

Inspiron 5301

Service Manual



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.

Chapter 1: Working inside your computer	5
Safety instructions.....	5
Working inside your computer.....	5
After working inside your computer.....	7
Chapter 2: Removing and installing components	8
Recommended tools.....	8
Screw list.....	8
Major components of Inspiron 5301.....	9
Base cover.....	10
Removing the base cover.....	10
Installing the base cover.....	12
Battery.....	14
Lithium-ion battery precautions.....	14
Removing the 3-cell battery.....	15
Installing the 3-cell battery.....	16
Removing the 4-cell battery.....	17
Installing the 4-cell battery.....	18
Solid-state drive.....	19
Removing the M.2 2230 solid-state drive.....	19
Installing the M.2 2230 solid-state drive.....	21
Removing the M.2 2280 solid-state drive.....	22
Installing the M.2 2280 solid-state drive.....	23
Coin-cell battery.....	25
Removing the coin-cell battery.....	25
Installing the coin-cell battery.....	25
Fans.....	26
Removing the fan.....	26
Installing the fan.....	27
Speakers.....	28
Removing the speakers.....	28
Installing the speakers.....	29
Display assembly.....	30
Removing the display assembly.....	30
Installing the display assembly.....	33
Touchpad.....	34
Removing the touchpad.....	34
Installing the touchpad.....	35
Heat sink.....	36
Removing the heat sink.....	36
Installing the heat sink.....	37
Power-adaptor port.....	39
Removing the power-adaptor port.....	39
Installing the power-adaptor port.....	39

I/O board.....	40
Removing the I/O board.....	40
Installing the I/O board.....	41
System board.....	42
Removing the system board.....	42
Installing the system board.....	46
Palm-rest and keyboard assembly.....	49
Removing the palm-rest and keyboard assembly.....	49
Installing the palm-rest and keyboard assembly.....	50
Power button with fingerprint reader.....	51
Removing the power button with fingerprint reader.....	51
Installing the power button with fingerprint reader.....	52
Chapter 3: Drivers and downloads.....	54
Chapter 4: System setup.....	55
Entering BIOS setup program.....	55
Navigation keys.....	55
System setup options.....	56
System and setup password.....	62
Assigning a system setup password.....	63
Deleting or changing an existing system or admin password.....	63
Clearing CMOS settings.....	63
Clearing BIOS (System Setup) and System passwords.....	64
Updating the BIOS.....	64
Updating the BIOS in Windows.....	64
Updating the BIOS using the USB drive in Windows.....	64
Updating the BIOS in Linux and Ubuntu.....	65
Updating the BIOS from the F12 One-Time boot menu.....	65
Chapter 5: Troubleshooting.....	66
Handling swollen Lithium-ion batteries.....	66
Recovering the operating system.....	66
SupportAssist diagnostics.....	67
LCD Built-in Self Test (BIST).....	67
M-BIST.....	67
System diagnostic lights.....	68
WiFi power cycle.....	69
Flea power release.....	69
Chapter 6: Getting help and contacting Dell.....	70

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.

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.

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.

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.

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

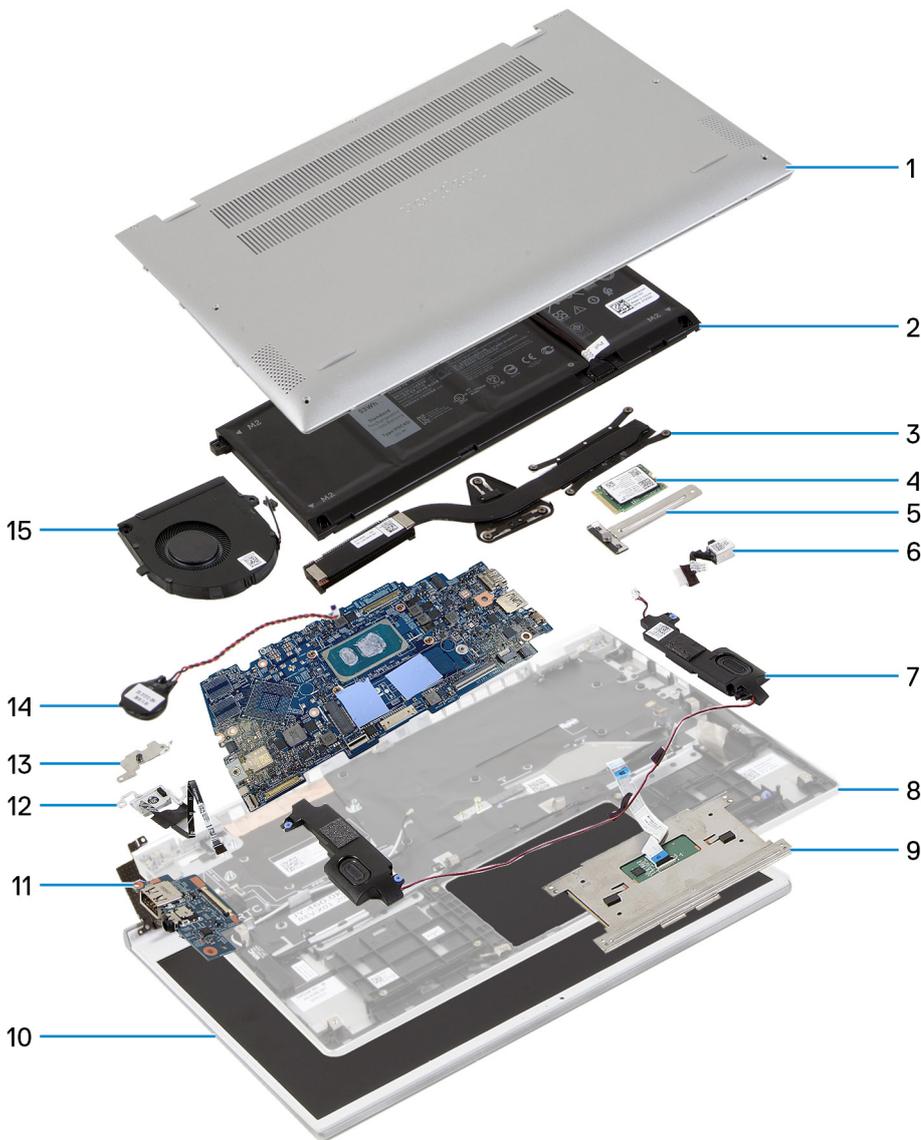
Component	Secured to	Screw type	Quantity	Screw image
Base cover	Palm-rest and keyboard assembly	M2x4	4	
3-cell Battery	Palm-rest and keyboard assembly	M2x5	4	
4-cell Battery	Palm-rest and keyboard assembly	M2x5	5	
Solid-state drive bracket	System board	M2x3	1	
Fan	System board	M2x3	2	
Display-assembly hinges	Palm-rest and keyboard assembly	M2x2	3	
Power-adaptor port	Palm-rest and keyboard assembly	M2x3	1	
I/O board	Palm-rest and keyboard assembly	M2x3	2	

Table 1. Screw list (continued)

Component	Secured to	Screw type	Quantity	Screw image
Wireless-card bracket	Palm-rest and keyboard assembly	M2x2.5	1	
Touchpad	Palm-rest and keyboard assembly	M2x2	4	

Major components of Inspiron 5301

The following image shows the major components of Inspiron 5301.



1. Base cover
2. Battery
3. Heat sink
4. Solid-state drive
5. Solid-state drive bracket
6. Power-adaptor port

- 7. Speakers
- 8. Palm-rest and keyboard assembly
- 9. Touchpad
- 10. Display assembly
- 11. I/O board
- 12. Power button with optional fingerprint reader
- 13. Power button bracket
- 14. Coin-cell battery
- 15. Fan

i 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.

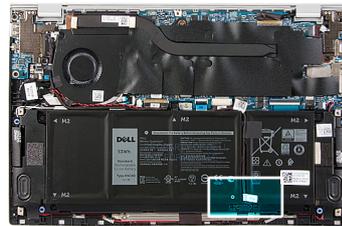
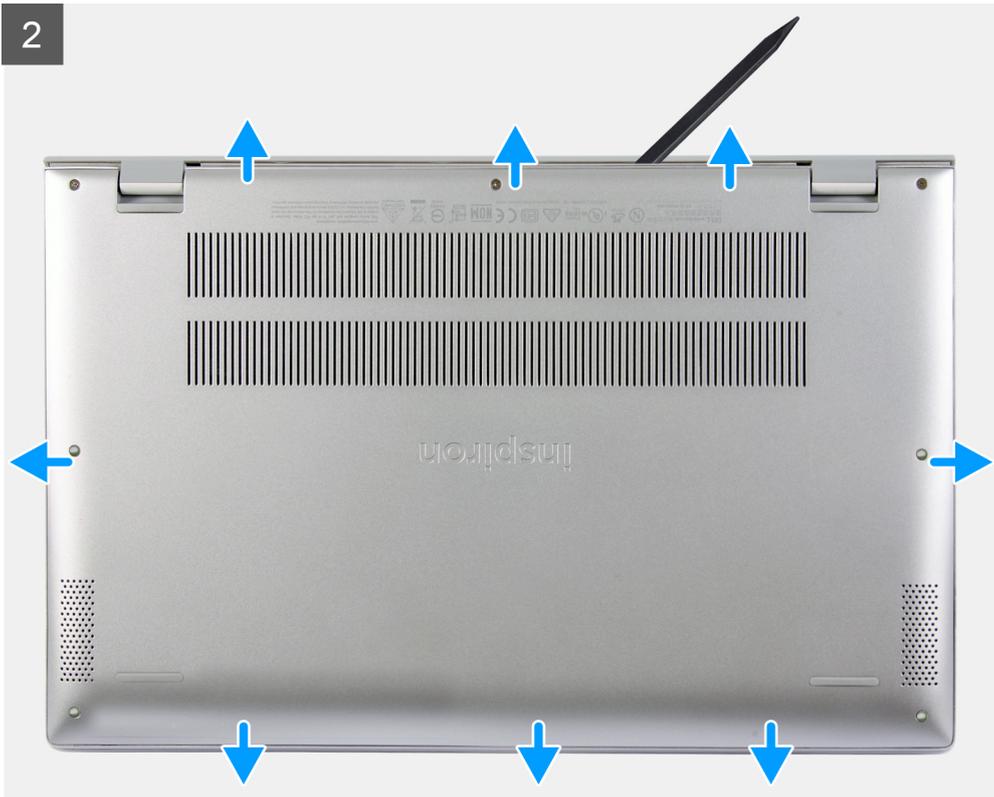


3x



4x
M2x4







Steps

1. Loosen the three captive screws that secure the base cover to the palm-rest and keyboard assembly.
2. Remove the four screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
3. Starting from the top-left corner, use a plastic scribe to pry the base cover in the direction of the arrows to release the base cover from the palm-rest and keyboard assembly.

CAUTION: Do not pull on or pry the base cover from the side where the hinges are; doing so may damage the base cover.

4. Pry the base cover and remove it from the palm-rest and keyboard assembly.

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

5. Using the pull tab, disconnect the battery cable from the battery.
6. Turn your computer over and press the power button for 15 seconds to drain the flea power.

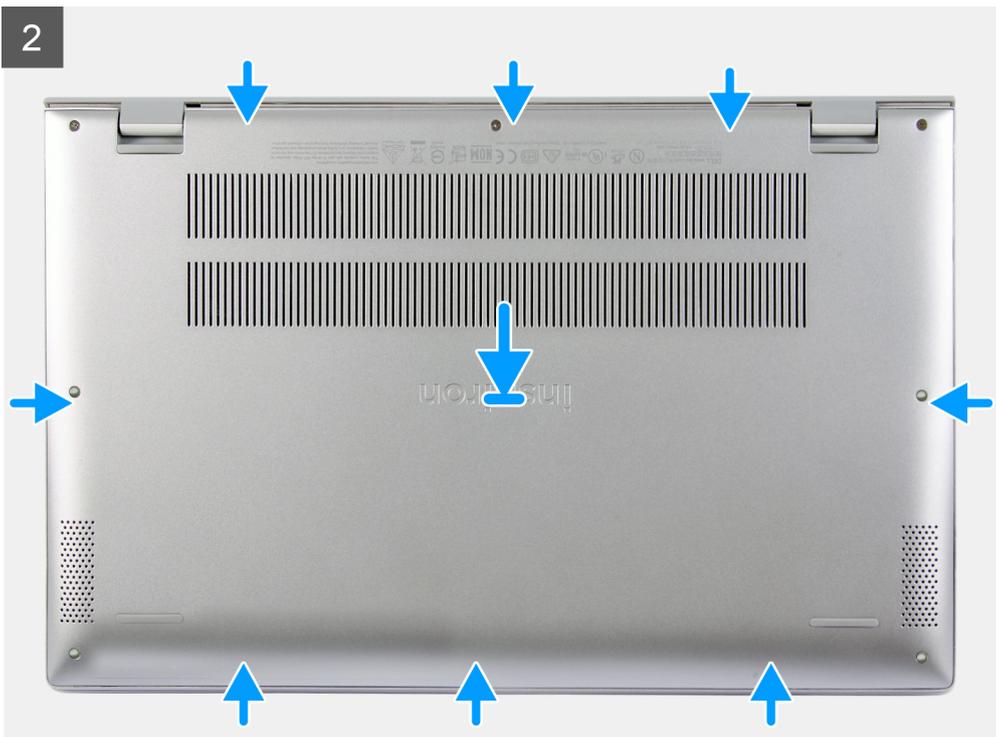
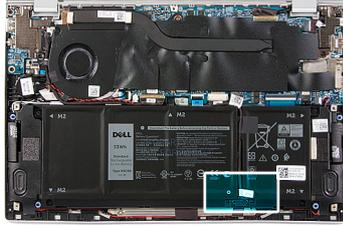
Installing the base cover

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.





