Inspiron 14 5430

Service Manual

Regulatory Model: P171G
Regulatory Type: P171G001
January 2023
Rev. A00

Notes, cautions, and warnings

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

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

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

Contents

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 included 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 the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

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

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

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

CAUTION: You should only perform troubleshooting and repairs as authorized or directed by the Dell technical assistance team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. See the safety instructions that is shipped with the product or at www.dell.com/regulatory_compliance.

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: 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 ports and the connectors are correctly oriented and aligned.

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

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

NOTE: The color of your computer and certain components may appear differently than shown in this document.

Before working inside your computer

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. Disconnect your computer and all attached devices from their electrical outlets.
4. Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.

5. Remove any media card and optical disk from your computer, if applicable.
6. Enter the service mode, if you are able to power on your computer.

   Service Mode

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

   CAUTION: If you are unable to turn on the computer to put it into Service Mode or the computer does not support Service Mode then proceed to disconnect the battery cable. To disconnect the battery cable, follow the steps in Removing the battery.

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

   a. Hold **<B>** key on the keyboard and press the power button for 3 seconds or until the Dell logo appears on the screen.
   b. Press any key to continue.
   c. If the AC adapter is not disconnected, a message prompting you to remove the AC adapter appears on the screen. Remove the AC adapter and then press any key to continue the **Service Mode** procedure. The **Service Mode** procedure automatically skips the following step if the **Owner Tag** of the computer is not set up in advance by the user.
   d. When the ready-to-proceed message appears on the screen, press any key to proceed. The computer emits three short beeps and shuts down immediately.
   e. Once the computer shuts down, it has successfully entered Service Mode.

   NOTE: If you are unable to power on your computer or unable to enter service mode skip this process.

Safety precautions

The safety precautions chapter details the primary steps to be taken before performing any disassembly instructions.

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

- Turn off the system and all attached peripherals.
- Disconnect the system and all attached peripherals from AC power.
- Disconnect all network cables, telephone, and telecommunications lines from the system.
- Use an ESD field service kit when working inside any notebook to avoid electrostatic discharge (ESD) damage.
- After removing any system component, carefully place the removed component on an anti-static mat.
- Wear shoes with non-conductive rubber soles to reduce the chance of getting electrocuted.

Standby power

Dell products with standby power must be unplugged before you open the case. Systems that incorporate standby power are essentially powered while turned off. The internal power enables the system to be remotely turned on (wake on LAN) and suspended into a sleep mode and has other advanced power management features.

Unplugging, pressing and holding the power button for 15 seconds should discharge 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 through the use of 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 non-metal surface. The wrist strap should be secure and in full contact with your skin, and ensure that you remove all jewelry such as watches, bracelets, or rings prior to bonding 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 DIMMs, and system boards. Very slight charges 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.

Due to the increased density of semiconductors used in recent Dell products, the sensitivity to static damage is now higher than in previous Dell products. For this reason, some previously approved methods of handling parts are no longer applicable.

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 DIMM that has received a static shock and immediately generates a "No POST/No Video" symptom with a beep code 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 DIMM receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms 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, etc.

The more difficult type of damage to recognize and troubleshoot is the intermittent (also called latent or "walking wounded") failure.

Perform the following steps to prevent ESD damage:

- Use a wired ESD wrist strap that is properly grounded. The use of wireless anti-static straps is no longer allowed; they 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, ensure that you discharge static electricity from your body.
- 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.

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 mat and to any bare metal on the system being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the mat. ESD-sensitive items are safe in your hand, on the ESD mat, in the system, or inside a bag.
- **Wrist Strap and Bonding Wire** – The wrist strap and bonding wire can be either directly connected between your wrist and bare metal on the hardware if the ESD mat is not required, or connected to the anti-static mat to protect hardware that is temporarily placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the ESD mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, mat, and bonding wire. Never use wireless wrist straps. Always be aware 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 of an ESD strap are prone to damage over time. When using an unmonitored kit, it is a best practice to regularly test the strap prior to each service call, and at a minimum, test once per week. A wrist strap tester is the best method for doing this test. If you do not have your own wrist strap tester, check with your regional office to find out if they have one. To perform the test, plug the wrist-strap's bonding-wire into the tester while it is strapped to your wrist and push the button to test. A green LED is lit if the test is successful; a red LED is lit and an alarm sounds if the test fails.
- **Insulator Elements** – It is critical to keep ESD sensitive devices, such as plastic heat sink casings, away from internal parts that are insulators and often highly charged.
- **Working Environment** – Before deploying the ESD Field Service kit, assess the situation at the customer location. For example, deploying the kit for a server environment is different than for a desktop or portable environment. Servers are typically installed in a rack within a data center; desktops or portables 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 system 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 part 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 ESD mat, in the system, or inside an anti-static bag.
- **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.

ESD protection summary

It is recommended to use the traditional wired ESD grounding wrist strap and protective anti-static mat at all times when servicing Dell products. In addition, it is critical to keep sensitive parts separate from all insulator parts while performing service and that they use anti-static bags for transporting sensitive components.

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 parts that you removed before working on your computer.
4. Connect your computer and all attached devices to their electrical outlets.

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

5. Press the power button to turn on the computer. Your computer will automatically return to normal functioning mode.

BitLocker

CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress, and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system reinstall. For more information about this subject, see Knowledge Article: updating the BIOS on Dell systems with BitLocker enabled.

CAUTION: If BitLocker is not suspended, replacing parts like system board or storage drives on a system with BitLocker / Device encryption enabled will also trigger the encryption and lock the user out. The recovery key is required to regain access to Windows. The recovery key is automatically saved to the user's Microsoft Account (MSA) when the device is encrypted and can be retrieved from https://account.microsoft.com/devices/recoverykey

For more information, refer to Windows Support article: Finding your BitLocker recovery key in Windows

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Removing and installing components

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

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, 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 with the configuration ordered.

Table 1. Screw list

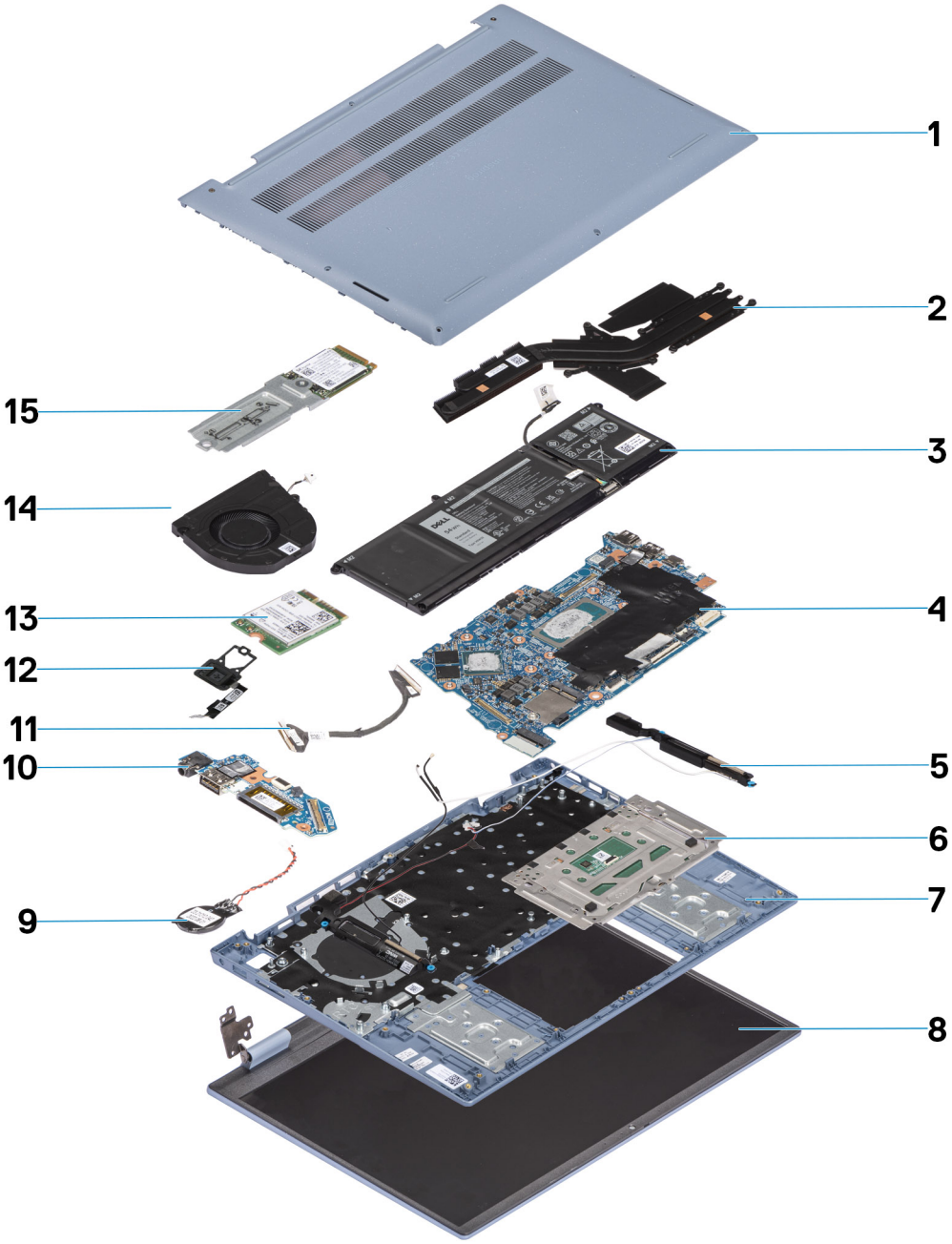
Component	Screw type	Quantity	Screw image
Base cover	M2x4	Downfiring speakers: 6 Upfiring speakers: 5	
Base cover	Captive screws **NOTE:** Screws are part of the base cover.	2	
3-cell battery	M2x3	3	
4-cell battery	M2x3	5	
M.2 2230 solid-state drive (SSD) extension bracket	M2x3 M2x1.8	1 1	 
M.2 2280 solid-state drive (SSD)	M2x3	1	
Wireless-card bracket	M2x3	1	

Table 1. Screw list (continued)

Component	Screw type	Quantity	Screw image
Fan	M2x3	2	
Heat sink	Captive screws **NOTE:** Screws are part of the heat sink.	Integrated: 4 Discrete: 7	
Touchpad (for computer shipped with downfiring speakers)	M2x2 M1.6x2.5	2 4	
Touchpad (for computer shipped with upfiring speakers)	M2x2 M1.6x2.5	4 5	
Display hinges	M2.5x3.5	4	
I/O daughter-board	M2x3	1	
Power button with optional fingerprint reader	M2x3	1	
USB Type-C port bracket	M2x4	Downfiring speakers: 3 Upfiring speakers: 2	
System board	M2x1.8	2	

Major components of Inspiron 14 5430

The following image shows the major components of Inspiron 14 5430.



1. Base cover
2. Heat sink
3. Battery
4. System board
5. Speakers
6. Touchpad
7. Palm-rest and keyboard assembly
8. Display assembly
9. Coin-cell battery
10. I/O daughter-board
11. I/O daughter-board cable
12. Power button with optional fingerprint reader
13. Wireless card
14. Fan
15. M.2 2230 solid-state drive

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

Base cover

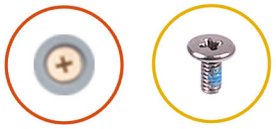
Removing the base cover

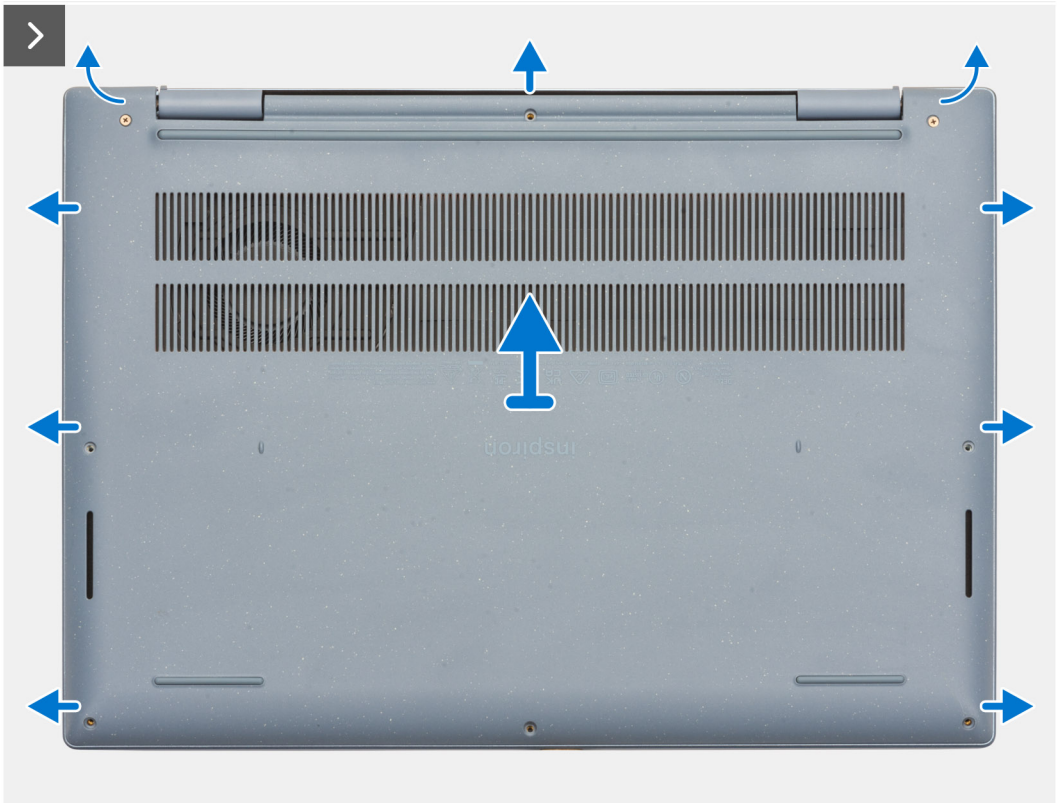
Prerequisites

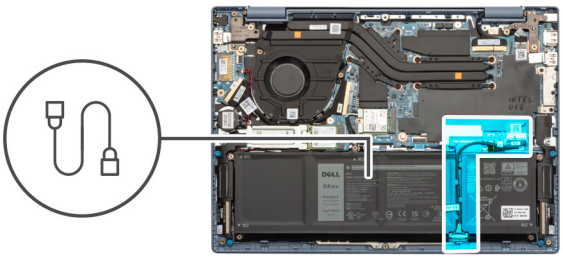
1. Follow the procedure in Before working inside your computer.

About this task

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








54Wh
BTY PULL

Steps

1. For computers shipped with downfiring speakers, remove the six screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
2. For computers shipped with upfiring speakers, remove the five screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
3. Loosen the two captive screws that secure the base cover to the palm-rest and keyboard assembly.
4. 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 through the edge of the top side of the base cover as it damages the latches inside the base cover.

5. Pry open the top side of the base cover and continue working on the left, right and, bottom sides to open the base cover.
6. Lift the base cover off the palm-rest and keyboard assembly.
7. Peel back the tape that secures the battery cable to the connector on the system board.
8. Use the pull tab to disconnect the battery cable from the connector on the system board.
9. Press and hold the power button for five seconds to ground the computer and drain the flea power.

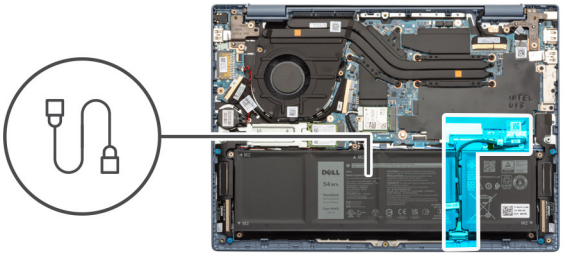
Installing the base cover

Prerequisites

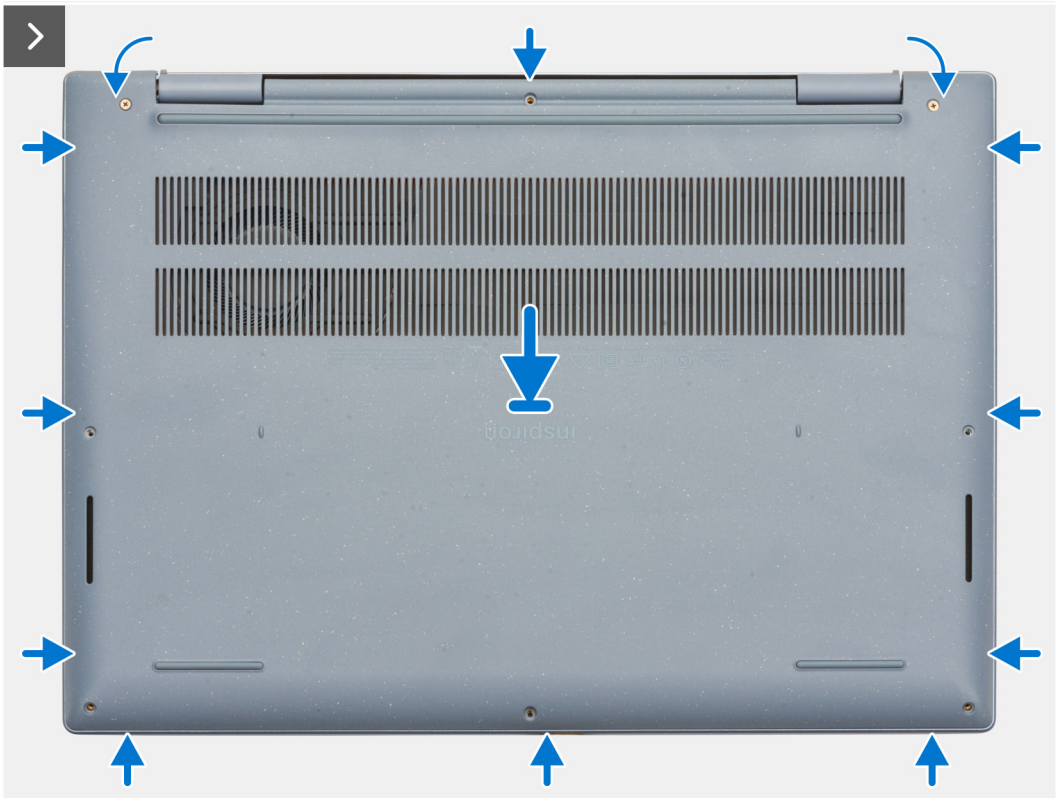
If you are replacing a component, remove the existing component before performing the installation procedure.

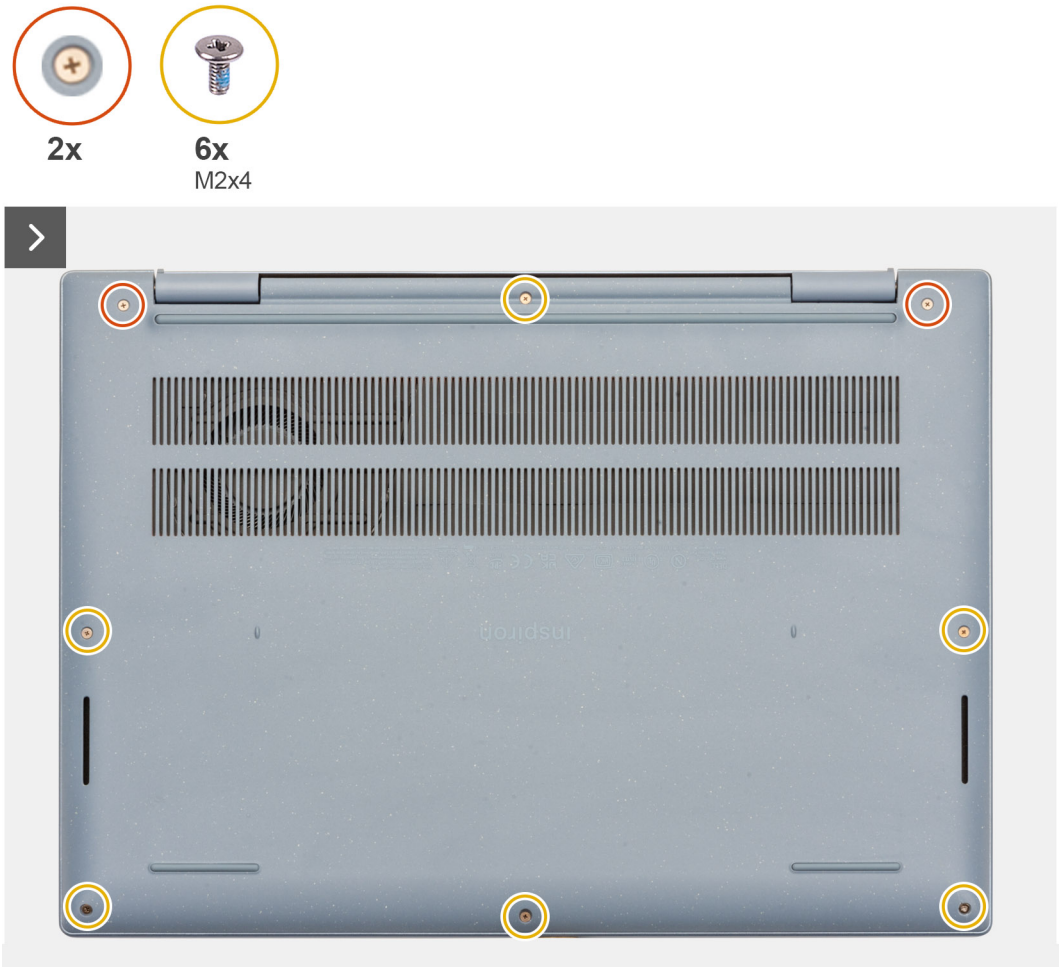
About this task

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




BTY PULL





Steps

1. Connect the battery cable to the connector on the system board.
2. Adhere the tape to secure the battery cable to the connector on the system board.
3. Place the base cover on top of the palm-rest and keyboard assembly.
4. Align the screw holes on the base cover to the screw holes on the palm-rest and keyboard assembly, and snap the base cover latches into place.
5. Tighten the two captive screws to secure the base cover to the palm-rest and keyboard assembly.
6. For computers shipped with downfiring speakers, replace the six screws (M2x4) to secure the base cover to the palm-rest and keyboard assembly.
7. For computers shipped with upfiring speakers, 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

Lithium-ion battery precautions

CAUTION:

- **Exercise caution when handling Lithium-ion batteries.**

- **Discharge the battery completely before removing it. Disconnect the AC power adapter from the system 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.**
- **Ensure any screws during the servicing of this product are not lost or misplaced, to prevent accidental puncture or damage to the battery and other system components.**
- **If the battery gets stuck inside your computer as a result of swelling, do not try to release it as puncturing, bending, or crushing a lithium-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See www.dell.com/contactdell.**
- **Always purchase genuine batteries from www.dell.com 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 Lithium-ion batteries, see Handling swollen Lithium-ion batteries.**

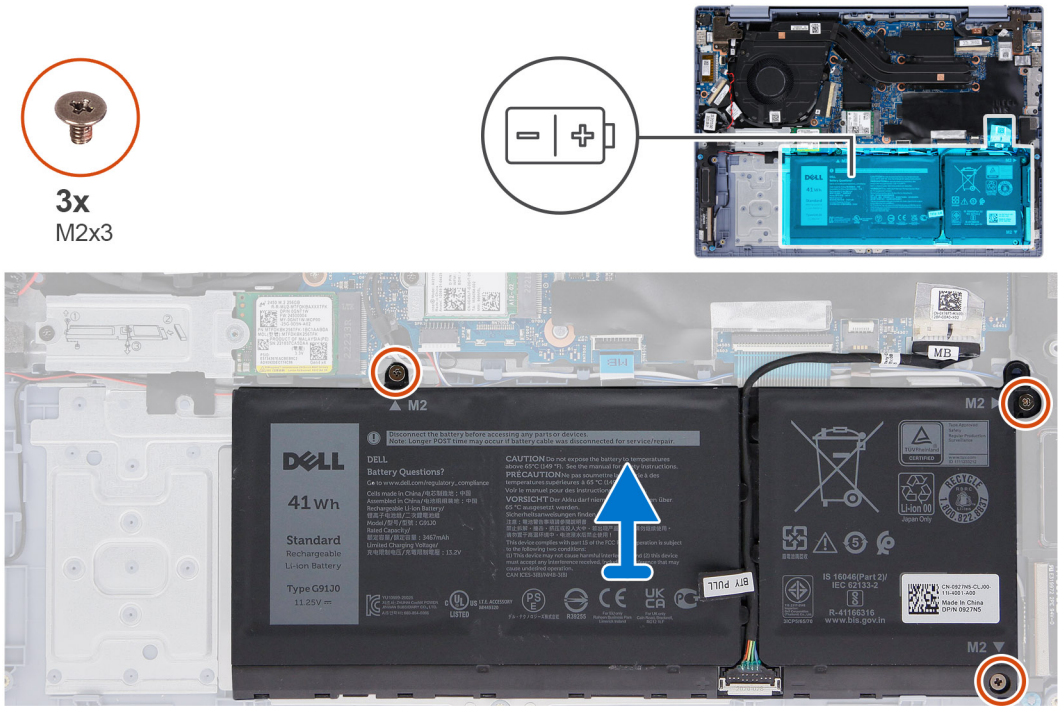
Removing the 3-cell battery

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

The following image indicates the location of the 3-cell battery and provides a visual representation of the removal procedure.



