

# Dell G5 SE 5505

## 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.

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# Working inside your computer

## Before working inside your computer

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

## Before you begin

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


## Safety instructions

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


 **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](http://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](http://www.dell.com/regulatory_compliance).

 **CAUTION:** Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity which could harm internal components.

 **CAUTION:** When you disconnect a cable, pull it by its connector or its pull tab, not the cable itself. Some cables have connectors with locking tabs or thumb-screws that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly-aligned to avoid bending the connector pins. When connecting cables, ensure that the ports and the connectors are correctly oriented and aligned.

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

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

## Electrostatic discharge—ESD protection

ESD is a major concern when you handle electronic components, especially sensitive components such as expansion cards, processors, memory DIMMs, and system boards. Very slight charges can damage circuits in ways that may not be obvious, such as intermittent problems or a shortened product life span. As the industry pushes for lower power requirements and increased density, ESD protection is an increasing concern.

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

Two recognized types of ESD damage are catastrophic and intermittent failures.

- **Catastrophic** – Catastrophic failures represent approximately 20 percent of ESD-related failures. The damage causes an immediate and complete loss of device functionality. An example of catastrophic failure is a memory DIMM that has received a static shock and immediately generates a "No POST/No Video" symptom with a beep code emitted for missing or nonfunctional memory.
- **Intermittent** – Intermittent failures represent approximately 80 percent of ESD-related failures. The high rate of intermittent failures means that most of the time when damage occurs, it is not immediately recognizable. The DIMM receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms related to the damage. The weakened trace may take weeks or months to melt, and in the meantime may cause degradation of memory integrity, intermittent memory errors, etc.

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

Perform the following steps to prevent ESD damage:

- Use a wired ESD wrist strap that is properly grounded. The use of wireless anti-static straps is no longer allowed; they do not provide adequate protection. Touching the chassis before handling parts does not ensure adequate ESD protection on parts with increased sensitivity to ESD damage.
- Handle all static-sensitive components in a static-safe area. If possible, use anti-static floor pads and workbench pads.
- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the anti-static packing material until you are ready to install the component. Before unwrapping the anti-static packaging, ensure that you discharge static electricity from your body.
- Before transporting a static-sensitive component, place it in an anti-static container or packaging.

## ESD field service kit

The unmonitored Field Service kit is the most commonly used service kit. Each Field Service kit includes three main components: anti-static mat, wrist strap, and bonding wire.

## Components of an ESD field service kit

The components of an ESD field service kit are:

- **Anti-Static Mat** – The anti-static mat is dissipative and parts can be placed on it during service procedures. When using an anti-static mat, your wrist strap should be snug and the bonding wire should be connected to the mat and to any bare metal on the system being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the mat. ESD-sensitive items are safe in your hand, on the ESD mat, in the system, or inside a bag.
- **Wrist Strap and Bonding Wire** – The wrist strap and bonding wire can be either directly connected between your wrist and bare metal on the hardware if the ESD mat is not required, or connected to the anti-static mat to protect hardware that is temporarily placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the ESD mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, mat, and bonding wire. Never use wireless wrist straps. Always be aware that the internal wires of a wrist strap are prone to damage from normal wear and tear, and must be checked regularly with a wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the wrist strap and bonding wire at least once per week.
- **ESD Wrist Strap Tester** – The wires inside of an ESD strap are prone to damage over time. When using an unmonitored kit, it is a best practice to regularly test the strap prior to each service call, and at a minimum, test once per week. A wrist strap tester is the best method for doing this test. If you do not have your own wrist strap tester, check with your regional office to find out if they have one. To perform the test, plug the wrist-strap's bonding-wire into the tester while it is strapped to your wrist and push the button to test. A green LED is lit if the test is successful; a red LED is lit and an alarm sounds if the test fails.
- **Insulator Elements** – It is critical to keep ESD sensitive devices, such as plastic heat sink casings, away from internal parts that are insulators and often highly charged.

- **Working Environment** – Before deploying the ESD Field Service kit, assess the situation at the customer location. For example, deploying the kit for a server environment is different than for a desktop or portable environment. Servers are typically installed in a rack within a data center; desktops or portables are typically placed on office desks or cubicles. Always look for a large open flat work area that is free of clutter and large enough to deploy the ESD kit with additional space to accommodate the type of system that is being repaired. The workspace should also be free of insulators that can cause an ESD event. On the work area, insulators such as Styrofoam and other plastics should always be moved at least 12 inches or 30 centimeters away from sensitive parts before physically handling any hardware components
- **ESD Packaging** – All ESD-sensitive devices must be shipped and received in static-safe packaging. Metal, static-shielded bags are preferred. However, you should always return the damaged part using the same ESD bag and packaging that the new part arrived in. The ESD bag should be folded over and taped shut and all the same foam packing material should be used in the original box that the new part arrived in. ESD-sensitive devices should be removed from packaging only at an ESD-protected work surface, and parts should never be placed on top of the ESD bag because only the inside of the bag is shielded. Always place parts in your hand, on the ESD mat, in the system, or inside an anti-static bag.
- **Transporting Sensitive Components** – When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

## ESD protection summary


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

## Transporting sensitive components

When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

## Lifting equipment

Adhere to the following guidelines when lifting heavy weight equipment:

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

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

## After working inside your computer

### About this task

 **CAUTION: Leaving stray or loose screws inside your computer may severely damage your computer.**

### Steps

1. Replace all screws and ensure that no stray screws remain inside your computer.
2. Connect any external devices, peripherals, or cables you removed before working on your computer.
3. Replace any media cards, discs, or any other parts that you removed before working on your computer.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.

# Removing and installing components

## Recommended tools










The procedures in this document may require the following tools:

- Phillips screwdriver #1
- Flat-head screwdriver
- Plastic scribe

## Screw list






- i** **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.
- i** **NOTE:** Some computers have magnetic surfaces. Ensure that the screws are not left attached to such surface when replacing a component.
- i** **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	M2x7	6	 <p><b>i</b> <b>NOTE:</b> Screw color may vary depending on the configuration ordered.</p>
3-cell battery	Palm-rest and keyboard assembly	M2x3	2	
4-cell battery	Palm-rest and keyboard assembly	M2x3	3	
Solid-state drive	Solid-state drive bracket	M2x3	1	
Left fan	Palm-rest and keyboard assembly	M2x3	2	
Right fan	Palm-rest and keyboard assembly	M2x3	2	
Wireless-card bracket	System board	M2x3	1	
Touchpad bracket	Palm-rest and keyboard assembly	M2L2 Big Head	7	
USB 3.1 Type-C port bracket	System board	M2x3	2	



**Table 1. Screw list (continued)**

Component	Secured to	Screw type	Quantity	Screw image
Hinge brackets	Palm-rest and keyboard assembly	M2.5x5	4	
Hinge brackets	Display panel	M2.5x2.5 Big Head	12	
Hinge brackets	Display panel	M2x2.5	2	
I/O board	Palm-rest and keyboard assembly	M2x3	2	
System board	KB Support	M2L2 Big Head	2	

## Base cover

### Removing the base cover

#### Prerequisites

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

#### About this task

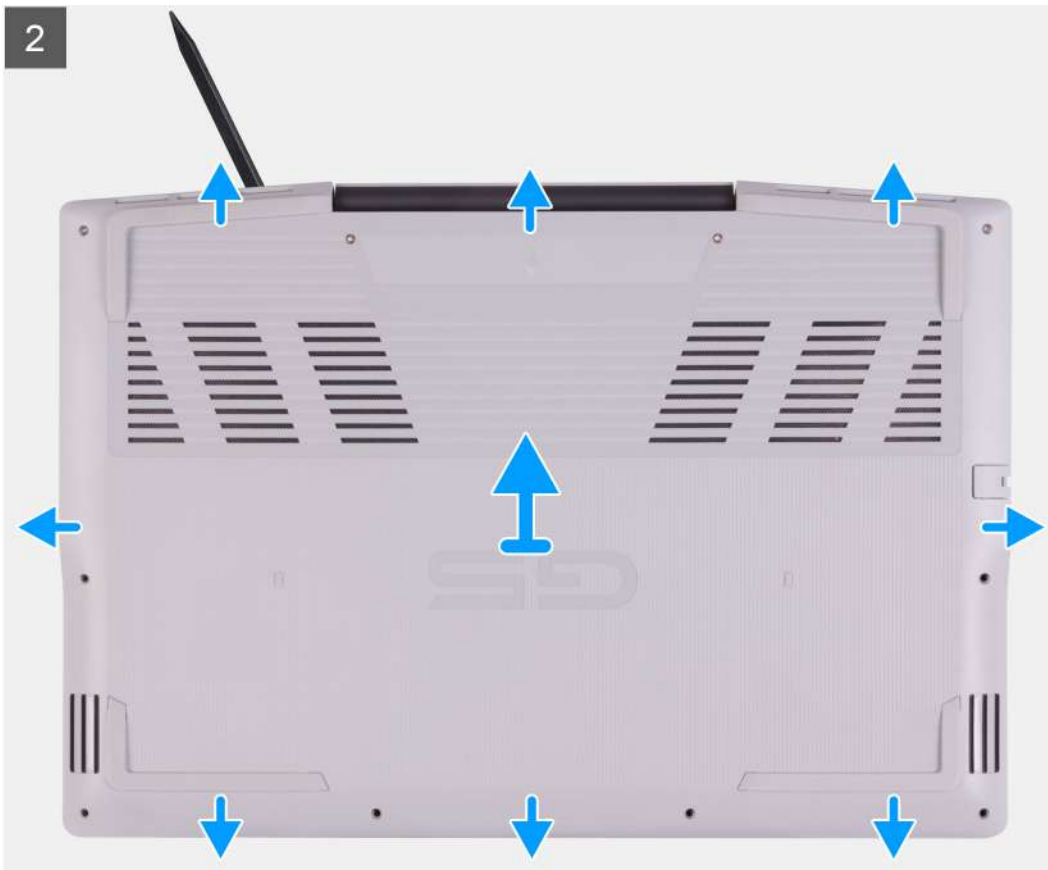
The following images indicate the location of the base cover and provide a visual representation of the removal procedure.



6x  
M2x7



4x





## Steps

1. Loosen the four captive screws that secure the base cover to the palm-rest and keyboard assembly.
2. Remove the six screws (M2x7) that secure the base cover to 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.

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.
4. Pry the base cover and turn it over.

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

5. Disconnect the LED cable from the system board, if applicable.
6. Using the pull tab, disconnect the battery cable from the system board.
7. Turn your computer over and press the power button for 15 seconds to drain the flea power.

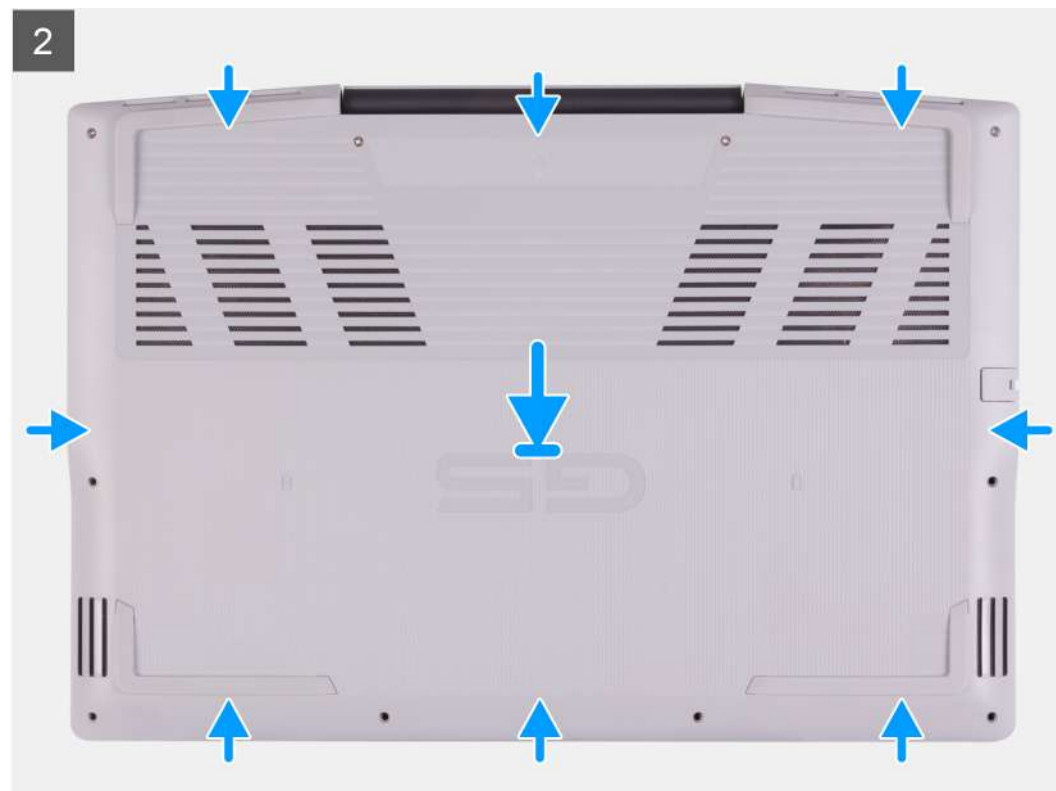
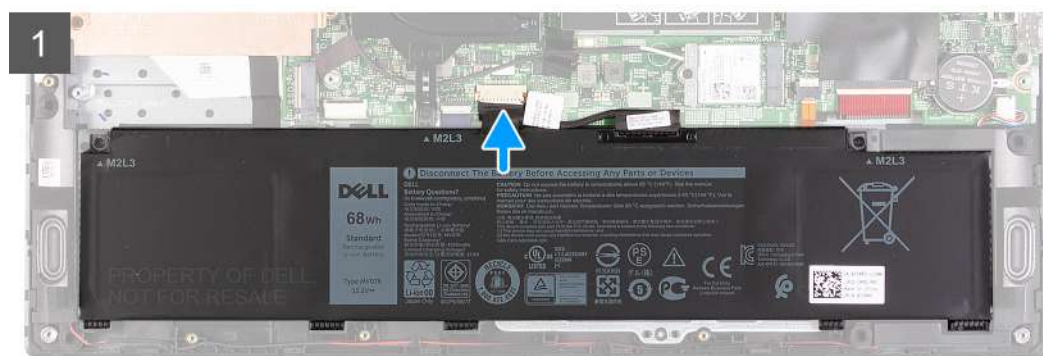
# Installing the base cover

## 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.





### Steps

1. Connect the battery cable to the system board, if applicable.
2. Connect the LED cable to the system board, if applicable.
3. Align the screw holes on the base cover with the screw holes on the palm-rest and keyboard assembly, and then snap the base cover into place.
4. Replace the six screws (M2x7) that secure the base cover to the palm-rest and keyboard assembly.
5. Tighten the four 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](#).

