Inspiron 7405 2n1

Service Manual

Regulatory Model: P126G
Regulatory Type: P126G001
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Notes, cautions, and warnings

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

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

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

Contents

1

Working inside your computer

Before working inside your computer

About this task

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

Steps

1. Save and close all open files and exit all open applications.
2. Shut down your computer. 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.

   CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.
5. Remove any media card and optical disc from your computer, if applicable.

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.

NOTE: 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.

NOTE: 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 thumb-screws 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.

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

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 that all field service technicians 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 that technicians 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.

Lifting equipment

Adhere to the following guidelines when lifting heavy weight equipment:

CAUTION: Do not lift greater than 50 pounds. Always obtain additional resources or use a mechanical lifting device.

1. Get a firm balanced footing. Keep your feet apart for a stable base, and point your toes out.
2. Tighten stomach muscles. Abdominal muscles support your spine when you lift, offsetting the force of the load.
3. Lift with your legs, not your back.
4. Keep the load close. The closer it is to your spine, the less force it exerts on your back.
5. Keep your back upright, whether lifting or setting down the load. Do not add the weight of your body to the load. Avoid twisting your body and back.
6. Follow the same techniques in reverse to set the load down.

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.
5. Turn on your computer.

2

Removing and installing components

Recommended tools

The procedures in this document may require the following tools:

- Phillips screwdrivers #0 and #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 surface when replacing a component.

NOTE: Screw color may vary with the configuration ordered.

Table 1. Screw list

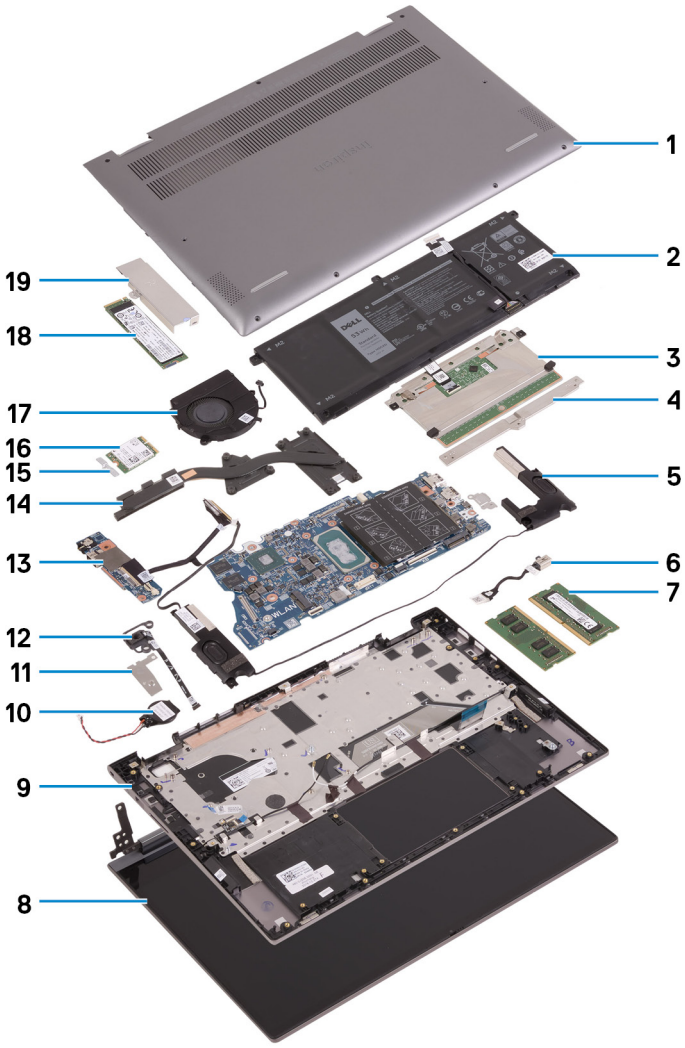
Component	Secured to	Screw type	Quantity	Screw image
Base cover	Palm-rest and keyboard assembly	M2x4	6	
Battery	Palm-rest and keyboard assembly	M2x3	5 - For computers shipped with 4-cell battery 4 - For computers shipped with 3-cell battery	
Wireless-card bracket	Wireless card and system board	M2x3	1	
Solid-state drive thermal bracket	Palm-rest and keyboard assembly	M2x3	1	
Solid-state drive	Solid-state drive bracket	M2x3	1	
Fan	Palm-rest and keyboard assembly	M2x2	2	
Touchpad bracket	Palm-rest and keyboard assembly	M2x2	3	
Touchpad	Palm-rest and keyboard assembly	M2x2	2	

Table 1. Screw list (continued)

Component	Secured to	Screw type	Quantity	Screw image
I/O board	Palm-rest and keyboard assembly	M2x3	1	
Display hinges	Palm-rest and keyboard assembly	M2.5x 5	5	
Power-button board	Palm-rest and keyboard assembly	M2x3	2	
Power-button bracket (optional for configuration with fingerprint reader)	Palm-rest and keyboard assembly	M2x3	2	
Power-adapter port	Palm-rest and keyboard assembly	M2x3	1	
USB Type-C bracket	Palm-rest and keyboard assembly	M2x3	2	
System board	Palm-rest and keyboard assembly	M2x2	2	

Major components of Inspiron 7405 2n1

The following image shows the major components of Inspiron 7405 2n1.



1. Base cover
2. Battery
3. Touchpad
4. Touchpad-bracket
5. Speaker
6. Power-adapter port
7. Memory module
8. Display assembly
9. Palm-rest and keyboard assembly
10. Coin-cell battery
11. Power button with fingerprint-reader bracket
12. Power button with fingerprint reader
13. I/O board
14. Heat sink
15. Wireless-card bracket
16. Wireless card
17. Fan
18. Solid-state drive
19. Solid-state drive thermal bracket

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

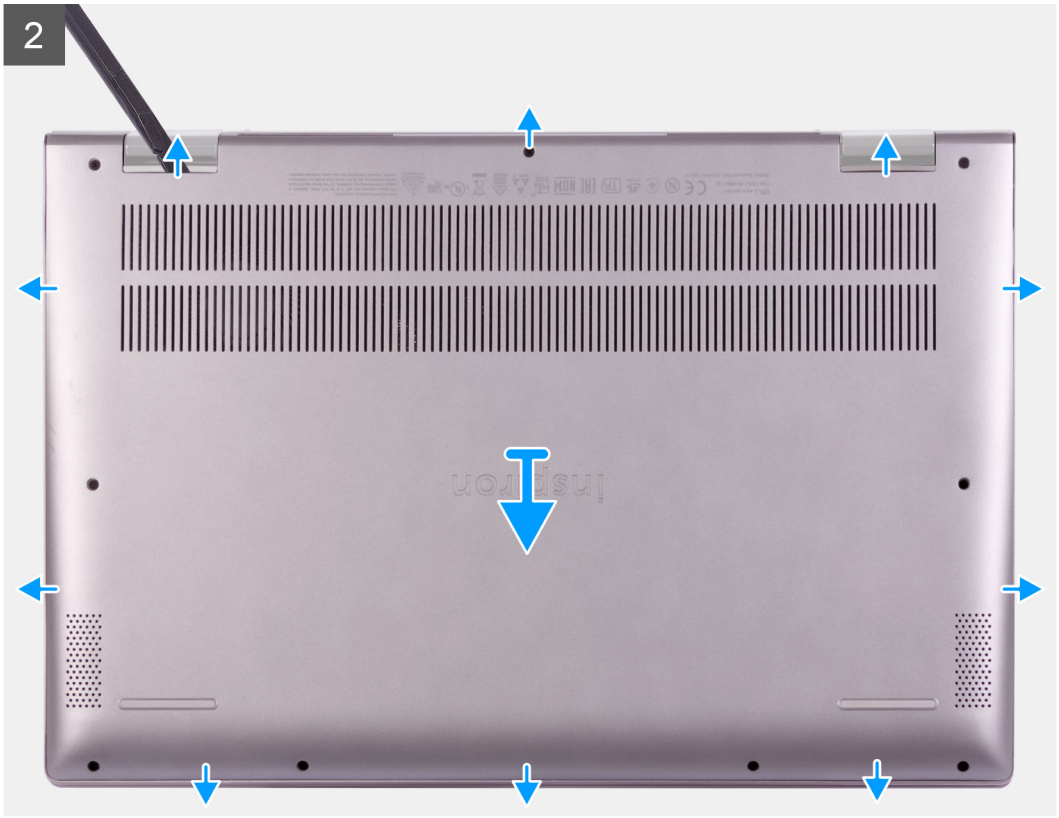
Removing the base cover

Prerequisites

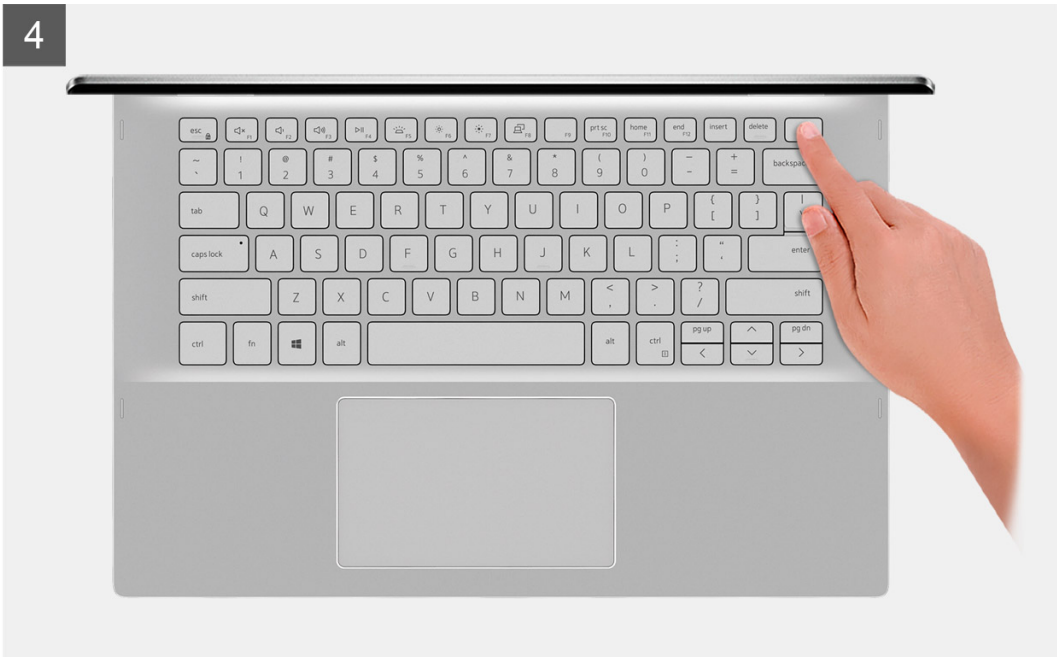
1. Follow the procedure in Before working inside your computer.

About this task

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


2


3
M2
M2
M2
M2
M2
DELL
53Wh
Standard



Steps

1. Remove the six screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
2. Loosen the three captive screws that secure the base cover to the palm-rest and keyboard assembly.

   NOTE: Upon loosening the three captive screws, the base cover will pop up creating a gap between the base cover and the palm-rest assembly.

3. Starting from the top-right corner, use a plastic scribe to pry the base cover to release the base cover from the palm-rest and keyboard assembly.

   NOTE: The following step is applicable only if you want to further remove any other component from your computer.

4. Peel the tape that secures the battery cable to the system board.
5. Disconnect the battery cable from the system board.
6. Turn your computer over and press the power button for 15 seconds to 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

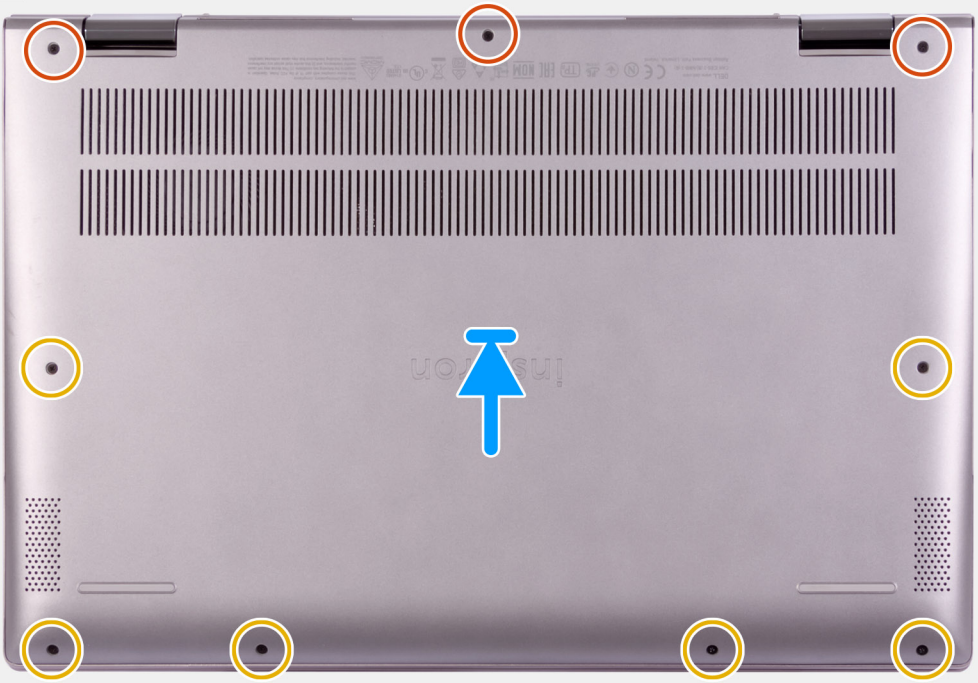
The following images indicate the location of the base cover and provide a visual representation of the installation procedure.

1

3x
M2x7

6x
M2x4

2



Steps

1. Connect the battery cable to the system board.
2. Adhere the tape that secures the battery cable to the system board.
3. Align the screw holes on the base cover with the screw holes on the palm-rest and keyboard assembly, and then snap the base cover into place.
4. Replace the six screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
5. Tighten the three captive screws that 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 as much as possible before removing it from the system. This can be done by disconnecting the AC adapter from the system to allow the battery to drain.**
- **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.**

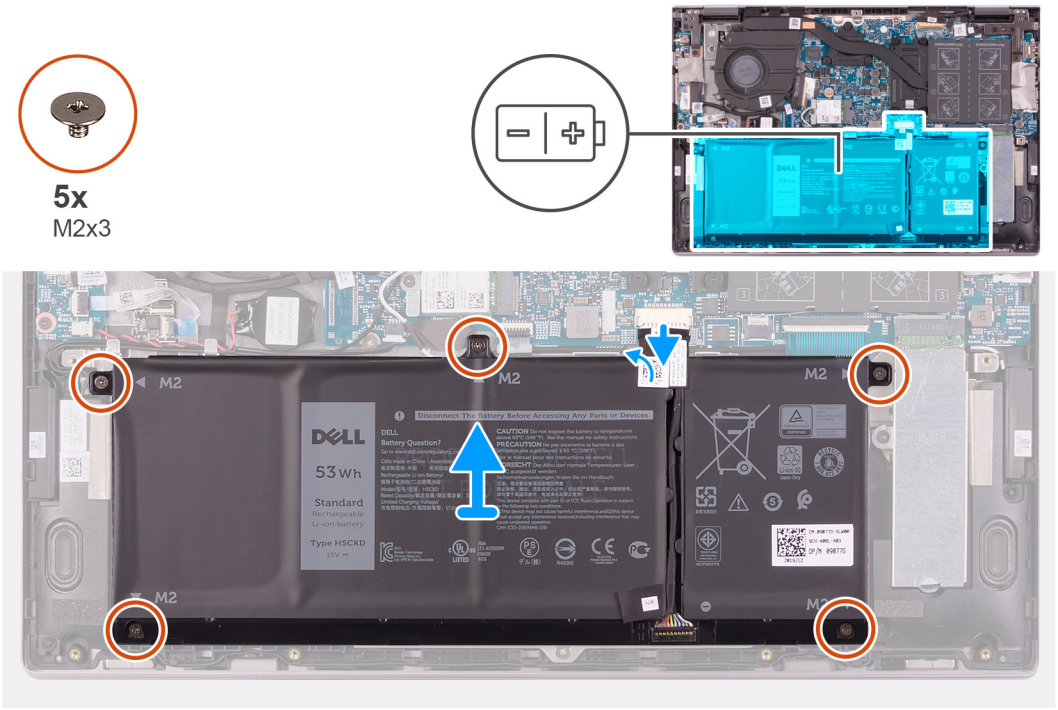
Removing the battery

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 battery and provides a visual representation of the removal procedure.



Steps

1. Peel the tape that secures the battery cable to the system board (applicable only if not peeled earlier).
2. Disconnect the battery cable from the system board (applicable only if not disconnected earlier).
3. Remove the five screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
4. Lift the battery off the palm-rest and keyboard assembly.