Steps

1. Remove the three screws (M2x3) that secure the 3-cell battery to the palm-rest and keyboard assembly.
2. Lift the 3-cell battery, along with the battery cable, off the palm-rest and keyboard assembly.

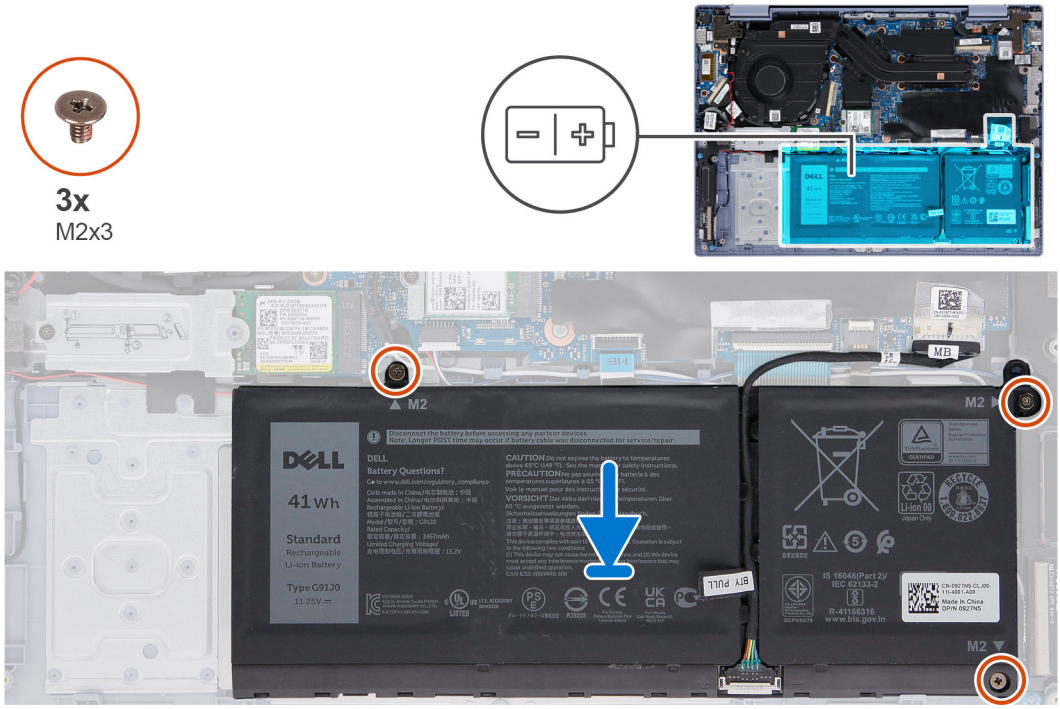
Installing the 3-cell battery

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 3-cell battery and provides a visual representation of the installation procedure.



Steps

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

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

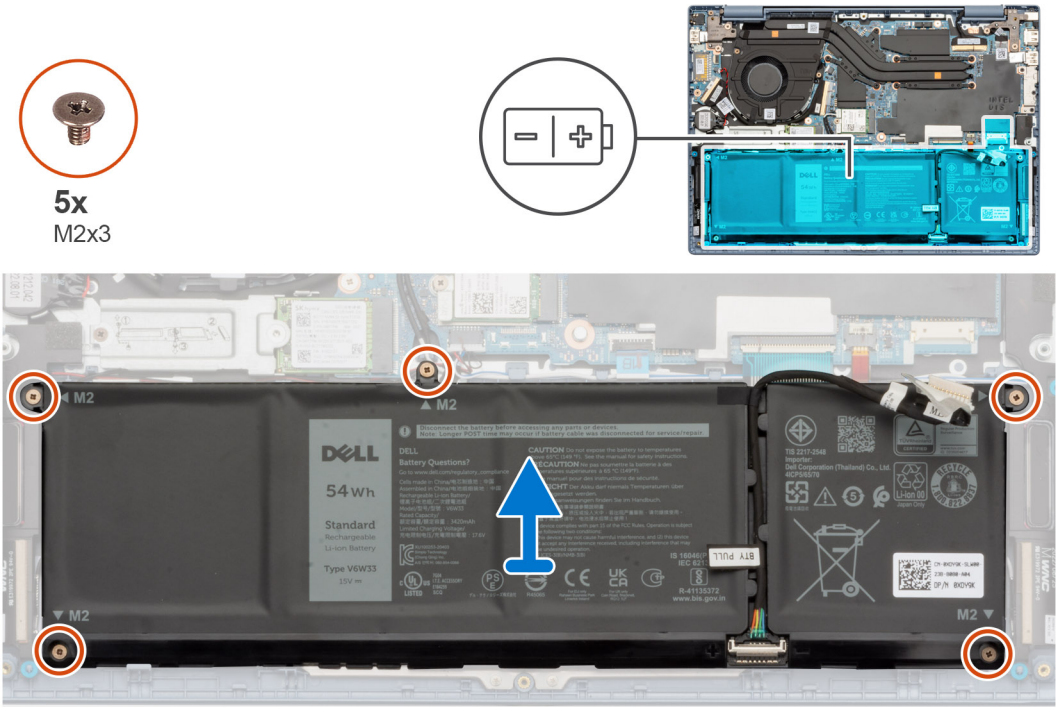
Removing the 4-cell battery

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

The following image indicates the location of the 4-cell battery and provides a visual representation of the removal procedure.



Steps

1. Remove the five screws (M2x3) that secure the 4-cell battery to the palm-rest and keyboard assembly.
2. Lift the 4-cell battery, along with the battery cable, off the palm-rest and keyboard assembly.

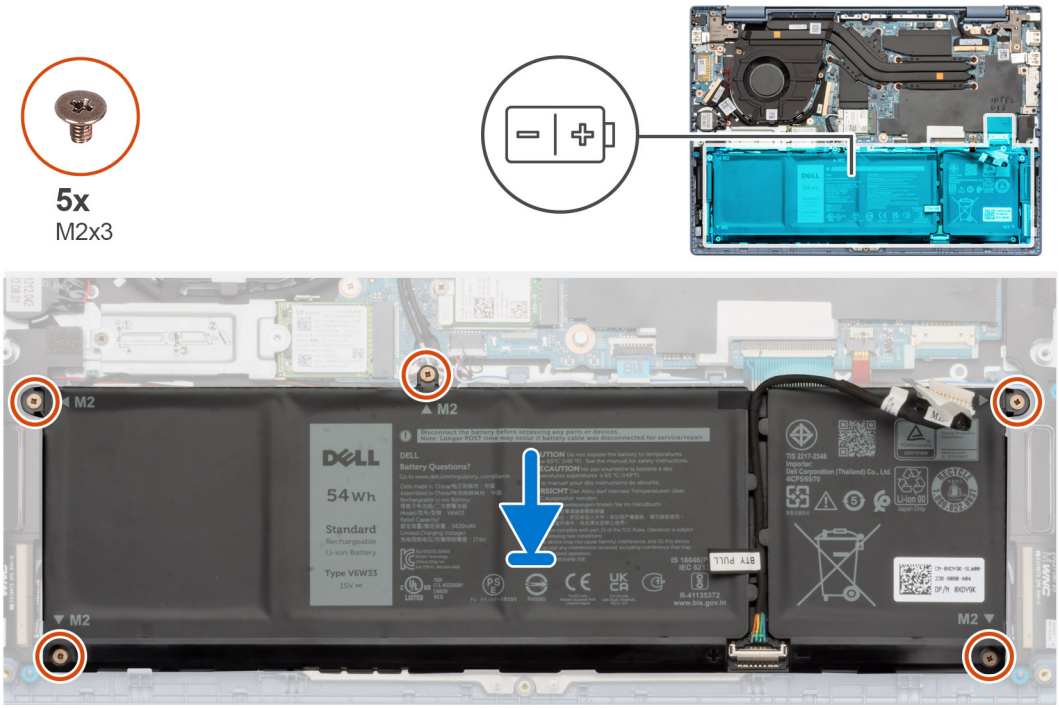
Installing the 4-cell battery

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 4-cell battery and provides a visual representation of the installation procedure.



Steps

1. Place the 4-cell battery, along with the battery cable, in the slot on the palm-rest and keyboard assembly.
2. Align the screw holes on the 4-cell battery to the screw holes on the palm-rest and keyboard assembly.
3. Replace the five screws (M2x3) to secure the 4-cell battery to the palm-rest and keyboard assembly.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

M.2 solid-state drive

Removing the M.2 2230 solid-state drive

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

NOTE: This procedure applies only to computers shipped with a M.2 2230 solid-state drive installed.

NOTE: The M.2 solid-state drive installed on your computer depends on the configuration ordered. The M.2 slot supports one of the following solid-state drives:

- M.2 2230 solid-state drive

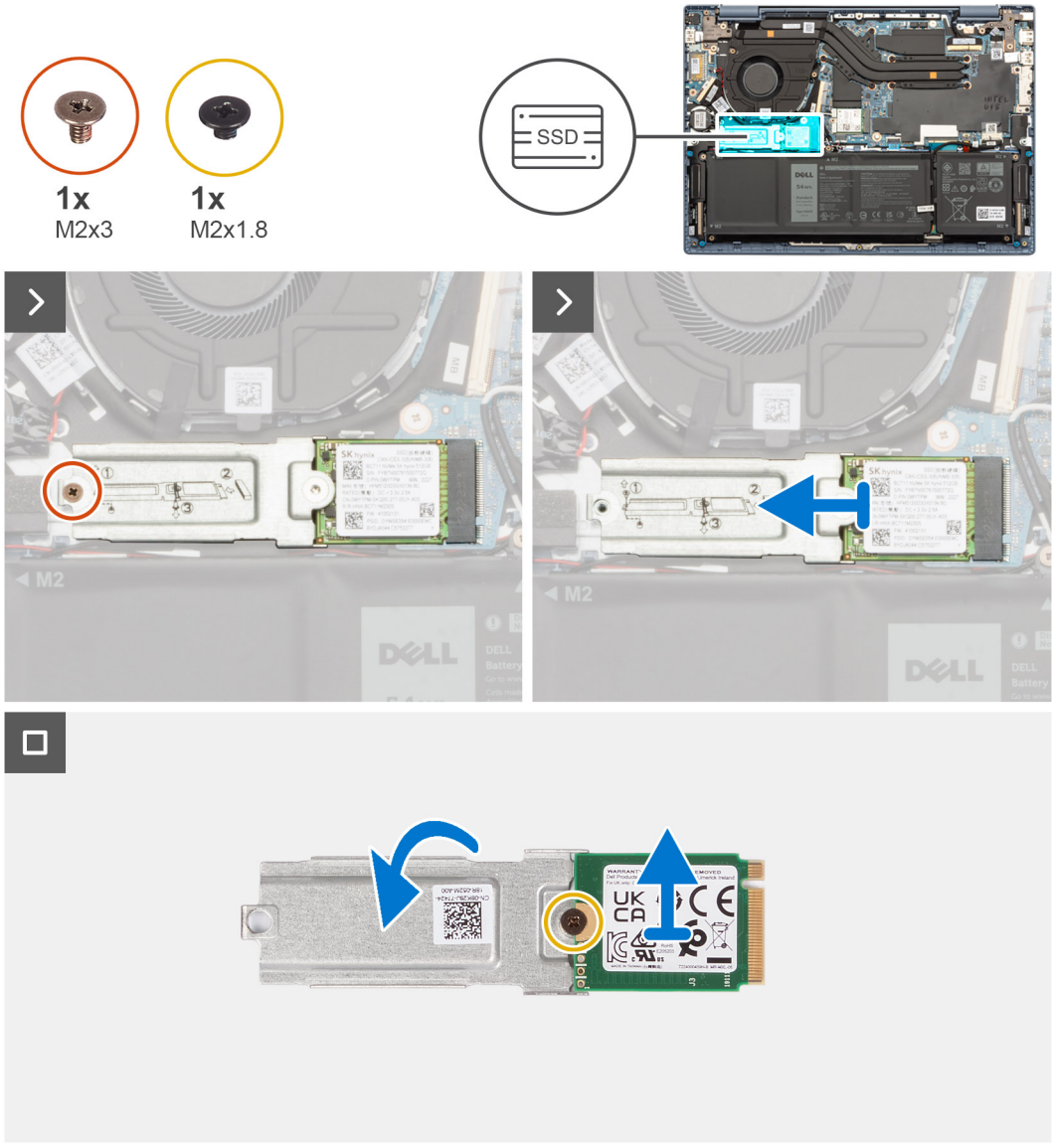
  A mounting bracket for the M.2 2230 solid-state drive is required. The mounting bracket is provided if the M.2 2230 solid-state is shipped with the computer.

  If you are replacing the M.2 2230 solid-state drive with a new M.2 2230 solid-state drive, use the existing mounting bracket to install the latter.

- M.2 2280 solid-state drive

  If you are replacing the M.2 2280 solid-state drive (shipped with the computer) with an M.2 2230 solid-state drive, a mounting bracket for the M.2 2230 solid-state drive is required. Please contact Dell support to purchase the mounting bracket for the M.2 2230 solid-state drive.

The following images indicate the location of the M.2 2230 solid-state drive and provide a visual representation of the removal procedure.



Steps

1. Remove the screw (M2x3) that secures the M.2 2230 solid-state drive bracket to the system board.
2. Slide and remove the M.2 2230 solid-state drive bracket, along with the M.2 2230 solid-state drive, from the M.2 card slot on the system board.
3. Turn over the M.2 2230 solid-state drive bracket.
4. Remove the screw (M2x1.8) that secures the M.2 2230 solid-state drive to the M.2 2230 solid-state drive bracket.
5. Lift the M.2 2230 solid-state drive off the M.2 2230 solid-state drive bracket.

Installing the M.2 2230 solid-state drive

Prerequisites

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

About this task

NOTE: This procedure applies only if you are installing a M.2 2230 solid-state drive.

NOTE: The M.2 solid-state drive installed on your computer depends on the configuration ordered. The M.2 slot supports one of the following solid-state drives:

- M.2 2230 solid-state drive

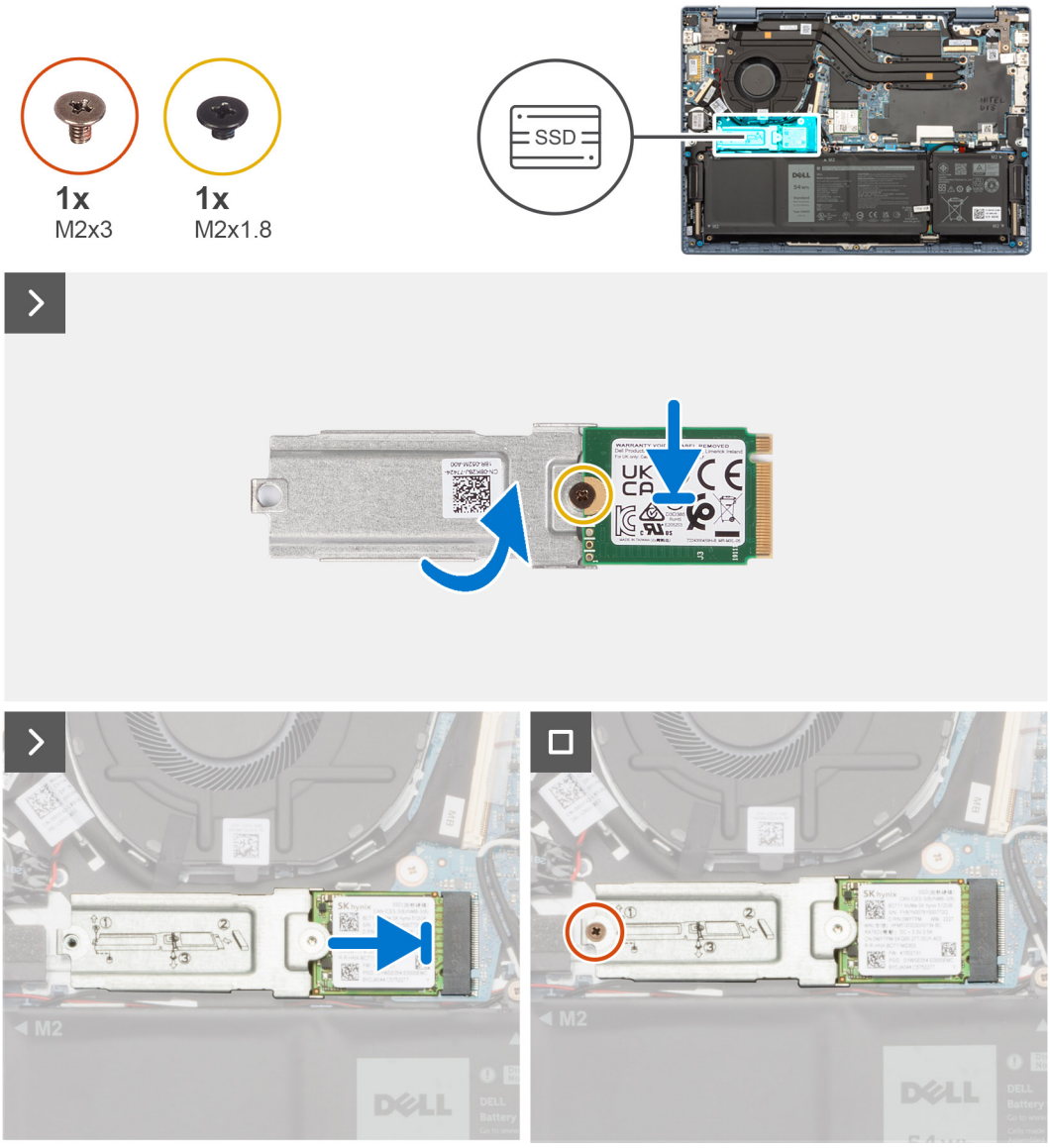
  A mounting bracket for the M.2 2230 solid-state drive is required. The mounting bracket is provided if the M.2 2230 solid-state is shipped with the computer.

  If you are replacing the M.2 2230 solid-state drive with a new M.2 2230 solid-state drive, use the existing mounting bracket to install the latter.

- M.2 2280 solid-state drive

  If you are replacing the M.2 2280 solid-state drive (shipped with the computer) with an M.2 2230 solid-state drive, a mounting bracket for the M.2 2230 solid-state drive is required. Please contact Dell support to purchase the mounting bracket for the M.2 2230 solid-state drive.

The following images indicate the location of the M.2 2230 solid-state drive and provide a visual representation of the installation procedure.



Steps

1. Align the round notch on the M.2 2230 solid-state drive to the screw hole on the M.2 2230 solid-state drive bracket.
2. Replace the screw (M2x1.8) to secure the M.2 2230 solid-state drive to the M.2 2230 solid-state drive bracket.
3. Turn over the M.2 2230 solid-state drive bracket.
4. Align the notch on the M.2 2230 solid-state drive with the tab on the M.2 card slot on the system board.
5. At an angle, slide and place the M.2 2230 solid-state drive bracket, along with the solid-state drive, into the M.2 card slot on the system board.
6. Replace the screw (M2x3) to secure the M.2 2230 solid-state drive bracket to the system board.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

Removing the M.2 2280 solid-state drive

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

NOTE: This procedure applies only to computers shipped with a M.2 2280 solid-state drive installed.

NOTE: The M.2 solid-state drive installed on your computer depends on the configuration ordered. The M.2 slot supports one of the following solid-state drives:

- M.2 2230 solid-state drive

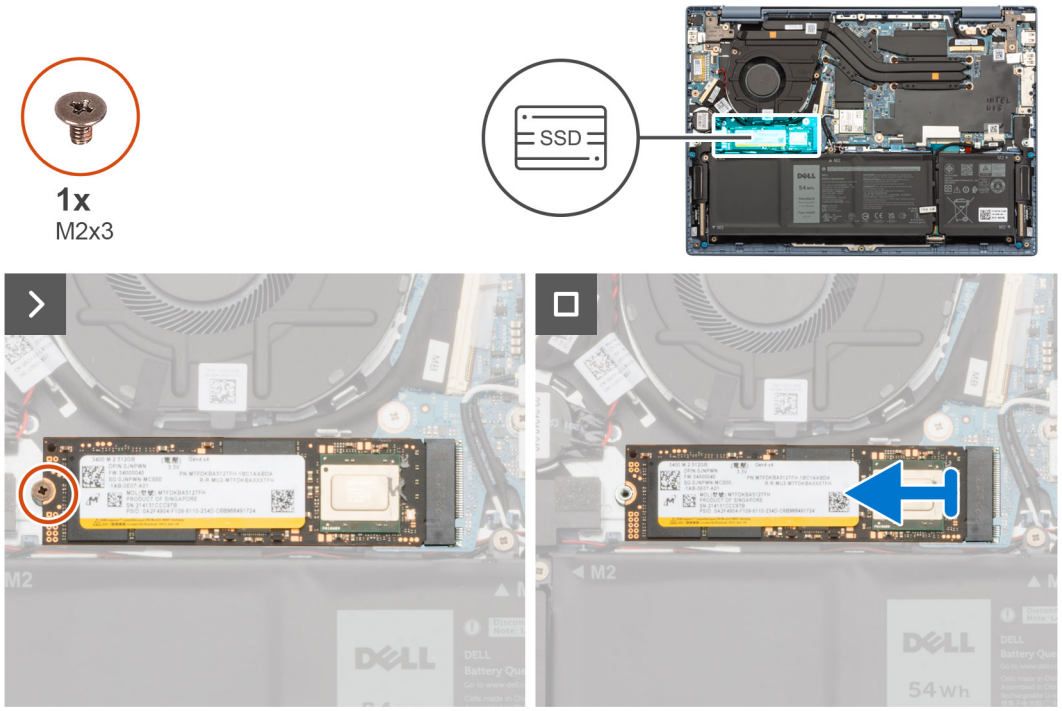
  A mounting bracket for the M.2 2230 solid-state drive is required. The mounting bracket is provided if the M.2 2230 solid-state is shipped with the computer.

