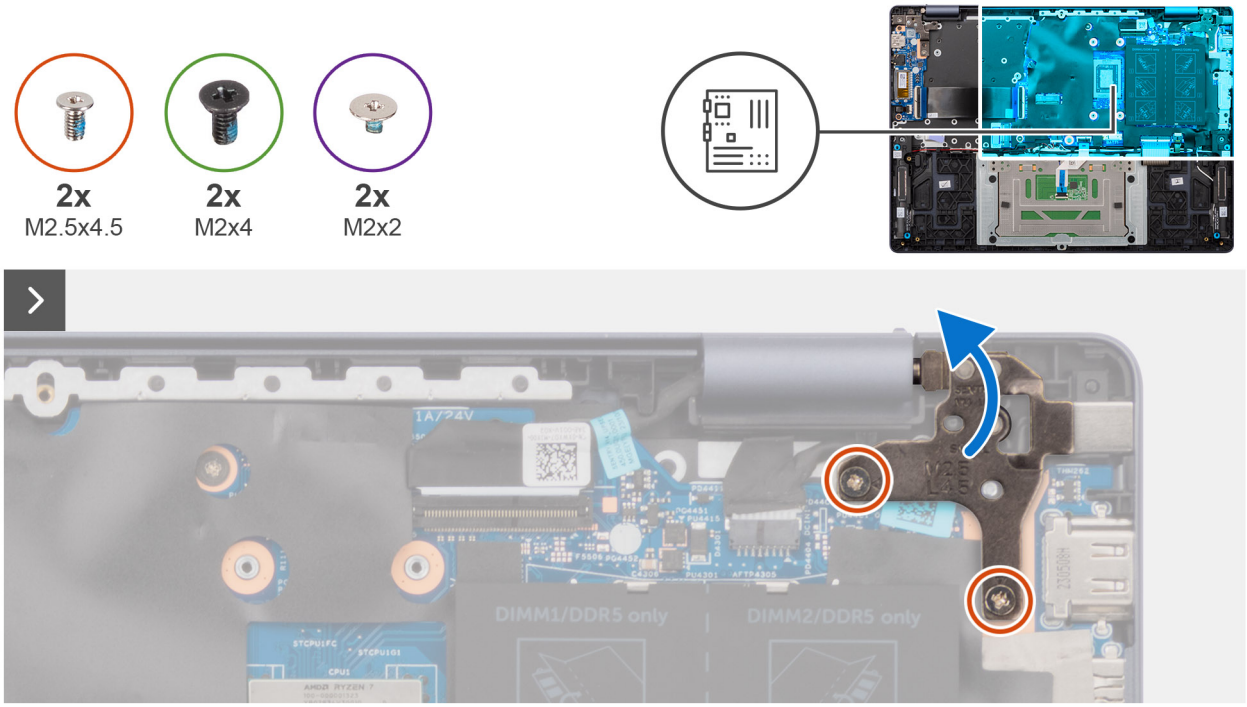


Figure 88. Removing the system board (for computers shipped with an aluminum chassis)

Steps

1. Remove the two screws (M2.5x4.5) that secure the right display hinge to the system board and the palm-rest and keyboard assembly.
2. Using a plastic scribe, lift the right display hinge to an angle of 90 degrees from the palm-rest and keyboard assembly.
3. Disconnect the following cables from the system board:
   a. I/O-board cable (IOBD1)
   b. eDP cable (LCD)
   c. Power-adapter port cable (DCIN1)
   d. Keyboard-backlight cable (KBBL1)

      NOTE: This step applies only to computers that are shipped with a keyboard backlight installed.

   e. Keyboard cable (KB1)
   f. Touchpad cable (TP1)
   g. Speaker cable (SPK1)

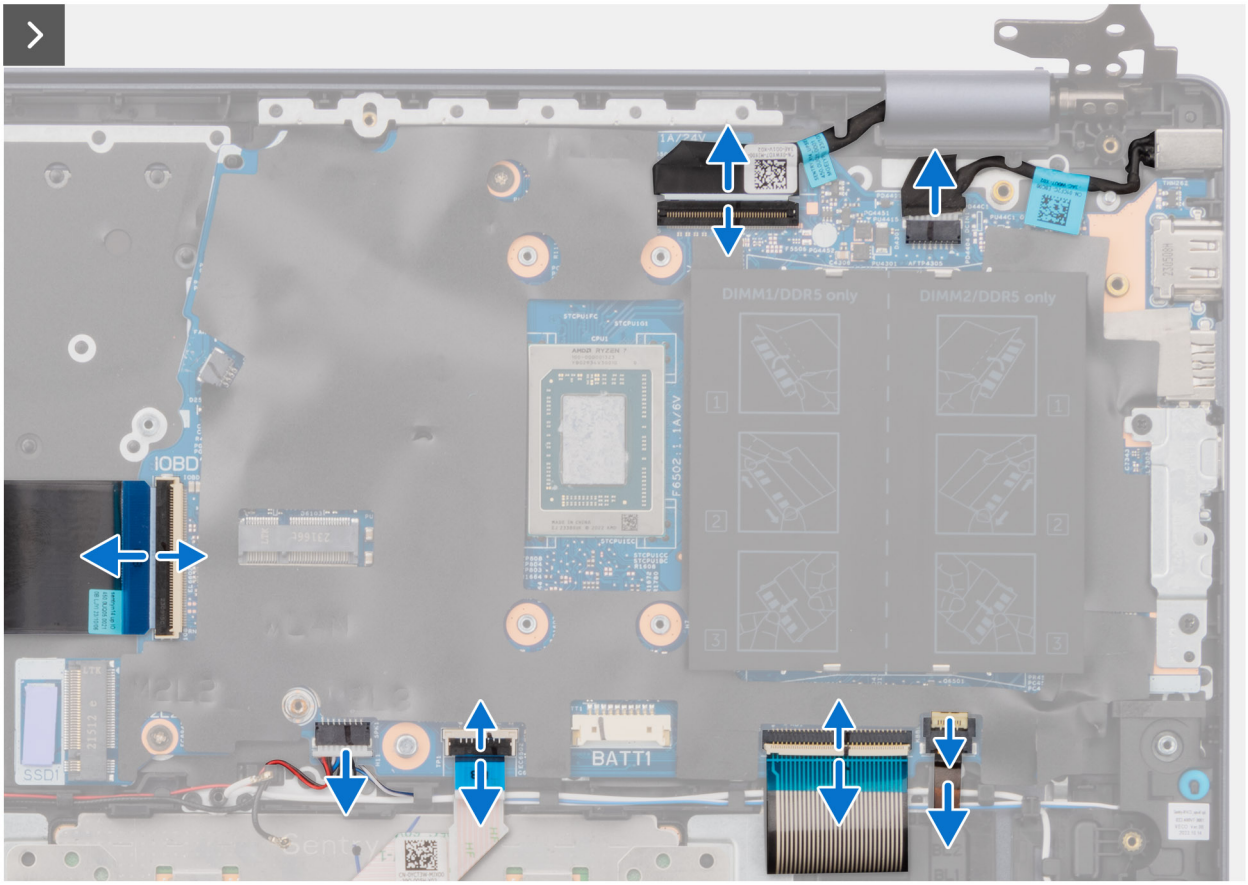


Figure 89. Removing the system board (for computers shipped with an aluminum chassis)

4. Remove the two screws (M2x4) that secure the USB Type-C port bracket to the system board. Then, remove the two screws (M2x2) that secure the system board to the palm-rest and keyboard assembly.