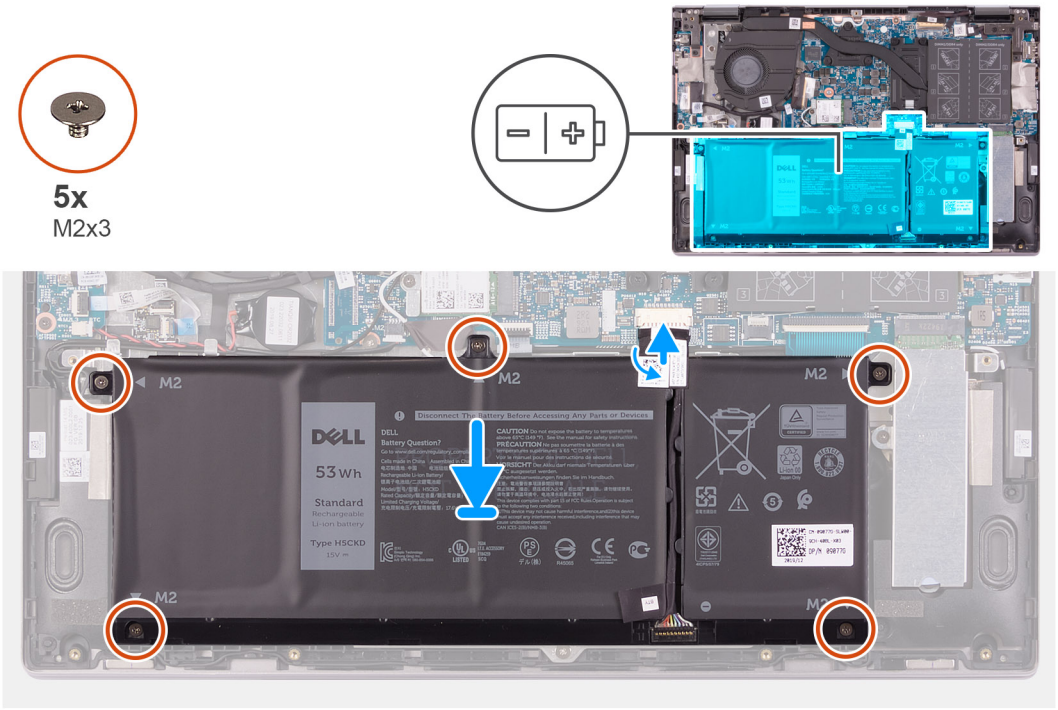
Installing the battery

Prerequisites

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

About this task

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



Steps

1. Using the alignment posts, place the battery on the palm-rest and keyboard assembly.
2. Replace the five screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
3. Connect the battery cable to the system board.
4. Adhere the tape that secures the battery cable to the system board.

Next steps

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

Coin-cell battery

Removing the coin-cell battery

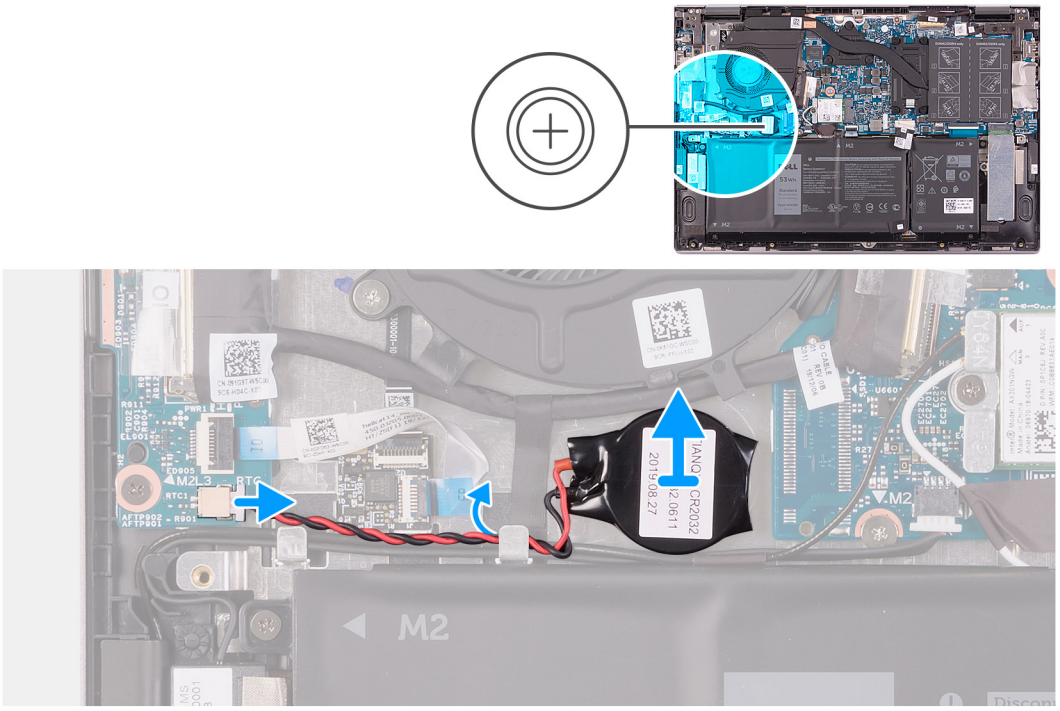
Prerequisites

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

   NOTE: Removing the I/O-board cable is equivalent to removing the coin-cell battery. It resets the BIOS setup program's settings to default. It is recommended that you note the BIOS setup program's settings before removing the coin-cell battery.
2. Remove the base cover.

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 I/O board.
2. Remove the coin-cell battery cable from the routing guide on the fan.
3. Using a plastic scribe, peel the coin-cell battery off the slot on the palm-rest and keyboard assembly.

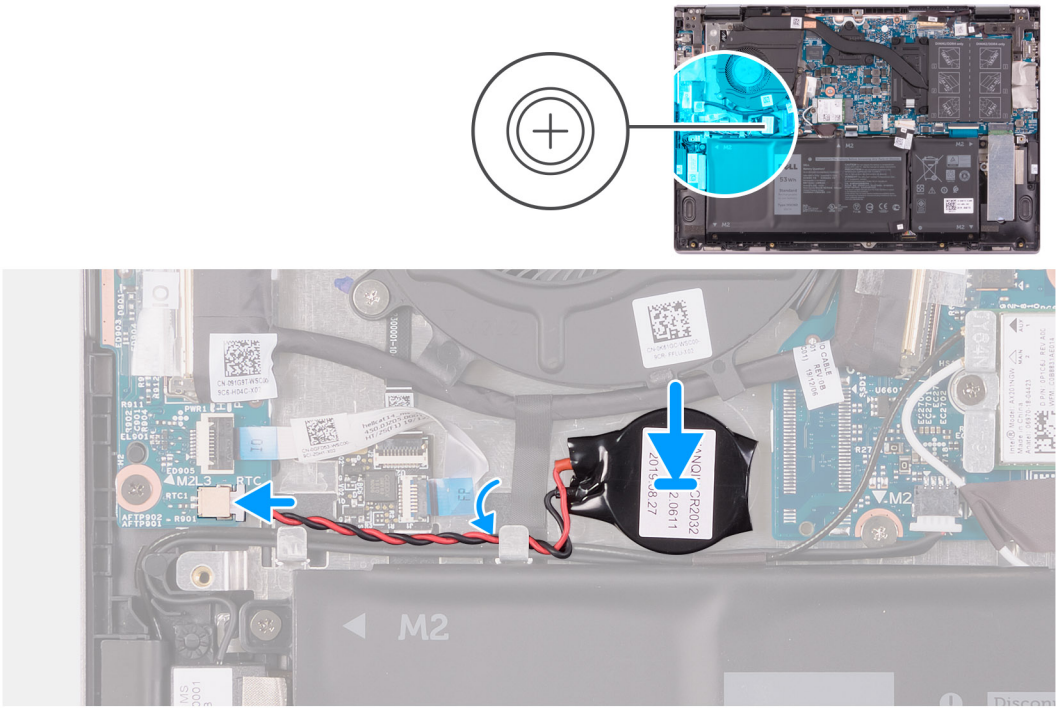
Installing the coin-cell battery

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. Adhere the coin-cell battery to the slot on the palm-rest and keyboard assembly.
2. Lift the speaker cable and route the coin-cell battery cable through the routing guide on the fan.
3. Connect the coin-cell battery cable to the I/O board.

Next steps

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

Memory modules

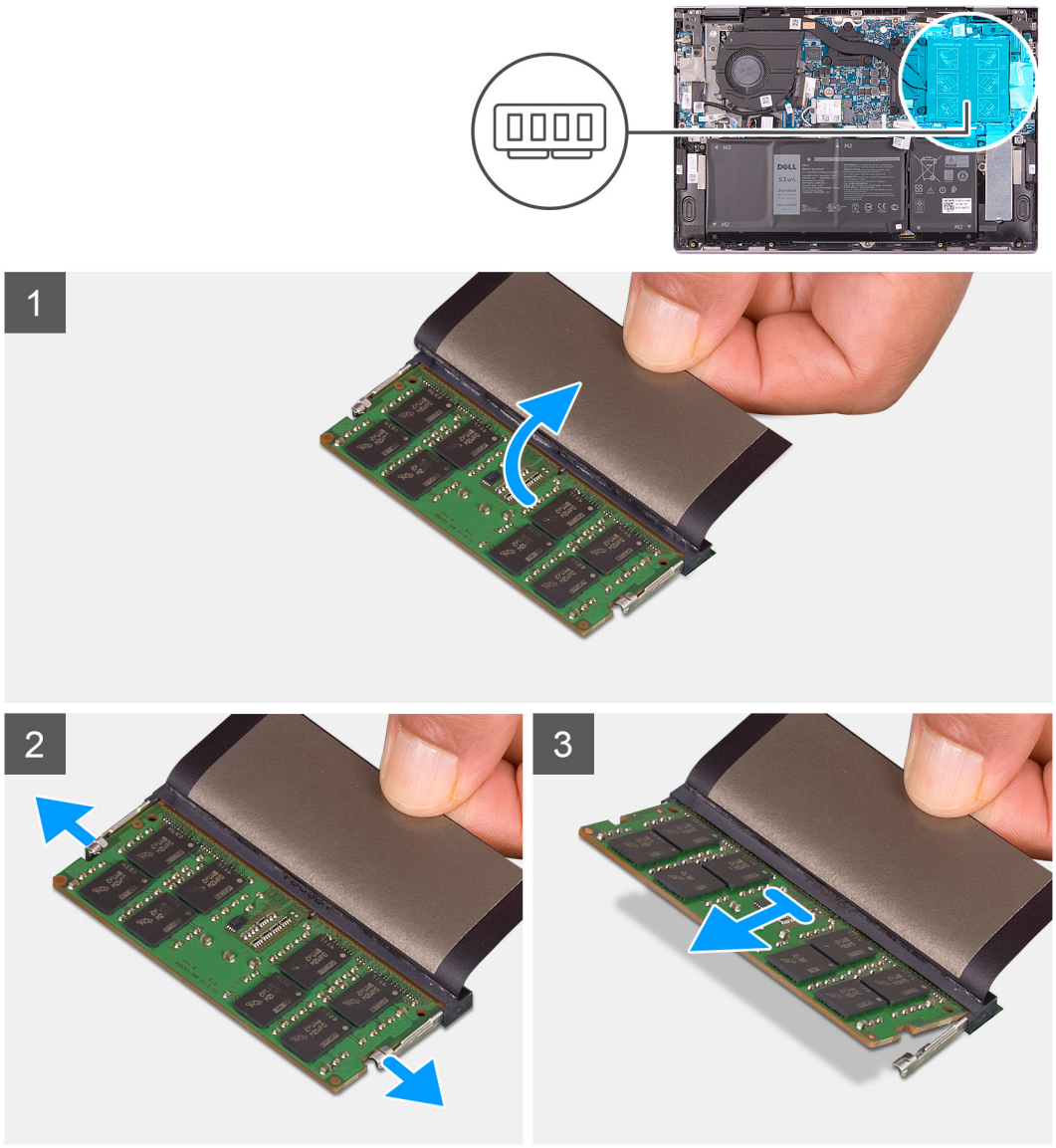
Removing the memory modules

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 memory modules and provides a visual representation of the removal procedure.



Steps

1. Lift the flap to access the memory module.
2. Use your fingertips to carefully spread apart the securing-clips on each end of the memory-module slot until the memory module pops up.
3. Slide and remove the memory module from the memory-module slot.

NOTE: Repeat step 2 to step 3 to remove any other memory modules installed in your computer.

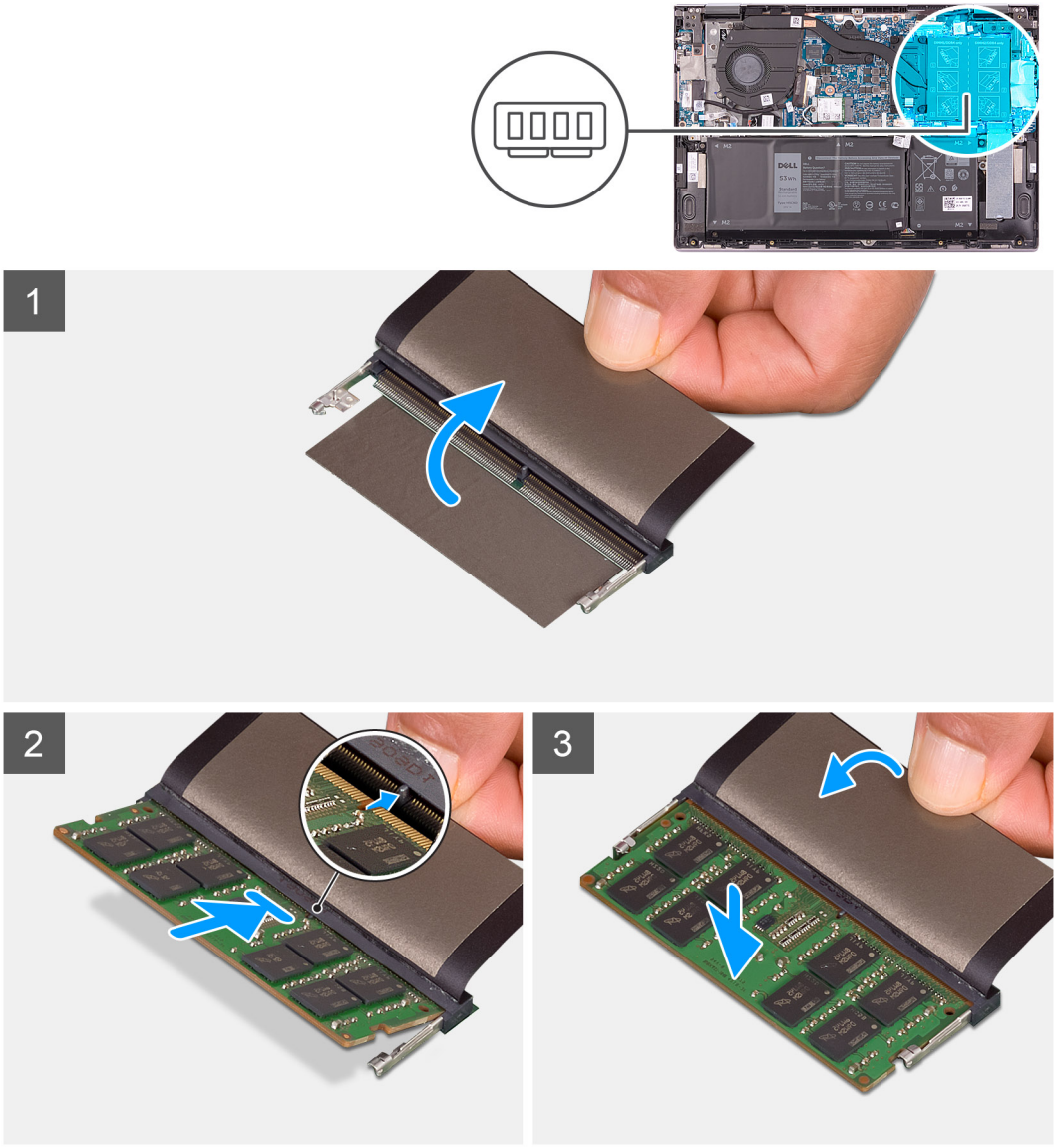
Installing the memory modules

Prerequisites

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

About this task

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



Steps

1. Lift the flap to access the memory-module slot.
2. Align the notch on the memory module with the tab on the memory-module slot.
3. Slide the memory module firmly at an angle, into the memory-module slot.
4. Press the memory module down until it clicks into place.

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

NOTE: Repeat step 2 to step 4 to install any other memory modules in your computer.

Next steps

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

Speakers

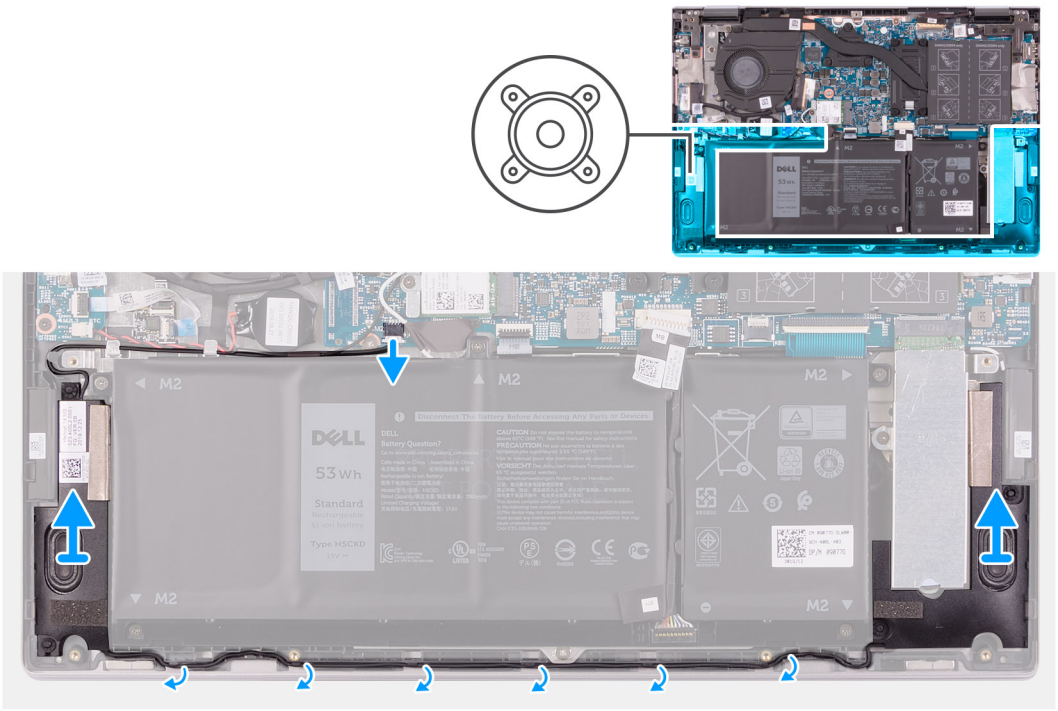
Removing the speakers

Prerequisites

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

About this task

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



Steps

1. Disconnect the speaker cable from the system board.
2. Note the speaker cable routing, and remove the speaker cable from the routing guides on the palm-rest and keyboard assembly.
3. Lift the speakers along with the cables, off the palm-rest and keyboard assembly.