  If you are replacing the M.2 2230 solid-state drive with a new M.2 2230 solid-state drive, use the existing mounting bracket to install the latter.

- M.2 2280 solid-state drive

  If you are replacing the M.2 2280 solid-state drive (shipped with the computer) with an M.2 2230 solid-state drive, a mounting bracket for the M.2 2230 solid-state drive is required. Please contact Dell support to purchase the mounting bracket for the M.2 2230 solid-state drive.

The following images indicate the location of the M.2 2280 solid-state drive and provide a visual representation of the removal procedure.



Steps

1. Remove the screw (M2x3) that secures the M.2 2280 solid-state drive to the system board.
2. Slide and remove the M.2 2280 solid-state drive from the M.2 card slot on the system board.

Installing the M.2 2280 solid-state drive

Prerequisites

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

About this task

NOTE: This procedure applies only if you are installing a M.2 2280 solid-state drive.

NOTE: The M.2 solid-state drive installed on your computer depends on the configuration ordered. The M.2 slot supports one of the following solid-state drives:

- M.2 2230 solid-state drive

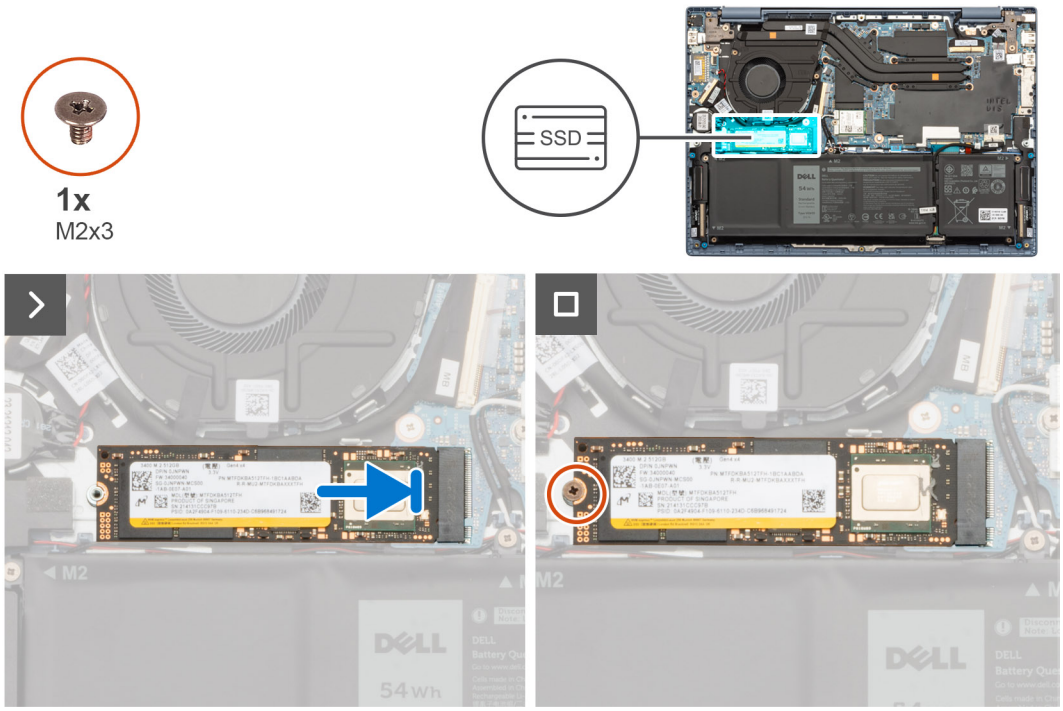
  A mounting bracket for the M.2 2230 solid-state drive is required. The mounting bracket is provided if the M.2 2230 solid-state is shipped with the computer.

  If you are replacing the M.2 2230 solid-state drive with a new M.2 2230 solid-state drive, use the existing mounting bracket to install the latter.

- M.2 2280 solid-state drive

  If you are replacing the M.2 2280 solid-state drive (shipped with the computer) with an M.2 2230 solid-state drive, a mounting bracket for the M.2 2230 solid-state drive is required. Please contact Dell support to purchase the mounting bracket for the M.2 2230 solid-state drive.

The following images indicate the location of the M.2 2280 solid-state drive and provide a visual representation of the installation procedure.



Steps

1. Align the notch on the M.2 2280 solid-state drive to the tab on the M.2 card slot on the system board.
2. At an angle, slide and place the M.2 2280 solid-state drive into the M.2 card slot on the system board.
3. Replace the screw (M2x3) to secure the M.2 2280 solid-state drive bracket to the system board.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

Wireless card

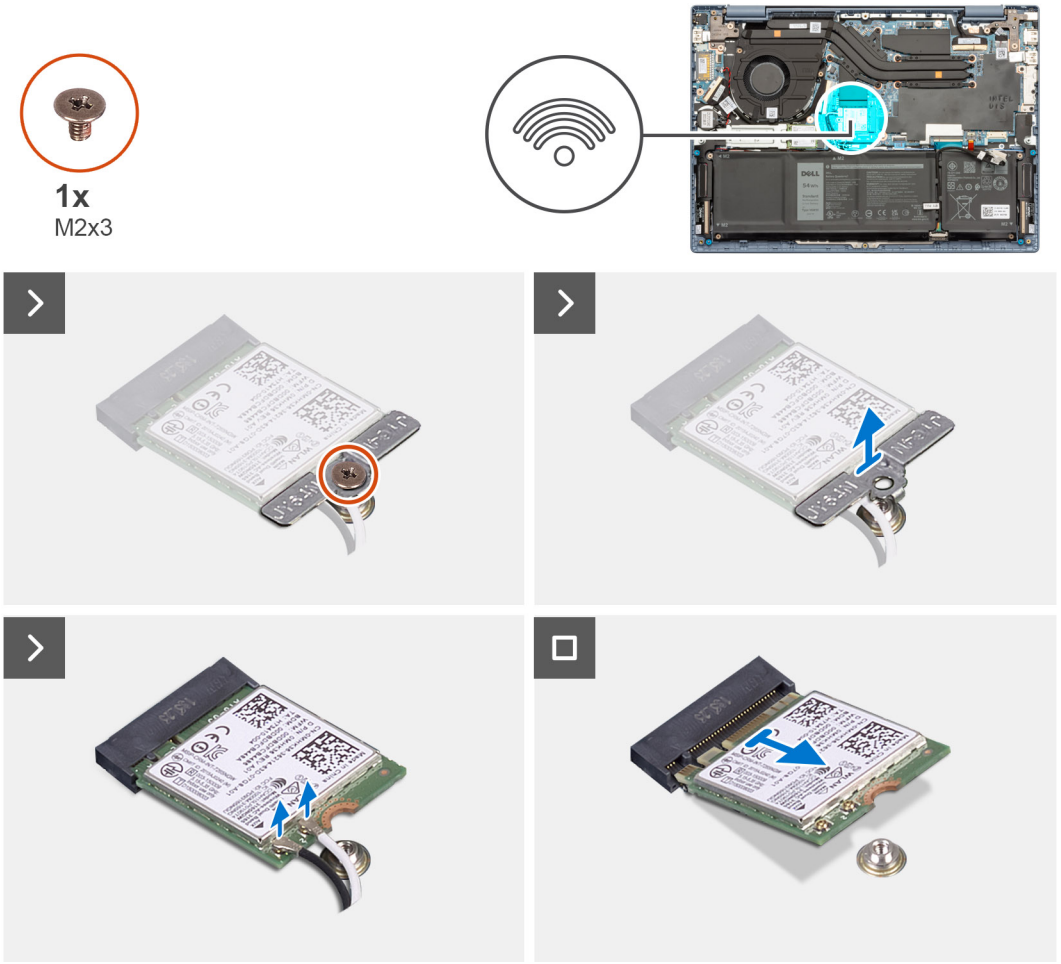
Removing the wireless card

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

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



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 WLAN antenna cables from the connectors on the wireless card.
4. Slide and remove the wireless card from the wireless-card slot on the system board.

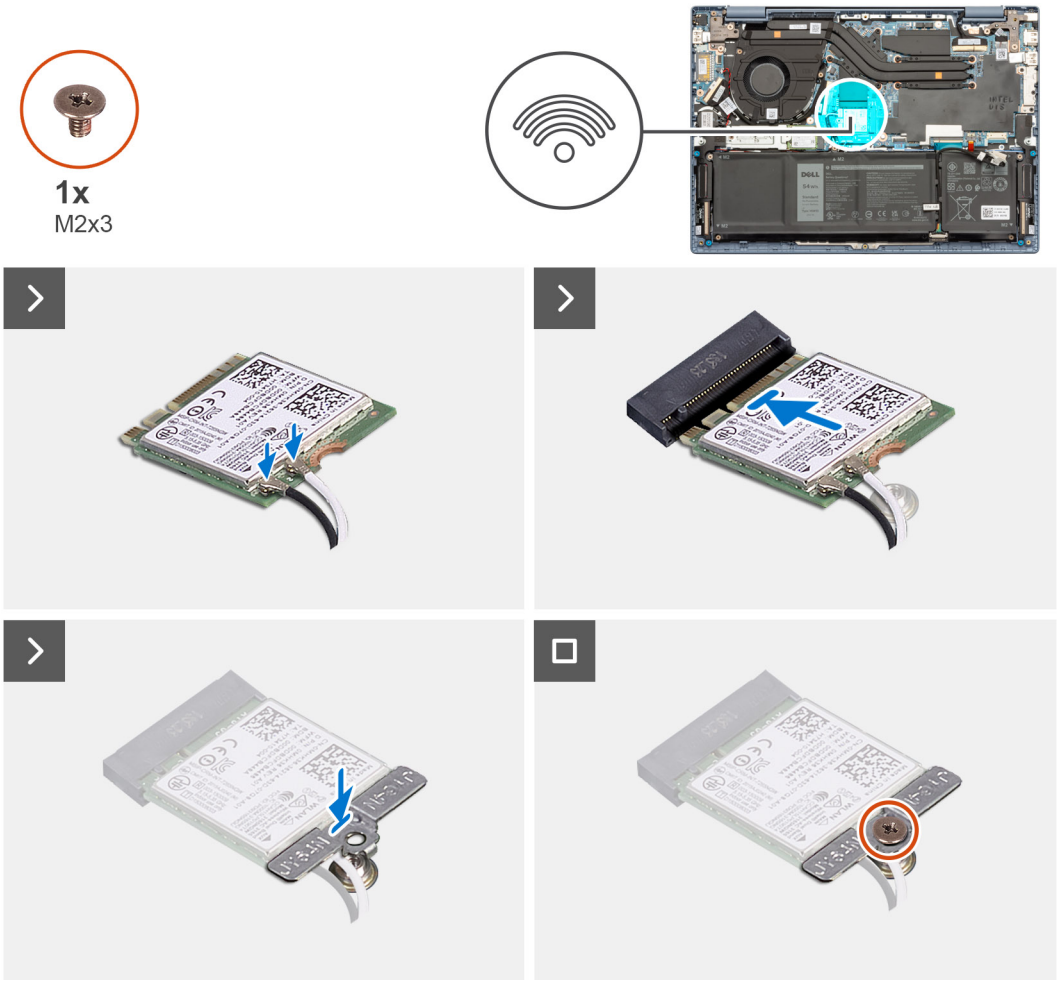
Installing the wireless card

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.



Steps

1. Connect the WLAN antenna cables to the connectors on the wireless card.

Table 2. Antenna-cable color scheme

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

2. Align the notch on the wireless card to the tab on the wireless-card slot on the system board.
3. At an angle, slide the wireless card into the wireless-card slot on the system board.
4. Place the wireless-card bracket on the wireless card.
5. Align the screw hole on the wireless-card bracket to 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.
2. Follow the procedure in After working inside your computer.

Fan

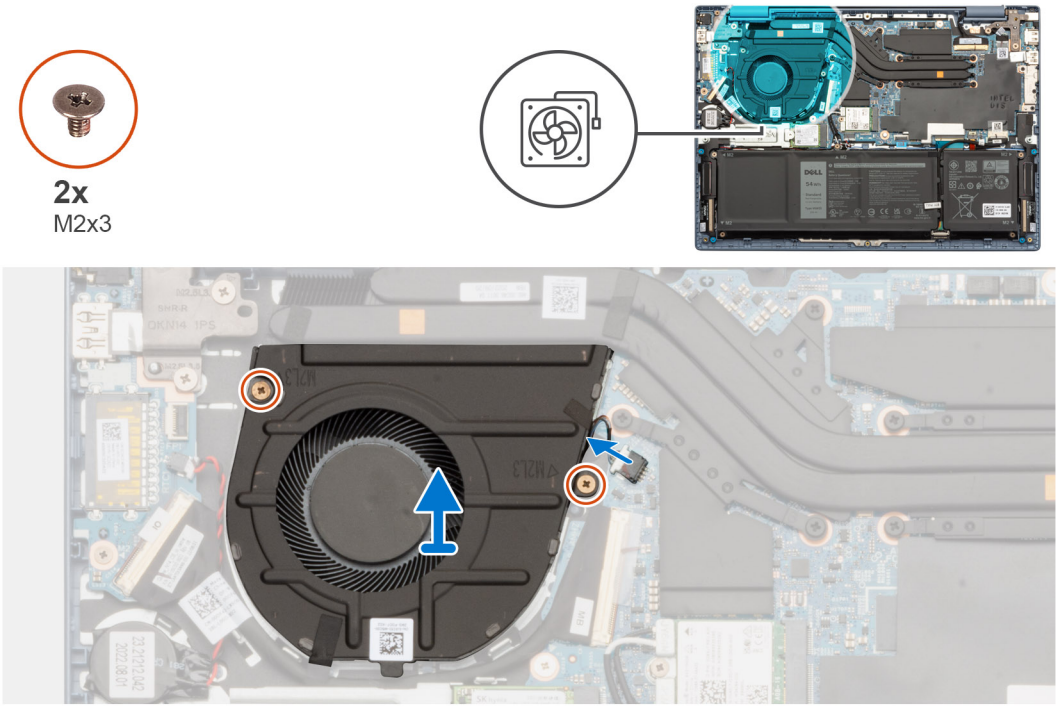
Removing the fan

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

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



Steps

1. Peel back the tape that secures the I/O daughter-board cable to the fan.
2. Disconnect the fan cable from the connector on the system board.
3. Remove the two screws (M2x3) that secure the fan to the palm-rest and keyboard assembly.
4. Lift the fan off the palm-rest and keyboard assembly.

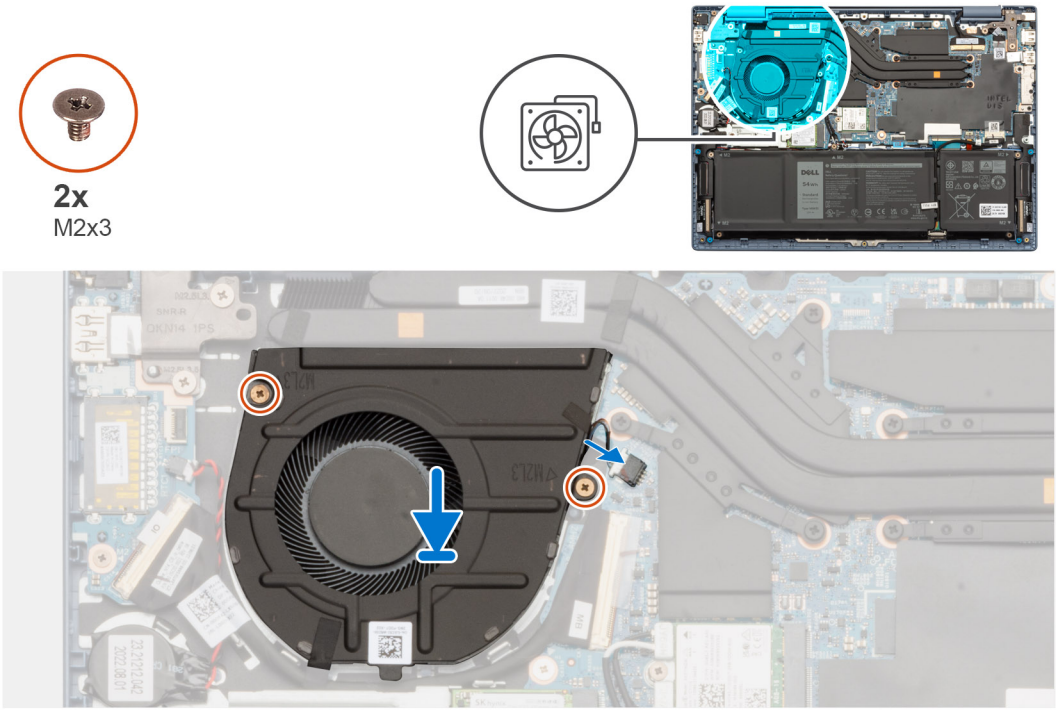
Installing the fan

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.



Steps

1. Place the fan on the palm-rest and keyboard assembly.
2. Align the screw holes on the fan to the screw holes on the palm-rest and keyboard assembly.
3. Replace the two screws (M2x3) to secure the fan to the palm-rest and keyboard assembly.
4. Connect the fan cable to the connector on the system board.
5. Adhere the tape to secure the I/O daughter-board cable to the fan.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

Heat sink

Removing the heat sink - integrated

Prerequisites

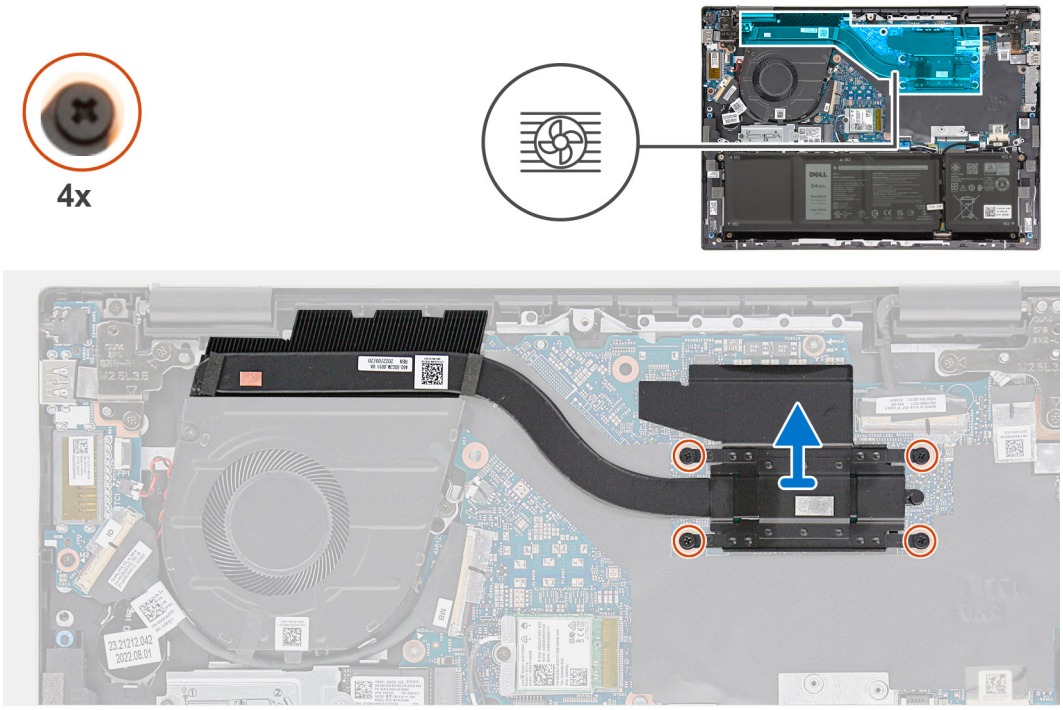
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

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

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

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



Steps

1. Loosen the four captive screws that secure the integrated heat sink to the system board.

   NOTE: Loosen the four captive screws in the reverse sequential order mentioned on the integrated heat sink [4 > 3 > 2 > 1].

2. Lift and remove the integrated heat sink from the system board.

Installing the heat sink - integrated

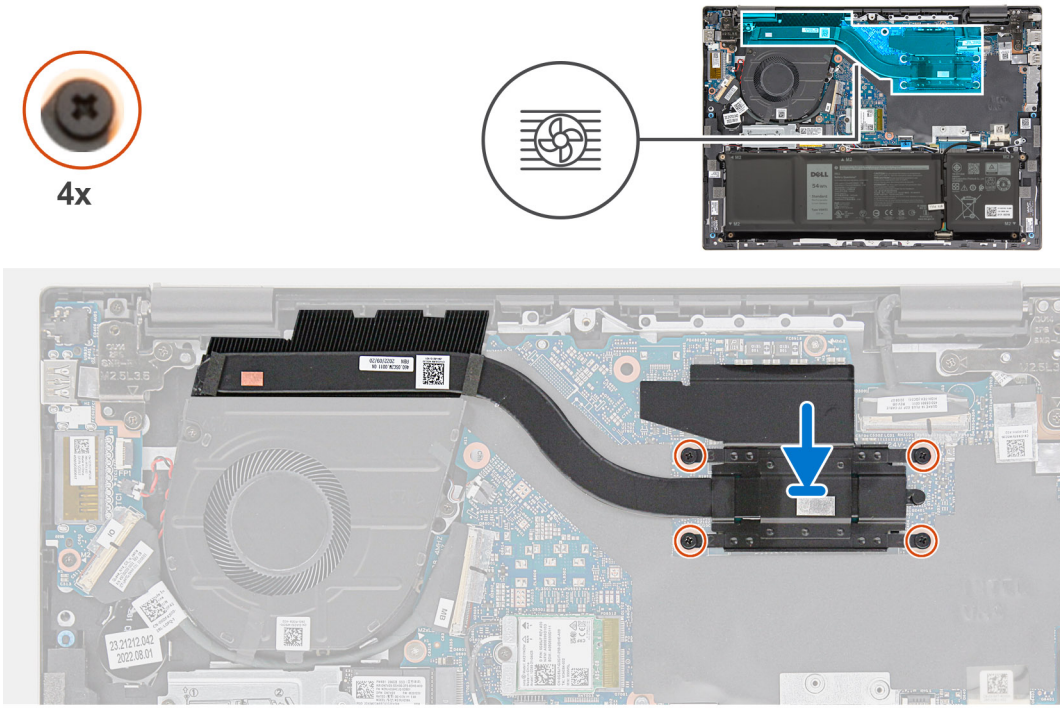
Prerequisites

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 provided in the kit to ensure that thermal conductivity is achieved.

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



Steps

1. Place the integrated heat sink on the system board.
2. Align the screw holes on the integrated heat sink to the screw holes on the system board.
3. Tighten the four captive screws to secure the integrated heat sink to the system board.

   NOTE: Tighten the four captive screws in the sequential order mentioned on the integrated heat sink [1 > 2 > 3 > 4].

