# Dell 16

DC16251

Owner's Manual

Regulatory Model: P131F
Regulatory Type: P131F001
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DELL Technologies

## Notes, cautions, and warnings

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

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

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

# Contents

# 1

# Views of Dell 16 DC16251

## Right


**Figure 1. Right view**

1. **SD-card slot**

   Reads from and writes to the SD card. The computer supports the following card types:
   - Secure Digital (SD)
   - Secure Digital High Capacity (SDHC)
   - Secure Digital Extended Capacity (SDXC)

2. **Universal Audio port**

   Connect headphones or a headset (headphone and microphone combo).

3. **USB 3.2 Gen 1 (5 Gbps) port**

   Connect devices such as external storage devices and printers. Provides data transfer speeds of up to 5 Gbps.

4. **Security-cable slot (wedge-shaped)**

   Connect a security cable to prevent unauthorized movement of your computer.

## Left


**Figure 2. Left view**

1. **Power-adapter port**

   Connect a power adapter to provide power to your computer and charge the battery.

2. **Battery-status light**

Indicates the battery-charge status.

- White–Battery is charging.
- Amber–Battery charge is low or critical.

3. **HDMI 1.4 port**

   Connect to a TV, external display, or another HDMI-in enabled device. Provides video and audio output.

4. **USB 3.2 Gen 1 (5 Gbps) port**

   Connect devices such as external storage devices and printers. Provides data transfer speeds of up to 5 Gbps.

5. **USB 3.2 Gen 2 (10 Gbps) Type-C port with DisplayPort 1.4 and Power Delivery**

   Connect devices such as external storage devices, printers, and external displays. Provides data transfer rate of up to 10 Gbps.

   Supports Power Delivery that enables two-way power supply between devices. Provides up to 15 W power output to enable faster charging.

   **NOTE:** A USB Type-C to DisplayPort adapter (sold separately) is required to connect a DisplayPort device.

# Top

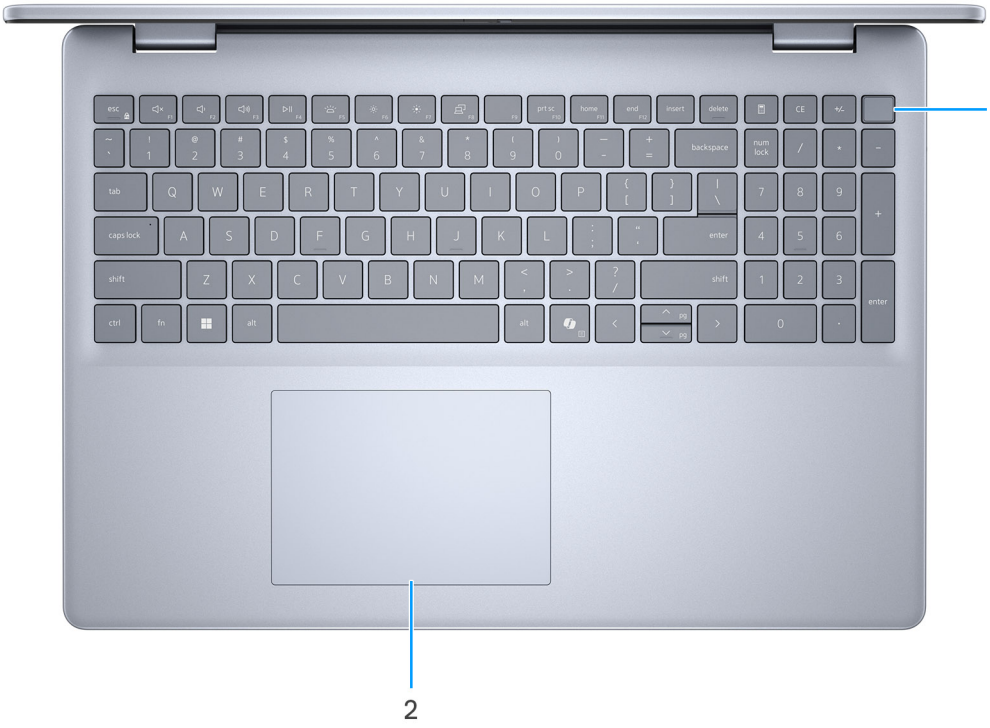



**Figure 3. Top view**

1. **Power button with optional fingerprint reader**

   Press to turn on the computer if it is turned off, in sleep state, or in hibernate state.

   When the computer is turned on, press the power button to put the computer into a sleep state; press and hold the power button for 10 seconds to force shut-down the computer.

   If the power button has a fingerprint reader, place your finger on the power button steadily to log in.

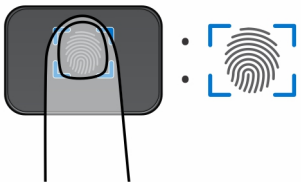


**Figure 4. Active area of the fingerprint reader**

**NOTE:** The highlighted area indicates the actual active fingerprint reader area, and the image is for illustration purposes only.

**NOTE:** You can customize the power-button behavior in Windows. For more information, see Dell Support Site.

2. **Precision touchpad**

   Move your finger on the touchpad to move the mouse pointer. Tap to left-click and two fingers tap to right-click.

# Front


**Figure 5. Front view**

1. **Left and right microphones**

   Provides digital sound input for audio recording and voice calls.

2. **Privacy shutter**

   Slide the privacy shutter to cover the camera lens and protect your privacy when the camera is not in use.

3. **Camera**

   Enables you to video chat, capture photos, and record videos.

4. **Camera-status light**

   Turns on when the camera is in use.

5. **Display**

   Provides visual output.

# Bottom

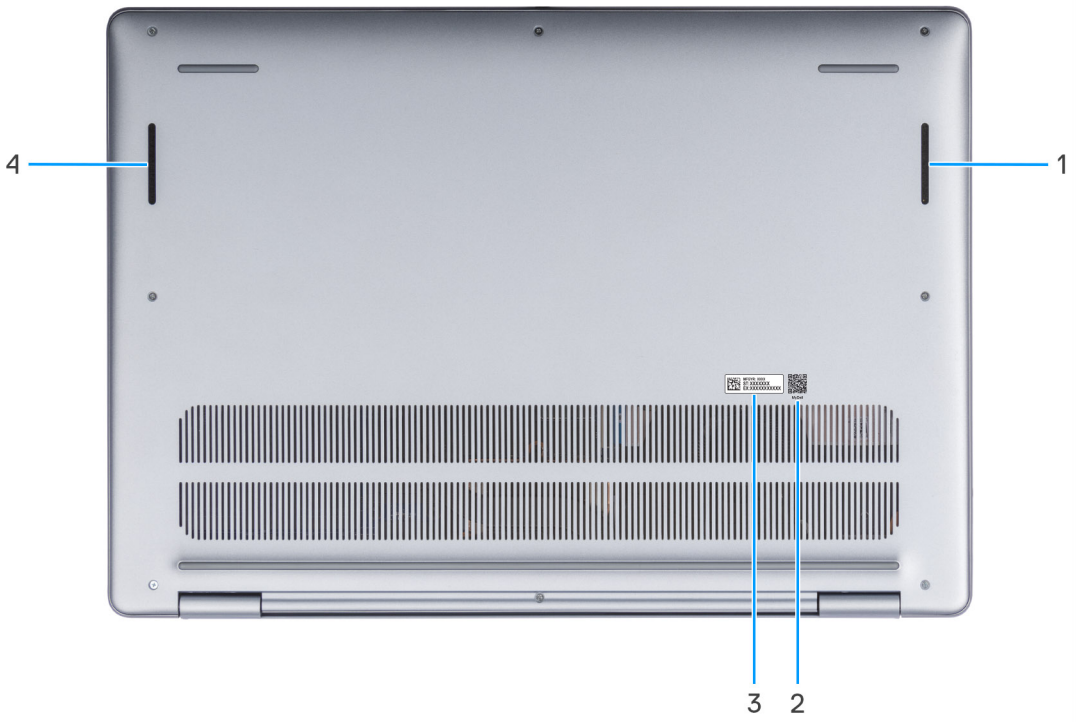



**Figure 6. Bottom view**

1. **Right speaker**

   Provides audio output.

2. **MyDell QR code**

   **MyDell** is your hub for content personalized to your Dell 16 DC16251, including videos, articles, manuals, and access to support.

3. **Service Tag label**

   The Service Tag is a unique alphanumeric identifier that enables Dell service technicians to identify the hardware components in your computer and access warranty information.

4. **Left speaker**

   Provides audio output.

# Locate the Service Tag or Express Service Code label of your computer

The Service Tag is a unique alphanumeric identifier that allows Dell service technicians to identify the hardware components in your computer and access warranty information. The Express Service Code is a numeric version of the Service Tag.

For more information about how to find the Service Tag of your computer, search in the Knowledge Base Resource at the Dell Support Site.

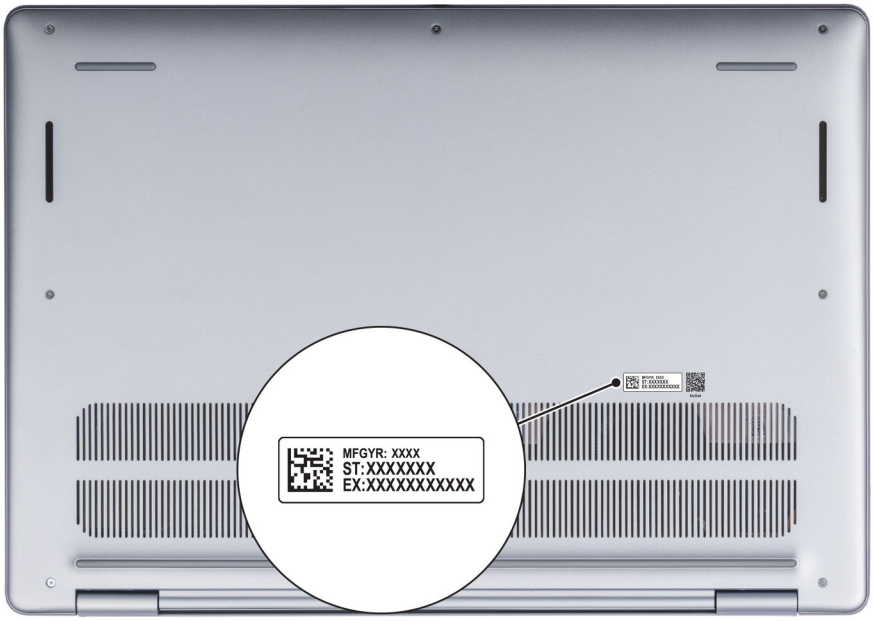



**Figure 7. Service Tag/Express Service Code location**

# Battery-status light

The following table lists the battery-status light of your Dell 16 DC16251.

**Table 1. Battery-status light behavior**

| Power source | LED behavior | System power state | Battery charge level |
|---|---|---|---|
| AC adapter | Off | S0 or S5 | 100% |
| AC adapter | Solid white | S0 or S5 | < 100% |
| Battery | Off | S0 or S5 | 11-100% |
| Battery | Solid amber | S0 or S5 | < 10% |

- S0 (ON): The computer is turned on.
- S3 (Sleep): Screen is off and computer is in sleep mode.
- S4 (Hibernate): The computer consumes the least power in the Hibernate state than in the ON or OFF state. The computer is almost in the OFF state. The context data is written to a storage device, allowing you to resume from where you left after the computer is turned on.
- S5 (OFF): The computer is in a shutdown state.

# 2

# Set up your Dell 16 DC16251

### About this task

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

### Steps

1. Connect the power adapter and press the power button.

**Figure 8. Connect the power adapter and press the power button**

**NOTE:** The battery may go into power-saving mode during shipment to conserve charge on the battery. Ensure that the power adapter is connected to your computer when it is turned on for the first time.

2. Finish the operating system setup.

   **For Ubuntu:**

   Follow the on-screen instructions to complete the setup. For more information about installing and configuring Ubuntu, search in the Knowledge Base Resource at Dell Support Site.

   **For Windows:**

   Follow the on-screen instructions to complete the setup. When setting up, it is recommended that you:

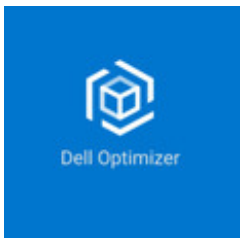
   - Connect to a network for Windows updates.

     **NOTE:** If connecting to a secured wireless network, enter the password for the wireless network access when prompted.

   - If connected to the Internet, sign-in with an existing Microsoft account or create an account. If not connected to the Internet, create an offline account.
   - On the **Support and Protection** screen, enter your contact details.

3. Locate and use Dell apps from the Windows Start menu—Recommended.

### Table 2. Locate Dell apps

| Resources | Description |
|---|---|
|  | Dell Optimizer is an application designed to enhance computer performance and productivity by optimizing settings for power, battery, display, collaboration touchpad, and presence detection. It also provides access to applications purchased with your new computer.<br>For more information, see Dell Optimizer User's Guide at Dell Support Site. |
|  | **Dell Product Registration**<br>Register your computer with Dell. |
|  | **Dell Help & Support**<br>Access help and support for your computer. |
|  | **SupportAssist**<br>SupportAssist is a proactive and predictive technology that offers automated technical support for Dell computers. It proactively monitors both hardware and software, addressing performance issues, preventing security threats, and automating engagement with Dell Technical Support.<br>For more information, see SupportAssist for Home PCs User's Guide at Dell Support Site.<br>**NOTE:** In SupportAssist, click the warranty expiry date to renew or upgrade your warranty. |

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# Specifications of Dell 16 DC16251

## Dimensions and weight

The following table lists the height, width, depth, and weight of your Dell 16 DC16251.

### Table 3. Dimensions and weight

| Description | Values |
|---|---|
| Height: | |
| Front height | 16.18 mm (0.63 in.) |
| Rear height | 17.37 mm (0.68 in.) |
| Width | 356.78 mm (14.04 in.) |
| Depth | 249.52 mm (9.82 in.) |
| Weight<br>**NOTE:** The weight of your computer depends on the configuration that you ordered. | • Minimum: 1.90 kg (4.18 lb)<br>• Maximum: 2.14 kg (4.72 lb) |

## Processor

The following table lists the details of the processors that are supported in your Dell 16 DC16251.

### Table 4. Processor

| Description | Option one | Option two |
|---|---|---|
| Processor type | Intel Core 7 150U | Intel Core 5 120U |
| Processor wattage | 15 W | 15 W |
| Processor total core count | 10 | 10 |
| Performance-cores | 2 | 2 |
| Efficient-cores | 8 | 8 |
| Processor total thread count<br>**NOTE:** Intel Hyper-Threading Technology is only available on Performance-cores. | 12 | 12 |
| Processor speed | 1.8 GHz to 5.4 GHz | 1.4 GHz to 5 GHz |
| Frequency—Performance cores | | |
| Processor base frequency | 1.8 GHz | 1.4 GHz |
| Maximum turbo frequency | 5.4 GHz | 5 GHz |

### Table 4. Processor (continued)

| Description | | Option one | Option two |
|---|---|---|---|
| Frequency—Efficient cores | | | |
| | Processor base frequency | 1.8 GHz | 1.4 GHz |
| | Maximum turbo frequency | 3.8 GHz | 3.6 GHz |
| Thermal Mode/Thermal Design Power (TDP) | | | |
| | Cool | 10 W | 10 W |
| | Optimized | 15 W | 15 W |
| | Quiet | 10 W | 10 W |
| | Ultra Performance | 17 W | 17 W |
| Processor cache | | 12 MB | 12 MB |
| Integrated graphics | | Intel Graphics | Intel Graphics |

# Chipset

The following table lists the details of the chipset that is supported by your Dell 16 DC16251.

### Table 5. Chipset

| Description | Values |
|---|---|
| Chipset | Integrated |
| Processor | Intel Core 5/7 |
| DRAM bus width | Two channels, 64-bit |
| Flash EPROM | 32 MB |
| PCIe bus | Up to Gen4 |

# Operating system

Your Dell 16 DC16251 supports the following operating systems:

- Windows 11 Pro
- Windows 11 Pro National Education
- Windows 11 Home
- Windows 11 Home (S Mode)
- Ubuntu Linux 24.04 LTS, 64-bit

# Memory

The following table lists the memory specifications that are supported by your Dell 16 DC16251.

### Table 6. Memory specifications

| Description | Values |
|---|---|
| Memory slots | Two SODIMM slots |
| Memory type | DDR5 |
| Memory speed | 5200 MT/s |
| Maximum memory configuration | 32 GB |
| Minimum memory configuration | 8 GB |
| Memory size per slot | 8 GB or 16 GB |
| Memory configurations supported | • 8 GB: 1 x 8 GB, DDR5, 5200 MT/s, single-channel<br>• 16 GB: 2 x 8 GB, DDR5, 5200 MT/s, dual-channel<br>• 24 GB: 1 x 16 GB + 1 x 8 GB, DDR5, 5200 MT/s, dual-channel<br>• 32 GB: 2 x 16 GB, DDR5, 5200 MT/s, dual-channel |

# External ports and slots

The following table lists the external ports and slots on your Dell 16 DC16251.

### Table 7. External ports and slots

| Description | Values |
|---|---|
| USB ports | • Two USB 3.2 Gen 1 (5 Gbps) ports<br>• One USB 3.2 Gen 2 (10 Gbps) Type-C port with DisplayPort 1.4 and Power Delivery |
| Audio port | One Universal Audio port |
| Video port(s) | One HDMI 1.4 port<br>**NOTE:** The maximum resolution supported over HDMI 1.4 port is 1920 x 1080 at 60 Hz. No 4K/2K output. |
| Media-card reader | One SD-card slot |
| Power-adapter port | One 65 W DC-in adapter, 4.50 mm barrel, E4 |
| Security-cable slot | One wedge-shaped lock slot |

# Internal slots

The following table lists the internal slots of your Dell 16 DC16251.

### Table 8. Internal slots

| Description | Values |
|---|---|
| M.2 | • One M.2 2230 slot for Wi-Fi and Bluetooth combo card<br>• One M.2 2230 slot for solid state drive<br>**NOTE:** To learn more about the features of different types of M.2 cards, search in the Knowledge Base Resource at Dell Support Site. |

# Wireless module

The following table lists the Wireless Local Area Network (WLAN) modules that are supported on your Dell 16 DC16251.

### Table 9. Wireless module specifications

| Description | Option one | Option two |
|---|---|---|
| Model number | Realtek RTL8852BE | Realtek RTL8852CE |
| Transfer rate | Up to 1201 Mbps | Up to 2402 Mbps |
| Frequency bands supported | 2.4 GHz/5 GHz | 2.4 GHz/5 GHz/6 GHz |
| Wireless standards | • Wi-Fi 802.11a/b/g<br>• Wi-Fi 4 (Wi-Fi 802.11n)<br>• Wi-Fi 5 (Wi-Fi 802.11ac)<br>• Wi-Fi 6 (Wi-Fi 802.11ax) | • Wi-Fi 802.11a/b/g<br>• Wi-Fi 4 (Wi-Fi 802.11n)<br>• Wi-Fi 5 (Wi-Fi 802.11ac)<br>• Wi-Fi 6E (Wi-Fi 802.11ax) |
| Encryption | • 64-bit/128-bit WEP<br>• AES-CCMP<br>• TKIP | • 64-bit/128-bit WEP<br>• AES-CCMP<br>• TKIP |
| Bluetooth wireless card<br>**NOTE:** The functionality of the Bluetooth wireless card may vary based on the operating system. | Bluetooth 5.3 wireless card | Bluetooth 5.3 wireless card |

# Audio

The following table lists the audio specifications of your Dell 16 DC16251.

### Table 10. Audio specifications

| Description | Values |
|---|---|
| Audio controller | Realtek ALC3254 |
| Stereo conversion | Supported |
| Internal audio interface | High definition audio interface |
| External audio interface | One Universal Audio port |

### Table 10. Audio specifications (continued)

| Description | | Values |
|---|---|---|
| Number of speakers | | Two |
| Internal-speaker amplifier | | Supported |
| External volume controls | | Keyboard shortcut controls |
| Speaker output: | | |
| | Average | 2 W x 2 = 4 W |
| | Peak | 2.5 W x 2 = 5 W |
| Microphone | | Dual-array microphones |

# Storage

This section lists the storage options on your Dell 16 DC16251.

Your Dell 16 DC16251 supports only one M.2 2230 solid state drive.

**NOTE:** The M.2 2230 solid state drive is the primary storage drive of your computer.

### Table 11. Storage specifications

| Storage type | Interface type | Capacity |
|---|---|---|
| M.2 2230 solid state drive | Gen4 PCIe NVMe | Up to 2 TB |

# Media-card reader

The following table provides the specification of media cards that are supported by your Dell 16 DC16251.

### Table 12. Media-card reader specifications

| Description | Values |
|---|---|
| Media-card slot type | One SD card |
| Media-cards supported | • Secure Digital (SD)<br>• Secure Digital High Capacity (SDHC)<br>• Secure Digital Extended Capacity (SDXC) |
| **NOTE:** The maximum capacity of the media-card reader varies depending on the standard of the media card that is inserted in your computer. | |

# Keyboard

The following table lists the keyboard specifications of your Dell 16 DC16251.

### Table 13. Keyboard specifications

| Description | Values |
|---|---|
| Keyboard type | Standard backlit Copilot key keyboard |

### Table 13. Keyboard specifications (continued)

| Description | Values |
|---|---|
| Keyboard layout | QWERTY |
| Number of keys | • English International; English US; Arabic; Canada (Bilingual) (MUI); Chinese (Traditional); Greek; Hebrew; Korean; and Ukrainian: 99 keys<br>• Belgian; Bulgarian; Czech/Slovak (MUI); French (European); German; Hungarian; Italian; Nordic (MUI); Slovenian; Spanish (Castilian); Spanish (Latin American); Swiss/European (MUI); Turkish: 100 keys<br>• Japanese: 103 keys |
| Key pitch | X = 18.70 mm<br>Y = 18.05 mm |
| Keyboard shortcuts | Some keys on your keyboard have two symbols on them. These keys can be used to type alternate characters or to perform secondary functions.<br>• To type the alternate character, press Shift and the desired key.<br>• To perform secondary functions, press Fn and the desired key.<br>**NOTE:** You can define the primary behavior of the function keys (F1–F12) by changing **Function Key Behavior** in the BIOS Setup program.<br>**NOTE:** If Copilot in Windows is not available on your computer, pressing the Copilot key launches Windows search. For more information about Copilot in Windows, see the Knowledge Base Resource at the Dell Support site. |

# Keyboard shortcuts of Dell 16 DC16251

**NOTE:** Keyboard characters may differ depending on the keyboard language configuration. Keys that are used for shortcuts remain the same across all language configurations.

Some keys on your keyboard have two symbols on them. These keys can be used to type alternate characters or to perform secondary functions. The symbol that is shown on the lower part of the key refers to the character that is typed out when the key is pressed. If you press shift and the key, the symbol that is shown on the upper part of the key is typed out. For example, if you press **2**, 2 is typed out; if you press **Shift** + **2**, @ is typed out.

The keys F1-F12 at the top row of the keyboard are function keys for multimedia control, as indicated by the icon on the key. Press the function key to enable the task represented by the icon. For example, pressing F1 mutes the audio (see the table below).

However, if the function keys F1-F12 are needed for specific software applications, multimedia functionality can be disabled by pressing **Fn** + **Esc**. Later, multimedia control can be invoked by pressing **Fn** and the respective function key. For example, mute audio by pressing **Fn** + **F1**.

**NOTE:** You can also define the primary behavior of the function keys (F1–F12) by changing **Function Key Behavior** in the BIOS setup program.

### Table 14. Function key primary behavior

| Function key | Primary behavior |
|---|---|
| F1 | Mute or unmute audio |
| F2 | Decrease volume |

### Table 14. Function key primary behavior (continued)

| Function key | Primary behavior |
|---|---|
| F3 | Increase volume |
| F4 | Microphone Mute |
| F5 | KB Illumination/Backlight |
| F6 | Decrease brightness |
| F7 | Increase brightness |
| F8 | Switch to external display |
| F9 | Stealth mode |
| F10 | Print screen |
| F11 | Home |
| F12 | End |

The **fn** key is also used with selected keys on the keyboard to invoke secondary functions.

### Table 15. Secondary behavior

| Function key | Secondary behavior |
|---|---|
| fn + F1 | Operating system and application-specific F1 behavior |
| fn + F2 | Operating system and application-specific F2 behavior |
| fn + F3 | Operating system and application-specific F3 behavior |
| fn + F4 | Operating system and application-specific F4 behavior |
| fn + F5 | Operating system and application-specific F5 behavior |
| fn + F6 | Operating system and application-specific F6 behavior |
| fn + F7 | Operating system and application-specific F7 behavior |
| fn + F8 | Operating system and application-specific F8 behavior |
| fn + F9 | Operating system and application-specific F9 behavior |
| fn + F10 | Operating system and application-specific F10 behavior |
| fn + F11 | Operating system and application-specific F11 behavior |
| fn + F12 | Operating system and application-specific F12 behavior |
| fn + Ctrl | Open the application menu |
| fn + Esc | Toggle between multimedia and function key behavior |
| fn + PgUp | Scroll up the document or page |
| fn + PgDn | Scroll down the document or page |
| fn + Home | Move to the beginning of the document |
| fn + End | Move to the end of the document |
| Copilot | Launch Copilot in Windows<br>**NOTE:** If Copilot in Windows is not available on your computer, the Copilot key launches Recall. If both Recall and Copilot in Windows are not available on your computer, the Copilot key launches Windows Search. For more information about Copilot in Windows and Recall, search in the Knowledge Base Resource at the Dell Support Site. |

### Table 15. Secondary behavior (continued)

| Function key | Secondary behavior |
|---|---|
| fn + left arrow | Home (move to the beginning of the document) |
| fn + right arrow | End (move to the end of the document) |

# Camera

The following table lists the camera specifications of your Dell 16 DC16251.

### Table 16. Camera specifications

| Description | | Values |
|---|---|---|
| Number of cameras | | One |
| Camera type | | FHD RGB camera |
| Camera location | | Front camera |
| Camera sensor type | | CMOS sensor technology |
| Camera resolution: | | |
| | Still image | 2.07 megapixel |
| | Video | 1920 x 1080 (FHD at 30 fps) |
| Diagonal viewing angle | | 82.20 degrees |

# Touchpad

The following table lists the touchpad specifications of your Dell 16 DC16251.

### Table 17. Touchpad specifications

| Description | | Values |
|---|---|---|
| Touchpad resolution: | | |
| | Horizontal | 305 dpi |
| | Vertical | 305 dpi |
| Touchpad dimensions: | | |
| | Horizontal | 115 mm (4.52 in.) |
| | Vertical | 80 mm (3.15 in.) |
| Touchpad gestures | | For more information about the touchpad gestures available on Windows, see the Microsoft Knowledge Base article at Microsoft Support Site. |

# Power adapter

The following table lists the power adapter specifications of your Dell 16 DC16251.

### Table 18. Power-adapter specifications

| Description | | Values |
|---|---|---|
| Type | | 65 W DC-in adapter, 4.50 mm barrel, E4 |
| Power-adapter dimensions: | | |
| | Height | 108 mm (4.25 in.) |
| | Width | 47 mm (1.85 in.) |
| | Depth | 28 mm (1.10 in.) |
| Input voltage | | 100 VAC–240 VAC |
| Input frequency | | 50 Hz–60 Hz |
| Input current (maximum) | | 1.70 A |
| Output current (continuous) | | 3.34 A |
| Rated output voltage | | 19.50 VDC |
| Temperature range: | | |
| | Operating | 0°C to 40°C (32°F to 104°F) |
| | Storage | -40°C to 70°C (-40°F to 158°F) |
| **CAUTION: Operating and storage temperature ranges may differ among components, so operating or storing the device outside these ranges may impact the performance of specific components.** | | |

# Power adapter requirements of Dell 16 DC16251

**NOTE:** If you did not purchase the Dell-branded power adapter that is recommended for your computer, ensure that the power adapter you use meets the following requirements.

The following table lists the power adapter requirements for your Dell 16 DC16251.

### Table 19. Power adapter requirements

| Description | Value |
|---|---|
| Power that is required from a power adapter to achieve optimal performance | 60 W |
| Power that charges the computer at a slower speed<br>**NOTE:** A warning message may appear informing you about the use of a lower-powered adapter and slower charging speed. | Less than 60 W |
| Minimum power that is required from a power adapter to operate the computer and charge the battery<br>**NOTE:** A warning message appears informing you about the use of a lower-powered adapter and slower charging speed. | 27 W |

### Table 19. Power adapter requirements (continued)

| Description | Value |
|---|---|
| USB Power Delivery (PD) fast charging | Supported |
| ExpressCharge mode | Supported<br>**NOTE:** Ensure that the computer with a 42 Wh battery is connected to a 65 W power adapter for this feature to be supported. |

# Battery

The following table lists the battery specifications of your Dell 16 DC16251.