## Memory module

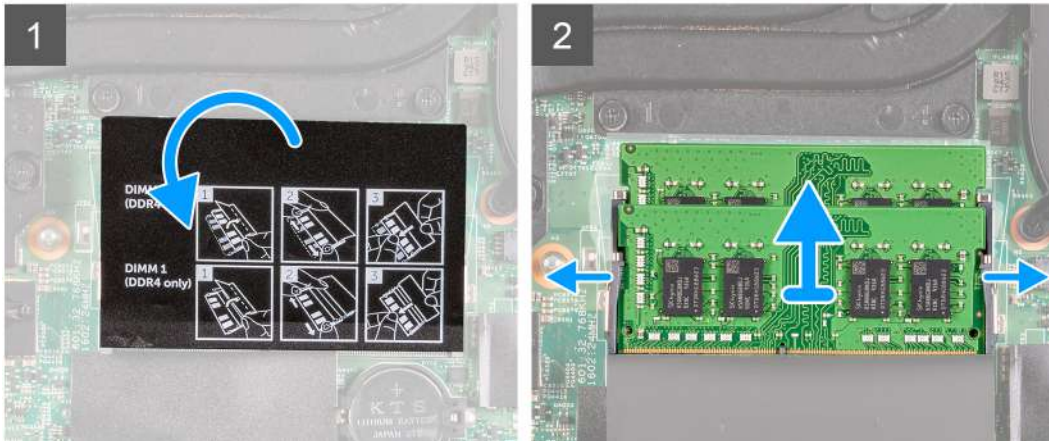
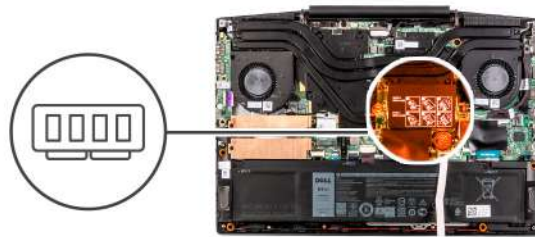
### Removing the memory module

#### Prerequisites

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

#### About this task

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



### Steps

1. Turn the mylar to find the memory module.
2. Use your fingertips to carefully spread apart the securing-clips on each end of the memory-module slot until the memory module pops-up.
3. Remove the memory module from the memory-module slot.

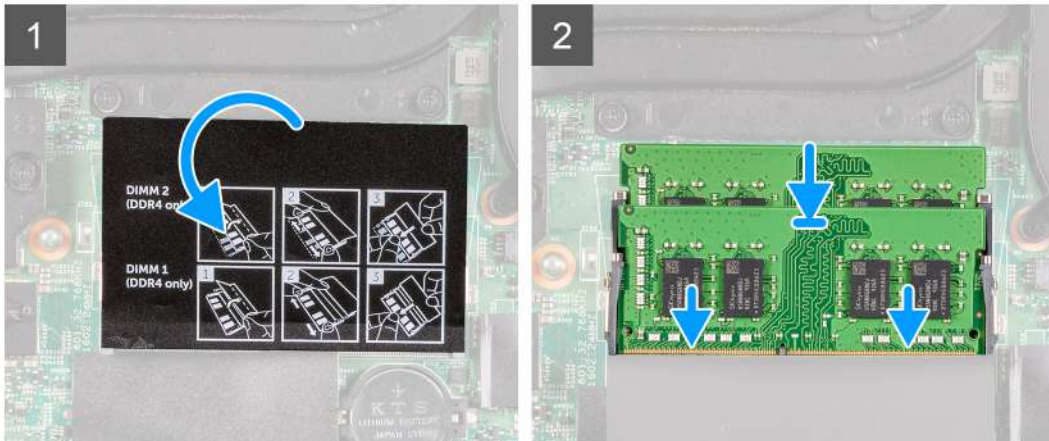
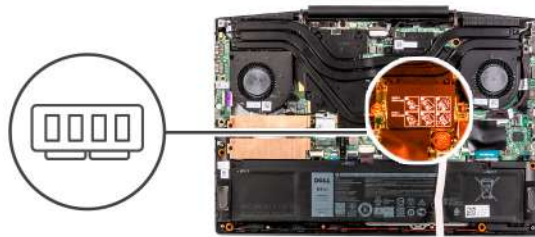
## Installing the memory module

### Prerequisites

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

### About this task

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



### Steps

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

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

### Next steps

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

## Solid-state drive—M.2 slot one

### Removing the 2230 solid-state drive in M.2 slot one

#### Prerequisites

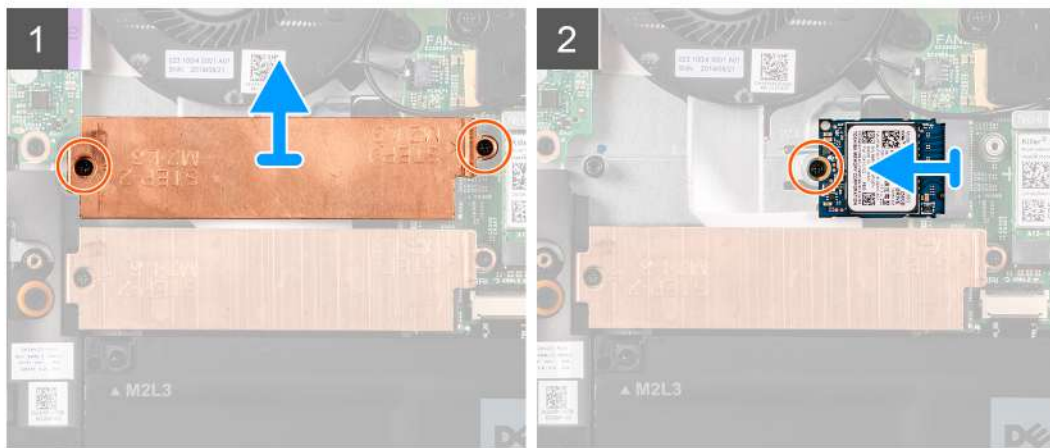
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).

#### About this task

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

**NOTE:** Depending on the configuration ordered, your computer may support either 2230 solid-state drive or 2280 solid-state drive in M.2 slot one.

The following image indicates the location of the 2230 solid-state drive that is installed in M.2 slot one and provides a visual representation of the removal procedure.



### Steps

1. Remove the two screws (M2x3) that secure the thermal shield to the solid-state drive and the system board.
2. Lift the thermal shield off the palm-rest and keyboard assembly.
3. Remove the screw (M2x3) that secures the solid-state drive to the palm-rest and keyboard assembly.
4. Slide and lift the solid-state drive off the SSD1 slot on the system board.

## Installing the 2230 solid-state drive in M.2 slot one

### Prerequisites

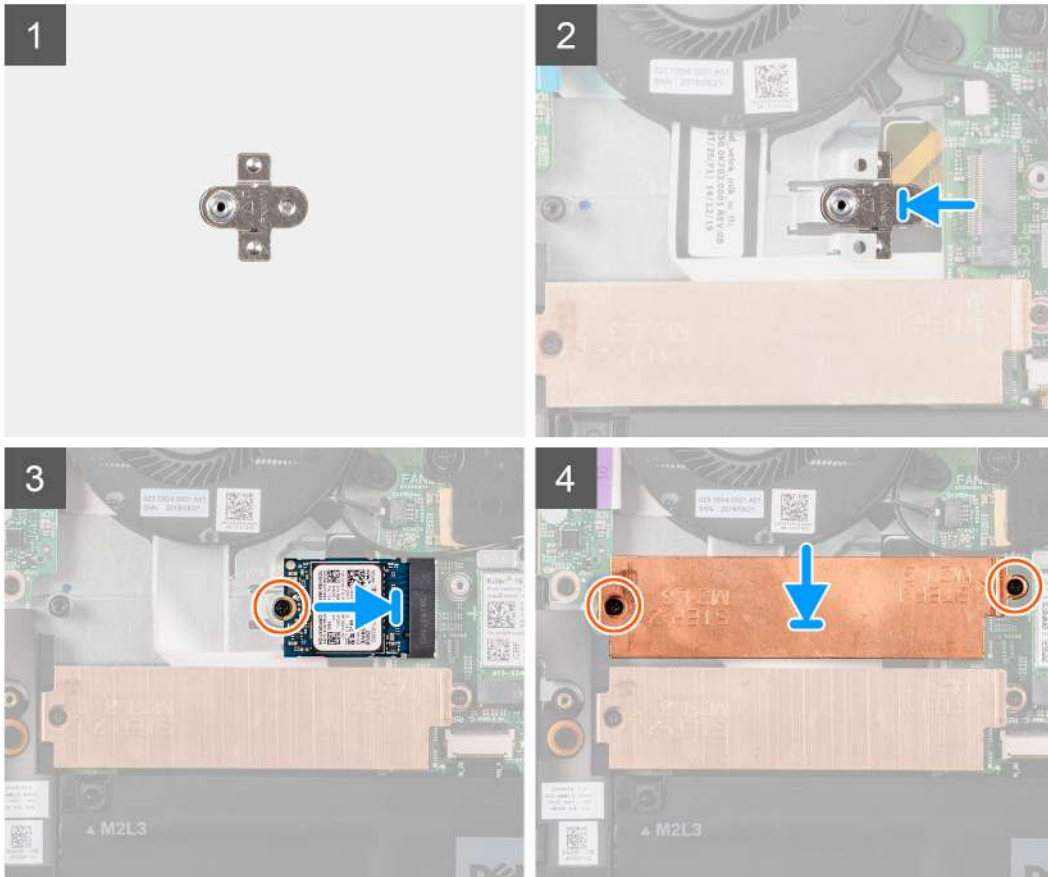
If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

- NOTE:** This procedure applies only to computers shipped with a 2230 solid-state drive installed in M.2 slot one.
- NOTE:** Depending on the configuration ordered, your computer may support either 2230 solid-state drive or 2280 solid-state drive in M.2 slot one.
- NOTE:** Install the solid-state drive thermal shield, if it is not installed.

The following image indicates the location of the 2230 solid-state drive that is installed in M.2 slot one and provides a visual representation of the installation procedure.





### Steps

1. Slide the solid-state drive mounting bracket into the slot on the system board, if it is not installed.
2. Align the notches on the solid-state drive with the SSD1 slot on the system board.
3. Slide the solid-state drive into the SSD1 slot on the system board.
4. Replace the screw (M2x3) that secures the solid-state drive to the system board.
5. Place the thermal shield on the solid-state drive.
6. Align the screw holes on the thermal shield with the screw holes on the system board and the palm-rest and keyboard assembly.
7. Replace the two screws (M2x3) that secure the thermal shield to the solid-state drive and the system board.

### Next steps

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

## Installing the 2280 solid-state drive in M.2 slot one

### Prerequisites

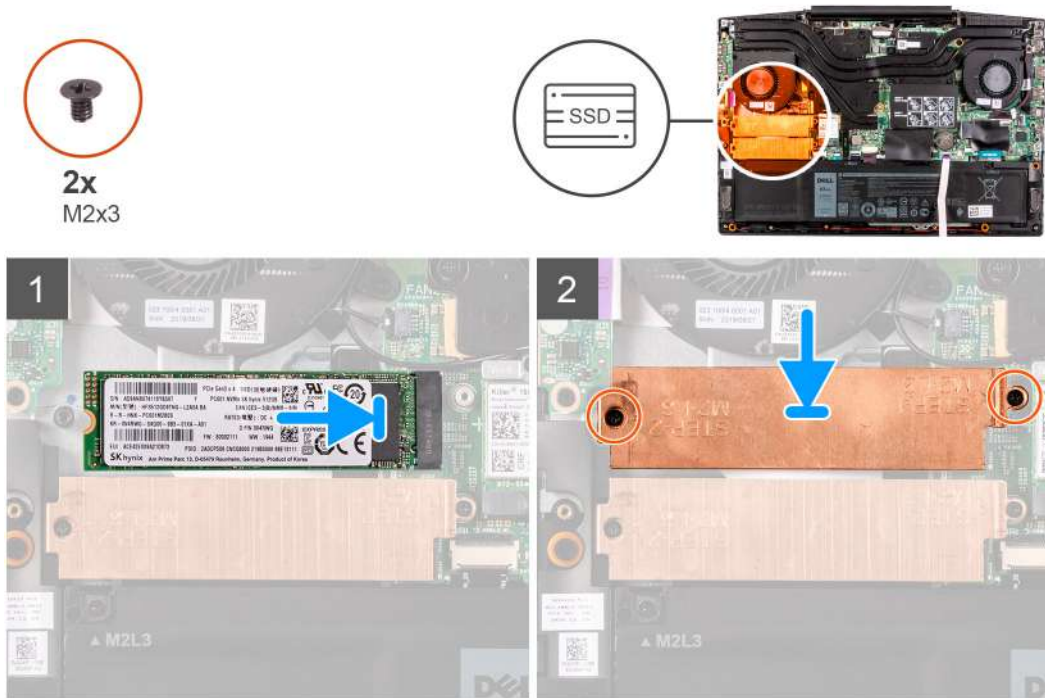
If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

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

**NOTE:** Depending on the configuration ordered, your computer may support either 2230 solid-state drive or 2280 solid-state drive in M.2 slot one.

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



### Steps

1. Align the notches on the solid-state drive with the SSD2 slot on the system board.
2. Slide the solid-state drive into the SSD2 slot on the system board.
3. Place the solid-state drive bracket on the solid-state drive.
4. Align the screw holes on the thermal shield with the screw holes on the system board and the palm-rest and keyboard assembly.
5. Replace the two screws (M2x3) that secure the solid-state drive to the system board.