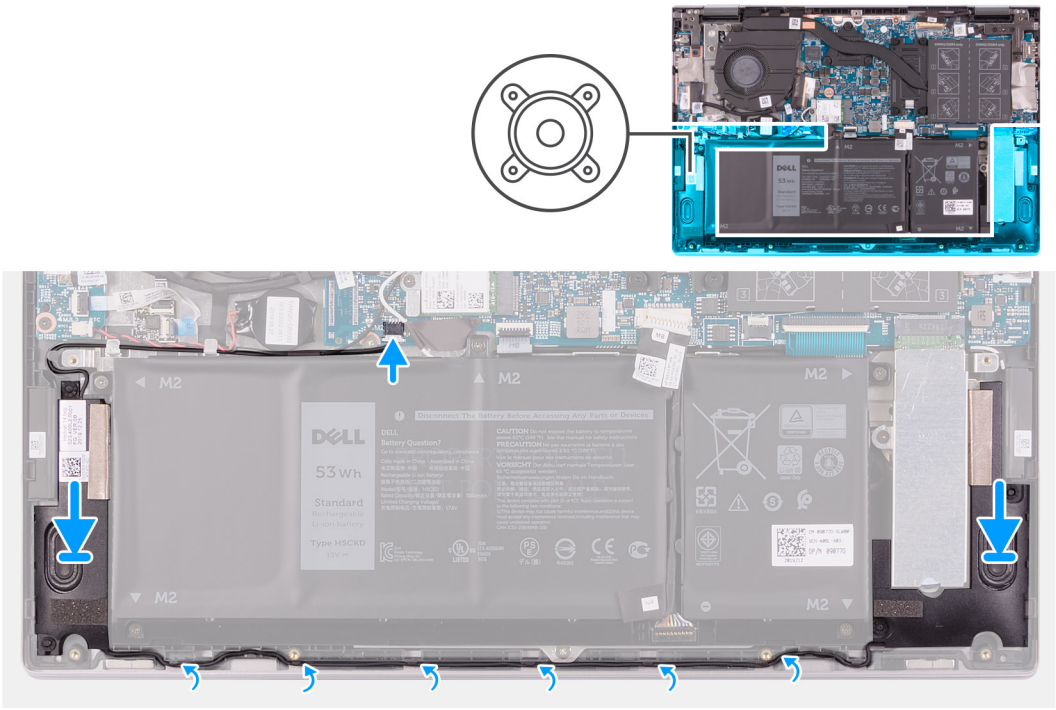
Installing the speakers

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 speakers and provides a visual representation of the installation procedure.



Steps

1. Using the alignment posts and rubber grommets, place the speakers on the slots of the palm-rest and keyboard assembly.
2. Route the speaker cable through the routing guides on the palm-rest and keyboard assembly.
3. Connect the speaker cable to the system board.

Next steps

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

Heat sink

Removing the heat sink

Prerequisites

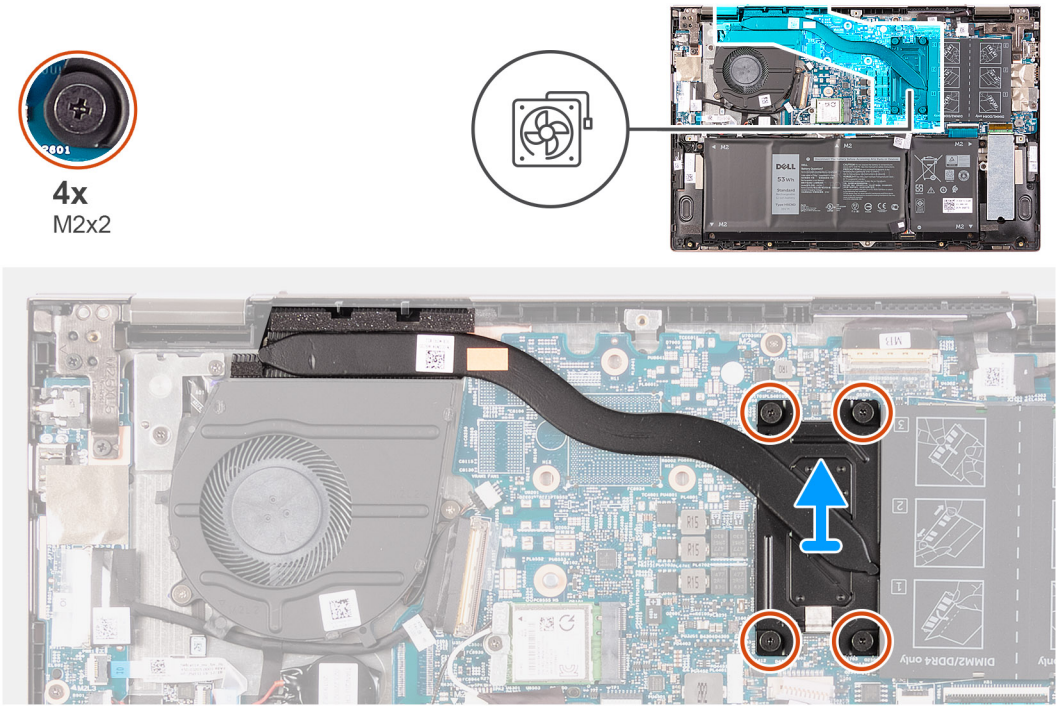
1. Follow the procedure in Before working inside your computer.

   CAUTION: 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.

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

About this task

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



Steps

1. In reverse sequential order (as indicated on the heat sink), loosen the seven captive screws that secure the heat sink to the system board.
2. Lift the heat sink off the system board.

Installing the heat sink

Prerequisites

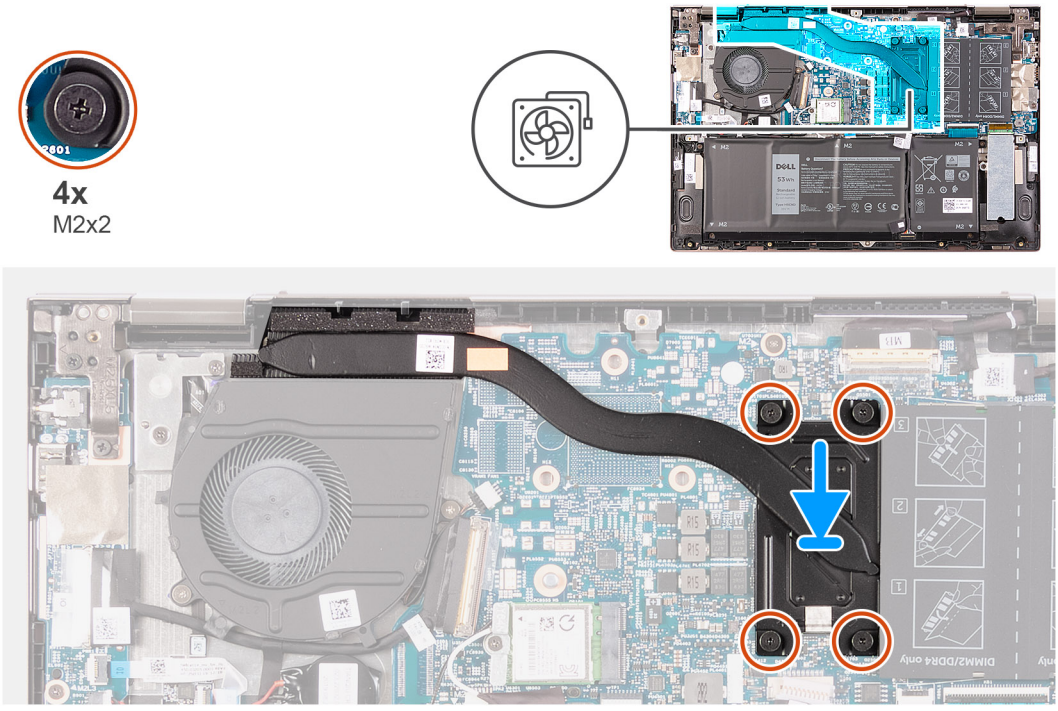
If you are replacing a component, remove the existing component before performing the installation procedure.

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

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

About this task

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



Steps

1. Align the screw holes on the heat sink with the screw holes on the system board.
2. In sequential order (as indicated on the heat sink), tighten the seven captive screws that secure the heat sink to the system board.

Next steps

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

Power-adapter port

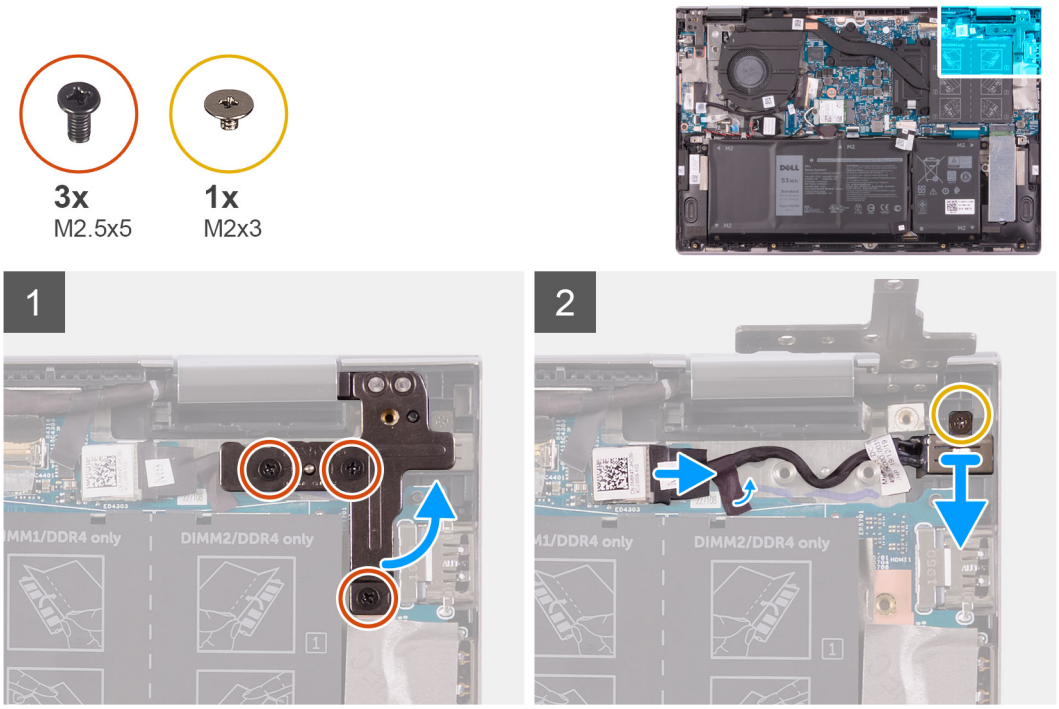
Removing the power-adapter port

Prerequisites

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

About this task

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



Steps

1. Remove the three screws (M2.5x5) that secure the right display-hinge to the palm-rest and keyboard assembly.
2. Open the right display-hinge at an angle of 90 degrees.
3. Peel the tape that secures the power-adapter port cable to the system board.
4. Disconnect the power-adapter port cable from the system board.
5. Remove the screw (M2x3) that secures the power-adapter port to the palm-rest and keyboard assembly.
6. Lift the power-adapter port along with its cable, off the palm-rest and keyboard assembly.

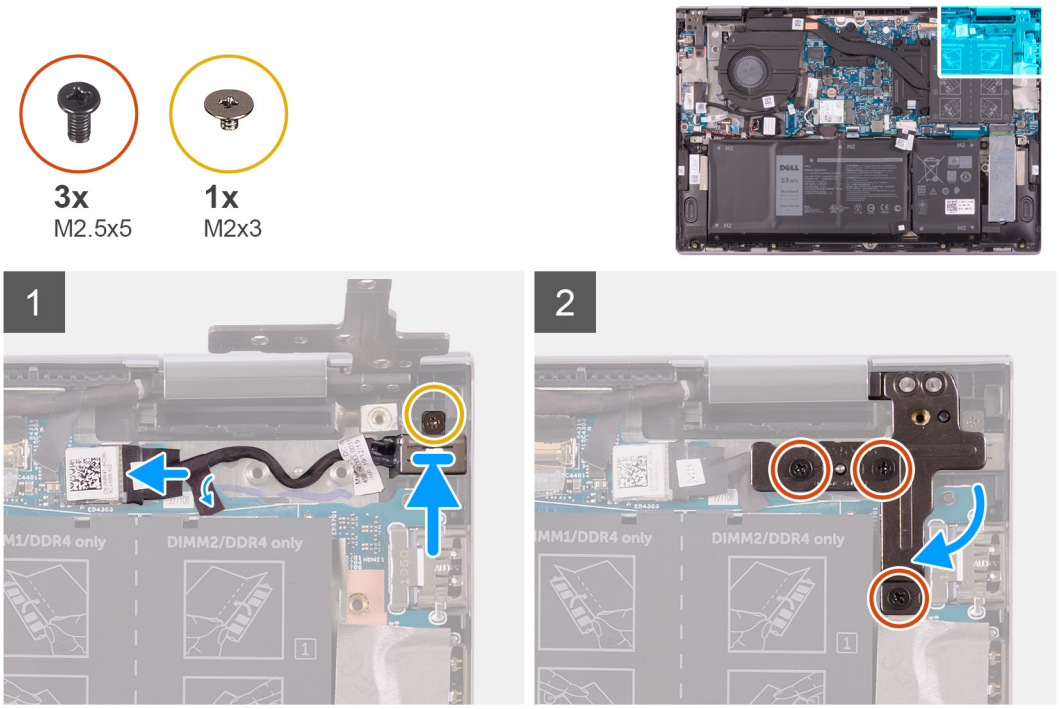
Installing the power-adapter port

Prerequisites

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

About this task

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



Steps

1. Place the power-adapter port into the slot on the palm-rest and keyboard assembly.
2. Replace the screw (M2x3) that secures the power-adapter port to the palm-rest and keyboard assembly.
3. Route the power-adapter port cable through the routing guide on the palm-rest and keyboard assembly.
4. Connect the power-adapter port cable to the system board.
5. Adhere the tape that secures the power-adapter port cable to the system board.
6. Close the right display-hinge.
7. Replace the three screws (M2.5x5) that secure the right display-hinge to the palm-rest and keyboard assembly.

Next steps

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

Touchpad

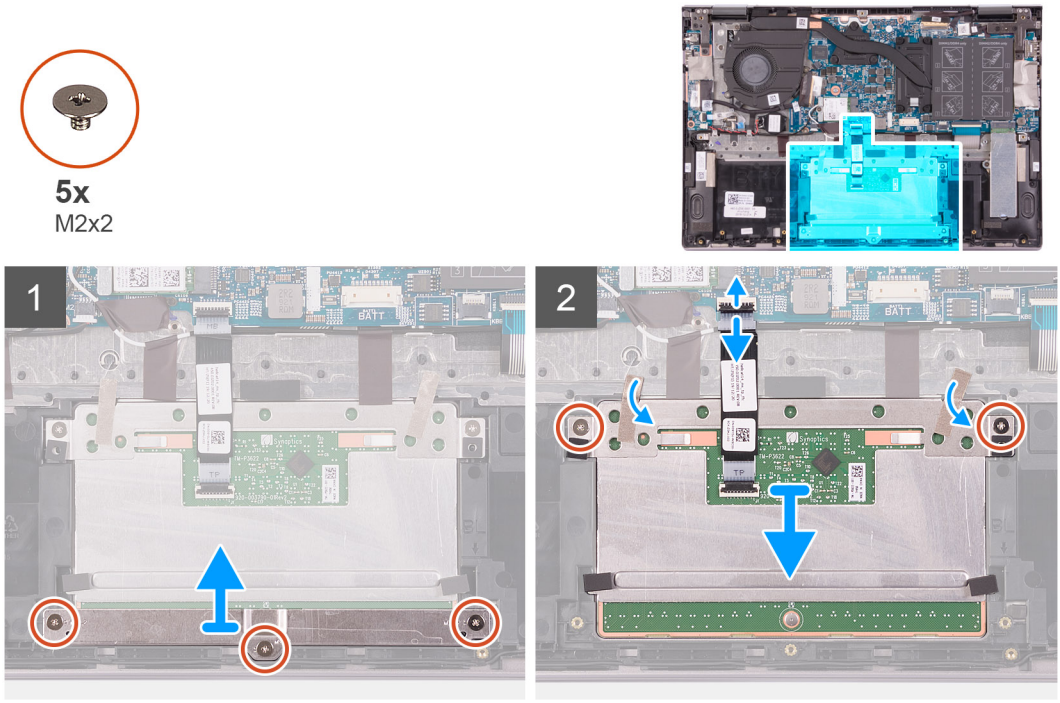
Removing the touchpad

Prerequisites

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

About this task

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



Steps

1. Remove the three screws (M2x2) that secure the touchpad bracket to the palm-rest and keyboard assembly.
2. Open the latch, and disconnect the touchpad cable from the touchpad.
3. Peel the tape that secures the touchpad to the palm-rest and keyboard assembly.
4. Remove the two screws (M2x2) that secure the touchpad to the palm-rest and keyboard assembly.
5. Slide and lift the touchpad off the palm-rest and keyboard assembly.