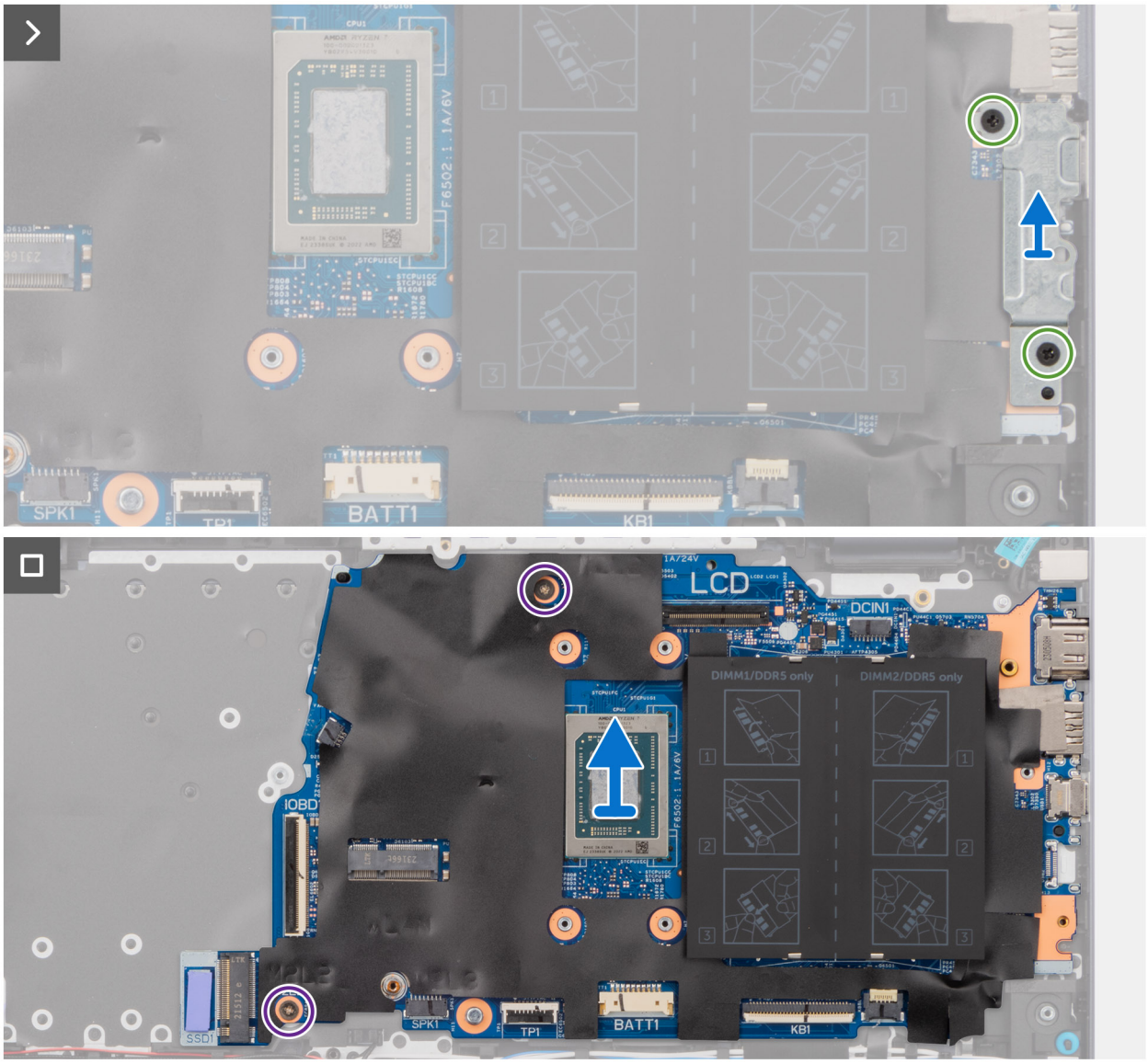


Figure 90. Removing the system board (for computers shipped with an aluminum chassis)

5. Lift and remove the USB Type-C port bracket from the system board.
6. Carefully lift and remove the system board at angle, from the palm-rest and keyboard assembly, to clear the ports from the port slots.

Installing the system board (for computers shipped with an aluminum chassis)

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

The following image indicates the connectors on your system board.

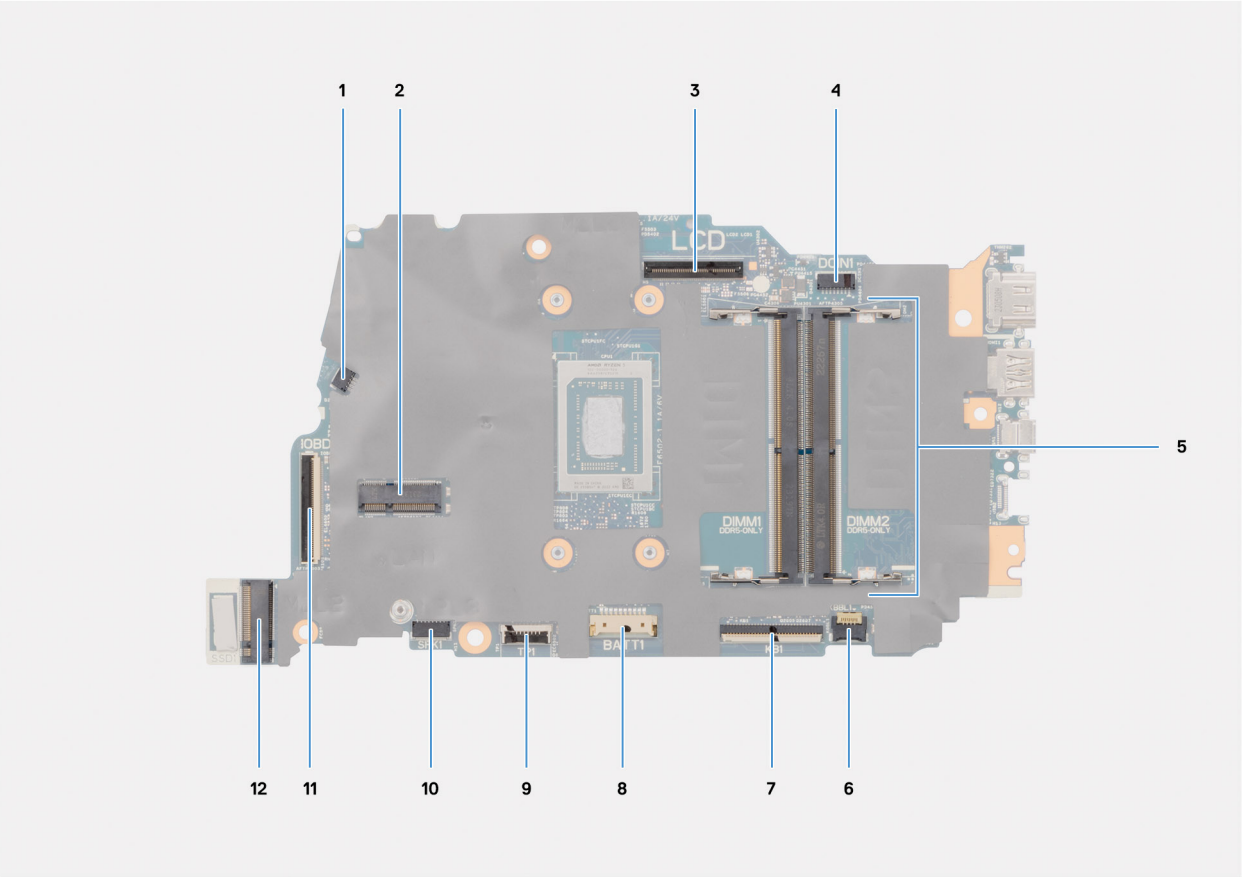


Figure 91. System board connectors

1. Fan cable connector (FAN1)
2. Wireless card connector (WLAN1)
3. eDP cable connector (LCD)
4. Power-adapter port connector (DCIN1)
5. Memory module connector (DIMM1 and DIMM2)
6. Keyboard-backlight cable connector (KBBL1)
7. Keyboard cable connector (KB1)
8. Battery connector (BATT1)
9. Touchpad cable connector (TP1)
10. Speaker cable connector (SPK1)
11. I/O-board cable connector (IOBD1)
12. Solid state drive connector (SSD1)