### Next steps

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

## Removing the 2280 solid-state drive in M.2 slot one

### Prerequisites

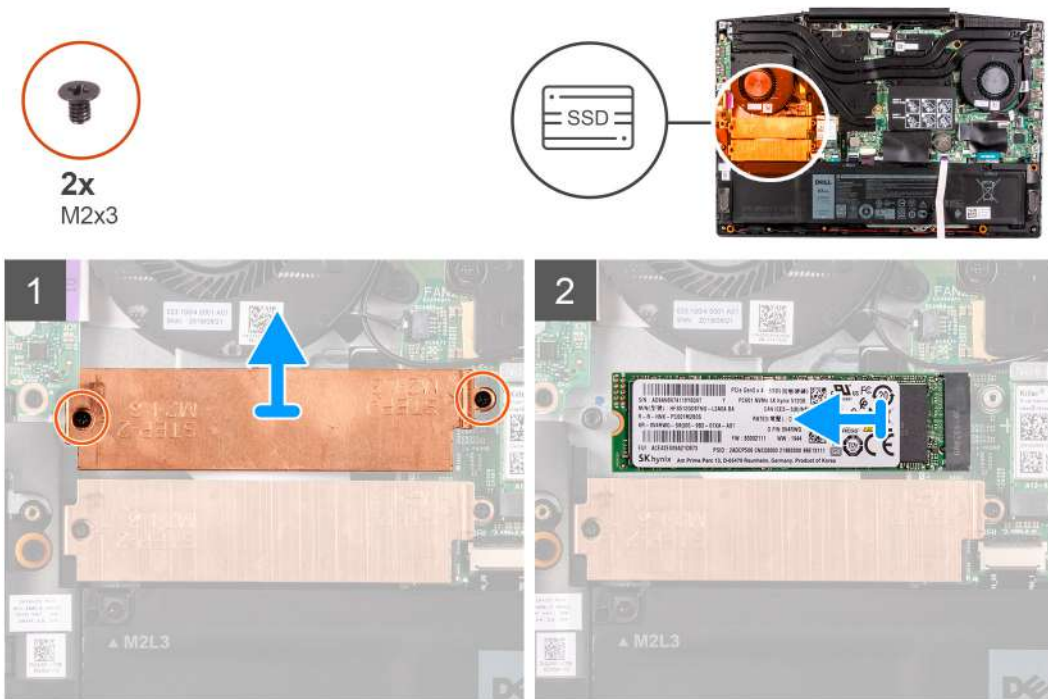
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).

### About this task

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

**NOTE:** Depending on the configuration ordered, your computer may support either 2230 solid-state drive or 2280 solid-state drive in M.2 slot one.

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



### Steps

1. Remove the two screws (M2x3) that secure the thermal shield to the system board and the palm-rest and keyboard assembly.
2. Lift the thermal shield off the palm-rest and keyboard assembly.
3. Slide and lift the solid-state drive off the SSD1 slot on the system board.

## Solid-state drive—M.2 slot two

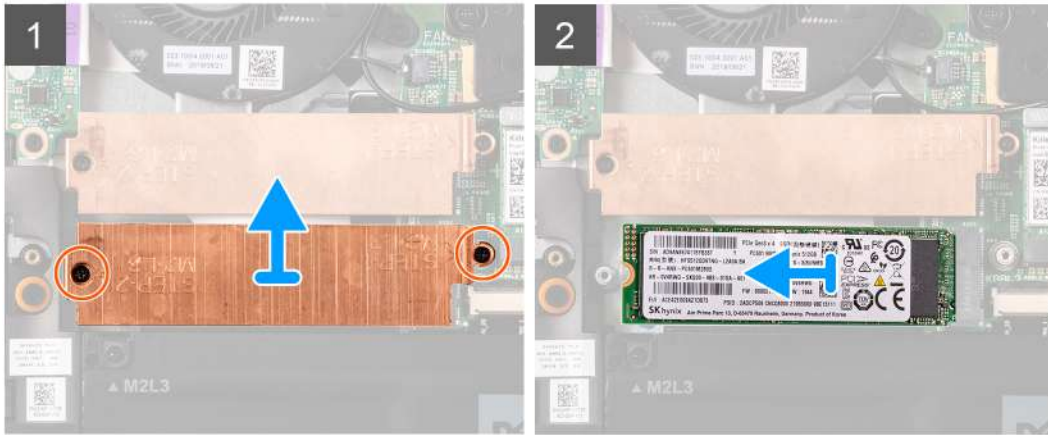
### Removing the 2280 solid-state drive in M.2 slot two

#### 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 2280 solid-state drive in M.2 slot two and provides a visual representation of the removal procedure.



### Steps

1. Remove the two screws (M2x3) that secure the solid-state drive bracket to the system board and the palm-rest and keyboard assembly.
2. Lift the solid-state drive bracket off the solid-state drive.
3. Slide and lift the solid-state drive off the SSD2 slot on the system board.

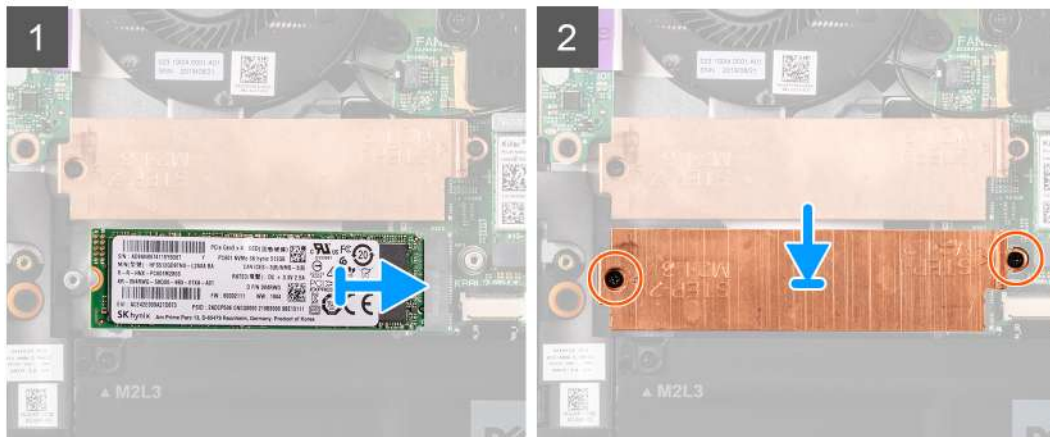
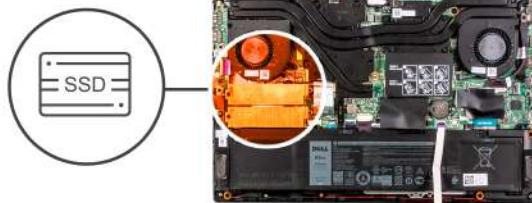
## Installing the 2280 solid-state drive in M.2 slot two

### 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 2280 solid-state drive installed in M.2 slot two and provides a visual representation of the installation procedure.



### Steps

1. Align the notches on the solid-state drive with the SSD2 slot on the system board.
2. Slide the solid-state drive into the SSD2 slot on the system board.
3. Place the solid-state drive bracket on the solid-state drive.
4. Align the screw holes on the solid-state drive bracket with the screw holes on the system board and the palm-rest and keyboard assembly.
5. Replace the two screws (M2x3) that secure the solid-state drive to the system board.

### Next steps

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

## Battery

### Removing the 3-cell battery

#### Prerequisites

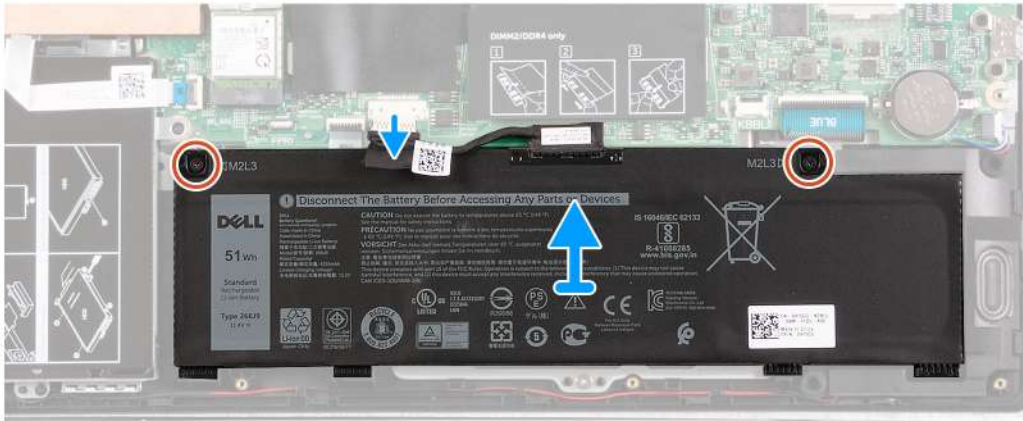
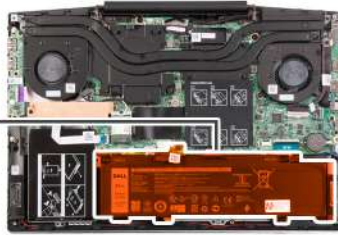
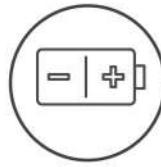
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).

#### About this task

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



2x  
M2X3



### Steps

1. Remove the two screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
2. Disconnect the battery cable from the system board, if applicable.
3. Lift the battery off the palm-rest and keyboard assembly.

## Installing the 3-cell battery

### Prerequisites

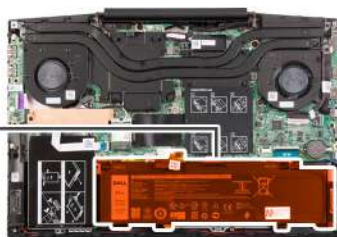
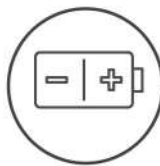
If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

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



2x  
M2X3



### Steps

1. Align the screw holes on the battery with the screw holes on the palm-rest and keyboard assembly.
2. Replace the two screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
3. Connect the battery cable to the system board.

### Next steps

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

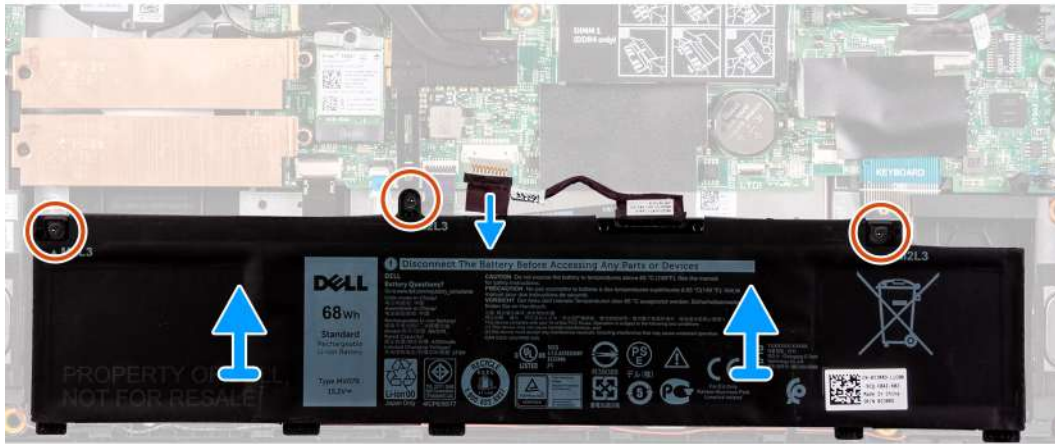
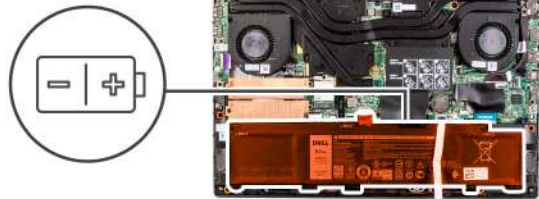
## Removing the 6-cell battery

### 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.



### Steps

1. Remove the three screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
2. Disconnect the battery cable from the system board, if applicable.
3. Lift the battery off the palm-rest and keyboard assembly.

## Installing the 6-cell battery

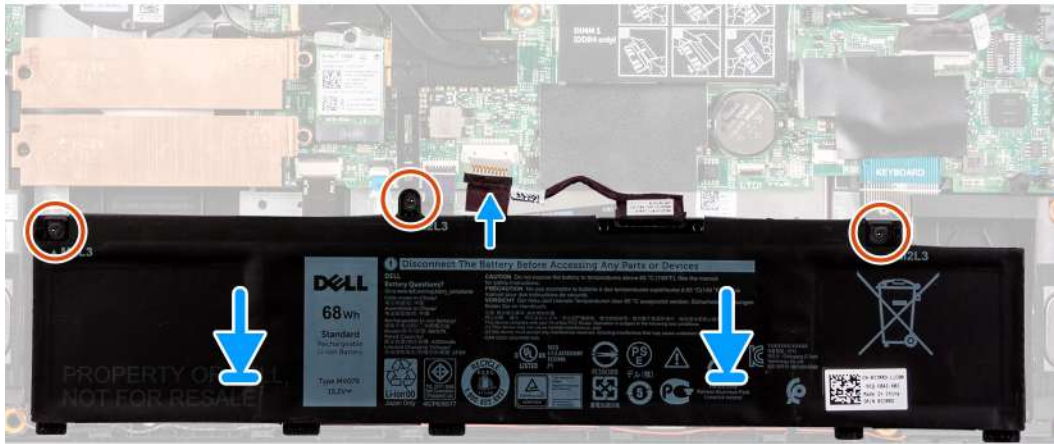
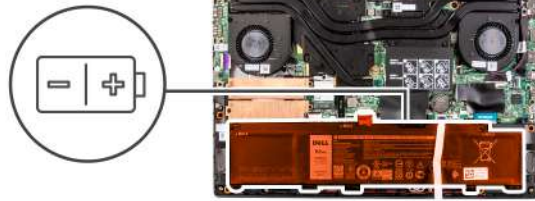
### Prerequisites

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.





### Steps

1. Align the screw holes on the battery with the screw holes on the palm-rest and keyboard assembly.
2. Replace the three screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
3. Connect the battery cable to the system board.

### Next steps

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

## Wireless card

### Removing the WLAN card

#### 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 WLAN card and provides a visual representation of the removal procedure.



1x  
M2x3



### Steps

1. Remove the screw (M2x3) that secures the WLAN card to the system board.
2. Remove the bracket that secures the WLAN card to the system board.
3. Disconnect the antenna cables from the WLAN card.
4. Slide and remove the WLAN card from the WLAN-card slot.