### Table 20. Battery specifications

| Description | | Option one | Option two |
|---|---|---|---|
| Battery type | | 4-cell, 54 Wh, Lithium Ion Polymer, ExpressCharge Capable | 4-cell, 64 Wh, Lithium Ion Polymer, ExpressCharge Capable |
| Battery voltage | | 15 VDC | 15.20 VDC |
| Battery weight (maximum) | | 0.24 kg (0.53 lb) | 0.26 kg (0.57 lb) |
| Battery dimensions: | | | |
| | Height | 5.75 mm (0.23 in.) | 5.75 mm (0.23 in.) |
| | Width | 271.90 mm (10.66 in.) | 271.90 mm (10.66 in.) |
| | Depth | 82 mm (3.22 in.) | 82 mm (3.22 in.) |
| Temperature range: | | | |
| | Operating | • Charge: 0°C to 45°C (32°F to 113°F)<br>• Discharge: 0°C to 70°C (32°F to 158°F) | • Charge: 0°C to 45°C (32°F to 113°F)<br>• Discharge: 0°C to 70°C (32°F to 158°F) |
| | Storage | -20°C to 60°C (-4°F to 140°F) | -20°C to 60°C (-4°F to 140°F) |
| Battery operating time | | Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions. | Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions. |
| Battery charging time (approximate)<br>**NOTE:** You can control the charging time, duration, start and end time, and so on, using the settings on the MyDell application (Power option). For more information about MyDell application, search in the Knowledge Base Resource at Dell Support Site. | | • 3 hr (Standard charge)<br>• 2 hr (Express charge) | • 3 hr (Standard charge)<br>• 2 hr (Express charge) |
| Coin-cell battery | | N/A | N/A |

**CAUTION: Operating and storage temperature ranges may differ among components, so operating or storing the device outside these ranges may impact the performance of specific components.**

**Table 20. Battery specifications (continued)**

| Description | Option one | Option two |
|---|---|---|
| **CAUTION: Dell Technologies recommends that you charge the battery regularly for optimal power consumption.** | | |

# Power requirements (for computers shipped with 4-cell, 54 Wh battery)

**NOTE:** The information in this section is applicable to the European Union (EU) countries.

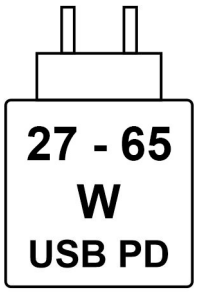


**Figure 9. Pictogram for 54 Wh battery**

The power that is delivered by the charger must be between a minimum of 27 Watts that is required by the radio equipment, and a maximum of 65 Watts in order to achieve the maximum charging speed.

This computer supports USB Power Delivery (PD) fast charging.

# Power requirements (for computers shipped with 4-cell, 64 Wh battery)

**NOTE:** The information in this section is applicable to the European Union (EU) countries.

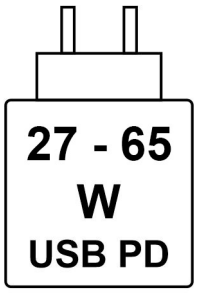


**Figure 10. Pictogram for 64 Wh battery**

The power that is delivered by the charger must be between a minimum of 27 Watts that is required by the radio equipment, and a maximum of 65 Watts in order to achieve the maximum charging speed.

This computer supports USB Power Delivery (PD) fast charging.

# Display

The following table lists the display specifications of your Dell 16 DC16251.

### Table 21. Display specifications

| Description | | Option one | Option two |
|---|---|---|---|
| Display type | | 16" Full High Definiton Plus (FHD+) with ComfortView | 16" Full High Definiton Plus (FHD+) with ComfortView Plus |
| Touch options | | No | Yes |
| Display-panel technology | | Wide Viewing Angle (WVA) | Wide Viewing Angle (WVA) |
| Display-panel dimensions (active area): | | | |
| | Height | 344.68 mm (13.57 in.) | 344.68 mm (13.57 in.) |
| | Width | 215.42 mm (8.48 in.) | 215.42 mm (8.48 in.) |
| | Diagonal | 406.46 mm (16 in.) | 406.46 mm (16 in.) |
| Display-panel native resolution | | 1920 x 1200 | 1920 x 1200 |
| Luminance (typical) | | 300 nits | 300 nits |
| Megapixels | | 2.30 | 2.30 |
| Color gamut | | 45% NTSC (typical) | 45% NTSC (typical) |
| Pixels Per Inch (PPI) | | 141 | 141 |
| Contrast ratio | | • 800:1 (minimum)<br>• 1000:1 (typical) | • 800:1 (minimum)<br>• 1000:1 (typical) |
| Response time (maximum) | | 35 ms | 35 ms |
| Refresh rate | | 60 Hz | 60 Hz |
| Horizontal view angle | | • +/- 80 degrees (minimum)<br>• +/- 85 degrees (typical) | • +/- 80 degrees (minimum)<br>• +/- 85 degrees (typical) |
| Vertical view angle | | • +/- 80 degrees (minimum)<br>• +/- 85 degrees (typical) | • +/- 80 degrees (minimum)<br>• +/- 85 degrees (typical) |
| Pixel pitch | | 0.18 mm | 0.18 mm |
| Power consumption (maximum) | | 4.45 W | 5.60 W |
| Anti-glare vs glossy finish | | Anti-Glare | Anti-Glare |

# Fingerprint reader (optional)

The following table lists the specifications of the optional fingerprint-reader of your Dell 16 DC16251.

### Table 22. Fingerprint reader specifications

| Description | Values |
|---|---|
| Sensor technology | Capacitive |
| Sensor resolution | 500 dpi |
| Sensor pixel size | 108 mm x 88 mm |

# Sensors

The following table lists the sensors of your Dell 16 DC16251.

### Table 23. Sensor

| Sensor support |
|---|
| Accelerometer |

# GPU—Integrated

The following table lists the specifications of the integrated Graphics Processing Unit (GPU) supported by your Dell 16 DC16251.

### Table 24. GPU—Integrated

| Controller | Memory size | Processor |
|---|---|---|
| Intel Graphics | Shared system memory | Intel Core 5 and 7 processors |

## External display support

The following table lists the external display support for your Dell 16 DC16251.

### Table 25. External display support

| Graphics card | Supported external displays with laptop display enabled | Supported external displays with laptop display disabled |
|---|---|---|
| Intel Graphics | 2 | 2 |

# GPU—Discrete

The following table lists the specifications of the discrete Graphics Processing Unit (GPU) supported by your Dell 16 DC16251.

### Table 26. GPU—Discrete

| Controller | Memory size | Memory type |
|---|---|---|
| NVIDIA GeForce MX570A | 2 GB | GDDR6 |

## External display support

The following table lists the external display support for your Dell 16 DC16251.

### Table 27. External display support

| Graphics card | Supported external displays with laptop display enabled | Supported external displays with laptop display disabled |
|---|---|---|
| NVIDIA GeForce MX570A | 2 | 2 |
| **NOTE:** For more information about external display support, see the *External Display Connection Guide* on Dell Support Site. | | |

# Hardware security

The following table lists the hardware security of your Dell 16 DC16251.

### Table 28. Hardware security

| Hardware security |
|---|
| Wedge-shaped lock slot |
| Trusted Platform Module (TPM) 2.0 |
| Windows Hello - Fingerprint Reader (optional) |
| Camera shutter |

# Operating and storage environment

This table lists the operating and storage specifications of your Dell 16 DC16251.

**Airborne contaminant level:** G1 as defined by ISA-S71.04-1985

### Table 29. Computer environment

| Description | Operating | Storage |
|---|---|---|
| Temperature range | 0°C–35°C (32°F–95°F) | -40°C to 70°C (-40°F to 158°F) |
| Relative humidity (maximum) | 10% to 90% (non-condensing) | 5% to 95% (non-condensing) |
| Vibration (maximum)* | 0.66 GRMS | 1.30 GRMS |
| Shock (maximum) | 110 G† | 160 G† |
| Altitude range | -15.20 m to 3048 m (-49.87 ft to 10,000 ft) | -15.20 m to 10,668 m (-49.87 ft to 35,000 ft) |
| **CAUTION: Operating and storage temperature ranges may differ among components, so operating or storing the device outside these ranges may impact the performance of specific components.** | | |

* Measured using a random vibration spectrum that simulates the user environment.

† Measured using a 2 ms half-sine pulse.

# Dell support policy

For information about Dell support policy, search in the Knowledge Base Resource at Dell Support Site.

# ComfortView

**WARNING: Prolonged exposure to blue light from the display may lead to long-term effects such as eye strain, eye fatigue, or damage to the eyes.**

Blue light is a color in the light spectrum which has a short wavelength and high energy. Chronic exposure to blue light, particularly from digital sources, may disrupt sleep patterns and cause long-term effects such as eye strain, eye fatigue, or damage to the eyes.

Dell ComfortView software technology reduces harmful blue light emissions to make extended screen time easy on your eyes.

ComfortView mode can be enabled and configured using the Dell CinemaColor application.

ComfortView mode complies with TÜV Rheinland's requirement for low blue light displays.

To reduce the risk of eye strain, it is also recommended that you:

- Position the display at a comfortable viewing distance between 20 and 28 inches (50 cm and 70 cm) from your eyes.
- Blink frequently to moisten your eyes, wet your eyes with water, or apply suitable eye drops.
- Take an extended break for 20 minutes every two hours.
- Look away from your display, and gaze at a distant object at 20 ft (609.60 cm) away for at least 20 seconds during each break.

# Dell Optimizer

Dell Optimizer is an AI-based software application that allows you to customize your computer settings for power and battery, and more.

For Dell 16 DC16251 with Dell Optimizer, you can:

- Extend the battery life of your computer with Intelligent Battery Extender and Dynamic Charge.
- Tune the performance, power consumption, cooling, and fan noise with selectable thermal modes.
- Access and secure your computer depending on your physical presence.
- Download and redeem the apps that are purchased with your computer.

For more information about configuring and using these features, search for *Dell Optimizer* at the Dell Support Site.

4

# Working inside your computer

## Safety instructions

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

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

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

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

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

**CAUTION: You should only perform troubleshooting and repairs as authorized or directed by the Dell technical support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty.**

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

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

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

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

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

## Before working inside your computer

### About this task

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

### Steps

1. Save and close all open files and exit all open applications.
2. Shut down your computer. For Windows operating system, click **Start** > **Power** > **Shut down**.

   **NOTE:** If you are using a different operating system, see the documentation of your operating system for instructions.

3. Turn off all the attached peripherals.
4. Disconnect your computer from the electrical outlet.
5. Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.
6. Remove any media card and optical drive from your computer, if applicable.
7. To clean the air vents, use a soft brush and move vertically.

   **NOTE:** Do not remove the base cover or use any blower to clean the vents.

8. Enter the Service Mode.

   **Service Mode**

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

   **CAUTION: If you are unable to turn on the computer to put it into Service Mode, disconnect the battery cable. To disconnect the battery cable, follow the steps in Removing the battery.**

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

   a. Press and hold the B key and the power button for 3 seconds or until the Dell logo appears on the screen.
   b. Press any key to continue.
   c. If the power adapter is not disconnected, a message prompting you to disconnect the power adapter appears on the screen. Disconnect the power adapter and then press any key to enter into the Service Mode. The Service Mode setup automatically skips the following step if the **`Owner Tag`** of the computer is not set up in advance by the user.
   d. When the **ready-to-proceed** message appears on the screen, press any key to proceed. The computer emits three short beeps and shuts down immediately.
      The computer shuts down and enters the Service Mode.

# Safety precautions

This section details the primary steps to be followed before disassembling any device or component.

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

- Turn off the computer and all attached peripherals.
- Disconnect the computer from AC power.
- Disconnect all network cables and peripherals from the computer.
- Use an ESD field service kit when working inside your computer to avoid electrostatic discharge (ESD) damage.
- Place the removed component on an anti-static mat after removing it from the computer.
- Press and hold the power button for 15 seconds to discharge the residual power in the system board.

## Bonding

Bonding is a method for connecting two or more grounding conductors to the same electrical potential. This is done by using a field service electrostatic discharge (ESD) kit. When connecting a bonding wire, ensure that it is connected to bare metal and never to a painted or nonmetal surface. Ensure that the wrist strap is secure and in full contact with your skin. Remove all jewelry, watches, bracelets, or rings before grounding yourself and the equipment.

# Electrostatic discharge—ESD protection

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

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

- **Catastrophic** – Catastrophic failures represent approximately 20 percent of ESD-related failures. The damage causes an immediate and complete loss of device functionality. An example of catastrophic failure is a memory module that has received a static shock and immediately generates a "No POST/No Video" symptom with a beep code that is emitted for missing or nonfunctional memory.

- **Intermittent** – Intermittent failures represent approximately 80 percent of ESD-related failures. The high rate of intermittent failures means that most of the time when damage occurs, it is not immediately recognizable. The memory module receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms that are related to the damage. The weakened trace may take weeks or months to melt, and in the meantime may cause degradation of memory integrity, intermittent memory errors, and so on.

Intermittent failures that are also called latent or "walking wounded" are difficult to detect and troubleshoot.

Perform the following steps to prevent ESD damage:

- Use a wired ESD wrist strap that is properly grounded. Wireless anti-static straps do not provide adequate protection. Touching the chassis before handling parts does not ensure adequate ESD protection on parts with increased sensitivity to ESD damage.
- Handle all static-sensitive components in a static-safe area. If possible, use anti-static floor pads and workbench pads.
- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the anti-static packing material until you are ready to install the component. Before unwrapping the anti-static packaging, use the anti-static wrist strap to discharge the static electricity from your body.

  **NOTE:** You can protect against ESD and discharge static electricity from your body by touching a metal-grounded object before you interact with anything electronic, for example, an unpainted metal surface on your computer's I/O panel. When connecting a peripheral (including handheld digital assistants) to your computer, you should always ground both yourself and the peripheral before connecting it to the computer. In addition, as you work inside the computer, periodically touch a metal-grounded object to remove any static charge that your body may have accumulated.

  For more information about the wrist strap and ESD wrist strap tester, see Components of an ESD Field Service Kit.
- Before transporting a static-sensitive component, place it in an anti-static container or packaging.

# ESD Field Service kit

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

**CAUTION: It is critical to keep ESD-sensitive devices away from internal parts that are insulated and often highly charged, such as plastic heat sink casings.**

## Working environment

Before the ESD Field Service kit is deployed, conduct an evaluation of the site to ensure proper setup and readiness. For example, deploying the kit for a server environment is different than for a desktop or laptop environment. Servers are typically installed in a rack within a data center; desktops or laptops are typically placed on office desks or cubicles. Always look for a large open flat work area that is free of clutter and large enough to deploy the ESD kit with additional space to accommodate the type of computer that is being repaired. The workspace should also be free of insulators that can cause an ESD event. On the work area, insulators such as styrofoam and other plastics should always be moved at least 12 inches or 30 centimeters away from sensitive parts before physically handling any hardware components.

## ESD packaging

All ESD-sensitive devices must be shipped and received in static-safe packaging. Metal, static-shielded bags are preferred. However, you should always return the damaged component using the same ESD bag and packaging that the new part arrived in. The ESD bag should be folded over and taped shut and all the same foam packing material should be used in the original box that the new part arrived in. ESD-sensitive devices should be removed from packaging only at an ESD-protected work surface, and parts should never be placed on top of the ESD bag because only the inside of the bag is shielded. Always place parts in your hand, on the anti-static mat, in the computer, or inside an ESD bag.

## Components of an ESD Field Service kit

The components of an ESD Field Service kit are:

- **Anti-Static Mat** – The anti-static mat is dissipative and parts can be placed on it during service procedures. When using an anti-static mat, your wrist strap should be snug and the bonding wire should be connected to the anti-static mat and to any bare metal on the computer being worked on. Once deployed properly, service parts can be removed from the ESD bag and

placed directly on the anti-static mat. ESD-sensitive items are safe in your hand, on the anti-static mat, in the computer, or inside an ESD bag.

- **Wrist Strap and Bonding Wire** – If an anti-static mat is not being used, the wrist strap and bonding wire should be connected directly between your wrist and an exposed metal part of the hardware. If you are using an anti-static mat, connect the wrist strap and bonding wire to the anti-static mat to ensure protection for any hardware placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the anti-static mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, anti-static mat, and bonding wire. Never use wireless wrist straps. Always be cautious that the internal wires of a wrist strap are prone to damage from normal wear and tear, and must be checked regularly with a wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the wrist strap and bonding wire at least once per week.
- **ESD Wrist Strap Tester** – The wires inside an ESD strap are prone to damage over time. When using an unmonitored ESD kit, it is recommended to test the wrist strap regularly—ideally before each service session, and at a minimum, once per week. The most reliable method for testing is with a wrist strap tester. To perform the test, connect the bonding wire of the wrist strap to the tester while wearing the strap. Press the test button to initiate the check. A green LED indicates a successful test, while a red LED and audible alarm signal a failure.

**NOTE:** It is recommended to always use the traditional wired ESD grounding wrist strap and protective anti-static mat when servicing Dell products. In addition, it is critical to keep sensitive parts separate from all insulator parts while servicing the computer.

## Transporting sensitive components

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

## After working inside your computer

### About this task

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

### Steps

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

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

5. Press the power button to turn on the computer.

# BitLocker

When updating the BIOS on a computer with BitLocker enabled, consider the following precautions.

**CAUTION: If BitLocker is not suspended before updating the BIOS, the BitLocker key will not be recognized the next time that you reboot the computer. You are prompted to enter the recovery key to progress, and the computer displays a prompt for the recovery key on each reboot. If the recovery key is not known, this can result in data loss or an operating system reinstall. For more information, see Knowledge Article: updating the BIOS on Dell computers with BitLocker enabled.**

The installation of the following components triggers BitLocker:

- Hard disk drive or solid state drive
- System board

# Recommended tools

The procedures in this document may require the following tools:

- Phillips screwdriver #0
- Plastic scribe

# Screw list

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

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

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

### Table 30. Screw list

| Component | Screw type | Quantity | Screw image |
|---|---|---|---|
| Base cover | Captive screw | 2 |  |
| | M2x5 | 6 |  |
| Battery | M2x3.5 | 5 |  |
| Solid state drive bracket | M2x3.5 | 3 |  |
| Solid state drive | M1.6x1.8 | 1 |  |
| Wireless card | M2x3.5 | 1 |  |
| Fan | M2x5.5 | 2 |  |
| Heat sink - for computers shipped with integrated graphics card | Captive screws | 4 |  |
| Heat sink - for computers shipped with discrete graphics card | M2x3.5 | 3 |  |
| | Captive screws | 4 |  |
| Touchpad | M2x2.3 | 7 |  |
| Display hinges | M2.5x5 | 5 |  |

**Table 30. Screw list (continued)**

| Component | Screw type | Quantity | Screw image |
|---|---|---|---|
| I/O board | M2x3.5 | 3 |  |
| Power button | M2x2.3 | 1 |  |
| Power button with fingerprint reader | M2x2.3 | 1 |  |
| System board | M2x3.5 | 4 |  |
| | M1.6x1.8 | 1 |  |

# Major components of Dell 16 DC16251

The following image shows the major components of Dell 16 DC16251.

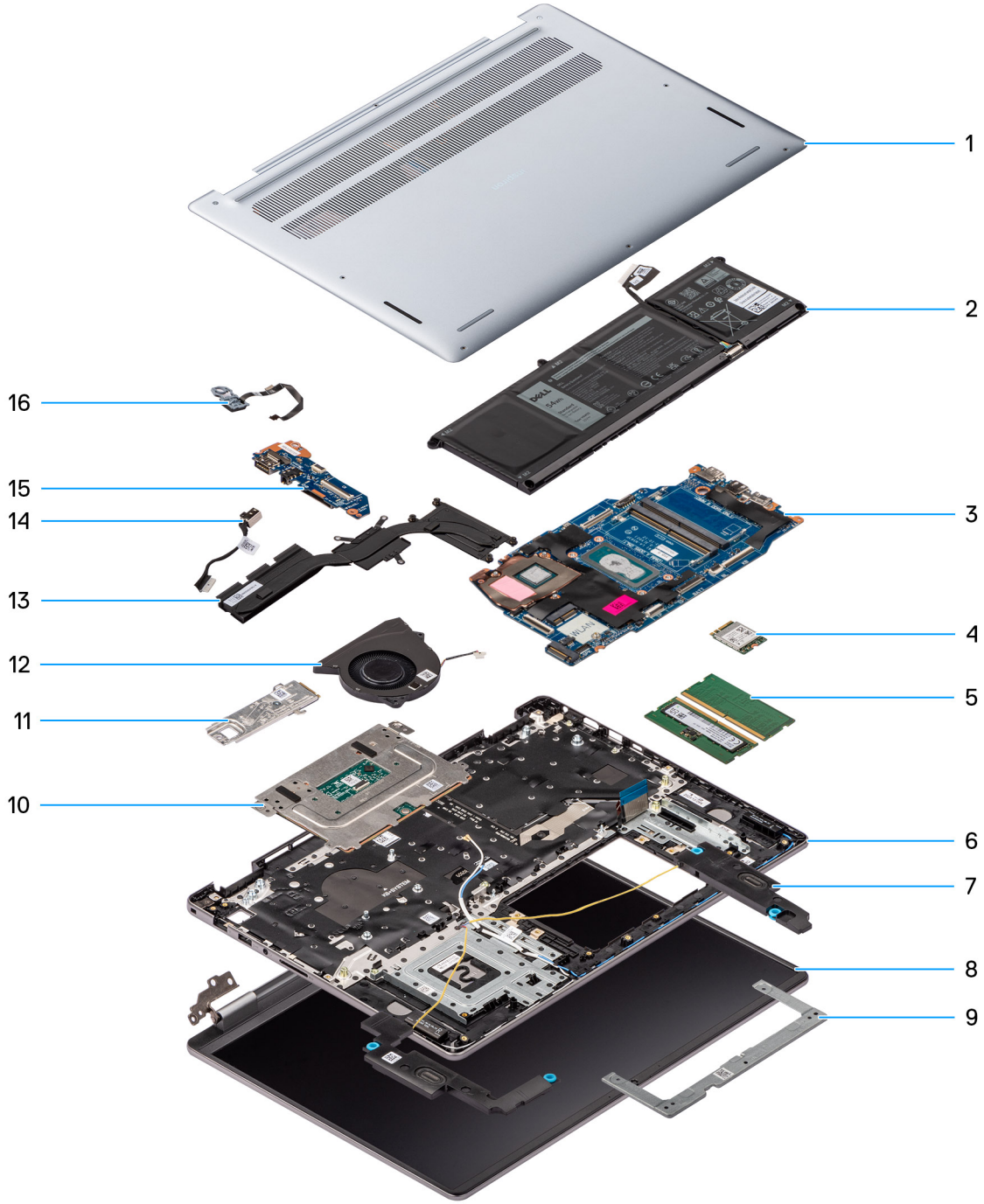


**Figure 11. Major components of Dell 16 DC16251**

1. Base cover
2. Battery
3. System board
4. Wireless card
5. Memory modules
6. Palm-rest and keyboard assembly
7. Speakers
8. Display assembly
9. Touchpad bracket
10. Touchpad
11. Solid state drive with bracket

12. Fan
13. Heat sink
14. Power-adapter port
15. I/O board
16. Power button with optional fingerprint reader

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

# 5

# Removing and installing Customer Replaceable Units (CRUs)

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

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

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

# Base cover

## Removing the base cover

### Prerequisites

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

**CAUTION: Ensure that your computer is in Service Mode. If the computer does not turn on, does not enter Service Mode, or does not support Service Mode, proceed to disconnect the battery cable.**

### About this task

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


**Figure 12. Removing the base cover**

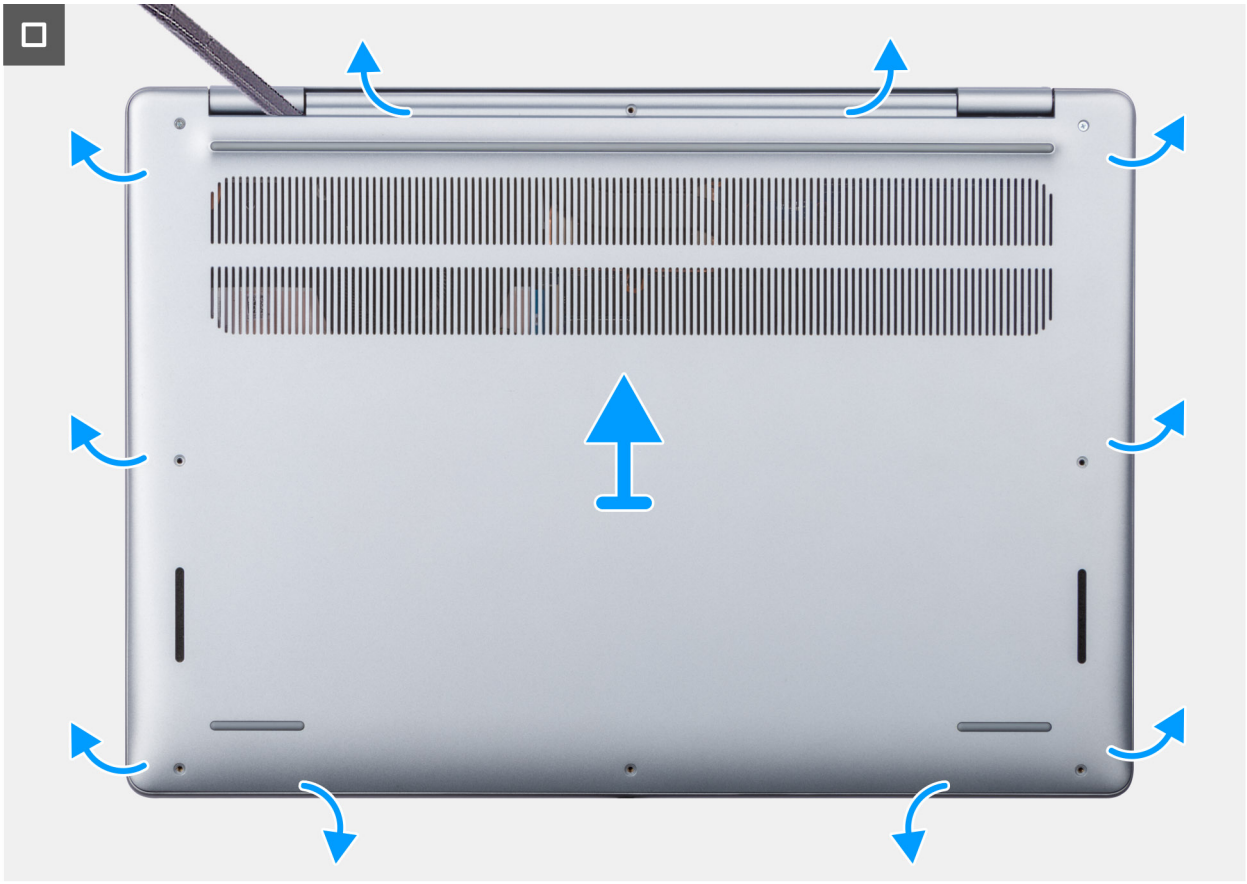

Figure 13. Removing the base cover

### Steps

1. Remove the six screws (M2x5) and loosen the two captive screws that secure the base cover to the palm-rest and keyboard assembly.

   **NOTE:** Upon loosening the captive screws, the base cover opens up creating a gap between the base cover and the palm-rest assembly at the hinges.

2. Using a plastic scribe, pry open the base cover starting from the recesses, which are located in the U-shaped indents at the top edge of the base cover, near the hinges.
3. Pry open the top side of the base cover and continue working on the left, right, and bottom sides to release to open the base cover.
4. Lift and remove the base cover off the palm-rest and keyboard assembly.