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

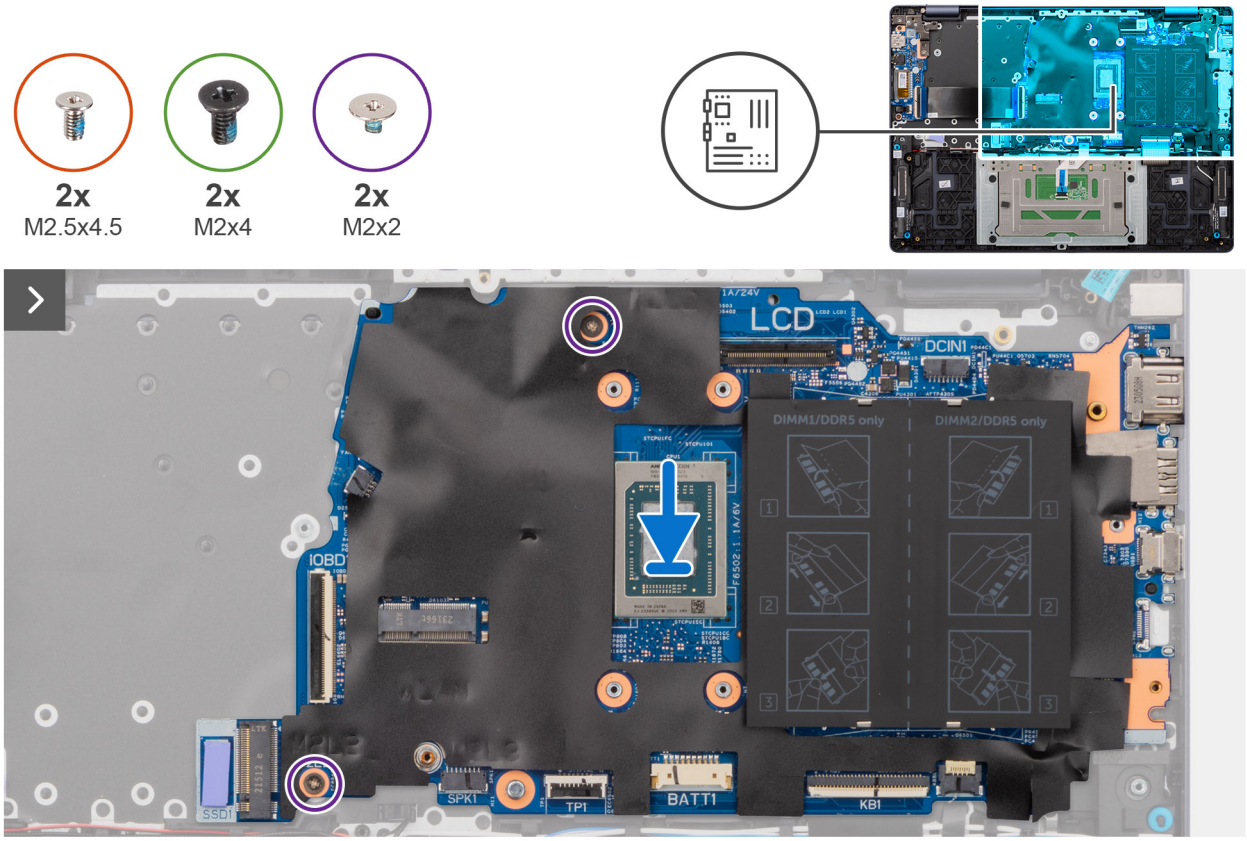


Figure 92. Installing the system board (for computers shipped with an aluminum chassis)

Steps

1. Align the ports on the system board with the port slots and place the system board on the palm-rest and keyboard assembly.
2. Align the screw holes on the system board with the screw holes on the palm-rest and keyboard assembly.
3. Replace the two screws (M2x2) to secure the system board to the palm-rest and keyboard assembly.
4. Place the USB Type-C port bracket in the slot on the system board.
5. Align the screw holes on the USB Type-C port bracket with the screw holes on the system board.
6. Replace the two screws (M2x4) to secure the USB Type-C port bracket to the system board.

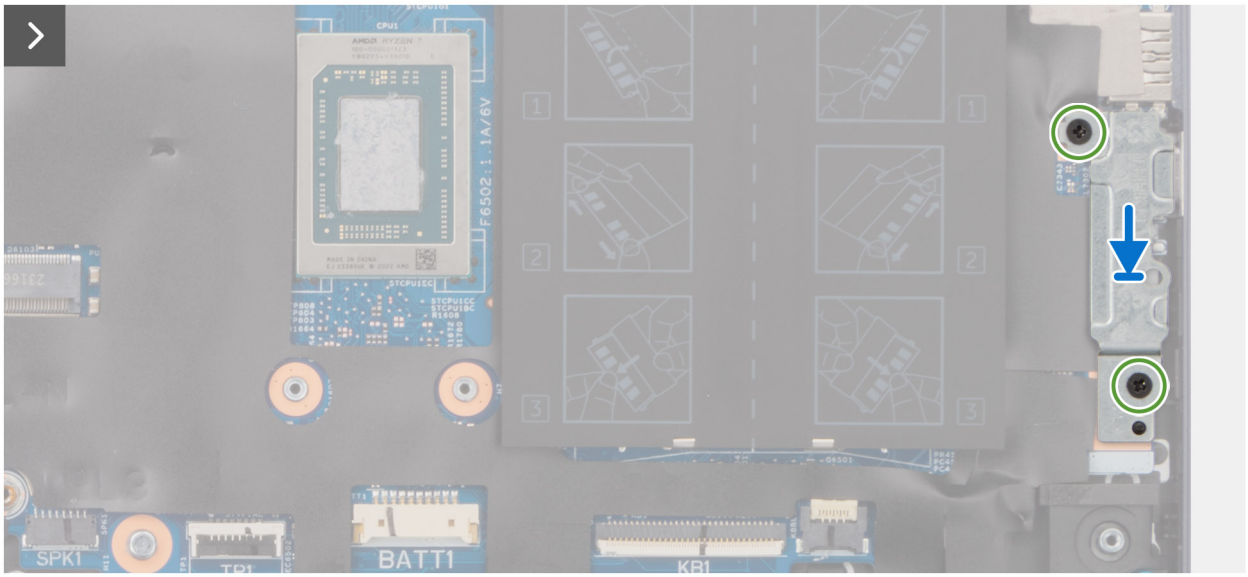


Figure 93. Installing the system board (for computers shipped with an aluminum chassis)

7. Connect the following cables to the connectors on the system board:
   a. I/O-board cable (IOBD1)
   b. eDP cable (LCD)
   c. Power-adapter port cable (DCIN1)
   d. Keyboard-backlight cable (KBBL1)

      NOTE: This step applies only to computers that are shipped with a keyboard backlight installed.

   e. Keyboard cable (KB1)
   f. Touchpad cable (TP1)
   g. Speaker cable (SPK1)