3x



4x
M2x4

3



Steps

1. Connect the battery cable to the battery, if applicable.
2. 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.
3. Replace the four screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
4. 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 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

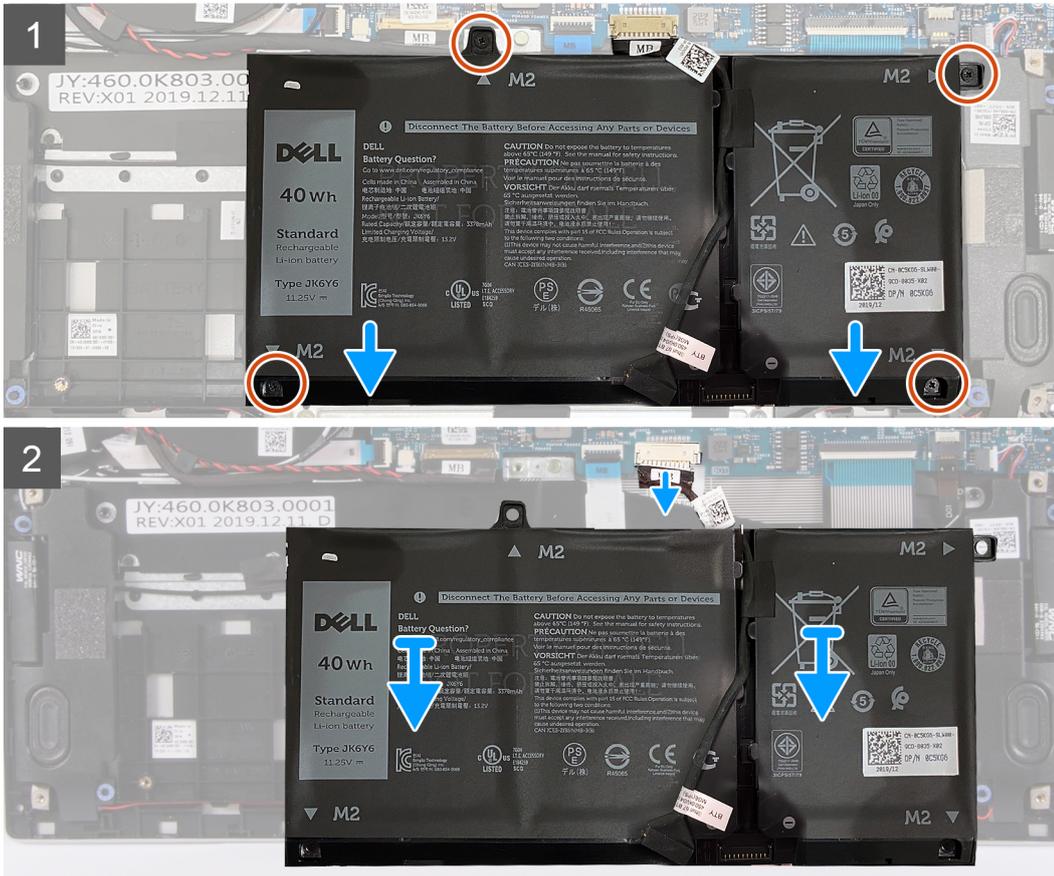
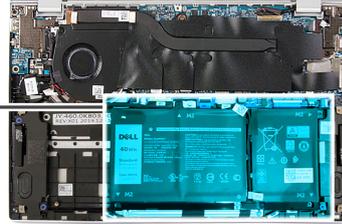
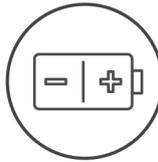
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).

About this task

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



4x
M2x5



Steps

1. Remove the four screws (M2x5) that secure the battery to the palm-rest and keyboard assembly.
2. Lift the battery off the palm-rest and keyboard assembly.
3. Disconnect the battery cable from the system board, if applicable.

Installing the 3-cell battery

Prerequisites

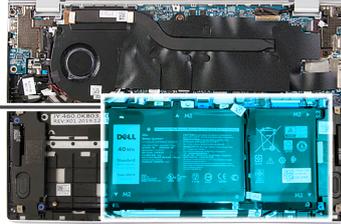
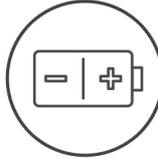
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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



4x
M2x5



Steps

1. Connect the battery cable to the system board.
2. Align the screw holes on the battery with the screw holes on the palm-rest and keyboard assembly.
3. Replace the four screws (M2x5) that secure the 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

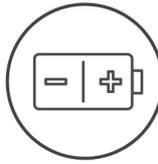
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).

About this task

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



5x
M2x5



Steps

1. Remove the five screws (M2x5) that secure the battery to the palm-rest and keyboard assembly.
2. Lift the battery off the palm-rest and keyboard assembly.
3. Disconnect the battery cable from the system board, if applicable.

Installing the 4-cell battery

Prerequisites

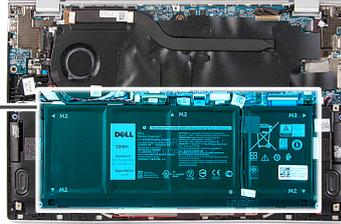
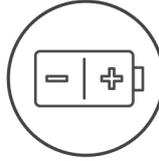
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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



5x
M2x5



Steps

1. Connect the battery cable to the system board.
2. Align the screw holes on the battery with the screw holes on the palm-rest and keyboard assembly.
3. Replace the five screws (M2x5) that secure the 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](#).

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](#).

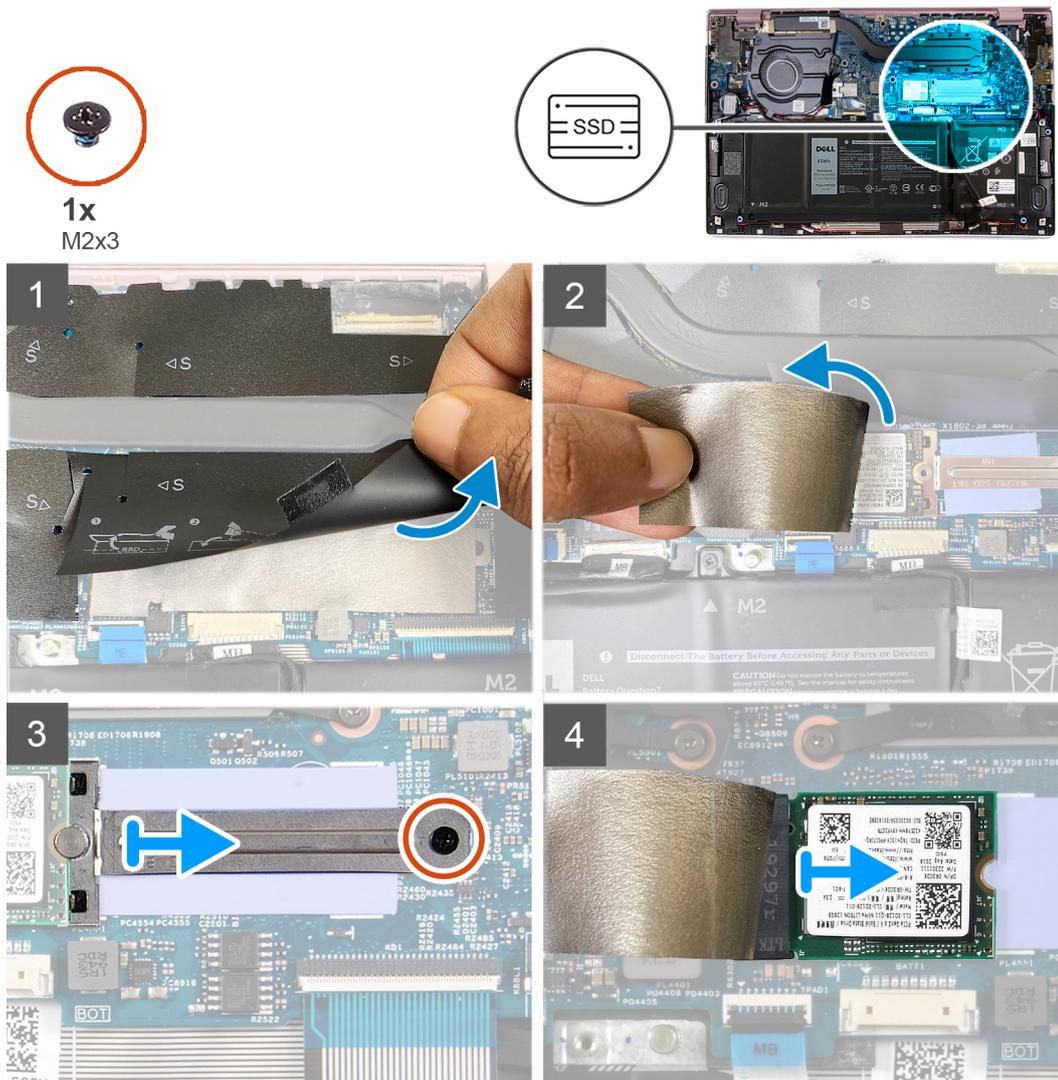
About this task

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

i **NOTE:** The M.2 card that is installed on your computer will depend on the configuration ordered. Supported card configurations on the M.2 card slot:

- M.2 2230 solid-state drive + 2230 mounting bracket
- M.2 2280 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. Lift the Mylar that covers the system board.
2. Lift the thermal tape that covers the M.2230 solid-state drive and bracket.
3. Remove the screw (M2x3) that secures the M.2 2230 bracket to the system board.
4. Slide and lift the M.2 2230 bracket off the system board.
5. Slide and lift the M.2 2230 solid-state drive off the system board.

Installing the M.2 2230 solid-state drive

Prerequisites

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

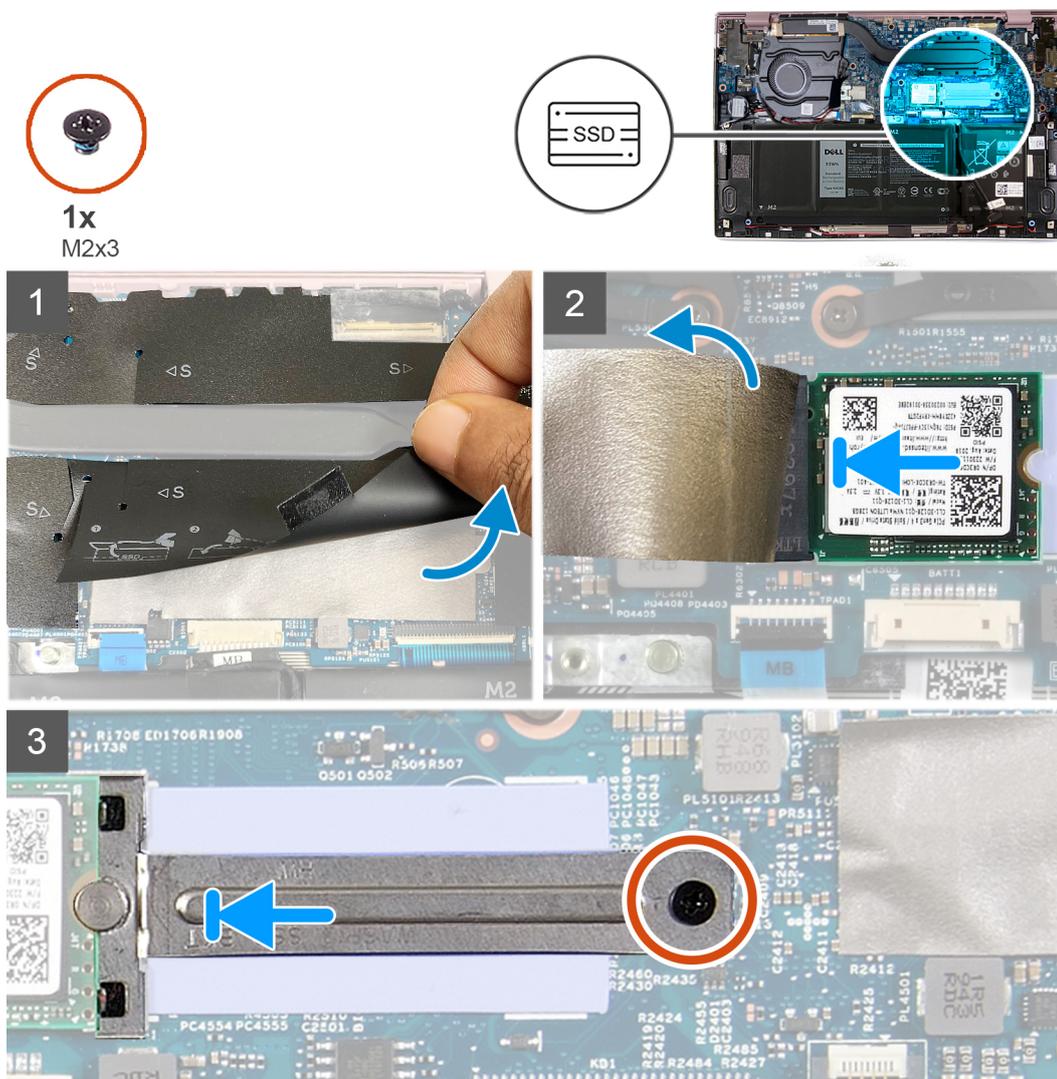
About this task

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

NOTE: The M.2 card that is installed on your computer will depend on the configuration ordered. Supported card configurations on the M.2 card slot:

- M.2 2230 solid-state drive + 2230 mounting bracket
- M.2 2280 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. Lift the Mylar that covers the system board.
2. Lift the thermal tape over the M.2 2230 solid-state drive and bracket.
3. Align the notch on the M.2 2230 solid-state drive with the tab on the M.2 card slot on the system board.
4. Slide the M.2 2230 solid-state drive into the M.2 card slot on the system board.

5. Place and slide the M.2 2230 bracket on the system board, aligning the notch on the M.2 2230 bracket to the groove on the M.2 2230 solid-state drive.
6. Replace the screw (M2x3) that secures the M.2 2230 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.

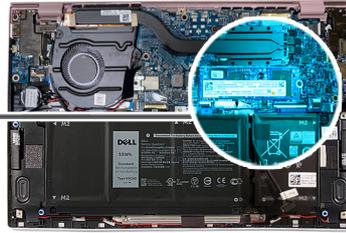
 **NOTE:** The M.2 card that is installed on your computer will depend on the configuration ordered. Supported card configurations on the M.2 card slot:

- M.2 2230 solid-state drive + 2230 mounting bracket
- M.2 2280 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.



1x
M2x3



Steps

1. Lift the Mylar that covers the system board.
2. Lift the thermal tape that covers the M.2 2280 solid-state drive.
3. Remove the screw (M2x3) that secures the M.2 2280 solid-state drive to the palm-rest and keyboard assembly.
4. 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.