## 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.

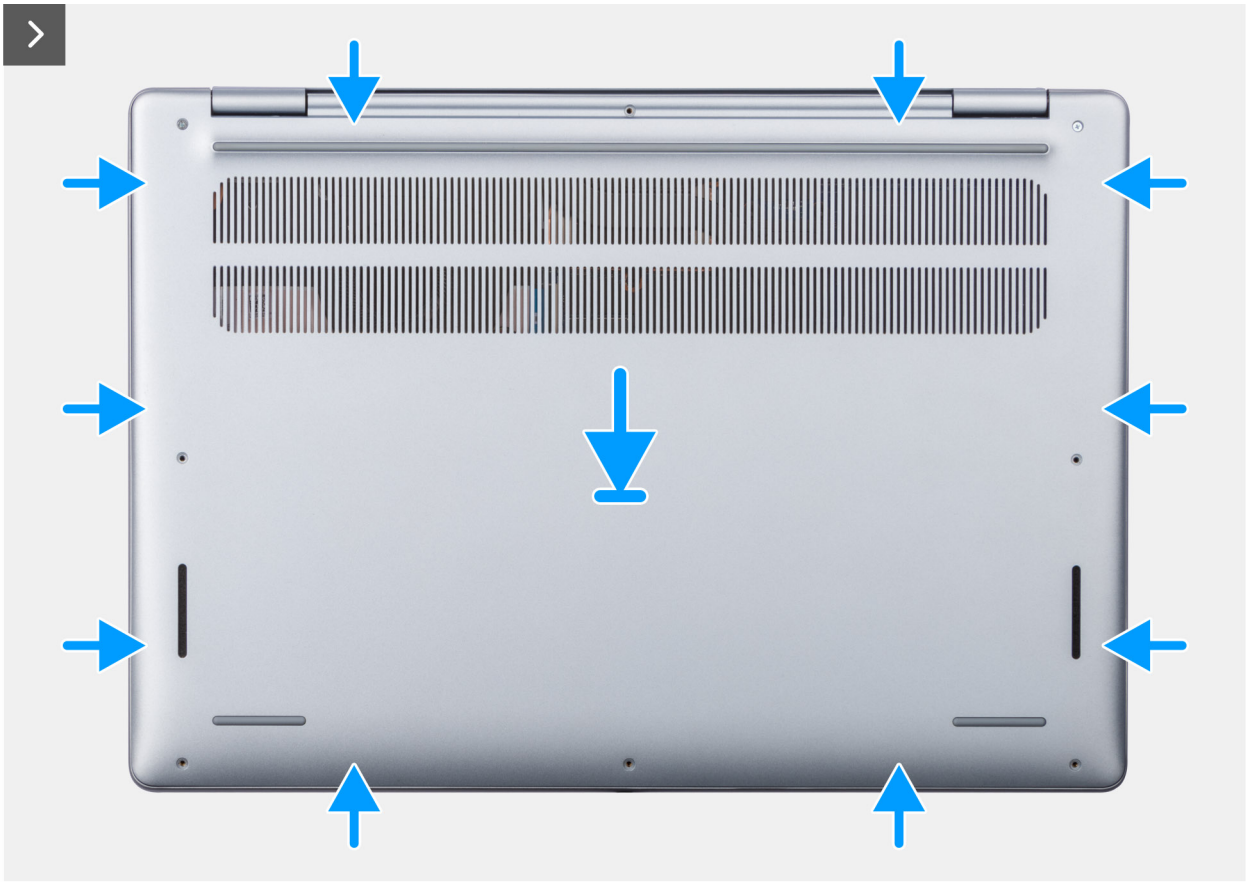

Figure 14. Installing the base cover


**Figure 15. Installing the base cover**

### Steps

1. Place the base cover on the palm-rest and keyboard assembly.
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. Tighten the two captive screws and replace the six screws (M2x5) to secure the base cover to the palm-rest and keyboard assembly.

### Next steps

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

# Battery

## Rechargeable Li-ion battery precautions

**WARNING:**

- **Exercise caution when handling rechargeable Li-ion batteries.**

- **Discharge the battery completely before removing it. Disconnect the AC power adapter from the computer and operate the computer solely on battery power—the battery is fully discharged when the computer no longer turns on when the power button is pressed.**
- **Do not crush, drop, mutilate, or penetrate the battery with foreign objects.**
- **Do not expose the battery to high temperatures, or disassemble battery packs and cells.**
- **Do not apply pressure to the surface of the battery.**
- **Do not bend the battery.**
- **Do not use tools of any kind to pry on or against the battery.**
- **To prevent accidental puncture or damage to the battery and other components, ensure that no screws are lost or misplaced during the servicing of the computer.**
- **Always purchase genuine batteries from Dell Site or authorized Dell partners and resellers.**
- **Swollen batteries should not be used and should be replaced and disposed properly. For guidelines on how to handle and replace swollen rechargeable Li-ion batteries, see Handling swollen rechargeable Li-ion batteries.**

# Removing the 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.

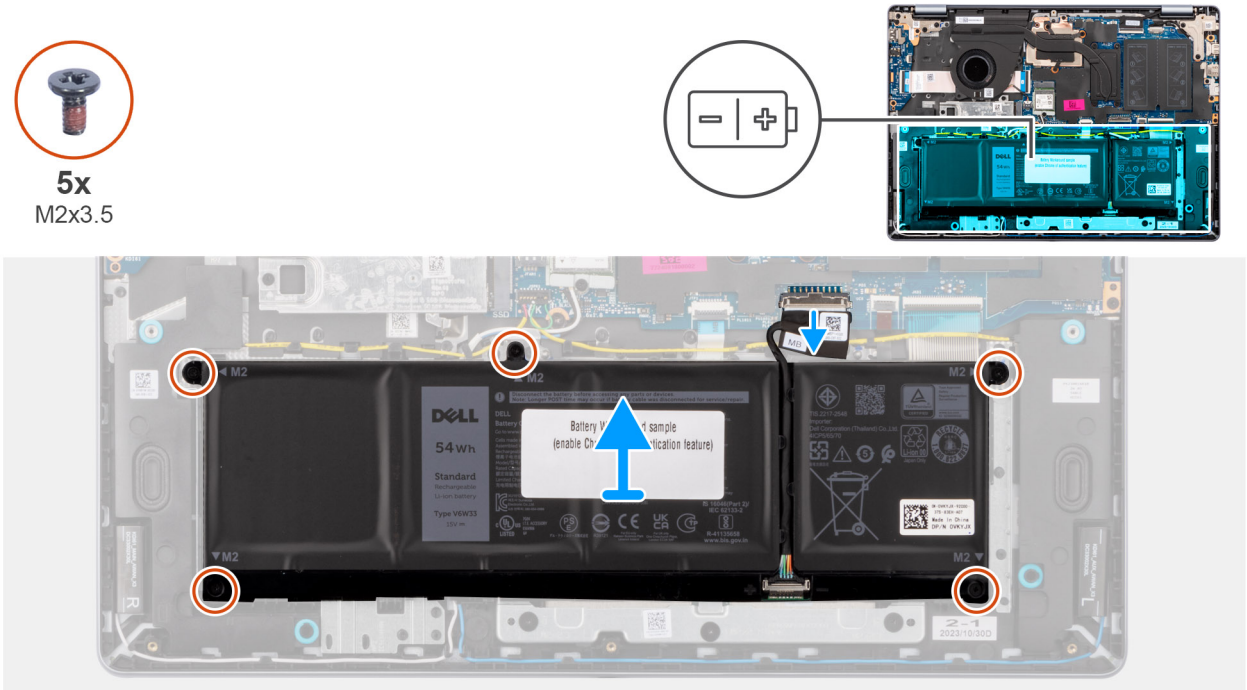


**Figure 16. Removing the battery**

### Steps

1. Open the latch and disconnect the battery cable from the connector (BATT) on the system board.
2. Remove the five screws (M2x3.5) that secure the battery to the palm-rest and keyboard assembly.
3. Lift the battery, along with the battery cable, off the palm-rest and keyboard assembly.

**NOTE:** Battery and battery cable are separate serviceable parts. If battery replacement is required, reuse the same battery cable. To disconnect the battery cable, see Disconnecting the battery cable.

# Installing the battery

### Prerequisites

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

### About this task

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

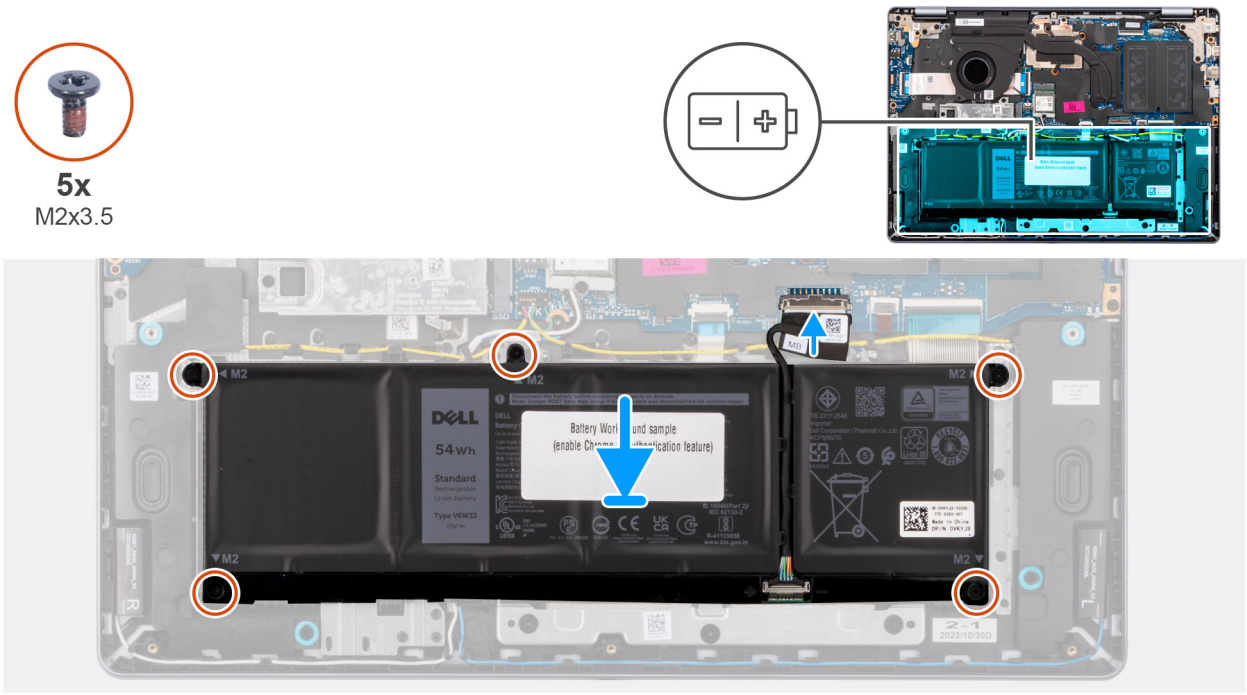


**Figure 17. Installing the battery**

**NOTE:** Battery and battery cable are separate serviceable parts. If battery replacement is required, reuse the same battery cable. To connect the battery cable, see Connecting the battery cable.

### Steps

1. Place the battery, along with the battery cable, in the slot on the palm-rest and keyboard assembly.

   **NOTE:** When placing the battery, insert the tabs on the battery into the hooks on the palm-rest and keyboard assembly.

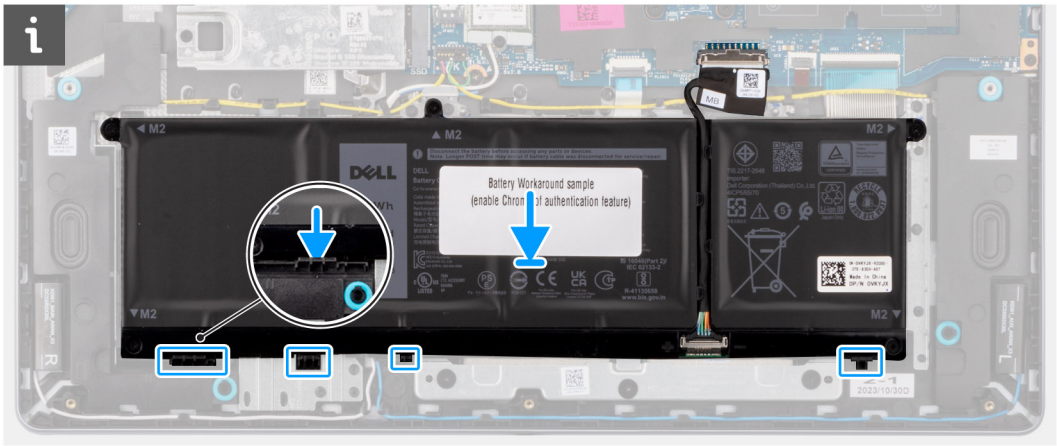


**Figure 18. Installing the battery - Insert the tabs into hooks**

2. Align the screw holes on the battery with the screw holes on the palm-rest and keyboard assembly.
3. Replace the five screws (M2x3.5) to secure the battery to the palm-rest and keyboard assembly.
4. Connect the battery cable to the connector (BATT) on the system board.

### Next steps

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

# Battery cable

## Disconnecting the battery cable

### Prerequisites

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

### About this task

The following images in the steps indicate the location of the battery cable and provide a visual representation of disconnecting the battery cable.

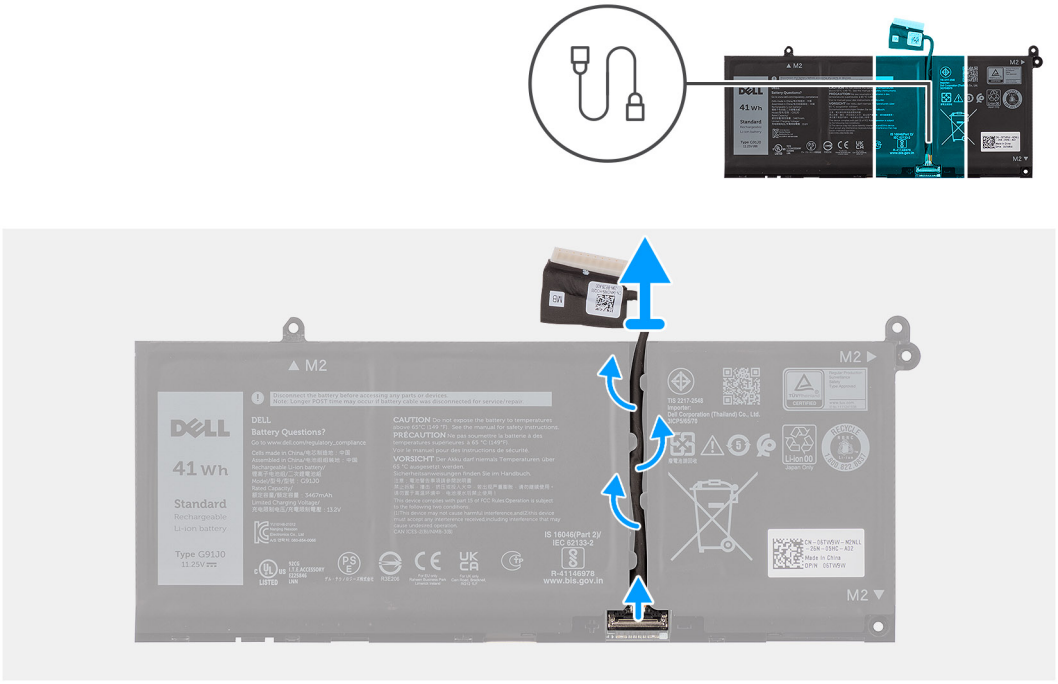


**Figure 19. Disconnecting the battery cable**

### Steps

1. Remove the battery cable from the routing guides on the battery.
2. Open the latch and disconnect the battery cable from the connector on the battery.

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

**NOTE:** To disconnect the battery cable, first push the latch downward to release the connector, and then pull the connector upward to disconnect it from the battery.

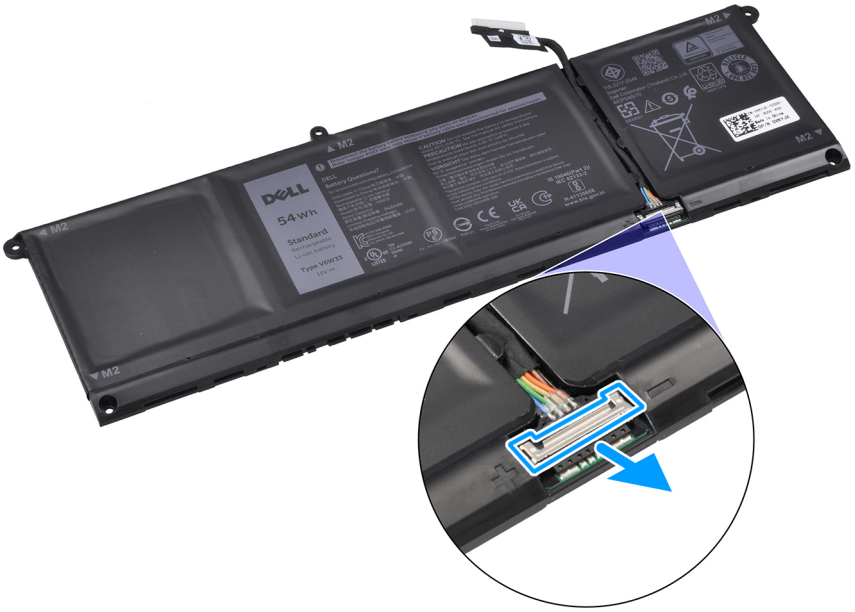


**Figure 20. Releasing the battery cable connector**

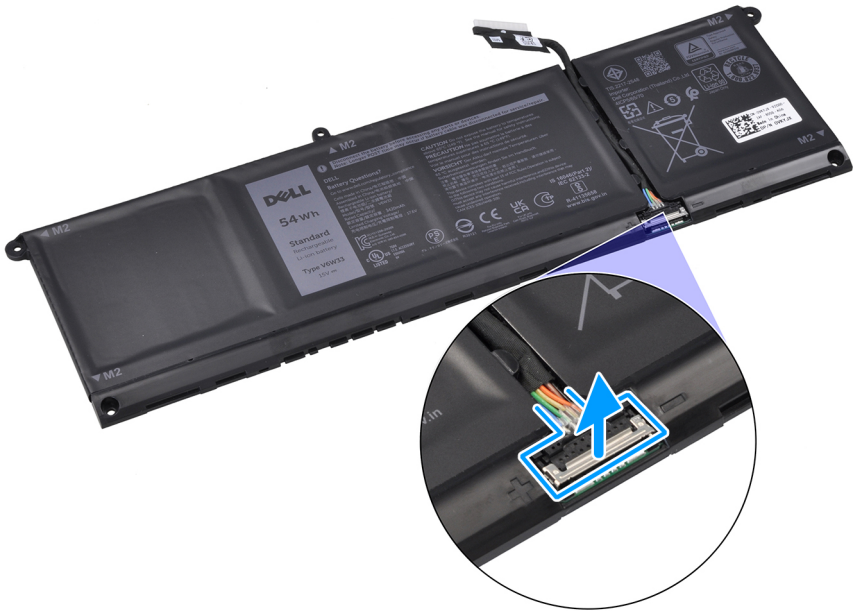

Figure 21. Disconnecting the battery cable

# Connecting the battery cable

### Prerequisites

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

### About this task

The following images in the steps indicate the location of the battery cable and provide a visual representation of the connecting the battery cable.

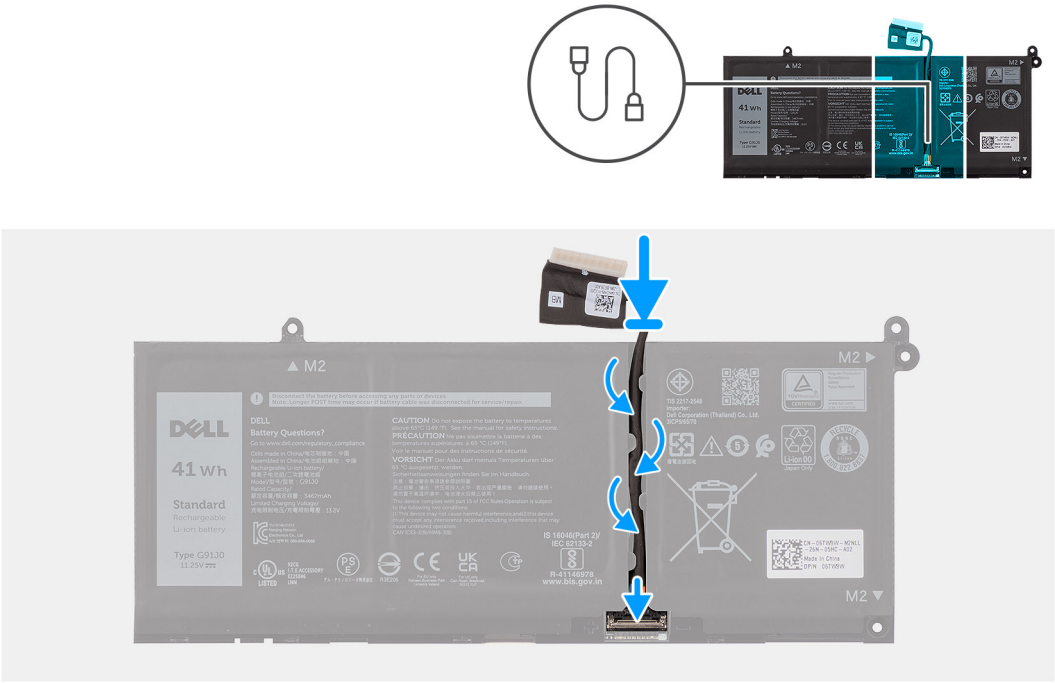

Figure 22. Connecting the battery cable

### Steps

1. Connect the battery cable to the connector on the battery and close the latch.
2. Route the battery cable through the routing guides on the battery.

### Next steps

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

# Memory module

## Removing the memory module

### Prerequisites

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

### About this task

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

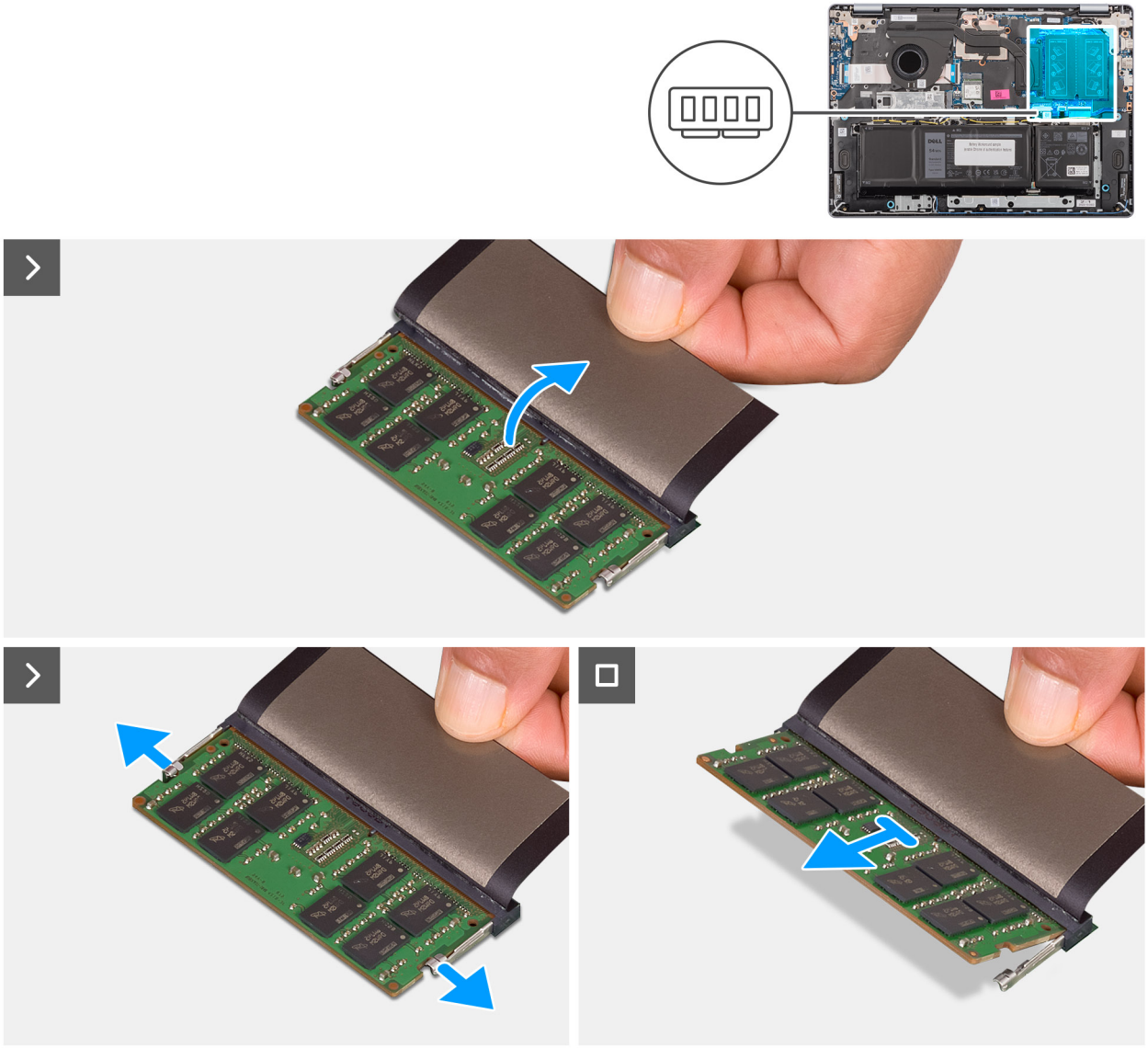

Figure 23. Removing the memory module

### Steps

1. Lift the Mylar to access the memory module.
2. Pull the retention clips away from the memory module until the memory module pops-up.
3. Hold the memory module by the edges and slide to remove it from the memory-module slot (DIMM A DDR5 ONLY).

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

4. Repeat step 1 to step 3 to remove the memory module from the second slot (DIMM B DDR5 ONLY), if installed.

## Installing the memory module

### Prerequisites

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

### About this task

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

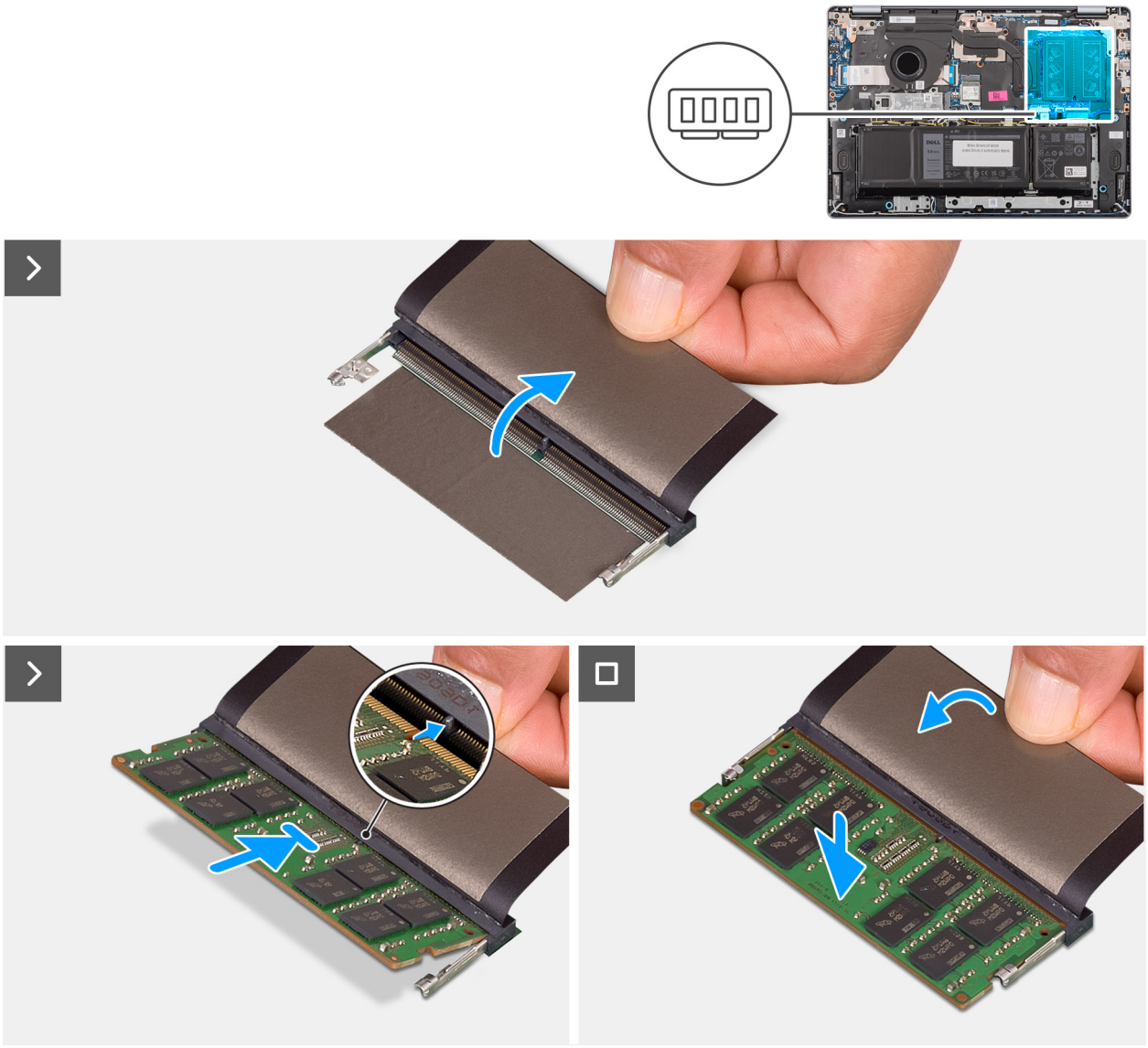

**Figure 24. Installing the memory module**

### Steps

1. Lift the Mylar to access the memory-module slot.
2. Align the notch on the memory module to the tab on the memory-module slot (DIMM A DDR5 ONLY).
3. Slide the memory module firmly into the memory-module slot at an angle.
4. Press down on the memory module until the securing clips firmly click into place.