## Installing the WLAN card

### Prerequisites

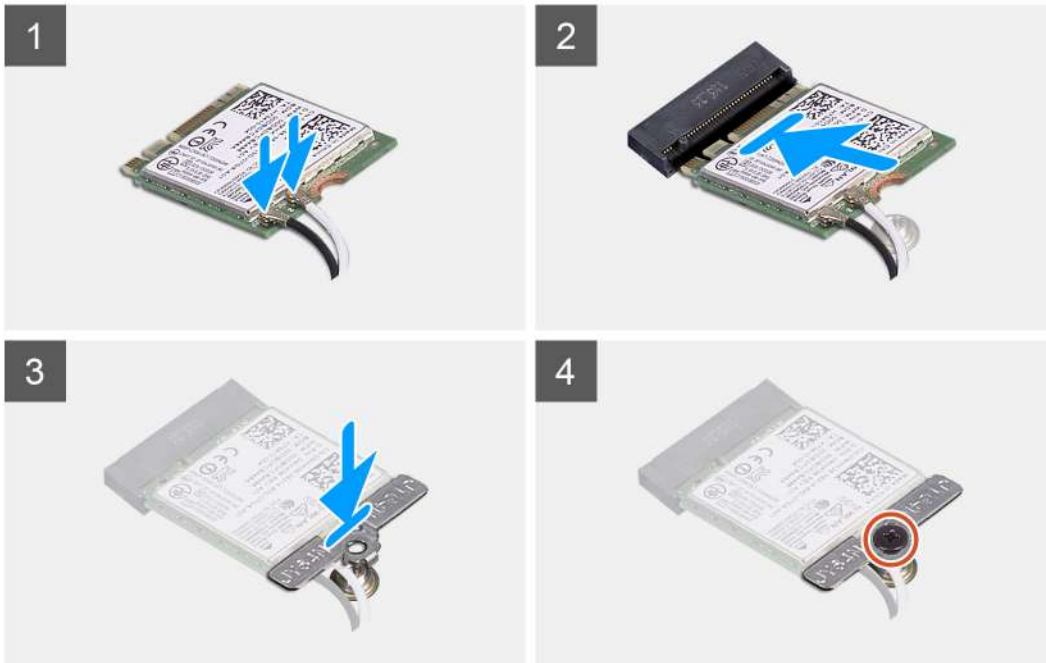
If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

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



1x  
M2x3



### Steps

1. Connect the antenna cables to the WLAN card.

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

**Table 2. Antenna-cable color scheme**

Connectors on the wireless card	Antenna-cable color
Main (white triangle)	White
Auxiliary (black triangle)	Black

2. Align the notch on the WLAN card with the tab on the WLAN-card slot and insert the WLAN card at an angle into the WLAN-card slot.
3. Align and place the WLAN-card bracket on the WLAN card.
4. Replace the screw (M2x3) to secure the WLAN card to the system board.

### Next steps

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

# Speakers

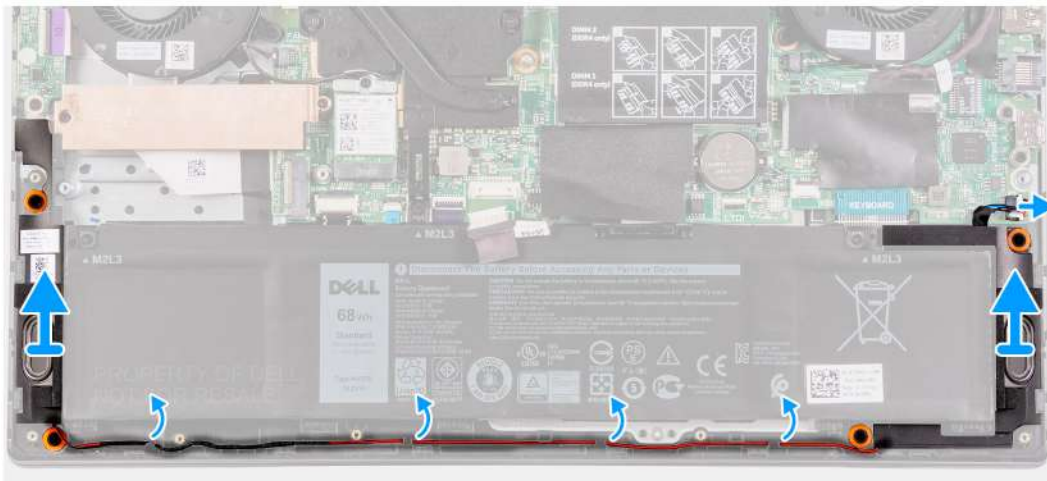
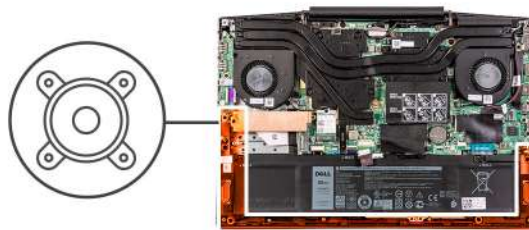
## Removing the speakers

### Prerequisites

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

### About this task

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



### Steps

1. Disconnect the speaker cable from the system board.
2. Note the routing of the cable that connects the left speaker to the right speaker and remove it from the routing guides on the palm-rest and keyboard assembly.

**NOTE:** Note the position of the rubber grommets before lifting the speakers.

3. Lift the speakers, along with the cable, off the palm-rest and keyboard assembly.

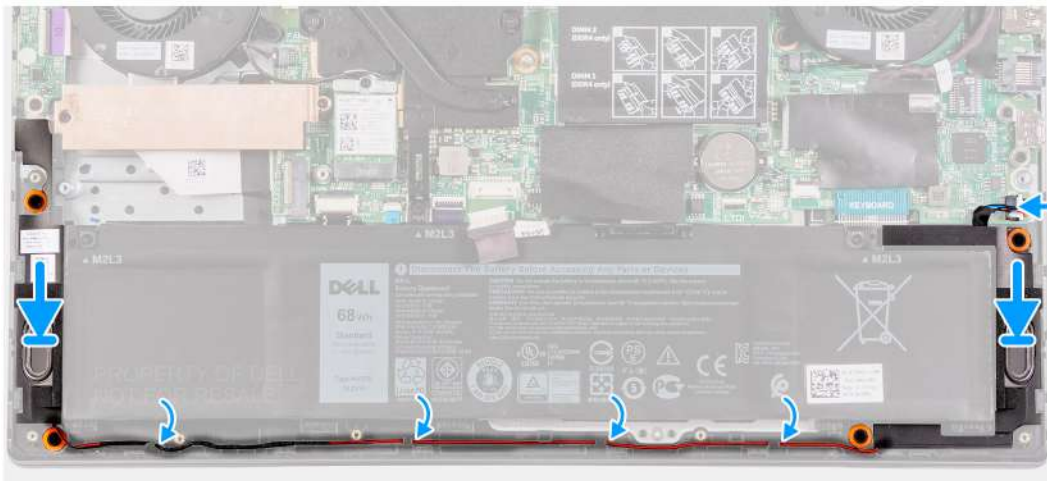
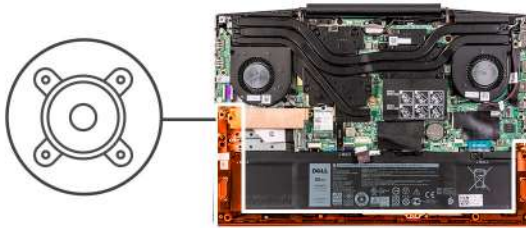
## Installing the speakers

### Prerequisites

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

### About this task

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



### Steps

1. Using the alignment posts and rubber grommets, place the speakers in the slots on the palm-rest and keyboard assembly
  - NOTE:** If the rubber grommets are pushed out of the speakers when removing the speakers, push them back in place before replacing the speakers.
2. Route the speaker cable through the routing guides on the palm-rest and keyboard assembly.
3. Connect the speaker cable to the system board.

### Next steps

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

## Coin-cell battery

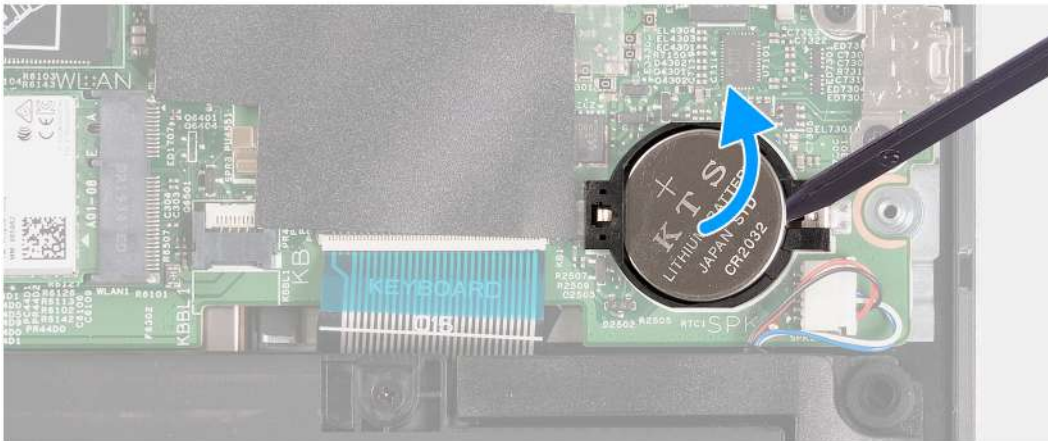
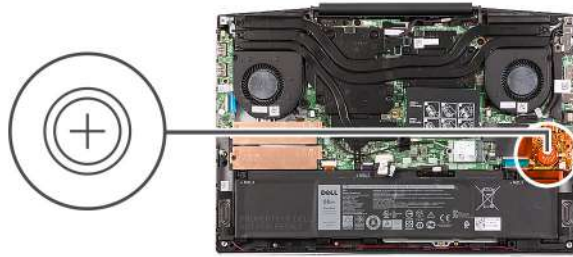
### Removing the coin-cell battery

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



### Steps

Using a plastic scribe, pry the coin-cell battery out of the coin-cell battery slot on the system board.

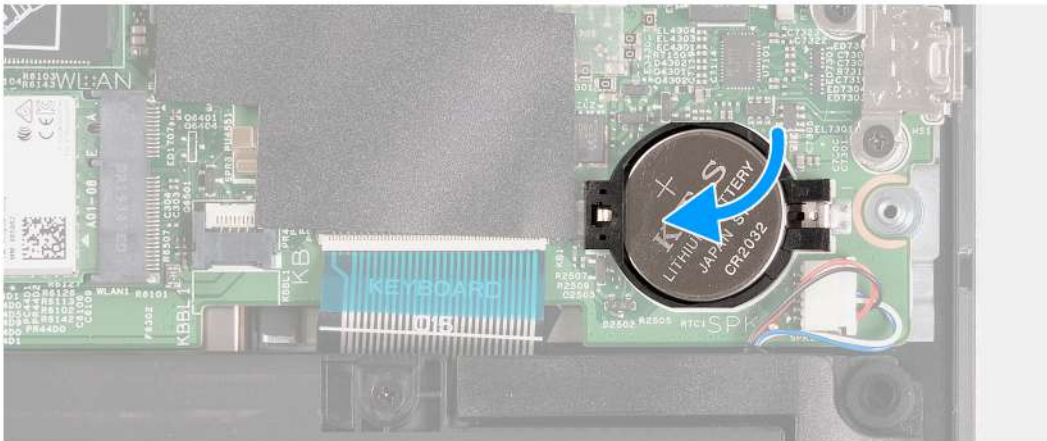
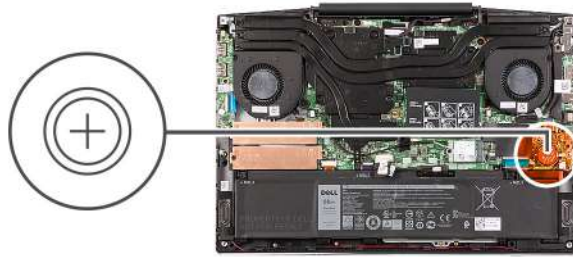
## Installing the coin-cell battery

### Prerequisites

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

### About this task

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



### Steps

1. Place the coin-cell battery in the coin-cell battery slot with the positive side facing up.
2. Snap the coin-cell battery into place.

### Next steps

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

## Power-adapter port

### Removing the power-adapter port

#### Prerequisites

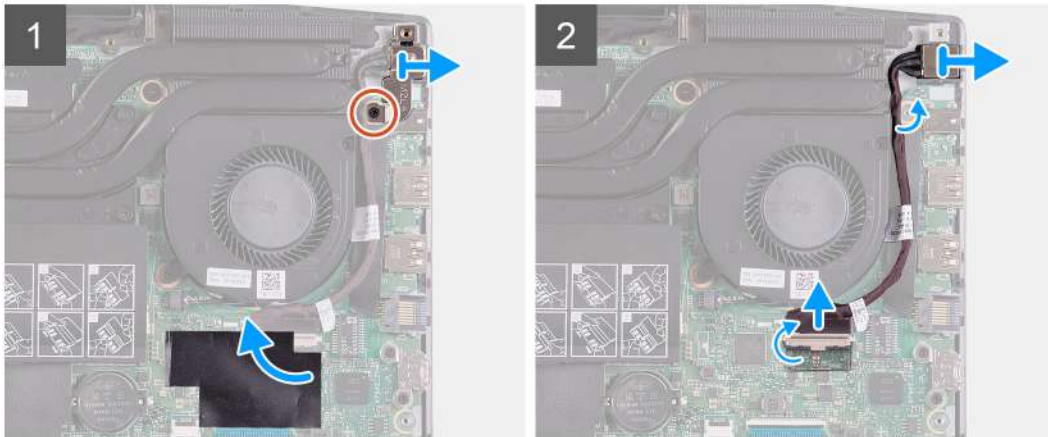
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).

#### About this task

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



1x  
M2x3



### Steps

1. Remove the screw (M2x3) on the power-adapter port-bracket that secures the power-adapter port to the system board.
2. Remove the power-adapter port-bracket from the system board.
3. Peel the mylar that covers the power-adapter port-cable connection on the system board.
4. Peel- back the tape that secures the power-adapter port-cable to the system board.
5. Disconnect the power-adapter port-cable from the system board.
6. Lift the power-adapter port, along with its cable, off the palm-rest and keyboard assembly.