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

Removing the heat sink - discrete

Prerequisites

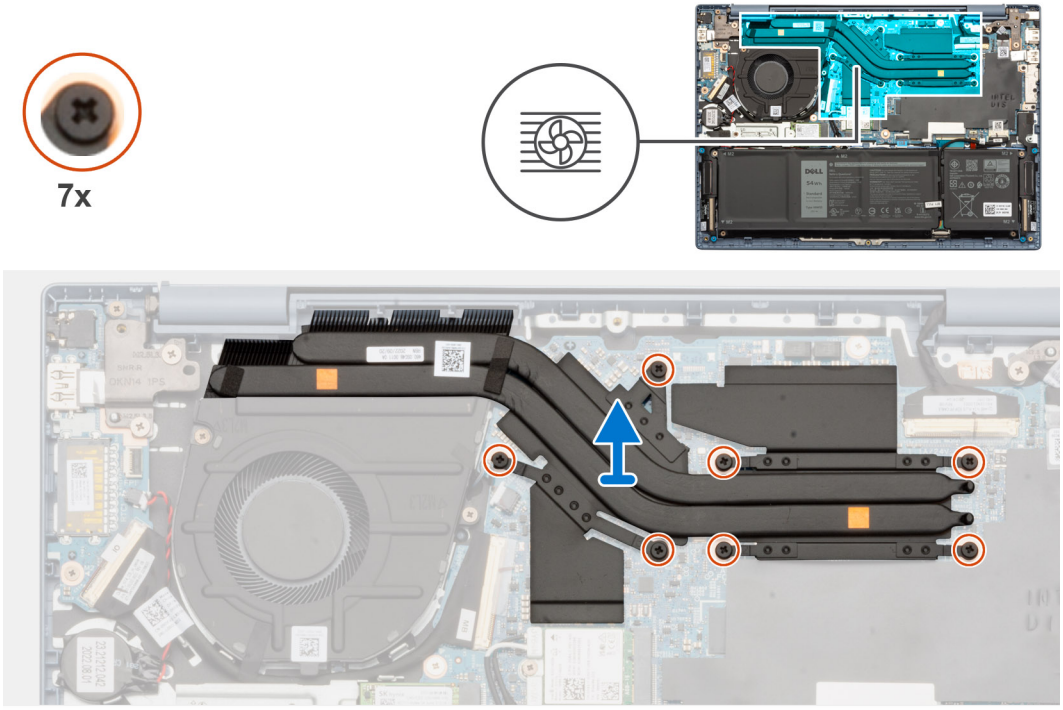
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

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

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

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



Steps

1. Loosen the seven captive screws that secure the discrete heat sink to the system board.

   NOTE: Loosen the seven captive screws in the reverse sequential order mentioned on the discrete heat sink [7 > 6 > 5 > 4 > 3 > 2 > 1].

2. Lift and remove the discrete heat sink from the system board.

Installing the heat sink - discrete

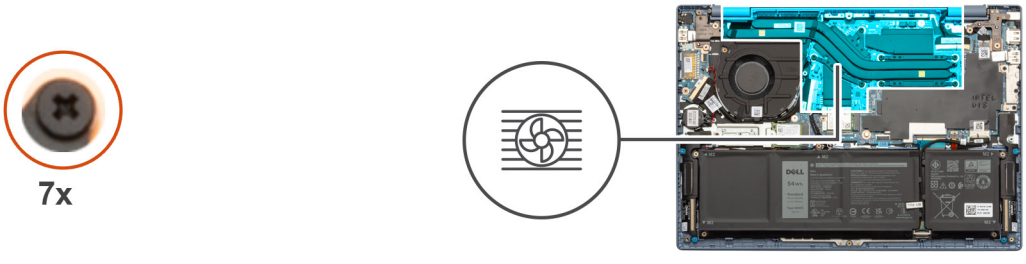
Prerequisites

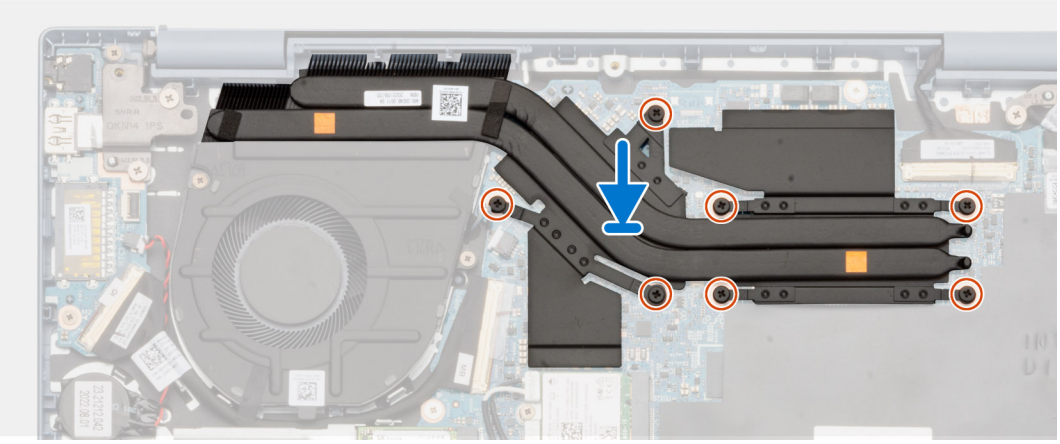
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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

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





Steps

1. Place the discrete heat sink on the system board.
2. Align the screw holes on the discrete heat sink to the screw holes on the system board.
3. Tighten the seven captive screws to secure the discrete heat sink to the system board.

   NOTE: Tighten the seven captive screws in the sequential order mentioned on the discrete heat sink [1 > 2 > 3 > 4 > 5 > 6 > 7].

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

Speakers

Removing the speakers

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the wireless card.
4. Remove the 3-cell battery or the 4-cell battery, whichever applicable.

About this task

NOTE: The removal procedure is the same for both, computers shipped with downfiring speakers installed and computers shipped with upfiring speakers installed.

NOTE: The wireless-card antennas are attached to the speakers as an assembly and cannot be separated for individual replacement. Services will replace the speakers and the wireless antennas as an assembly part.

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

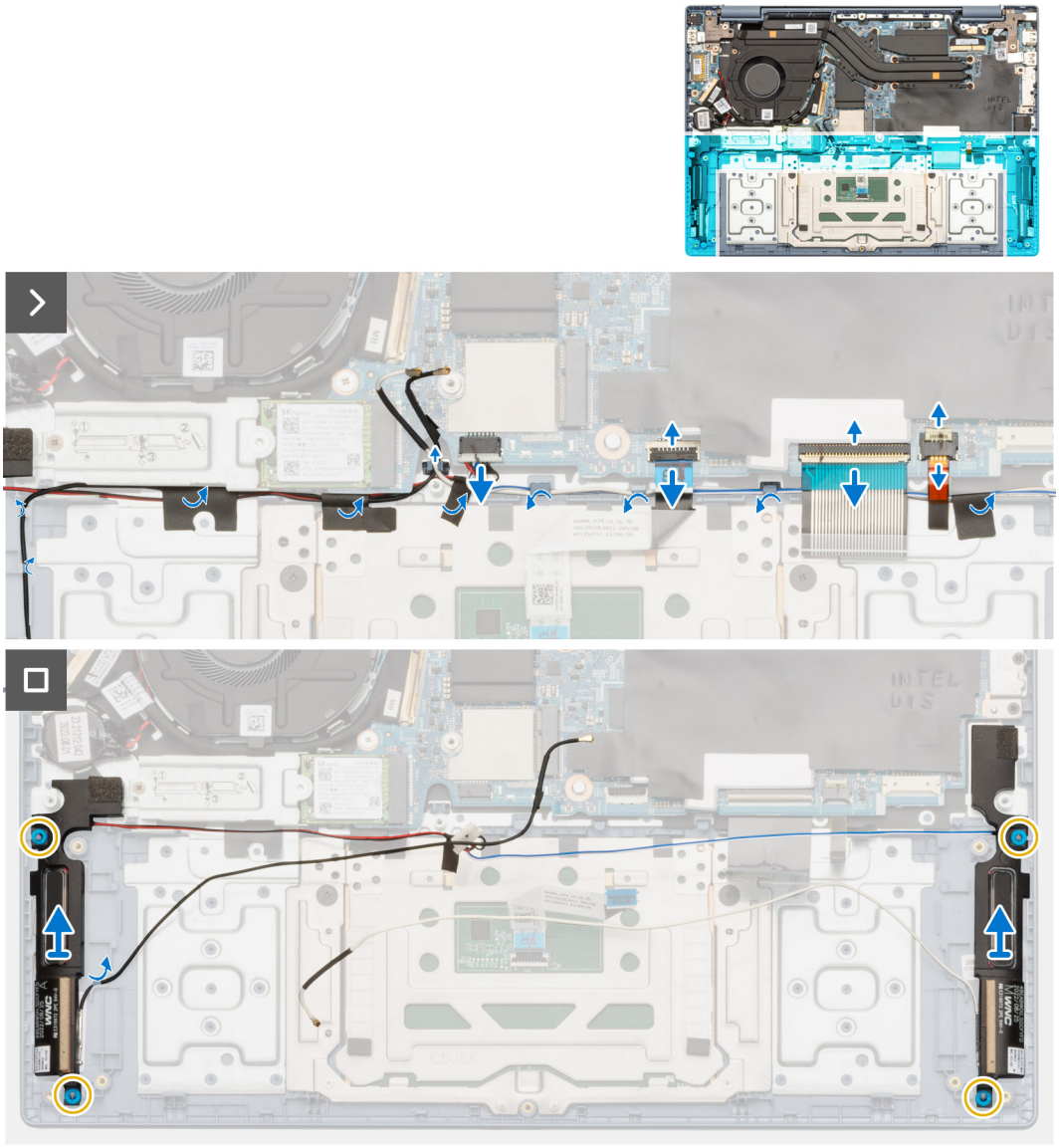


Figure 1. Removing the downfiring speakers

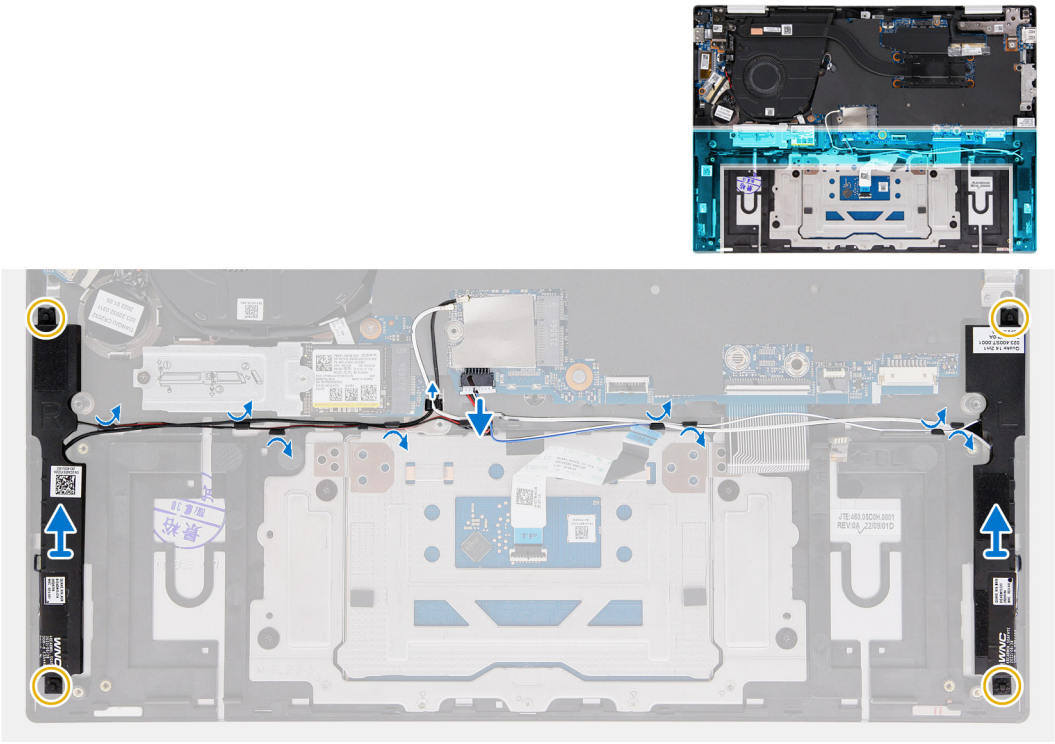


Figure 2. Removing the upfiring speakers

Steps

1. Open the latch and disconnect the touchpad cable from the connector on the system board.
2. Open the latch and disconnect the keyboard cable from the connector on the system board.
3. Open the latch and disconnect the keyboard-backlight cable from the connector on the system board.
4. Peel back the tapes that secure the speaker cables and the wireless-antenna cables to the palm-rest and keyboard assembly.
5. Disconnect the speaker cable from the connector on the system board.
6. Unroute and remove the wireless-antenna cables and the speaker cables from the routing guides on palm-rest and keyboard assembly.
7. Lift the speakers, along with the speaker cables and the wireless-antenna cables, off the palm-rest and keyboard assembly.

Installing the speakers

Prerequisites

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

About this task

NOTE: The installation procedure is the same for both, computers shipped with downfiring speakers installed and computers shipped with upfiring speakers installed.

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.

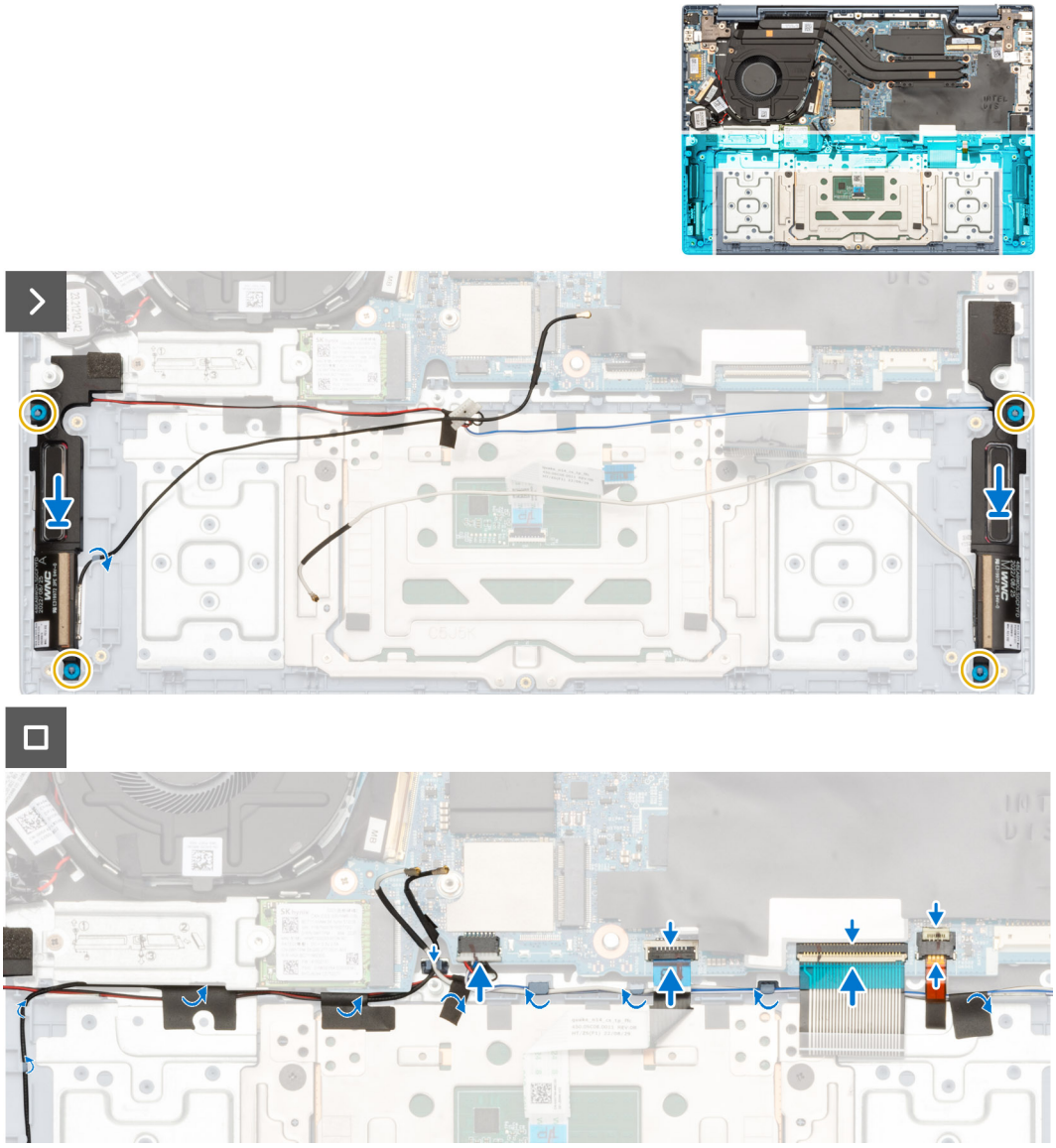


Figure 3. Installing the downfiring speakers

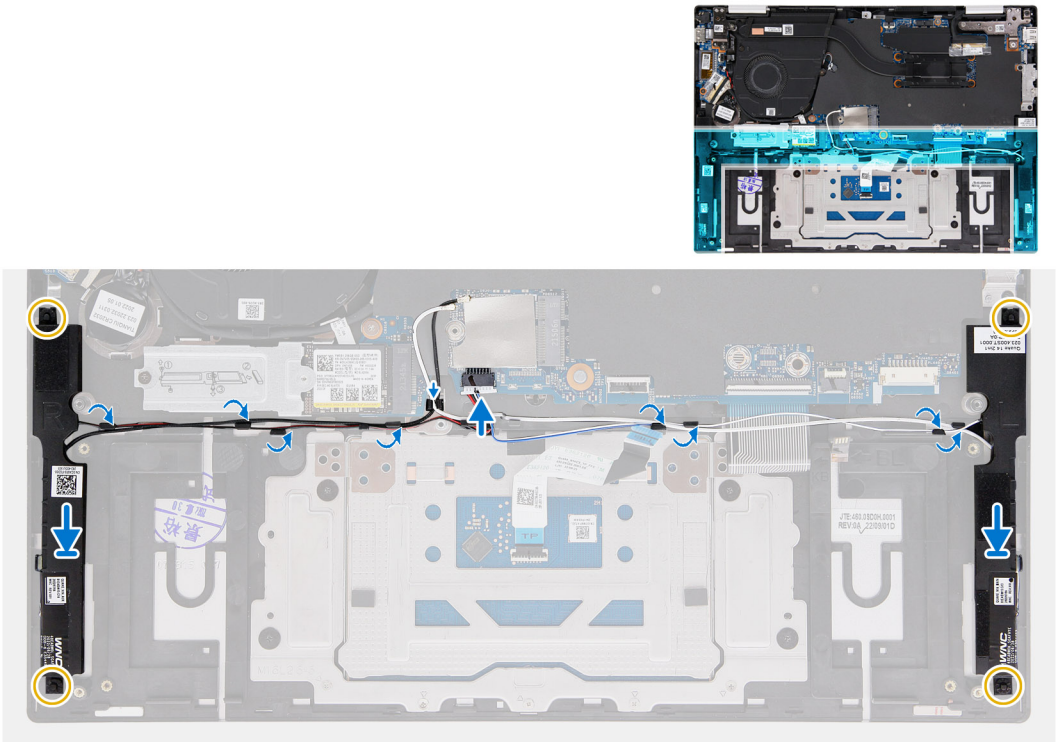


Figure 4. Installing the upfiring speakers

Steps

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

   NOTE: Ensure that the alignment posts are threaded through the rubber grommets on the speakers.

2. Route the speaker cable and the wireless-antenna cables through the routing guides on the palm-rest and keyboard assembly.
3. Connect the speaker cable to the connector on the system board.
4. Adhere the tapes to secure the speaker cables and the wireless-antenna cables to the palm-rest and keyboard assembly.
5. Connect the touchpad cable to the connector on the system board and close the latch.
6. Connect the keyboard cable to the connector on the system board and close the latch.
7. Connect the keyboard-backlight cable to the connector on the system board and close the latch.

Next steps

1. Install the 3-cell battery or the 4-cell battery, whichever applicable.
2. Install the wireless card.
3. Install the base cover.
4. Follow the procedure in After working inside your computer.

Touchpad

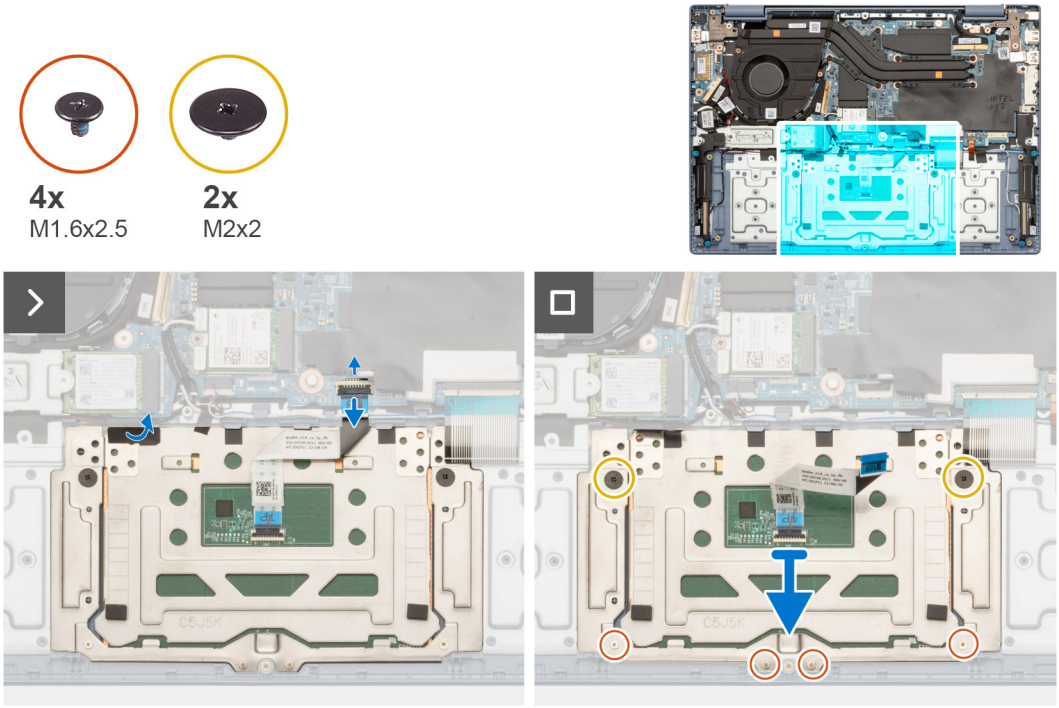
Removing the touchpad

Prerequisites

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

About this task

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



Steps

1. Peel the tape that secures the touchpad to the palm-rest and keyboard assembly.
2. Open the latch and disconnect the touchpad flexible flat cable from the connector on the system board.
3. For computers shipped with downfiring speakers, remove the two screws (M2x2) and the four screws (M1.6x2.5) that secure the touchpad to the palm-rest and keyboard assembly.
4. For computers shipped with upfiring speakers, remove the four screws (M2x2) and the five screws (M1.6x2.5) that secure the touchpad to the palm-rest and keyboard assembly.
5. Lift the touchpad, along with the touchpad flexible flat cable, off the palm-rest and keyboard assembly.