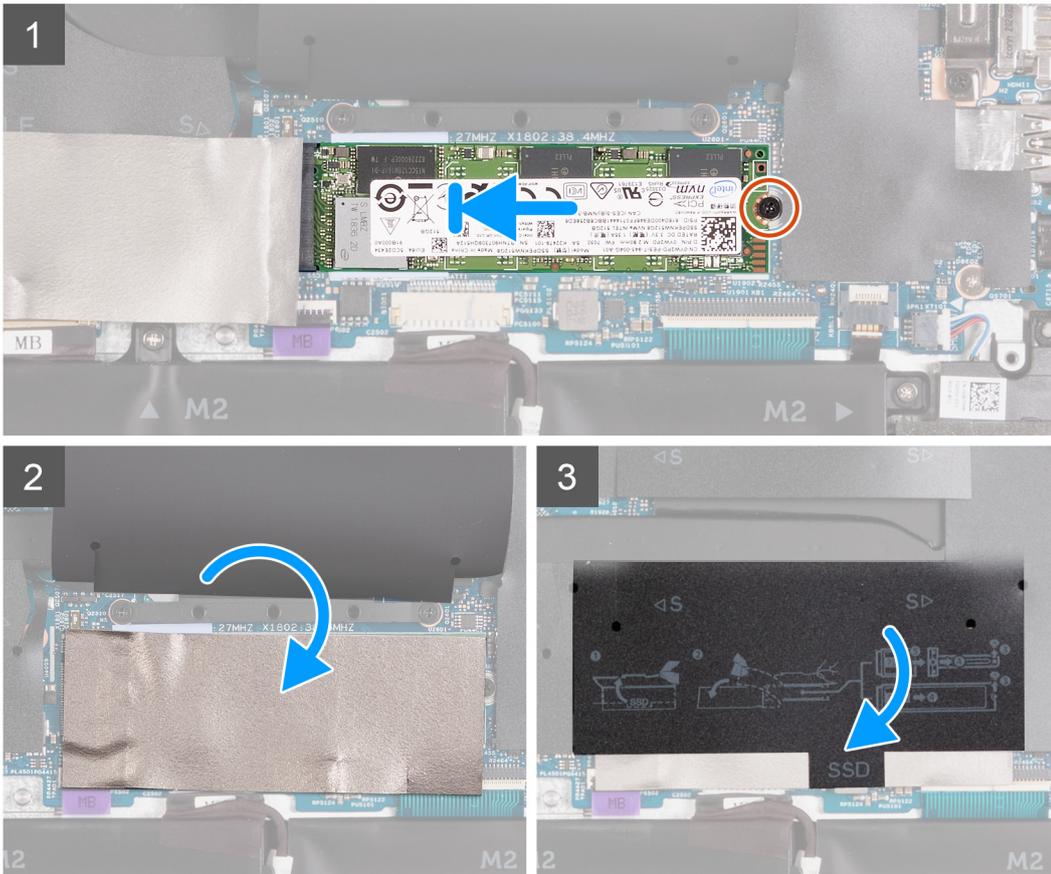
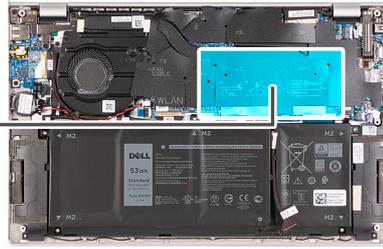
About this task

- NOTE:** This procedure applies if you are installing a M.2 2280 solid-state drive.
- NOTE:** The M.2 card that is installed on your computer will depend on the configuration ordered. Supported card configurations on the M.2 card slot:
 - M.2 2230 solid-state drive + 2230 mounting bracket
 - M.2 2280 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.



1x
M2x2.5



Steps

1. Lift the Mylar over the system board.
2. Lift the thermal tape that covers the M.2 2280 solid-state drive.
3. Align the notch on the M.2 2280 solid-state drive with the tab on the M.2 card slot on the system board.
4. Slide the M.2 2280 solid-state drive into the M.2 card slot on the system board.
5. Replace the screw (M2x3) that secures the M.2 2280 solid-state drive to the palm-rest and keyboard assembly.

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

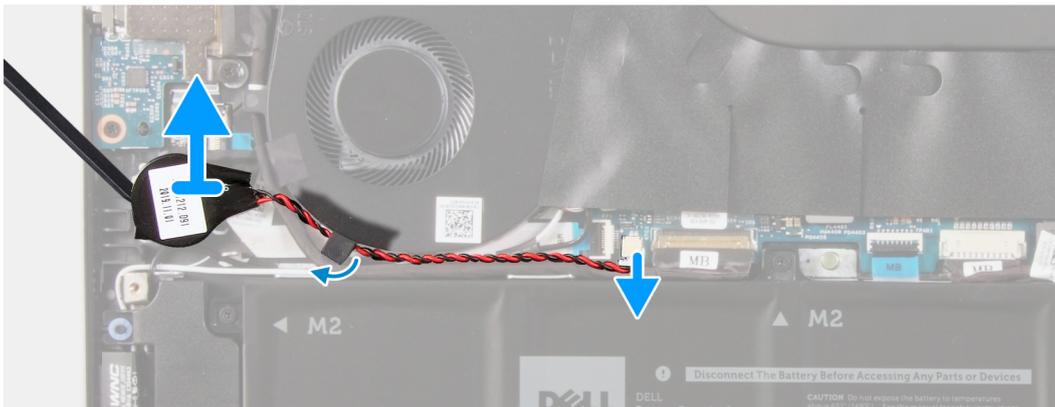
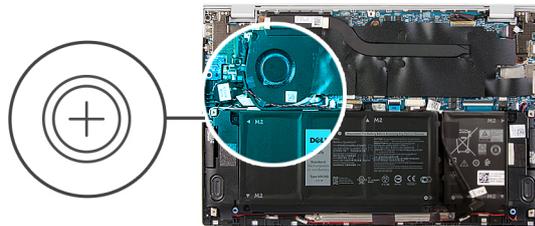
1. Follow the procedure in [Before working inside your computer](#).

CAUTION: Removing the coin-cenn battery 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 cable from the system board.
2. Remove the coin-cell battery cable from the routing guide.
3. Peel the coin-cell battery off the palm-rest and keyboard assembly.

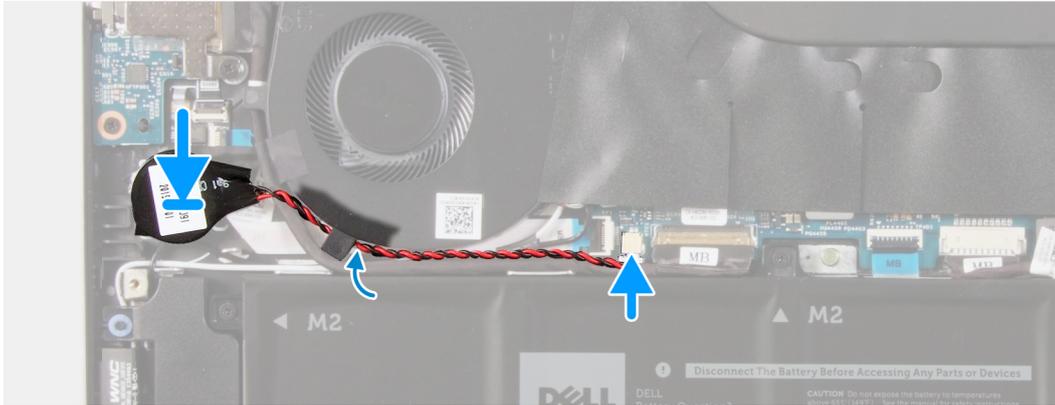
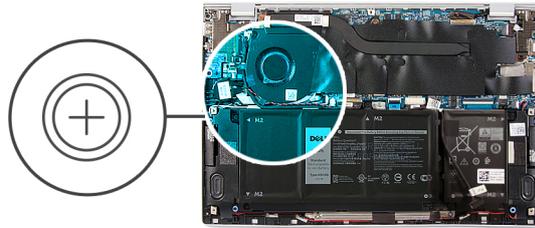
Installing the coin-cell battery

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. Route the coin-cell battery cable through the routing guide.
3. Connect the coin-cell battery cable to the system board.

Next steps

1. Install the [4-cell battery](#).
2. Install the [3-cell battery](#).
3. Install the [base cover](#).
4. Follow the procedure in [After working inside your computer](#).

Fans

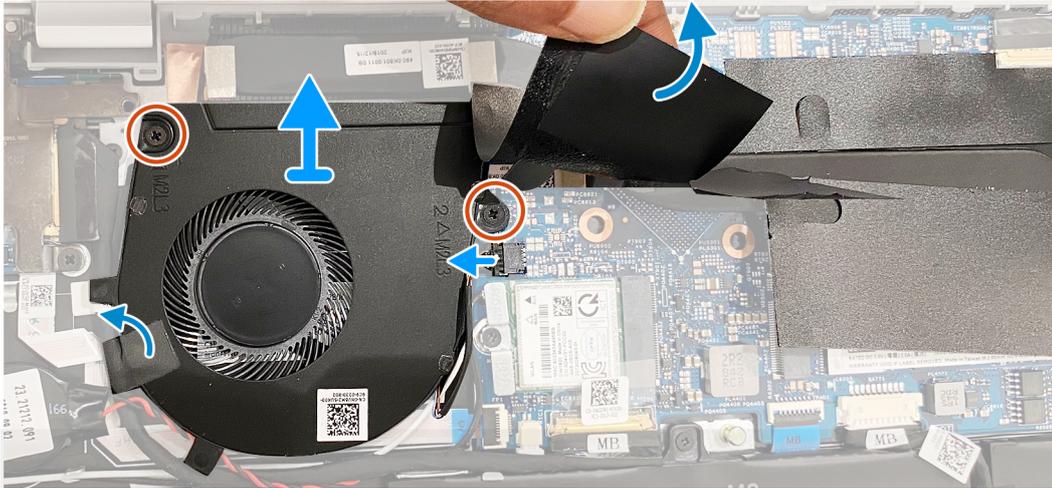
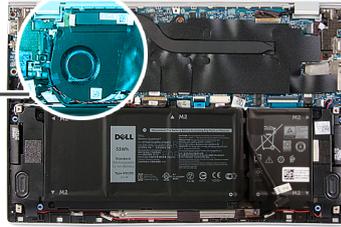
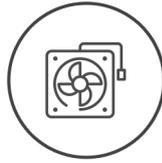
Removing the fan

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 fans and provide a visual representation of the removal procedure.



Steps

1. Peel off the tape that secures the I/O-board cable to the fan.
2. Lift the mylar that covers the fan screw on the system board.
3. Remove the two screws (M2x3) that secure the fan to the system board.
4. Disconnect the fan cable from the system board.
5. Lift the fan off the system board.

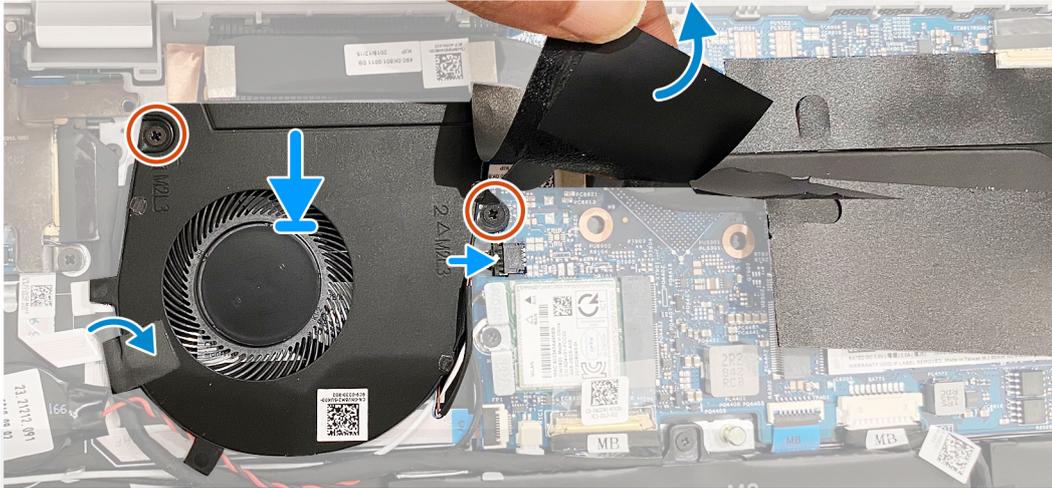
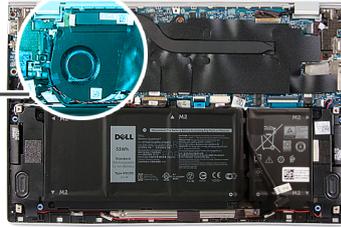
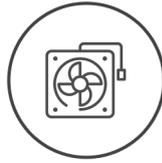
Installing the fan

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 fans and provide a visual representation of the installation procedure.



Steps

1. Lift the mylar that covers the screw hole on the fan.
2. Align the screw holes on the fan with the screw holes on the system board.
3. Replace the two screws (M2x3) that secure the fan to the system board.
4. Connect the fan cable from the system board.
5. Adhere the tape that secures the I/O-board cable to the fan.

Next steps

1. Install the [base cover](#).
2. Follow the procedure in [After working inside your computer](#).

Speakers

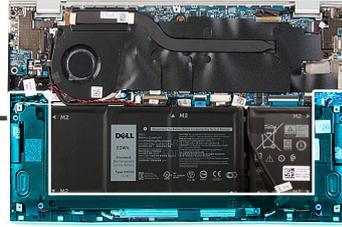
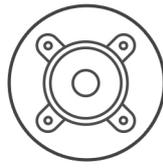
Removing the speakers

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. Peel the tapes that secure the speaker cable to the battery.
3. Note the routing of the speaker cables, and remove the speaker cables from the respective routing guides on the palm-rest and keyboard assembly.
4. Pry the speakers off the palm-rest and keyboard assembly.