## Installing the power-adapter port

### Prerequisites

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

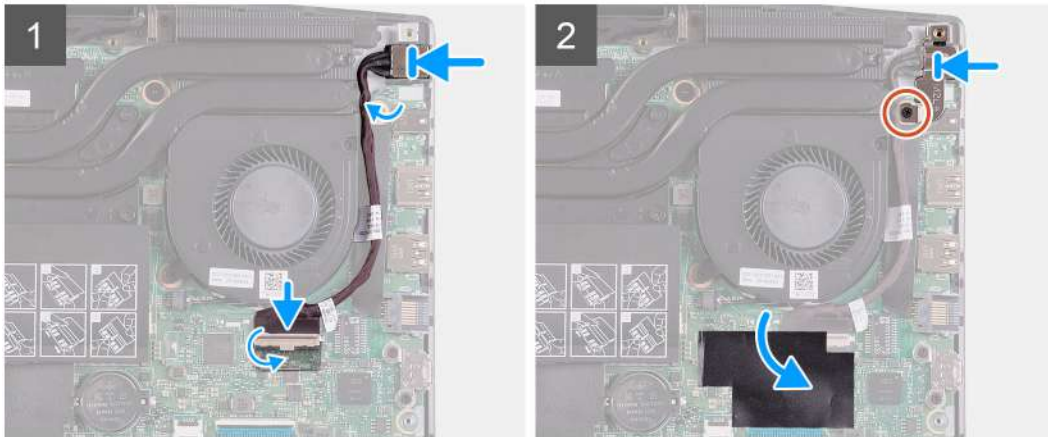
### About this task

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





1x  
M2x3



### Steps

1. Place the power-adapter port into the slot and adhere the power-adapter port cable on the palm rest and keyboard assembly.
2. Connect the power-adapter port cable to the system board.
3. Adhere the mylar that covers the power-adapter port cable connection on the system board.
4. Align and place the power-adapter port bracket over the power-adapter port.
5. Replace the two screws (M2x3) to secure the power-adapter port bracket to the system board.

### Next steps

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

## Fans

### Removing the left fan

#### Prerequisites

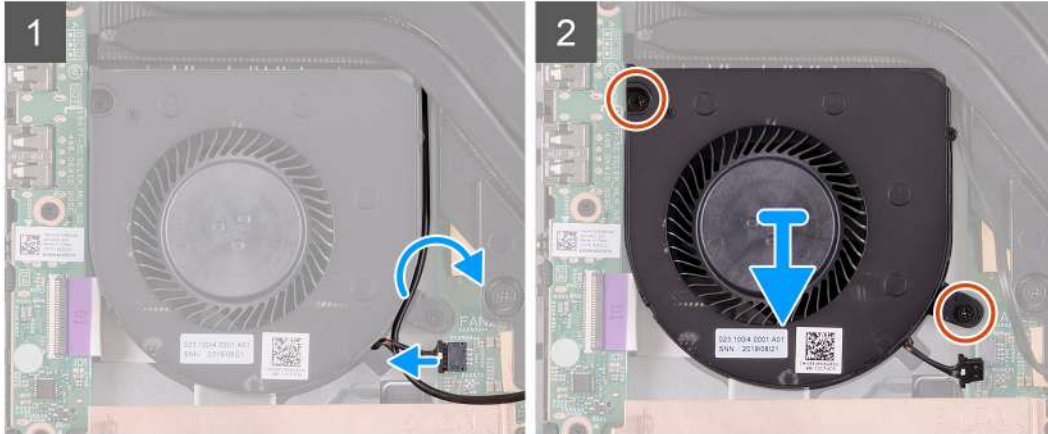
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).

#### About this task

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



2x  
M2x3



### Steps

1. Disconnect the fan cable from the system board.
2. Note the routing of the WLAN cable and remove the WLAN cable from the left fan.
3. Remove the two (M2x3) screws that secure the left fan to the system board.
4. Lift the left fan off the palm-rest and keyboard assembly.

## Installing the left fan

### Prerequisites

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

### About this task

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



2x  
M2x3



### Steps

1. Align and place the left fan on the palm-rest and keyboard assembly.
2. Route the WLAN cable through the routing guides on the fan.
3. Connect the left-fan cable to the system board.
4. Replace the two (M2x3) screws to secure the left fan 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 right fan

### Prerequisites

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

### About this task

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



2x  
M2x3



### Steps

1. Disconnect the right-fan cable from the system board.
2. Remove the two (M2x3) screws that secure the right fan to the system board.
3. Lift the right fan off the palm-rest and keyboard assembly.

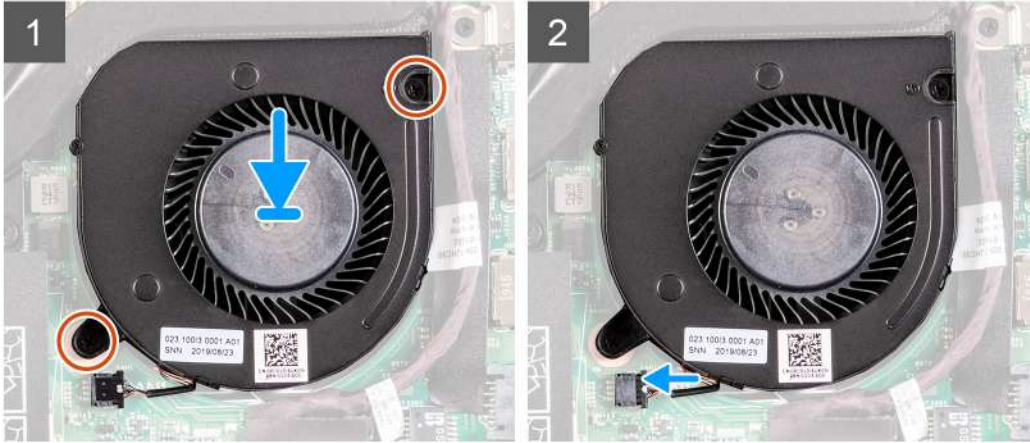
## Installing the right fan

### Prerequisites

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

### About this task

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



### Steps

1. Align and place the right fan on the palm-rest and keyboard assembly.
2. Replace the two (M2x3) screws to secure the right fan to the palm-rest and keyboard assembly.
3. Connect the right-fan cable to the system board.

### Next steps

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

## Heat sink

### Removing the heat sink

#### Prerequisites

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

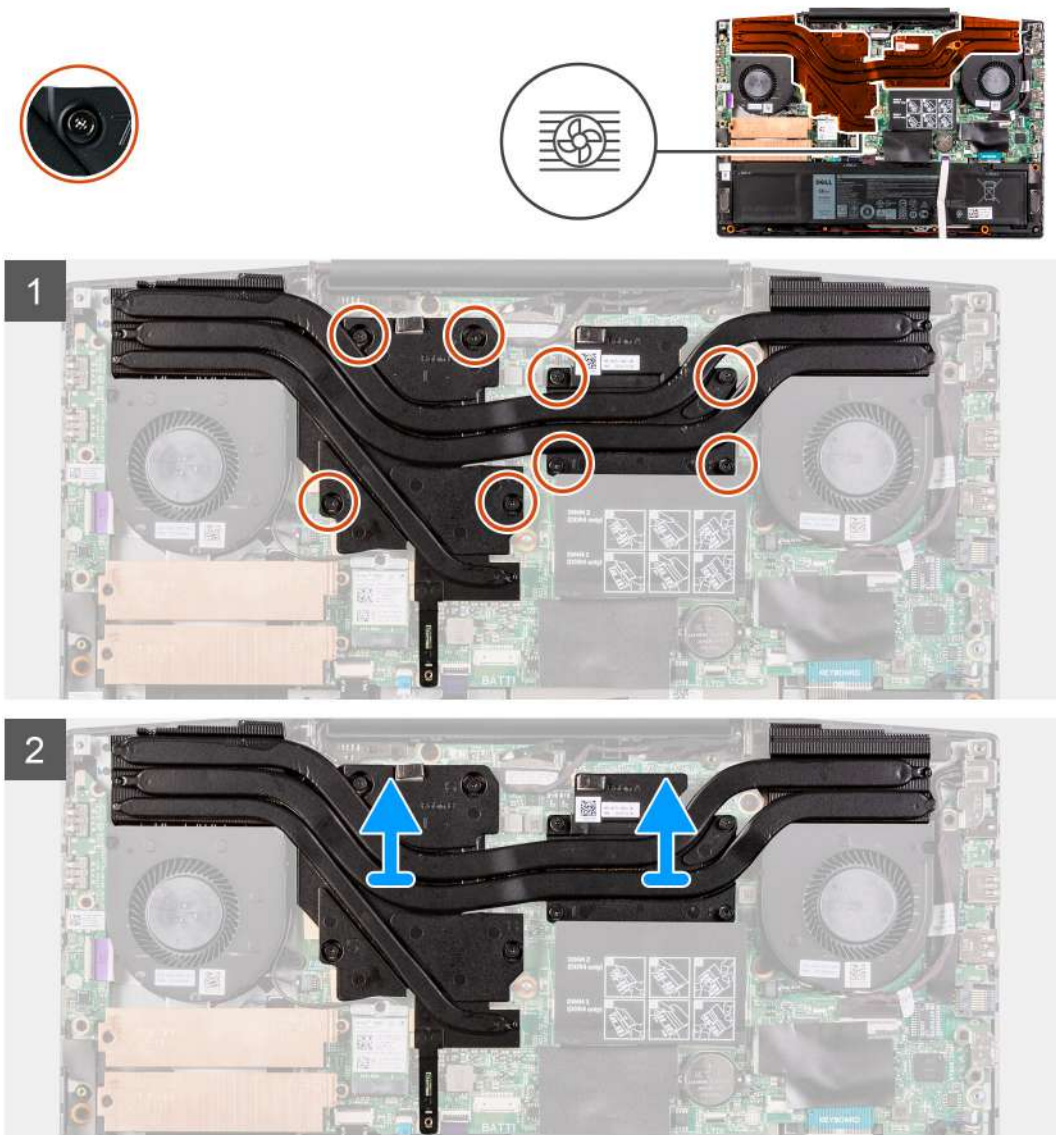
**CAUTION:** For maximum cooling of the processor, do not touch the heat transfer areas on the heat sink. The oils in your skin can reduce the heat transfer capability of the thermal grease.

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

2. Remove the [base cover](#).

#### About this task

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



### Steps

1. In the reverse sequential order (8>7>6>5>4>3>2>1), loosen the eight captive screws that secure the heat sink to the system board.
2. Lift the heat sink off the system board.

## Installing the heat sink

### Prerequisites

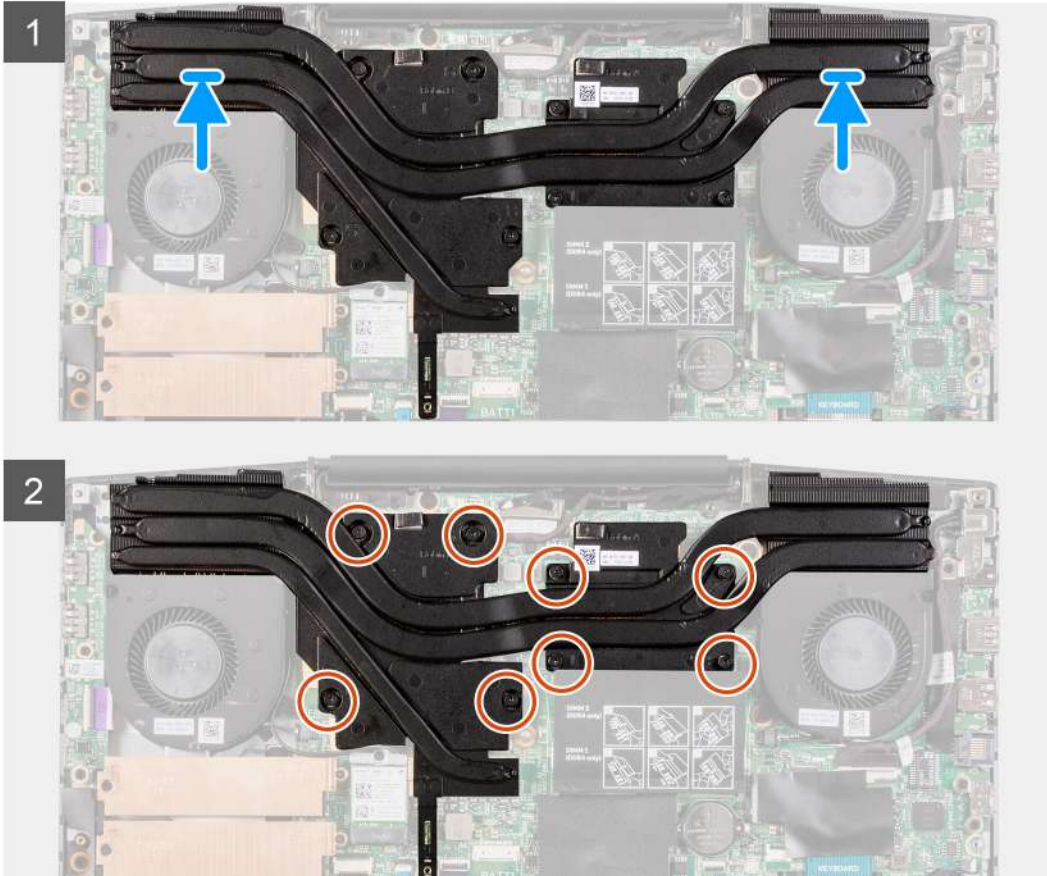
If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

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



### Steps

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

### Next steps

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

## I/O board

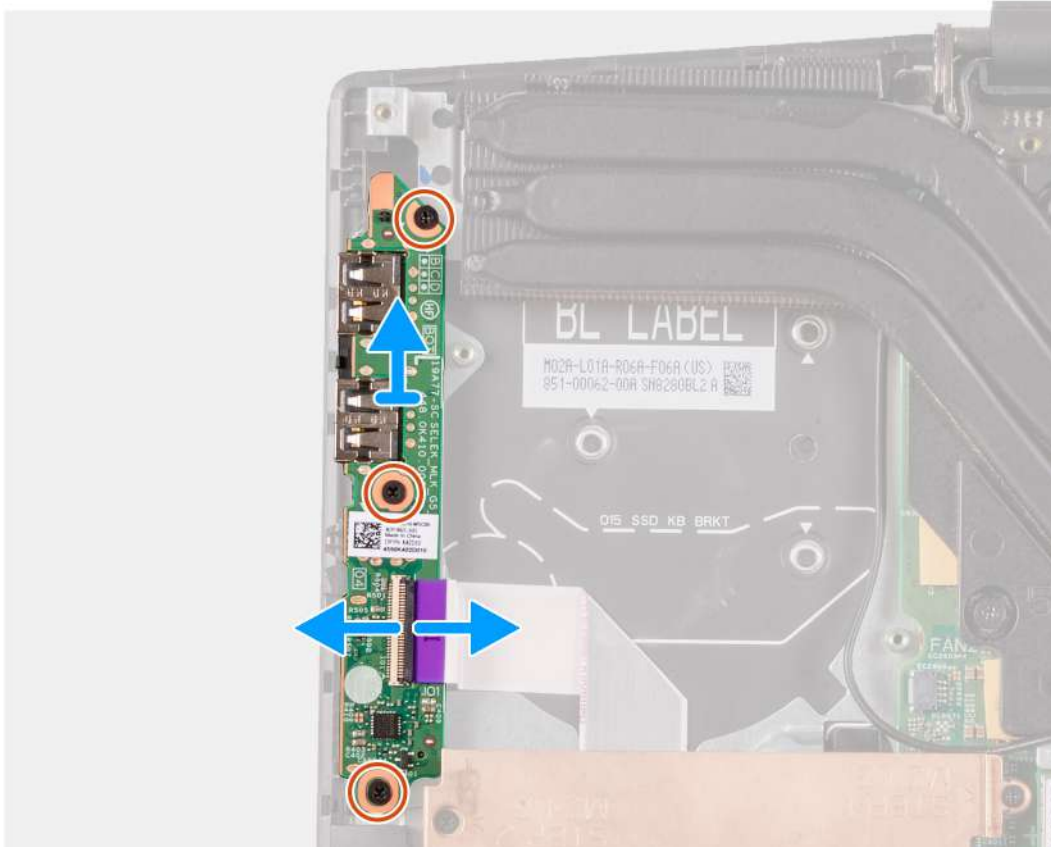
### Removing the I/O board

#### Prerequisites

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

### About this task

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



### Steps

1. Lift the latch to disconnect the I/O-board cable from the I/O board.
2. Remove the three screws (M2x3) that secure the I/O board to the palm-rest and keyboard assembly.
3. Lift the I/O board off the palm-rest and keyboard assembly.