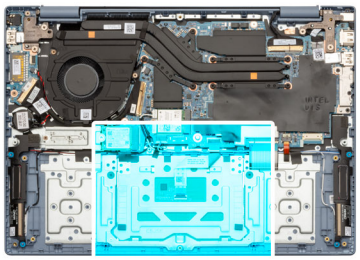
Installing the touchpad

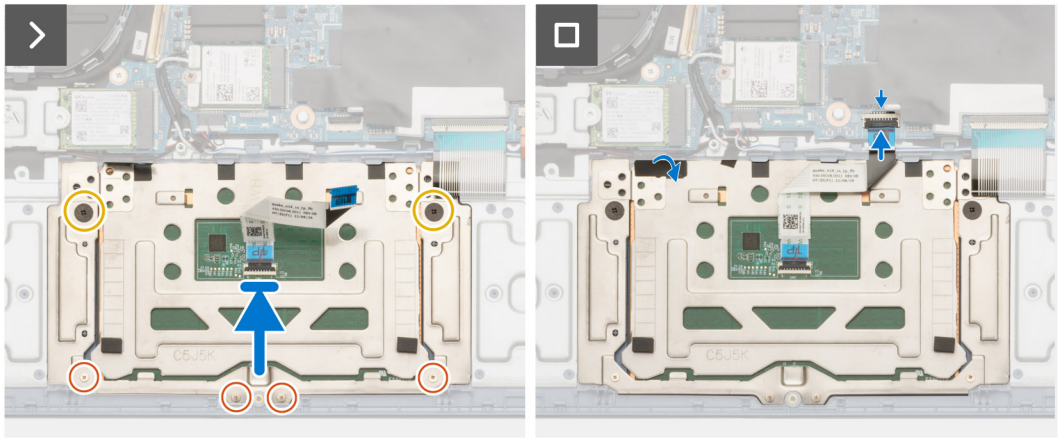
Prerequisites

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.





Steps

1. Align and place the touchpad, along with the touchpad flexible flat cable, in the slot on the palm-rest and keyboard assembly.
2. Align the screw holes on the touchpad to the screw holes on the palm-rest and keyboard assembly.
3. For computers shipped with downfiring speakers, replace the two screws (M2x2) and the four screws (M1.6x2.5) to secure the touchpad to the palm-rest and keyboard assembly.
4. For computers shipped with upfiring speakers, replace the four screws (M2x2) and the five screws (M1.6x2.5) to secure the touchpad to the palm-rest and keyboard assembly.
5. Connect the touchpad flexible flat cable to the connector on the system board and close the latch.
6. Adhere the tape to secure the touchpad to the palm-rest and keyboard assembly.

Next steps

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

Power-adapter port

Removing the power-adapter port

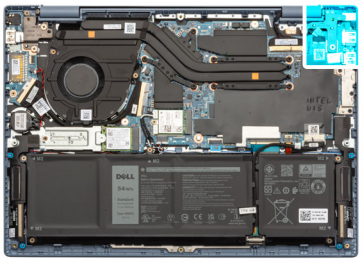
Prerequisites

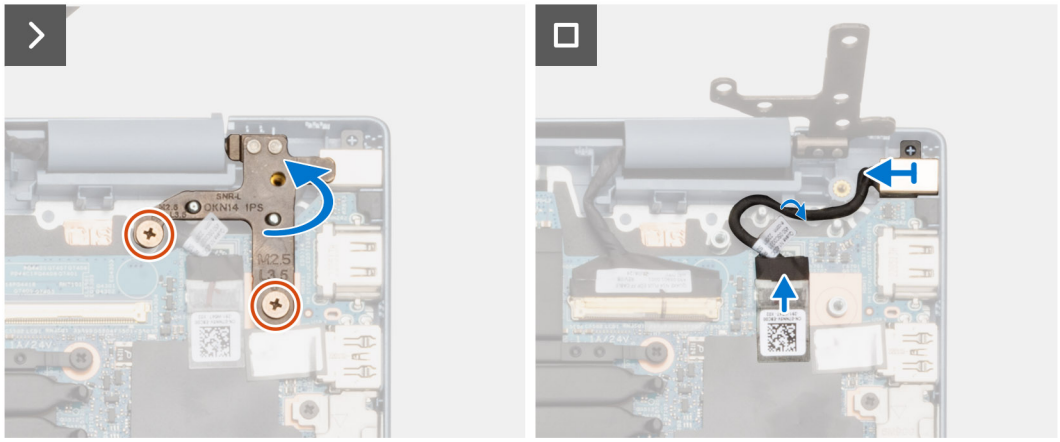
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

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

2x
M2.5x3.5





Steps

1. Remove the two screws (M2.5x3.5) that secure the right display hinge to the system board and the palm-rest and keyboard assembly.
2. Using a plastic scribe, pry open the right display hinge upwards at an angle of 90 degrees.
3. Peel back the tape that secures the power-adapter port cable to the connector on the system board.
4. Disconnect the power-adapter port cable from the connector 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, along with the cable, off the palm-rest and keyboard assembly.

Installing the power-adapter port

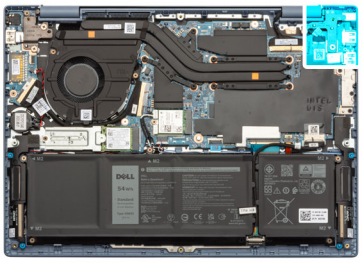
Prerequisites

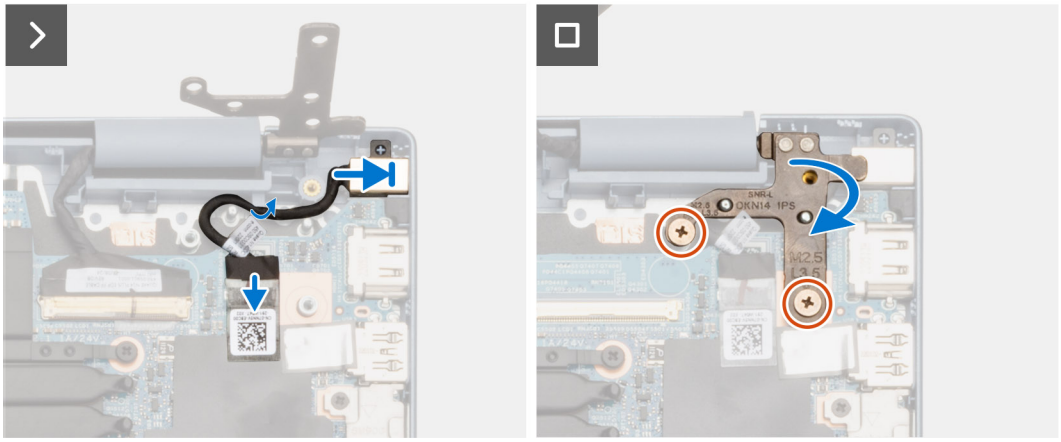
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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

2x
M2.5x3.5





Steps

1. Place the power-adapter port, along with the cable, 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 on the system board.
4. Adhere the tape to secure the power-adapter port cable to the connector on the system board.
5. Close the right display hinge downwards to align the screw holes on the right display hinge to the screw holes on the system board and the palm-rest and keyboard assembly.
6. Replace the two screws (M2.5x3.5) to secure the right display hinge to the system board and the palm-rest and keyboard assembly.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

I/O-board cable

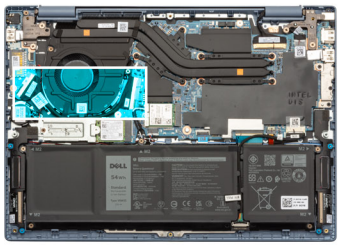
Removing the I/O daughter-board cable

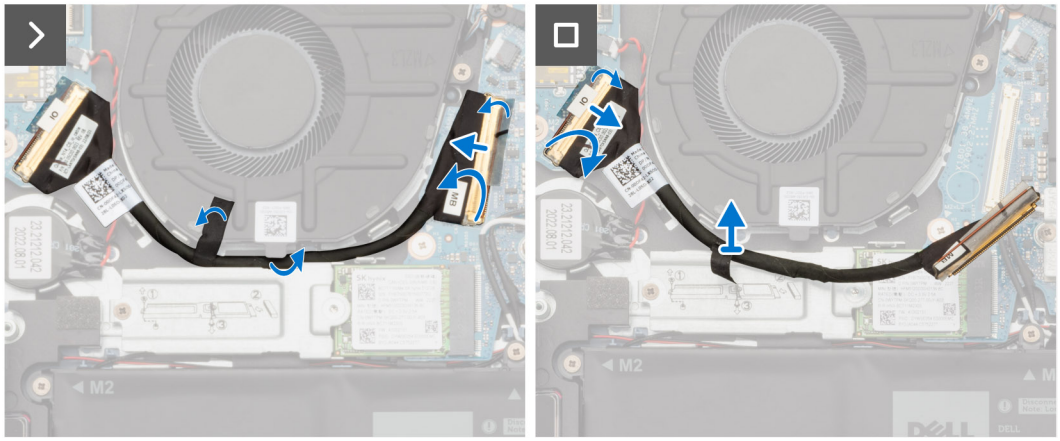
Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

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





Steps

1. Peel back the tape that secures the I/O daughter-board cable to the fan.
2. Peel back the tape that secures the I/O daughter-board cable to the connector on the system board.
3. Open the latch and disconnect the I/O daughter-board cable from the connector on the system board.
4. Carefully unroute the I/O daughter-board cable from the routing guides on palm-rest and keyboard assembly.
5. Peel back the tape that secures the I/O daughter-board cable to the connector on the I/O daughter-board.
6. Open the latch and disconnect the I/O daughter-board cable from the connector on the I/O daughter-board.
7. Open the I/O daughter-board cable off the palm-rest and keyboard assembly.

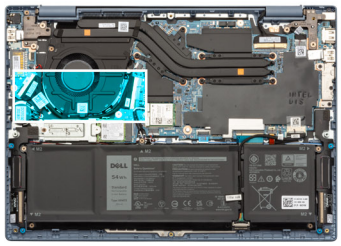
Installing the I/O daughter-board cable

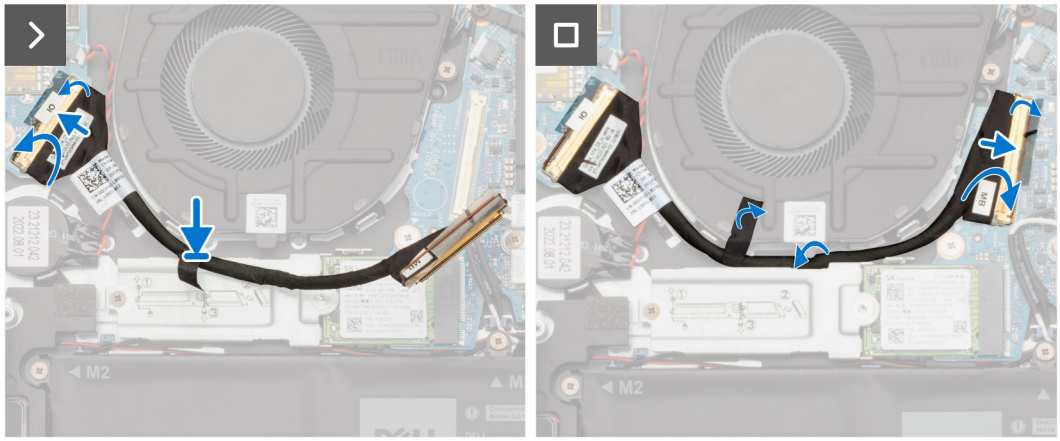
Prerequisites

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

About this task

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





Steps

1. Connect the I/O daughter-board cable to the connector on the I/O daughter-board and close the latch.
2. Adhere the tape to secure the I/O daughter-board cable to the connector on the I/O daughter-board.
3. Carefully route the I/O daughter-board cable through the routing guides on palm-rest and keyboard assembly.
4. Connect the I/O daughter-board cable to the connector on the system board and close the latch.
5. Adhere the tape to secure the I/O daughter-board cable to the connector on the system board.
6. Adhere the tape to secure the I/O daughter-board cable to the fan.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

I/O board

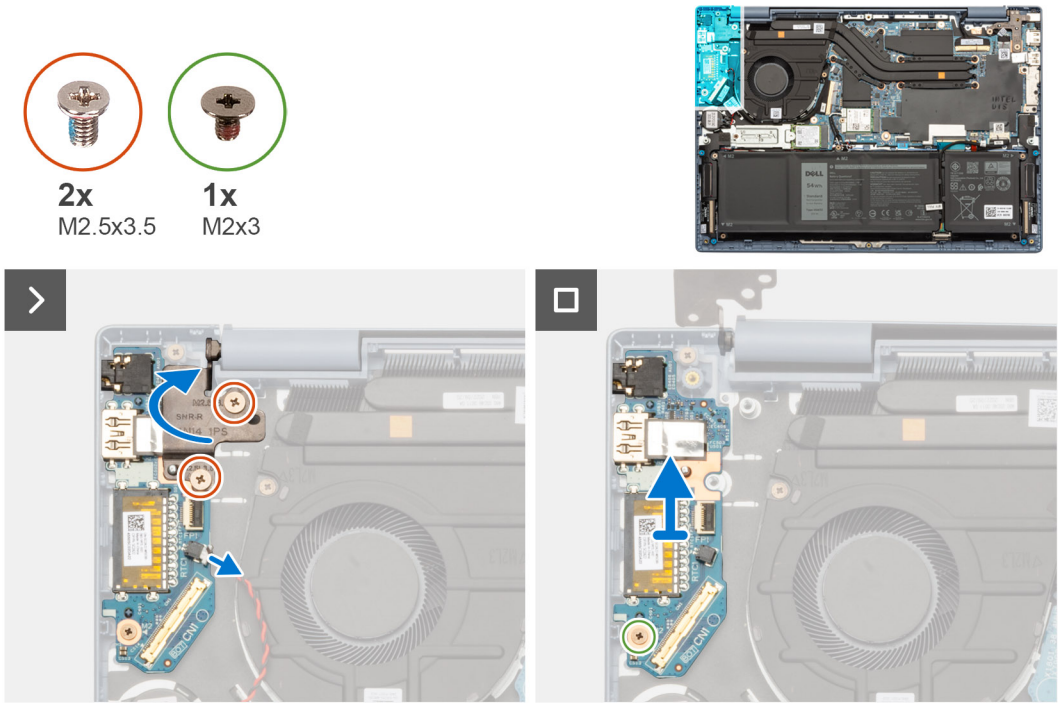
Removing the I/O daughter-board

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the I/O daughter-board cable.

About this task

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



Steps

1. Remove the two screws (M2.5x3.5) that secure the left display hinge to the I/O daughter-board and the palm-rest and keyboard assembly.
2. Using a plastic scribe, pry open the left display hinge upwards at an angle of 90 degrees.
3. Disconnect the coin-cell battery cable from the connector on the I/O daughter-board.
4. Open the latch and disconnect the fingerprint reader flexible printed circuits cable from the connector on the I/O daughter-board.

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

5. Remove the screw (M2x3) that secures the I/O daughter-board to the palm-rest and keyboard assembly.
6. Carefully slide and remove the I/O daughter-board at angle, from the palm-rest and keyboard assembly, to clear the ports from the port openings.

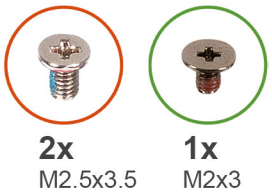
Installing the I/O daughter-board

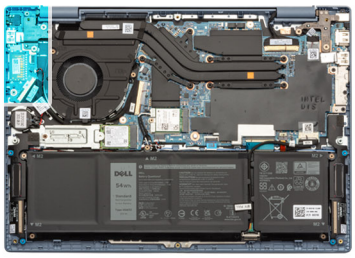
Prerequisites

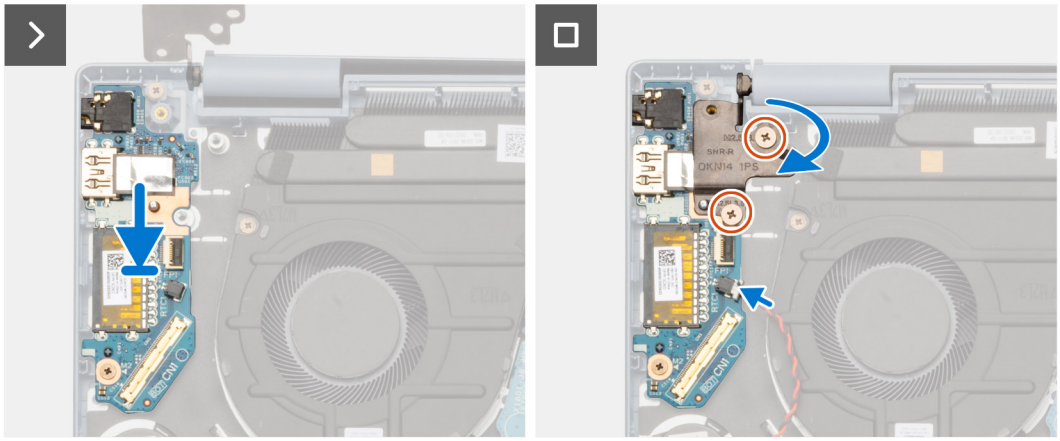
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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







Steps

1. Align the ports on the I/O daughter-board to the port openings on the palm-rest and keyboard assembly.
2. Carefully slide and place the I/O daughter-board at an angle, on the palm-rest and keyboard assembly.
3. Align the screw hole on the I/O daughter-board to the screw hole on the palm-rest and keyboard assembly.
4. Replace the screw (M2x3) to secure the I/O daughter-board to the palm-rest and keyboard assembly.
5. Connect the fingerprint reader flexible printed circuits cable to the connector on the I/O daughter-board and close the latch.

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

6. Connect the coin-cell battery cable to the connector on the I/O daughter-board.
7. Close the left display hinge downwards to align the screw holes on the left display hinge to the screw holes on the I/O daughter-board and the palm-rest and keyboard assembly.
8. Replace the two screws (M2.5x3.5) to secure the left display hinge to the I/O daughter-board and the palm-rest and keyboard assembly.

Next steps

1. Install the I/O daughter-board cable.
2. Install the base cover.
3. Follow the procedure in After working inside your computer.

Coin-cell battery

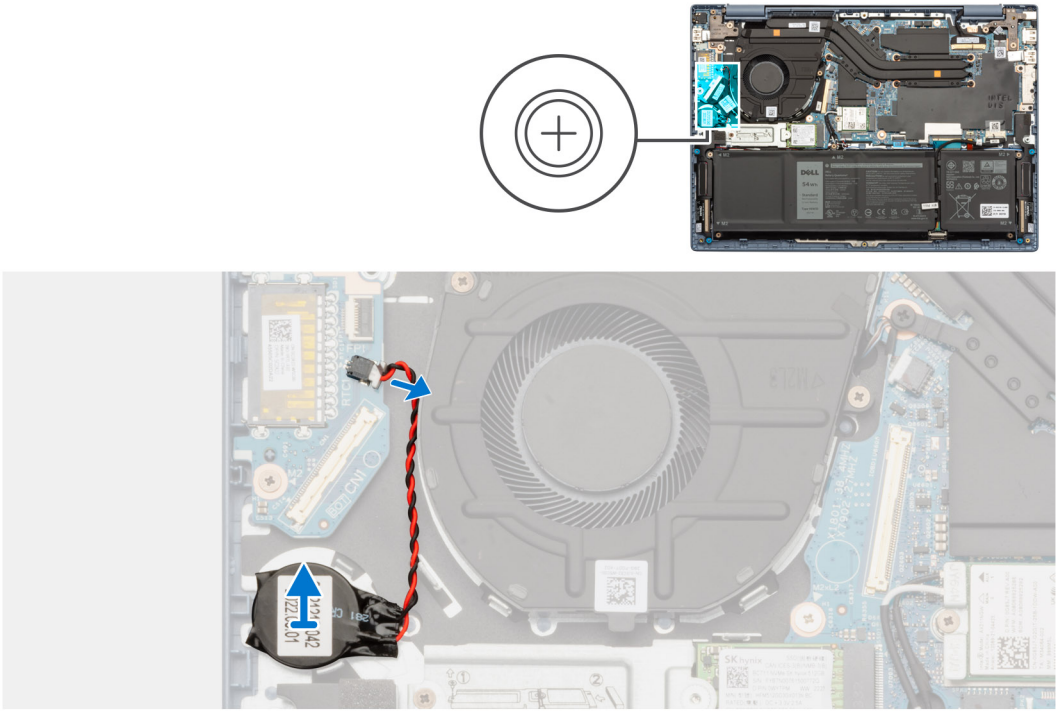
Removing the coin-cell battery

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the I/O daughter-board cable.

About this task

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



Steps

1. Disconnect the coin-cell battery from the connector on the I/O daughter-board.
2. Using a plastic scribe, pry the coin-cell battery off the slot on the palm-rest and keyboard assembly.

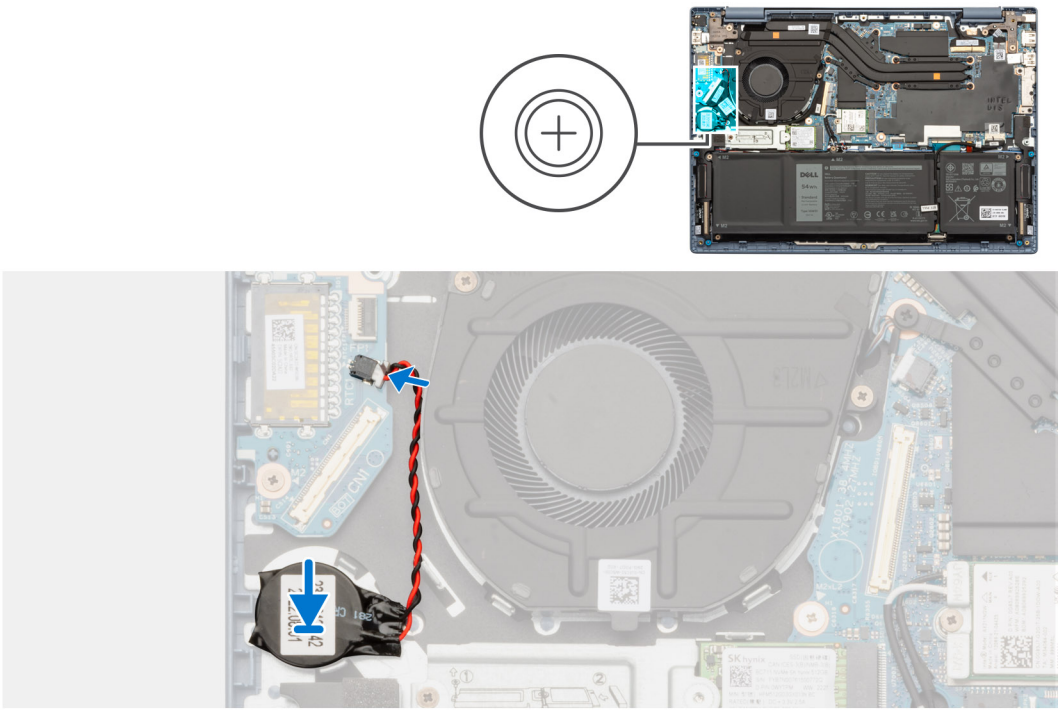
Installing the coin-cell battery

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 coin-cell battery and provides a visual representation of the installation procedure.



Steps

1. Place the coin-cell battery on the slot on the palm-rest and keyboard assembly.
2. Connect the coin-cell battery cable to the connector on the I/O daughter-board.