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

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

5. Repeat step 1 to step 4 when installing the memory module in the second slot (DIMM B DDR5 ONLY).

### Next steps

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

# Solid state drive

## Removing the solid state drive

### Prerequisites

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

### About this task

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

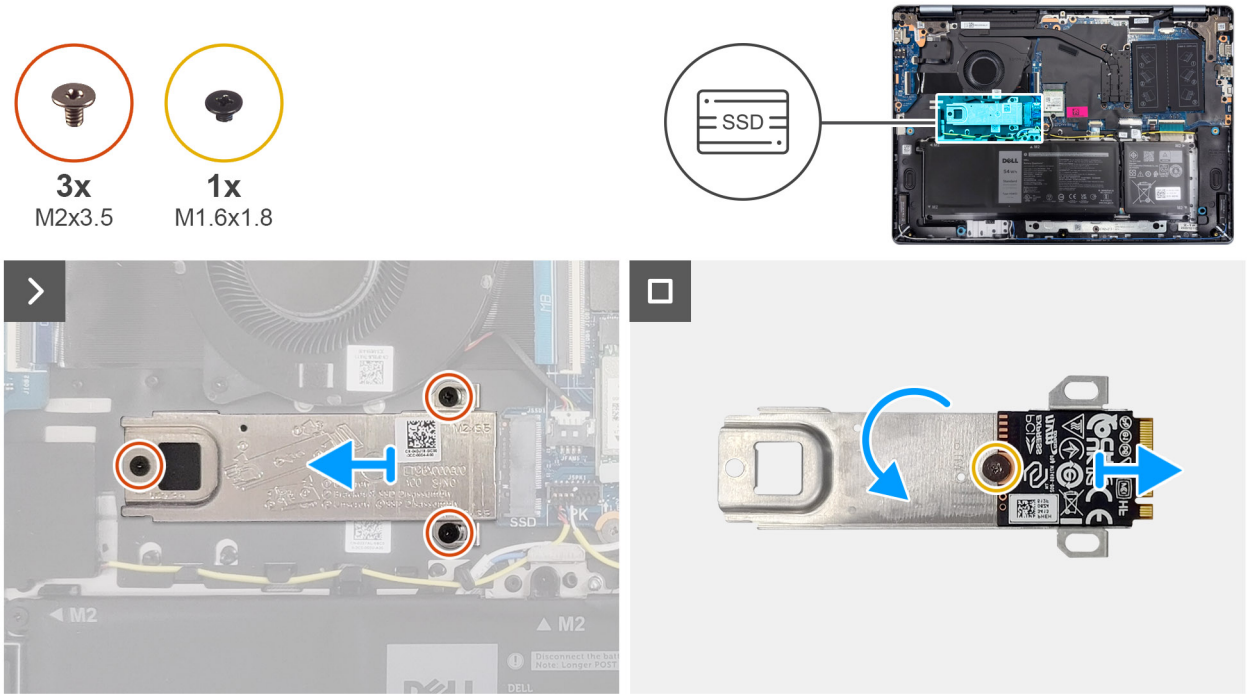


**Figure 25. Removing the solid state drive**

### Steps

1. Remove the three screws (M2x3.5) that secure the solid state drive bracket and the solid state drive to the palm-rest and keyboard assembly.
2. Slide and remove the solid state drive bracket along with the solid state drive from the connector (SSD) on the system board.
3. Flip over the bracket and remove the screw (M1.6x1.8) that secures the solid state drive to the bracket.
4. Remove the solid state drive from the bracket.

## Installing the solid state drive

### Prerequisites

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

### About this task

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

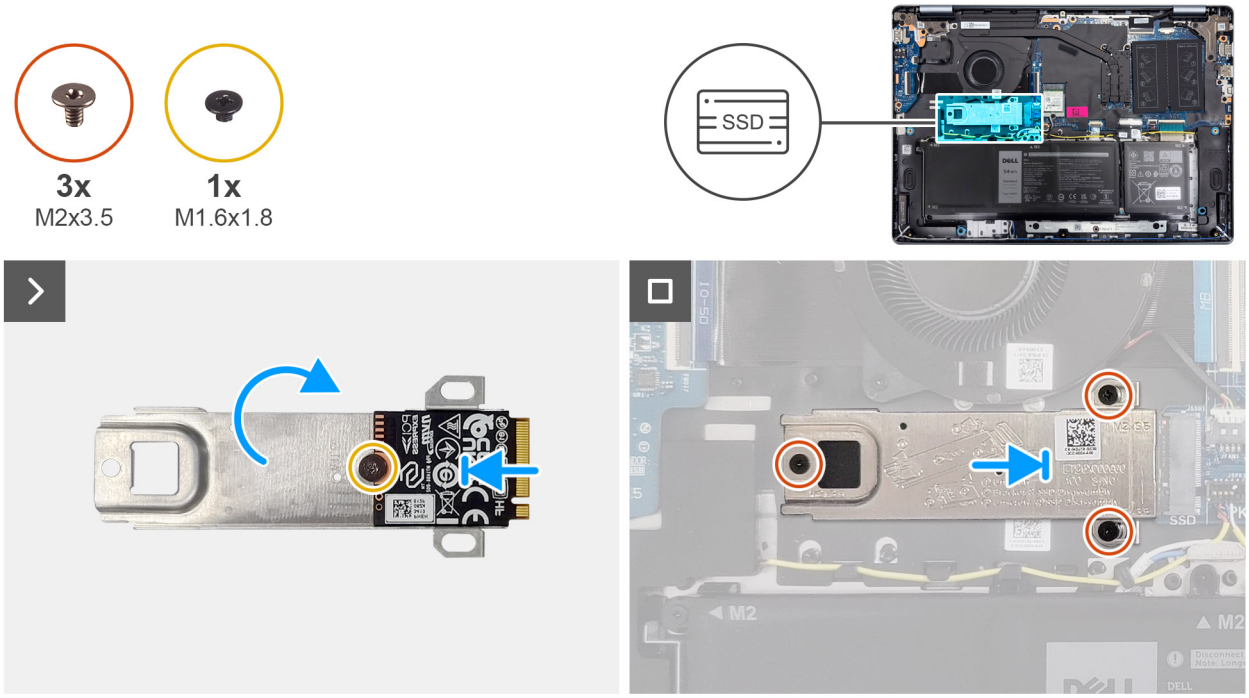


**Figure 26. Installing the solid state drive**

### Steps

1. Align and place the solid state drive on the solid state drive bracket.
2. Replace the screw (M1.6x1.8) to secure the solid state drive to the bracket and flip the bracket.
3. Align the notch on the solid state drive to the tab on the M.2 card slot.
4. Slide the solid state drive bracket along with the solid state drive at an angle into the M.2 card slot (SSD) on the system board.
5. Align the screw holes on the solid state drive bracket with the screw holes on the palm-rest and keyboard assembly.
6. Replace the three screws (M2x3.5) to secure the solid state drive bracket and the 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.

# Wireless card

## Removing the wireless card

### Prerequisites

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

### About this task

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

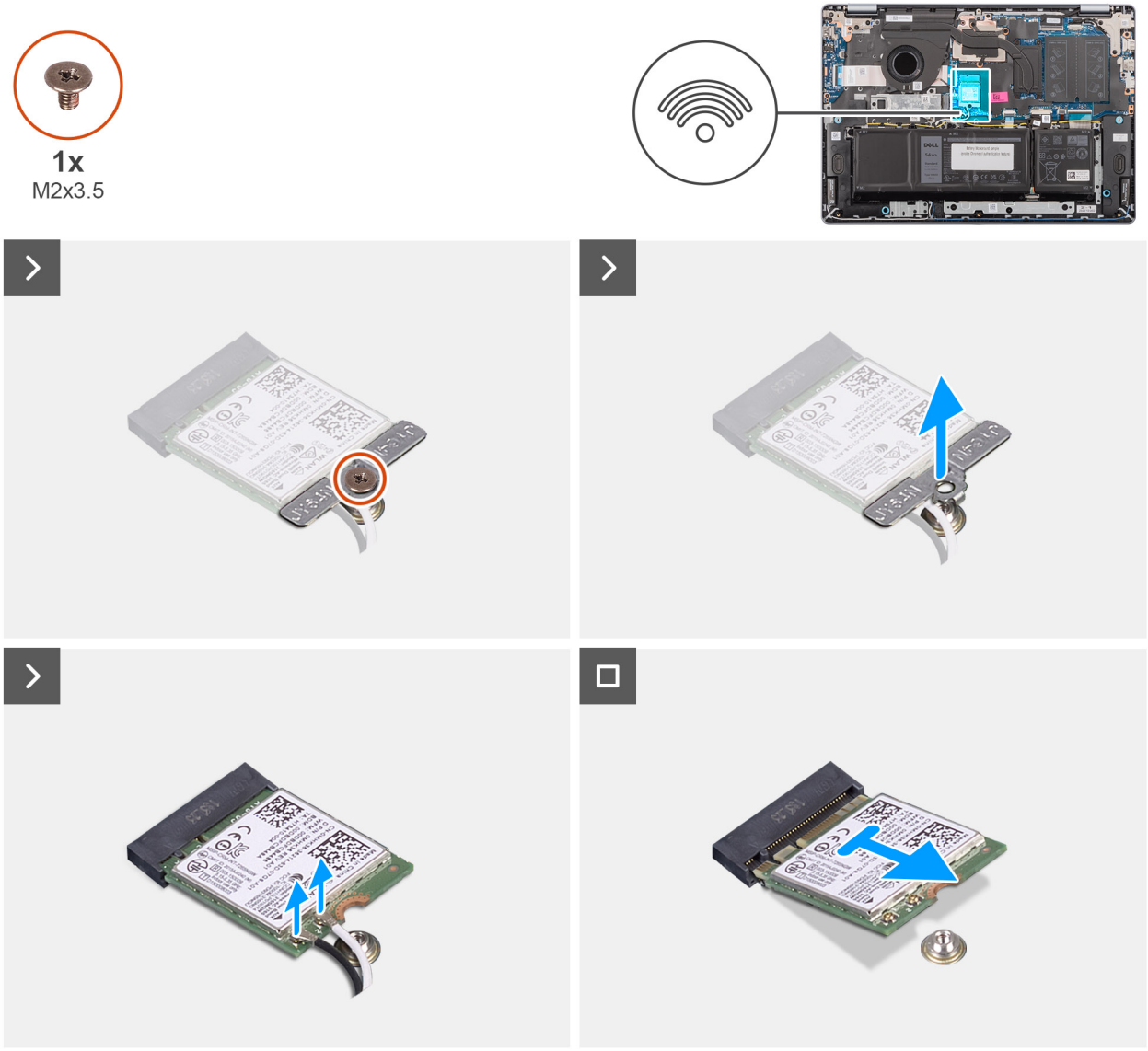


Figure 27. Removing the wireless card

### Steps

1. Remove the screw (M2x3.5) that secures the wireless-card bracket to the system board.
2. Lift the wireless-card bracket off the wireless card.
3. Disconnect the wireless-antenna cables from the connectors on the wireless card.
4. Slide and remove the wireless card from the wireless-card slot (WLAN) on the system board.

## Installing the wireless card

### Prerequisites

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

### About this task

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

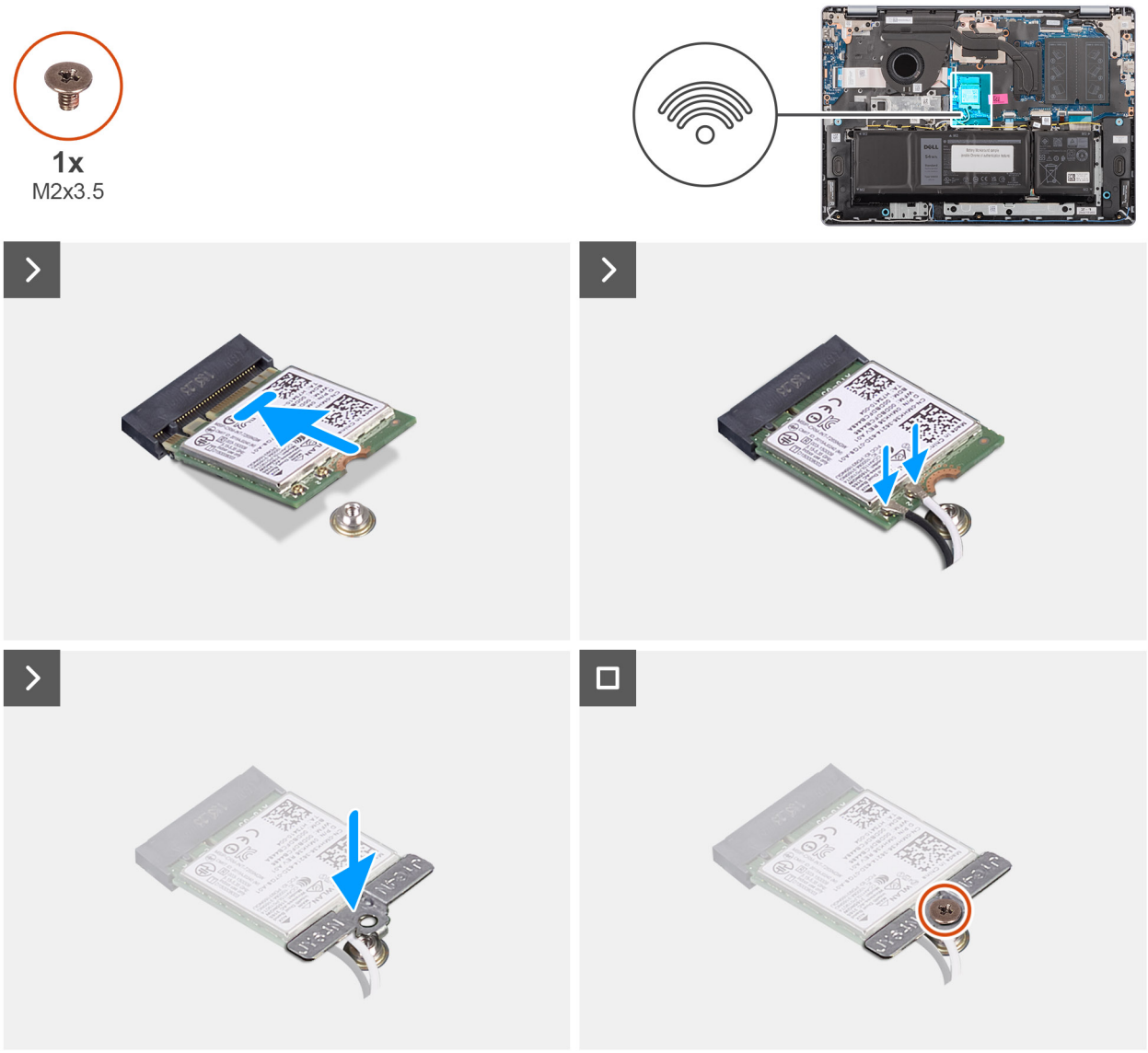


**Figure 28. Installing the wireless card**

### Steps

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

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

**Table 31. Antenna-cable color scheme**

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

4. Place the wireless-card bracket on the wireless card.
5. Align the screw hole on the wireless-card bracket with the screw hole on the system board.
6. Replace the screw (M2x3.5) to secure the wireless-card bracket and the wireless 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 images indicate the location of the speakers and provide a visual representation of the removal procedure.

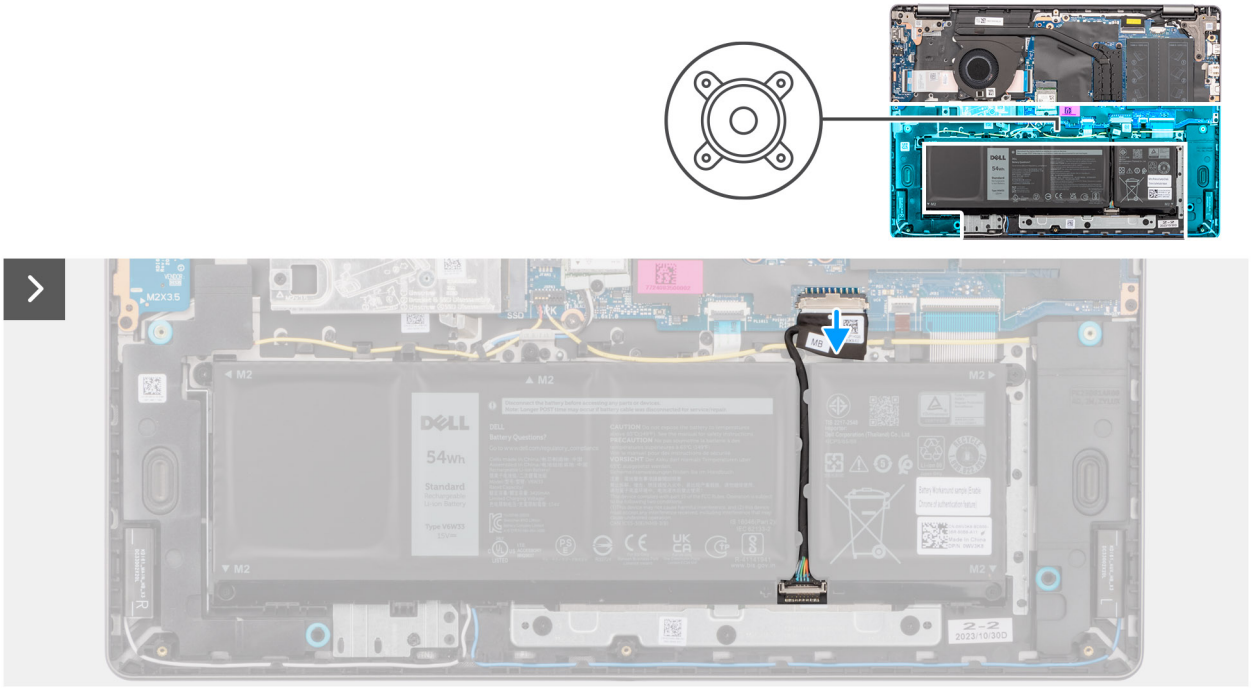

Figure 29. Disconnecting the battery cable

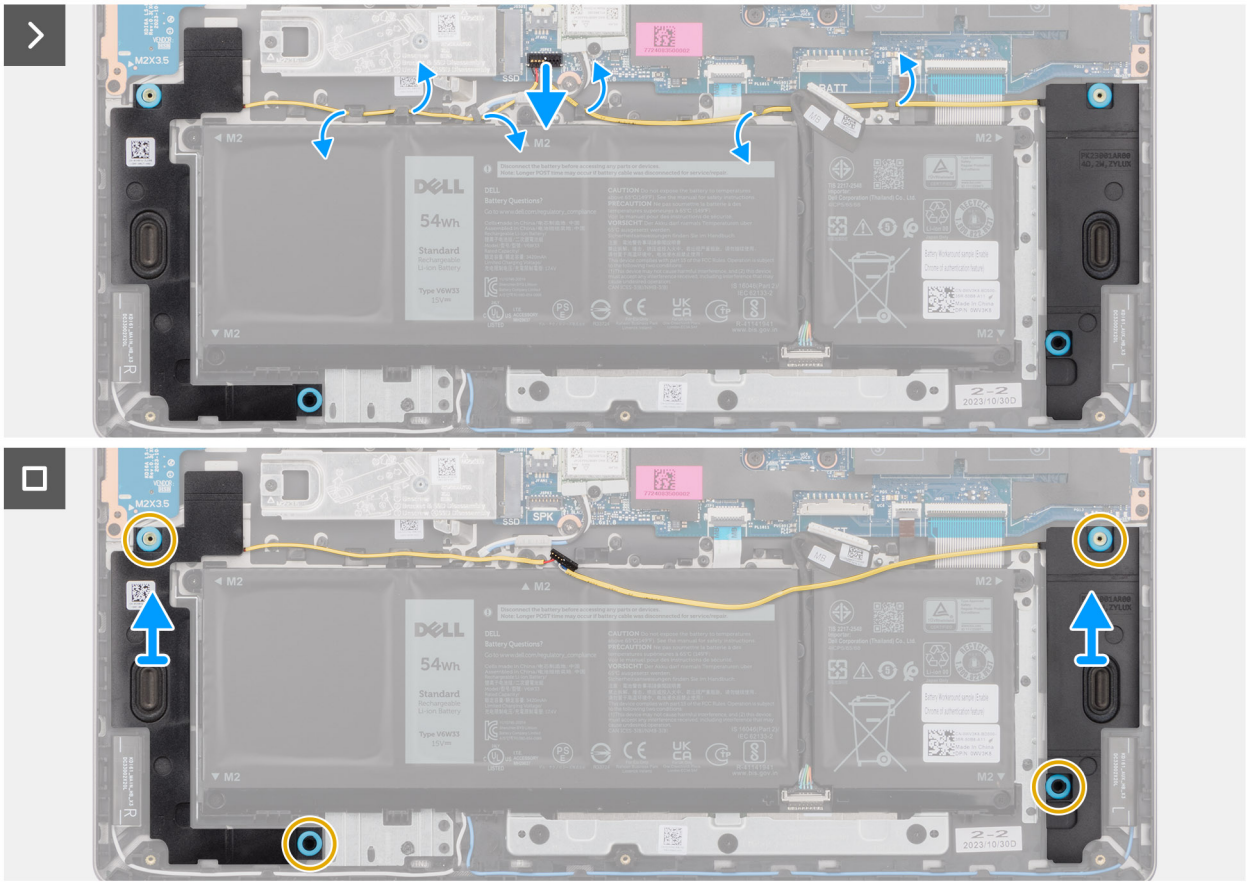


**Figure 30. Removing the speakers**

### Steps

1. Disconnect the battery cable from the connector (BATT) on the system board.
2. Disconnect the speaker cable from the connector (SPK) on the system board.

**CAUTION: To disconnect the speaker cable from the system board, pry the base of the cable connector's head first and then pull it away from the connector (SPK) on the system board. Do not pull the cable downwards to disconnect the speaker cable from the system board.**

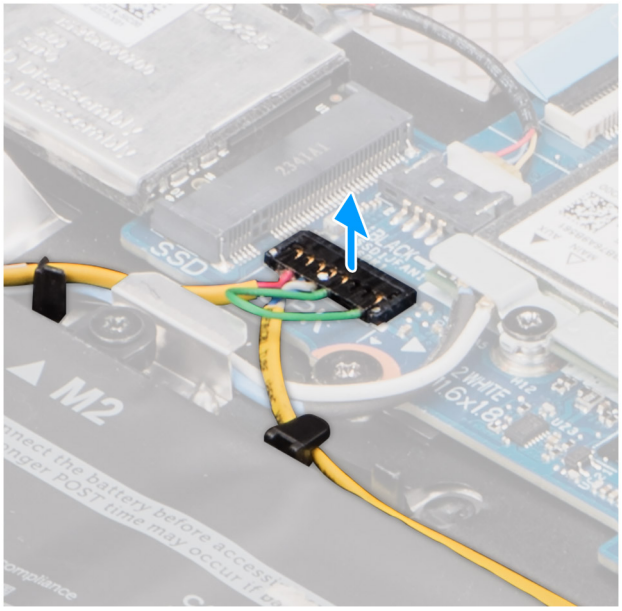


**Figure 31. Disconnecting the speaker cable**

3. Remove the speaker cable from the routing guides on palm-rest and keyboard assembly.
4. 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 images indicate the location of the speakers and provide a visual representation of the installation procedure.

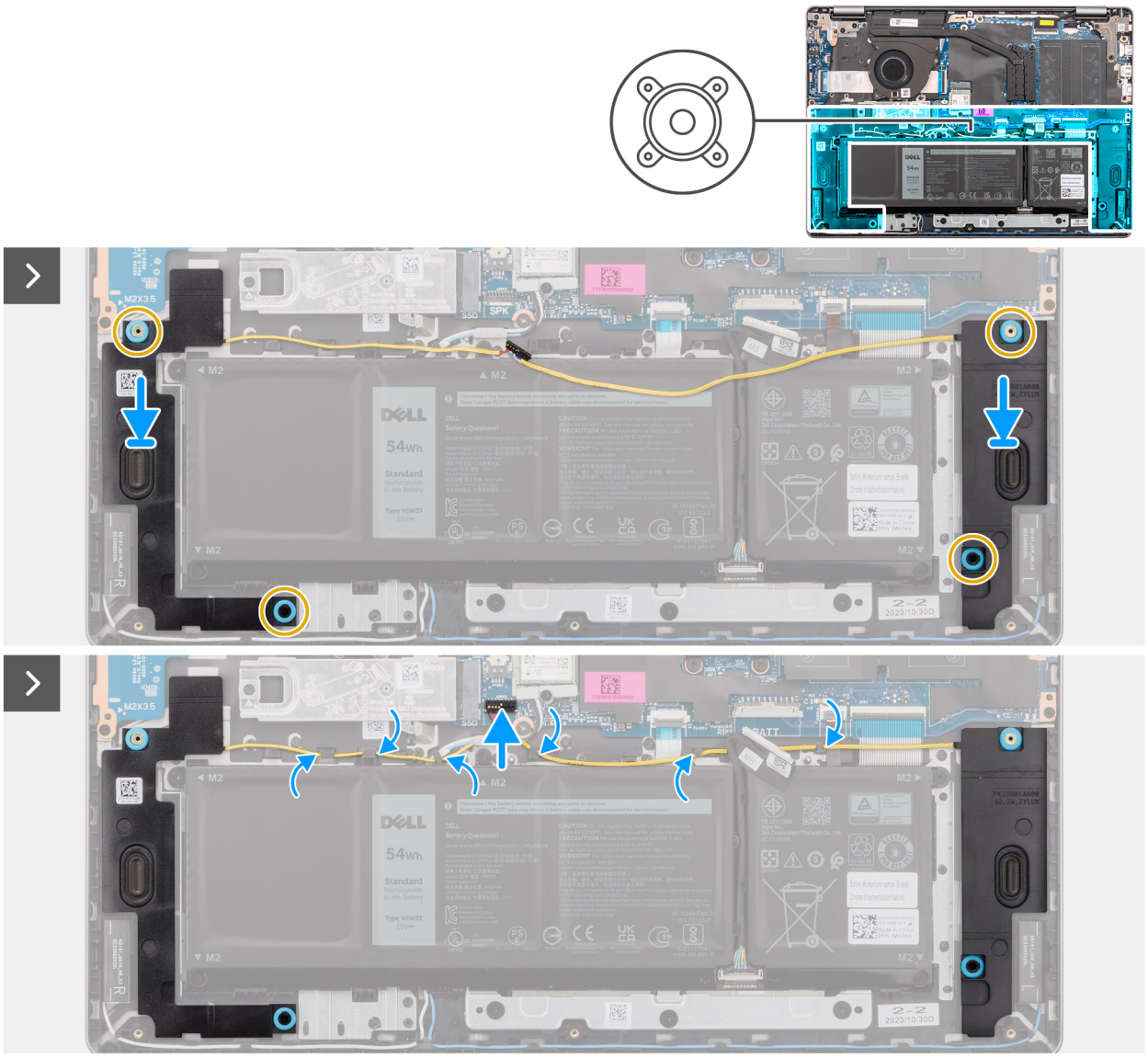

Figure 32. Installing the speakers

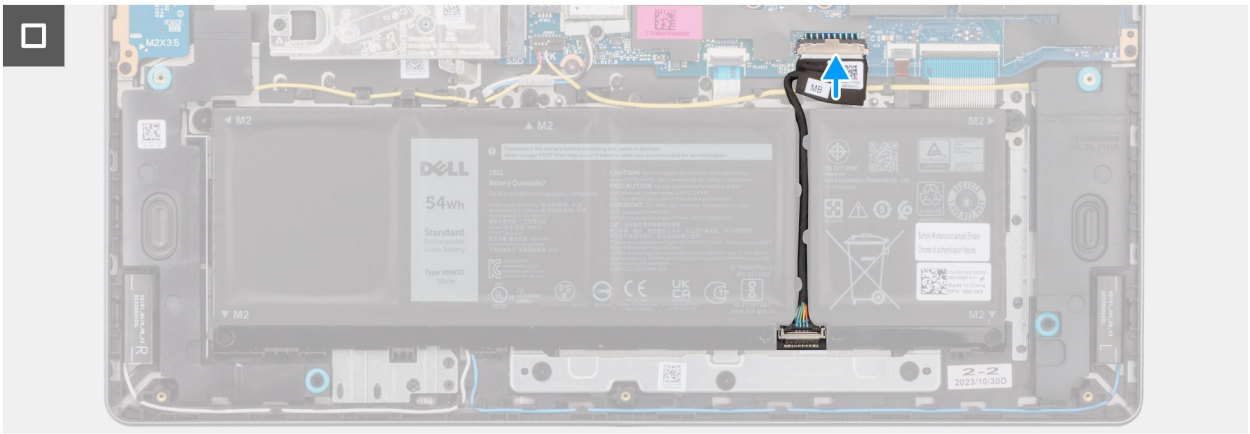

Figure 33. Connecting the battery cable

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

### Steps

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

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

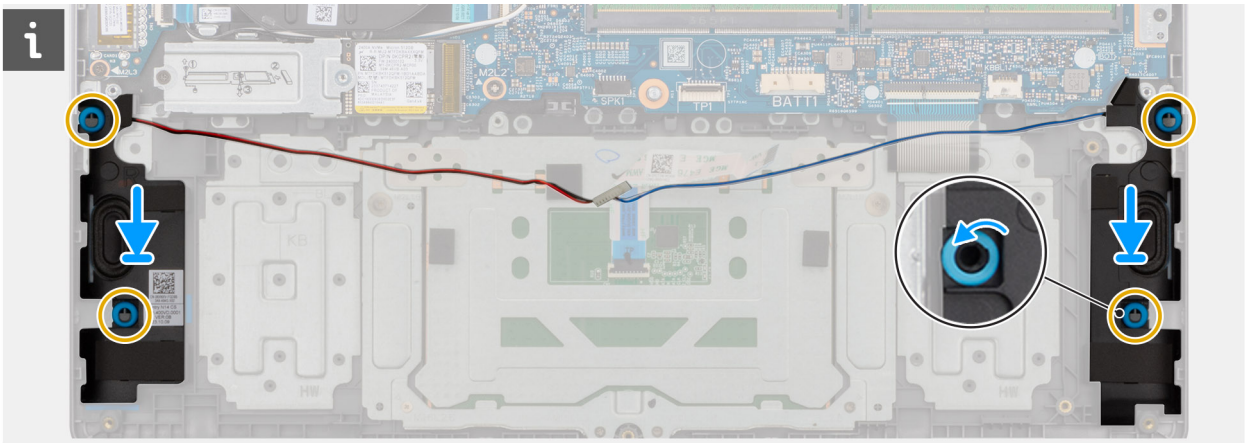

**Figure 34. Aligning the speaker grommets**

2. Route the speaker cable through the routing guides on the palm-rest and keyboard assembly, over the wireless-antenna cables.
3. Connect the speaker cable to the connector (SPK) on the system board.
4. Connect the battery cable to the connector (BATT) on the system board.