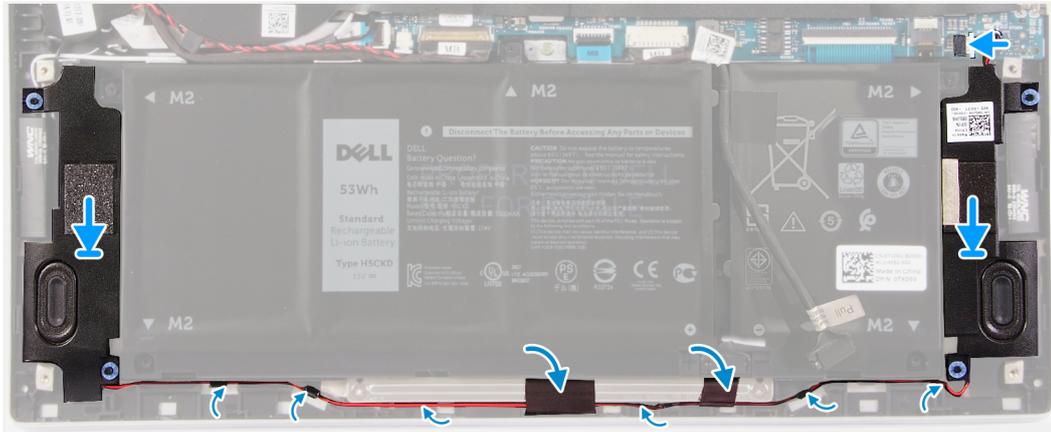
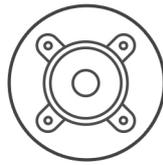
Installing the speakers

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. Slide the left and the right speakers into the respective slots on the palm-rest and keyboard assembly.
2. Route the speaker cables through the respective routing guides on the palm-rest and keyboard assembly.
3. Adhere the tapes that secure the speaker cable to the battery.
4. Connect the left and the right speaker cables to the respective connectors on the system board.

Next steps

1. Install the [base cover](#).
2. Follow the procedure in [After working inside your computer](#).

Display assembly

Removing the display assembly

Prerequisites

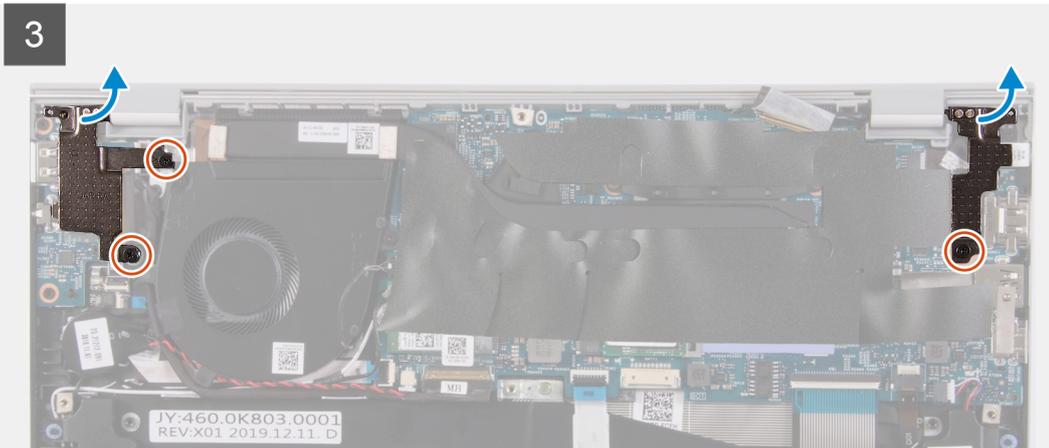
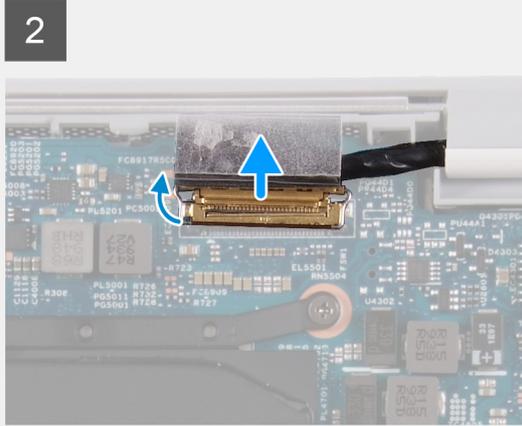
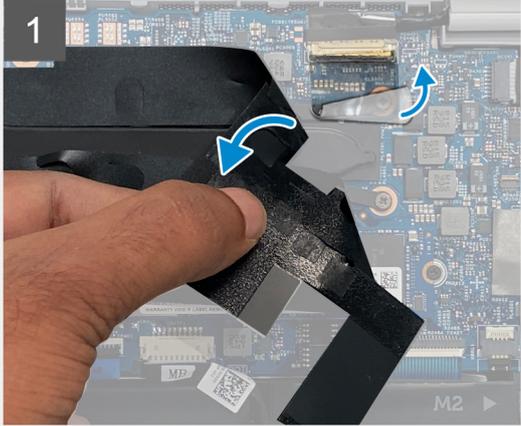
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).

About this task

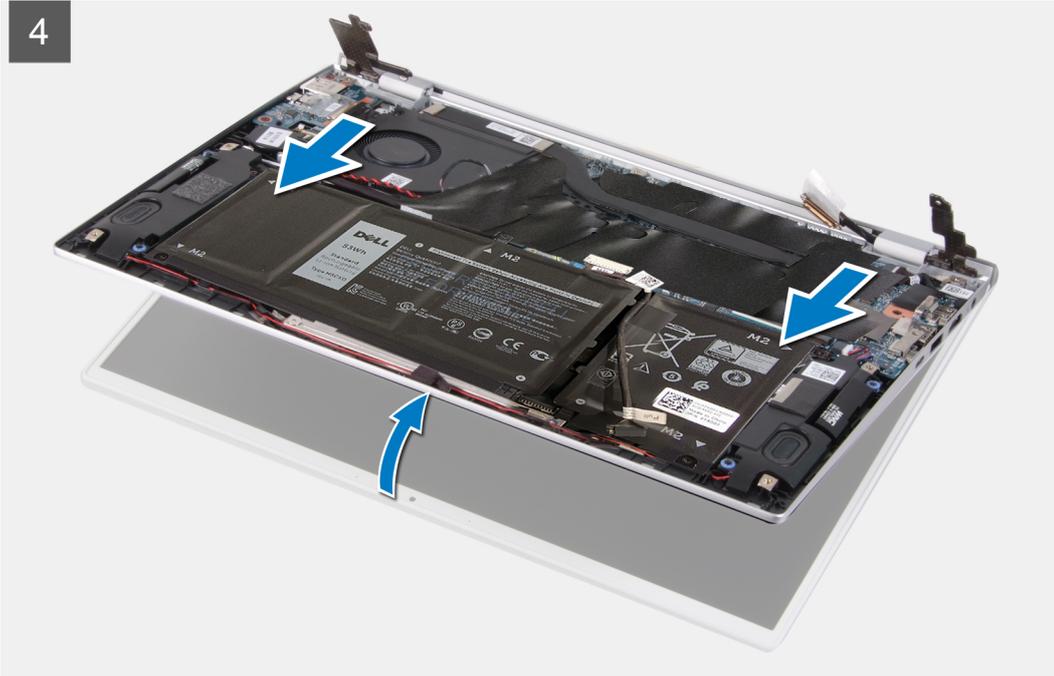
The following images indicate the location of the display assembly and provide a visual representation of the removal procedure.



3x
M2x2



4



Steps

1. Lift the mylar that covers the display cable on the system board.
2. Open the latch and disconnect the display cable from the system board.
3. Remove the two screws (M2x2) that secure the left hinge to the palm-rest and keyboard assembly.
4. Remove the screw (M2x2) that secures the right hinge to the system board and the palm-rest and keyboard assembly.
5. Open the display assembly at an angle and slide the palm-rest and keyboard assembly from the display assembly.
6. After performing all the above steps, you are left with the display assembly.



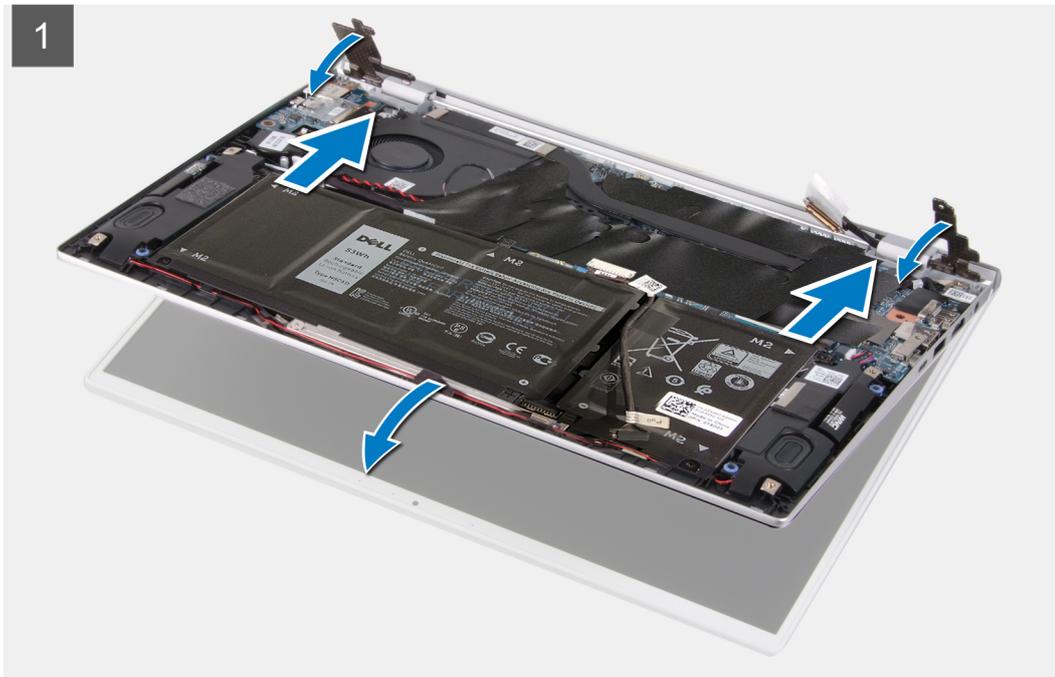
Installing the display assembly

Prerequisites

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

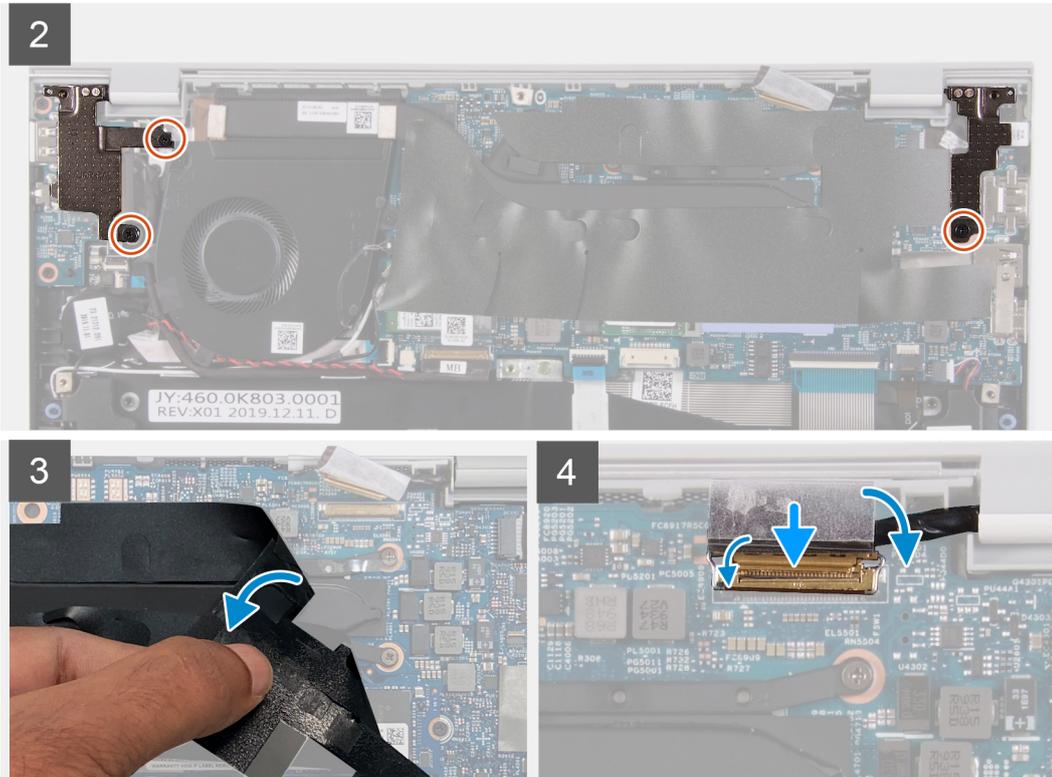
About this task

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





3x
M2x2



Steps

1. Place the display assembly on a clean surface.
2. Align and place the palm-rest and keyboard assembly at an angle with the display assembly.
3. Align the screw holes on the display hinges with the screw holes on the palm-rest and keyboard assembly.
4. Replace the screw (M2x2) that secures the right hinge to the system board and the palm-rest and keyboard assembly.
5. Replace the two screws (M2x2) that secure the left hinge to the palm-rest and keyboard assembly.
6. Lift the mylar that covers the display-cable connector on the system board.
7. Connect 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](#).

Touchpad

Removing the touchpad

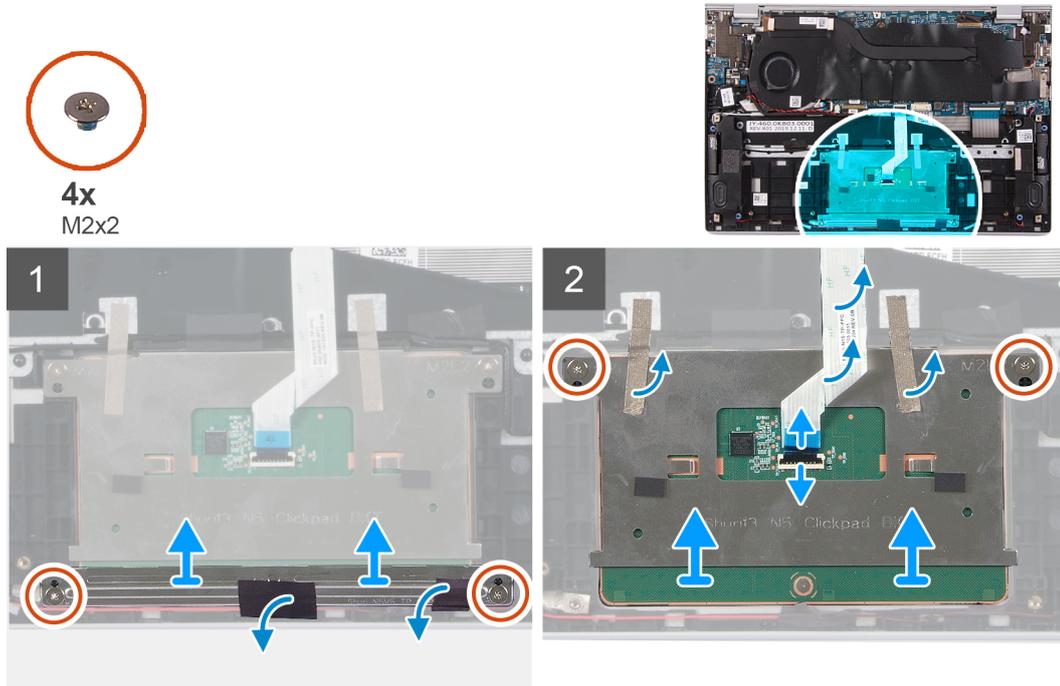
Prerequisites

1. Follow the procedure in [Before working inside your computer](#).

2. Remove the [base cover](#).
3. Remove the [4-cell battery](#) or the [3-cell battery](#).

About this task

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



Steps

1. Peel the tape that secures the speaker cables to the touchpad bracket.
2. Remove the two (M2x2) screws that secure the touchpad bracket to the palm-rest and keyboard assembly.
3. Remove the two (M2x2) screws that secure the touchpad to the palm-rest and keyboard assembly.
4. Open the latch and disconnect the touchpad cable from the system board.
5. Peel the tapes that secure the touchpad to the palm-rest and keyboard assembly.
6. Lift the touchpad, along with the cable, off the palm-rest and keyboard assembly.