## Installing the I/O board

### Prerequisites

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

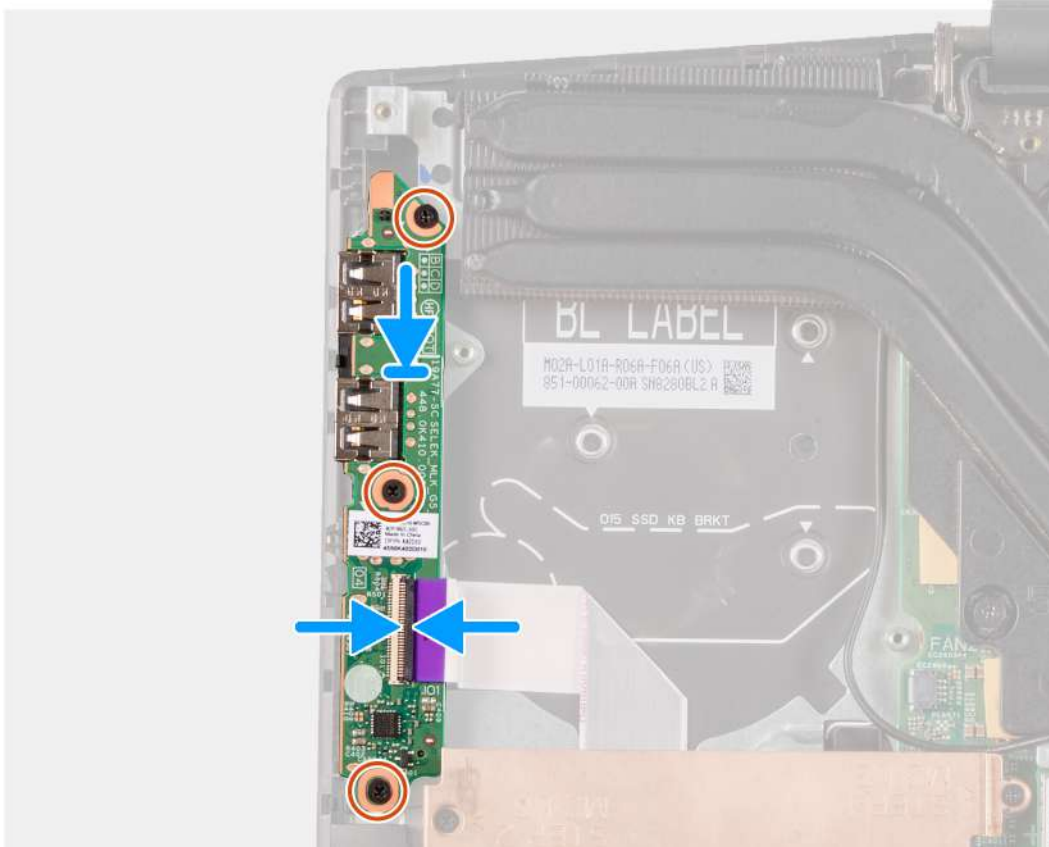
### About this task

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





3x  
M2x3



### Steps

1. Align and place the I/O board on the palm-rest and keyboard assembly.
2. Install the three screws (M2x3) that secure the I/O board to the palm-rest and keyboard assembly.
3. Connect the I/O-board cable to the I/O board.

### Next steps

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

## Display assembly

### Removing the display assembly

#### Prerequisites

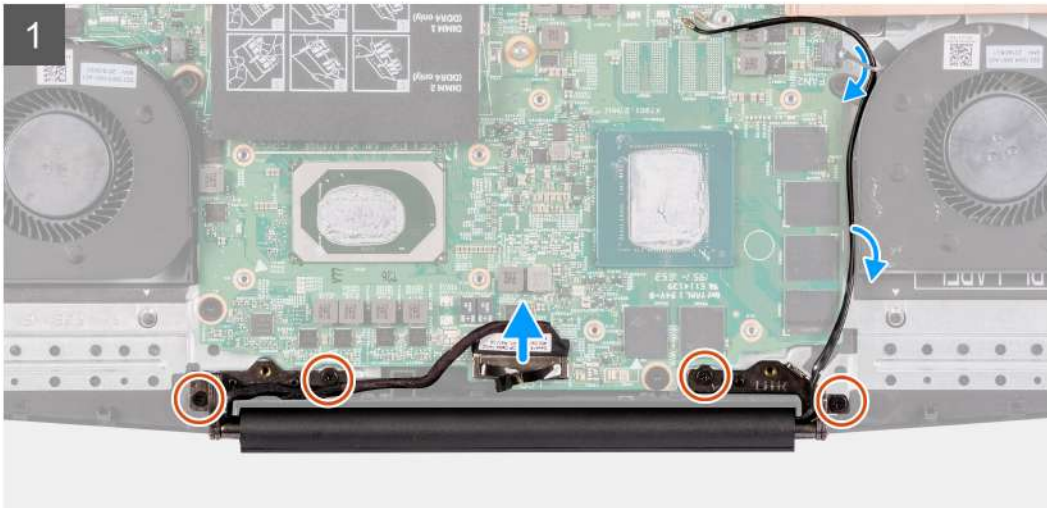
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).
3. Remove the [heat sink](#).

### About this task

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



4x  
M2.5x5



### Steps

1. Disconnect the display cable from the system board.
2. Remove the four screws (M2.5x5) that secure the display hinges to the system board.
3. Lift the display assembly off the palmrest and keyboard assembly.



## Installing the display assembly

### Prerequisites

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

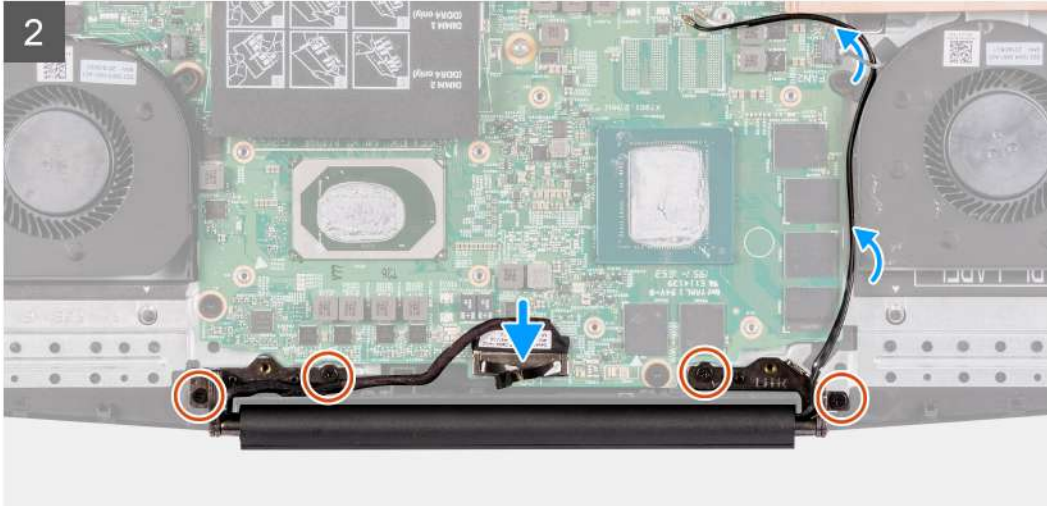
### About this task

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





4x  
M2.5x5



### Steps

1. Align the display assembly on the palm-rest and keyboard assembly.
2. Align the screw holes on the display hinges with screw holes on the system board.
3. Replace the four screws (M2.5x5) that secure the display hinges to the system board.
4. Connect the display cable from the system board.

### Next steps

1. Install the [heat sink](#).
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](#).
2. Remove the [base cover](#).
3. Remove the [battery](#).
4. Remove the [memory modules](#).
5. Remove the [wireless card](#).
6. Remove the [left fan](#).
7. Remove the [right fan](#).
8. Remove the [power-adaptor port](#).

#### About this task

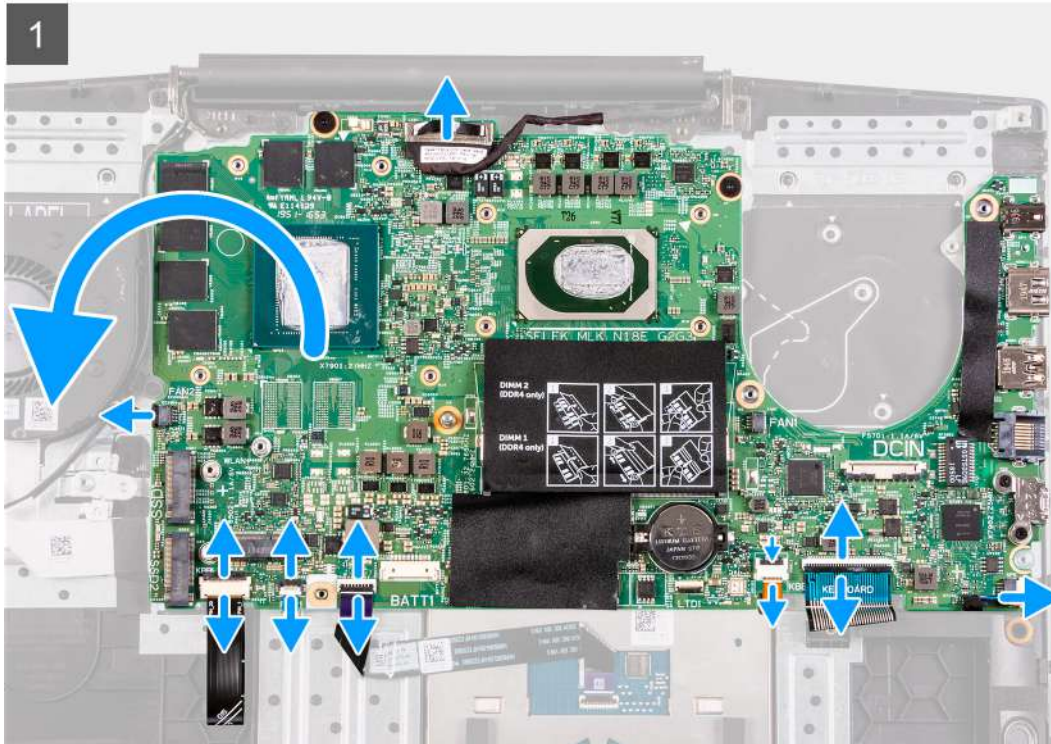
The following image indicates the location of the system board and provides a visual representation of the removal procedure.

**CAUTION:**

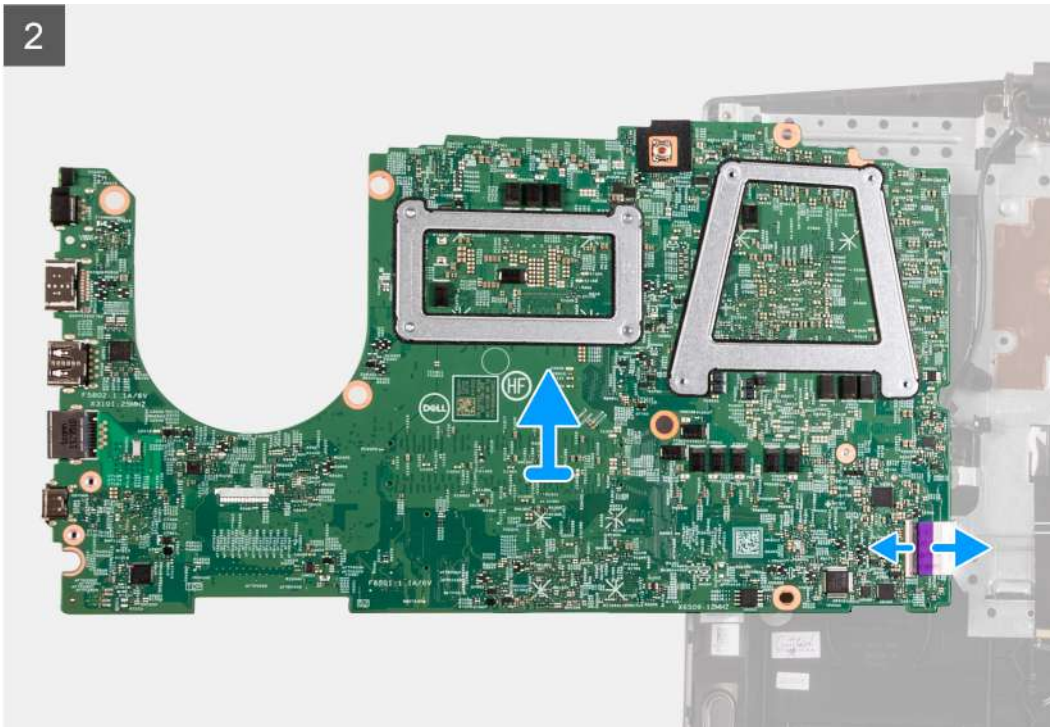
The I/O board connector is located underneath the system board. Turn the system board over and disconnect the I/O board cable from the system board.