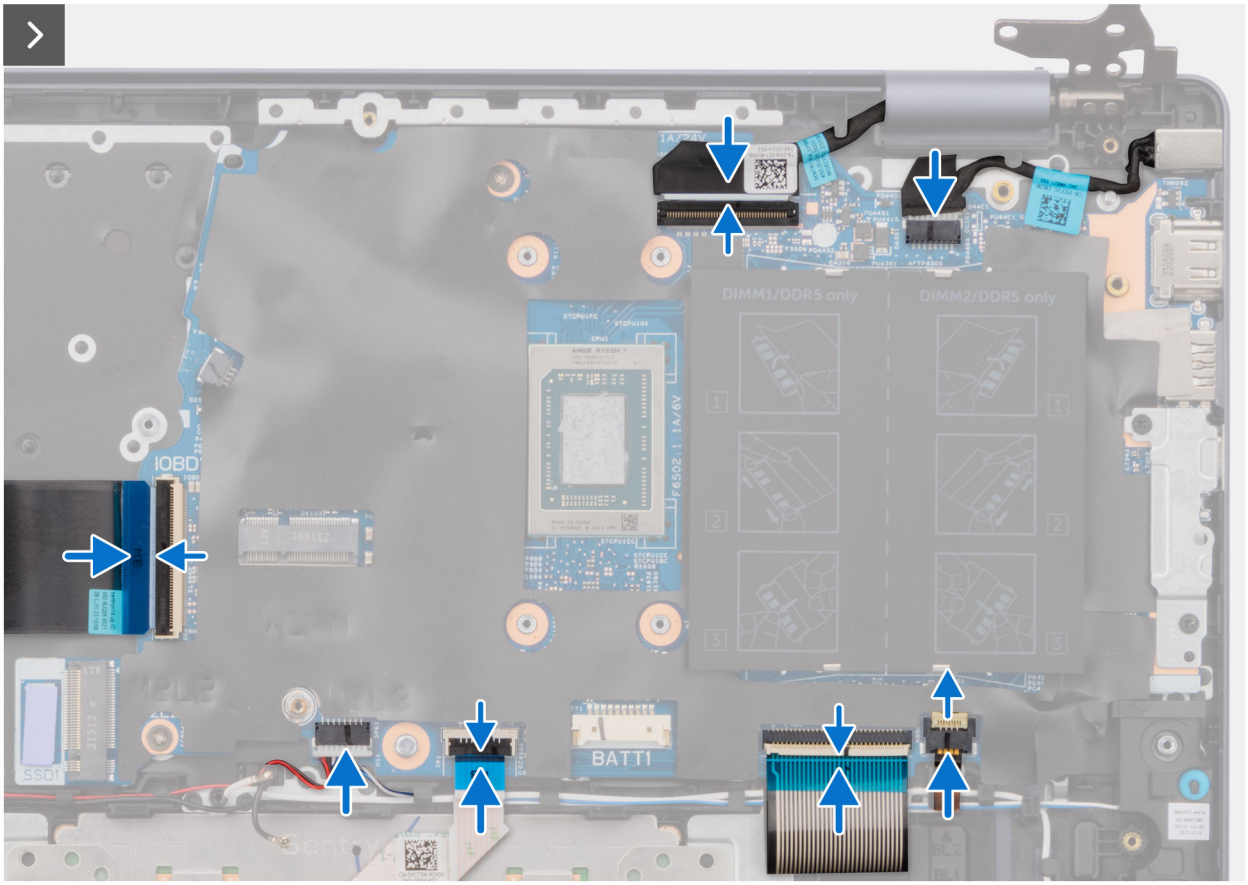


Figure 94. Installing the system board (for computers shipped with an aluminum chassis

8. Close the right display hinge to align the screw holes on the right display hinge with the screw holes on the system board and the palm-rest and keyboard assembly.
9. Replace the two screws (M2.5x4.5) to secure the right display hinge to the system board and the palm-rest and keyboard assembly.

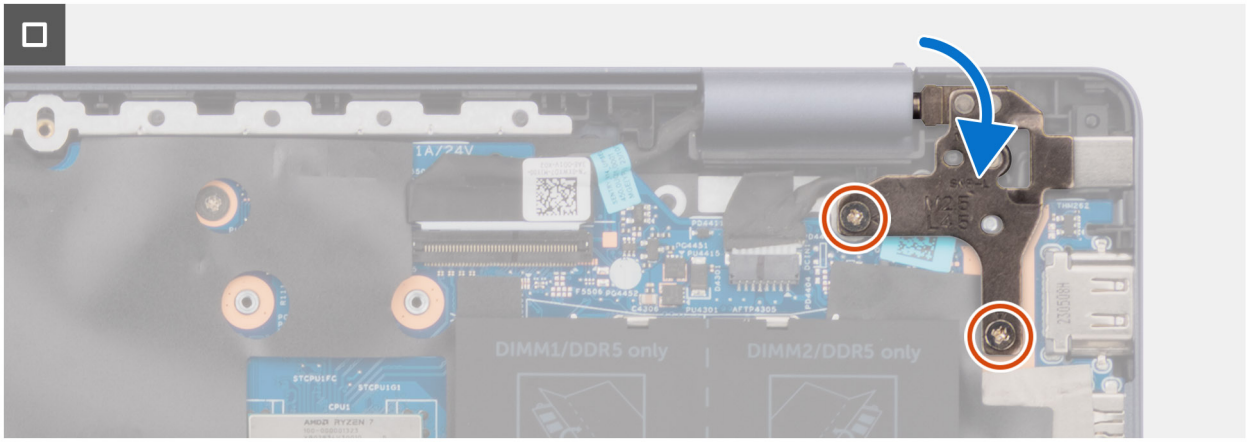


Figure 95. Installing the system board

Next steps

1. Install the heat sink.
2. Install the 3-cell battery or the 4-cell battery, whichever is applicable.
3. Install the fan.
4. Install the wireless card.

5. Install the solid state drive.
6. Install the memory module.
7. Install the base cover (aluminum chassis).
8. Follow the procedure in After working inside your computer.

Palm-rest and keyboard assembly

Removing the palm-rest and keyboard assembly

CAUTION: The information in this removal section is intended for authorized service technicians only.

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is applicable.
3. Remove the memory module.
4. Remove the solid state drive.
5. Remove the wireless card.
6. Remove the fan.
7. Remove the 3-cell battery or the 4-cell battery, whichever is applicable.
8. Remove the heat sink.

NOTE: The system board can be removed and installed along with the heat sink, when replacing the palm-rest and keyboard assembly. This simplifies the removal and installation procedure and prevents damage to the thermal bond between the system board and heat sink.

9. Remove the speakers.
10. Remove the touchpad.
11. Remove the power-adapter port.
12. Remove the I/O-board cable.
13. Remove the I/O board.
14. Remove the power button or the power button with optional fingerprint reader, whichever is applicable.
15. Remove the display assembly.
16. Remove the system board (plastic chassis) or system board (aluminum chassis), whichever is applicable.

About this task

NOTE: The palm-rest and keyboard assembly cannot be further disassembled once all the **`Prerequisites`** are completed. If the keyboard is malfunctioning and is required to be replaced, replace the entire palm-rest assembly.

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

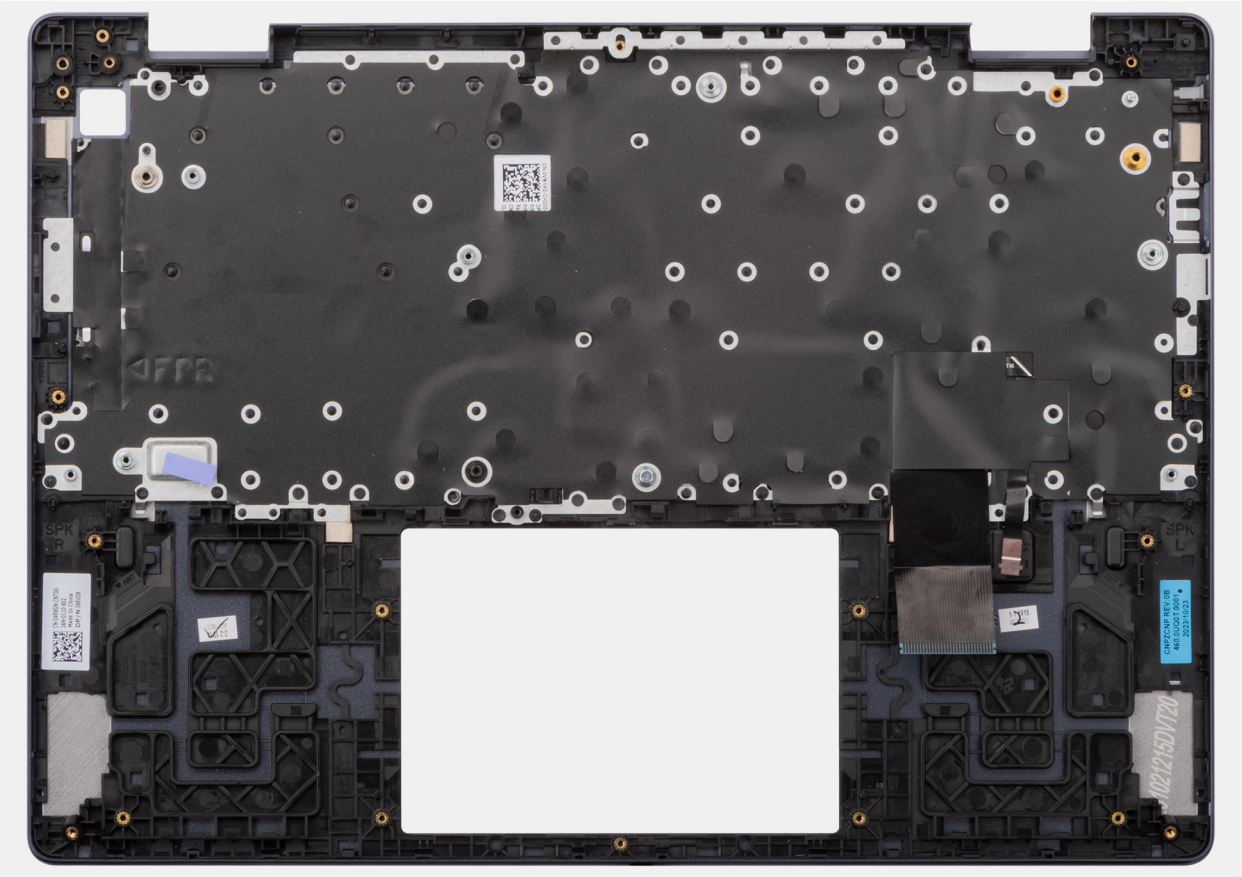


Figure 96. Palm-rest and keyboard assembly

Steps

After performing the steps in the **Prerequisites**, you are left with the palm-rest and keyboard assembly.