Next steps

1. Install the I/O daughter-board cable.
2. Install the base cover.
3. Follow the procedure in After working inside your computer.

Power button

Removing the power button

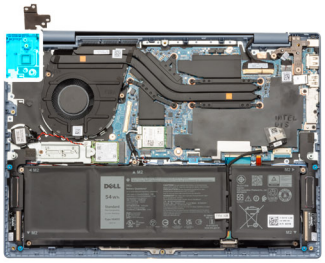
Prerequisites

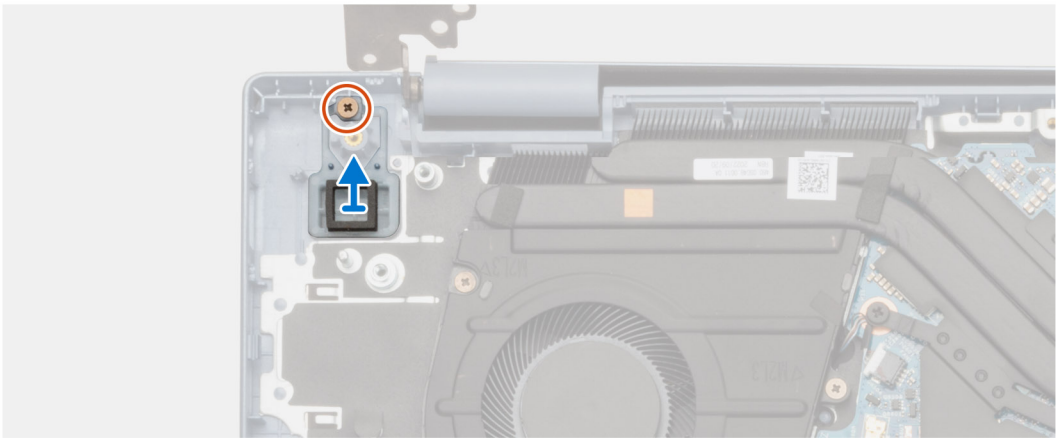
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the I/O daughter-board cable.
4. Remove the I/O daughter-board.

About this task

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

1x
M2x3





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.

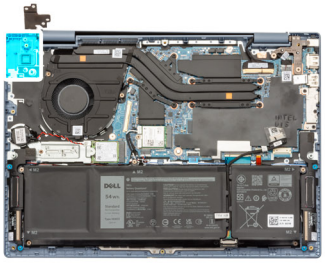
Installing the power button

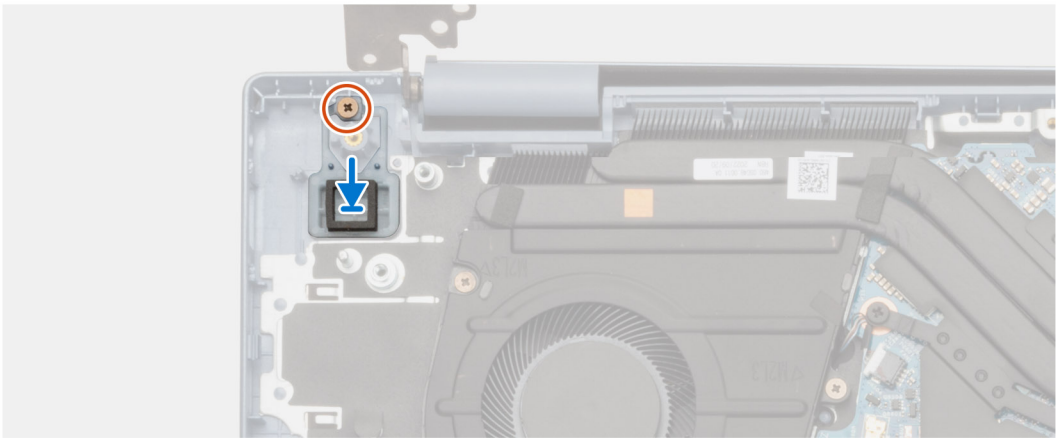
Prerequisites

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.





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 to 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 daughter-board.
2. Install the I/O daughter-board cable.
3. Install the base cover.
4. Follow the procedure in After working inside your computer.

Power button with optional fingerprint reader

Removing the power button with optional fingerprint reader

Prerequisites

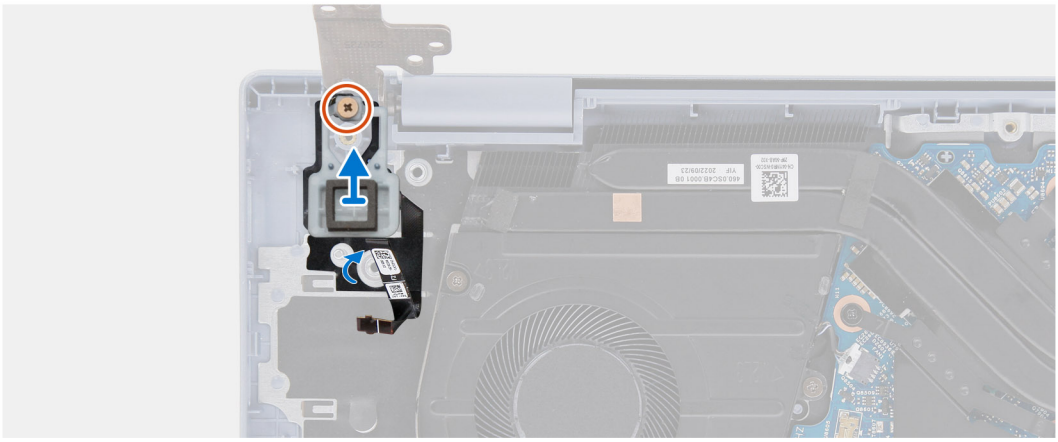
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the I/O daughter-board cable.
4. Remove the I/O daughter-board.

About this task

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

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

1x
M2x3



Steps

1. Carefully peel off the tape that secures the fingerprint reader flexible printed circuits cable to the palm-rest and keyboard assembly.
2. Remove the screw (M2x3) that secures the power button with optional fingerprint reader to the palm-rest and keyboard assembly.
3. Lift the power button with optional fingerprint reader off the slot on the palm-rest and keyboard assembly.

Installing the power button with optional fingerprint reader

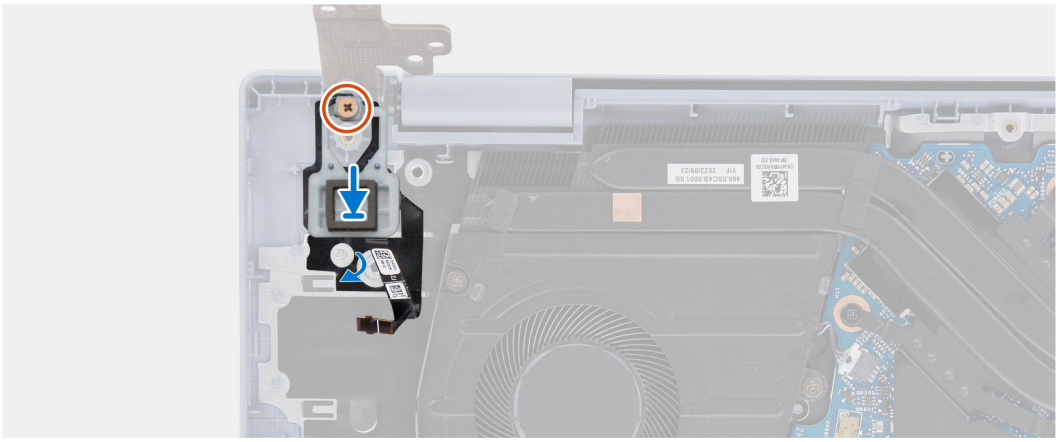
Prerequisites

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 with optional fingerprint reader and provides a visual representation of the installation procedure.

1x
M2x3



Steps

1. Place the power button with optional fingerprint reader in the slot on the palm-rest and keyboard assembly.
2. Align the screw hole on the power button with 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 optional fingerprint reader to the palm-rest and keyboard assembly.
4. Adhere the tape to secure the fingerprint reader flexible printed circuits cable to the palm-rest and keyboard assembly.

Next steps

1. Install the I/O daughter-board.
2. Install the I/O daughter-board cable.
3. Install the base cover.
4. Follow the procedure in After working inside your computer.

Display assembly

Removing the display assembly

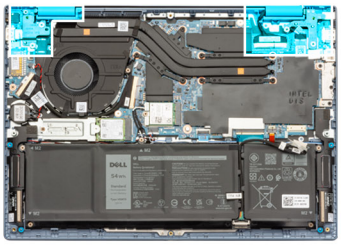
Prerequisites

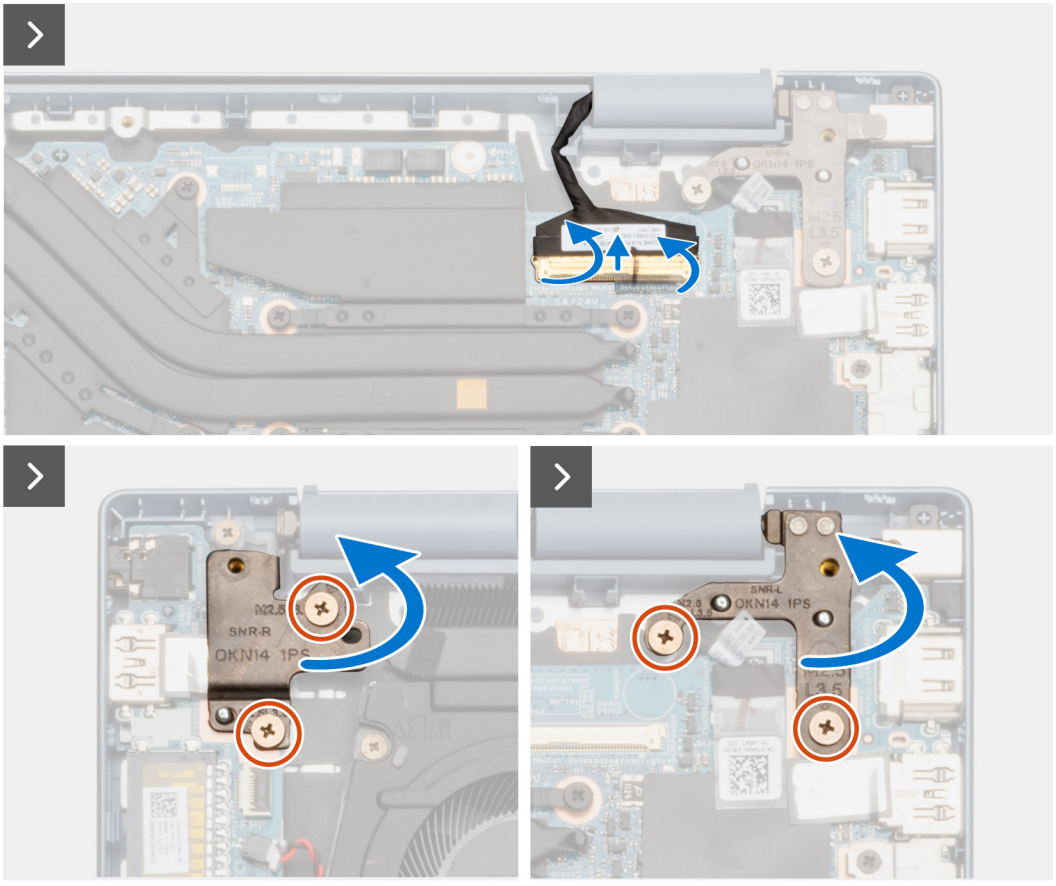
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

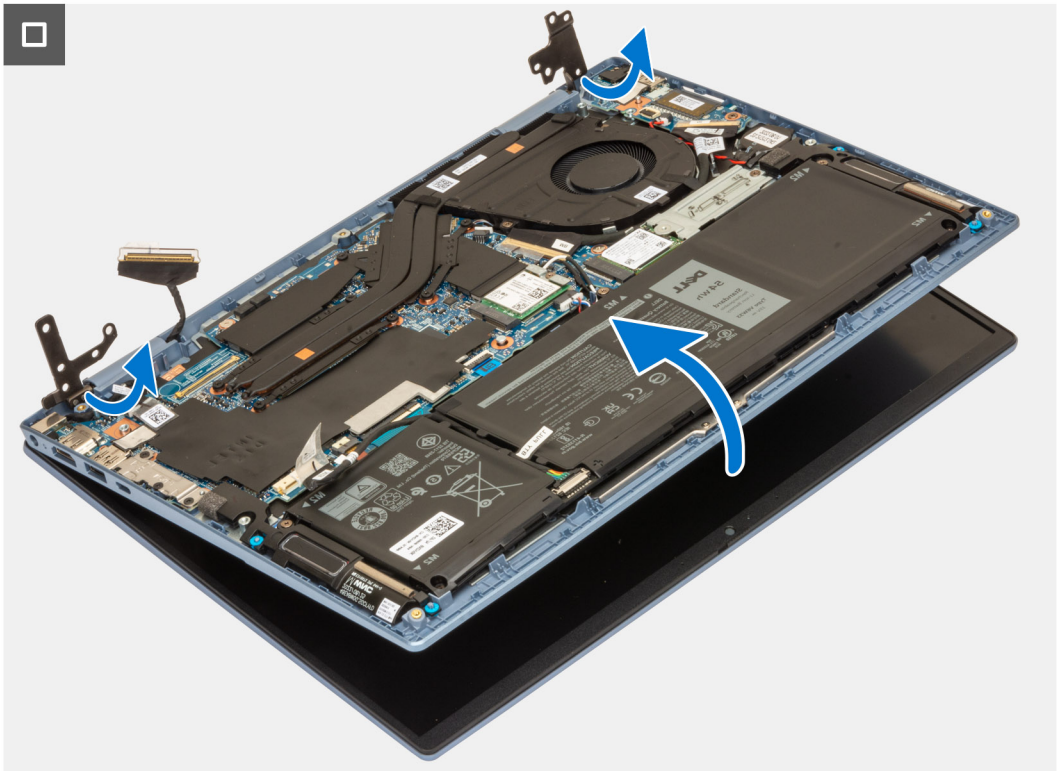
About this task

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

4x
M2.5x3.5







Steps

1. Peel back the tape that secures the display cable to the connector on the system board.
2. Open the latch and disconnect the display cable from the connector on the system board.
3. Remove the two screws (M2.5x3.5) that secure the left display hinge to the I/O daughter-board and palm-rest and keyboard assembly.

4. Remove the two screws (M2.5x3.5) that secure the right display hinge to the system board and palm-rest and keyboard assembly.
5. Using a plastic scribe, pry open the left display hinge upwards at an angle of 90 degrees.
6. Using a plastic scribe, pry open the right display hinge upwards at an angle of 90 degrees.
7. 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.

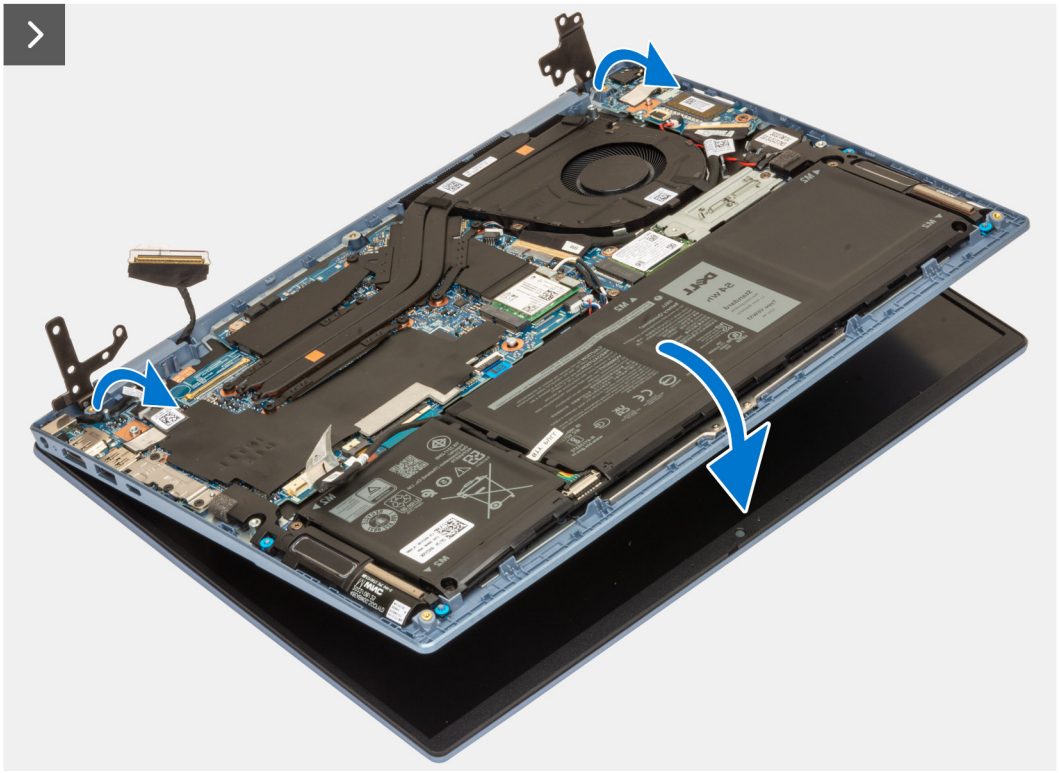
Installing the display assembly

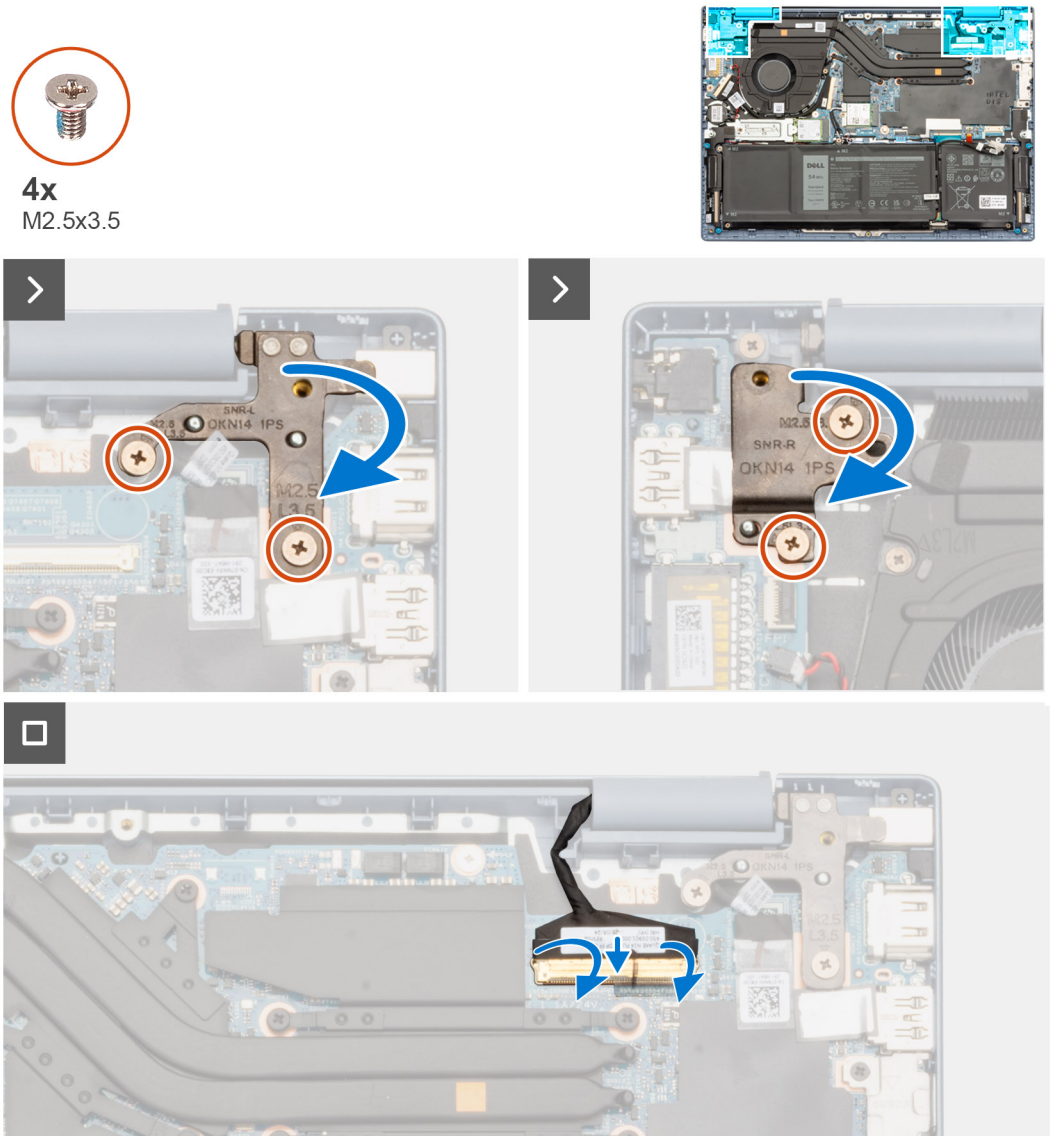
Prerequisites

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.





Steps

1. Place the display assembly on a clean and flat surface with the display panel facing up.
2. Gently slide the palm-rest and keyboard assembly at an angle and place 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. Gently close the right display hinge to align the screw holes on the right display hinge to the screw holes on the system board and the palm-rest and keyboard assembly.
4. Replace the two screws (M2.5x3.5) to secure the right display hinge to the system board and the palm-rest and keyboard assembly.
5. Gently close the left display hinge to align the screw holes on the left display hinge to the screw holes on the I/O daughter-board and the palm-rest and keyboard assembly.
6. Replace the two screws (M2.5x3.5) to secure the left display hinge to the I/O daughter-board and the palm-rest and keyboard assembly.
7. Connect the display cable to the connector on the system board and close the latch.
8. Adhere the tape to secure the display cable to the connector on the system board.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

System board

Removing the system board

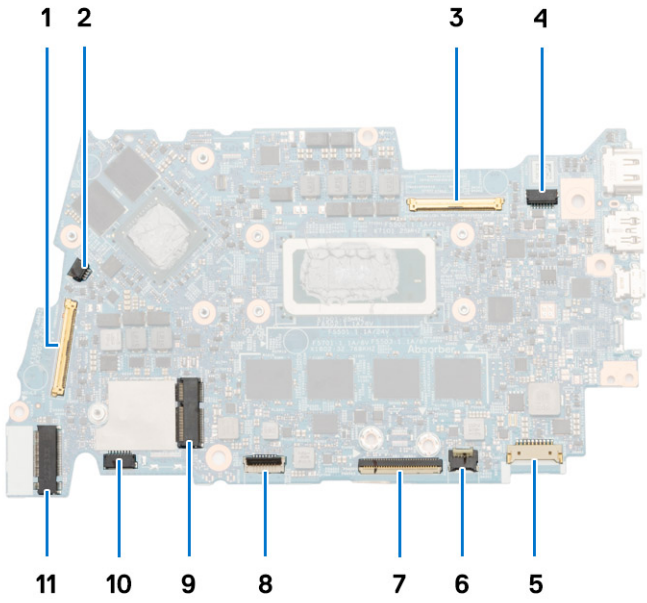
Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the 3-cell battery or the 4-cell battery, whichever applicable.
4. Remove the M.2 2230 solid-state drive or the M.2 2280 solid-state drive, whichever applicable.
5. Remove the wireless card.
6. Remove the fan.
7. Remove the heat sink - integrated or the heat sink - discrete, whichever applicable.