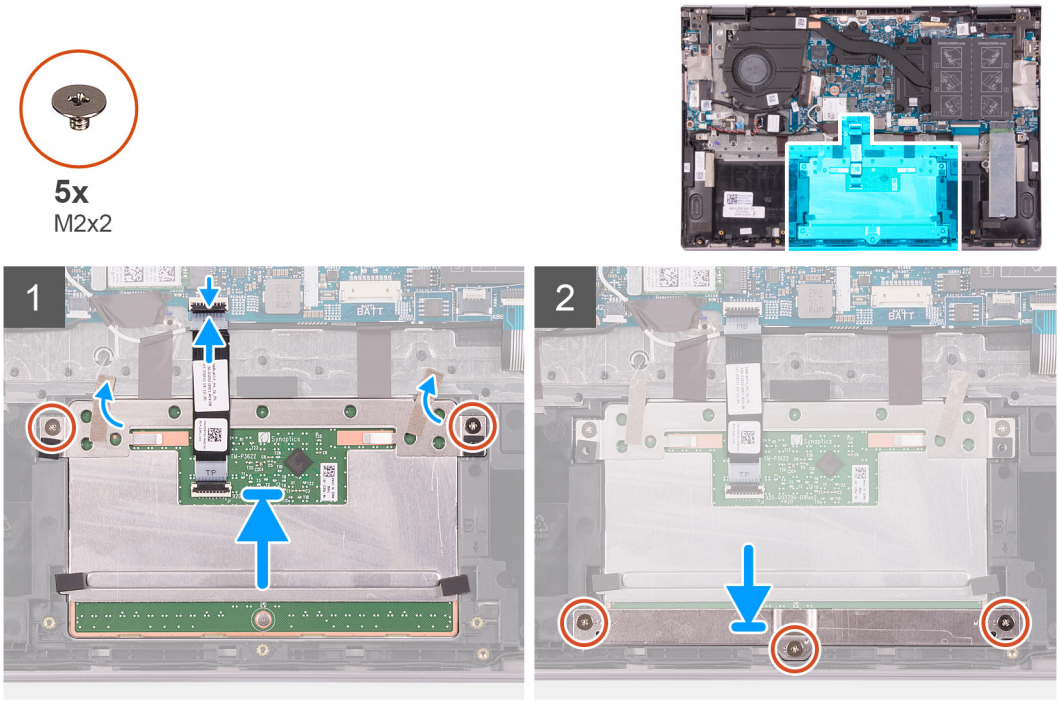
Installing the touchpad

Prerequisites

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

About this task

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



Steps

1. Slide the touchpad into the slot on the palm-rest and keyboard assembly.
2. Replace the two screws (M2x2) that secure the touchpad to the palm-rest and keyboard assembly.
3. Adhere the tape that secures the touchpad to the palm-rest and keyboard assembly.
4. Slide the touchpad cable into the connector on the touchpad and close the latch to secure the cable.
5. Place the touchpad bracket into the slot on the palm-rest and keyboard assembly.
6. Replace the three screws (M2x2) that secure the touchpad bracket to the palm-rest and keyboard assembly.

Next steps

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

Solid-state drive

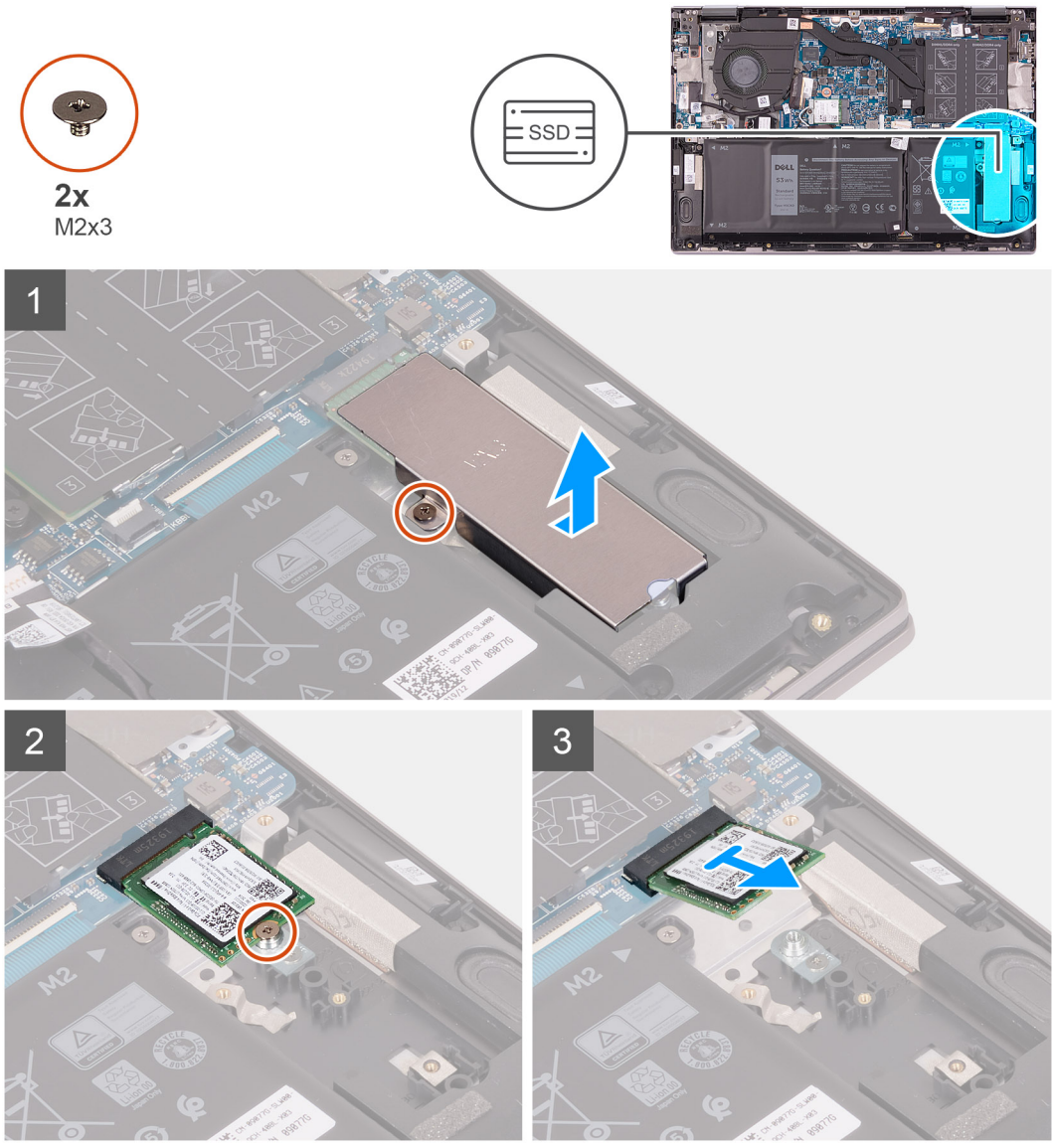
Removing the M.2 2230 solid-state drive

Prerequisites

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

About this task

The following image indicates the location of the M.2 2230 solid-state drive and provides a visual representation of the removal procedure.



Steps

1. Remove the screw (M2x3) that secures the solid-state drive thermal bracket to the palm-rest and keyboard assembly.
2. Lift the solid-state drive thermal bracket off the palm-rest and keyboard assembly.
3. Remove the screw (M2x3) that secures the solid-state drive to the solid-state drive bracket.
4. Slide and remove the solid-state drive from the solid-state drive slot.

Installing the M.2 2230 solid-state drive

Prerequisites

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

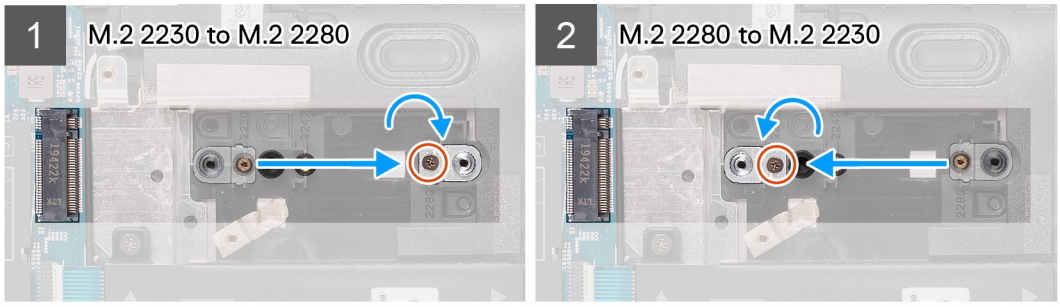
About this task

This computer supports two solid-state drive form factors.

- M.2 2230
- M.2 2280

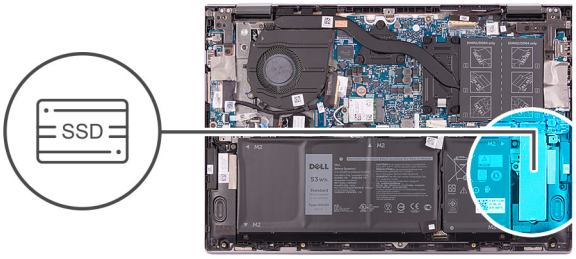
If you are replacing the M.2 2230 solid-state drive with an M.2 2280 solid-state drive, the following images indicate where to install the solid-state drive bracket based on form factor.

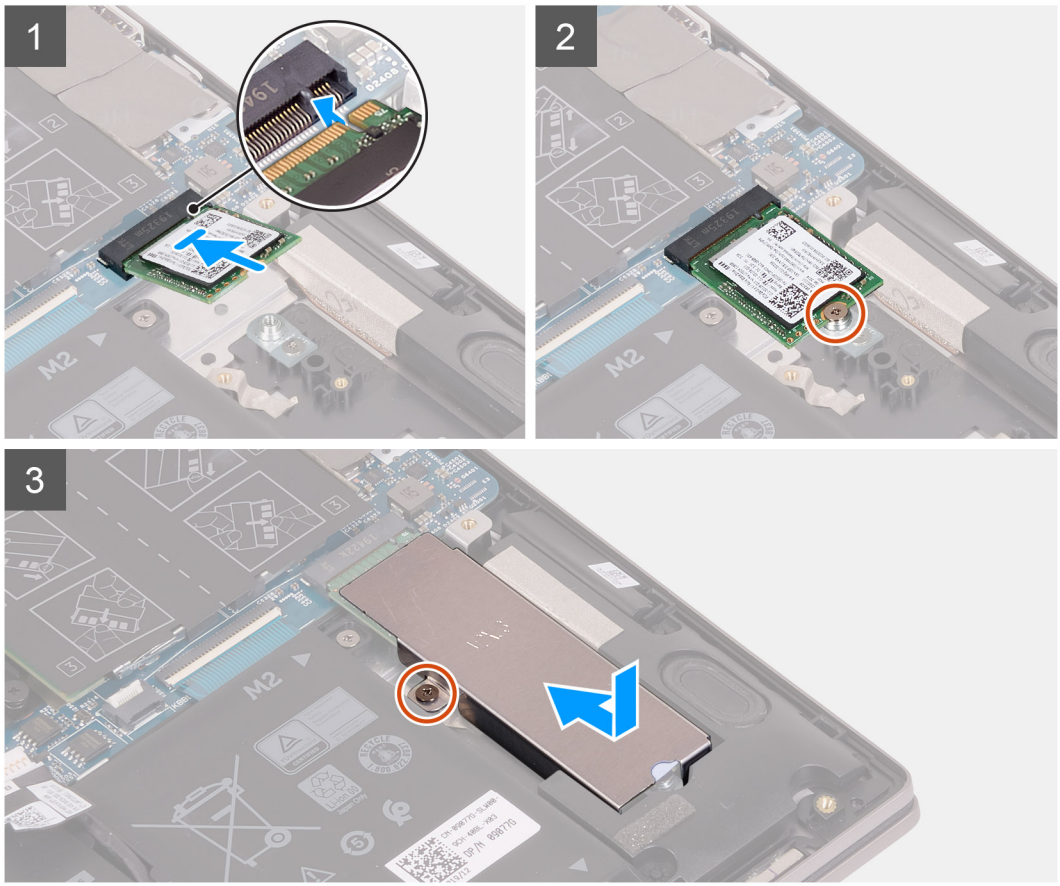
1x
M1.6x2.5



The following image indicates the location of the M.2 2230 solid-state drive and provides a visual representation of the installation procedure.

2x
M2x3





Steps

1. Remove the screw (M1.6x2.5) that secures the solid-state drive bracket to the palm-rest and keyboard assembly.
2. Turn the solid-state drive bracket at an angle of 180 degrees.
3. Insert the solid-state drive bracket into the other solid-state drive bracket slot on the palm-rest and keyboard assembly.
4. Replace the screw (M1.6x2.5) that secures the solid-state drive bracket to the palm-rest and keyboard assembly.
5. Align the notch on the solid-state drive with the tab on the solid-state drive slot.
6. Slide the solid-state drive firmly into the solid-state drive slot at an angle.
7. Replace the screw (M2x3) that secures the solid-state drive to the solid-state drive bracket.
8. Align the screw hole on the solid-state drive thermal bracket with the screw hole on the palm-rest and keyboard assembly.
9. Replace the screw (M2x3) that secures the solid-state drive thermal bracket to the palm-rest and keyboard assembly.

Next steps

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

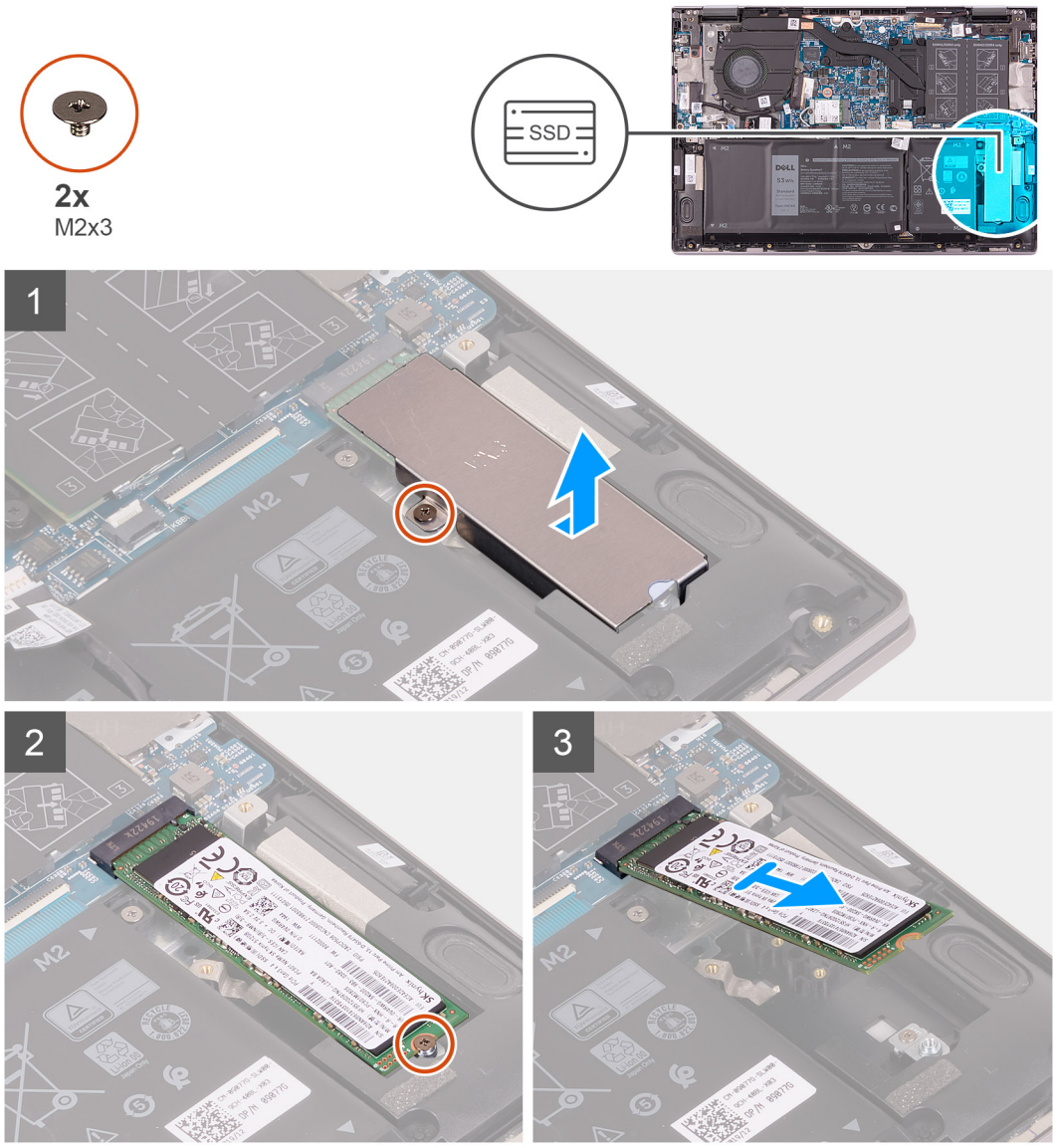
Removing the M.2 2280 solid-state drive

Prerequisites

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

About this task

The following image indicates the location of the M.2 2280 solid-state drive and provides a visual representation of the removal procedure.