Installing the palm-rest and keyboard assembly

CAUTION: The information in this installation section is intended for authorized service technicians only.

Prerequisites

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

About this task

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

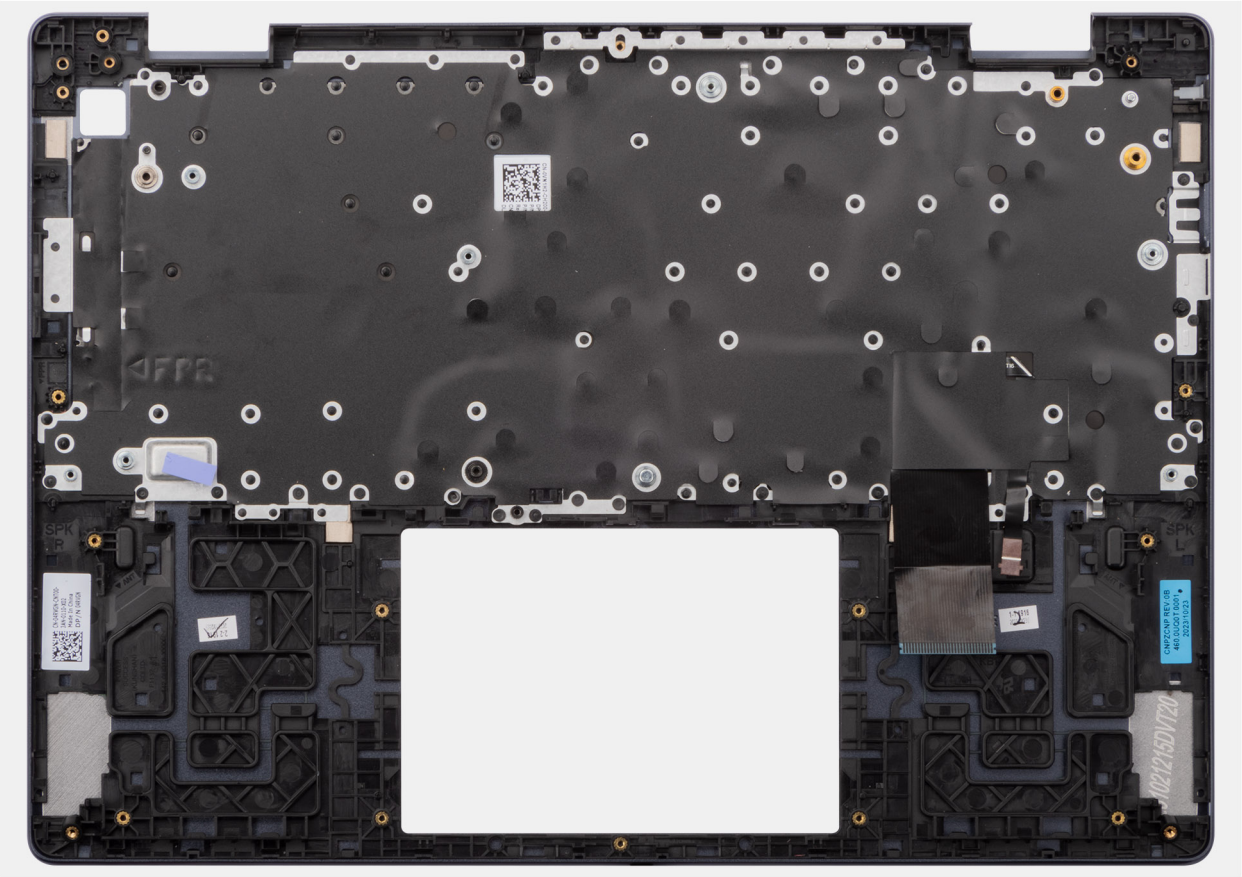


Figure 97. Palm-rest and keyboard assembly

Steps

Place the palm-rest and keyboard assembly on a flat and clean surface and perform the **Next steps** to install the palm-rest and keyboard assembly.

Next steps

1. Install the system board (plastic chassis) or system board (aluminum chassis), whichever is applicable.
2. Install the display assembly.
3. Install the power button or the power button with optional fingerprint reader, whichever is applicable.
4. Install the I/O board.
5. Install the I/O-board cable.
6. Install the power-adapter port.
7. Install the touchpad.
8. Install the speakers.
9. Install the heat sink.
10. Install the 3-cell battery or the 4-cell battery, whichever is applicable.
11. Install the fan.
12. Install the wireless card.
13. Install the solid state drive.
14. Install the memory module.
15. Install the base cover (plastic chassis) or the base cover (aluminum chassis), whichever is 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 14 Essential PV14255 supports the following operating systems:

1. For 220/250 processors
   - Windows 11 Home
   - Windows 11 Pro
   - Windows 11 Education – National Academic
   - Ubuntu Linux 24.04.2 LTS
2. For AI 330/350 processors
   - Windows 11 Home NextGen
   - Windows 11 Pro NextGen
   - Ubuntu Linux 24.04.2 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 this section 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 4. 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.

BIOS Setup options

NOTE: Depending on your computer and its installed devices, the items that are listed in this section may or may not be displayed.

Table 5. BIOS Setup options—Overview menu

Overview	Description
Dell Pro 14 Essential PV14255	
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.
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.
Signed Firmware Update	Displays whether the Signed Firmware Update is enabled on your computer. By default, the **Signed Firmware Update** option is enabled.
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.
Processor Information	
Processor Type	Displays the processor type.
Maximum Clock Speed	Displays the maximum processor clock speed.
Minimum Clock Speed	Displays the minimum processor clock speed.
Current Clock Speed	Displays the current processor clock speed.
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.
Intel Hyper-Threading Capable	Displays whether the processor is Hyper-Threading (HT) capable.

Table 5. BIOS Setup options—Overview menu (continued)

Overview	Description
64-Bit Technology	Displays whether 64-bit technology is used.
Memory Information	
Memory Installed	Displays the total memory installed on the computer.
Memory Available	Displays the total memory available on the computer.
Memory Speed	Displays the memory speed.
Memory Channel Mode	Displays single or dual channel mode.
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.
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.
Audio Controller	Displays the audio controller information of the computer.
Bluetooth Device	Displays the Bluetooth device information of the computer.
Pass Through MAC Address	Displays the MAC address of the video pass-through.

Table 6. BIOS Setup options—Boot Configuration menu

Boot Configuration	Description
Boot Sequence	
Boot Mode: UEFI only	Displays the boot mode of the computer.
Boot Sequence	Displays the boot sequence.
Secure Digital (SD) Card Boot	Enables or disables read-only boot from Secure Digital (SD) card. By default, the **Secure Digital (SD) Card Boot** option is enabled.
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, the **Enable Secure Boot** option is enabled. 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:** For Secure Boot to be enabled, the computer must be in UEFI boot mode and the Enable Legacy Option ROMs option must be turned off.
Secure Boot Mode	Enables or disables the Secure Boot operation mode. By default, the **Deployed Mode** is selected. **NOTE:** **Deployed Mode** should be selected for normal operation of Secure Boot.

Table 6. BIOS Setup options—Boot Configuration menu (continued)

Boot Configuration	Description
Enable Microsoft UEFI CA	When disabled, the UEFI CA is removed from the BIOS UEFI Secure Boot database ('db' variable). **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.** Microsoft HLK requirements for DeviceGuard require the UEFI 3rd Party CA removal from the UEFI SecureBoot database (db). Setting this option to Allow Pre-Boot Modules Only, will allow the UEFI 3rd party CA to be used to validate pre-boot option ROMs, but will not allow a bootloader signed with the UEFI 3rd party CA to be loaded. For additional security, Dell Technologies recommends setting the Microsoft UEFI CA option to **Enabled** to ensure the broadest compatibility with devices and operating systems.
Expert Key Management	
Enable Custom Mode	Enables or disables the ability to modify the keys in the PK, KEK, db, and dbx security key databases to be modified. By default, the **Enable Custom Mode** option is disabled.
Custom Mode Key Management	Selects the custom values for expert key management. By default, the **PK** option is selected.