Installing the touchpad

Prerequisites

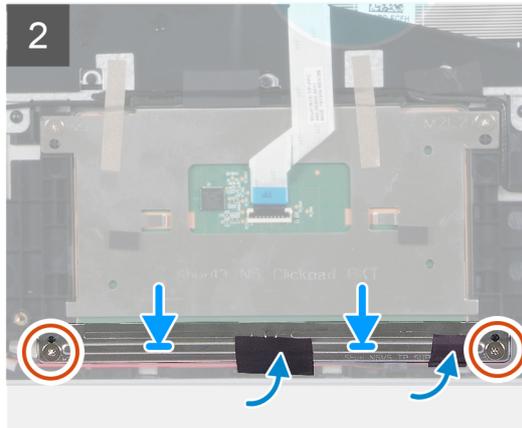
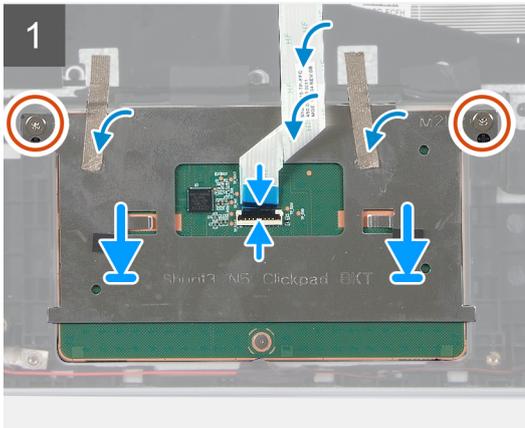
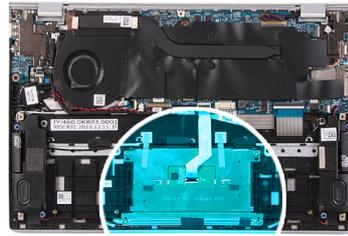
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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



4x
M2x2



Steps

1. Align and place the touchpad into the slot on the palm-rest and keyboard assembly.
2. Replace the two (M2x2) screws that secure the touchpad to the palm-rest and keyboard assembly.
3. Adhere the tapes that secure the touchpad to the palm-rest and keyboard assembly.
4. Connect the touchpad cable and close the latch to secure the cable to the system board.
5. Align and place the touchpad bracket into the slot on the palm-rest and keyboard assembly.
6. Replace the two (M2x2) screws that secure the touchpad bracket to the palm-rest and keyboard assembly.
7. Adhere the tape that secures the speaker cables to the touchpad bracket.

Next steps

1. Install the [base cover](#).
2. Install the [4-cell battery](#) or the [3-cell battery](#).
3. Follow the procedure in [After working inside your computer](#).

Heat sink

Removing the heat sink

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).

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

 **NOTE:** The number of screws varies depending on the configuration ordered.

3. Lift the heat sink off the system board.

Installing the heat sink

Prerequisites

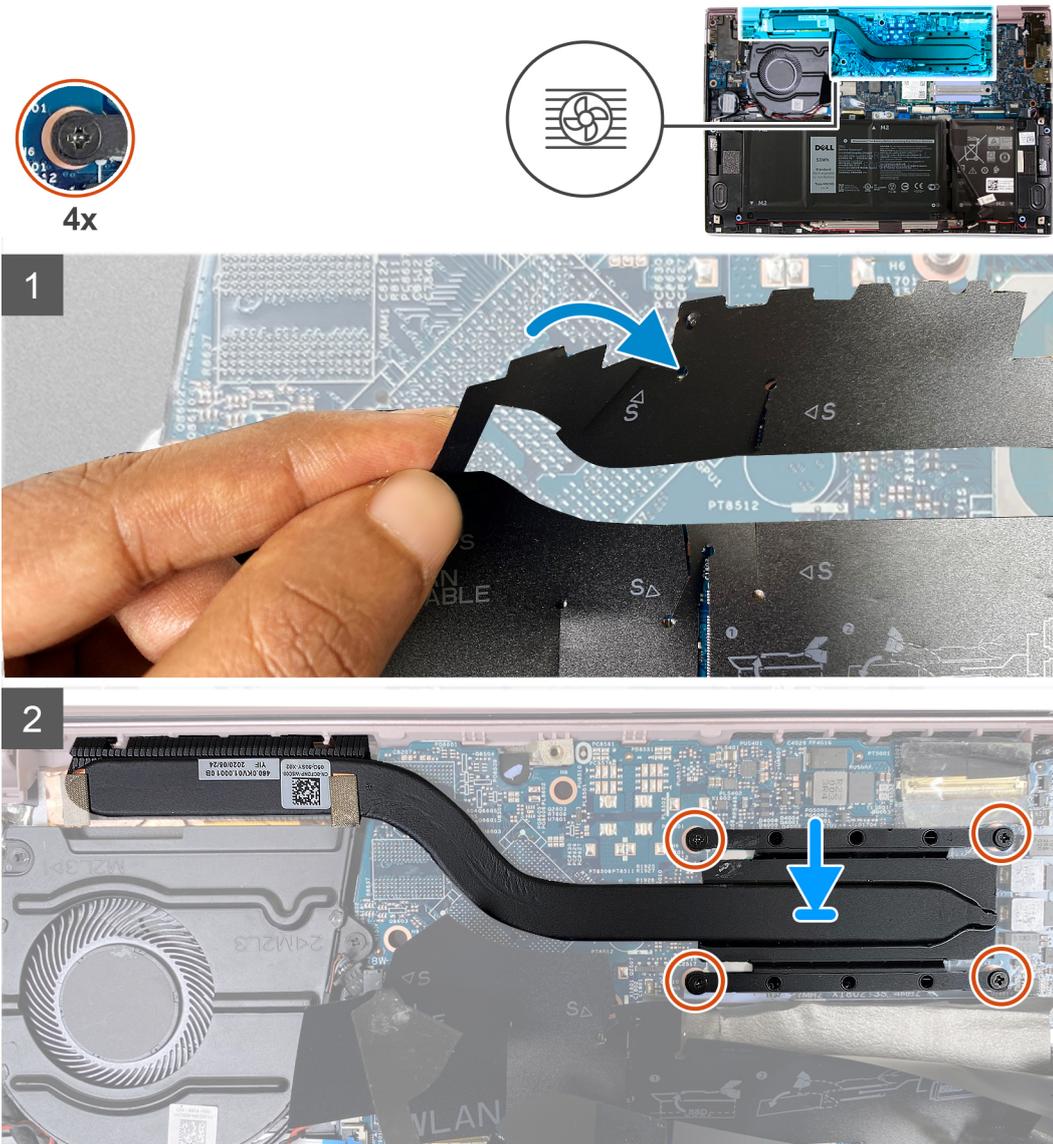
If you are replacing a component, remove the existing component before performing the installation procedure.

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

NOTE: The number of screws varies depending on the configuration ordered.

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

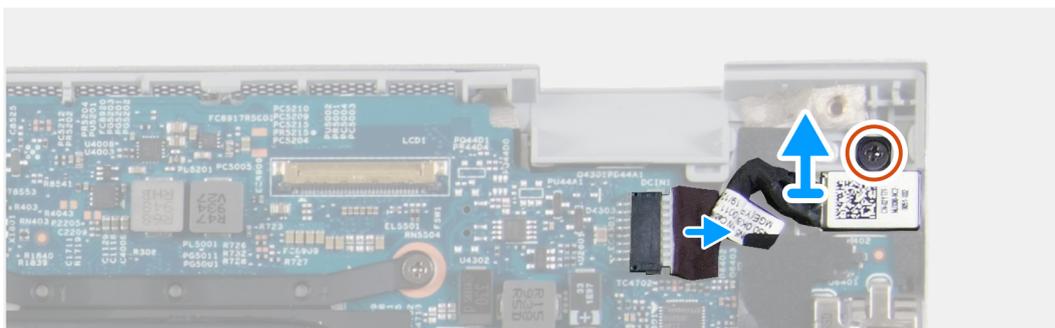
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).
3. Remove the [display assembly](#).

About this task

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



1x
M2x3



Steps

1. Remove the screw (M2x3) that secures the power-adapter port to the system board.
2. Disconnect the power-adapter port cable from the system board.
3. Lift the power-adapter port, along with its cable, off the palm-rest and keyboard assembly.

Installing the power-adapter port

Prerequisites

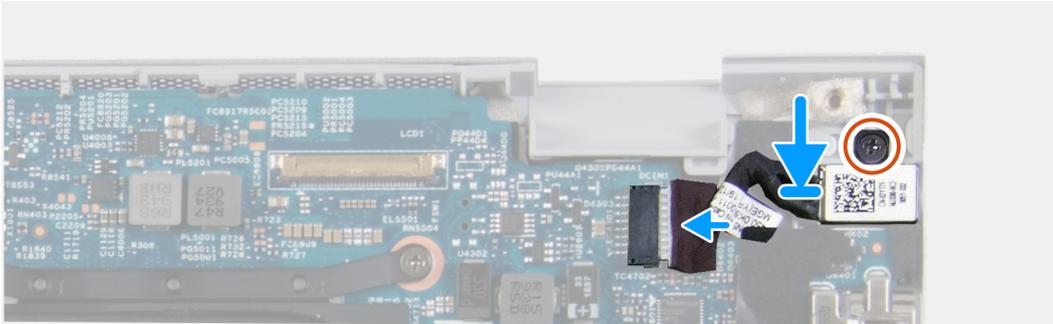
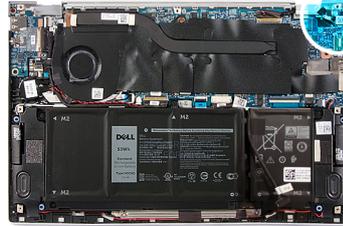
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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



1x
M2x3



Steps

1. Connect the power-adapter port cable to the system board.
2. Replace the screw (M2x3) that secures the power-adapter port to 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

Removing the I/O board

Prerequisites

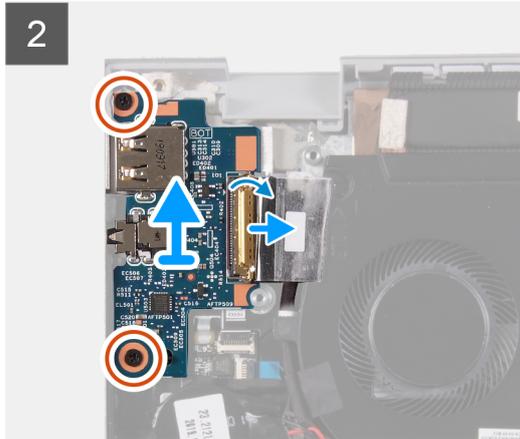
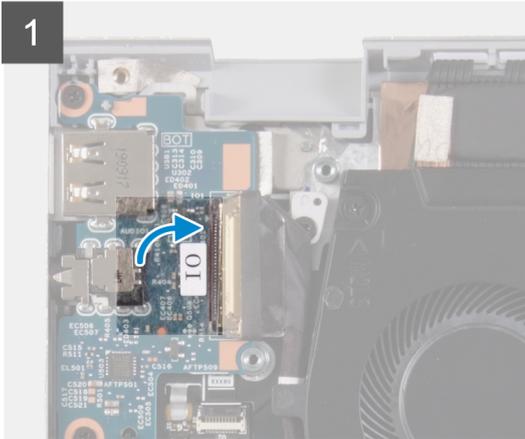
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).
3. Remove the [display assembly](#).

About this task

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



2x
M2x3



Steps

1. Peel the tape that secures the I/O-board cable to the I/O board.
2. Open the latch and disconnect the I/O-board cable from the I/O board.
3. Peel the tape that secures the I/O-board cable to the fan.
4. Remove the two screws (M2x3) that secure the I/O board to the palm-rest and keyboard assembly.
5. Lift the I/O board off the palm-rest and keyboard assembly.

Installing the I/O board

Prerequisites

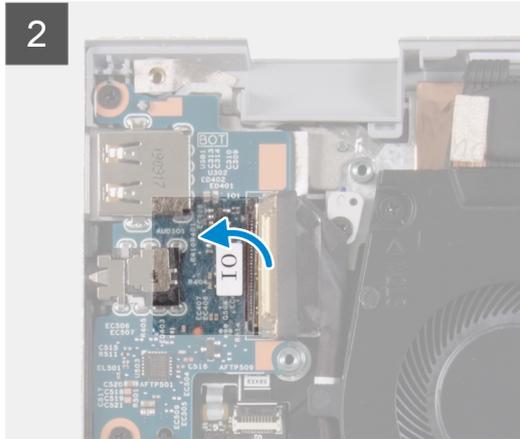
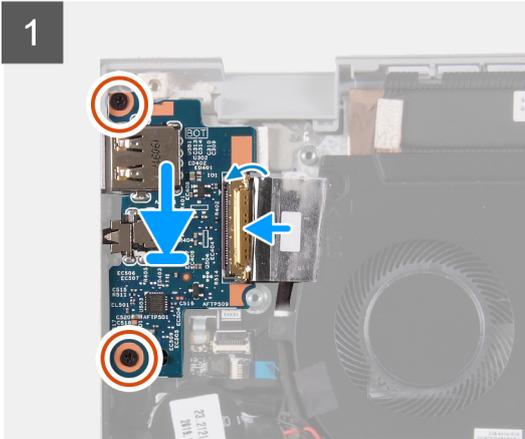
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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



2x
M2x3



Steps

1. Align and place the I/O board on the palm-rest and keyboard assembly.
2. Replace the two screws (M2x3) that secure the I/O board to the palm-rest and keyboard assembly.
3. Connect the I/O-board cable and close the latch to secure the cable to the I/O board.
4. Adhere the tape that secures the I/O-board cable to the fan.
5. Adhere the tape that secures the I/O-board cable to the I/O board.