### Next steps

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

# Fan

## Removing the fan

### Prerequisites

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

### About this task

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


Figure 35. Removing the fan

### Steps

1. Disconnect the fan cable from the connector (FAN) on the system board.
2. Remove the two screws (M2x5.5) that secure the fan to the palm-rest and keyboard assembly.
3. Lift the fan, along with the fan cable, off the palm-rest and keyboard assembly.

## Installing the fan

### Prerequisites

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

### About this task

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


**Figure 36. Installing the fan**

### Steps

1. Align and place the fan, along with fan cable, in the slot on the palm-rest and keyboard assembly.

   **CAUTION: Avoid touching the fan blades to prevent damage.**

2. Align the screw holes on the fan with the screw holes on the palm-rest and keyboard assembly.
3. Replace the two screws (M2x5.5) to secure the fan to the palm-rest and keyboard assembly.
4. Connect the fan cable to the connector (FAN) on the system board.

### Next steps

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

# 6

# Removing and installing Field Replaceable Units (FRUs)

The replaceable components in this chapter are Field Replaceable Units (FRUs).

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

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

**CAUTION: Dell Technologies recommends that these procedures be performed by trained technical repair specialists.**

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

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

## Heat sink

### Removing the heat sink - for computers shipped with integrated graphics card

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

#### 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 heat sink and provides a visual representation of the removal procedure.

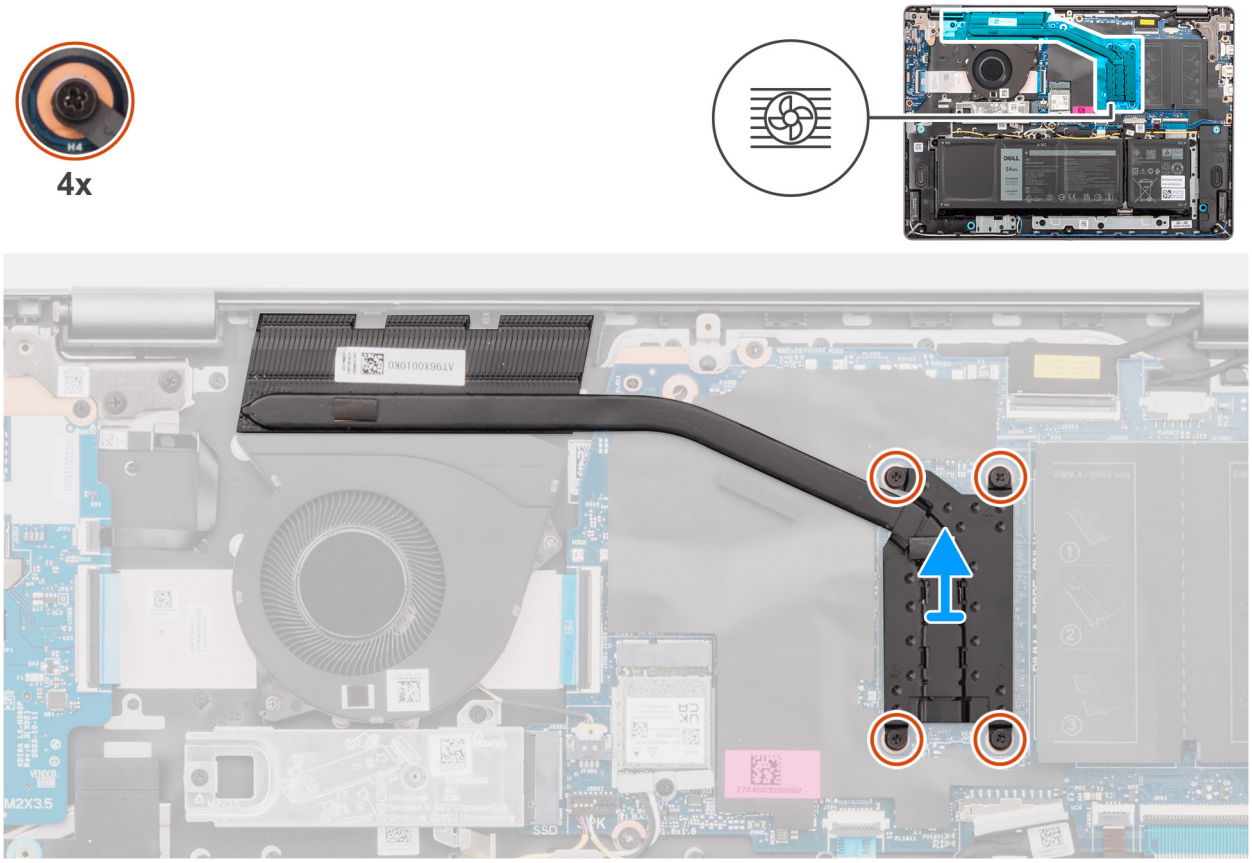


Figure 37. Removing the heat sink - for computers shipped with integrated graphics card

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

**CAUTION: 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.**

### Steps

1. In reverse sequential order (4 → 3 → 2 → 1), loosen the four captive screws that secure the heat sink to the system board.

   **NOTE:** The screw numbers are etched on the heat sink.

2. Lift the heat sink off the system board.

# Installing the heat sink - for computers shipped with integrated graphics card

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

### Prerequisites

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

### About this task

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

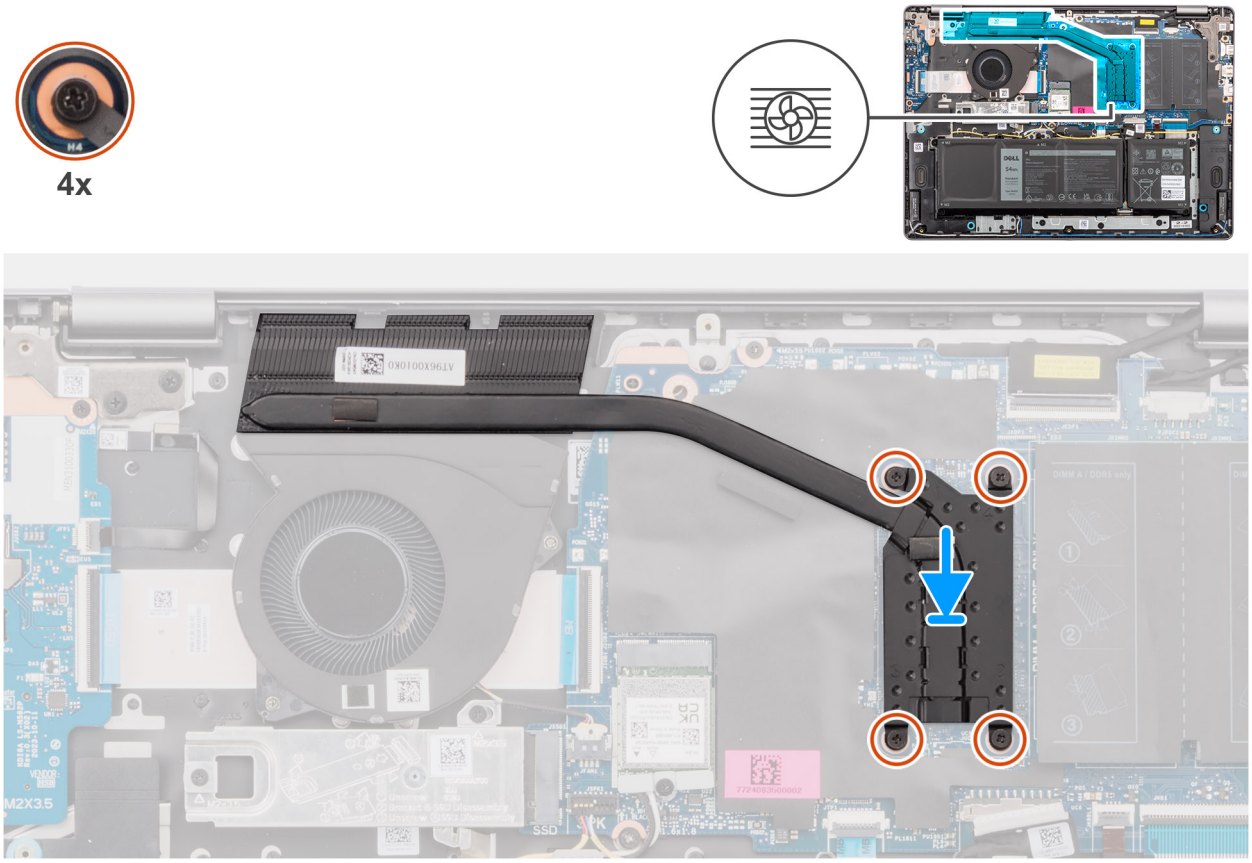


**Figure 38. Installing the heat sink - for computers shipped with integrated graphics card**

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

### Steps

1. Place the heat sink in the slot on the system board.
2. Align the screw holes on the heat sink with the screw holes on the system board.
3. In sequential order (1 → 2 → 3 → 4), tighten the four captive screws to secure the heat sink to the system board.

   **NOTE:** The screw numbers are etched on the heat sink.

### Next steps

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

## Removing the heat sink - for computers shipped with discrete graphics card

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

### 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 heat sink and provides a visual representation of the removal procedure.

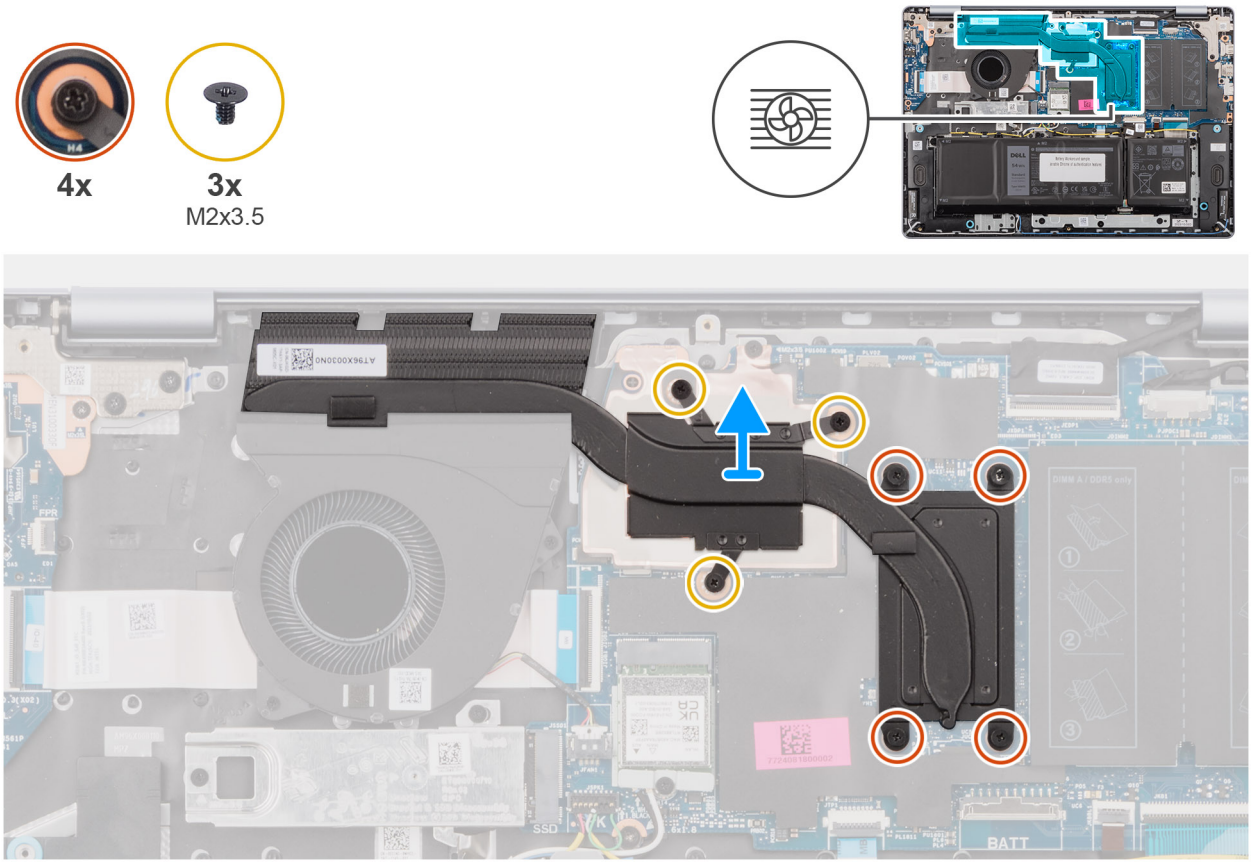


Figure 39. Removing the heat sink - for computers shipped with discrete graphics card

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

**CAUTION: 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.**

### Steps

1. In reverse sequential order (7 → 6 → 5 → 4 → 3 → 2 → 1), loosen the four captive screws and remove the three screws (M2x3.5) that secure the heat sink to the system board.

   **NOTE:** The screw numbers are etched on the heat sink.

   **NOTE:** Screws numbered 1 to 3 are removable and those numbered 4 to 7 are captive.

2. Lift the heat sink off the system board.

## Installing the heat sink - for computers shipped with discrete graphics card

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

### Prerequisites

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

### About this task

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

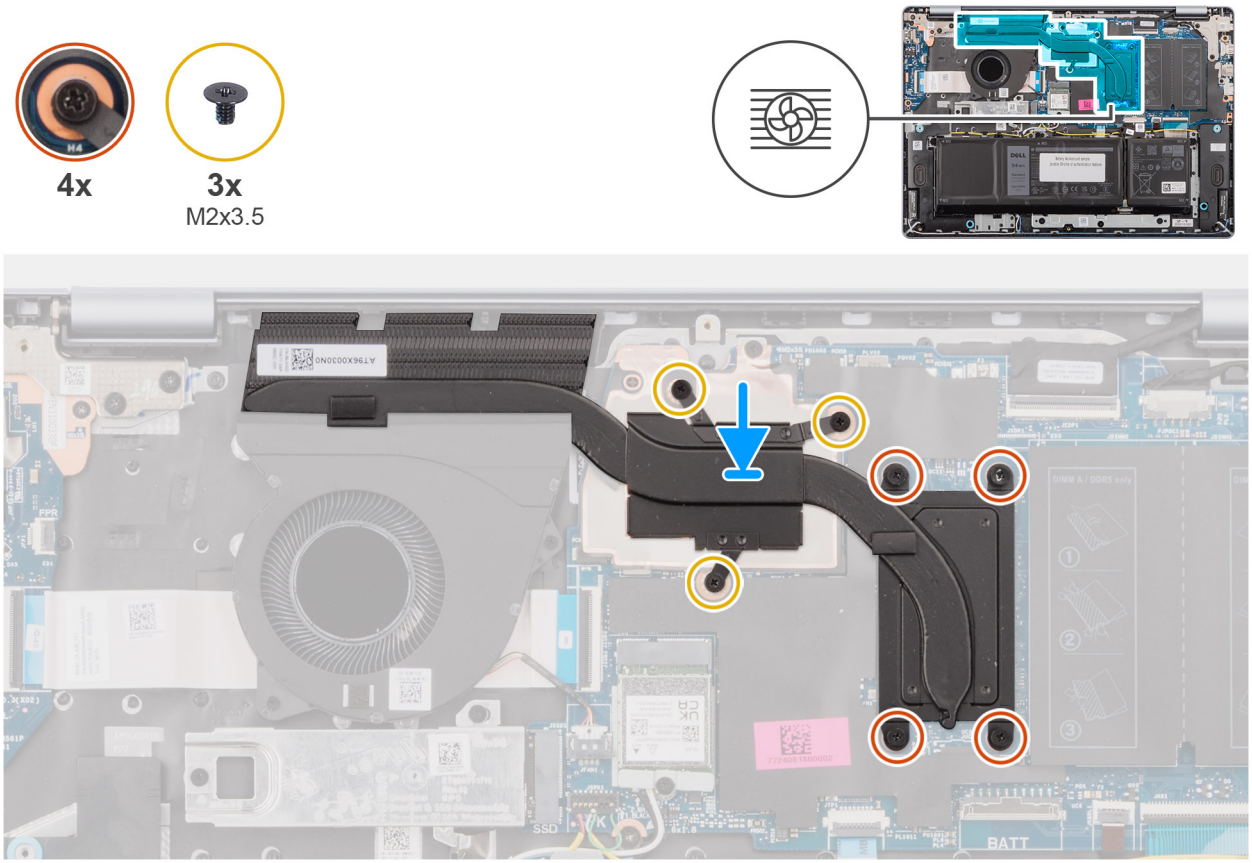


**Figure 40. Installing the heat sink - for computers shipped with discrete graphics card**

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

### Steps

1. Place the heat sink in the slot on the system board.
2. Align the screw holes on the heat sink with the screw holes on the system board.
3. In sequential order (1 → 2 → 3 → 4 → 5 → 6 → 7), tighten the four captive screws and replace the three screws (M2x3.5) to secure the heat sink to the system board.

   **NOTE:** The screw numbers are etched on the heat sink.

   **NOTE:** Screws numbered 1 to 3 are removable and those numbered 4 to 7 are captive.

### Next steps

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

# Touchpad

## Removing the touchpad

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

### Prerequisites

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

### About this task

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

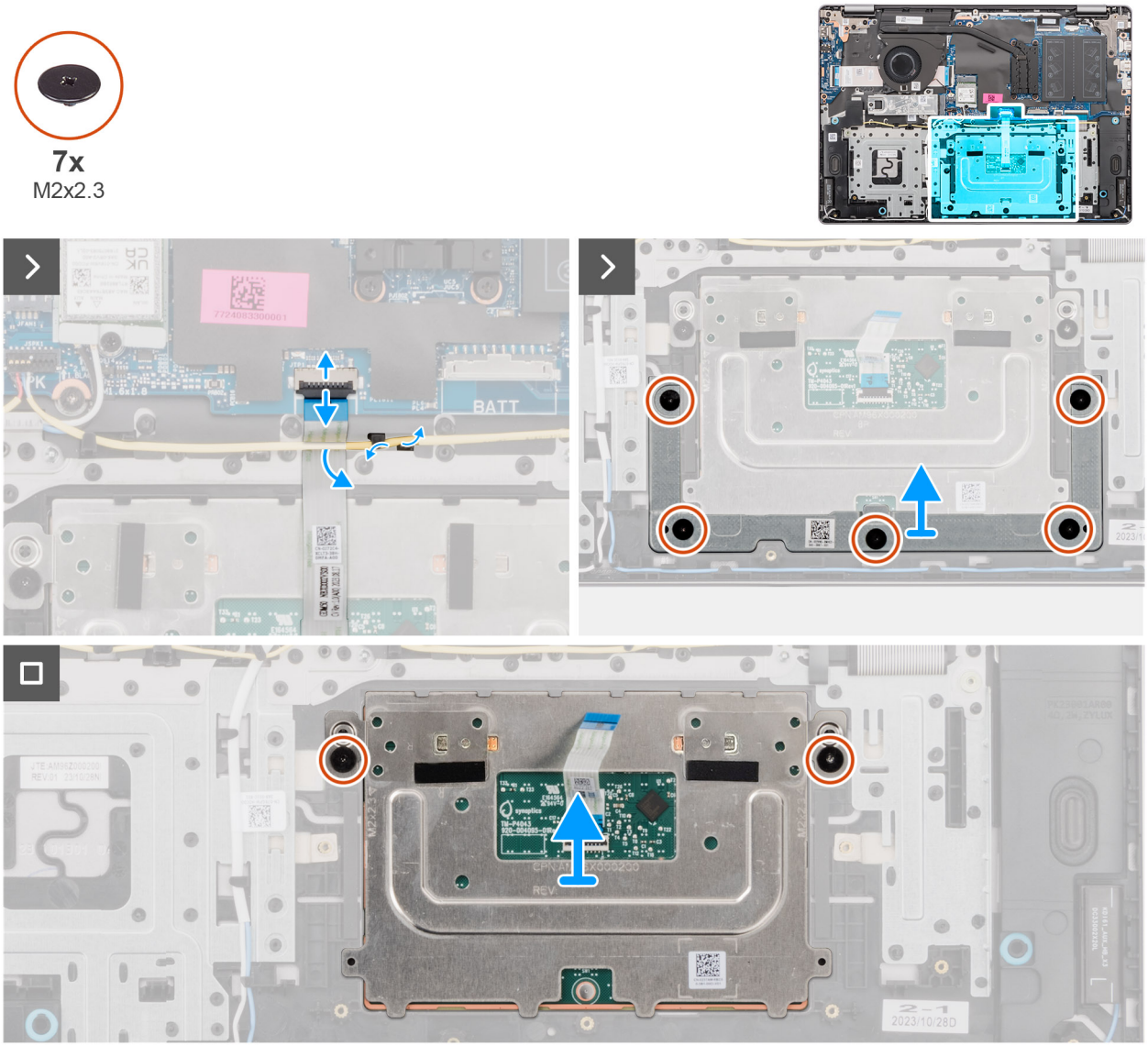


**Figure 41. Removing the touchpad**

### Steps

1. Remove the speaker cable from the routing guides on the palm-rest and keyboard assembly.

2. Open the latch and disconnect the touchpad cable from the connector (TP) on the system board.
3. Slide and remove the touchpad cable from underneath the speaker cable.
4. Remove the five screws (M2x2.3) that secure the touchpad bracket to the palm-rest and keyboard assembly.
5. Lift the touchpad bracket off the touchpad.
6. Remove the two screws (M2x2.3) that secure the touchpad to the palm-rest and keyboard assembly.
7. Lift the touchpad, along with the touchpad cable, off the palm-rest and keyboard assembly.

**NOTE:** The touchpad cable is assembled with the touchpad assembly as a service part and must not be removed from the touchpad assembly.

# Installing the touchpad

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

### Prerequisites

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

### About this task

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

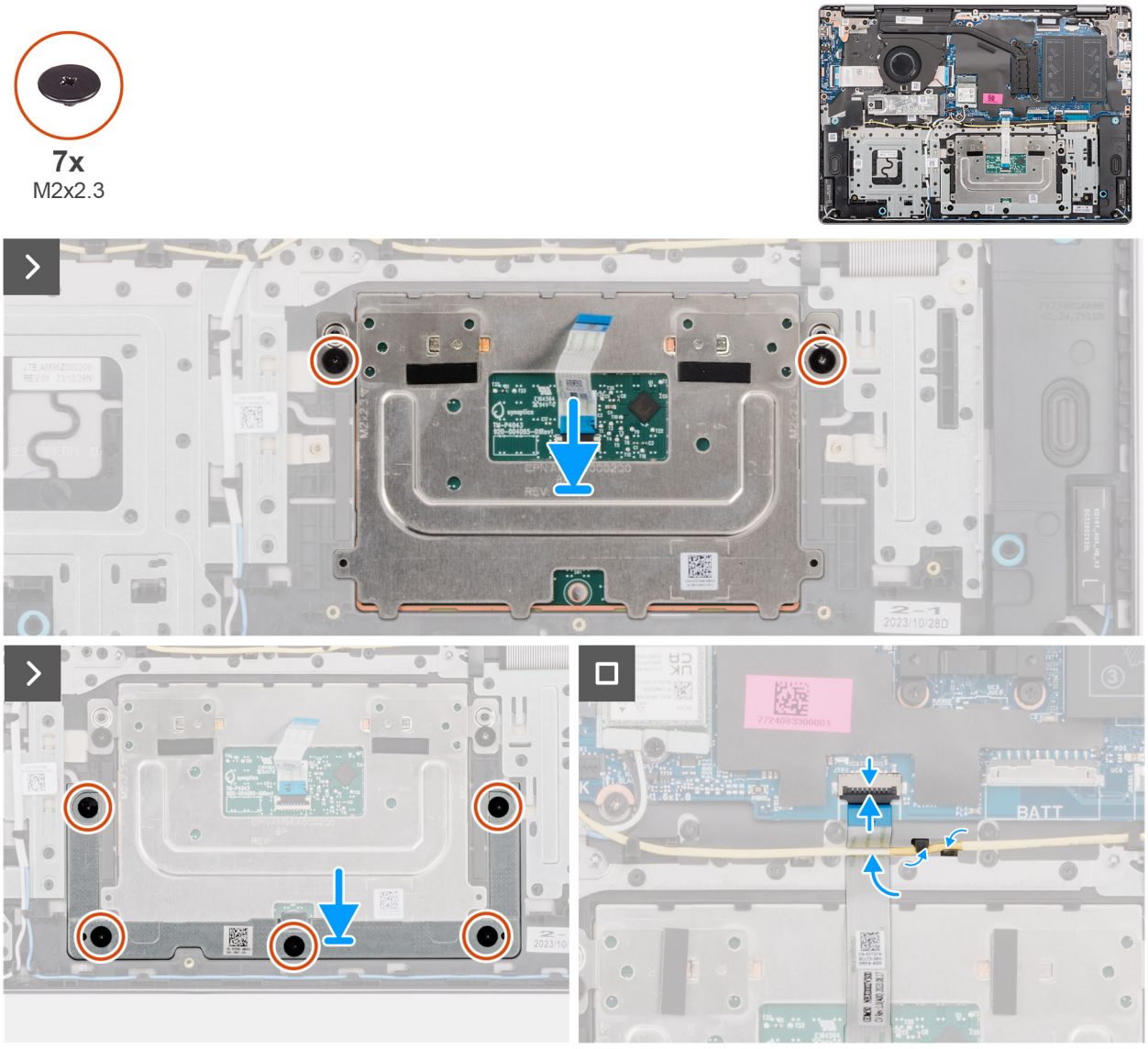


**Figure 42. Installing the touchpad**

**NOTE:** Ensure that the touchpad is aligned with the guides on the palm-rest and keyboard assembly, and the gap on either side of the touchpad is equal.

### Steps

1. Align and place the touchpad, along with the touchpad cable, in the slot on the palm-rest and keyboard assembly.
2. Replace the two screws (M2x2.3) to secure the touchpad to the palm-rest and keyboard assembly.
3. Place the touchpad bracket in the slot on the palm-rest and keyboard assembly.
4. Align the screw holes on the touchpad bracket with the screw holes on the palm-rest and keyboard assembly.
5. Replace the five screws (M2x2.3) to secure the touchpad bracket to the palm-rest and keyboard assembly.
6. Slide the touchpad cable underneath the speaker cable.
7. Connect the touchpad cable to the connector (TP) on the system board and close the latch.
8. Route the speaker cable through the routing guides on the palm-rest and keyboard assembly.