Table 7. BIOS Setup options—Integrated Devices menu

Integrated Devices	Description
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 and 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 Intenal Speaker** option is enabled.
USB/Thunderbolt Configuration	

Table 7. BIOS Setup options—Integrated Devices menu (continued)

Integrated Devices	Description
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.
Enable External USB Ports	Enables the external USB ports. By default, the **Enable External USB Ports** option is enabled.
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.
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.
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.
Disable USB4 PCIE Tunneling	Disables the USB4 PCIE Tunneling option. By default, the **Disable USB4 PCIE Tunneling** option is disabled.
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.
Type-C Dock	
Type-C Dock Override	Enables or disables to use connected Type-C Dell Dock to provide data stream with external USB ports disabled. When Type-C Dock override is enabled, the Video/Audio/LAN submenu is activated. By default, the **Type-C Dock Override** option is enabled.
Type-C Dock Audio	Enables or disables the usage of audio inputs and outputs from the connected Type-C Dell docking station. By default, the **Type-C Dock Audio** option is enabled.
Type-C Dock LAN	Enables or disables the usage of LAN on the external ports of the connected Type-C Dell docking station. By default, the **Type-C Dock LAN** option is enabled.
Miscellaneous Devices	
Enable Fingerprint Reader Device	Enables the Fingerprint Reader Device option. By default, the **Enable Fingerprint Reader Device** option is enabled.

Table 8. BIOS Setup options—Storage menu

Storage	Description
SATA/NVMe Operation	
SATA/NVMe Operation	Sets the operating mode of the integrated SATA hard drive controller.

Table 8. BIOS Setup options—Storage menu (continued)

Storage	Description
	By default, the **AHCI/NVMe** option is selected. The storage device is configured for AHCI/NVMe mode.
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.
Enable MediaCard	
Secure Digital (SD) Card	Enables or disables the SD card. By default, the **Secure Digital (SD) Card** option is enabled.
Secure Digital (SD) Card Read-Only Mode	Enables or disables the SD card read-only mode. By default, the **Secure Digital (SD) Card Read-Only Mode** option is disabled.

Table 9. BIOS Setup options—Display menu

Display	Description
Display Brightness	
Brightness on battery power	By default, the screen brightness is set to 50 when the computer is running on battery power. Set the screen brightness when the computer is running on battery power.
Brightness on AC power	By default, the screen brightness is set to 100 when the computer is running on AC power. Set the screen brightness when the computer is running on AC power.
Touchscreen	Enables or disables the touch screen option. By default, the **Touchscreen** option is enabled.
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.

Table 10. BIOS Setup options—Connection menu

Connection	Description
Wireless Device Enable	
WLAN	Enables or disables the internal WLAN device. By default, the **WLAN** option enabled.
Bluetooth	Enables or disables the internal Bluetooth device. By default, the **Bluetooth** option enabled.
Enable UEFI Network Stack	Enables or disables the UEFI Network Stack and controls the onboard LAN Controller. By default, the **Enable UEFI Network Stack** option is enabled.
Wireless Radio Control	
Control WLAN Radio	Allows the computer to detect a wired network connection and then disable the selected wireless radios (WLAN and/or WWAN). Upon disconnection from the wired network, the selected wireless radios are re-enabled.

Table 10. BIOS Setup options—Connection menu (continued)

Connection	Description
	By default, the **Control WLAN Radio** option is disabled.

Table 11. BIOS Setup options—Power menu

Power	Description
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 switch to battery power automatically during peak energy usage hours. By default, the **Enable Peak Shift** option is disabled.
Thermal Management	Allows you to manage the fan settings to regulate processor temperature and control computer performance, noise, and thermal levels. By default, the **Optimized** option is selected.
USB Wake Support	
Wake on Dell USB-C Dock	When enabled, connecting a Dell USB-C Dock wakes the computer from Standby, Hibernate, and Power Off. By default, the **Wake on Dell USB-C Dock** option is enabled.
Block Sleep	Enables or disables the computer from entering Sleep (S3) mode in the operating system. By default, the **Block Sleep** option is disabled. **NOTE:** When enabled, the computer does not go to Sleep, Intel Rapid Start is disabled automatically, and the operating system power option is blank if it was set to Sleep.
Lid Switch	
Enable Lid Switch	Enables or disables the Lid Switch. By default, the **Enable Lid Switch** option is enabled.
Power On Lid Open	When enabled, it allows the computer to turn on from the off state whenever the lid is opened. By default, the **Power On Lid Open** option is enabled.
Intel Speed Shift Technology	Enables or disables the Intel Speed Shift Technology support. When enabled, the operating system selects the appropriate processor performance automatically. By default, the **Intel Speed Shift Technology** option is enabled.

Table 12. BIOS Setup options—Security menu

Security	Description
Trusted Platform Module (TPM)	The Trusted Platform Module (TPM) provides various cryptographic services which serve as the cornerstone for many platform security technologies. Trusted Platform Module (TPM) is a security device that stores computer-generated keys for encryption and features such as BitLocker, Virtual Secure Mode, remote Attestation. By default, the **Trusted Platform Module (TPM)** option is enabled. For additional security, Dell Technologies recommends keeping **Trusted Platform Module (TPM)** enabled to allow these security technologies to fully function. **NOTE:** The options that are listed apply to computers with a discrete **Trusted Platform Module (TPM)** chip.
TPM On	Allows you to enable or disable TPM. By default, the **TPM On** option is enabled. For additional security, Dell Technologies recommends keeping **TPM On** enabled to allow these security technologies to fully function.
Physical Presence Interface (PPI) Bypass	The Physical Presence Interface (PPI) Bypass options can be used to allow the operating system to manage certain aspects of the TPM. If these options are enabled, you are not prompted to confirm certain changes to the TPM configuration. For additional security, Dell Technologies recommends keeping the **PPI Bypass for Enable Commands** option enabled. For additional security, Dell Technologies recommends keeping the **PPI Bypass for Disable Commands** option disabled. For additional security, Dell Technologies recommends keeping the **PPI Bypass for Clear Commands** option disabled.
Attestation Enable	The **Attestation Enable** option controls the endorsement hierarchy of the TPM. Disabling the **Attestation Enable** option prevents TPM from being used to digitally sign certificates. By default, the **Attestation Enable** option is enabled. For additional security, Dell Technologies recommends keeping the **Attestation Enable** option enabled. **NOTE:** When disabled, this feature may cause compatibility issues or loss of functionality in some operating systems.
Key Storage Enable	The **Key Storage Enable** option controls the storage hierarchy of TPM, which is used to store digital keys. Disabling the **Key Storage Enable** option restricts the ability of TPM to store owner's data. By default, the **Key Storage Enable** option is enabled. For additional security, Dell Technologies recommends keeping the **Key Storage Enable** option enabled. **NOTE:** When disabled, this feature may cause compatibility issues or loss of functionality in some operating systems.
SHA-256	Enables selection of the hashing algorithm that is used by the TPM. When enabled, the TPM uses the SHA-256 hashing algorithm. When disabled, the TPM uses the SHA-1 hash algorithm. By default, the **SHA-256** option is enabled. For additional security, Dell Technologies recommends keeping the **SHA-256** option enabled.

Table 12. BIOS Setup options—Security menu (continued)

Security	Description
Clear	When enabled, the **Clear** option clears information that is stored in the TPM after exiting the BIOS setup of your computer. 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.
TPM State	Enables or disables the Trusted Platform Module (TPM). This is the normal operating state for the Trusted Platform Module (TPM) when you want to use its complete array of capabilities. By default, the **TPM State** option is enabled.
Intel Platform Trust Technology (PTT)	Intel PTT is a firmware-based Trusted Platform Module (fTPM) device that is part of Intel chipsets. It provides credential storage and key management that can replace the equivalent functionality of a discrete TPM chip. **NOTE:** The options that are listed apply to computers without a discrete **Trusted Platform Module (TPM)**.
PTT On	Enables or disables the Intel PTT option. By default, the **PTT On** option is enabled. For additional security, Dell Technologies recommends keeping the **PTT On** option enabled.
Physical Presence Interface (PPI) Bypass for Clear Commands	The PPI Bypass for Clear Commands option allows the operating system to manage certain aspects of PTT. When enabled, you are not prompted to confirm changes to the PTT configuration. 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.
Clear	When enabled, the **Clear** option clears the information that is stored in the PTT fTPM after exiting the BIOS setup of your computer. 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 PTT fTPM data needs to be cleared.
AMD Firmware TPM (fTPM)	AMD Firmware TPM (fTPM) is a firmware-based TPM device that is part of AMD chipsets. It provides credential storage and key management that can replace the equivalent functionality of a discrete TPM chip. **NOTE:** The options that are listed apply to computers without a discrete **Trusted Platform Module (TPM)** chip.
fTPM On	Enables the AMD firmware TPM option. By default, the **fTPM On** option is enabled. For additional security, Dell Technologies recommends keeping the **fTPM On** option enabled.
Physical Presence Interface (PPI) Bypass	The Physical Presence Interface (PPI) Bypass options can be used to allow the operating system to manage certain aspects of the AMD fTPM. If this option is enabled, you are not prompted to confirm certain changes to the fTPM configuration.