2x  
M2x2



2



### Steps

1. Open the latch and disconnect the power-button cable from the system board.
2. Open the latch and disconnect the keyboard cable from the system board.
3. Open the latch and disconnect the keyboard-backlight cable from the system board.
4. Open the latch and disconnect the touchpad cable from the system board.
5. Disconnect the speaker cable from the system board.
6. Remove the two (M2x2) screws that secure the system board to the palm-rest and keyboard assembly.
7. Turn the system board over and disconnect the I/O board cable from the system board.

## Installing the system board

### Prerequisites

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

### About this task

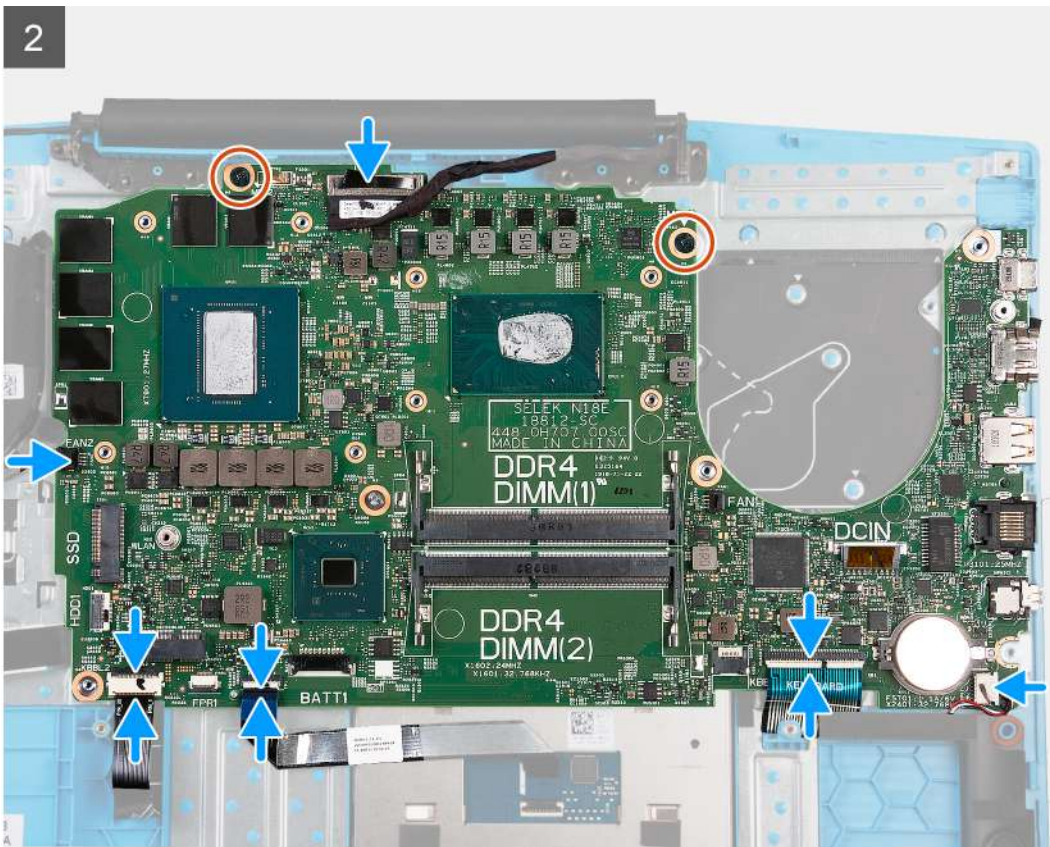
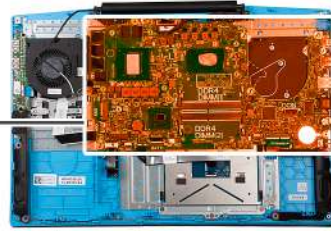
The following image indicates the location of the system board and provides a visual representation of the installation procedure.

#### NOTE:

**The I/O board connector is located underneath the system board. Turn the system board over and connect the I/O board cable to the system board.**



2x  
M2x2



### Steps

1. Connect the I/O board cable to the system board.
2. Turn the system board to the front and align and place the system board on the palm-rest and keyboard assembly.

3. Replace the two (M2x2) screws that secure the system board to the palm-rest and keyboard assembly.
4. Connect the speaker cable to the system board.
5. Open the latch and connect the touchpad cable to the system board.
6. Open the latch and connect the keyboard-backlight cable to the system board.
7. Open the latch and connect the keyboard cable to the system board.
8. Open the latch and connect the power-button cable to the system board.

#### Next steps

1. Install the [power-adapter port](#).
2. Install the [right fan](#).
3. Install the [left fan](#).
4. Install the [wireless card](#).
5. Install the [memory modules](#).
6. Install the [battery](#).
7. Install the [base cover](#).
8. Follow the procedure in [After working inside your computer](#).

## Touchpad

### Removing the touchpad

#### Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).
3. Remove the [battery](#).
4. Remove the [memory modules](#).
5. Remove the [wireless card](#).
6. Remove the [left fan](#).
7. Remove the [right fan](#).
8. Remove the [display assembly](#).
9. Remove the [power-adapter port](#).
10. Remove the [system board](#).

 **NOTE:** The system board can be removed with the heat sink attached.

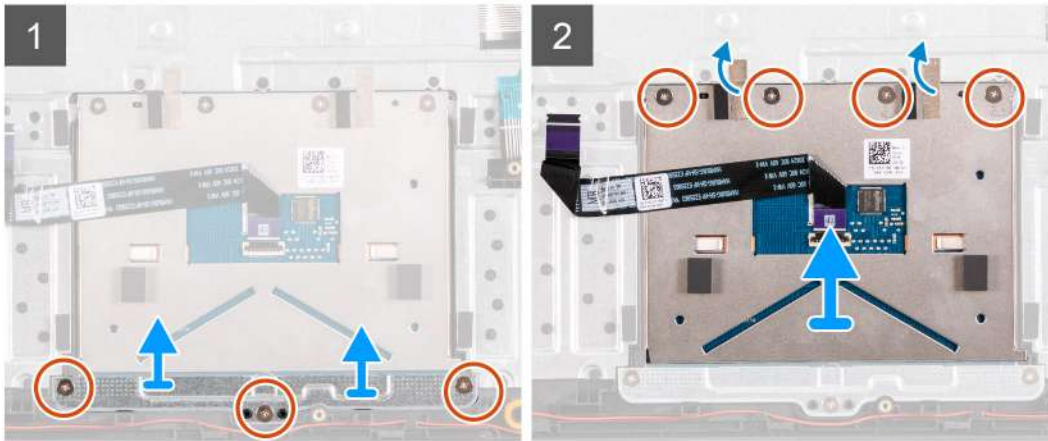
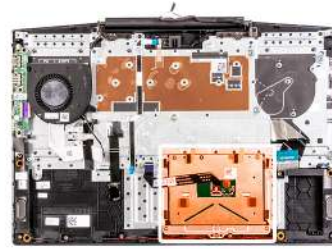
#### About this task

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





7x  
M2.x2



### Steps

1. Remove the three (M2x2) screws that secure the touchpad bracket to the palm-rest and keyboard assembly
2. Lift the touchpad bracket off the palm-rest and keyboard assembly.
3. Peel the tapes from the touchpad.
4. Remove the four (M2x2) screws that secure the touchpad to the palm-rest and keyboard assembly.
5. Lift the touchpad off the palm-rest and keyboard assembly.

## Installing the touchpad

### Prerequisites

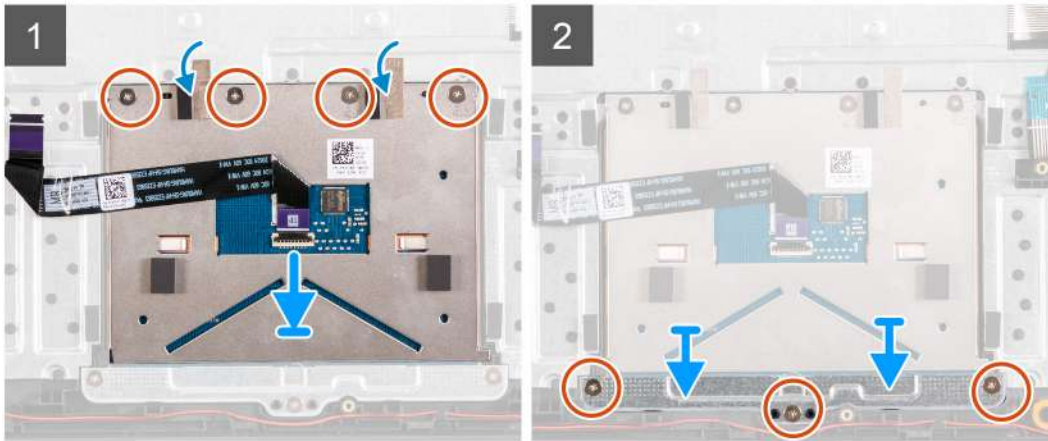
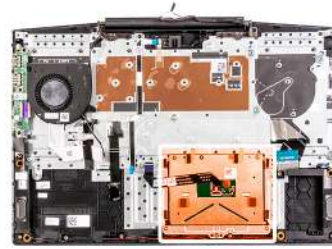
If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

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



7x  
M2.x2



### Steps

1. Align and place the touchpad into the slot on the palm-rest and keyboard assembly.
2. Replace the four (M2x2) screws and adhere the tapes that secure the touchpad to the palm-rest and keyboard assembly.
3. Align and place the touchpad bracket into the slot on the palm-rest and keyboard assembly.
4. Replace the three (M2x2) screws that secure the touchpad bracket to the palm-rest and keyboard assembly.

### Next steps

1. Install the [system board](#).
2. Install the [power-adaptor port](#).
3. Install the [display assembly](#).
4. Install the [right fan](#).
5. Install the [left fan](#).
6. Install the [wireless card](#).
7. Install the [memory modules](#).
8. Install the [battery](#).
9. Install the [base cover](#).
10. Follow the procedure in [After working inside your computer](#).

## Palm-rest and keyboard assembly

## Removing the palm-rest and keyboard assembly

### Prerequisites

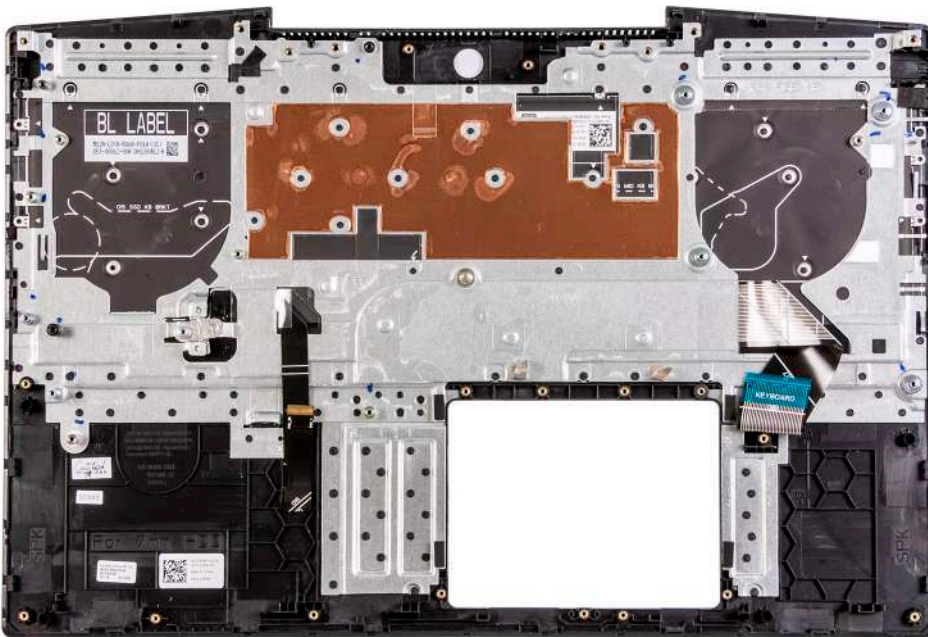
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).
3. Remove the [battery](#).
4. Remove the [memory modules](#).
5. Remove the [wireless card](#).
6. Remove the [left fan](#).
7. Remove the [right fan](#).

8. Remove the [solid-state drive](#).
9. Remove the [I/O board](#).
10. Remove the [touchpad](#).
11. Remove the [speakers](#).
12. Remove the [heat sink](#).
13. Remove the [display assembly](#).
14. Remove the [power-adaptor port](#).
15. Remove the [system board](#).

**i** **NOTE:** The system board can be removed with the heat sink attached.

#### About this task

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



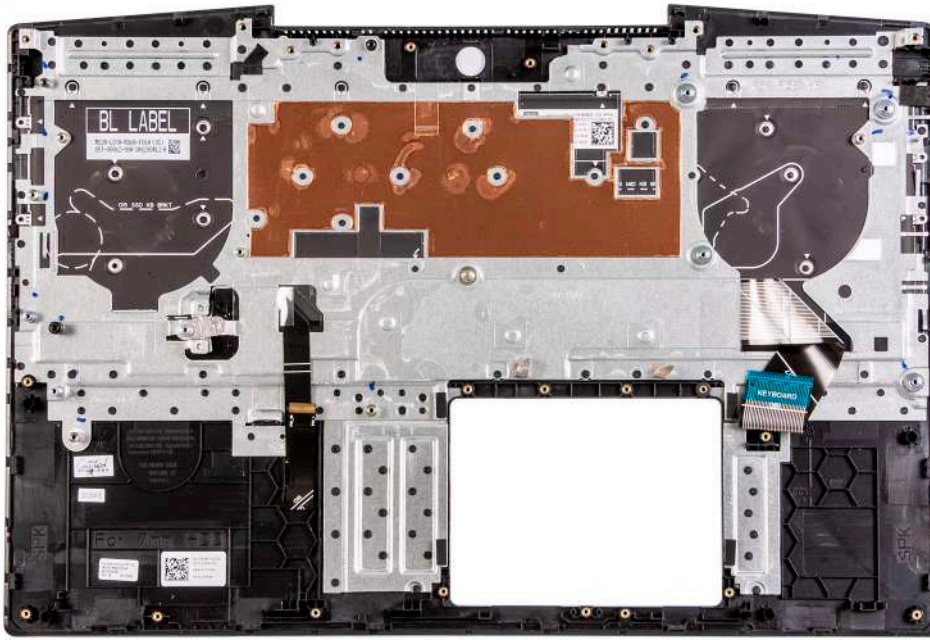
## Installing the palm-rest and keyboard assembly

#### Prerequisites

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

#### About this task

Place the palm-rest and keyboard assembly on a flat surface.