### Next steps

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

# I/O-board cable

## Removing the I/O-board cable

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

### Prerequisites

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

### About this task

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

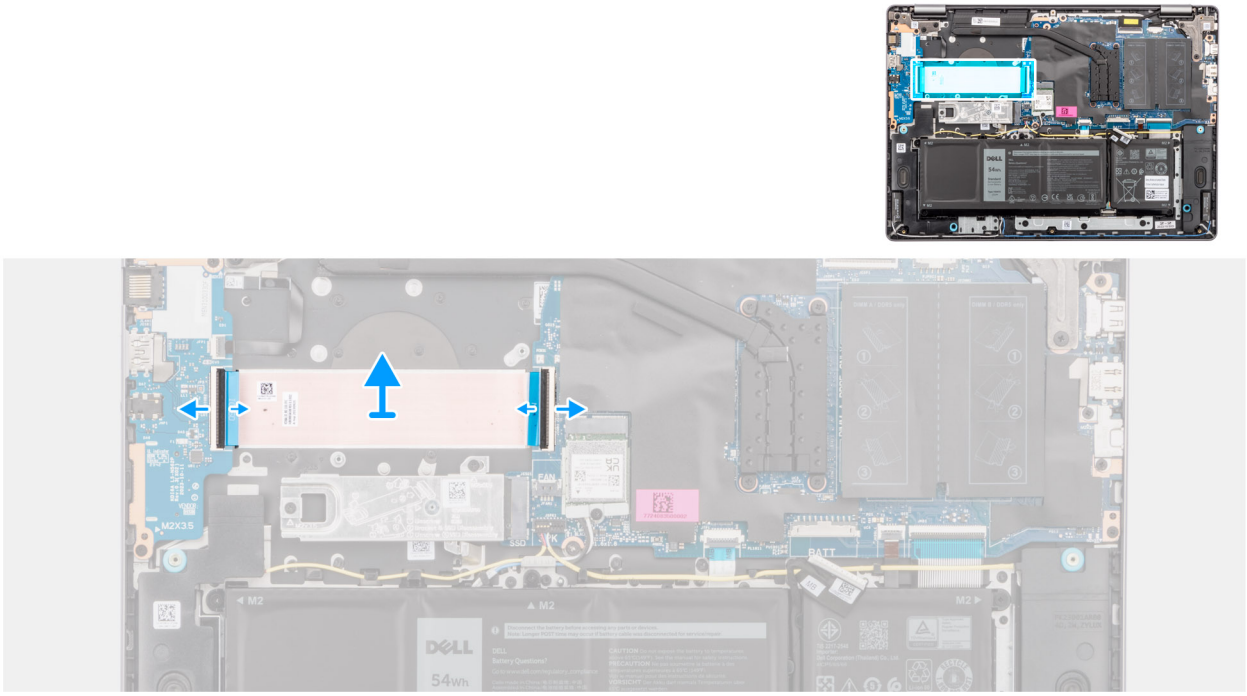

Figure 43. Removing the I/O-board cable

### Steps

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

## Installing the I/O-board cable

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

### Prerequisites

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

### About this task

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

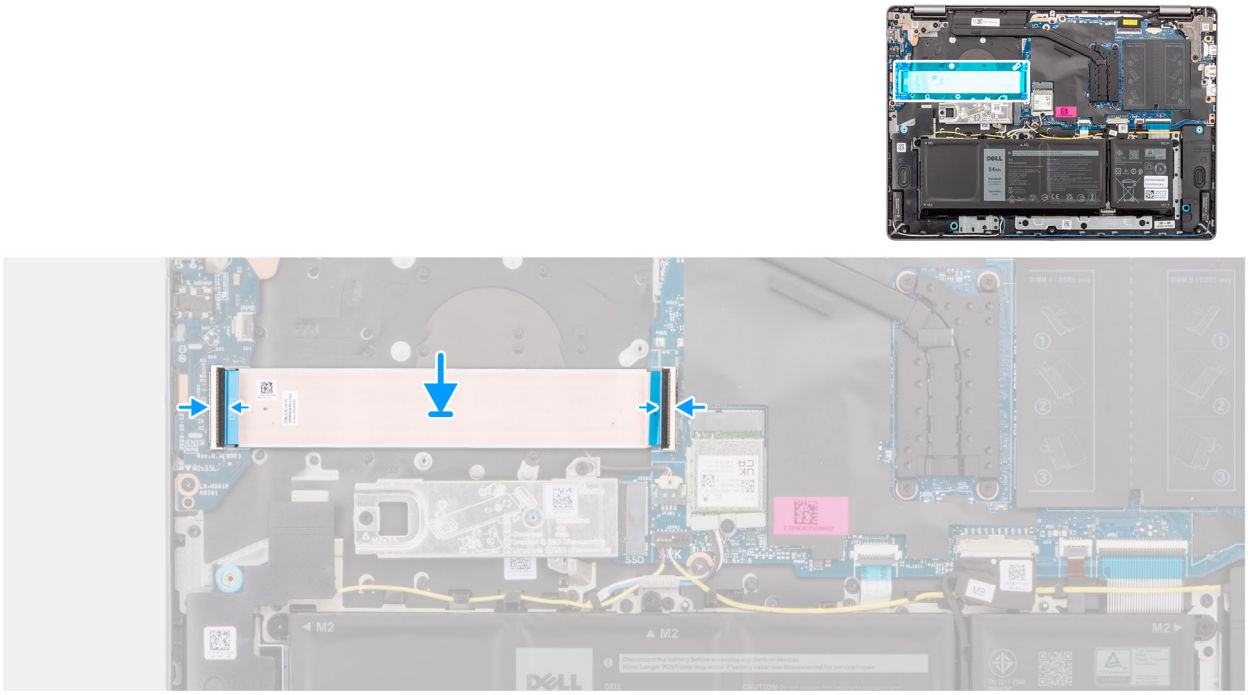

Figure 44. Installing the I/O-board cable

### Steps

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

### Next steps

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

# I/O board

## Removing the I/O board

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

### Prerequisites

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

### About this task

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

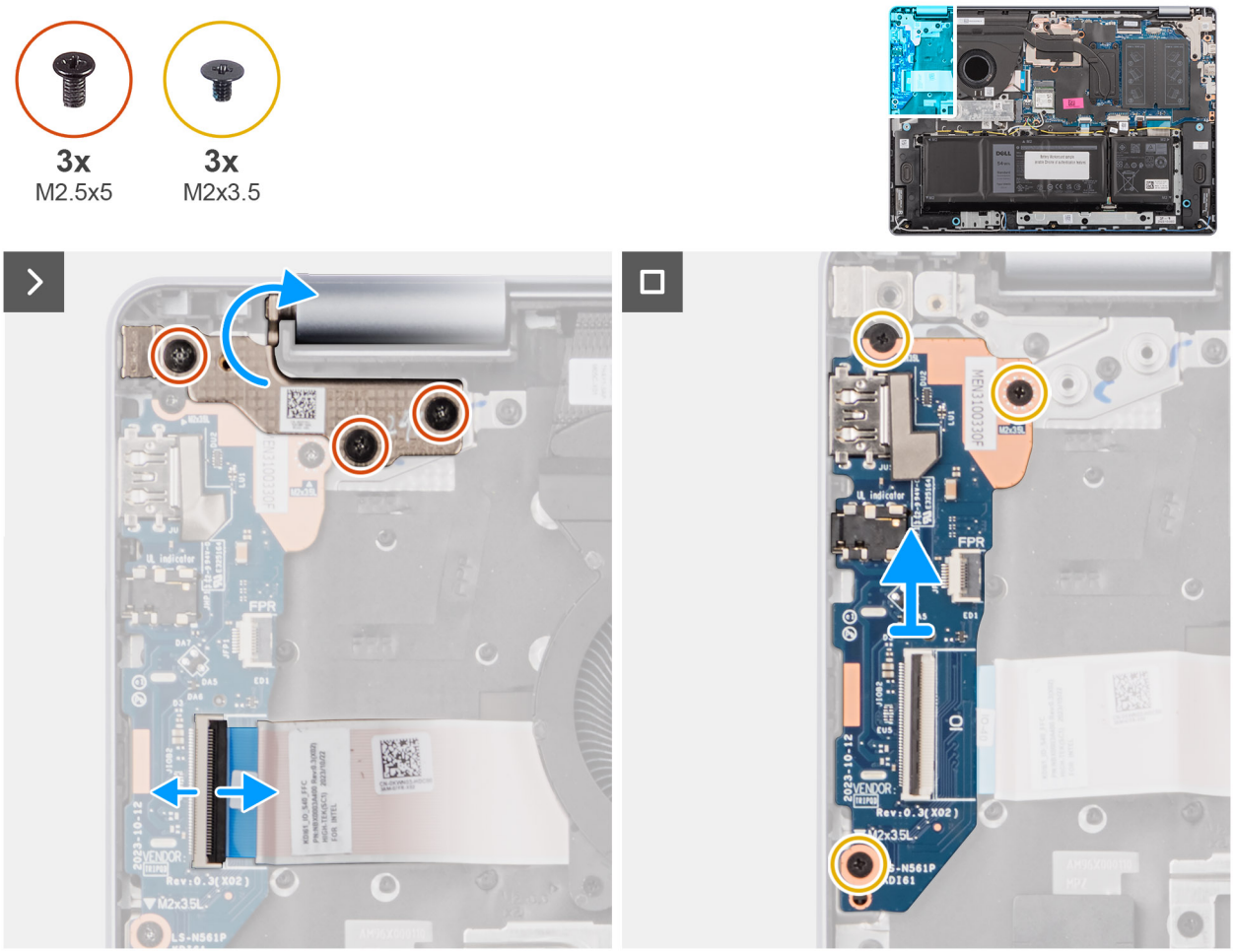


**Figure 45. Removing the I/O board**

### Steps

1. Remove the three screws (M2.5x5) that secure the right-display hinge to the palm-rest and keyboard assembly.
2. Using a plastic scribe, lift and open the right-display hinge to an angle of 90 degrees from the palm-rest and keyboard assembly to access the I/O board.
3. Open the latch and disconnect the I/O-board cable from the connector on the I/O board.
4. For computers shipped with fingerprint reader installed, open the latch and disconnect the fingerprint-reader cable from the I/O board.
5. Remove the three screws (M2x3.5) that secure the I/O board to the palm-rest and keyboard assembly.
6. Carefully slide and lift the I/O board at an angle, moving it away from the port slots, and then remove it from the palm-rest and keyboard assembly.

# Installing the I/O board

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

### Prerequisites

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

### About this task

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

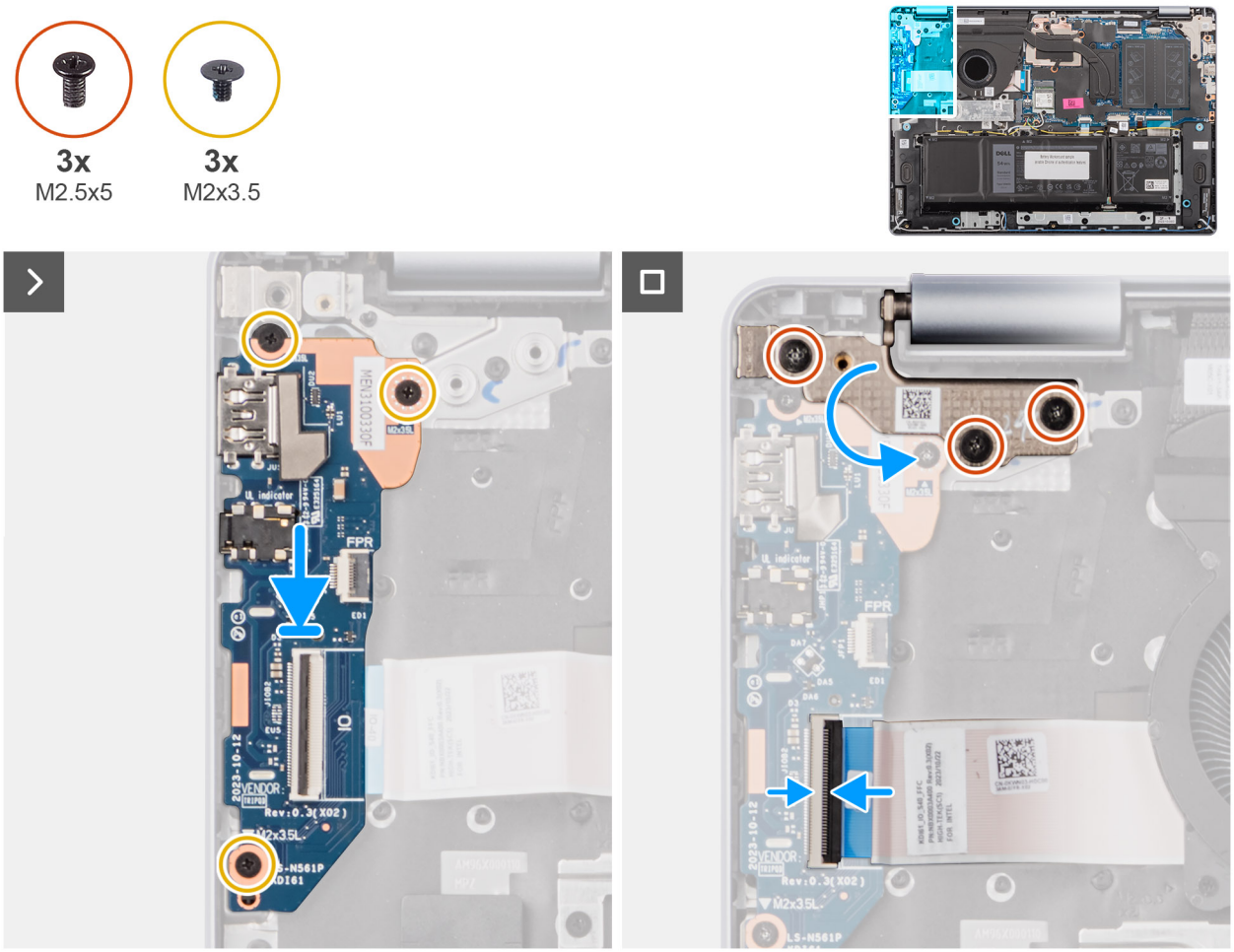


Figure 46. Installing the I/O board

### Steps

1. Carefully slide and place the I/O board on the palm-rest and keyboard assembly.
2. Align the ports on the I/O board with the port slots on the palm-rest and keyboard assembly.
3. Replace the three screws (M2x3.5) to secure the I/O board to the palm-rest and keyboard assembly.
4. For computers shipped with fingerprint reader installed, connect the fingerprint-reader cable to the connector on the I/O board and close the latch.
5. Connect the I/O-board cable to the connector on the I/O board and close the latch.
6. Close the right-display hinge to align the screw holes of the right-display hinge to the screw holes on the palm-rest and keyboard assembly.
7. Replace the three screws (M2.5x5) to secure the right-display hinge to the palm-rest and keyboard assembly.

### Next steps

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

# Display assembly

## Removing the display assembly

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

**NOTE:** The maximum operating angle for the display-panel hinge is 135 degrees.

### 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.

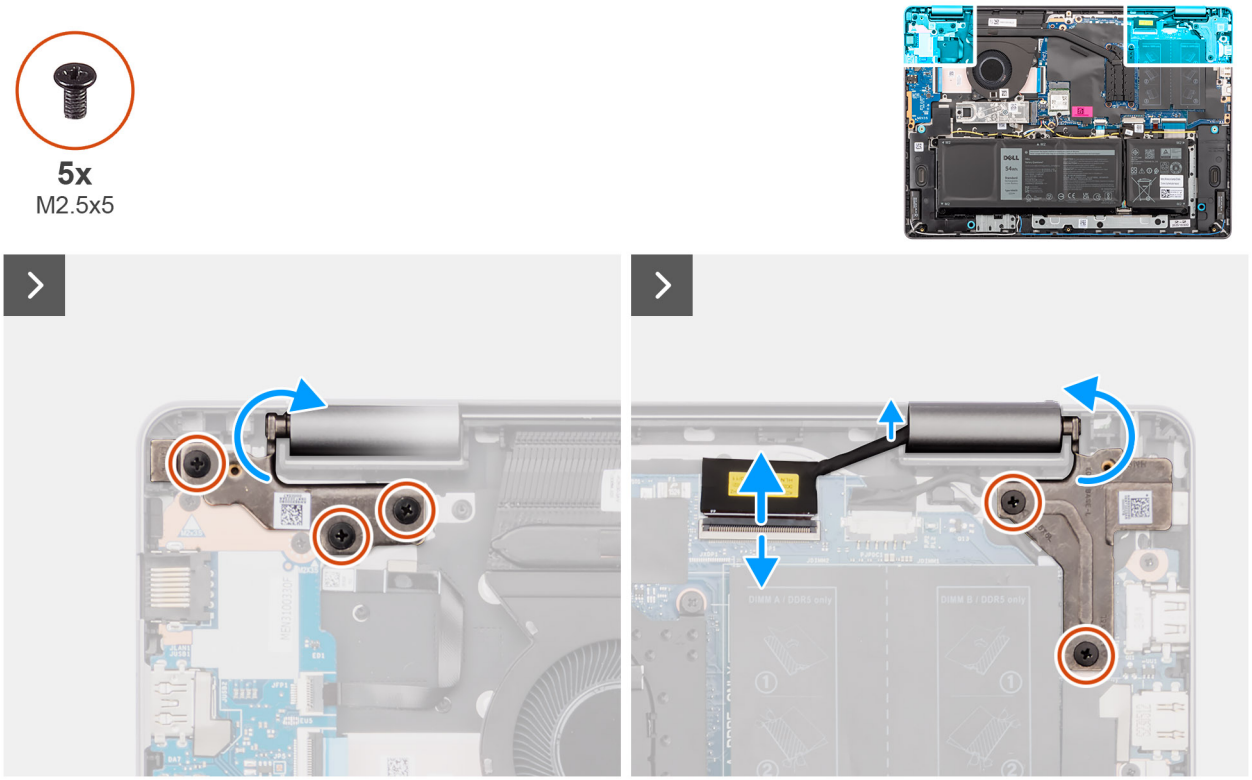


**Figure 47. Removing the display assembly**

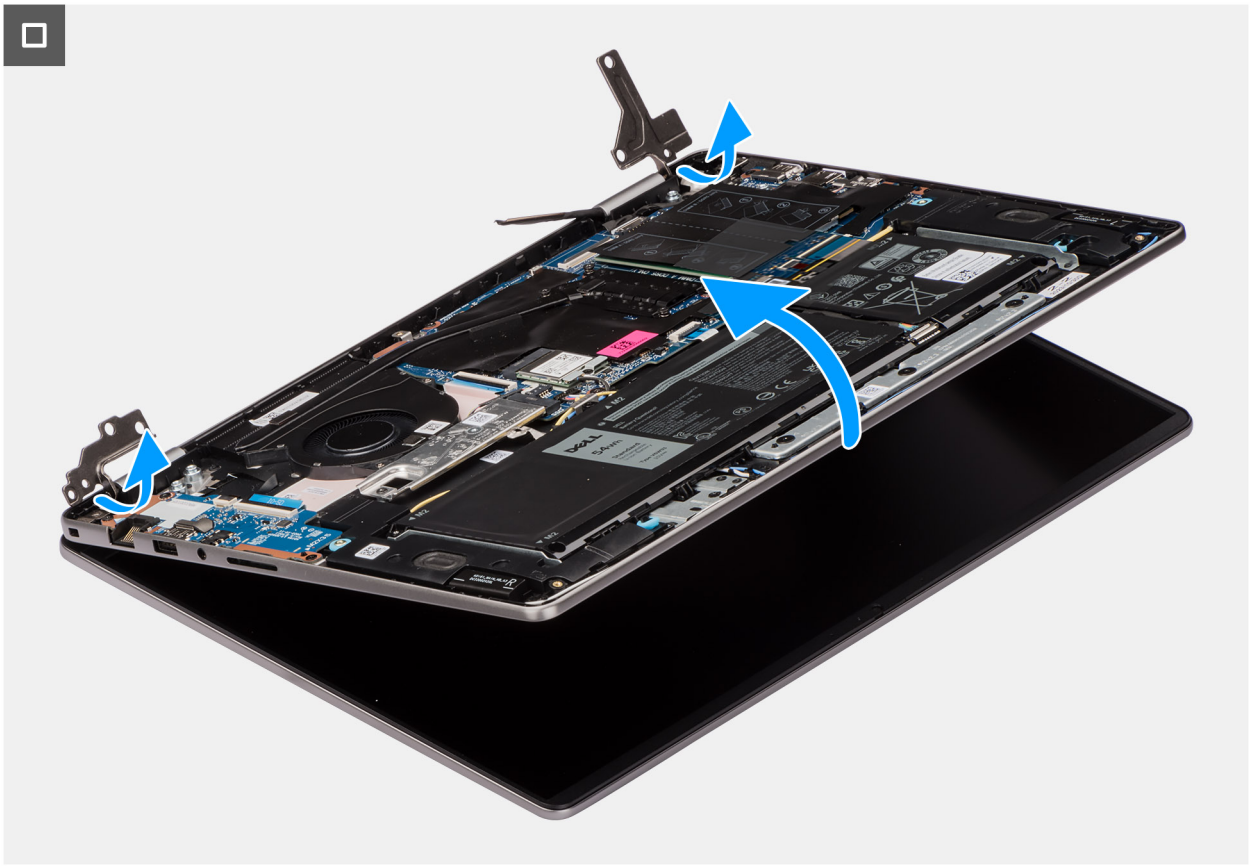

Figure 48. Removing the display assembly

### Steps

1. Remove the five screws (M2.5x5) that secure the left and right-display hinges to the palm-rest and keyboard assembly.
2. Using a plastic scribe, lift the display hinges to an angle of 90 degrees from the palm-rest and keyboard assembly.
3. Disconnect the display cable from the connector (eDP) on the system board.
4. Remove the display cable from the routing guides on the palm-rest and keyboard assembly.
5. Lift the palm-rest and keyboard assembly at an angle to free it from the hinges and remove it from the display assembly.

**NOTE:** The display assembly is a Hinge-Up Design (HUD) assembly and cannot be further disassembled once it is removed from the palm-rest and keyboard assembly. If any of the components within the display assembly is faulty, replace the entire display assembly.

**NOTE:** The power-adapter port is secured in place by the left-display hinge. There is no screw, tape, or adhesive that secures the power-adapter port to the palm-rest and keyboard assembly. Therefore, it is important to verify that the power-adapter port has not been displaced during subsequent replacement procedures.

## Installing the display assembly

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

**NOTE:** The maximum operating angle for the display-panel hinge is 135 degrees.

### Prerequisites

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

### About this task

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

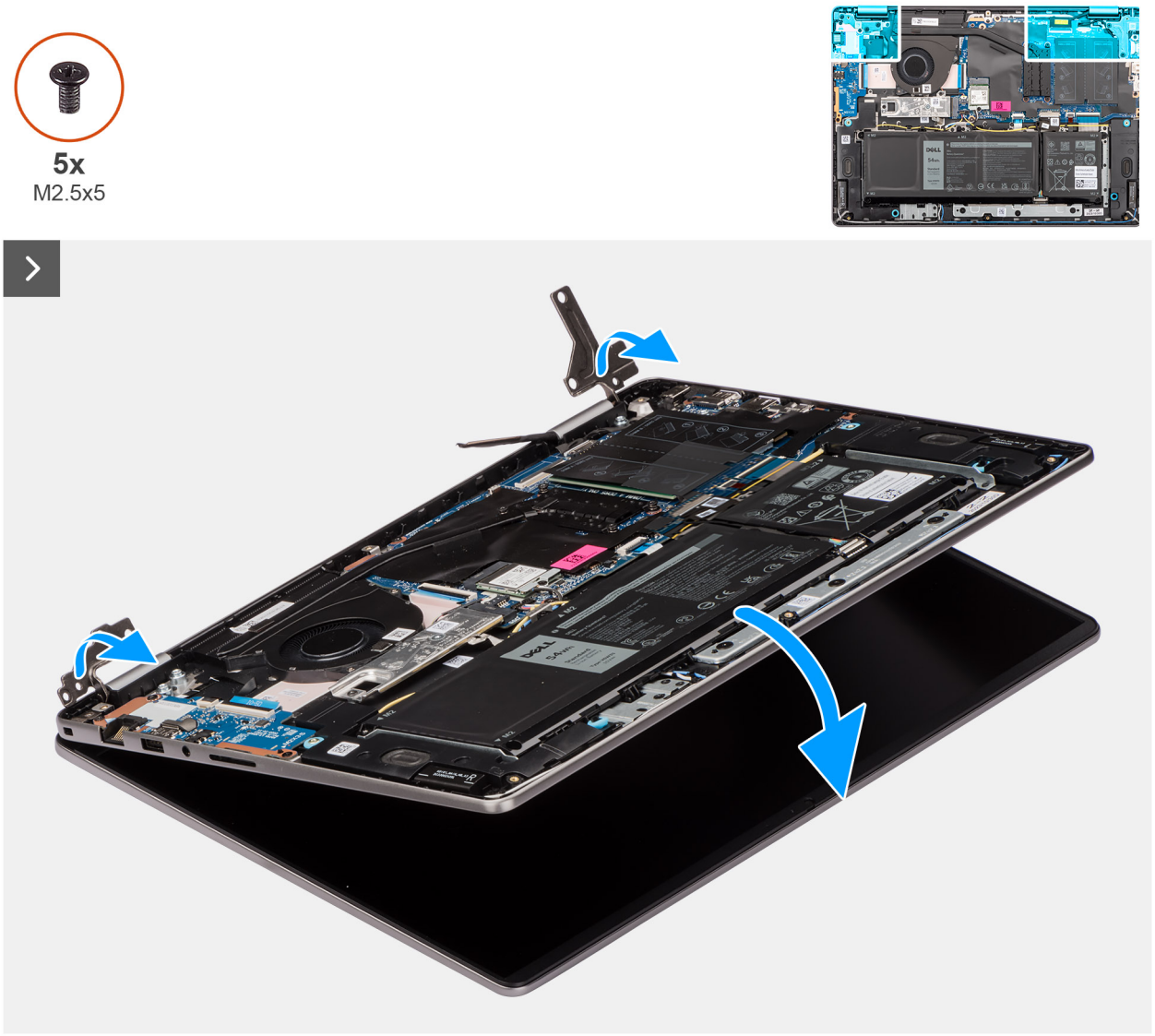


**Figure 49. Installing the display assembly**

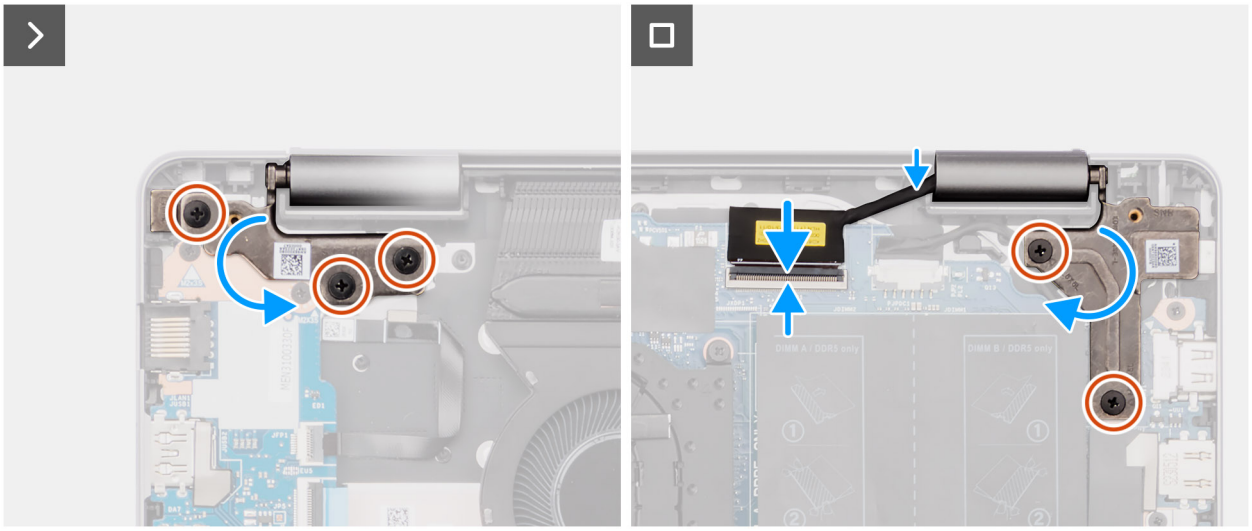

Figure 50. Installing the display assembly

**NOTE:** Ensure that the display hinges are opened to the maximum before replacing the display assembly on the palm-rest and keyboard assembly.

### Steps

1. Place the display assembly on a clean and flat surface.
2. Carefully place the palm-rest and keyboard assembly at an angle on the display assembly.