Table 12. BIOS Setup options—Security menu (continued)

Security	Description
	For additional security, Dell Technologies recommends keeping the **PPI Bypass for Clear Command** option disabled.
Clear	When enabled, the **Clear** option clears the information that is stored in the AMD fTPM after exiting the BIOS setup of your computer. 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 fTPM data needs to be cleared.
Chassis intrusion	
Chassis Intrusion Detection	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 Detection** option is enabled. For additional security, Dell Technologies recommends keeping the **Chassis Intrusion Detection** option enabled.
Block Boot Until Cleared	Enables or disables the Block Boot Until Cleared option. By default, the **Block Boot Until Cleared** option is disabled. **NOTE:** The Block Boot Until Cleared option prevents the system from booting after a chassis intrusion event is detected. The warning must be cleared from BIOS Setup, by clearing the Chassis Intrusion Warning option. If a BIOS Admin Password is set, the password must be entered prior to clearing the Chassis Intrusion Warning. Dell Technologies recommends keeping the **Block Boot Until Cleared** option disabled.
Chassis Intrusion Power Off	Enables or disables the Chassis Intrusion Power Off option. By default, the **Chassis Intrusion Power Off** option is disabled. **NOTE:** When enabled, the computer immediately shuts down when a chassis intrusion is detected. This setting could cause data loss or corruption. Dell Technologies recommends keeping the **Chassis Intrusion Power Off** option disabled.
Chassis Intrusion TPM Clear	Enables or disables the Chassis Intrusion TPM Clear option. By default, the **Chassis Intrusion TPM Clear** option is disabled. **NOTE:** When enabled, the computer clears the TPM when a chassis intrusion is detected. This setting could cause data loss or corruption. Dell Technologies recommends keeping the **Chassis Intrusion TPM Clear** option disabled.
Chassis Intrusion Data Wipe	Enables or disables the Chassis Intrusion Data Wipe option. By default, the **Chassis Intrusion Data Wipe** option is disabled.

Table 12. BIOS Setup options—Security menu (continued)

Security	Description
	NOTE: When enabled, the computer will wipe data from all the internal drives when a chassis intrusion is detected. This setting could cause data loss or corruption. Dell Technologies recommends keeping the **Chassis Intrusion Data Wipe** option disabled.
Device Configuration Hotkey Access	The OROM Keyboard Access feature allows you to enter the Option ROM configuration screens, using hotkeys during the boot process. This setting controls only the Intel RAID (CTRL+I), MEBX (CTRL+P), and LSI RAID (CTRL+C) Option ROMs. Other preboot Option ROMs which support entry via a key sequence are not affected by this setting. For additional security, Dell Technologies recommends keeping the **OROM Keyboard Access** option enabled.
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. 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.
SMM Security Mitigation	Enables or disables additional UEFI SMM Security Mitigation protections. This option uses the Windows SMM Security Mitigations Table (WSMT) to confirm to the operating system that security best practices have been implemented by the UEFI firmware. By default, the **SMM Security Mitigation** option is enabled. For additional security, Dell Technologies recommends keeping the **SMM Security Mitigation** option enabled unless you have a specific application which is not compatible. **NOTE:** This feature may cause compatibility issues or loss of functionality with some legacy tools and applications.
Thunderbolt Security Level	Thunderbolt Security Level gives you control to authenticate Thunderbolt devices, when connected to the computer. When set to **User Authorization** the computer will prompt you to allow each Thunderbolt device that you connect to the computer. **NOTE:** Thunderbolt devices may have access to read and write the computer memory. You should only allow devices which you trust. Dell Technologies recommends keeping the **Thunderbolt Security Level** option to **User Authorization**.
Disable USB4 PCIe Tunneling	The Disable USB4 PCIe Tunneling option allows a system administrator to disable the PCIe functionality of Thunderbolt ports. When enabled, the Disable USB4 PCIe Tunneling option will prevent Thunderbolt ports from operating in native TBT mode, and any attached PCIe devices will not function (e.g. PCIe NIC).

Table 12. BIOS Setup options—Security menu (continued)

Security	Description
	Dell Technologies recommends keeping the **Disable USB4 PCIe Tunneling** option to disabled for full functionality. For enhanced security, Dell Technologies recommends keeping the **Disable USB4 PCIe Tunneling** option enabled.
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 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 enabled. **NOTE:** When the Absolute features are activated, the Absolute integration cannot be disabled from the BIOS setup screen.
UEFI Boot Path Security	Enables or disables the computer to prompt the user to enter the Administrator password (if set) when booting to a UEFI boot path device from the F12 boot menu. By default, the **Always Except Internal HDD** option is enabled.
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 **Firmware Device Tamper Detection** option is enabled. For additional security, Dell Technologies recommends keeping the **Firmware Device Tamper Detection** option enabled.

Table 13. BIOS Setup options—Passwords menu

Passwords	
Administrator Password	The Administrator Password prevents unauthorized access to the BIOS Setup options. Once the administrator password is set, the BIOS setup options can only be modified after providing the correct password. The following rules and dependencies apply to the Administrator Password - • The administrator password cannot be set if computer and/or internal storage device passwords are already set. • The administrator password can be used in place of the computer and/or internal storage passwords.

Table 13. BIOS Setup options—Passwords menu (continued)

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 - • 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.
Hard Drive Password	The Hard Drive Password can be set to prevent unauthorized access of the data stored on the hard 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 is used - • The hard drive password option cannot be accessed when a 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 computer and hard drive passwords are set to the same value, the hard drive unlocks after the correct computer password is entered. Dell Technologies recommends using a hard drive password to protect unauthorized data access.
Owner Password	The Owner Password is typically used when a computer is loaned or leased, and the end user sets their own computer or hard drive password. The Owner Password can provide override access to unlock the computer when it is returned. The Owner Password cannot be set using BIOS Setup. System lessors are given a tool which enables them to configure the Owner Password. The following rules and dependencies apply when the Owner Password is used - • The owner password cannot be set when the administrator password is already set.

Table 13. BIOS Setup options—Passwords menu (continued)

Passwords	
	• The owner password can be used in place of the administrator, computer, or storage passwords. **NOTE:** The hard drive password must be set on the computer with the owner password. Dell Technologies recommends that only computer lessors use the owner password.
Strong Password	The Strong Password feature enforces stricter rules for administrator, owner, and computer passwords. When enabled, the following rules are enforced - • The minimum length of the password is set to eight characters. • The password is required to include at least one upper case and one lower case character. **NOTE:** These requirements do not affect the hard drive password. By default, the **Strong Password** option is enabled. For additional security, Dell Technologies recommends keeping the **Strong Password** option enabled as it requires passwords to be more complex.
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.
Password Bypass	The **Password Bypass** option allows the computer to reboot from the operating system without entering the computer or hard drive password. If the computer has already booted to the operating system, it is presumed that the user has already entered the correct computer or hard drive password. **NOTE:** This option does not remove the requirement to enter the password after shutting down. By default, the **Password Bypass** option is enabled. For additional security, Dell Technologies recommends keeping the **Password Bypass** option enabled.
Password Changes	
Allow Non-Admin Password Changes	The **Allow Non-Admin Password Changes** option in BIOS setup allows an end user to set or change the computer or hard drive passwords without entering the administrator password. This gives an administrator control over the BIOS settings but enables an end user to provide their own password. By default, the **Allow Non-Admin Password Changes** option is disabled. For additional security, Dell Technologies recommends keeping the **Allow Non-Admin Password Changes** option disabled.
Non-Admin Setup Changes	The **Non-Admin Setup Changes** option allows an end user to configure the wireless devices without requiring the administrator password. By default, the **Non-Admin Setup Changes** option is disabled. For additional security, Dell Technologies recommends keeping the **Non-Admin Setup Changes** option disabled.
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).