Steps

1. Remove the screw (M2x3) that secures the solid-state drive thermal bracket to the palm-rest and keyboard assembly.
2. Lift the solid-state drive thermal bracket off the palm-rest and keyboard assembly.
3. Remove the screw (M2x3) that secures the solid-state drive to the solid-state drive bracket.
4. Slide and remove the solid-state drive from the solid-state drive slot.

Installing the M.2 2280 solid-state drive

Prerequisites

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

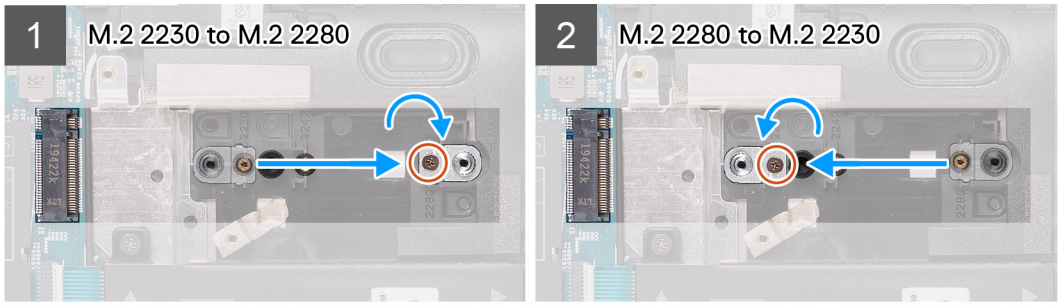
About this task

This computer supports two solid-state drive form factors.

- M.2 2230
- M.2 2280

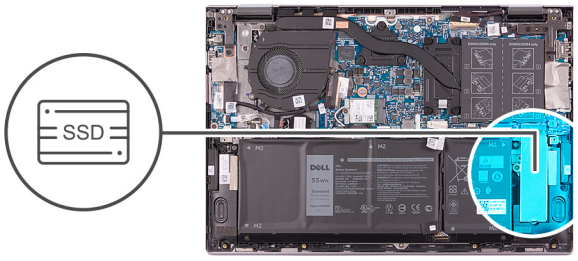
If you are replacing the M.2 2280 solid-state drive with an M.2 2330 solid-state drive, the following images indicate where to install the solid-state drive bracket based on form factor.

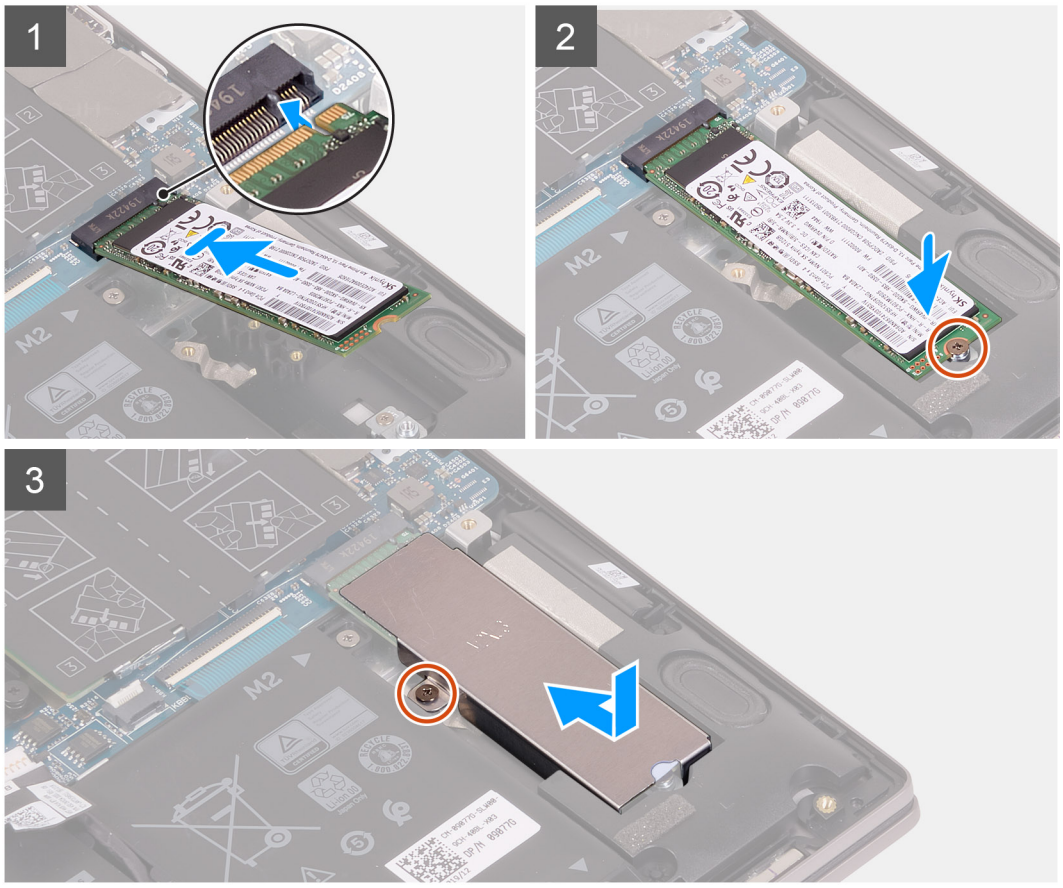
1x
M1.6x2.5



The following image indicates the location of the M.2 2280 solid-state drive and provides a visual representation of the installation procedure.

2x
M2x3





NOTE: Perform step 1 to step 3 if you are replacing the M.2 2230 solid-state drive with an M.2 2280 solid-state drive.

Steps

1. Remove the screw (M1.6x2.5) that secures the solid-state drive bracket to the palm-rest and keyboard assembly.
2. Turn the solid-state drive bracket at an angle of 180 degrees.
3. Insert the solid-state drive bracket into the other solid-state drive bracket slot on the palm-rest and keyboard assembly.
4. Replace the screw (M1.6x2.5) that secures the solid-state drive bracket to the palm-rest and keyboard assembly.
5. Align the notch on the solid-state drive with the tab on the solid-state drive slot.
6. Slide the solid-state drive firmly into the solid-state drive slot at an angle.
7. Replace the screw (M2x3) that secures the solid-state drive to the solid-state drive bracket.
8. Align the screw hole on the solid-state drive thermal bracket with the screw hole on the palm-rest and keyboard assembly.
9. Replace the screw (M2x3) that secures the solid-state drive thermal bracket to the palm-rest and keyboard assembly.

Next steps

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

Fan

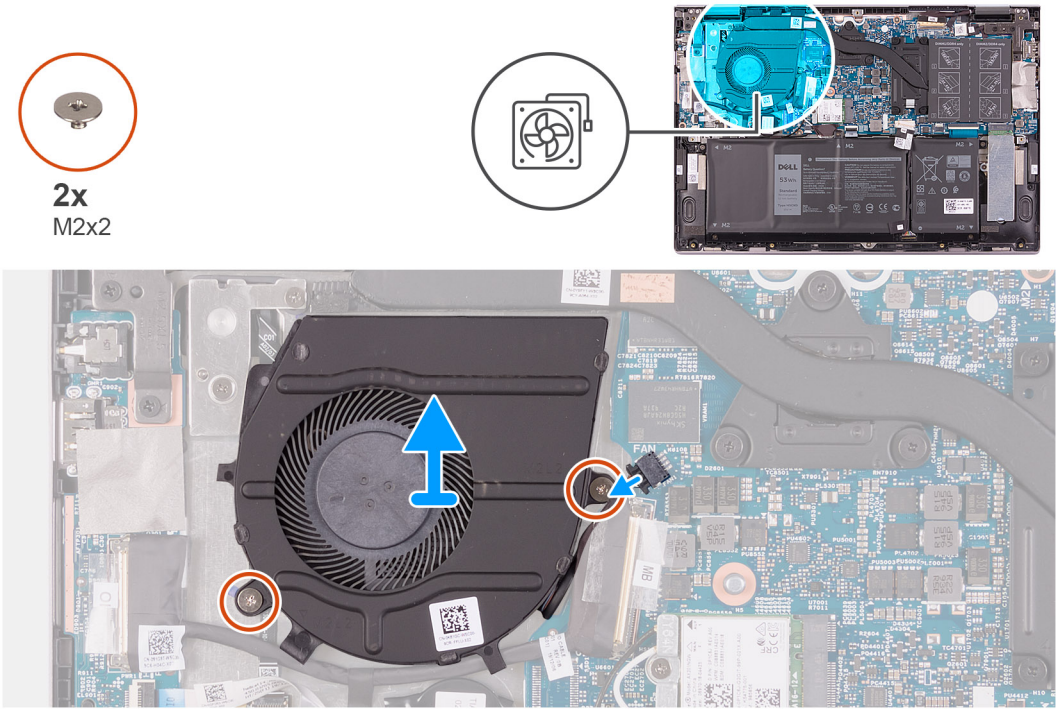
Removing the fan

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. Disconnect the fan cable from the system board.
2. Remove the two screws (M2x2) that secure the fan to the palm-rest and keyboard assembly.

3. Lift the fan off the palm-rest and keyboard assembly.

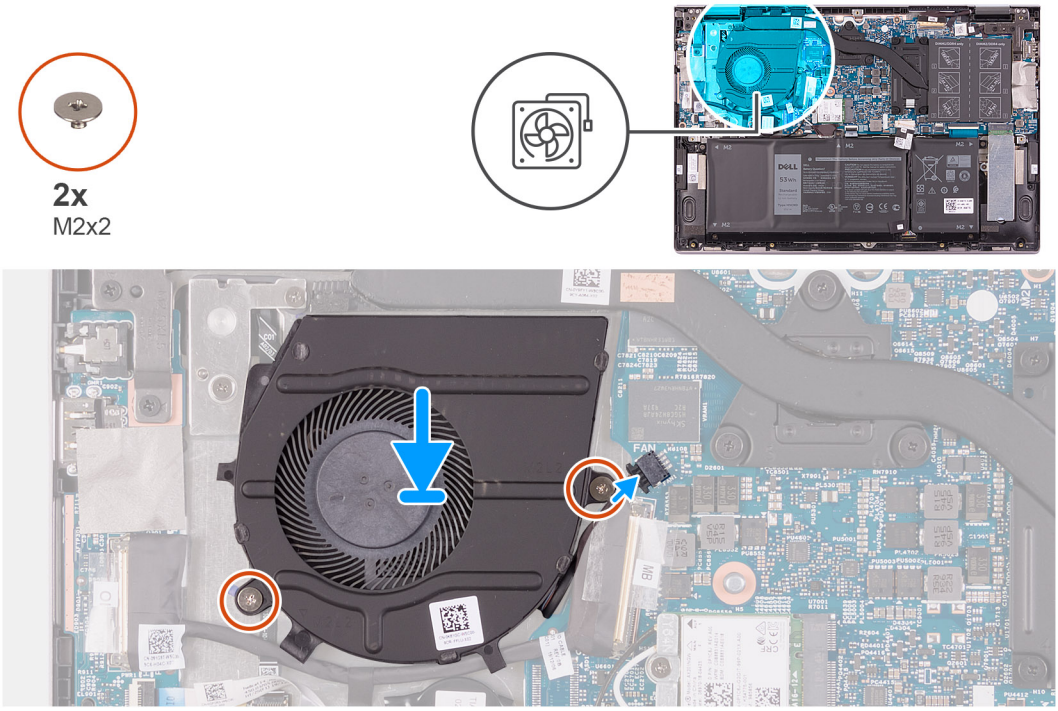
Installing the fan

Prerequisites

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

About this task

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



Steps

1. Using the alignment posts, place the fan on the palm-rest and keyboard assembly.
2. Replace the two screws (M2x2) that secure the system fan to the palm-rest and keyboard assembly.
3. Connect the fan cable to the system board.

Next steps

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

I/O board

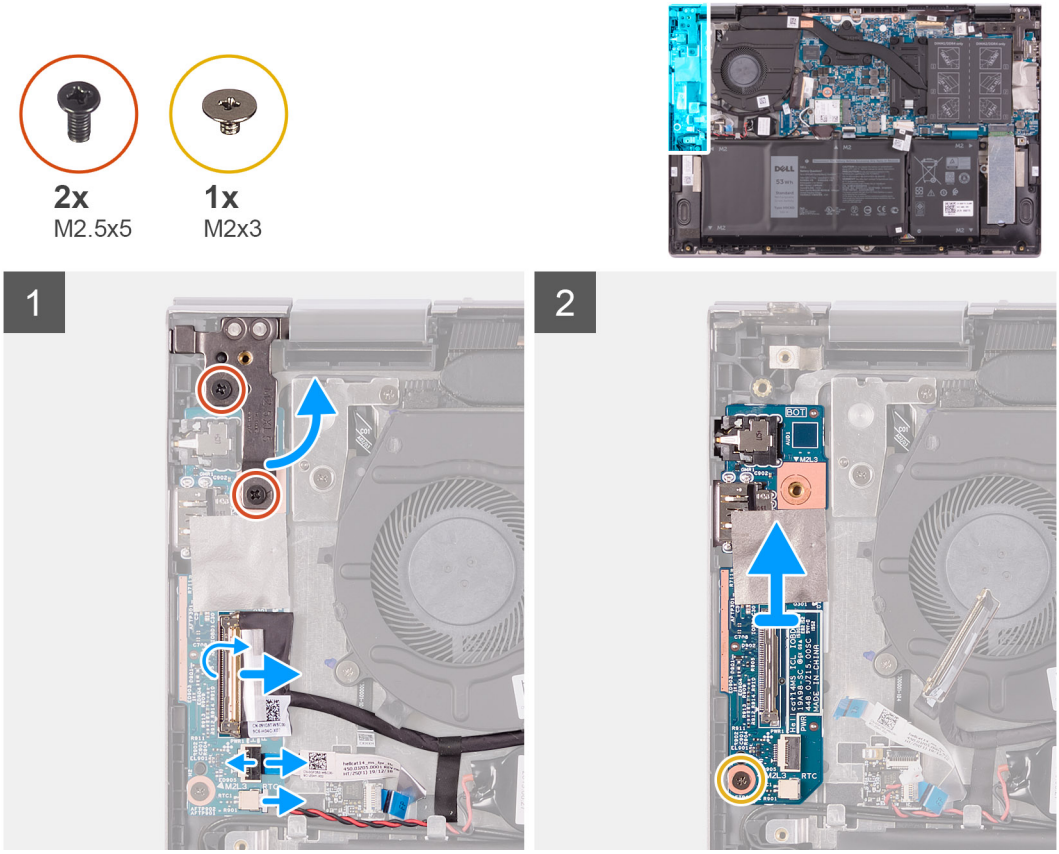
Removing the I/O board

Prerequisites

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

About this task

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



Steps

1. Remove the two screws (M2.5x5) that secure the left display hinge to the palm-rest and keyboard assembly.
2. Open the left-display hinge at an angle of 90 degrees.
3. Peel the tape that secures the I/O-board cable to the I/O board.
4. Open the latch, and disconnect the I/O-board cable from the I/O board.
5. Open the latch, and disconnect the fingerprint reader-cable from the I/O board.
6. Disconnect the coin-cell battery cable from the I/O board.
7. Remove the screw (M2x3) that secures the I/O board to the palm-rest and keyboard assembly.
8. Slide and lift the I/O board off the palm-rest and keyboard assembly.

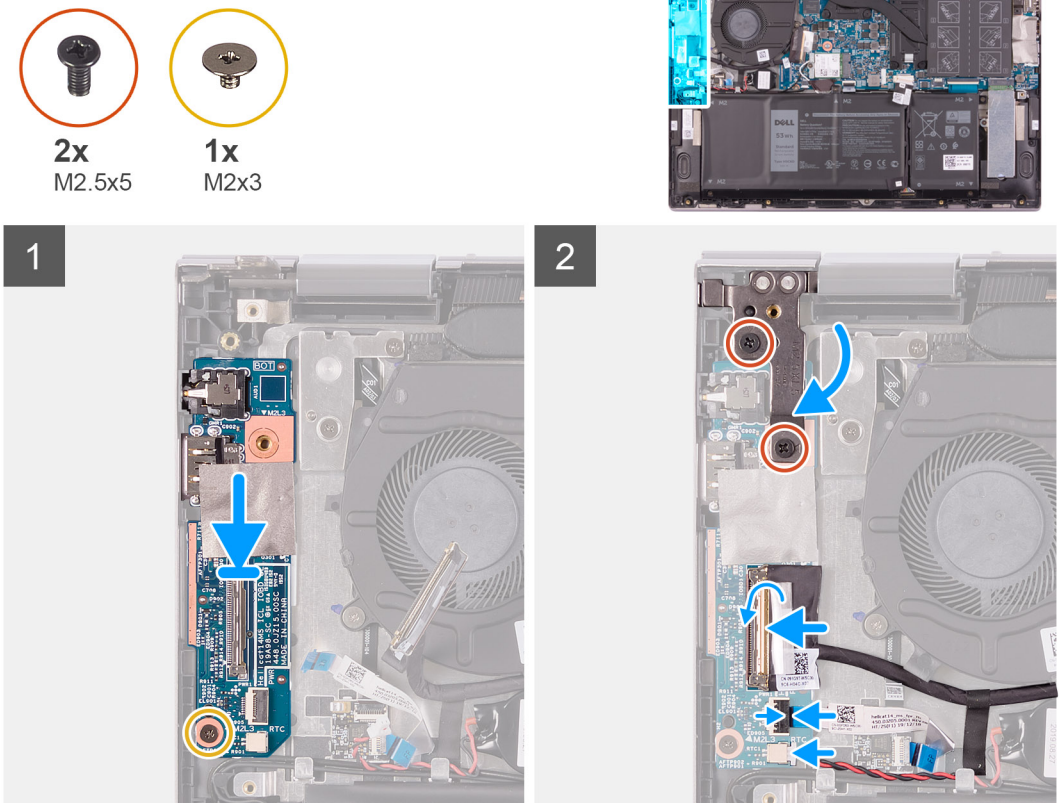
Installing the I/O board

Prerequisites

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

About this task

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



Steps

1. Slide the I/O board into the slots on the palm-rest and keyboard assembly.
2. Align the screw hole on the I/O board with the screw hole on the palm-rest and keyboard assembly.
3. Replace the screw (M2x3) that secures the I/O board to the palm-rest and keyboard assembly.
4. Connect the I/O-board cable to the connector on the I/O board and close the latch to secure the cable.
5. Adhere the tape that secures the I/O-board cable to the I/O board.
6. Connect the fingerprint reader-cable to the connector on the I/O board and close the latch to secure the cable.
7. Connect the coin-cell battery cable to the I/O board.
8. Close the left display hinge.
9. Replace the two screws (M2.5x5) that secure the left-display hinge to the palm-rest and keyboard assembly.