   **CAUTION: Do not slide the palm-rest and keyboard assembly over the display assembly to avoid damaging the display.**

   **NOTE:** The power-adapter port is secured in place by the left-display hinge. There is no screw, tape, or adhesives that secure the power-adapter port to the palm-rest and keyboard assembly. Therefore, it is important to verify that the power-adapter port has not been displaced during subsequent replacement procedures.
3. Gently press to close the hinges and align the screw holes on the hinges with the screw holes on the palm-rest and keyboard assembly.
4. Replace the five screws (M2.5x5) to secure the left and right-display hinges to the palm-rest and keyboard assembly.
5. Route the display cable through the routing guides on the palm-rest and keyboard assembly.
6. Connect the display cable to the connector (eDP) on the system board.

### Next steps

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

# Power button

## Removing the power button

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

### Prerequisites

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

### About this task

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

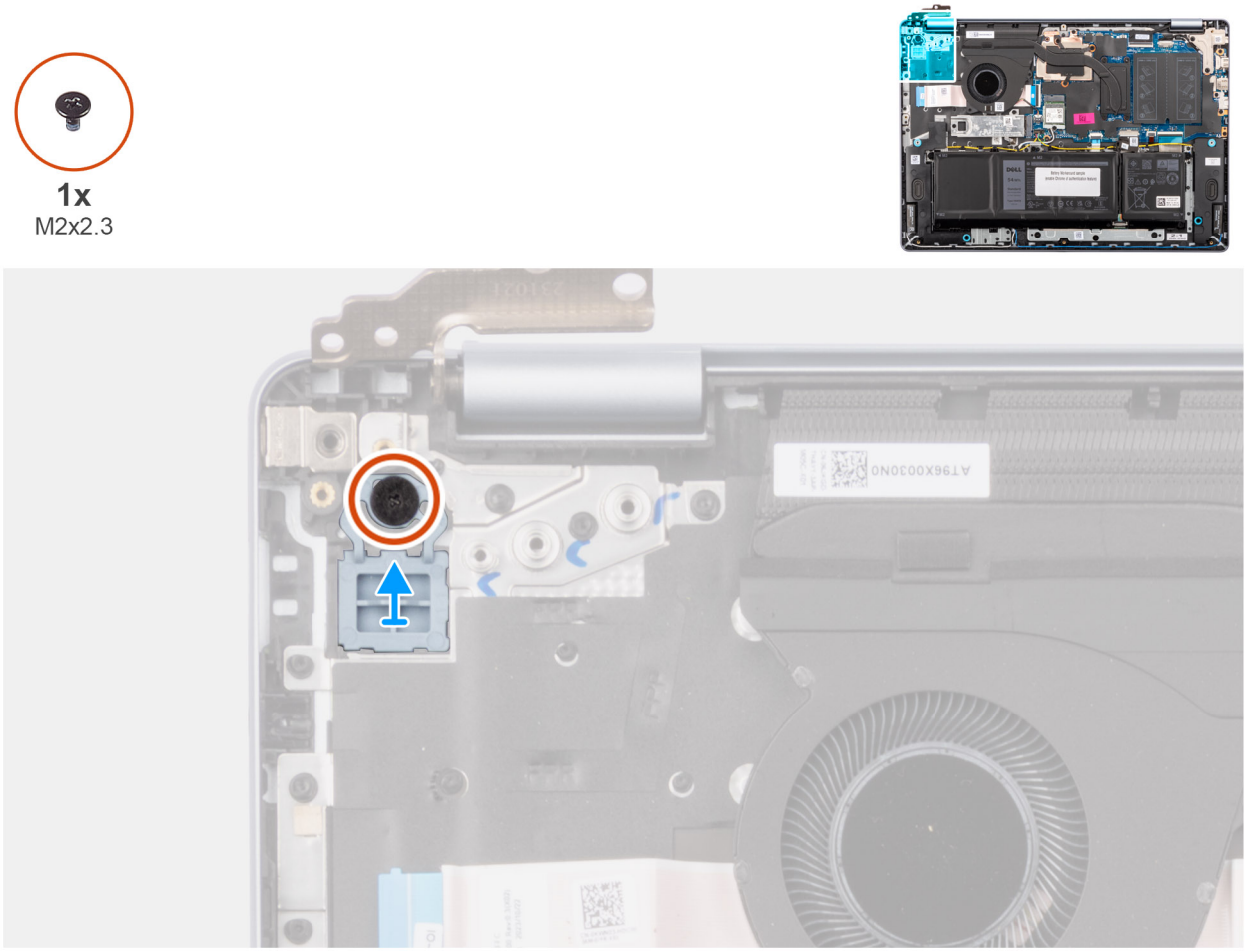


Figure 51. Removing the power button

### Steps

1. Remove the screw (M2x2.3) that secures the power button to the palm-rest and keyboard assembly.
2. Lift the power button off the palm-rest and keyboard assembly.

## Installing the power button

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

### Prerequisites

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

### About this task

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

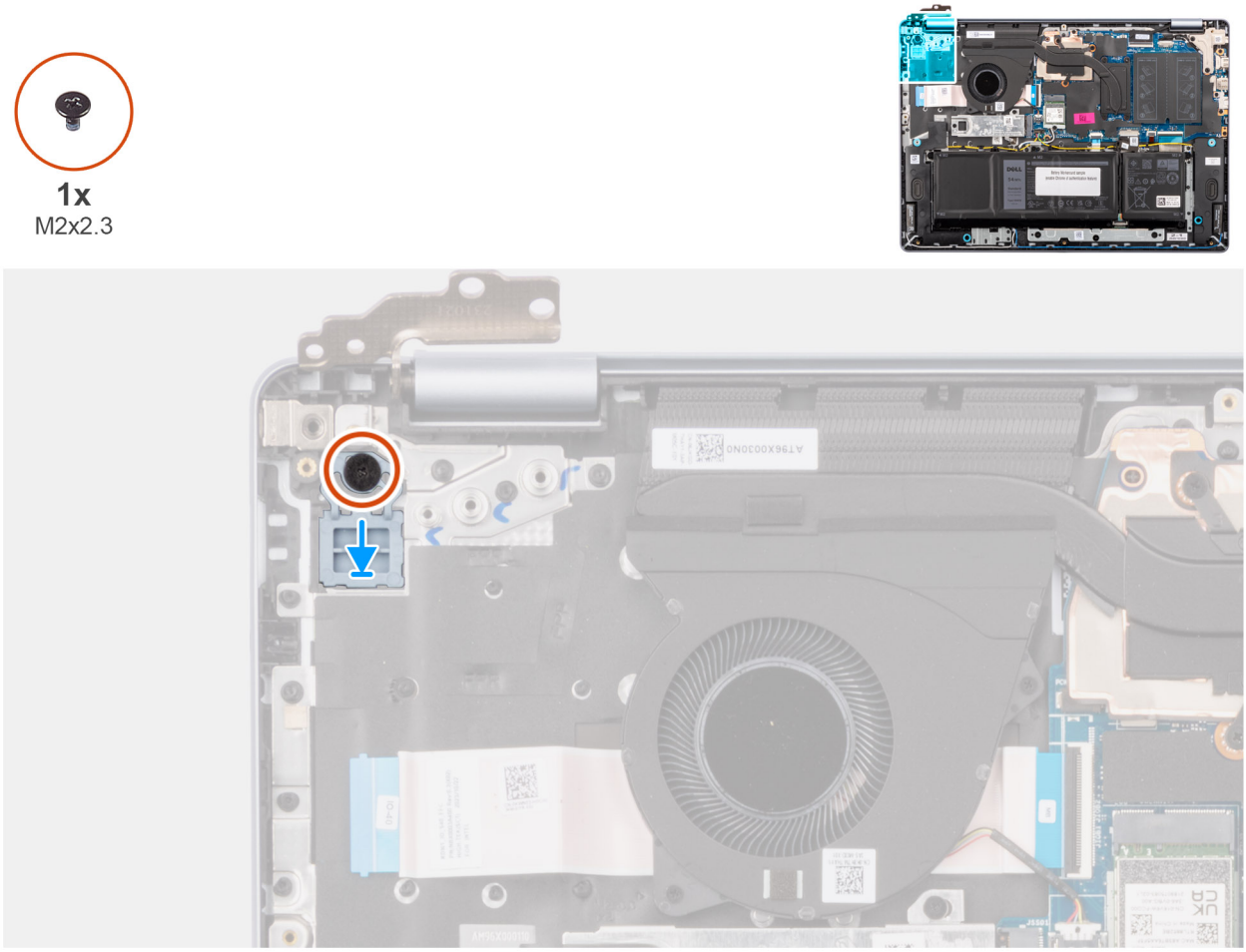


Figure 52. Installing the power button

### Steps

1. Place the power button in the slot on the palm-rest and keyboard assembly.
2. Align the screw hole on the power button to the screw hole on the palm-rest and keyboard assembly.
3. Replace the screw (M2x2.3) to secure the power button to the palm-rest and keyboard assembly.

### Next steps

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

# Power button with fingerprint reader

## Removing the power button with fingerprint reader

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

### Prerequisites

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

### About this task

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

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

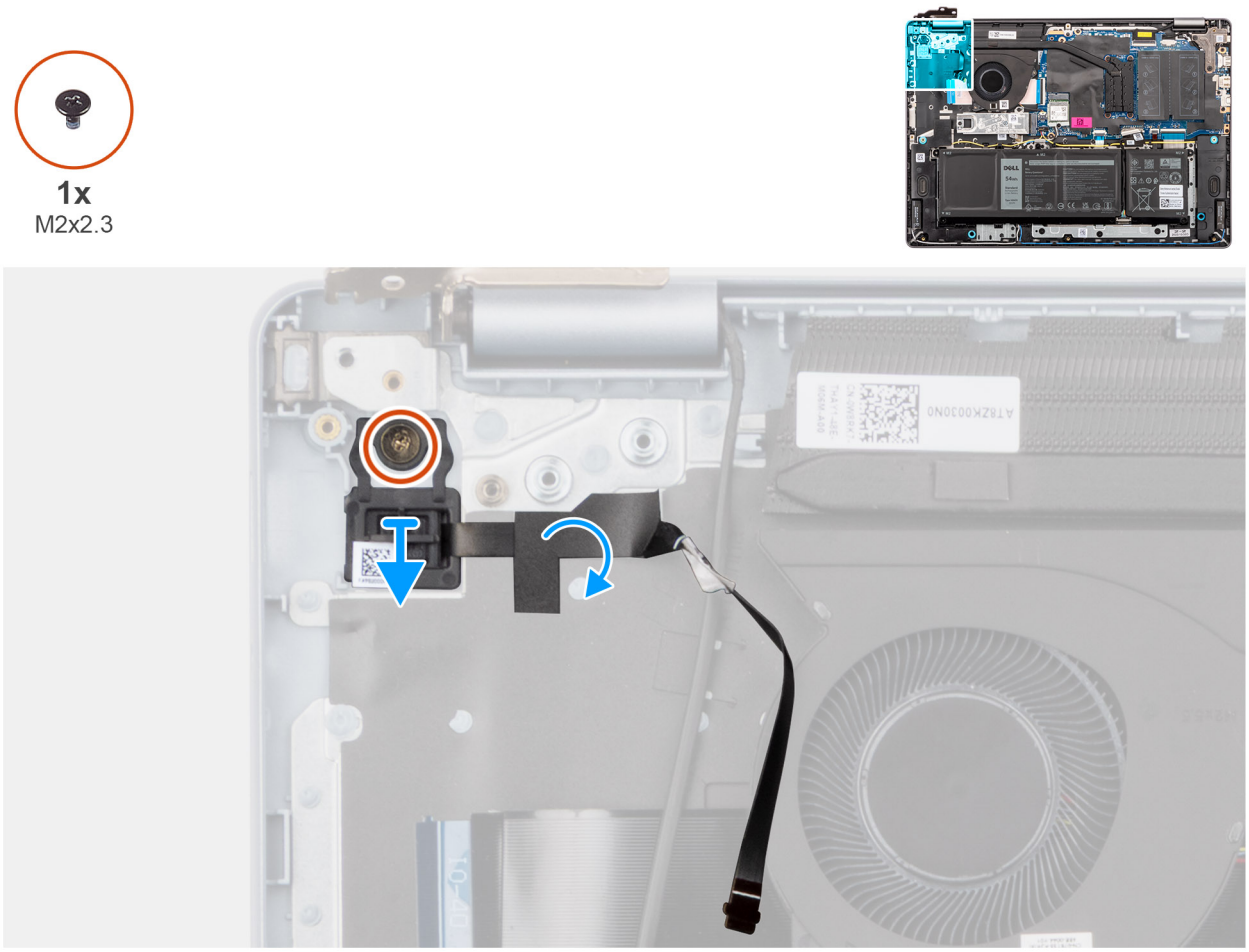


**Figure 53. Removing the power button with fingerprint reader**

### Steps

1. Peel back the keyboard Mylar that covers the fingerprint-reader cable.
2. Peel back the fingerprint-reader cable from the palm-rest and keyboard assembly.
3. Remove the screw (M2x2.3) that secures the power button to the palm-rest and keyboard assembly.
4. Lift the power button, along with fingerprint-reader cable, off the slot on the palm-rest and keyboard assembly.

# Installing the power button with fingerprint reader

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

### Prerequisites

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

### About this task

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

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

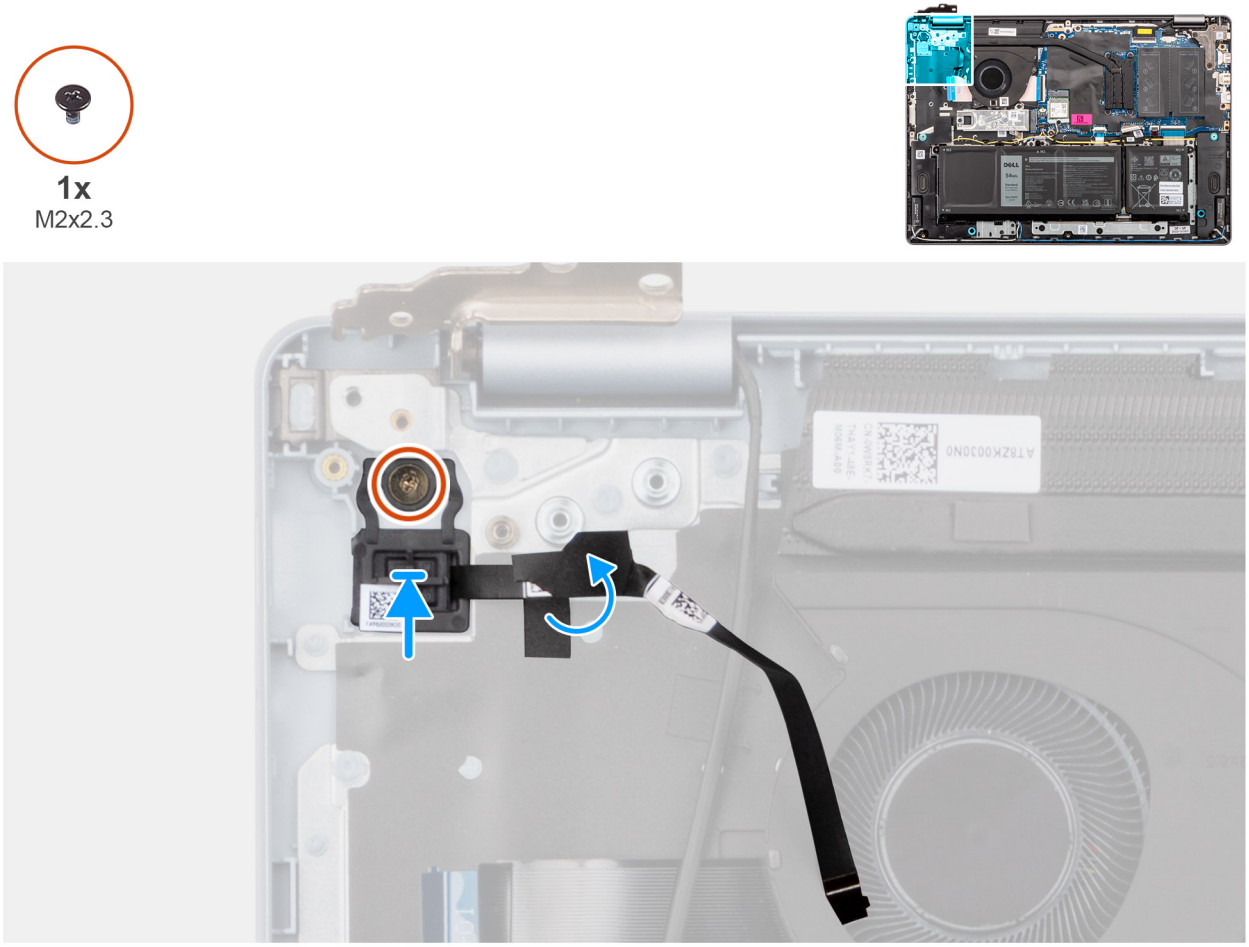


**Figure 54. Installing the power button with fingerprint reader**

### Steps

1. Place the power button, along with fingerprint-reader cable, in the slot on the palm-rest and keyboard assembly.
2. Align the screw hole on the power button to the screw hole on the palm-rest and keyboard assembly.
3. Replace the screw (M2x2.3) to secure the power button to the palm-rest and keyboard assembly.
4. Adhere the fingerprint-reader cable to the palm-rest and keyboard assembly.

**NOTE:** Ensure that the grounding tape on the top side of the fingerprint-reader cable is adhered to the keyboard plate.

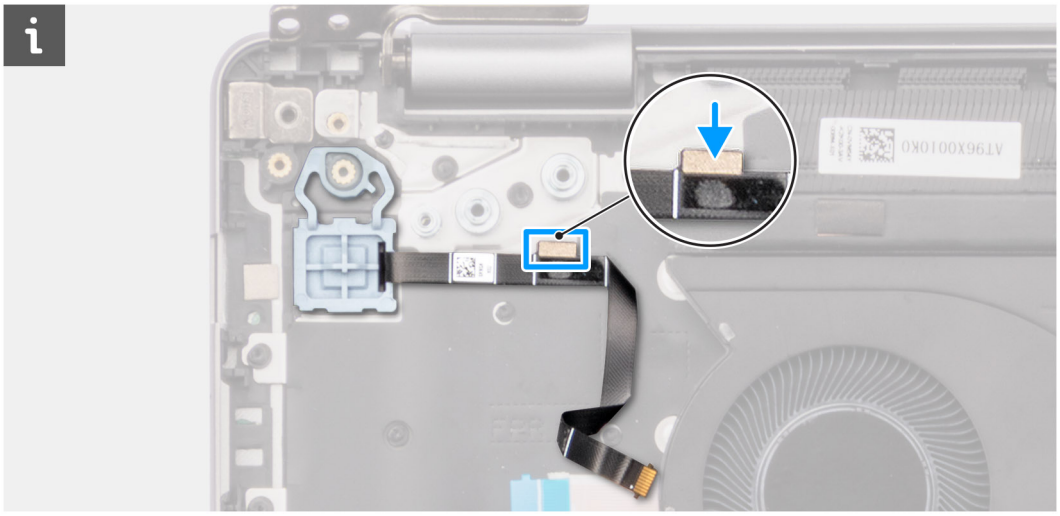

Figure 55. Adhering the finger-print cable to palm-rest and keyboard assembly

5. Adhere the keyboard Mylar to cover the fingerprint-reader cable.

### Next steps

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

# Power-adapter port

## Removing the power-adapter port

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

### Prerequisites

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

### About this task

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

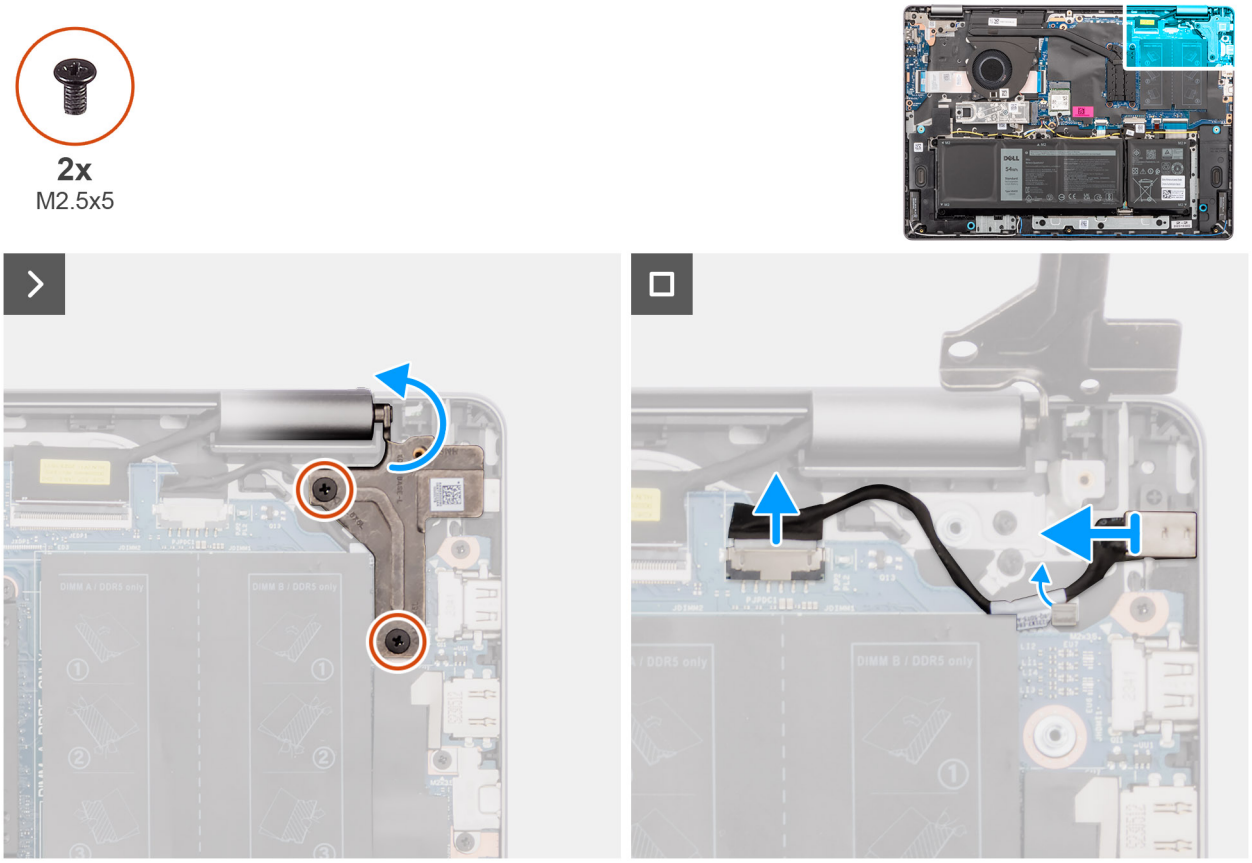


Figure 56. Removing the power-adapter port

### Steps

1. Remove the two screws (M2.5x5) that secure the left-display hinge to the system board and the palm-rest and keyboard assembly.
2. Using a plastic scribe, lift the left-display hinge to an angle of 90 degrees from the palm-rest and keyboard assembly to access the power-adapter port.
3. Disconnect the power-adapter port cable from the connector (DCIN) on the system board.
4. Remove the power-adapter port cable from the routing guide on the palm-rest and keyboard assembly.
5. Remove the power-adapter port from the slot on the palm-rest and keyboard assembly.

# Installing the power-adapter port

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

### Prerequisites

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

### About this task

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

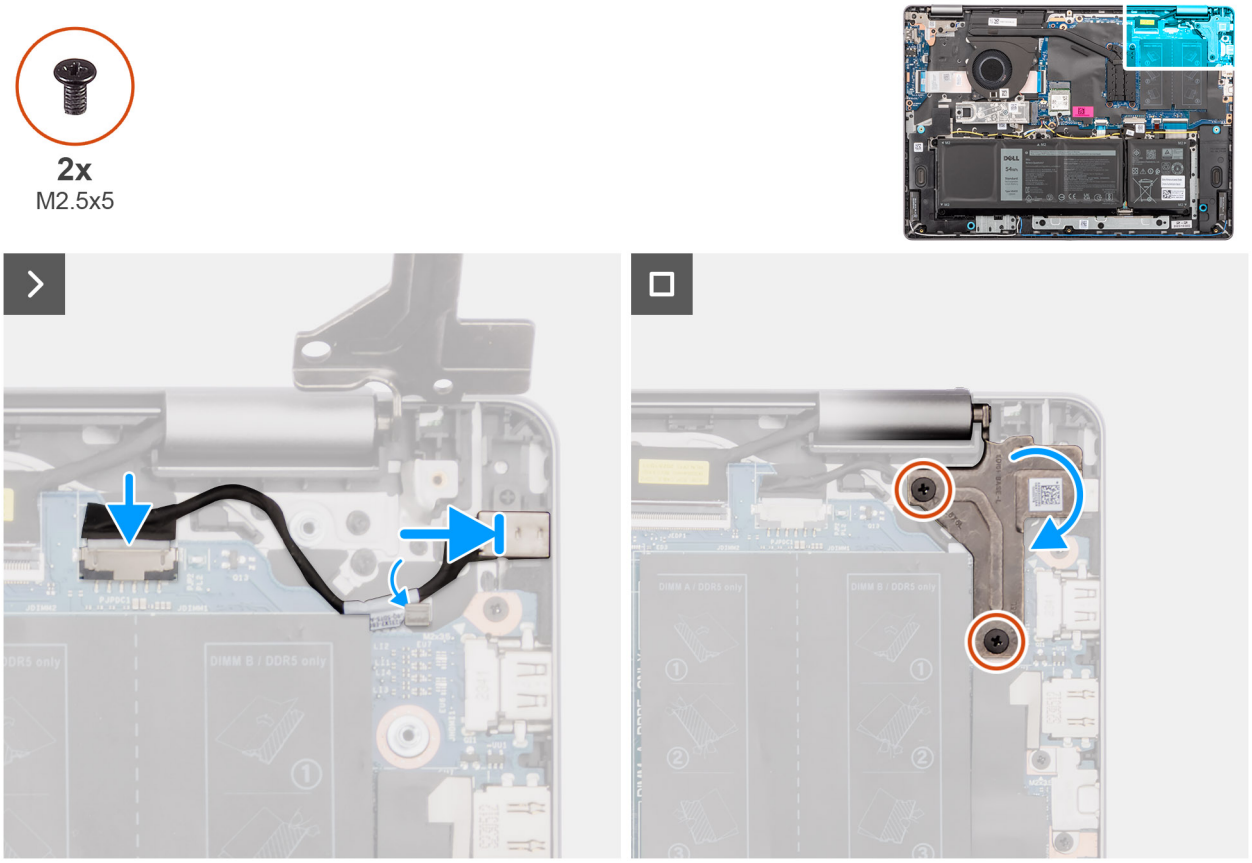


Figure 57. Installing the power-adapter port

### Steps

1. Align and place the power-adapter port in the slot on the palm-rest and keyboard assembly.
2. Route the power-adapter port cable through the guide on the palm-rest and keyboard assembly.
3. Connect the power-adapter port cable to the connector (DCIN) on the system board.
4. Close the left-display hinge to align the screw holes on the left-display hinge to the screw holes on the system board and the palm-rest and keyboard assembly.
5. Replace the two screws (M2.5x5) to secure the left-display hinge to the system board and the palm-rest and keyboard assembly.

### Next steps

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

# System board

## Removing the system board

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

### Prerequisites

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

4. Remove the solid state drive.
5. Remove the wireless card.
6. Remove the heat sink - for computers shipped with integrated graphics card or heat sink - for computers shipped with discrete graphics card, whichever is applicable.

**NOTE:** When removing the system board to replace or access other parts, the system board can be removed with the heat sink attached to it in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.

### About this task

The following image indicates the connectors on your system board.