### Next steps

1. Install the [system board](#).
2. Install the [power-adapter port](#).
3. Install the [display assembly](#).
4. Install the [heat sink](#).
5. Install the [speakers](#).
6. Install the [touchpad](#).
7. Install the [I/O board](#).
8. Install the [solid-state drive](#).
9. Install the [right fan](#).
10. Install the [left fan](#).
11. Install the [wireless card](#).
12. Install the [memory modules](#).
13. Install the [battery](#).
14. Install the [base cover](#).
15. 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 [SLN128938](#).

## 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. <b>NOTE:</b> For the standard graphics browser only.
Esc	Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.

## One time boot menu

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

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

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

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

**NOTE:** XXX denotes the SATA drive number.

- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

**NOTE:** Choosing Diagnostics, will display the ePSA diagnostics screen.

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

## System setup options

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

**Table 4. System setup options—Main menu**

Main	
System Time	Displays the current time in hh:mm:ss format.
System Date	Displays the current date in mm/dd/yyyy format.
BIOS Version	Displays the BIOS version.
Product Name	Displays the model number of your computer.
Service Tag	Displays the service tag of your computer.
Asset Tag	Displays the asset tag of your computer.
CPU Type	Displays the processor type.
CPU Speed	Displays the processor speed.
CPU ID	Displays the processor identification code.
<b>CPU Cache</b>	
L1 Cache	Displays the processor L1 cache size.
L2 Cache	Displays the processor L2 cache size.
L3 Cache	Displays the processor L3 cache size.
M.2 PCIe SSD	Display the M.2 PCIe SSD device information of the computer.
AC Adapter Type	Displays the type of AC adapter.
System Memory	Displays the size of memory installed.
Memory Speed	Displays the speed of memory.
Keyboard Type	Displays the type of keyboard installed on the computer.

**Table 5. System setup options—Advanced menu**

Advanced	
PowerNow! Enable	Enables or disables the dynamic frequency scaling and power-saving technology for the AMD processor. Default: Enabled
Virtualization	Enables or disables the Virtualization technology. Default: Enabled
Integrated NIC	Enables or disables the on-board LAN controller.

**Table 5. System setup options—Advanced menu (continued)**

Advanced	
USB Emulation	<p>Default: Enabled</p> <p>Enables or disables the USB emulation feature. This feature defines how the BIOS, in the absence of a USB-aware operating system, handles USB devices. USB emulation is always enabled during POST.</p> <p><b>i</b> <b>NOTE: You cannot boot any type of USB device (floppy, hard drive, or memory key) when this option is off.</b></p>
USB Wake Support	<p>Default: Enabled</p> <p>Allows you to enable USB devices to wake the computer from standby or to disable the USB wake support feature.</p> <p><b>i</b> <b>NOTE: If USB PowerShare is enabled, a device connected to the USB PowerShare connector may not wake the computer.</b></p>
SATA Operation	<p>Default: Disabled</p> <p>Allows you to configure the operating mode of the integrated SATA hard drive controller.</p>
Adapter Warnings	<p>Default: AHCI</p> <p>Allows you to choose if the computer should display warning messages when you use AC adapters that are not supported by your computer.</p>
Function Key Behavior	<p>Default: Enabled</p> <p>Allows you to set function key or multimedia key as the default function key behavior.</p>
Keyboard Illumination	<p>Default: Multimedia key</p> <p>Selects the operating mode of the keyboard illumination feature.</p>
Keyboard Backlight with AC	<p>Default: Bright</p> <p>Selects the timeout value for the keyboard backlight when an AC adapter is plugged into the computer.</p>
Keyboard Backlight with Battery	<p>Default: 1 minute</p> <p>Selects the timeout value for the keyboard backlight when the computer is running on battery power.</p>
Battery Health	<p>Default: 1 minute</p> <p>Displays the battery health.</p>
Camera	<p>Enables or disables the camera.</p>
Battery Charge Configuration	<p>Default: Disabled</p> <p>Set the battery charge settings with a preselected custom charge start and stop.</p>
Advanced Battery Charge Configuration	<p>Default: Adaptive</p> <p>Enable Advanced Battery Charge Configuration from the beginning of the day to a specified work period.</p>
dGPU Support	<p>Default: Disabled</p> <p>Enable the discrete graphics of the computer.</p>
	<p>Default: Enabled</p>



**Table 5. System setup options—Advanced menu (continued)**

<b>Advanced</b>	
SmartShift	Enable or disable the Smartshift. Default: Enabled
<b>Maintenance</b>	
Data Wipe on next boot	Enables or disables data wipe on the next boot. Default: Disabled
BIOS Recovery from Hard Drive	Enables the user to recover from certain corrupted BIOS conditions from a recovery file on the user primary hard drive or an external USB key.
BIOS Auto-Recovery	Enables BIOS to automatically recover BIOS without user actions. Default: Disabled
<b>SupportAssist System Resolution</b>	
Auto OS Recovery Threshold	Controls the automatic boot flow for SupportAssist System Resolution Console and for the Dell OS Recovery tool. Default: 2
SupportAssist OS Recovery	Enables or disables the boot flow for the SupportAssist OS Recovery tool in the even of certain system errors. Default: Disabled

**Table 6. System setup options—Security menu**

<b>Security</b>	
Admin Password Status	Displays if the administrator password is clear or set.
System Password Status	Displays if the system password is clear or set. Default: Not Set
Asset Tag	Set your system's Asset Tag.
Admin Password	Allows you to set the administrator password. The administrator password controls access to the system setup utility.
System Password	Allows you to set the system password. The system password controls access to the computer at boot.
Password Change	Allows you to permit or deny system password or HDD password changes. Default: Permitted
Computrace	Enables or disables the BIOS module interface of the optional Computrace Service from Absolute Software. Default: Deactivate
SED Block SID Authentication	Enables or disables SED Block SID Authentication. Default: Disabled
PPI Bypass for SED Block SID Command	When there is no drive ownership and the ppibypassforblocksid is enabled, BIOS requires user input while sending the Block SID authentication command to SED drives. When ppibypassforblocksid is disabled, BIOS does not require user input while sending the Block SID command. Default: Disabled
Firmware TPM	Enable or disable the firmware TPM.

**Table 6. System setup options—Security menu (continued)**

<b>Security</b>	
PPI Bypass for Clear Command	<p>Default: Enabled</p> <p>Allows you to control the TPM Physical Presence Interface (PPI). When enabled, this setting will allow the OS to skip BIOS PPI user prompts when issuing the Clear command. Changes to this setting take effect immediately.</p> <p>Default: Disabled</p>
UEFI Firmware Capsule Updates	<p>Enables or disables BIOS updates through UEFI capsule update packages.</p> <p>Default: Enabled</p>
WINDOWS SMM SECURITY MITIGATIONS TABLE (WSMT)	<p>Enables or disables configuration of platform features on Dell Client Systems with WSMT-enabled BIOS.</p> <p>Default: Enabled</p>

**Table 7. System setup options—Boot menu**

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

**Table 8. System setup options—Exit menu**

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

## Updating the BIOS in Windows

### Prerequisites

It is recommended to update your BIOS (System Setup), when you replace the system board or if an update is available. For laptops, ensure that your computer battery is fully charged and connected to a power outlet.

### About this task

 **NOTE:** If BitLocker is enabled, it must be suspended before updating the system BIOS, and then re-enabled after the BIOS update is completed.


### Steps

1. Restart the computer.
2. Go to [www.dell.com/support](http://www.dell.com/support).
  - Enter the **Service Tag** or **Express Service Code** and click **Submit**.
  - Click **Detect Product** and follow the on-screen instructions.
3. If you are unable to detect or find the Service Tag, click **Choose from all products**.
4. Choose the **Products** category from the list.

 **NOTE:** Choose the appropriate category to reach the product page.

5. Select your computer model and the **Product Support** page of your computer appears.
6. Click **Get drivers**, and then click **Drivers and Downloads**.  
The Drivers and Downloads section is displayed.
7. Click **Find it myself**.
8. Click **BIOS** to view the BIOS versions.
9. Identify the latest BIOS file and click **Download**.
10. Select your preferred download method in the **Please select your download method below** window, and then click **Download File**.  
The **File Download** window appears.
11. Click **Save** to save the file on your computer.
12. Click **Run** to install the updated BIOS settings on your computer.  
Follow the on-screen instructions.

## Updating BIOS on systems with BitLocker enabled

 **CAUTION:** If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: <https://www.dell.com/support/article/sln153694>

## Updating your system BIOS using a USB flash drive

### About this task

If the computer cannot load into Windows but there is still a need to update the BIOS, download the BIOS file using another computer and save it to a bootable USB flash drive.

 **NOTE:** You must use a bootable USB flash drive. For more information, see the knowledge base article [SLN143196](#).

### Steps

1. Download the BIOS update .exe file to another computer.
2. Copy the .exe file onto the bootable USB flash drive.
3. Insert the USB flash drive into the computer that requires the BIOS update.
4. Restart the computer and press F12 when the Dell logo appears to display the One Time Boot Menu.
5. Using arrow keys, select **USB Storage Device** and press Enter.
6. The computer restarts to a `Diag C:\>` prompt.
7. Run the file by typing the complete filename and press Enter.
8. The BIOS Update Utility is displayed. Follow the on-screen instructions.



Figure 1. DOS BIOS Update Screen

## Flashing the BIOS from the F12 One-Time boot menu

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

### About this task

#### BIOS Update

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

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

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

#### Updating from the One-Time boot menu

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

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

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

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

#### Steps

1. From a turn off state, insert the USB drive where you copied the flash into a USB port of the computer.
2. Turn on the computer and press F12 to access the One-Time Boot Menu, select BIOS Update using the mouse or arrow keys then press Enter.  
The flash BIOS menu is displayed.
3. Click **Flash from file**.
4. Select external USB device.

5. Select the file and double-click the flash target file, and then click **Submit**.
6. Click **Update BIOS**. The computer restarts to flash the BIOS.
7. The computer will restart after the BIOS update is completed.

## System and setup password

**Table 9. System and setup password**

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

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

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

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

 **NOTE:** System and setup password feature is disabled.

## Assigning a system setup password

### Prerequisites

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

### About this task

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

### Steps

1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.  
The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.  
Use the following guidelines to assign the system password:
  - A password can have up to 32 characters.
  - The password can contain the numbers 0 through 9.
  - Only lower case letters are valid, upper case letters are not valid.
  - Only the following special characters are valid: Space, ("), (+), (.), (-), (.), (/), (:), ([), (\), (]), (^).
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and a message prompts you to save the changes.
5. Press Y to save the changes.  
The computer restarts.

## Deleting or changing an existing system setup password


### Prerequisites

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

### About this task

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

## Steps

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.  
The **System Security** screen is displayed.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password**, update, or delete the existing system password, and press Enter or Tab.
4. Select **Setup Password**, update, or delete the existing setup password, and press Enter or Tab.  
 **NOTE: If you change the System and/or Setup password, reenter the new password when prompted. If you delete the System and/or Setup password, confirm the deletion when prompted.**
5. Press Esc and a message prompts you to save the changes.
6. Press Y to save the changes and exit from System Setup.  
The computer restarts.

# Clearing CMOS settings

## About this task

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


## Steps

1. Remove the [base cover](#).
2. Follow the removal procedure in [coin-cell battery](#) to remove the coin-cell battery from the system board.
3. Wait for one minute.
4. Follow the installation procedure in [coin-cell battery](#) to connect the coin-cell battery to the system board.
5. 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](http://www.dell.com/contactdell).

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

# Troubleshooting

## Recovering the operating system

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

Dell SupportAssist OS Recovery is a standalone tool that is preinstalled in all Dell computers installed with Windows 10 operating system. It consists of tools to diagnose and troubleshoot issues that may occur before your computer boots to the operating system. It enables you to diagnose hardware issues, repair your computer, back up your files, or restore your computer to its factory state.

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

For more information about the Dell SupportAssist OS Recovery, see *Dell SupportAssist OS Recovery User's Guide* at [www.dell.com/support](http://www.dell.com/support).

## 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 10. LED codes**

Diagnostic light codes	Problem description
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
3,1	Coin-cell battery failure
3,2	PCI, video card/chip failure
3,3	Recovery image not found

**Table 10. LED codes (continued)**

Diagnostic light codes	Problem description
3,4	Recovery image found but invalid
3,5	Power-rail failure
3,6	System BIOS Flash incomplete

**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.

## 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 removed. The following procedure provides the instructions on how to conduct flea power release:

### Steps

1. Turn off your computer.
2. Remove the [base cover](#).
3. Remove the [battery](#).
4. Press and hold the power button for 15 seconds to drain the flea power.
5. Replace the [battery](#).
6. Replace the [base cover](#).
7. Turn on your computer.

## 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.





# 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 11. Self-help resources**

Self-help resources	Resource location
Information about Dell products and services	<a href="http://www.dell.com">www.dell.com</a>
My Dell app	
Tips	
Contact Support	In Windows search, type <code>Contact Support</code> , and press Enter.
Online help for operating system	<a href="http://www.dell.com/support/windows">www.dell.com/support/windows</a>
Troubleshooting information, user manuals, set up instructions, product specifications, technical help blogs, drivers, software updates, and so on.	<a href="http://www.dell.com/support">www.dell.com/support</a>
Dell knowledge base articles for a variety of computer concerns	<ol style="list-style-type: none"> <li>1. Go to <a href="http://www.dell.com/support">www.dell.com/support</a>.</li> <li>2. On the menu bar at the top of the Support page, select <b>Support &gt; Knowledge Base</b>.</li> <li>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.</li> </ol>
Learn and know the following information about your product: <ul style="list-style-type: none"> <li>• Product specifications</li> <li>• Operating system</li> <li>• Setting up and using your product</li> <li>• Data backup</li> <li>• Troubleshooting and diagnostics</li> <li>• Factory and system restore</li> <li>• BIOS information</li> </ul>	See <i>Me and My Dell</i> at <a href="http://www.dell.com/support/manuals">www.dell.com/support/manuals</a> . To locate the <i>Me and My Dell</i> relevant to your product, identify your product through one of the following: <ul style="list-style-type: none"> <li>• Select <b>Detect Product</b>.</li> <li>• Locate your product through the drop-down menu under <b>View Products</b>.</li> <li>• Enter the <b>Service Tag number</b> or <b>Product ID</b> in the search bar.</li> </ul>

## Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see [www.dell.com/contactdell](http://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.