Next steps

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

Power button with fingerprint reader

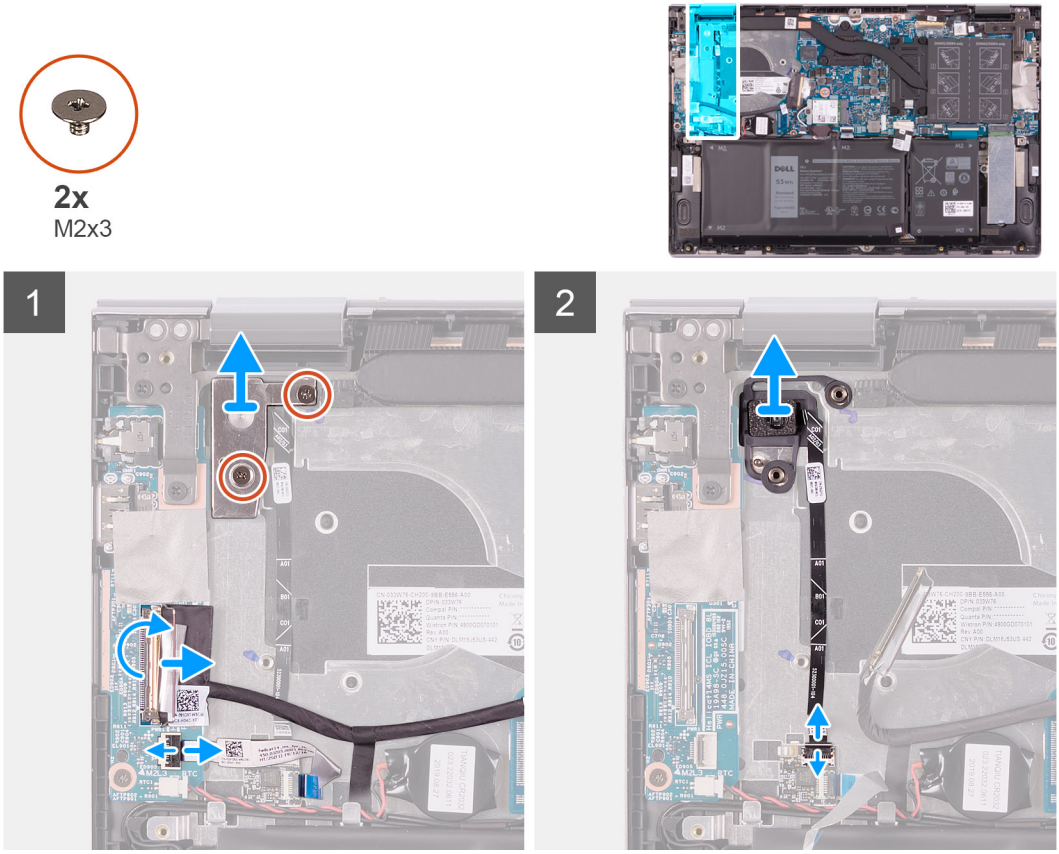
Removing the power-button board

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the heat sink.
4. Remove the fan.

About this task

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



Steps

1. Remove the two screws (M2x3) that secure the power-button bracket to the palm-rest and keyboard assembly.
2. Lift the power-button bracket off the palm-rest and keyboard assembly.
3. Peel the tape that secures the I/O-board cable to the I/O board.
4. Open the latch, and disconnect the I/O-board cable from the I/O board.
5. Open the latch, and disconnect the fingerprint reader-cable from the I/O board.
6. Open the latch, and disconnect the power-button cable from the fingerprint reader-board.
7. Lift the power button, along with its cable, off the slot on the palm-rest and keyboard assembly.

Installing the power-button board

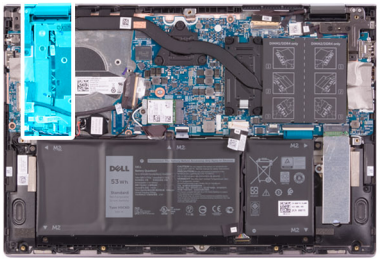
Prerequisites

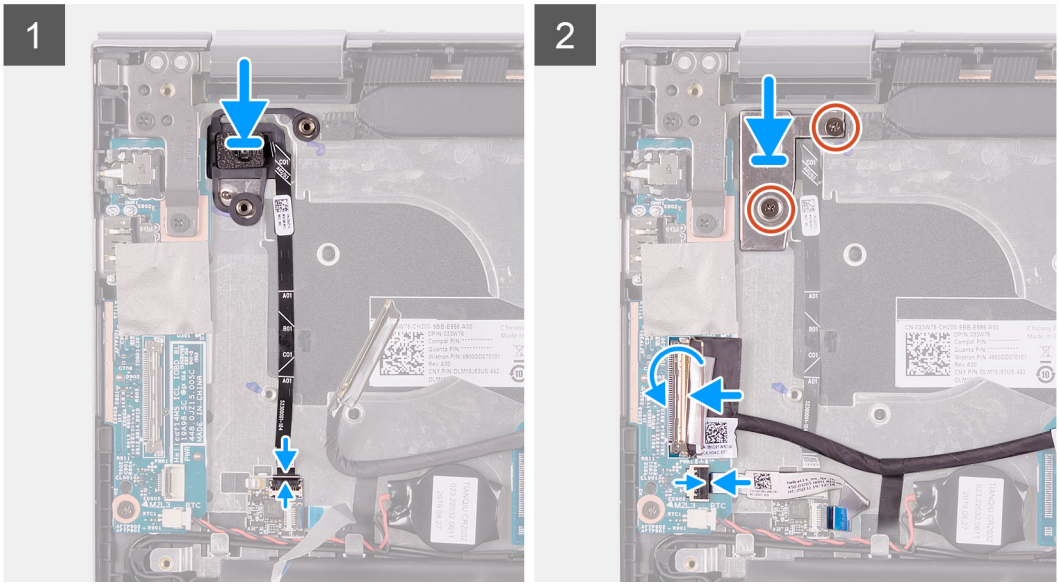
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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

2x
M2x3





Steps

1. Align and place the power button, along with its cable, on the slot of the palm-rest and keyboard assembly.
2. Slide the power-button cable into the connector on the fingerprint reader-board and close the latch to secure the cable.
3. Connect the fingerprint reader-cable to the connector on the I/O board and close the latch to secure the cable.
4. Connect the I/O-board cable to the connector on the I/O board and close the latch to secure the cable.
5. Adhere the tape that secures the I/O-board cable to the I/O board.
6. Align the screw holes on the power-button bracket with the screw holes on the palm-rest and keyboard assembly.
7. Replace the two screws (M2x3) that secure power-button bracket to the palm-rest and keyboard assembly.

Next steps

1. Install the fan.
2. Install the heat sink.
3. Install the base cover.
4. Follow the procedure in After working inside your computer.

Display assembly

Removing the display assembly

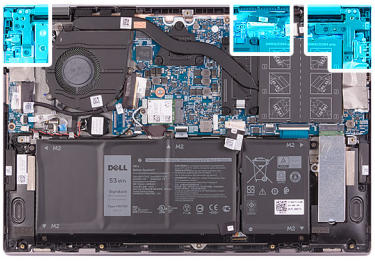
Prerequisites

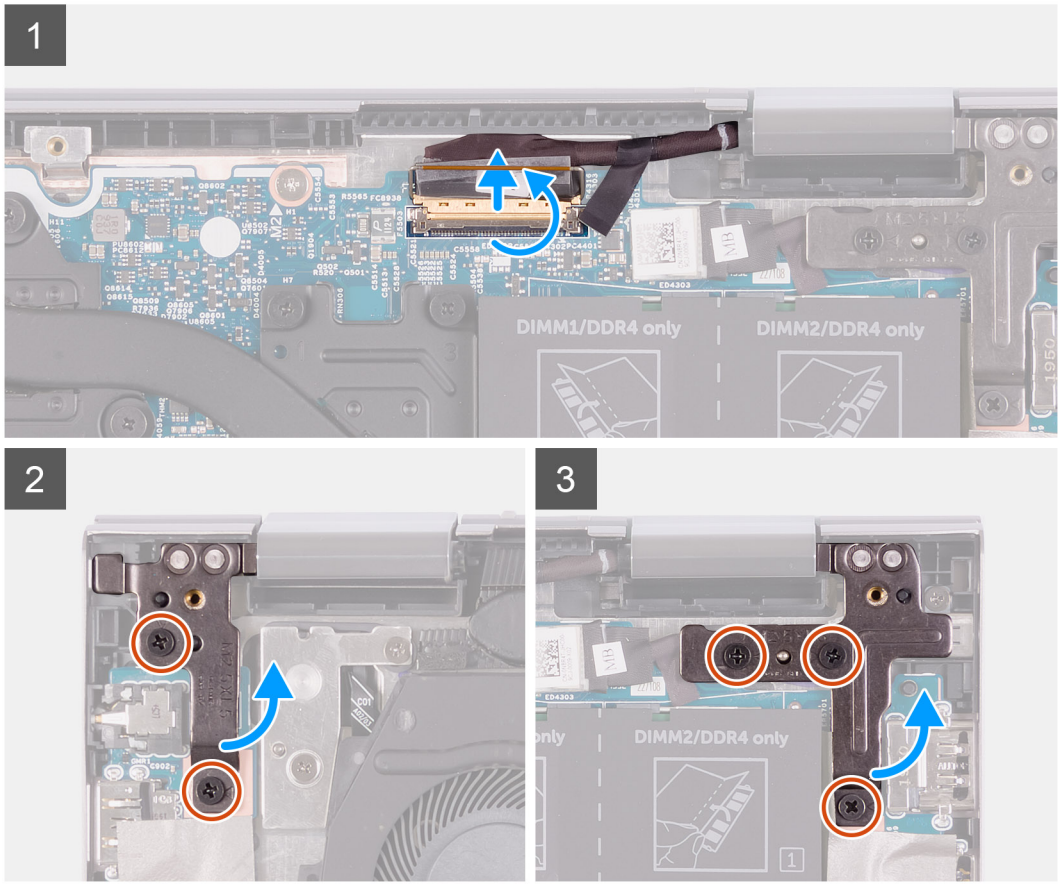
1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

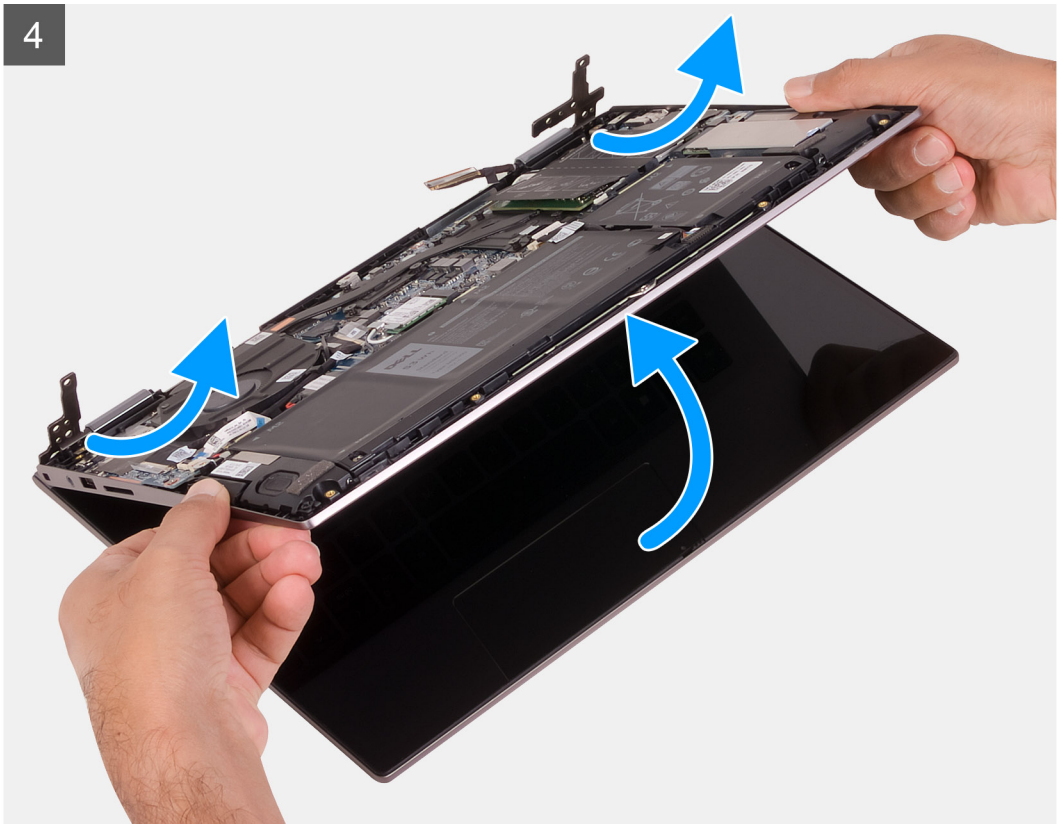
About this task

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

5x
M2.5x5







Steps

1. Peel the tape that secures the display cable to the system board.
2. Open the latch, and disconnect the display cable from the system board.
3. Remove the two screws (M2.5x5) that secure the left-display hinges to the palm-rest and keyboard assembly.
4. Remove the three screws (M2.5x5) that secure the right-display hinges to the palm-rest and keyboard assembly.