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

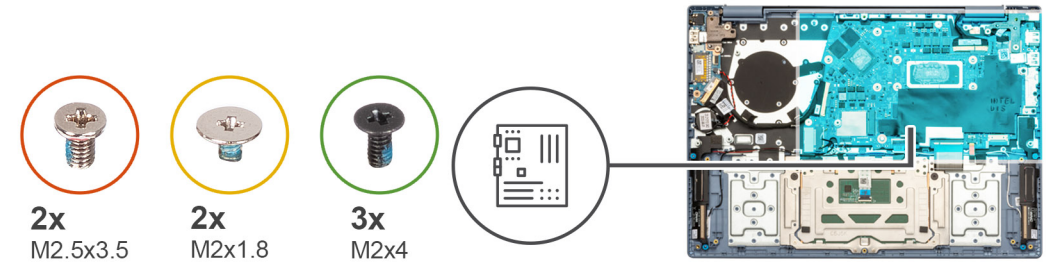
The following image indicates the connectors on your system board.

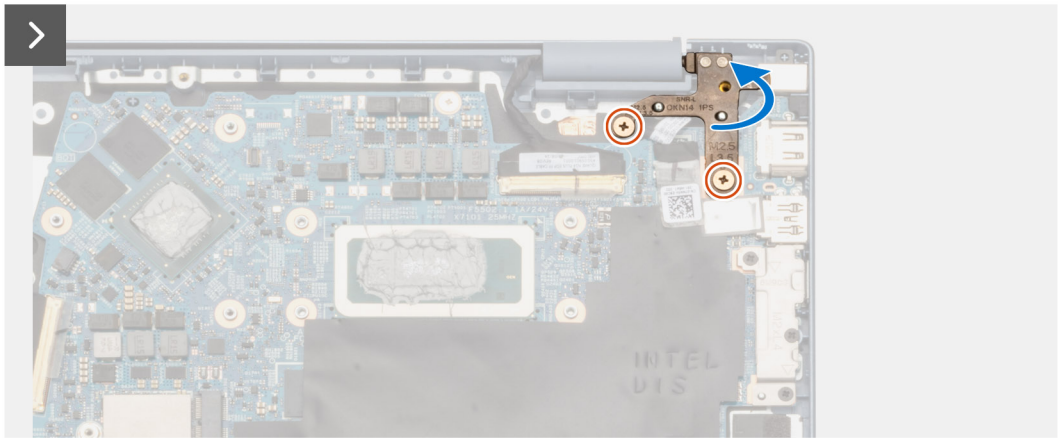


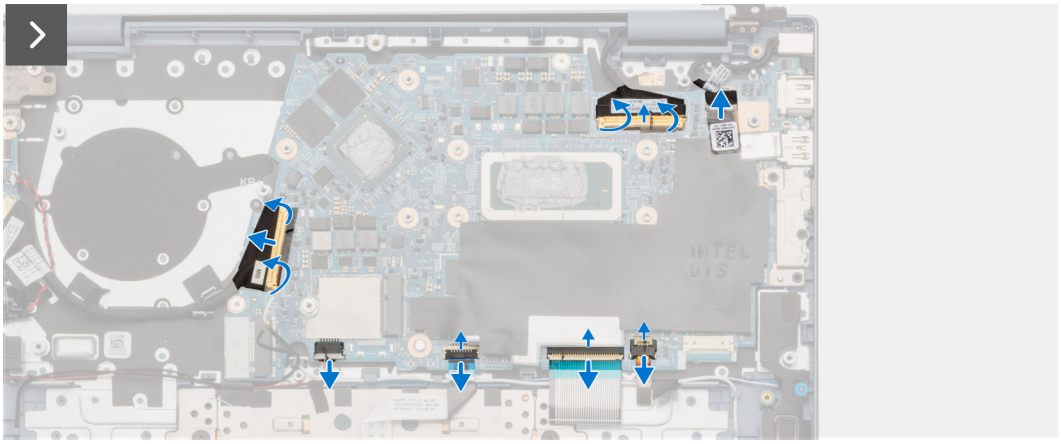
1. I/O daughter-board cable connector
2. Fan cable connector
3. Display cable connector
4. Power-adapter port cable connector
5. Battery cable connector
6. Keyboard-backlight FPC connector
7. Keyboard FPC connector
8. Touchpad FPC connector
9. Wireless card connector

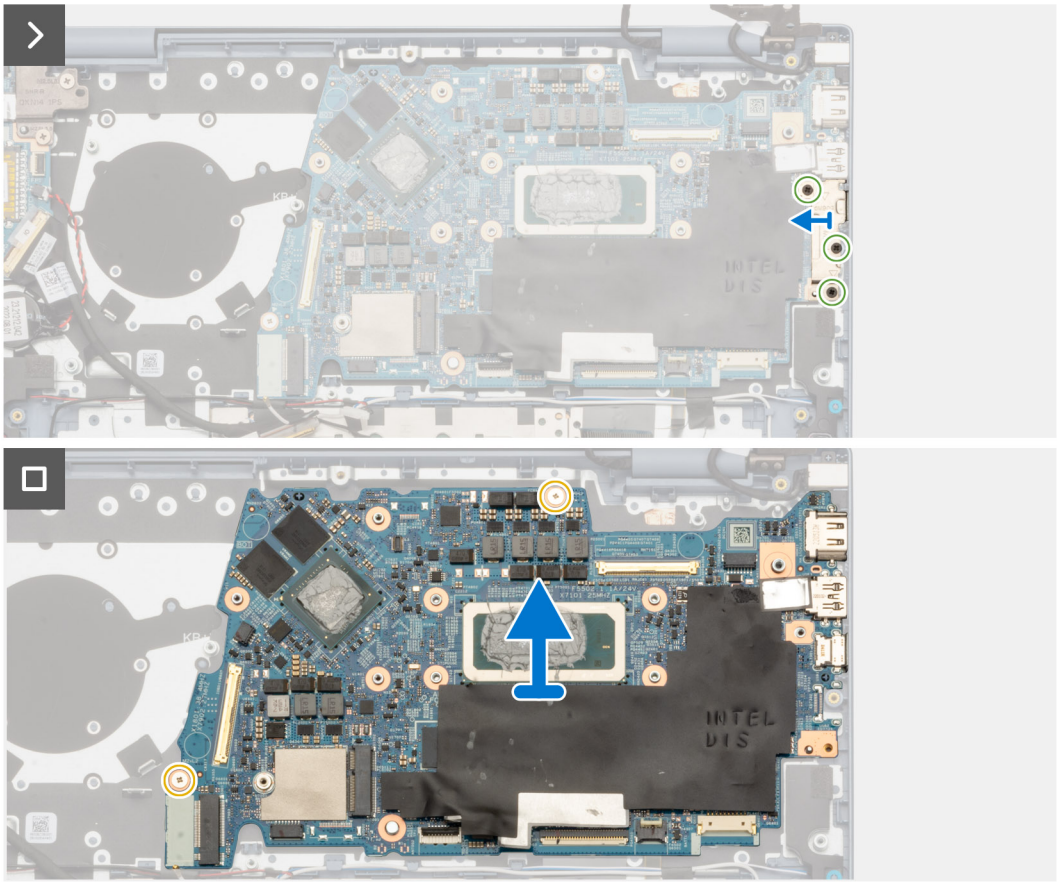
10. Speaker cable connector
11. M.2 2230/2280 solid-state drive connector

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









Steps

1. Remove the two screws (M2.5x3.5) that secure the right display hinge to the system board and the palm-rest and keyboard assembly.
2. Using a plastic scribe, pry open the right display hinge upwards at an angle of 90 degrees.
3. Peel back the tape that secures the I/O daughter-board cable to the connector on the system board.
4. Open the latch and disconnect the I/O daughter-board cable from the connector on the system board.
5. Peel back the tape that secures the display cable to the connector on the system board.
6. Open the latch and disconnect the display cable from the connector on the system board.
7. Peel back the tape that secures the power-adapter port cable to the connector on the system board.
8. Disconnect the power-adapter port cable from the connector on the system board.
9. Open the latch and disconnect the keyboard-backlight cable from the connector on the system board.
10. Open the latch and disconnect the keyboard cable from the connector on the system board.
11. Open the latch and disconnect the touchpad cable from the connector on the system board.
12. Disconnect the speaker cable from the connector on the system board.
13. For computers shipped with downfiring speakers, remove the three screws (M2x4) that secure the USB Type-C port bracket to the system board.
14. For computers shipped with upfiring speakers, remove the two screws (M2x4) that secure the USB Type-C port bracket to the system board.
15. Lift and remove the USB Type-C port bracket from the system board.
16. Remove the two screws (M2x1.8) that secure the system board to the palm-rest and keyboard assembly.
17. Carefully slide and remove the system board at angle, from the palm-rest and keyboard assembly, to clear the ports from the port openings.

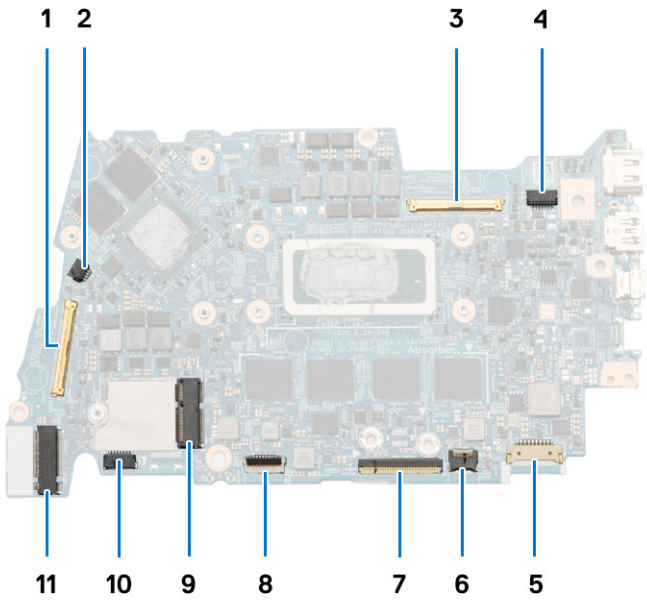
Installing the system board

Prerequisites

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

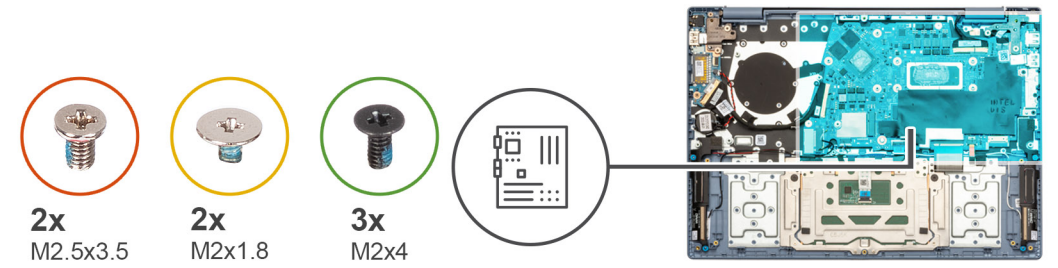
About this task

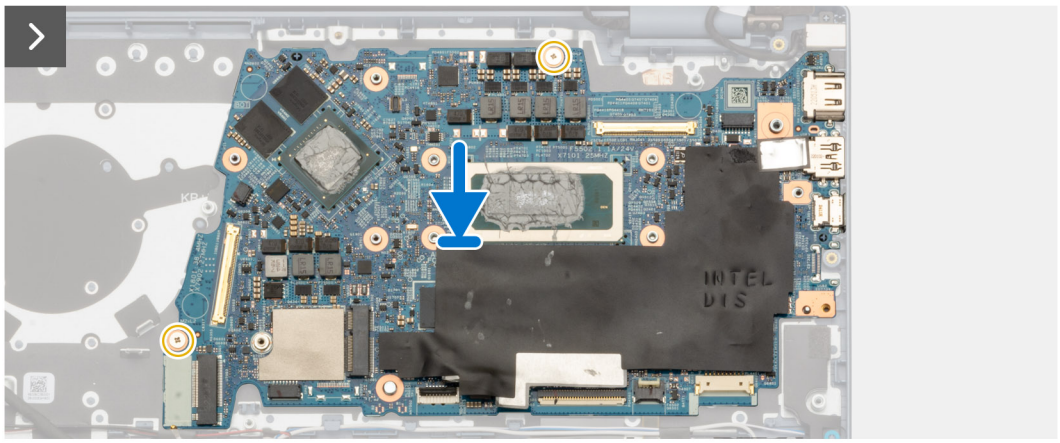
The following image indicates the connectors on your system board.

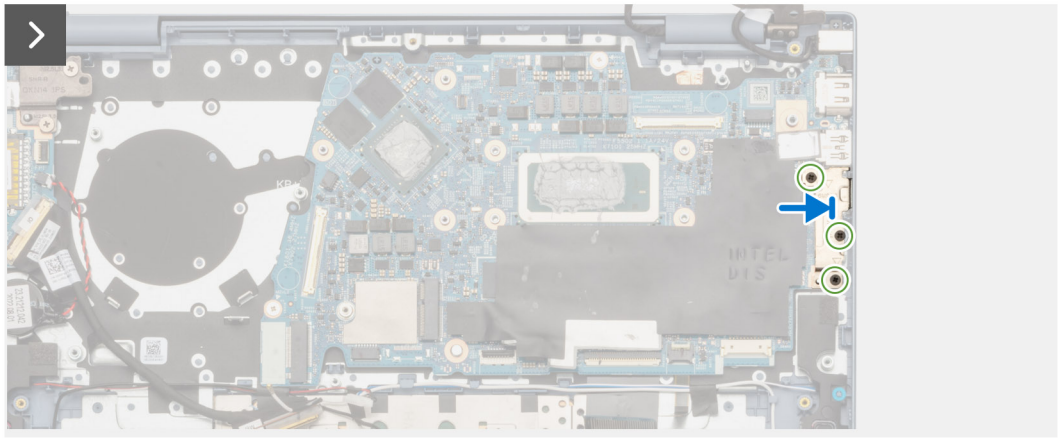


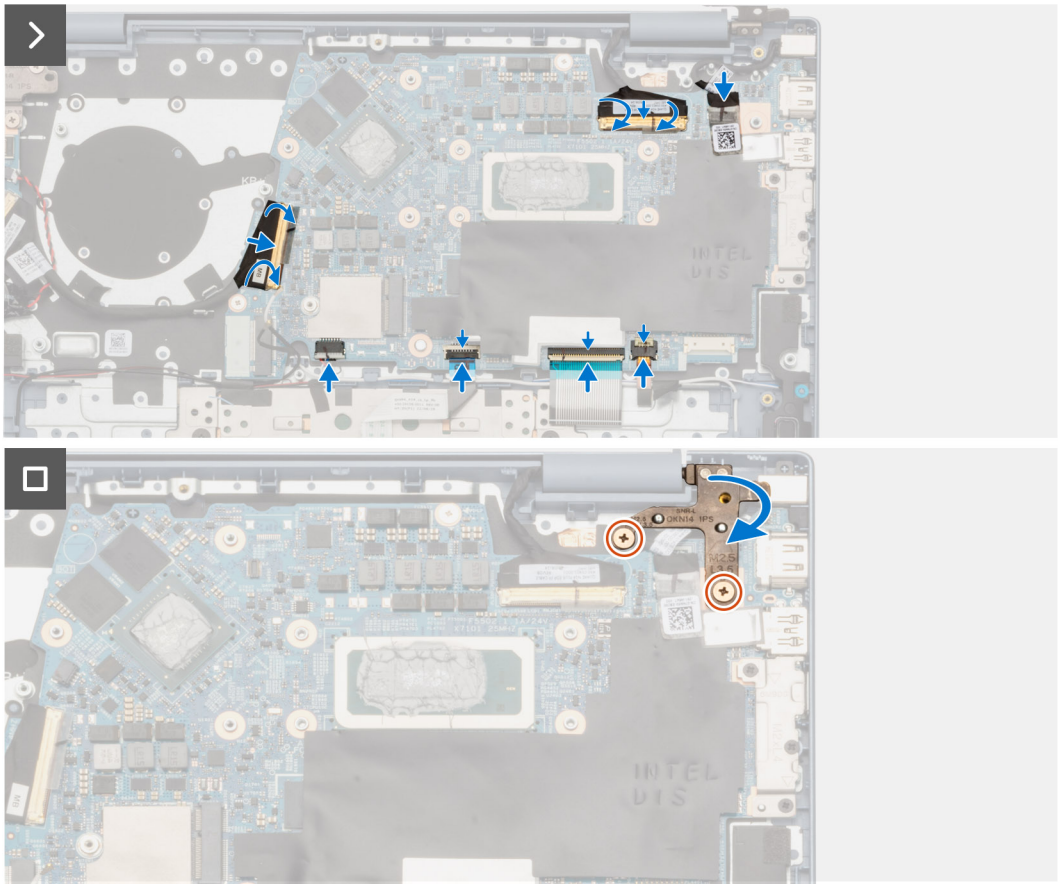
1. I/O daughter-board cable connector
2. Fan cable connector
3. Display cable connector
4. Power-adapter port cable connector
5. Battery cable connector
6. Keyboard-backlight FPC connector
7. Keyboard FPC connector
8. Touchpad FPC connector
9. Wireless card connector
10. Speaker cable connector
11. M.2 2230/2280 solid-state drive connector

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


2x
M2.5x3.5
2x
M2x1.8
3x
M2x4







Steps

1. Align the ports on the system board to the port openings on the palm-rest and keyboard assembly.
2. Carefully slide and place the system board at an angle, on the palm-rest and keyboard assembly.
3. Align the screw holes on the system board to the screw holes on the palm-rest and keyboard assembly.
4. Replace the two screws (M2x1.8) to secure the system board to the palm-rest and keyboard assembly.
5. Place the USB Type-C port bracket in the slot on the system board.
6. Align the screw holes on USB Type-C port bracket to the screw holes on the system board.
7. For computers shipped with downfiring speakers, replace the three screws (M2x4) to secure the USB Type-C port bracket to the system board.
8. For computers shipped with upfiring speakers, replace the two screws (M2x4) to secure the USB Type-C port bracket to the system board.
9. Connect the I/O daughter-board cable to the connector on the system board and close the latch.
10. Adhere the tape to secure the I/O daughter-board cable to the connector on the system board.
11. Connect the display cable to the connector on the system board and close the latch.
12. Adhere the tape to secure the display cable to the connector on the system board.
13. Connect the power-adapter port cable to the connector on the system board.
14. Adhere the tape to secure the power-adapter port cable to the connector on the system board.
15. Connect the keyboard-backlight cable to the connector on the system board and close the latch.
16. Connect the keyboard cable to the connector on the system board and close the latch.
17. Connect the touchpad cable to the connector on the system board and close the latch.
18. Connect the speaker cable to the connector on the system board.
19. Close the right display hinge downwards to align the screw holes on the right display hinge to the screw holes on the system board and the palm-rest and keyboard assembly.
20. Replace the two screws (M2.5x3.5) to secure the right display hinge to the system board and the palm-rest and keyboard assembly.

Next steps

1. Install the heat sink - integrated or the heat sink - discrete, whichever applicable.
2. Install the fan.
3. Install the wireless card.
4. Install the M.2 2230 solid-state drive or the M.2 2280 solid-state drive, whichever applicable.
5. Install the 3-cell battery or the 4-cell battery, whichever applicable.
6. Install the base cover.
7. Follow the procedure in After working inside your computer.

Palm-rest and keyboard assembly

Removing the palm-rest and keyboard assembly

Prerequisites

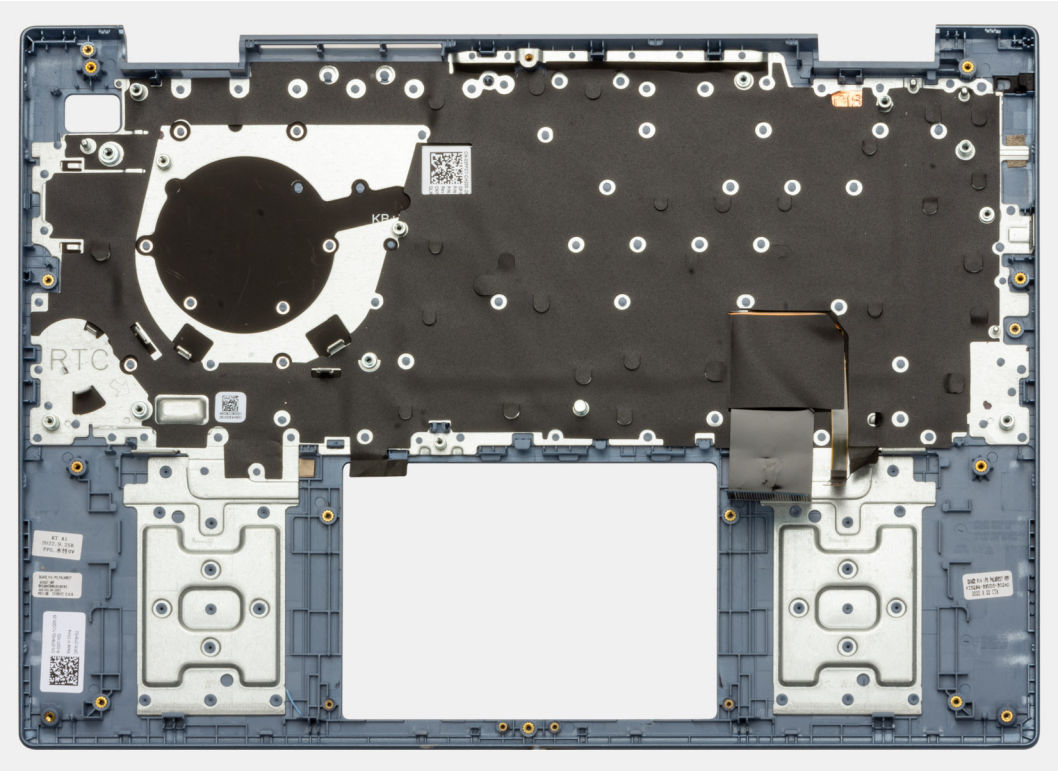
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the 3-cell battery or the 4-cell battery, whichever applicable.
4. Remove the M.2 2230 solid-state drive or the M.2 2280 solid-state drive, whichever applicable.
5. Remove the wireless card.
6. Remove the fan.
7. Remove the heat sink - integrated or the heat sink - discrete, whichever applicable.

   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.
8. Remove the speakers.
9. Remove the touchpad.
10. Remove the power-adapter port.
11. Remove the I/O daughter-board cable.
12. Remove the I/O daughter-board.
13. Remove the coin-cell battery.
14. Remove the power button or the power button with optional fingerprint reader, whichever applicable.
15. Remove the display assembly.
16. Remove the system board.

About this task

NOTE: The palm-rest and keyboard assembly cannot be further disassembled once all the pre-removal parts procedures 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.