Next steps

1. Install the [fan](#).
2. Install the [base cover](#).
3. Follow the procedure in [After working inside your computer](#).

System board

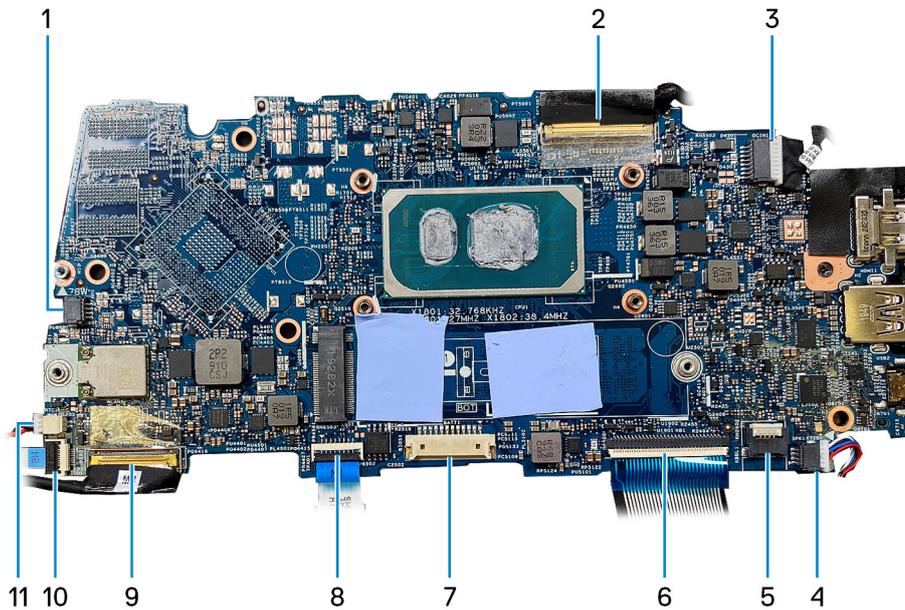
Removing the system board

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
 - NOTE:** Your computer's Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.
 - NOTE:** Replacing the system board removes any changes that you have made to the BIOS using the BIOS setup program. You must make the appropriate changes again after you replace the system board.
 - NOTE:** Before disconnecting the cables from the system board, note the location of the connectors so that you can reconnect the cables correctly after you replace the system board.
2. Remove the [base cover](#).
3. Remove the [4-cell battery](#) or the [3-cell battery](#).
4. Remove the [fan](#).
5. Remove the [heat sink](#).

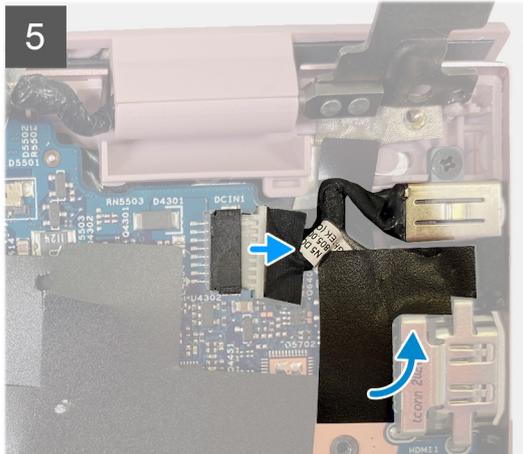
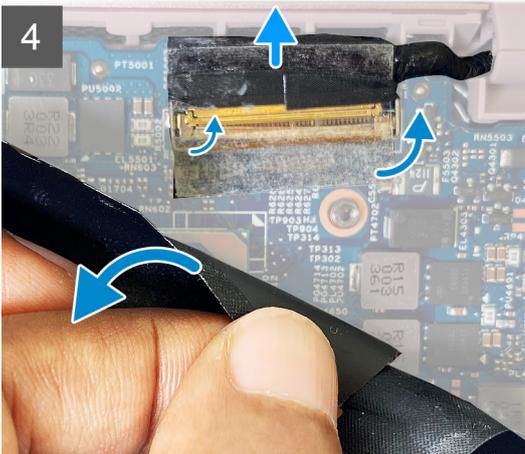
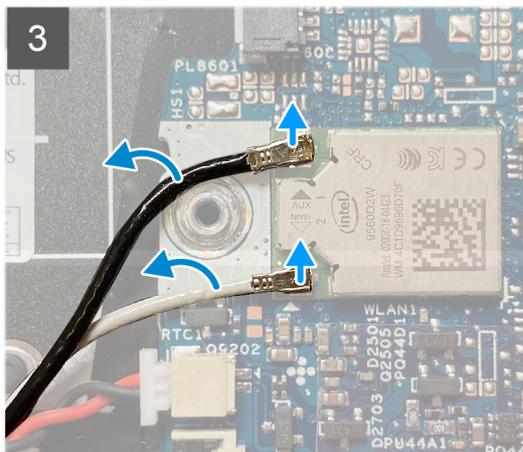
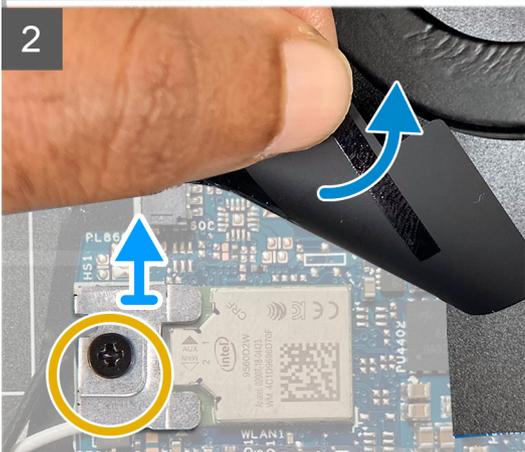
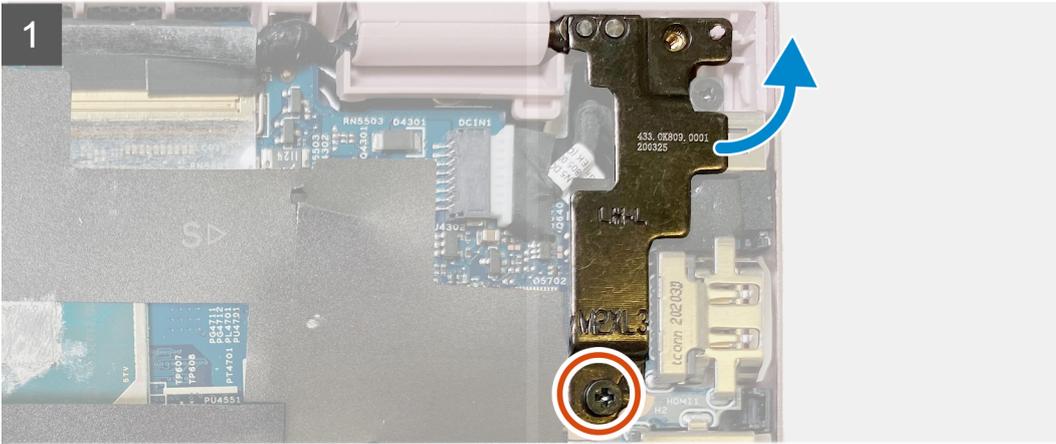
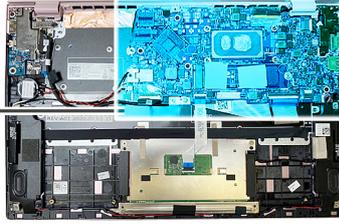
6. Remove the [solid state drive](#).

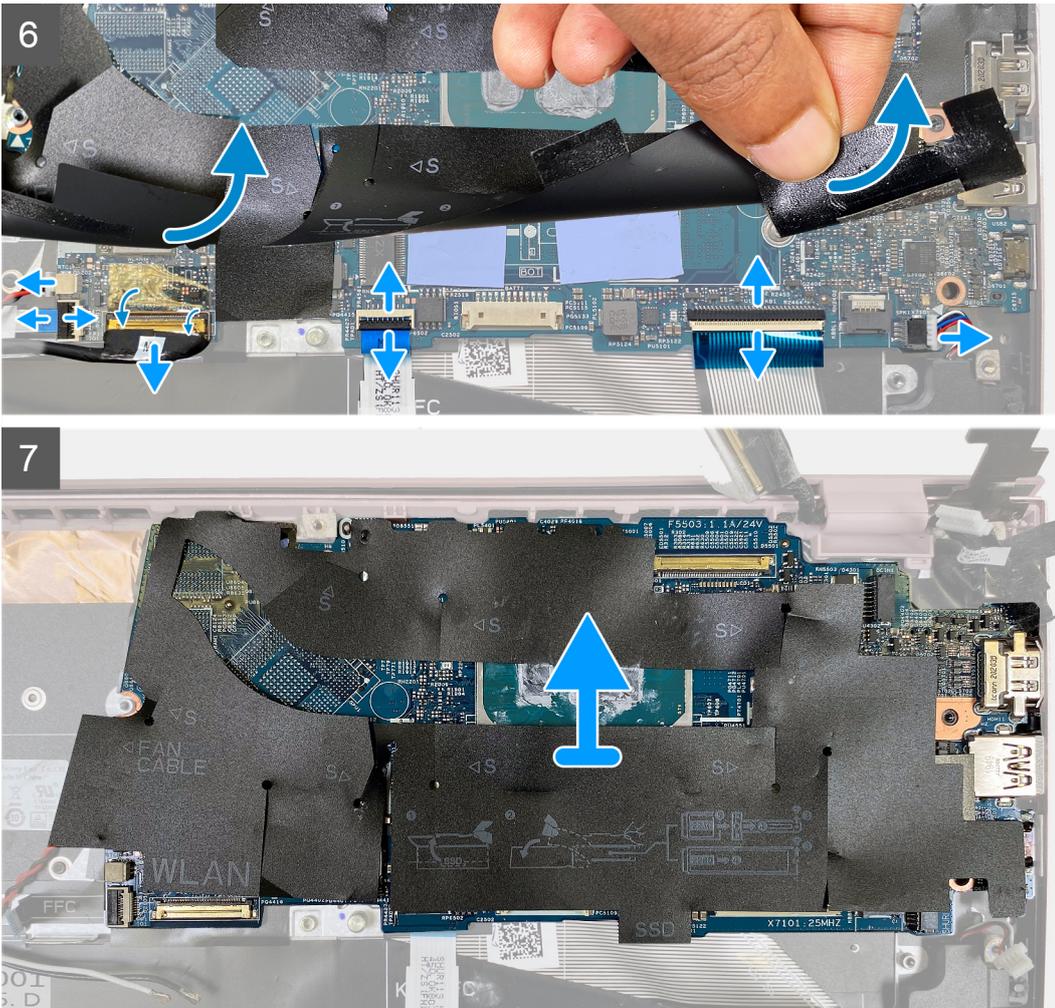
About this task



- | | |
|-----------------------------|------------------------------|
| 1. fan cable | 2. display cable |
| 3. power-adaptor port cable | 4. speaker cable |
| 5. keyboard backlight cable | 6. keyboard cable |
| 7. battery cable | 8. touchpad cable |
| 9. I/O-board cable | 10. fingerprint-reader cable |
| 11. coin-cell battery cable | |

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





Steps

1. Remove the screw (M2x3) that secures the left display hinge to the system board.
2. Lift the left display hinge away from the system board.
3. Lift the Mylar that covers the wireless card.
4. Remove the screw (M2x2.5) that secures the wireless-card bracket to the system board.
5. Lift the wireless-card bracket off the system board.
6. Disconnect the antenna cables from the system board.
7. Lift the Mylar that covers the display cable.
8. Open the latch, and disconnect the display cable from the system board.
9. Peel off the tape that adheres the power-adapter port cable to the system board.
10. Disconnect the power-adapter port cable from the system board.
11. Lift the Mylar that covers the cable connectors on the system board.
12. Disconnect the coin-cell battery cable from the system board.
13. Open the latch, and disconnect the fingerprint-reader cable, I/O-board cable, touchpad cable, keyboard cable and keyboard-backlit cable from the system board.
14. Disconnect the speaker cable from the system board.
15. Lift the system board off the palm-rest and keyboard assembly.

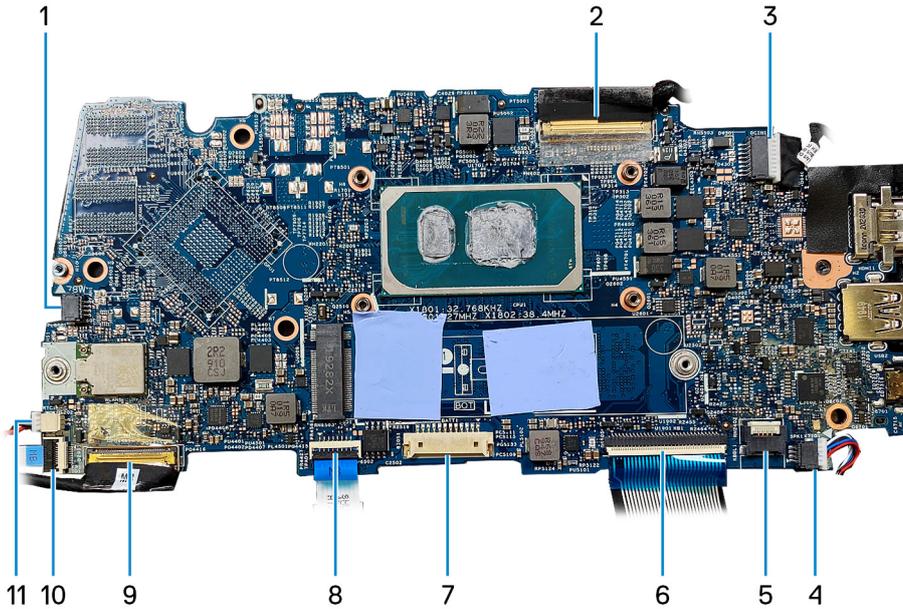
Installing the system board

Prerequisites

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

- NOTE:** Your computer's Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.
- NOTE:** Replacing the system board removes any changes that you have made to the BIOS using the BIOS setup program. You must make the appropriate changes again after you replace the system board.