5. Lift at an angle and slide the display assembly off the palm-rest and keyboard assembly.

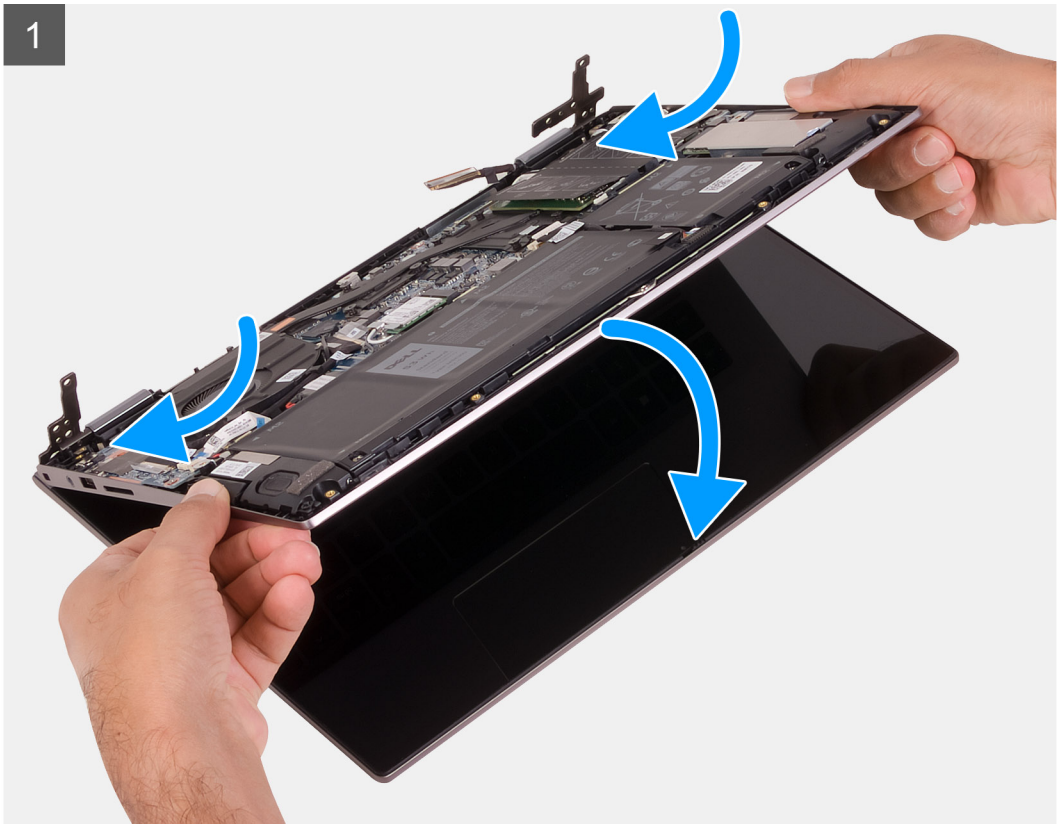
Installing the display assembly

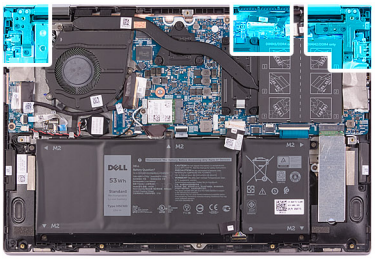
Prerequisites

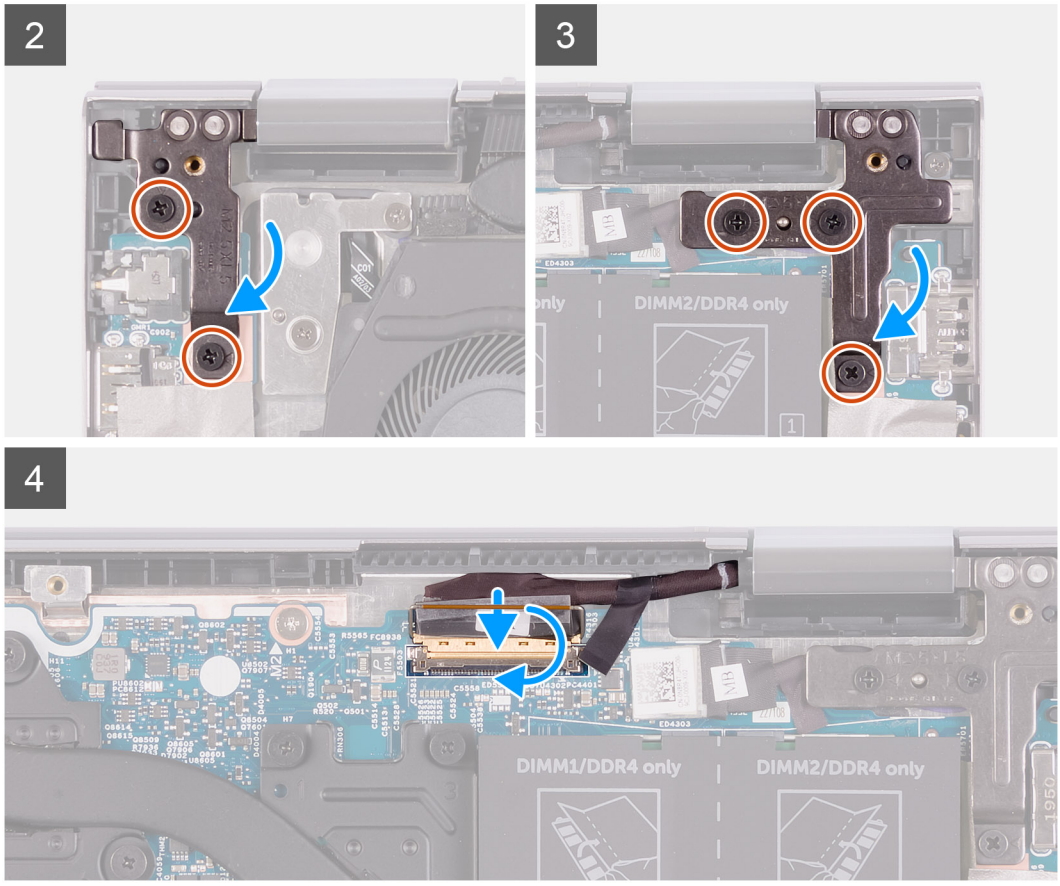
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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







Steps

1. Slide the display assembly at an angle, and place the display assembly on the palm-rest and keyboard assembly.
2. Replace the two screws (M2.5x5) that secure the left-display hinge to the palm-rest and keyboard assembly.
3. Replace the three screws (M2.5x5) that secure the right-display hinge to the palm-rest and keyboard assembly.
4. Connect the display-cable connector to the system board and close the latch to secure the cable.
5. Adhere the tape that secures the display cable to 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 battery.
4. Remove the coin-cell battery.
5. Remove the memory modules.
6. Remove the M.2 2230 solid-state drive or M.2 2280 solid-state drive, as applicable.
7. Remove the heat sink.

About this task

The following image indicates the connectors on your system board.

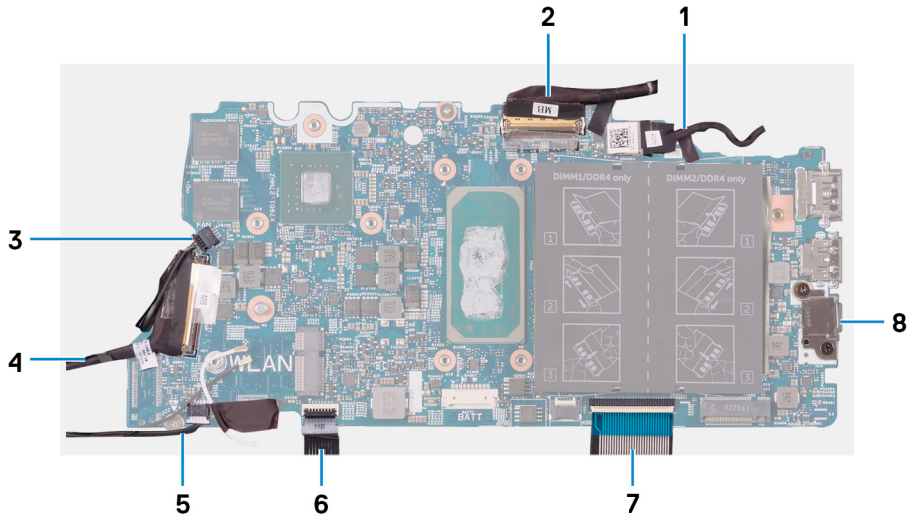
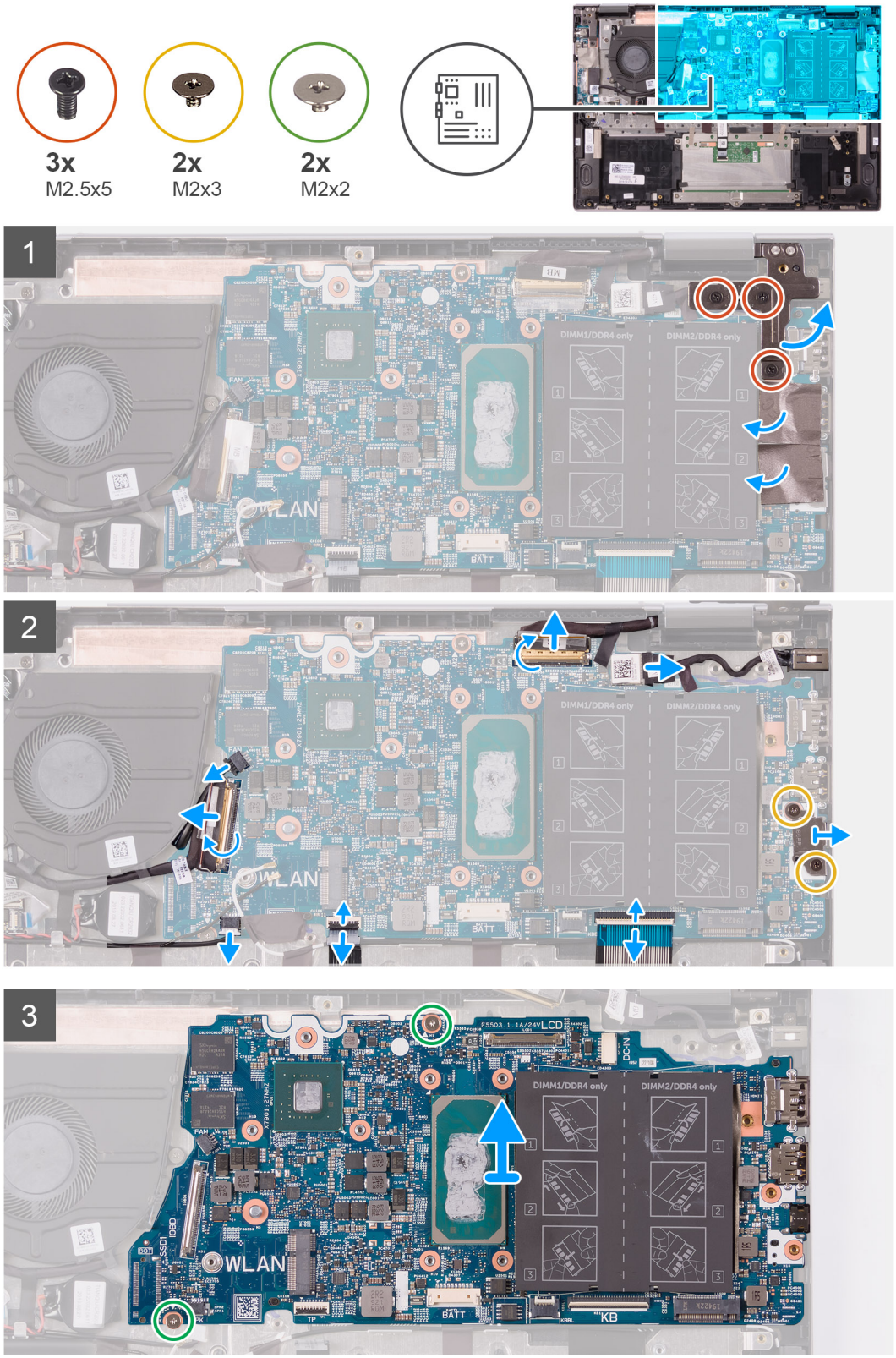


Figure 1. System-board connectors

1. Power-adapter port cable
2. Display cable
3. Fan cable
4. I/O-board cable
5. Speaker cable
6. Touchpad cable
7. Keyboard cable
8. USB Type-C port bracket

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



Steps

1. Remove the three screws (M2.5x5) that secure the right-display hinge to the palm-rest and keyboard assembly..
2. Open the hinge at an angle of 90 degrees.
3. Peel the tape that secures the USB Type-C port bracket to the system board.
4. Disconnect the fan cable from the system board.

5. Peel the tape that secures the I/O-board cable to the system board.
6. Open the latch, and disconnect the I/O-board cable from the system board.
7. Disconnect the speaker cable from the system board.
8. Open the latch, and disconnect the touchpad cable from the system board.
9. Open the latch, and disconnect the keyboard cable from the system board.
10. Remove the two screws (M2x3) that secure the USB Type-C bracket to the system board.
11. Lift the USB Type-C port bracket off the palm-rest and keyboard assembly.
12. Disconnect the power-adapter port cable from the system board.
13. Peel the tape that secures the display cable to the system board.
14. Open the latch, and disconnect the display cable from the system board.
15. Remove the two screws (M2x2) that secures the system board to the palm-rest and keyboard assembly.
16. Lift the system board off the palm-rest and keyboard assembly.

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.

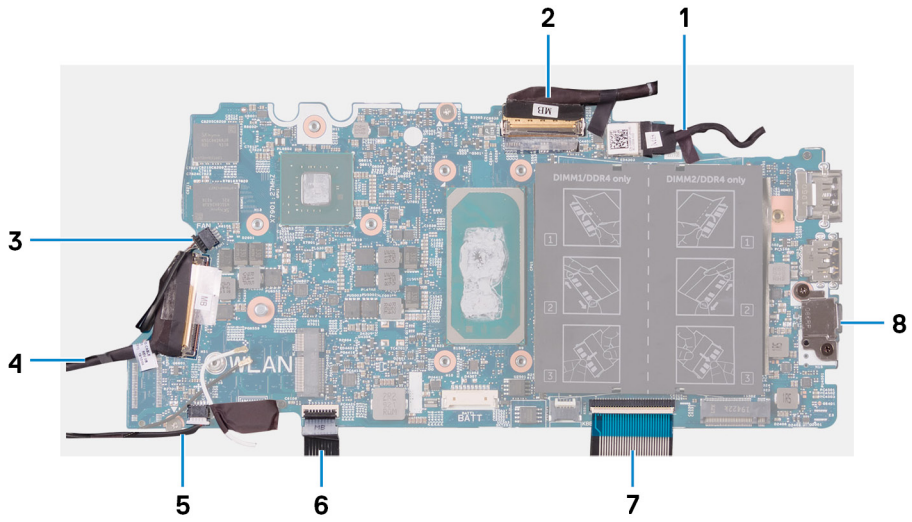
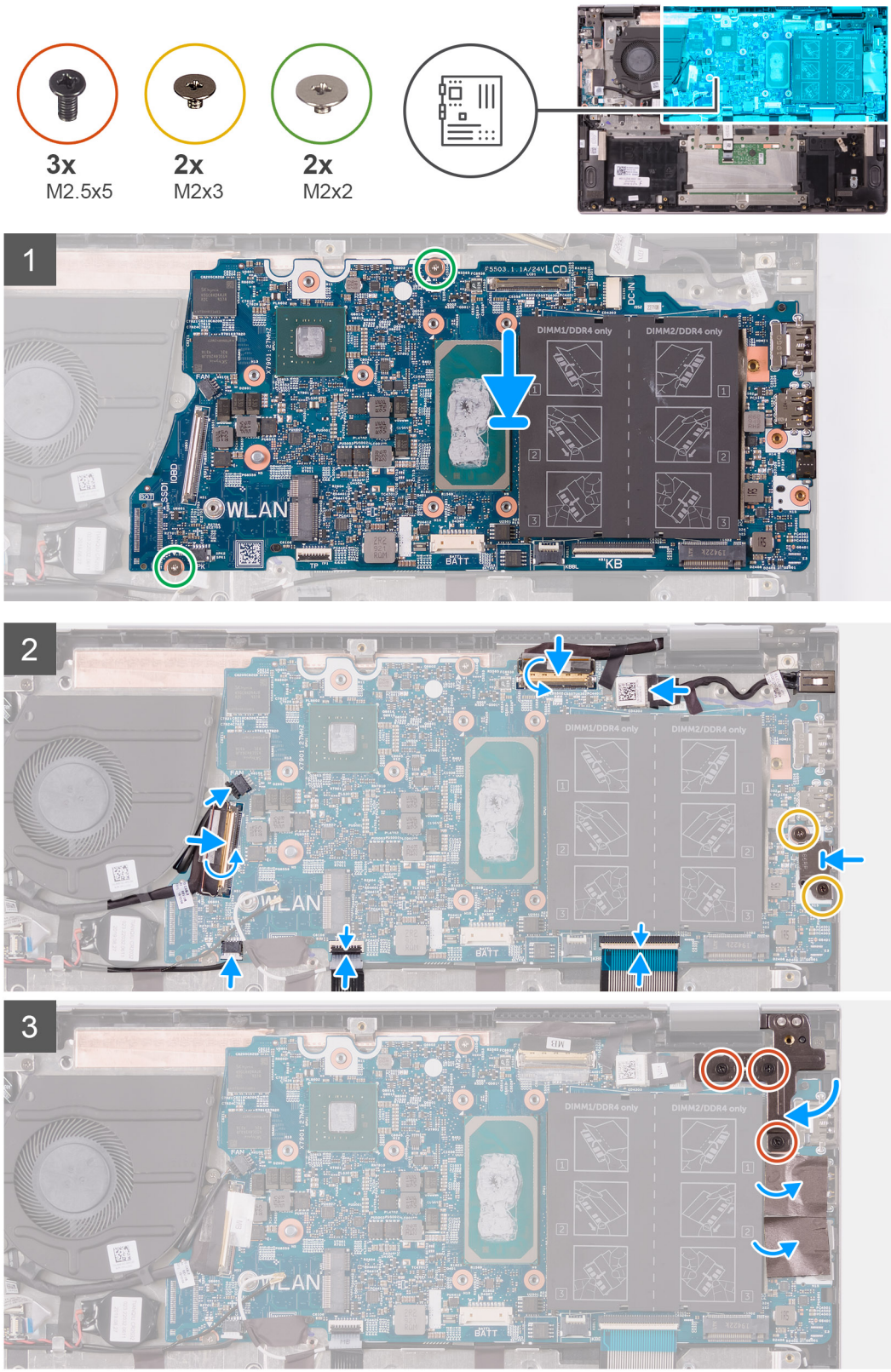


Figure 2. System-board connectors

1. Power-adapter port cable
2. Display cable
3. Fan cable
4. I/O-board cable
5. Speaker cable
6. Touchpad cable
7. Keyboard cable
8. USB Type-C port bracket

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



Steps

1. Align and place the system board on the palm-rest and keyboard assembly.
2. Replace the two screws (M2x2) that secure the system board to the palm-rest and keyboard assembly.
3. Connect the display cable to the connector on the system board and close the latch to secure the cable.
4. Adhere the tape that secures the display cable to the system board.

5. Connect the power-adapter port cable to the connector on the system board.
6. Align the screw holes on the USB Type-C port bracket with the screw holes on the system board.
7. Adhere the tape that secures the USB Type-C port bracket to the system board.
8. Replace the two screws (M2x3) that secure the USB Type-C port bracket to the system board.
9. Connect the keyboard cable to the connector on the system board and close the latch to secure the cable.
10. Connect the touchpad cable to the connector on the system board and close the latch to secure the cable.
11. Connect the speaker cable to the system board.
12. Connect the I/O-board cable to the connector on the system board and close the latch to secure the cable.
13. Adhere the tape that secures the I/O-board cable to the system board.
14. Connect the fan cable to the system board.
15. Close the right display hinge.
16. Replace the three screws (M2.5x5) that secure the right display hinge to the system board.

Next steps

1. Install the heat sink.
2. Install the fan.
3. Install the M.2 2230 solid-state drive or M.2 2280 solid-state drive, as applicable.
4. Install the memory modules.
5. Install the coin-cell battery.
6. Install the battery.
7. Install the base cover.
8. Follow the procedure in After working inside your computer.