Steps

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

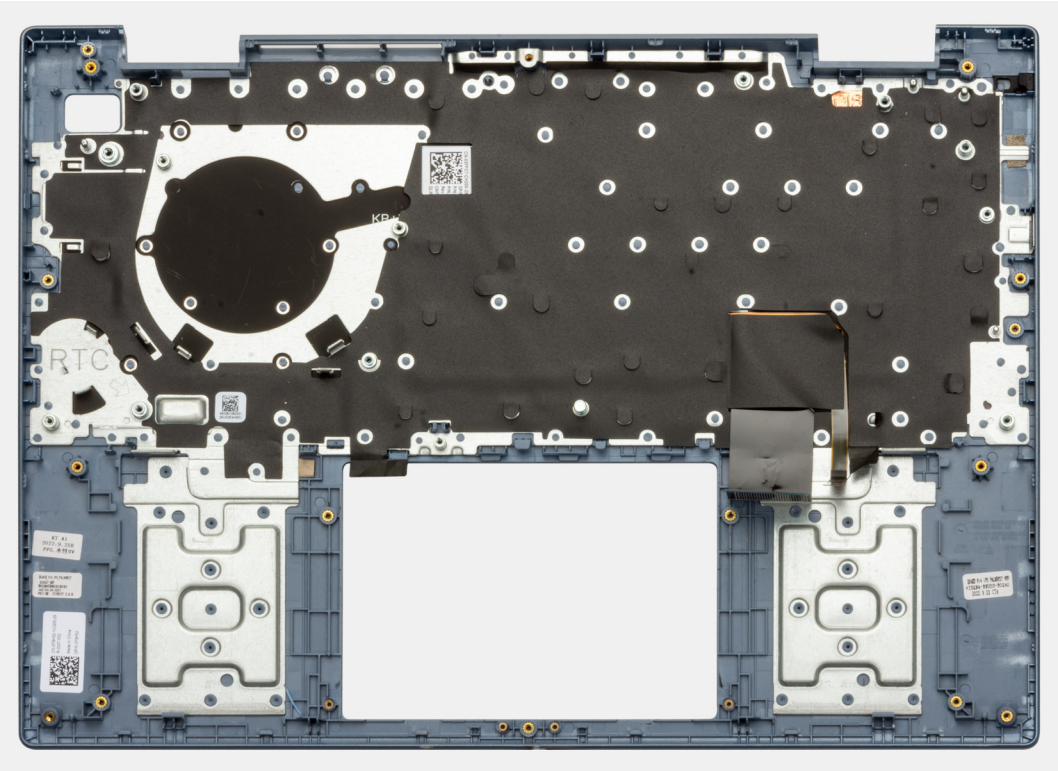
Installing the palm-rest and keyboard assembly

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.



Steps

Place the palm-rest and keyboard assembly on a flat and clean surface and perform the post-requisites to install the palm-rest and keyboard assembly.

Next steps

1. Install the system board.
2. Install the display assembly.
3. Install the power button or the power button with optional fingerprint reader, whichever applicable.
4. Install the coin-cell battery.
5. Install the I/O daughter-board.
6. Install the I/O daughter-board cable.
7. Install the power-adapter port.
8. Install the touchpad.
9. Install the speakers.
10. Install the heat sink - integrated or the heat sink - discrete, whichever applicable.
11. Install the fan.
12. Install the wireless card.
13. Install the M.2 2230 solid-state drive or the M.2 2280 solid-state drive, whichever applicable.
14. Install the 3-cell battery or the 4-cell battery, whichever applicable.
15. Install the base cover.
16. Follow the procedure in After working inside your computer.

3

Drivers and downloads

When troubleshooting, downloading or installing drivers it is recommended that you read the Dell Knowledge Based article, Drivers and Downloads FAQ 000123347.

4

BIOS setup

CAUTION: Unless you are an expert computer user, do not change the settings in the BIOS Setup program. Certain changes can make your computer work incorrectly.

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

NOTE: Before you change BIOS Setup program, it is recommended that you write down the BIOS Setup program screen information for future reference.

Use the BIOS Setup program for the following purposes:

- Get information about the hardware installed in your computer, such as the amount of RAM and the size of the hard drive.
- Change the system configuration information.
- Set or change a user-selectable option, such as the user password, type of hard drive installed, and enabling or disabling base devices.

BIOS overview

The BIOS manages data flow between the computer's operating system and attached devices such as hard disk, video adapter, keyboard, mouse, and printer.

Entering BIOS setup program

About this task

Turn on (or restart) your computer and press F2 immediately.

Navigation keys

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

Table 3. 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 follow the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area. **NOTE:** For the standard graphics browser only.
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 restarts the system.

One time boot menu

To enter **one time boot menu**, turn on your computer, and then press F12 immediately.

NOTE: It is recommended to shutdown the computer if it is on.

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot menu options are:

- Windows Boot Manager
- UEFI M.2 solid-state drive Boot
- UEFI HTTPs Boot

The boot sequence screen also displays the option to access the System Setup screen.

System setup options

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

Table 4. System setup options — System information menu

Overview	
Inspiron 14 5430	
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 option is enabled.
Battery Information	
Primary	Displays that battery is primary.
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 or not. If connected, displays the AC adapter type.
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.

Table 4. System setup options — System information menu (continued)

Overview	
Microcode Version	Displays the microcode version.
Intel Hyper-Threading Capable	Displays whether the processor is Hyper-Threading (HT) capable or not.
64-Bit Technology	Displays whether 64-bit technology is used or not.
Memory Information	
Memory Installed	Displays the total computer memory installed.
Memory Available	Displays the total computer memory available.
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 Panel Type of the computer.
Video Controller	Displays the video controller information of 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.
dGPU Video Controller	Displays the discrete video controller information of the computer.

Table 5. System setup options — Boot Configuration menu

Boot Configuration	
Boot Sequence	
Boot mode	Displays the boot mode of the computer.
Boot Sequence	Specifies the order that the BIOS searches the list of devices to find an operating system to boot. By default, **Windows Boot Manager** option is selected. By default, **UEFI RST BC711 NVMe SK hynix 512GB YB7N00761500772Q** option is selected. By default, **UEFI HTTPs Boot** option is selected.

Table 6. System setup options — Integrated Devices menu

Integrated Devices	
Date/Time	
Date	Sets the computer date in MM/DD/YYYY format. Changes to the date take effect immediately.
Time	Sets the computer time in HH:MM:SS 24-hour format. You can switch between 12-hour and 24-hour clock. Changes to the time take effect immediately.
Camera	
Enable Camera	Enables or disables the camera. By default, the option is enabled.

Table 6. System setup options — Integrated Devices menu (continued)

Integrated Devices	
Audio	Enables or disables the integrated audio controller. By default, all the options are enabled.
Enable Microphone	Enables or disables the microphone. By default, the option is enabled.
Enable Internal Speaker	Enables or disables the internal speaker. By default, the option is enabled.

Table 7. System setup options — Storage menu

Storage	
Storage interface	
Port Enablement	Enables or disables the onboard drives. By default, the **M.2 PCIe SSD** option is enabled.
Drive Information	
M.2 PCIe SSD	
Type	Displays the M.2 PCIe SSD type information of the computer.
Device	Displays the M.2 PCIe SSD device information of the computer.

Table 8. System setup options — Display menu

Display	
Display Brightness	
Brightness on battery power	Allows the user to set the screen brightness level when the computer is running on battery power. By default, the **Brightness on battery power** level is set to 50.
Brightness on AC power	Allows the user to set the screen brightness level when the computer is running on AC power. By default, the **Brightness on AC power** level is set to 100.

Table 9. System setup options — Connection menu

Connection	
HTTPs Boot Feature	
HTTPs Boot	Enables or disables the HTTPs Boot feature. By default, the option is enabled.
HTTPs Boot Modes	Allows the user to select the HTTPs Boot mode. By default, the **Auto Mode** option is selected. With this option HTTPs Boot automatically extracts Boot URL from the Dynamic Host Configuration Protocol (DHCP).

Table 10. System setup options — Passwords menu

Passwords	
Admin Password	Enables the user to set, change, or delete the administrator (admin) password. The admin password enables several security features.
M.2 PCIe SSD-0	Enables the user to set, change, or delete the M.2 PCIe SSD-0 password.

Table 11. System setup options — Update, Recovery menu

Update, Recovery	
SupportAssist OS Recovery	Enables or disables the boot flow for SupportAssist OS Recovery tool, in the event of certain system error. By default, the option is enabled.
BIOSConnect	Enables or disables cloud Service OS recovery if the main OS fails to boot within the number of failures equal or greater than the value specified by Dell Auto OS Recovery Threshold, and local Service does not boot, or is not installed. By default, the option is enabled.
Dell Auto OS Recovery Threshold	Controls the automatic boot flow for SupportAssist System Resolution Console and for Dell operating system Recovery tool. By default, the **Dell Auto OS Recovery Threshold** option is set to 2.

Table 12. System setup options — System Management menu

System Management	
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Creates a system Asset Tag that can be used by an IT administrator to uniquely identify a particular system. Once set in BIOS, the Asset Tag cannot be changed.
Diagnostics	
OS Agent Requests	Enables or disables the Dell OS Agent to schedule onboard diagnostics on a subsequent boot. Enabling this option helps assist in prevention and resolution of hardware related issues. By default, the option is enabled.

Table 13. System setup options — Keyboard menu

Keyboard	
Keyboard illumination	Allows the user to select the keyboard illumination brightness. By default, the option **Bight** option is selected. This option sets the keyboard illumination brightness level to 100%.
Keyboard Backlight Timeout on AC	Allows the user to set the keyboard backlight timeout duration when the computer is running on AC power. The keyboard backlight timeout value is only in effect when the backlight is enabled. By default, the **Keyboard Backlight Timeout on AC** value is set to 10 seconds.
Keyboard Backlight Timeout on battery	Allows the user to set the keyboard backlight timeout duration when the computer is running on battery power. The keyboard backlight timeout value is only in effect when the backlight is enabled. By default, the **Keyboard Backlight Timeout on battery** value is set to 10 seconds.

Table 14. System setup options — Pre-boot Behavior menu

Pre-boot Behavior	
Adapter Warnings	
Enable Adapter Warnings	Enables or disables the computer to display adapter warning messages when adapters with too little power capacity are detected. By default, the option is enabled.

Table 14. System setup options — Pre-boot Behavior menu (continued)

Pre-boot Behavior	
Warning 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 enabled. It stops, prompts, and waits for user input when warnings or errors are detected. **NOTE:** Errors deemed critical to the operation of the computer hardware will always halt the computer.
USB-C Warnings	
Enable Dock Warning Messages	Enables or disables the dock warning messages. By default, the option is enabled.

Table 15. System setup options — Performance menu

Performance	
Enable Adaptive C-States for Discrete Graphics	
Enable Adaptive C-States for Discrete Graphics	Enables the ability of the CPU to dynamically detect high usage of discrete graphics and adjust system parameters for higher performance. By default, the option is enabled.

Table 16. System setup options — System Logs menu

System Logs	
BIOS Event Log	
Clear Bios Event Log	Displays BIOS events. By default, the **Keep Log** option is selected.
Thermal Event Log	
Clear Thermal Event Log	Displays Thermal events. By default, the **Keep Log** option is selected.
Power Event Log	
Clear Power Event Log	Displays power events. By default, the **Keep Log** option is selected.

Updating the BIOS

Updating the BIOS in Windows

Steps

1. Go to www.dell.com/support.
2. Click **Product support**. In the **Search support** box, enter the Service Tag of your computer, and then click **Search**.

   NOTE: If you do not have the Service Tag, use the SupportAssist feature to automatically identify your computer. You can also use the product ID or manually browse for your computer model.

3. Click **Drivers & Downloads**. Expand **Find drivers**.
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, browse the folder where you saved the BIOS update file.
8. Double-click the BIOS update file icon and follow the on-screen instructions.
   For more information, see knowledge base article 000124211 at www.dell.com/support.

Updating the BIOS using the USB drive in Windows

Steps

1. Follow the procedure from step 1 to step 6 in Updating the BIOS in Windows to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information, see the knowledge base article 000145519 at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12** .
6. Select the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
   The **BIOS Update Utility** appears.
8. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS in Linux and Ubuntu

To update the system BIOS on a computer that is installed with Linux or Ubuntu, see the knowledge base article 000131486 at www.dell.com/support.

Updating the BIOS from the F12 One-Time boot menu

Update your computer BIOS using the BIOS update.exe file that is copied to a FAT32 USB drive and booting from the F12 One-Time boot menu.

About this task

BIOS Update

You can run the BIOS update file from Windows using a bootable USB drive or you can also update the BIOS from the F12 One-Time boot menu on the computer.

Most of the Dell computers built after 2012 have this capability, and you can confirm by booting your computer to the F12 One-Time Boot Menu to see if BIOS FLASH UPDATE is listed as a boot option for your computer. If the option is listed, then the BIOS supports this BIOS update option.

NOTE: Only computers with BIOS Flash Update option in the F12 One-Time boot menu can use this function.

Updating from the One-Time boot menu

To update your BIOS from the F12 One-Time boot menu, you need the following:

- USB drive formatted to the FAT32 file system (key does not have to be bootable)
- BIOS executable file that you downloaded from the Dell Support website and copied to the root of the USB drive
- AC power adapter that is connected to the computer
- Functional computer battery to flash the BIOS

Perform the following steps to perform the BIOS update flash process from the F12 menu:

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

Steps

1. From a turn off state, insert the USB drive where you copied the flash into a USB port of the computer.

2. Turn on the computer and press F12 to access the One-Time Boot Menu, select BIOS Update using the mouse or arrow keys then press Enter.
   The flash BIOS menu is displayed.
3. Click **Flash from file**.
4. Select external USB device.
5. Select the file and double-click the flash target file, and then click **Submit**.
6. Click **Update BIOS**. The computer restarts to flash the BIOS.
7. The computer will restart after the BIOS update is completed.

System and setup password

Table 17. System and setup password

Password type	Description
System password	Password that you must enter to log in to your system.
Setup password	Password that you must enter to access and make changes to the BIOS settings of your computer.

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

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

CAUTION: Anyone can access the data that is stored on your computer if it is not locked and left unattended.

NOTE: System and setup password feature is disabled.

Assigning a system setup password

Prerequisites

You can assign a new **System or Admin Password** only when the status is in **Not Set**.

About this task

To enter the system setup, press F12 immediately after a power-on or reboot.

Steps

1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
   The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to assign the system password:
   - A password can have up to 32 characters.
   - At least one special character: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | }
   - Numbers 0 through 9.
   - Upper case letters from A to Z.
   - Lower case letters from a to z.
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and save the changes as prompted by the pop-up message.
5. Press Y to save the changes.
   The computer restarts.

Deleting or changing an existing system setup password

Prerequisites

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.

About this task

To enter the System Setup, press F12 immediately after a power-on or reboot.

Steps

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
   The **System Security** screen is displayed.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password**, update, or delete the existing system password, and press Enter or Tab.
4. Select **Setup Password**, update, or delete the existing setup password, and press Enter or Tab.

   NOTE: If you change the System and/or Setup password, reenter the new password when prompted. If you delete the System and/or Setup password, confirm the deletion when prompted.
5. Press Esc and a message prompts you to save the changes.
6. Press Y to save the changes and exit from System Setup.
   The computer restarts.

Clearing CMOS settings

About this task

CAUTION: Clearing CMOS settings will reset the BIOS settings on your computer.

Steps

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

Clearing BIOS (System Setup) and System passwords

About this task

To clear the system or BIOS passwords, contact Dell technical support as described at www.dell.com/contactdell.

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

5

Troubleshooting

Handling swollen Lithium-ion batteries

Like most laptops, Dell laptops use lithium-ion batteries. One type of lithium-ion battery is the lithium-ion polymer battery. Lithium-ion polymer batteries have increased in popularity in recent years and have become 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 lithium-ion polymer battery technology is the potential for swelling of the battery cells.

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 should be replaced and disposed of properly. We recommend contacting Dell product 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 Lithium-ion batteries are as follows:

- Exercise caution when handling Lithium-ion batteries.
- Discharge the battery before removing it from the system. To discharge the battery, unplug the AC adapter from the system and operate the system only on battery power. When the system will no longer power on when the power button is pressed, the battery is fully discharged.
- 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 product support at https://www.dell.com/support 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 https://www.dell.com or otherwise directly from Dell.

Lithium-ion batteries can swell for various reasons such as age, number of charge cycles, or exposure to high heat. For more information on 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 in the Knowledge Base Resource at www.dell.com/support.

Locate the Service Tag or Express Service Code of your Dell computer

Your Dell computer is uniquely identified by a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, we recommend entering the Service Tag or Express Service Code at www.dell.com/support.

For more information on how to find the Service Tag for your computer, see Locate the Service Tag for your Dell Laptop.

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 with the BIOS and is launched by the BIOS internally. The embedded system diagnostics provides a set of options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if 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 terminal when the diagnostic tests are performed.

For more information, see https://www.dell.com/support/kbdoc/000180971.

Running the SupportAssist Pre-Boot System Performance Check

Steps

1. Turn on your computer.
2. As the computer boots, press the F12 key as the Dell logo appears.
3. On the boot menu screen, select the **Diagnostics** option.
4. Click the arrow at the bottom left corner.
   Diagnostics front page is displayed.
5. Click the arrow in the lower-right corner to go to the page listing.
   The items detected are listed.
6. To run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.
7. Select the device from the left pane and click **Run Tests**.
8. If there are any issues, error codes are displayed.
   Note the error code and validation number and contact Dell.

Built-in self-test (BIST)

M-BIST

M-BIST (Built In Self-Test) is the system board's built-in self-test diagnostics tool that improves the diagnostics accuracy of system board embedded controller (EC) failures.

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

How to run M-BIST

NOTE: M-BIST must be initiated on the system from a power-off state either connected to AC power or with battery only.

1. Press and hold both the **M** key on the keyboard and the **power button** to initiate M-BIST.
2. With both the **M** key and the **power button** held down, the battery indicator LED may exhibit two states:
   a. OFF: No fault detected with the system board
   b. AMBER: Indicates a problem with the system board
3. If there is a failure with the system board, the battery status LED will flash one of the following error codes for 30 seconds:

Table 18. 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	Unrecoverable SPI Failure

4. If there is no failure with the system board, the LCD will cycle through the solid color screens described in the LCD-BIST section for 30 seconds and then power off.

LCD Power rail 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 (i.e., the L-BIST circuit fails), the battery status LED will flash 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 L-BIST Test:

1. Press the power button to start the system.
2. If the system 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 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 (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 PC settings.

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

How to invoke LCD BIST Test

1. Power off the Dell laptop.
2. Disconnect any peripherals that are connected to the laptop. Connect only the AC adapter (charger) to the laptop.
3. Ensure that the LCD (screen) is clean (no dust particles on the surface of the screen).
4. Press and hold **D** key and **Power on** the laptop to enter LCD built-in self test (BIST) mode. Continue to hold the D key, until the system boots up.
5. The screen will display solid colors and change colors on the entire screen to white, black, red, green, and blue twice.
6. Then it will display 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 system will shut down.

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

System-diagnostic lights

This section lists the system-diagnostic lights of your Inspiron 14 5430.

Table 19. System-diagnostic lights

Blinking pattern		Problem description	Suggested resolution
Amber	White		
1	1	TPM detection failure	Replace the system board.
1	2	Unrecoverable SPI flash failure	Replace the system board.
1	3	Short in hinge cable tripped OCP1	Check if the display cable (EDP) is seated properly or pinched at the hinges. If problem persists, replace either display cable (EDP) or display assembly (LCD).
1	4	Short in hinge cable tripped OCP2	Check if the display cable (EDP) is seated properly or pinched at the hinges. If problem persists, replace either display cable (EDP) or display assembly (LCD).
1	5	EC unable to program i-Fuse	Replace the system board.
1	6	EC internal failure	Disconnect all power source (AC, battery, coin cell) and drain flea power by pressing and holding down power button for 3~5 seconds.
2	1	Processor failure	Replace the processor. If the processor is onboard, replace the system board.
2	2	System board: BIOS or ROM (Read-Only Memory) failure	Replace the system board.
2	3	No memory or RAM (Random-Access Memory) detected	Confirm that the memory module is installed properly. If problem persists, replace the memory module.
2	4	Memory or RAM (Random-Access Memory) failure	Confirm that the memory module is installed properly. If problem persists, replace the memory module.
2	5	Invalid memory installed	Confirm that the memory module is installed properly. If problem persists, replace the memory module.
2	6	System-board or chipset error	Replace the system board.
2	7	Display failure - SBIOS message	Replace display cable (EDP) if possible, otherwise replace the display assembly (LCD).
2	8	Display failure - EC detection of power rail failure	Replace the system board.

Table 19. System-diagnostic lights (continued)

Blinking pattern		Problem description	Suggested resolution
Amber	**White**		
3	1	CMOS battery failure	Reset the CMOS battery connection. If problem persists, replace the coin-cell battery.
3	2	PCI, video card/chip failure	Replace the system board.
3	3	BIOS recovery image not found	Flash latest BIOS version. If problem persists, replace the system board.
3	4	Recovery image found but invalid	Flash latest BIOS version. If problem persists, replace the system board.
3	5	Power-rail failure	EC ran into power sequencing failure. If problem persists, replace the system board.
3	6	System BIOS Flash incomplete	Flash corruption detected by SBIOS. If problem persists, replace the system board.
3	7	Management Engine (ME) error	Timeout waiting on ME to reply to HECI message. If problem persists, replace the system board.

NOTE: Blinking 3-3-3 LEDs on Lock LED (Caps-Lock or Nums-Lock), Power button LED (without Fingerprint reader), and Diagnostic LED indicates failure to provide input during LCD panel test on Dell SupportAssist Pre-boot System Performance Check diagnostics.

Recovering the operating system

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

Dell SupportAssist OS Recovery is a standalone tool that is preinstalled in all Dell computers installed with 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, or 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 their 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 www.dell.com/serviceabilitytools. Click **SupportAssist** and then, click **SupportAssist OS Recovery**.

Real-Time Clock (RTC Reset)

The Real Time Clock (RTC) reset function allows you or the service technician to recover Dell systems from No POST/No Power/No Boot situations. The legacy jumper enabled RTC reset has been retired on these models.

Start the RTC reset with the system powered off and connected to AC power. Press and hold the power button for

twenty (20) seconds

. The system 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 proposes multiple options for recovering Windows operating system on your Dell PC. For more information. see Dell Windows Backup Media and Recovery Options.

WiFi power cycle

About this task

If your computer is unable to access the internet due to WiFi connectivity issues a WiFi power cycle procedure may be performed. The following procedure provides the instructions on how to conduct a WiFi power cycle:

NOTE: Some ISPs (Internet Service Providers) provide a modem/router combo device.

Steps

1. Turn off your computer.
2. Turn off the modem.
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 your computer.

Drain residual 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 are requested to drain residual flea power before removing or replacing any components in your computer.

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

To drain residual flea power (perform a hard reset)

Steps

1. Turn off your computer.
2. Disconnect the power adapter from your 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 your computer.
9. Turn on your computer.

NOTE: For more information about performing a hard reset, search in the Knowledge Base Resource at www.dell.com/support.

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Getting help and contacting Dell

Self-help resources

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

Table 20. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
Tips	
Contact Support	In Windows search, type `Contact Support`, and press Enter.
Online help for operating system	www.dell.com/support/windows www.dell.com/support/linux
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals and documents.	Your Dell computer is uniquely identified by 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 www.dell.com/support. For more information on how to find the Service Tag for your computer, see Locate the Service Tag on your computer.
Dell knowledge base articles for a variety of computer concerns	1. Go to www.dell.com/support. 2. On the menu bar at the top of the Support page, select **Support** > **Knowledge Base**. 3. In the Search field on the Knowledge Base 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 www.dell.com/contactdell.

NOTE: Availability varies by country/region and product, and some services may not be available in your country/region.

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