About this task



- 1. fan cable
- 2. display cable
- 3. power-adaptor port cable
- 4. speaker cable
- 5. keyboard backlight cable
- 6. keyboard cable
- 7. battery cable
- 8. touchpad cable
- 9. I/O-board cable
- 10. fingerprint-reader cable
- 11. coin-cell battery cable

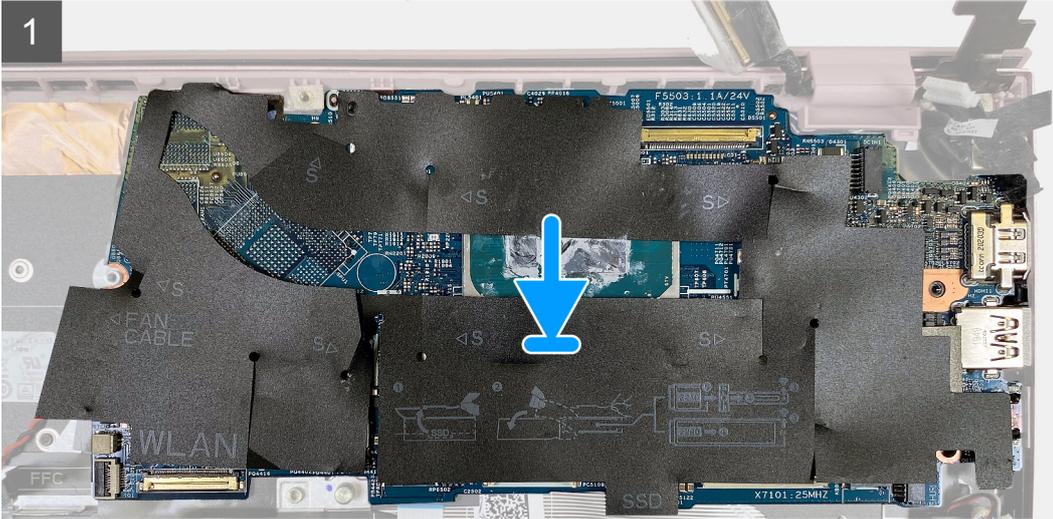
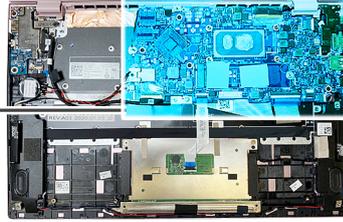
The following images indicate the location of the system board and provide a visual representation of the installation procedure.

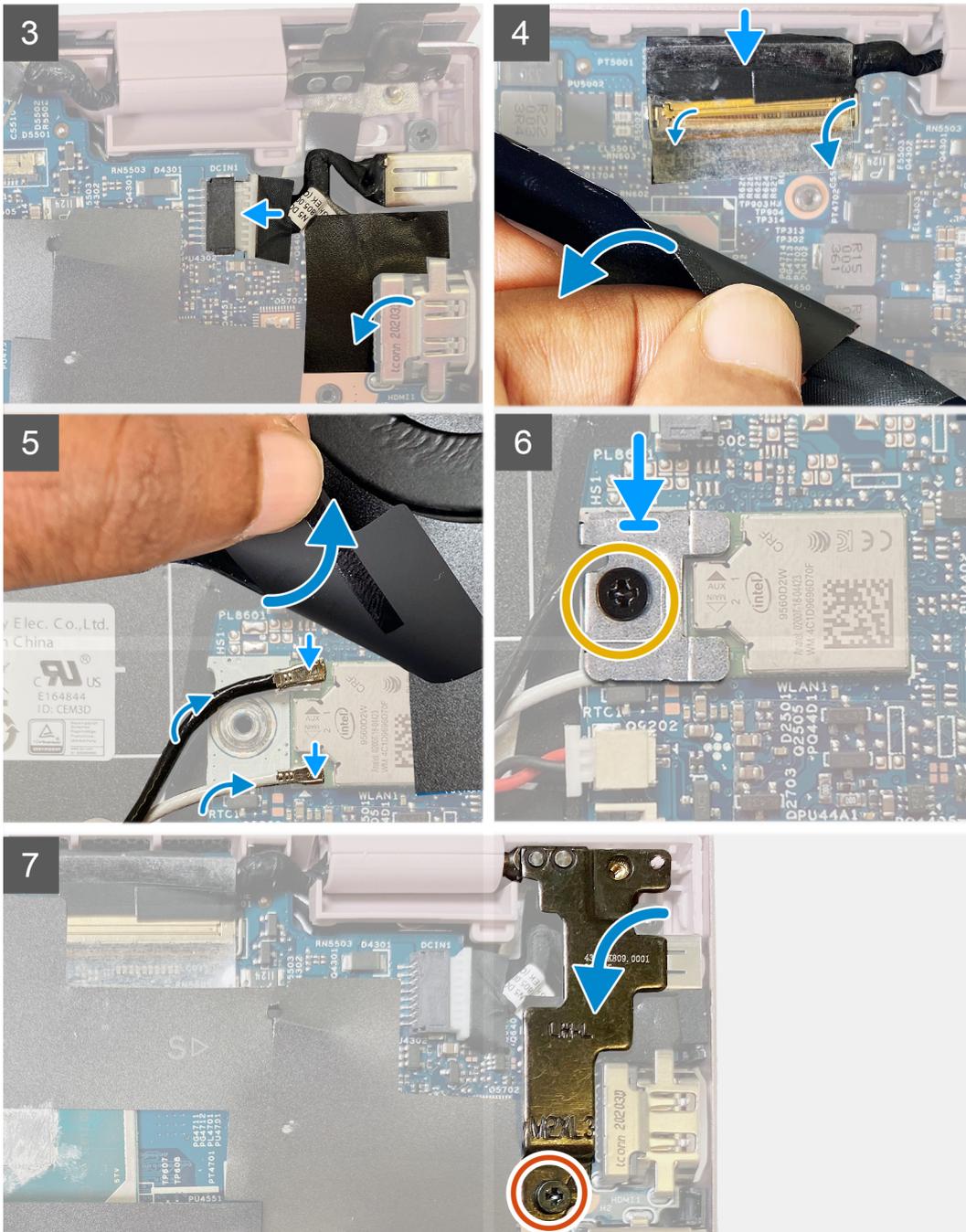


1x
M2x3



1x
M2x2.5





Steps

1. Align the system board on the palm-rest and keyboard assembly.

i **NOTE:** There is a screw hole on the system board that is marked "Inspiron 7300", only install a screw into this location when installing system board for Inspiron 7300.

2. Lift the Mylar that covers the cable connectors on the system board.
3. Connect the coin-cell battery cable to the system board.
4. Connect the fingerprint-reader cable, I/O-board cable, touchpad cable, keyboard cable and keyboard-backlit cable to the system board and close the latch to secure the cables.
5. Connect the speaker cable to the system board.
6. Connect the power-adaptor port cable to the system board.
7. Adhere the tape that secures the power-adaptor port cable to the system board.
8. Lift the Mylar that covers the display cable.

9. Connect the display cable to the system board and close the latch the secure the cable.
10. Place the wireless-card bracket on the wireless card.

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

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)

11. Replace the screw (M2x2.5) that secures the wireless-card bracket to the system board.
12. Align the screw hole on the left display hinge to the screw hole on the system board.
13. Replace the screw (M2x3) that secures the left display hinge to the system board.

Next steps

1. Install the [solid state drive](#).
2. Install the [heat sink](#).
3. Install the [fan](#).
4. Install the [4-cell battery](#) or the [3-cell battery](#).
5. Install the [base cover](#).
6. Follow the procedure in [After working inside your computer](#).

Palm-rest and keyboard assembly

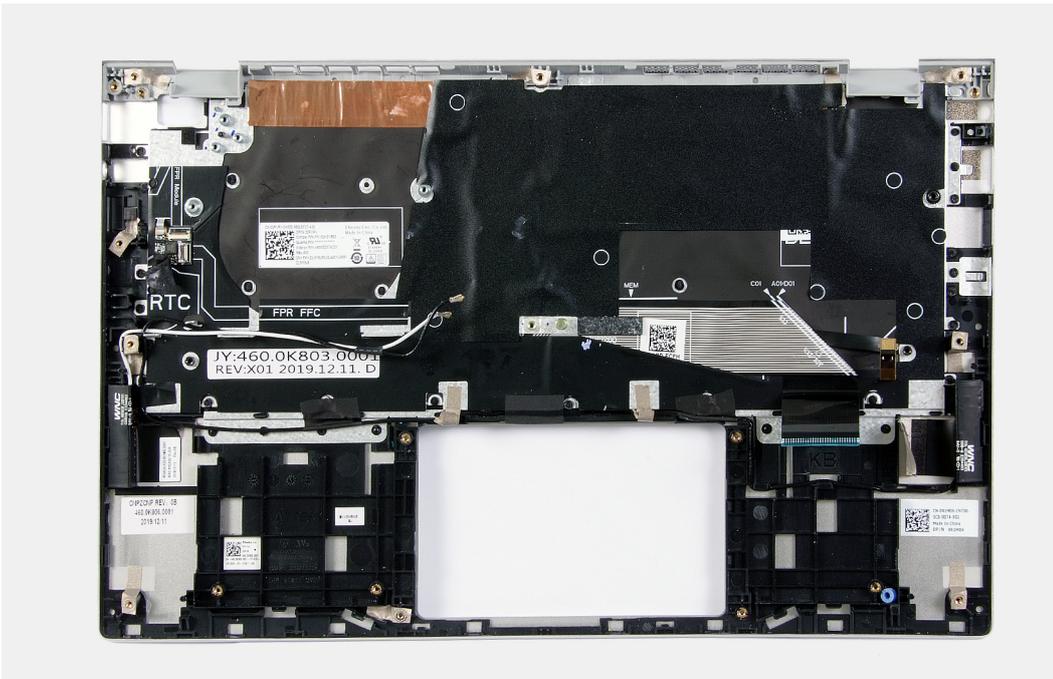
Removing the palm-rest and keyboard assembly

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).
3. Remove the [4-cell battery](#) or the [3-cell battery](#).
4. Remove the [speakers](#).
5. Remove the [display assembly](#).
6. Remove the [power-adaptor port](#).
7. Remove the [touchpad](#).

About this task

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



Steps

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

NOTE: System board can be removed with heatsink attached.

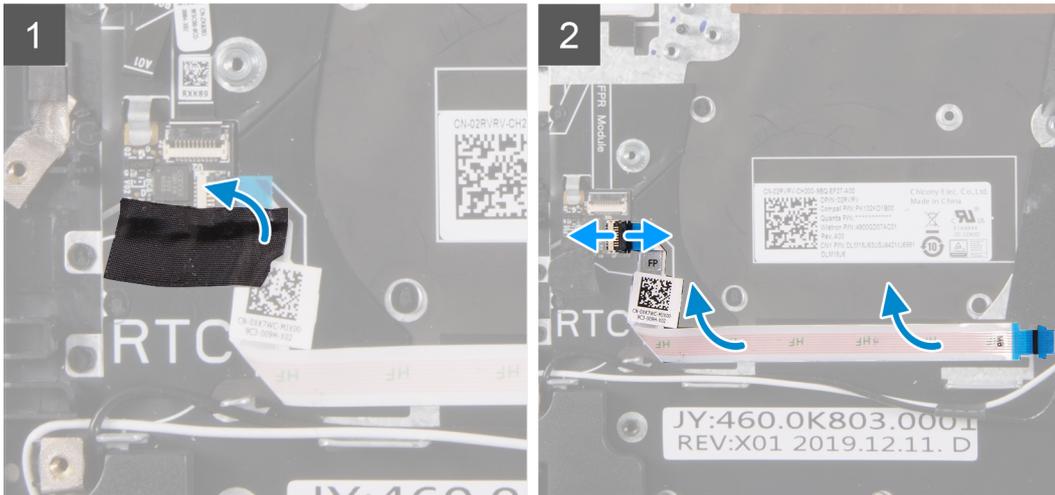
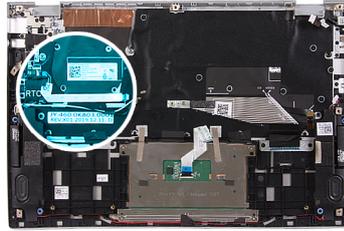
Installing the palm-rest and keyboard assembly

Prerequisites

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

About this task

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



Steps

1. Peel off the mylar tape that secures the power button with fingerprint reader cable connection.
2. Disconnect the power button with fingerprint reader cable from the connector on the palm-rest and keyboard assembly.
3. Lift the power button with fingerprint reader off the palm-rest and keyboard assembly.

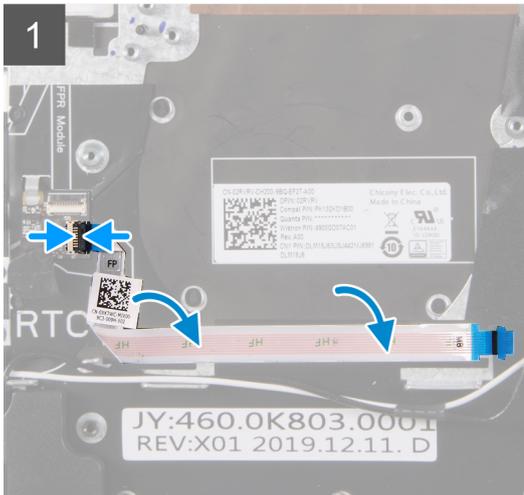
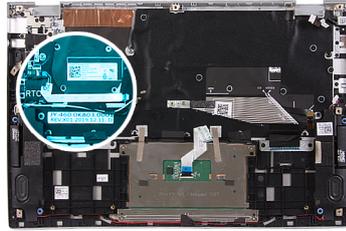
Installing the power button with fingerprint reader

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 power-adaptor port and provides a visual representation of the installation procedure.



Steps

1. Align the power button with fingerprint reader on the palm-rest and keyboard assembly.
2. Connect the power button with fingerprint reader cable to the connector on the palm-rest and keyboard assembly.
3. Adhere the mylar tape that secures the power button with fingerprint reader cable connection.

Next steps

1. Install the [power button with fingerprint reader](#).
2. Install the [power-adapter port](#).
3. Install the [display assembly](#).
4. Install the [speakers](#).
5. Install the [4-cell battery](#) or the [3-cell battery](#).
6. Install the [base cover](#).
7. Follow the procedure in [After working inside your computer](#).