Palm-rest and keyboard assembly

Removing the palm-rest and keyboard assembly

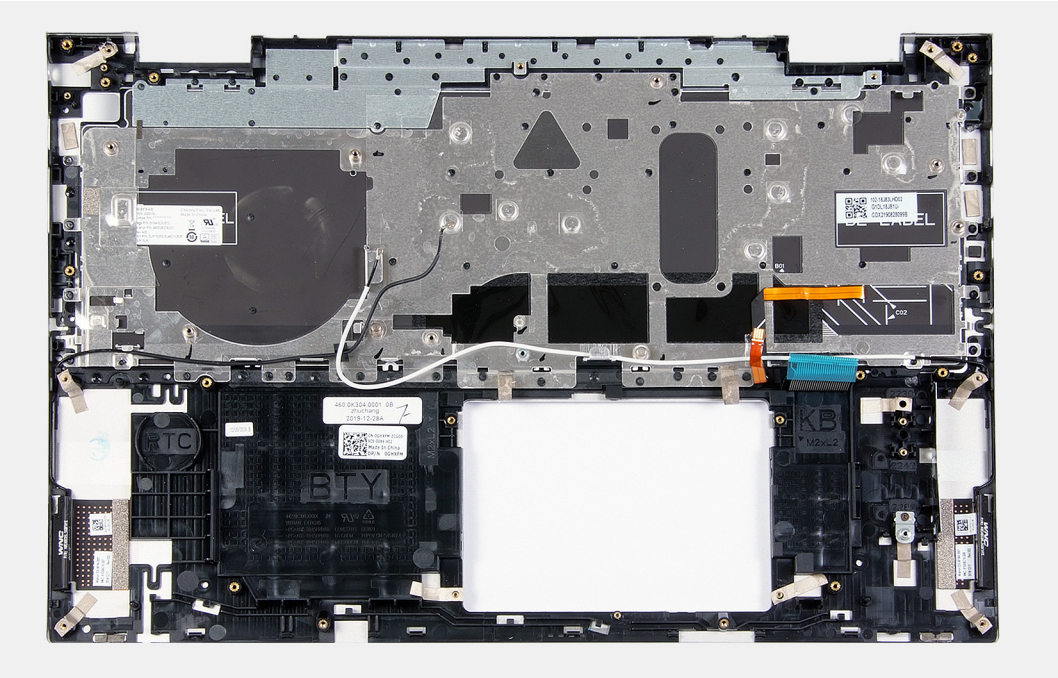
Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the coin-cell battery.
5. Remove the memory modules.
6. Remove the M.2 2230 solid-state drive or M.2 2280 solid-state drive, as applicable.
7. Remove the I/O board.
8. Remove the speakers.
9. Remove the heat sink.
10. Remove the fan.
11. Remove the touchpad.
12. Remove the power-adapter port.
13. Remove the power-button board.
14. Remove the display assembly.
15. Remove the system board.

NOTE: The system board can be removed or installed together with the heat sink attached. This simplifies the procedure and avoids breaking the thermal bond between the system board and the heat sink.

About this task

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.

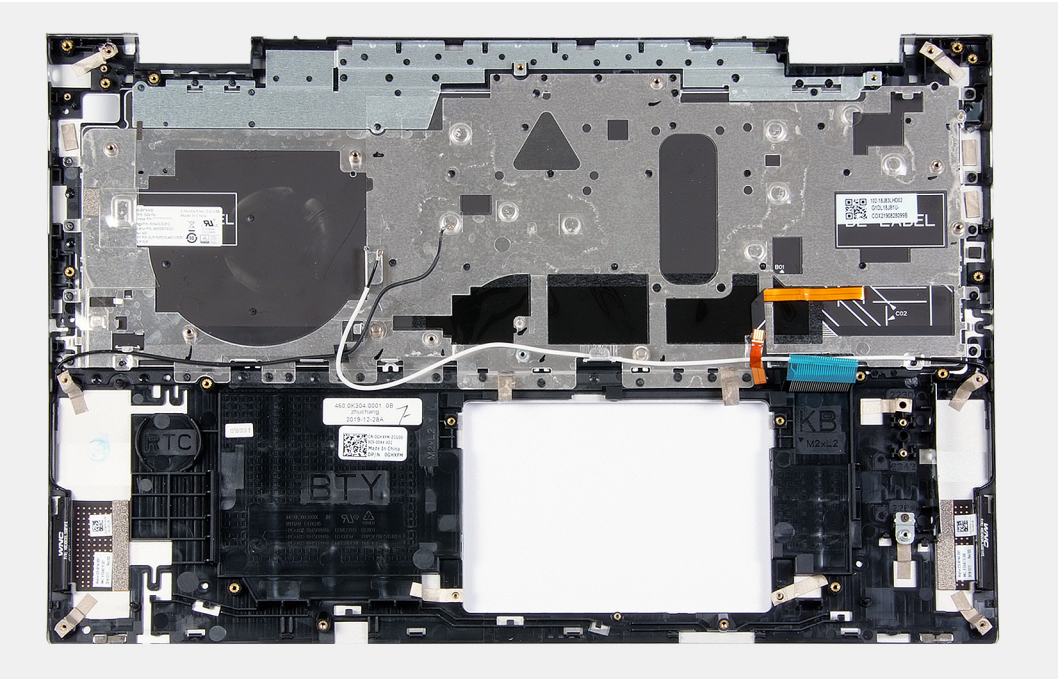
Installing the palm-rest and keyboard assembly

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 clean and flat surface.

Next steps

1. Install the system board.
2. Install the display assembly.
3. Install the power-button board.
4. Install the touchpad.
5. Install the power-adapter port.
6. Install the fan.
7. Install the heat sink.
8. Install the speakers.
9. Install the I/O board.
10. Install the M.2 2230 solid-state drive or M.2 2280 solid-state drive, as applicable.
11. Install the memory modules.
12. Install the coin-cell battery.
13. Install the battery.
14. Install the base cover.
15. 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 SLN128938.

4

System 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.

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 2. 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.

Boot Sequence

Boot Sequence allows you to bypass the System Setup–defined boot device order and boot directly to a specific device (for example: optical drive or hard drive). During the Power-on Self Test (POST), when the Dell logo appears, you can:

- Access System Setup by pressing F2 key

- Bring up the one-time boot menu by pressing F12 key

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

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

  NOTE: XXX denotes the SATA drive number.
- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

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

One time boot menu

To enter **one time boot menu**, turn on your computer, and then press F2 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:

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

  NOTE: XXX denotes the SATA drive number.
- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

The 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 listed in this section may or may not appear.

Table 3. System setup options—Main menu

Main	
System Time	Displays the current time in hh:mm:ss format.
System Date	Displays the current date in mm/dd/yyyy format.
BIOS Version	Displays the BIOS version.
Product Name	Displays the model number of your computer.
Service Tag	Displays the service tag of your computer.
Asset Tag	Displays the asset tag of your computer.
CPU Type	Displays the processor type.
CPU Speed	Displays the processor speed.
CPU ID	Displays the processor identification code.
CPU Cache	
L1 Cache	Displays the processor L1 cache size.
L2 Cache	Displays the processor L2 cache size.
L3 Cache	Displays the processor L3 cache size.
First HDD	Displays the type of hard drive installed.

Table 3. System setup options—Main menu (continued)

Main	
M.2 PCIe SSD	Display the M.2 PCIe SSD device information of the computer.
AC Adapter Type	Displays the type of AC adapter.
System Memory	Displays the size of memory installed.
Memory Speed	Displays the speed of memory.
Keyboard Type	Displays the type of keyboard installed on the computer.

Table 4. System setup options—Advanced menu

Advanced	
PowerNow! Enable	Enables or disables the dynamic frequency scaling and power-saving technology for the AMD processor. Default: Enabled
Virtualization	Enables or disables the Virtualization technology. Default: Enabled
Integrated NIC	Enables or disables the on-board LAN controller. Default: Enabled
USB Emulation	Enables or disables the USB emulation feature. This feature defines how the BIOS, in the absence of a USB-aware operating system, handles USB devices. USB emulation is always enabled during POST. **NOTE:** You cannot boot any type of USB device (floppy, hard drive, or memory key) when this option is off. Default: Enabled
USB Wake Support	Allows you to enable USB devices to wake the computer from standby or to disable the USB wake support feature. **NOTE:** If USB PowerShare is enabled, a device connected to the USB PowerShare connector may not wake the computer. **NOTE:** Your computer will not wake up from modern standby through touch fingerprint by default. To enable wake support for the fingerprint reader, the USB Wake Support needs to be enabled in the BIOS. To enable USB wake support, complete the steps in the knowledge base article SLN321473. Default: Disabled
SATA Operation	Allows you to configure the operating mode of the integrated SATA hard drive controller. Default: AHCI
Adapter Warnings	Allows you to choose if the computer should display warning messages when you use AC adapters that are not supported by your computer. Default: Enabled
Function Key Behavior	Allows you to set function key or multimedia key as the default function key behavior. Default: Multimedia key

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

Advanced	
Keyboard Illumination	Selects the operating mode of the keyboard illumination feature. Default: Bright
Keyboard Backlight with AC	Selects the timeout value for the keyboard backlight when an AC adapter is plugged into the computer. Default: 1 minute
Keyboard Backlight with Battery	Selects the timeout value for the keyboard backlight when the computer is running on battery power. Default: 1 minute
Express Charge	Selects the battery charge mode. Default: Express Charge
Battery Health	Displays the battery health.
Camera	Enables or disables the camera. Default: Disabled
Battery Charge Configuration	Set the battery charge settings with a preselected custom charge start and stop. Default: Adaptive
Advanced Battery Charge Configuration	Enable Advanced Battery Charge Configuration from the beginning of the day to a specified work period. Default: Disabled
Sleep Mode	Selects the power-saving state when your computer is idle. Default: OS Automatic Selection
Maintenance	
Data Wipe on next boot	Enables or disables data wipe on the next boot. Default: Disabled
BIOS Recovery from Hard Drive	Enables the user to recover from certain corrupted BIOS conditions from a recovery file on the user primary hard drive or an external USB key.
BIOS Auto-Recovery	Enables BIOS to automatically recover BIOS without user actions. Default: Disabled
SupportAssist System Resolution	
Auto OS Recovery Threshold	Controls the automatic boot flow for SupportAssist System Resolution Console and for the Dell OS Recovery tool. Default: 2
SupportAssist OS Recovery	Enables or disables the boot flow for the SupportAssist OS Recovery tool in the even of certain system errors. Default: Disabled

Table 5. System setup options—Security menu

Security	
Admin Password Status	Displays if the administrator password is clear or set.

Table 5. System setup options—Security menu (continued)

Security	
System Password Status	Displays if the system password is clear or set. Default: Not Set
HDD2 Password Status	Displays if the HDD password is clear or set. Default: Not Set
Service Tag	Set your system's Service Tag.
Admin Password	Allows you to set the administrator password. The administrator password controls access to the system setup utility.
System Password	Allows you to set the system password. The system password controls access to the computer at boot.
HDD2 password	Allows you to set, change, or delete the hard-disk drive password.
Password Change	Allows you to permit or deny system password or HDD password changes. Default: Permitted
Computrace	Enables or disables the BIOS module interface of the optional Computrace Service from Absolute Software. Default: Deactivate
SED Block SID Authentication	Enables or disables SED Block SID Authentication. Default: Disabled
PPI Bypass for SED Block SID Command	When there is no drive ownership and the ppibypassforblocksid is enabled, BIOS requires user input while sending the Block SID authentication command to SED drives. When ppibypassforblocksid is disabled, BIOS does not require user input while sending the Block SID command. Default: Disabled
Firmware TPM	Enable or disable the firmware TPM. Default: Enabled
PPI Bypass for Clear Command	Allows you to control the TPM Physical Presence Interface (PPI). When enabled, this setting will allow the OS to skip BIOS PPI user prompts when issuing the Clear command. Changes to this setting take effect immediately. Default: Disabled
UEFI Firmware Capsule Updates	Enables or disables BIOS updates through UEFI capsule update packages. Default: Enabled
WINDOWS SMM SECURITY MITIGATIONS TABLE (WSMT)	Enables or disables configuration of platform features on Dell Client Systems with WSMT-enabled BIOS. Default: Enabled

Table 6. System setup options—Boot menu

Boot	
Fast Boot	Enables or disables the fast boot option.

Table 6. System setup options—Boot menu (continued)

Boot	
	Default: Minimal
Secure Boot	Enables or disables the secure boot feature. Default: Disabled
Load Legacy Option ROMs	Enables or disables the Load Legacy Option ROMs. Default: Disabled
Boot List Option	Displays the available boot options. Default: UEFI
Attempt Legacy Boot	Enables or disables legacy boot. Default: Disabled
File Browser Add Boot Option	Allows you to add the boot options.

Table 7. System setup options—Exit menu

Exit	
Exit Saving Changes	Allows you to exit system setup and save your changes.
Save Change Without Exit	Allows you to save your changes without exiting the BIOS setup.
Exit Discarding Changes	Allows you to exit the BIOS setup without saving the changes.
Load Optimal Defaults	Allows you to restore default values for all system setup options.
Discard Changes	Allows you to load previous values for all system setup options.

Clearing CMOS settings

About this task

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

Steps

1. Turn off your computer.
2. Remove the base cover.

   NOTE: The battery must be disconnected from the system board (see Step 4 in Removing the base cover.
3. Press and hold the power button for 15 seconds to drain the flea power.
4. Before you turn on your computer, follow the steps in Installing the base cover.
5. Turn on your computer.

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

SupportAssist diagnostics

About this task

The SupportAssist diagnostics (previously known as ePSA diagnostics) performs a complete check of your hardware. The SupportAssist diagnostics is embedded in the BIOS and is launched by it internally. The SupportAssist diagnostics provides a set of options for particular devices or device groups. It allows 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 and provide extra information about the failed device(s)
- View status messages that indicate if the tests are completed successfully
- View error messages that indicate if problems were encountered during the test

NOTE: Some tests are meant for specific devices and require user interaction. Ensure that you are present in front of the computer when the diagnostic tests are performed.

System-diagnostic lights

Power and battery-status light

The power and battery status light indicates the power and battery status of the computer. These are the power states:

Solid white: Power adapter is connected and the battery has more than 5% charge.

Amber: Computer is running on battery and the battery has less than 5% charge.

Off:

- Power adapter is connected, and the battery is fully charged.
- Computer is running on battery, and the battery has more than 5% charge.
- Computer is in sleep state, hibernation, or turned off.

The power and battery-status light may blink amber or white according to pre-defined "beep codes" indicating various failures.

For example, the power and battery-status light blinks amber two times followed by a pause, and then blinks white three times followed by a pause. This 2,3 pattern continues until the computer is turned off, indicating no memory or RAM is detected.

The following table shows different power and battery-status light patterns and associated problems.

NOTE: The following diagnostic light codes and recommended solutions are intended for Dell service technicians to troubleshoot problems. 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.

Table 8. Diagnostic-light LED codes

Diagnostic light codes (Amber,White)	Problem description
1,1	TPM detection failure
1,2	Unrecoverable SPI Flash Failure
2,1	Processor failure
2,2	System board: BIOS or ROM (Read-Only Memory) failure

Table 8. Diagnostic-light LED codes (continued)

Diagnostic light codes (Amber,White)	Problem description
2,3	No memory or RAM (Random-Access Memory) detected
2,4	Memory or RAM (Random-Access Memory) failure
2,5	Invalid memory installed
2,6	System-board or chipset error
2,7	Display failure - SBIOS message
2,8	Display failure - EC detection of power rail failure
3,1	Coin-cell battery failure
3,2	PCI, video card/chip failure
3,3	Recovery image not found
3,4	Recovery image found but invalid
3,5	Power-rail failure
3,6	System BIOS Flash incomplete
3,7	Management Engine (ME) error

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 10 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/support.

Flashing the BIOS

About this task

You may need to flash (update) the BIOS when an update is available or when you replace the system board.

Follow these steps to flash the BIOS:

Steps

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click **Product support**, enter the Service Tag of your computer, and then click **Submit**.

   NOTE: If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.

4. Click **Drivers & downloads** > **Find it myself**.
5. Select the operating system installed on your computer.

6. Scroll down the page and expand **BIOS**.
7. Click **Download** to download the latest version of the BIOS for your computer.
8. After the download is complete, navigate to the folder where you saved the BIOS update file.
9. Double-click the BIOS update file icon and follow the instructions on the screen.

Flashing BIOS (USB key)

Steps

1. Follow the procedure from step 1 to step 7 in "Flashing the BIOS" to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information see the knowledge base article SLN143196 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** when the Dell logo is displayed on the screen.
6. Boot to the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
8. The **BIOS Update Utility** appears. Follow the instructions on the screen to complete the BIOS update.

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.

Flea power release

About this task

Flea power is the residual static electricity that remains on the computer even after it has been powered off and the battery has been disconnected from the system board. The following procedure provides the instructions on how to release the flea power:

Steps

1. Turn off your computer.
2. Remove the base cover.

NOTE: The battery must be disconnected from the system board. See Step 4 in removing the base cover .

3. Press and hold the power button for 15 seconds to drain the flea power.
4. Install the base cover.
5. Turn on your computer.

6

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 9. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
My Dell	
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
Troubleshooting information, user manuals, set up instructions, product specifications, technical help blogs, drivers, software updates, and so on.	www.dell.com/support
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.
Learn and know the following information about your product: • Product specifications • Operating system • Setting up and using your product • Data backup • Troubleshooting and diagnostics • Factory and system restore • BIOS information	See *Me and My Dell* at www.dell.com/support/manuals. To locate the *Me and My Dell* relevant to your product, identify your product through one of the following: • Select **Detect Product**. • Locate your product through the drop-down menu under **View Products**. • Enter the **Service Tag number** or **Product ID** in the search bar.

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.