Table 13. BIOS Setup options—Passwords menu (continued)

Passwords	
	By default, the **Admin Setup Lockout** option is disabled. For additional security, Dell Technologies recommends keeping the **Admin Setup Lockout** option disabled.
Recovery Password	The Recovery Password can be used when a system owner forgets the administrator, system, or hard drive password. You can get an unlock code from Dell Support over the phone after verifying ownership details. The unlock code overrides and removes the existing password. **NOTE:** When a hard drive password is overridden using this method, the data on the hard drive is erased if secure erase was enabled when setting the password.
Master Password Lockout	
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 14. BIOS Setup options—Update, Recovery menu

Update, Recovery	
UEFI Capsule Firmware Updates	
Enable UEFI Capsule Firmware Updates	Enables or disables BIOS updates through UEFI capsule update packages. **NOTE:** Disabling this option blocks the BIOS updates from services such as Microsoft Windows Update and Linux Vendor Firmware Service (LVFS). By default, the **Enable UEFI Capsule Firmware Updates** option is enabled.
BIOS Recovery from Hard Drive	Enables or disables the user to recover from certain corrupted BIOS conditions from a recovery file on the user primary hard drive or an external USB key. By default, the **BIOS Recovery from Hard Drive** option is enabled. **NOTE:** BIOS Recovery from Hard Drive is not available for self-encrypting drives (SED). **NOTE:** BIOS recovery is designed to fix the main BIOS block and cannot work if the Boot Block is damaged. In addition, this feature cannot work in the event of EC corruption, ME corruption, or a hardware issue. The recovery image must exist on an unencrypted partition on the drive.
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.

Table 14. BIOS Setup options—Update, Recovery menu (continued)

Update, Recovery	
BIOSConnect	Enables or disables cloud Service operating system recovery if the main operating system fails to boot with the number of failures equal to or greater than the value specified by the Auto OS Recovery Threshold setup option and local Service operating system does not boot or is not installed. 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 15. BIOS 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 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	Enables or disables the computer to turn on by a special LAN signal. By default, the **Wake on LAN** 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 16. BIOS 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 Illumination	Configures the operating mode of the keyboard illumination feature. By default, the **Bright** option is selected. Enables the keyboard illumination feature at 100% brightness level.
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.
Device Configuration HotKey Access	Allows you to control whether you can access device configuration screens through hotkeys during computer startup.

Table 16. BIOS Setup options—Keyboard menu (continued)

Keyboard	
	By default, the **Device Configuration HotKey Access** option is enabled. **NOTE:** This setting controls only the Intel RAID (CTRL+I), MEBX (CTRL+P), and LSI RAID (CTRL+C) Option ROMs. Other preboot Option ROMs, which support entry using a key sequence, are not affected by this setting.

Table 17. BIOS Setup options—Pre-boot Behavior menu

Preboot Behavior	
Adapter Warnings	
Enable Dock Warning Messages	Enables the warning messages during boot when the adapters with less power capacity are detected. By default, the **Enable Dock Warning Messages** 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.
Fastboot	Allows you to configure the speed of the UEFI boot process. By default, the **Thorough** option is selected. Performs complete hardware and configuration initialization during boot.
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.
Mouse/Touchpad	Defines how the computer handles mouse and touchpad input. By default, the **Touchpad and PS/2 Mouse** option is selected. Leaves the integrated touchpad enabled when an external PS/2 mouse is present.
Sign of Life	
Early Logo Display	Display Logo Sign of Life. By default, the **Early Logo Display** option is enabled.
Early Keyboard Backlight	Keyboard Backlight Sign of Life. By default, the **Early Keyboard Backlight** option is enabled.

Table 18. BIOS Setup options—Virtualization menu

Virtualization Support	
Intel Virtualization Technology	
Enable Intel Virtualization Technology (VT)	When enabled, the computer can run a Virtual Machine Monitor (VMM). By default, the **Enable Intel Virtualization Technology (VT)** option is enabled.

Table 18. BIOS Setup options—Virtualization menu (continued)

Virtualization Support	
VT for Direct I/O	
Enable Intel VT for Direct I/O	When enabled, the computer can perform Virtualization Technology for Direct I/O (VT-d). VT-d is an Intel method that provides virtualization for memory map I/O. By default, the **Enable Intel VT for Direct I/O** option is enabled.
Intel Trusted Execution Technology (TXT)	Intel Trusted Execution Technology (TXT) is a set of hardware extensions to Intel processors and chipsets. It provides a hardware-based root of trust to ensure that a platform boots with a known good configuration of firmware, BIOS, virtual machine monitor, and operating system. The following must be enabled in order to enable Intel TXT - • Intel Virtualization Technology - X • Intel Virtualization Technology - Direct By default, the **Intel Trusted Execution Technology (TXT)** option is enabled. For additional security, Dell Technologies recommends keeping the **Intel Trusted Execution Technology (TXT)** option enabled.
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 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.

Table 19. BIOS Setup options—Performance menu

Performance	
Multi-Core Support	
Multiple Atom Cores	Allows to change the number of Atom cores available to the operating system. The default value is set to the maximum number of cores. By default, the **All Cores** option is selected.
Intel SpeedStep	
Enable Intel SpeedStep Technology	Enables the computer to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production. By default, the **Enable Intel SpeedStep Technology** option is enabled.

Table 19. BIOS Setup options—Performance menu (continued)

Performance	
C-State Control	
Enable C-State Control	Enables or disables the ability of the CPU to enter and exit low-power state. When disabled, it disables all C-states. When enabled, it enables all C-states that the chipset or platform allows. By default, the **Enable C-State Control** option is enabled.
Intel Turbo Boost Technology	
Enable Intel Turbo Boost Technology	Enables or disables the Intel TurboBoost mode of the processor. When enabled, the Intel TurboBoost driver increases the performance of the CPU or graphics processor. By default, the **Enable Intel Turbo Boost Technology** option is enabled.
Intel Hyper-Threading Technology	
Enable Intel Hyper-Threading Technology	Enables or disables the Intel Hyper-Threading mode of the processor. When enabled, the Intel Hyper-Threading increases the efficiency of the processor resources when multiple threads run on each core. By default, the **Intel Hyper-Threading Technology** option is enabled.
Dynamic Tuning: Machine Learning	
Enable Dynamic Tuning: Machine Learning	Enables or disables operating system capability to enhance power tuning capabilities depending on the detected workloads. **NOTE:** This option is available for development only. By default, the **Enable Dynamic Tuning: Machine Learning** option is enabled.

Table 20. BIOS 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 21. System and setup password

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

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

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

Assigning a System Setup password

Prerequisites

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

Steps

1. To enter the **System Setup**, press **F2** immediately after a power-on or reboot.
2. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
   The **Security** screen is displayed.
3. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to create the system password:
   - Password can be up to 32 characters.
   - Password must contain at least one special character: "(! " # $ % & ' * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | })"
   - The password can contain numbers from 0 to 9.
   - The password can contain alphabets A to Z and a to z.
4. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
5. Press Y to save the changes.
   The computer restarts.

Deleting or changing an existing system password or setup password

Prerequisites

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

Steps

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

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

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

Clearing system and setup passwords

About this task

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

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

6

Troubleshooting

Handling swollen rechargeable Li-ion batteries

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

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

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

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

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

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

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 diagnostic quick 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 22. LED error codes

Blinking Pattern		Possible Problem
Amber	**White**	
2	1	CPU 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.

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 normally, 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.

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.

System-diagnostic lights

This section lists the system-diagnostic lights of your Dell Pro 14 Essential PV14255.

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 23. Diagnostic light codes

Diagnostic light codes (Amber, White)	Problem description
1,1	TPM Detection Failure
1,2	Unrecoverable SPI Flash Failure
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 installed
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

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

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

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

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

Real-Time Clock (RTC Reset)

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

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

Backup media and recovery options

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

Network power cycle

About this task

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

Steps

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

Drain flea power (perform hard reset)

About this task

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

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

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

Perform the following steps to drain the flea power:

Steps

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

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

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 24. Self-help resources

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

Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see 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

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

Table 25. Revision history

Revision	Date	Description
A00	08-29-2025	Original publish date.
A01	10-06-2025	Updated the Customer Replaceable Units (CRUs) and Field Replaceable Units (FRUs) list.