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](#).

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

Steps

1. Turn on your computer.
2. Press F2 immediately to enter the BIOS setup program.

NOTE: If you wait too long and the operating system logo appears, continue to wait until you see the desktop. Then, turn off your computer and try again.

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.

System setup options

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

Table 4. System setup options—Overview menu

Overview	
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.
Battery	Displays the battery health information.
Primary	Displays the primary battery.
Battery Level	Displays the battery level.
Battery State	Displays the battery state.
Health	Displays the battery health.
AC Adapter	Displays whether an AC adapter is installed.
Processor Information	
Processor Type	Displays the processor type.
Maximum Clock Speed	Displays the maximum processor clock speed.
Minimum Clock Speed	Displays the minimum processor clock speed.
Current Clock Speed	Displays the current processor clock speed.
Core Count	Displays the number of cores on the processor.
Processor ID	Displays the processor identification code.
Processor L2 Cache	Displays the processor L2 Cache size.
Processor L3 Cache	Displays the processor L3 Cache size.
Microcode Version	Displays the microcode version.
Intel Hyper-Threading Capable	Displays whether the processor is Hyper-Threading (HT) capable.
64-Bit Technology	Displays whether 64-bit technology is used.
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.
Device Information	
Panel Type	Displays the Panel Type of the computer.
Video Controller	Displays the integrate graphics information of the computer.

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

Overview	
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.

Table 5. System setup options—Boot Configurations menu

Boot Configurations	
Boot Sequence	
Boot Mode: UEFI only	Displays the boot mode of this computer.
Enable Boot Devices	Enables or disables boot devices for this computer.
Boot Sequence	Displays the boot sequence.
Secure Boot	
Enable Secure Boot	Enables or disables the computer to boots using only validated boot software. Default: OFF. NOTE: For Secure Boot to be enabled, the computer needs to be in UEFI boot mode and the Enable Legacy Option ROMs option needs to be turned off.
Secure Boot Mode	Selects the Secure Boot operation mode. Default: Deployed Mode. NOTE: Deployed Mode should be selected for normal operation of Secure Boot.
Expert Key Management	
Enable Custom Mode	Enables or disables the keys in the PK, KEK, db, and dbx security key databases to be modified. Default: OFF.
Custom Mode Key Management	Selects the custom values for expert key management. Default: PK.

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.
Enable Camera	Enables or disables camera. Default: ON.
USB Configuration	

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

Integrated Devices	
Enable Boot Support	Enables or disables booting from USB mass storage devices such as external hard drive, optical drive, and USB drive.
Enable External USB Ports	Enables or disables USB ports to be functional in an operating system environment.
Disable USB4 PCIE Tunneling	Default: OFF.

Table 7. System setup options—Storage menu

Storage	
SATA/NVMe Operation	Configures operating mode of the integrated storage device controller. Default: RAID on. Storage device is configured to support RAID (Intel Rapid Restore Technology).
Storage Interface	Enables or disables various onboard drives.
M.2 PCIe SSD	Default: ON.
Enable SMART Reporting	Enables or disables SMART (Self-Monitoring, Analysis, and Reporting Technology) during computer startup to report hard drive errors. Default: OFF.
Drive Information	Displays the information of various onboard drives.

Table 8. System setup options—Display menu

Display	
Display Brightness	
Brightness on battery power	Sets the screen brightness when the computer is running on battery power.
Brightness on AC power	Sets the screen brightness when the computer is running on AC power.
EcoPower	Enables or disables EcoPower which increases the battery life by reducing the screen brightness when appropriate. Default: ON.
Full screen logo	Enabled or disabled the computer to display full screen logo if the image match screen resolution. Default: OFF.

Table 9. System setup options—Connection menu

Connection	
Wireless Device Enable	Enable or disable internal WLAN/Bluetooth devices.
WLAN	Default: ON.
Bluetooth	Default: ON.
Enable UEFI Network Stack	Enables or disables to allow pre-OS and early OS networking features to use any enabled NICs. Default: ON.

Table 10. System setup options—Power menu

Power	
Battery Charge Configuration	Enables the computer to run on battery during power usage hours. Use the below options to prevent AC power usage between certain times of each day.

Table 10. System setup options—Power menu (continued)

Power	
Enable Advanced Battery Charge Configuration	<p>Default: Adaptive. Battery settings are adaptively optimized based on your typical battery usage pattern.</p> <p>Enables Advanced Battery Charge Configuration from the beginning of the day to a specified work period. Advanced Battery Charged maximizes battery health while still supporting heavy use during the work day.</p> <p>Default: OFF.</p>
Thermal Management	<p>Enables or disables processor heat management to adjust system performance.</p> <p>Default: Optimized.</p>
Enable USB Wake Support	<p>Enables the USB devices to wake the computer from Standby mode.</p> <p>Default: OFF.</p>
Block Sleep	<p>Blocks the computer from entering Sleep (S3) mode in the operating system.</p> <p>Default: OFF.</p> <p>i NOTE: If enabled, the computer will not go to sleep, Intel Rapid Start will be disabled automatically, and the operating system power option will be blank if it was set to Sleep.</p>
Lid Switch	<p>Enables the computer to power up from the off state whenever the lid is opened.</p> <p>Default: ON.</p>
Enable Intel Speed Shift Technology	<p>Enables or disables Intel Speed Shift Technology support which enables the operating system to select the appropriate processor performance automatically.</p> <p>Default: ON.</p>

Table 11. System setup options—Security menu

Security	
Intel Platform Trust Technology On	<p>Enables or disables Platform Trust Technology (PTT) visibility to the operating system.</p> <p>Default: ON.</p>
PPI Bypass for Clear Commands	<p>Enables or disables the operating system to skip BIOS Physical Presence Interface (PPI) user prompts when issuing the Clear command.</p> <p>Default: OFF.</p>
Clear	<p>Enables or disables the computer to clear the PTT owner information, and returns the PTT to the default state.</p> <p>Default: OFF.</p>
SMM Security Mitigation	<p>Enables or disables additional UEFI SMM Security Mitigation protections.</p> <p>Default: OFF.</p> <p>i NOTE: This feature may cause compatibility issues or loss of functionality with some legacy tools and applications.</p>
Start Data Wipe	<p>⚠ CAUTION: This Secure Wipe Operation will delete information in a way that it cannot be reconstructed.</p> <p>If enabled, the BIOS will queue up a data wipe cycle for storage devices that are connected to the motherboard on the next reboot.</p> <p>Default: OFF.</p>

Table 11. System setup options—Security menu (continued)

Security	
Absolute	Enable or disable the BIOS module interface of the optional Absolute Persistence Service from Absolute Software.
UEFI Boot Path Security	Enables or disables the system to prompt the user to enter the Admin password when booting a UEFI boot path from the F12 boot menu. Default: Always Except Internal HDD.

Table 12. System setup options—Passwords menu

Passwords	
Admin Password	Sets, Changes, or deletes the administrator (admin) password (sometimes called the "setup" password).
System Password	Sets, Changes, or deletes the system password.
Password Configuration	Control the minimum and maximum number of characters that are allowed for Admin and System passwords.
Password Bypass	Bypass the System (Boot) Password and the internal hard drive password prompts during a system restart. Default: Disabled.
Enable Non-Admin Password Changes	Enables or disables the user to change the system and hard drive password without the need for admin password. Default: ON.
Enable Admin Setup Lockout	Enables or disables the user from entering BIOS Setup when an Admin Password is set. Default: OFF.
Enable Master Password Lockout	Enables or disables the master password support. Default: OFF.

Table 13. System setup options—Update, Recovery menu

Update, Recovery	
Enable UEFI Capsule Firmware Updates	Enables or disables BIOS updates through UEFI capsule update packages.
BIOS Recovery from Hard Drive	Enables the computer to recover from a bad BIOS image, as long as the Boot Block portion is intact and functioning. Default: ON. i NOTE: BIOS recovery is designed to fix the main BIOS block and cannot work if the Boot Block is damaged. In addition, this feature cannot work in the event of EC corruption, ME corruption, or a hardware issue. The recovery image must exist on an unencrypted partition on the drive.
Allow BIOS Downgrade	Controls flashing of the system firmware to previous revisions. Default: ON.
SupportAssist OS Recovery	Enables or disables the boot flow for SupportAssist operating system Recovery tool in the even of certain system errors. Default: ON.
BIOSConnect	Enables or disables attempting cloud service OS recovery. Default: ON.
Dell Auto OS Recovery Threshold	Controls the automatic boot flow for SupportAssist System Resolution Console and for Dell operating system Recovery tool.

Table 13. System setup options—Update, Recovery menu (continued)

Update, Recovery	
	Default: 2.

Table 14. 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.
Wake on AC	Enables the computer to turn on and go to boot when AC power is supplied to the computer. Default: OFF.
Auto on Time	Enables the computer to automatically power on for defined days and times. Default: Disabled. The system will not automatically power up.

Table 15. System setup options—Keyboard menu

Keyboard	
Fn Lock Options	Enables or disables the Fn lock mode. Default: ON.
Lock Mode	Default: Lock Mode Secondary. Lock Mode Secondary = If this option is selected, the F1-F12 keys scan the code for their secondary functions.
OROM Keyboard Access	Enables or disables to enter Option ROM configuration via hotkeys during boot. Default: Enabled.

Table 16. System setup options—Pre-boot behavior menu

Pre-boot Behavior	
Enable Adapter Warnings	Enables the computer to display adapter warning messages during boot. Default: ON.
Warnings and Errors	Selects an action on encountering a warning or error during boot. Default: Prompt on Warnings and Errors. Stop, prompt and wait 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.
Enable Dock Warning Messages	Enables or disables dock warning messages. Default: ON.
Fastboot	Configures the speed of the UEFI boot process. Default: Thorough. Performs complete hardware and configuration initialization during boot.
Extend BIOS POST Time	Configures the BIOS POST (Power-On Self-Test) load time. Default: 0 seconds.

Table 17. System setup options—Virtualization menu

Virtualization	
Intel Virtualization Technology	Enables the computer to run a virtual machine monitor (VMM). Default: ON.
VT for Direct I/O	Enables the computer to perform Virtualization Technology for Direct I/O (VT-d). VT-d is an Intel method that provides virtualization for memory map I/O. Default: ON.

Table 18. System setup options—Performance menu

Performance	
Multi-Core Support	Changes the number of CPU cores available to the operating system. The default value is set to the maximum number of cores. Default: All Cores.
Intel SpeedStep	Enables or disables the Intel SpeedStep Technology to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production. Default: ON.
Enable C-State Control	Enables or disables the CPU's ability to enter and exit low-power states. Default: ON.
Intel TurboBoost Technology	Enabled or disabled the Intel TurboBoost mode of the processor. If enabled, the Intel TurboBoost driver increases the performance of the CPU or graphics processor. Default: ON.
Intel Hyper-Threading Technology	Enables or disables the Intel Hyper-Threading Technology to use processor resources more efficiently. Default: ON.

Table 19. System setup options—System Logs menu

System Logs	
BIOS Event Log	Displays BIOS events. Default: Keep.
Thermal Event Log	Displays Thermal events. Default: Keep.
Power Event Log	Displays Power events. Default: Keep.

System and setup password

Table 20. System and setup password

Password type	Description
System password	Password that you must enter to log on 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 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 field **Enter the old password** is grayed out.

About this task

To enter the system setup, press F2 immediately after a power-on or reboot.

Steps

1. In the **System BIOS** or **System Setup** screen, click **Passwords** on the left pane.
The **Passwords** screen is displayed.
2. Create a password in **Enter the new password** field, and press **Enter**.
Use the following guidelines to assign the system password:
 - A password can have up to 32 characters.
 - The password can contain the numbers 0 through 9.
 - Only lower case letters are valid, upper case letters are not allowed.
 - Only the following special characters are allowed: space, ("), (+), (.), (-), (.), (/), (;), ([), (\), (]), (`).
3. Reenter the new password and press **Enter** to confirm.
4. Click **APPLY CHANGES** and a message prompts you to save the changes.
5. Click **EXIT** to restart the computer.

Deleting or changing an existing system or admin password

About this task

To enter the System Setup, press **F2** immediately after a power-on or reboot.

Steps

1. In the **System BIOS** or **System Setup** screen, click **Passwords** in the left pane.
The **Passwords** screen is displayed.
2. In the **Passwords** screen, alter, or delete the existing system/admin password.
 **NOTE:** If you change the System and/or Admin password, reenter the new password when prompted. If you delete the System and Admin password, confirm the deletion when prompted.
3. Click **APPLY CHANGES** and a message prompts you to save the changes.
4. Click **EXIT** 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. Remove the [battery](#).
3. Remove the [coin-cell battery](#).
4. Wait for one minute.
5. Install the [coin-cell battery](#).
6. Install the [battery](#).
7. Install 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.

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](http://www.dell.com/support) 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](http://www.dell.com/support) 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](https://www.dell.com/support) 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.

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, see [Dell Laptop Battery - Frequently Asked Questions](#).

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**.

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

i **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.

For more information, see [SupportAssist Pre-Boot System Performance Check](#).

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 you see color bars on the LCD (screen).
5. The screen will display multiple color bars and change colors on the entire screen to red, green, and blue.
6. Carefully inspect the screen for abnormalities.
7. Press **Esc** key to exit.

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

M-BIST

M-BIST (Built In Self-Test) diagnostics tool, featuring improved accuracy in system board failures.

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

How to run M-BIST

i **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

System diagnostic lights

Battery-status light

Indicates the power and battery-charge status.

Solid white — Power adapter is connected and the battery has more than 5 percent charge.

Amber — Computer is running on battery and the battery has less than 5 percent charge.

Off

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

The power and battery-status light blinks amber along with beep codes indicating 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.

Table 21. LED codes

Diagnostic light codes	Problem description
1,1	TPM detection failure
1,2	Unrecoverable SPI flash failure
1,5	i-Fuse failure
1,6	EC internal failure
2,1	Processor failure
2,2	System board: BIOS or ROM (Read-Only Memory) failure
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
2,8	LCD 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

Camera status light: Indicates whether the camera is in use.

- Solid white — Camera is in use.
- Off — Camera is not in use.

Caps Lock status light: Indicates whether Caps Lock is enabled or disabled.

- Solid white — Caps Lock enabled.
- Off — Caps Lock disabled.

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 2 in [Removing the battery](#).

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.

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 22. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
My Dell app	
Tips	
Contact Support	In Windows search, type <code>Contact Support</code> , 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	<ol style="list-style-type: none"> 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.