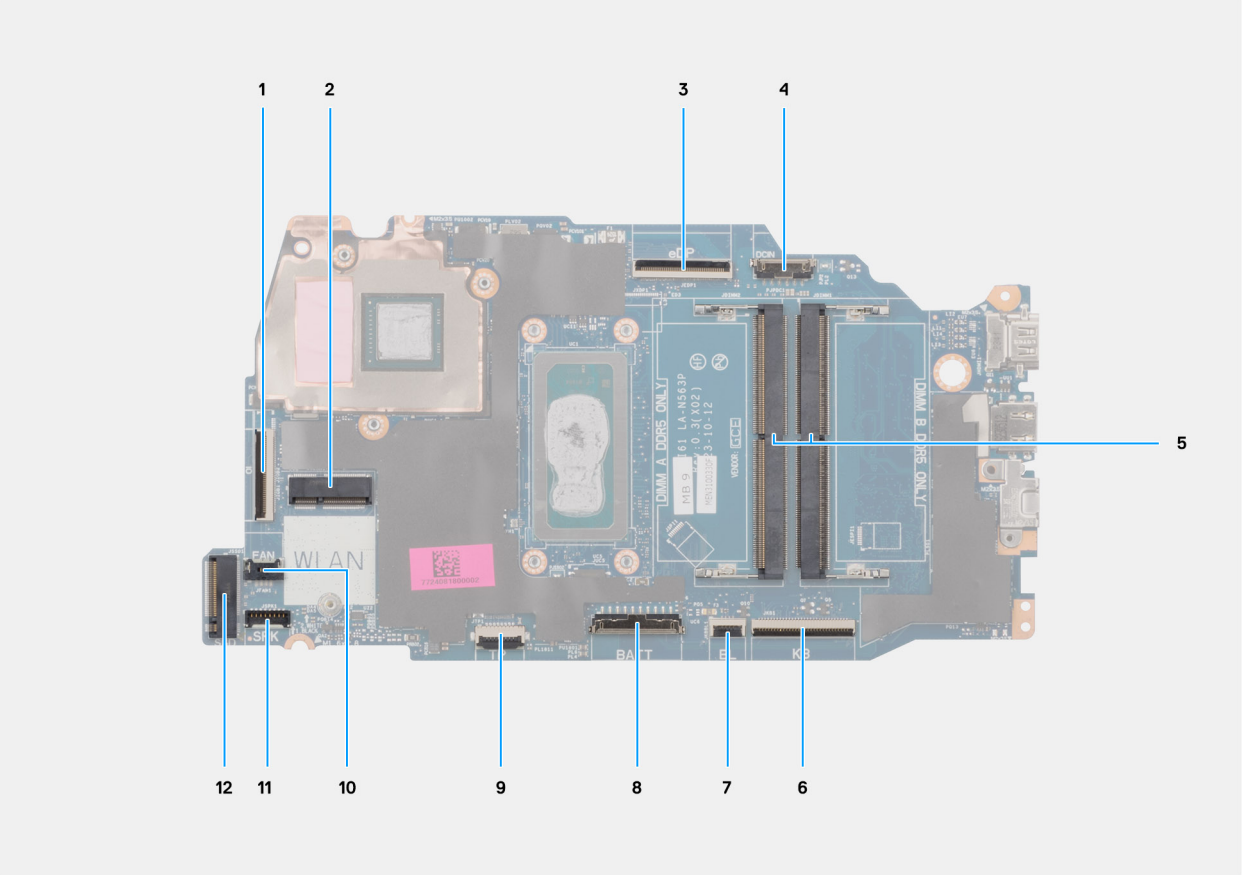


**Figure 58. System board connectors**

1. I/O-board cable (IO) connector
2. Wireless card (WLAN) connector
3. Display cable (eDP) connector
4. Power-adapter port (DCIN) connector
5. Memory module x2 (DIMM A DDR5 ONLY + DIMM B DDR5 ONLY) connectors
6. Keyboard cable (KB) connector
7. Keyboard-backlight cable (BL) connector
8. Battery cable (BATT) connector
9. Touchpad cable (TP) connector
10. Fan cable (FAN) connector
11. Speaker cable (SPK) connector
12. Solid state drive (SSD) connector

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

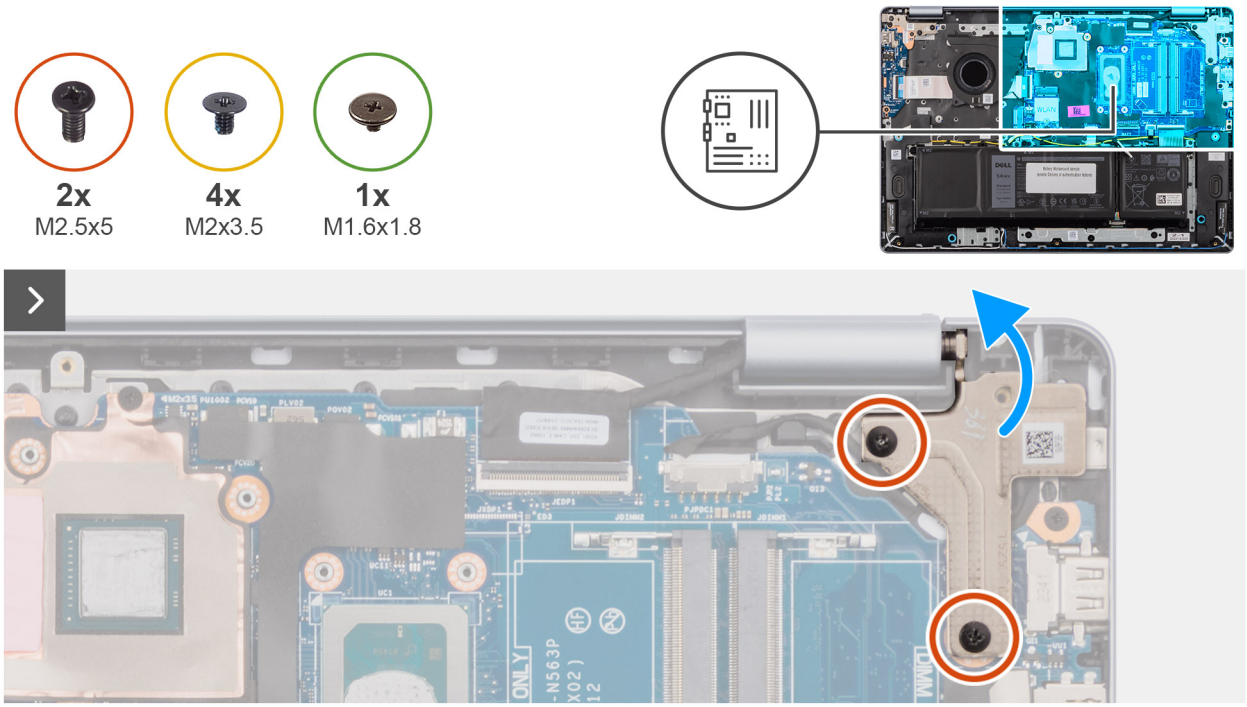


**Figure 59. Removing the system board**

### Steps

1. Remove the two screws (M2.5x5) that secure the left-display hinge to the palm-rest and keyboard assembly.
2. Using a plastic scribe, lift the left-display hinge to an angle of 90 degrees from the palm-rest and keyboard assembly.
3. Disconnect the following cables on the system board:
   a. display cable (eDP)
   b. power-adapter port cable (DCIN)
   c. keyboard cable (KB)
   d. keyboard-backlight cable (BL)
   e. battery cable (BATT)
   f. touchpad cable (TP)
   g. speaker cable (SPK)
   h. fan cable (FAN)
   i. I/O-board cable (IO)

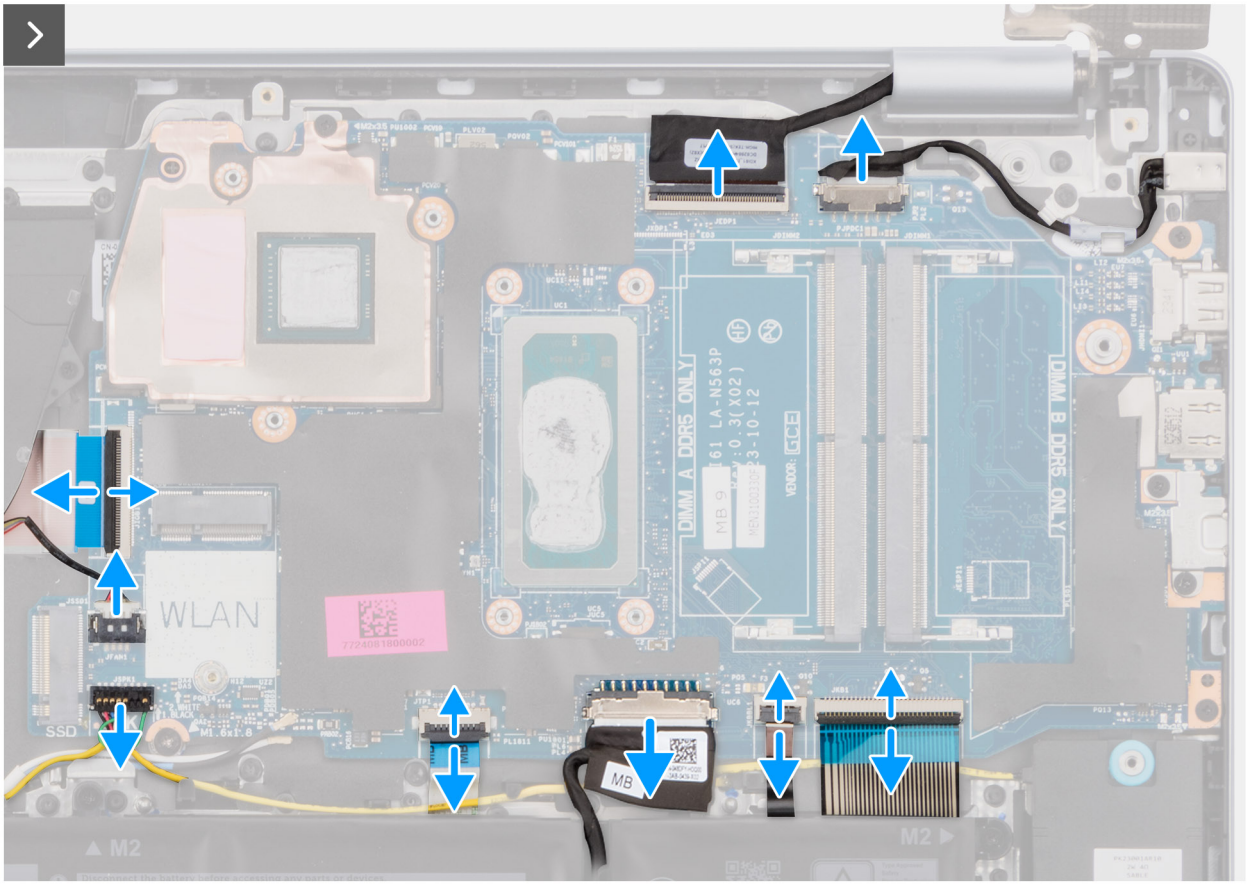


**Figure 60. Removing the system board**

4. Remove the screw (M1.6x1.8) and the four screws (M2x3.5) that secure the system board to the palm-rest and keyboard assembly.

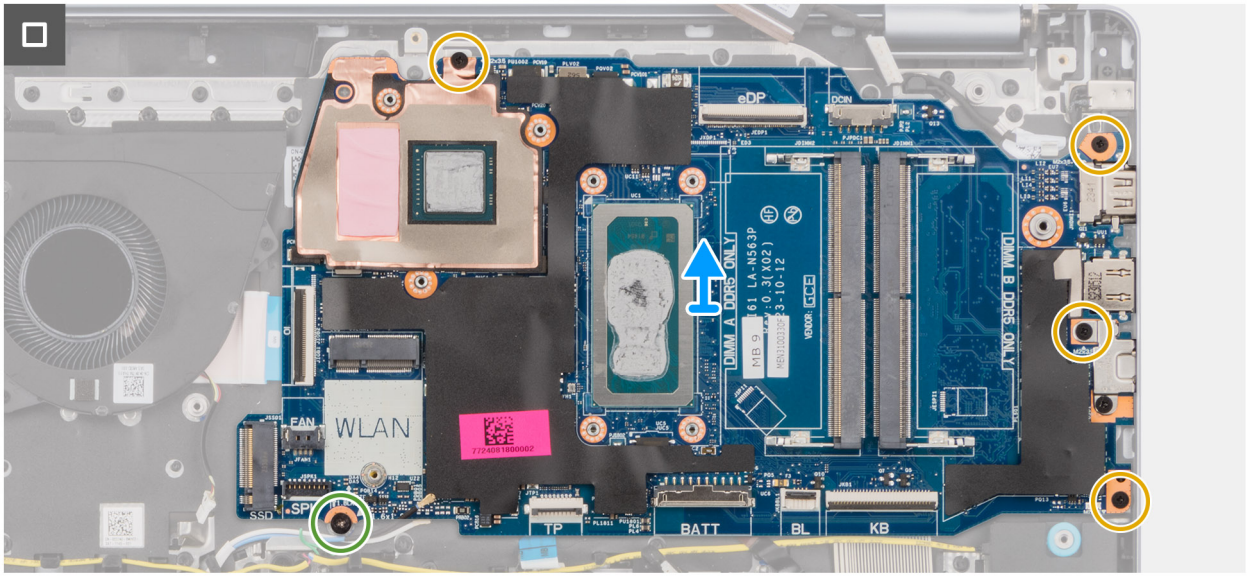


**Figure 61. Removing the system board**

**NOTE:** The USB Type-C bracket is secured to the system board with a single screw (M2x3.5). The bracket is attached with the system board as a service part and must not be removed from the system board.

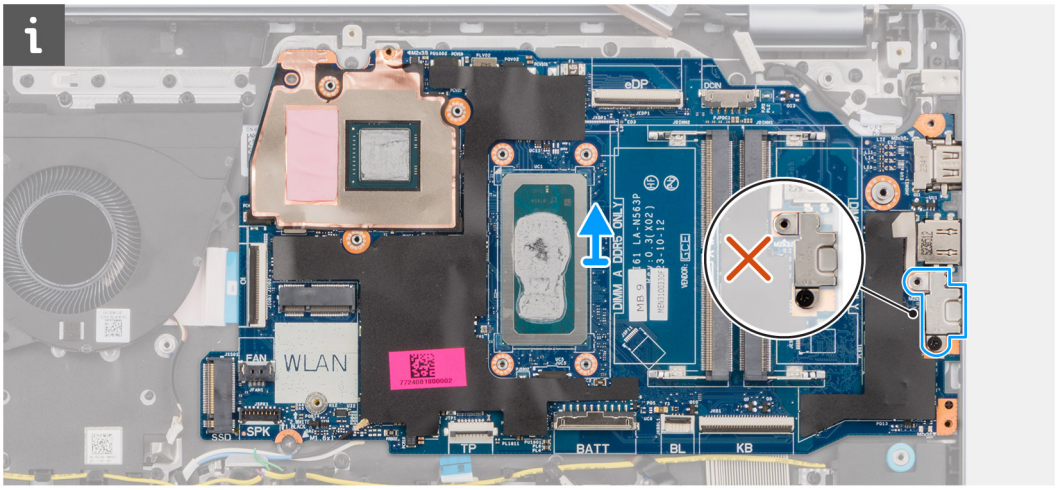


**Figure 62. System board - USB Type-C bracket**

5. Carefully lift and remove the system board from the palm-rest and keyboard assembly.

# Installing the system board

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

### Prerequisites

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

### About this task

The following image indicates the connectors on your system board.

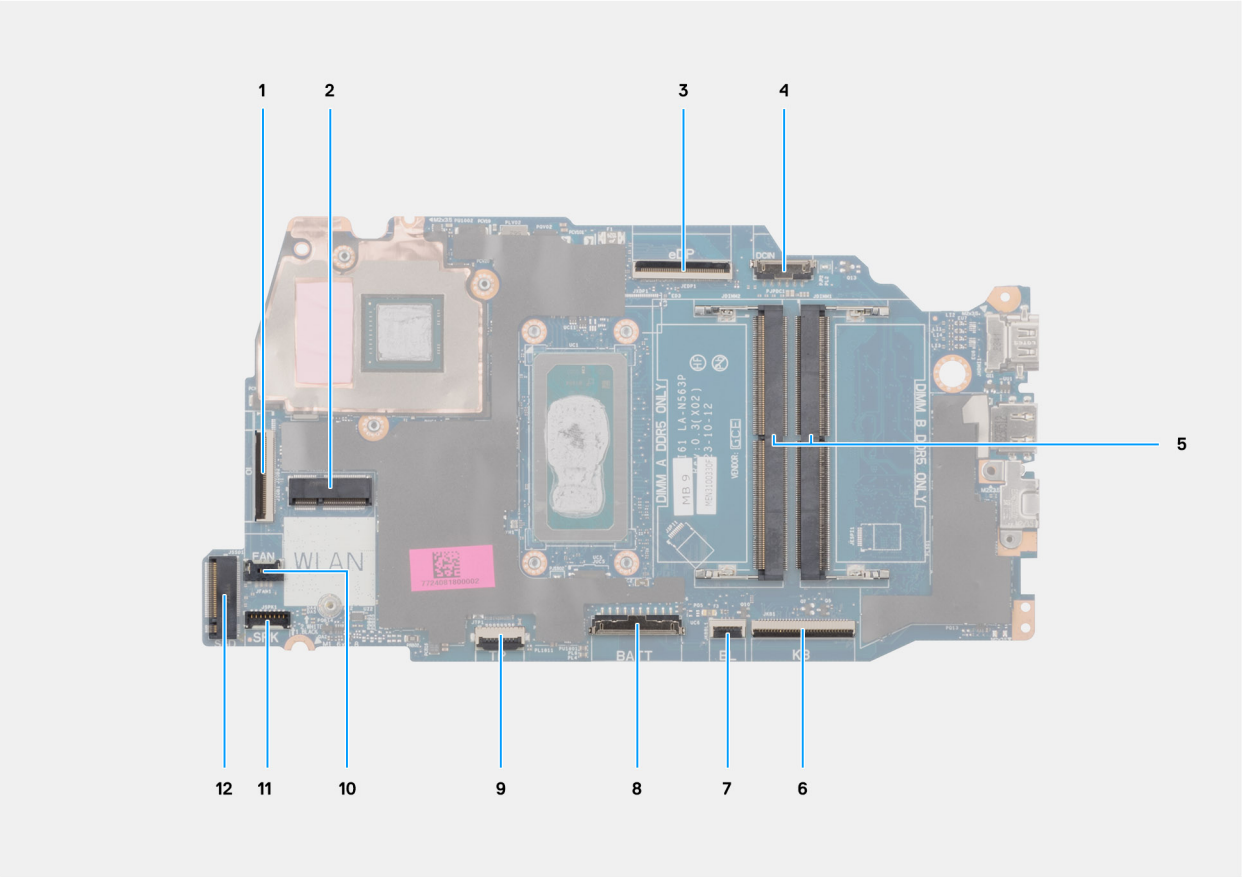


**Figure 63. System board connectors**

1. I/O-board cable (IO) connector
2. Wireless card (WLAN) connector
3. Display cable (eDP) connector
4. Power-adapter port (DCIN) connector
5. Memory module x2 (DIMM A DDR5 ONLY + DIMM B DDR5 ONLY) connectors
6. Keyboard cable (KB) connector
7. Keyboard-backlight cable (BL) connector
8. Battery cable (BATT) connector
9. Touchpad cable (TP) connector
10. Fan cable (FAN) connector
11. Speaker cable (SPK) connector
12. Solid state drive (SSD) connector

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

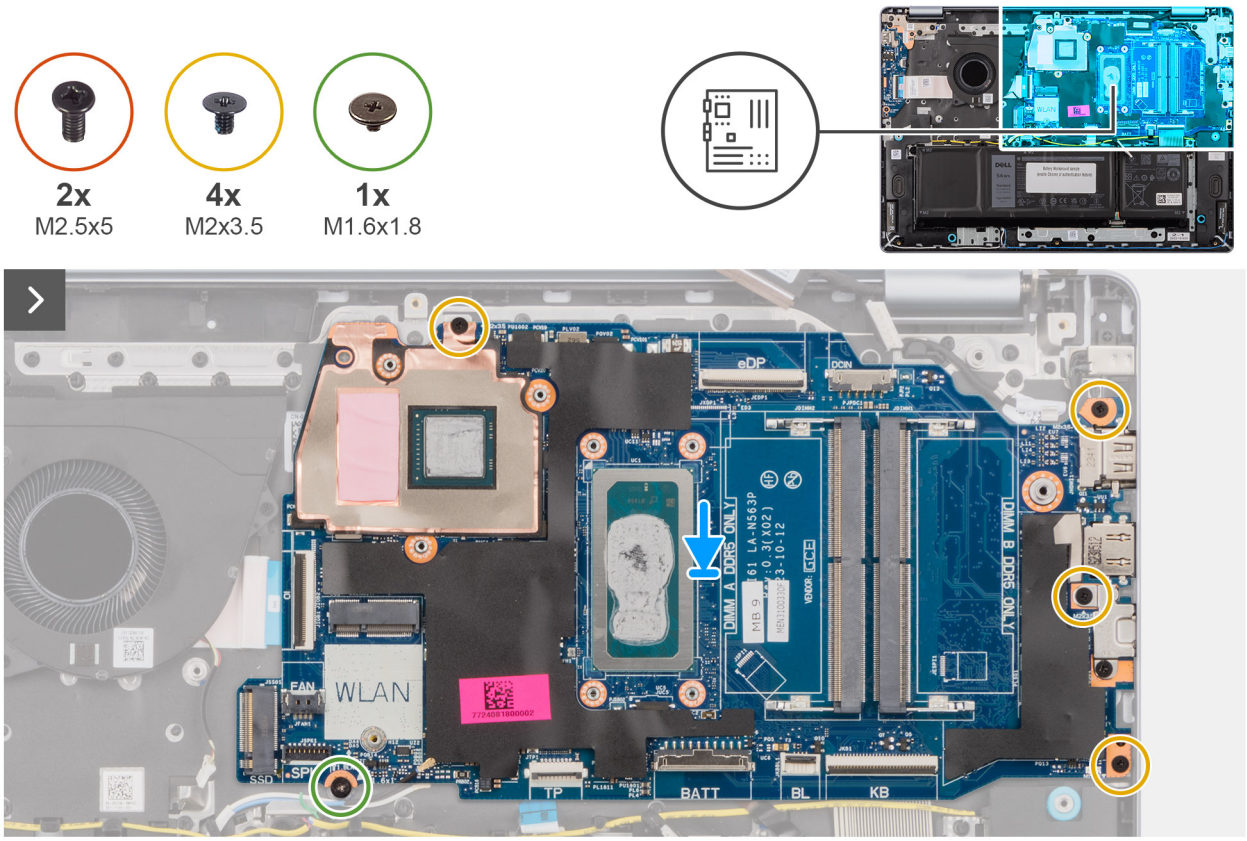


**Figure 64. Installing the system board**

### Steps

1. At an angle, carefully slide and place the system board on the palm-rest and keyboard assembly.
2. Align the ports on the system board to the port slots on the palm-rest and keyboard assembly.
3. Align the screw holes on the system board with the screw holes on the palm-rest and keyboard assembly.
4. Replace the (M1.6x1.8) and the four screws (M2x3.5) to secure the system board to the palm-rest and keyboard assembly.
5. Connect the following cables to the system board:
   a. display cable (eDP)
   b. power-adapter port cable (DCIN)
   c. keyboard cable (KB)
   d. keyboard-backlight cable (BL)
   e. battery cable (BATT)
   f. touchpad cable (TP)
   g. speaker cable (SPK)
   h. fan cable (FAN)
   i. I/O-board cable (IO)

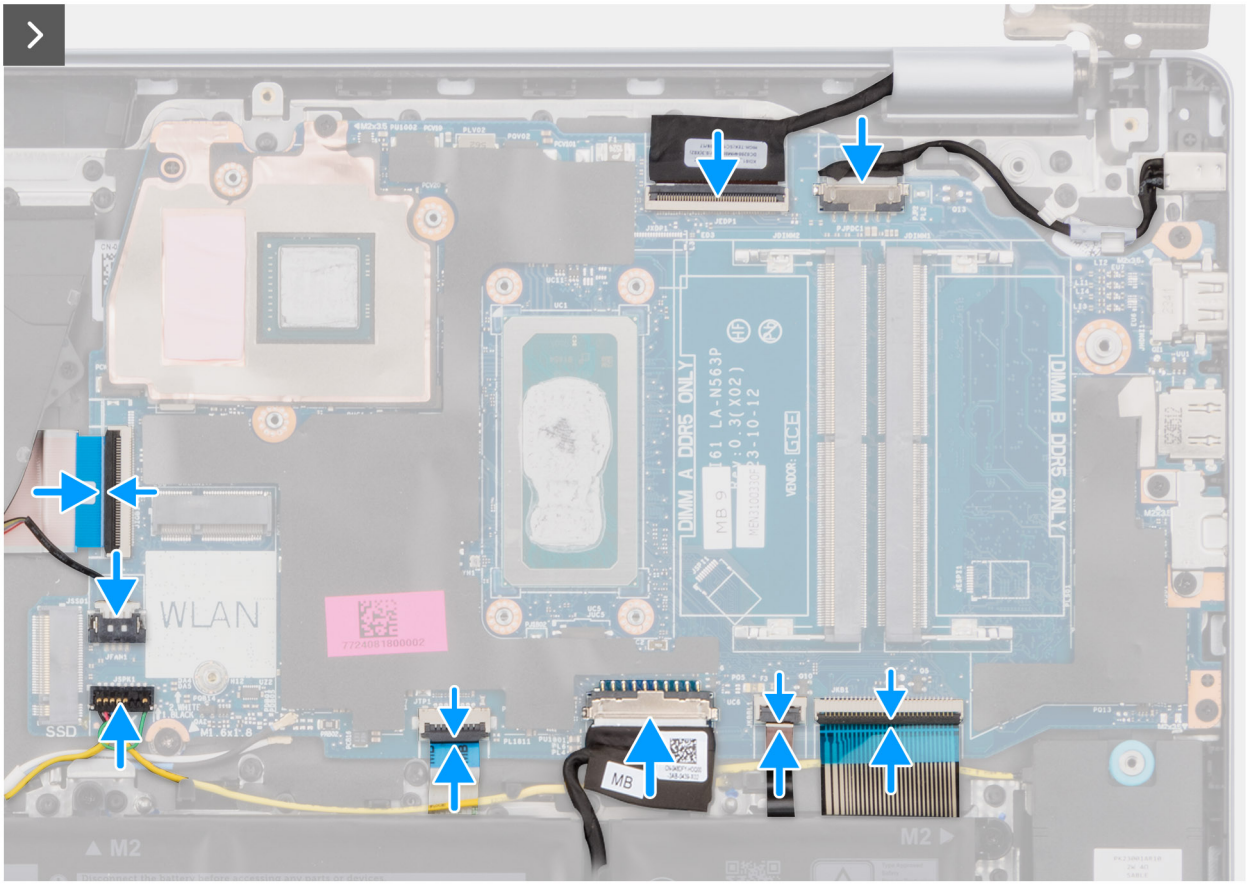


**Figure 65. Installing the system board**

6. Close the left-display hinge to align the screw holes on the left-display hinge with the screw holes on the system board and the palm-rest and keyboard assembly.
7. Replace the two screws (M2.5x5) that secure the left-display hinge to the palm-rest and keyboard assembly.

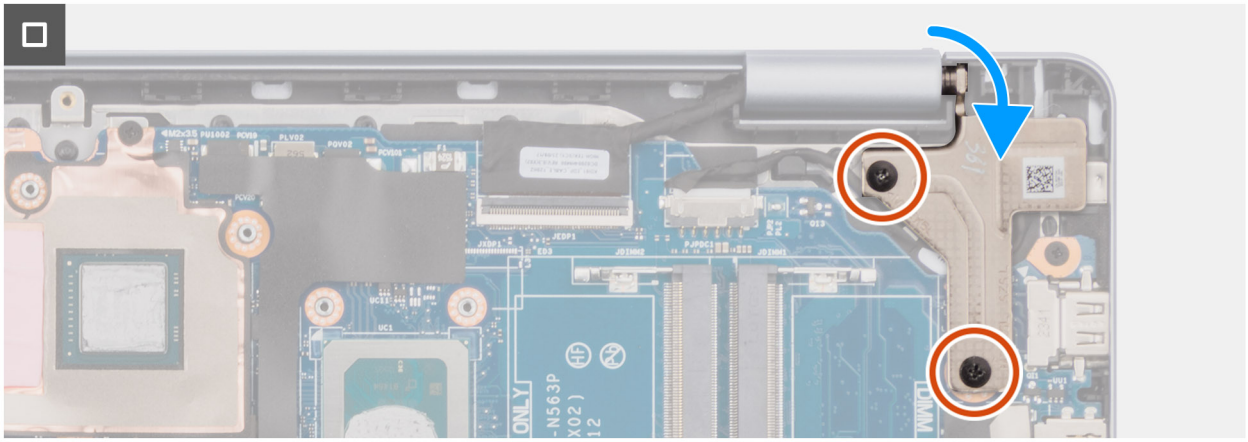

**Figure 66. Installing the system board**

### Next steps

1. Install the heat sink - for computers shipped with integrated graphics card or heat sink - for computers shipped with discrete graphics card, whichever is applicable.
2. Install the wireless card.
3. Install the solid state drive.
4. Install the memory module.

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

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

### Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the memory module.
5. Remove the solid state drive.
6. Remove the wireless card.
7. Remove the speakers.
8. Remove the fan.
9. Remove the heat sink - for computers shipped with integrated graphics card or heat sink - for computers shipped with discrete graphics card, whichever is applicable.
10. Remove the touchpad.
11. Remove the I/O-board cable.
12. Remove the I/O board.
13. Remove the display assembly.
14. Remove the power button or the power button with fingerprint reader, whichever is applicable.
15. Remove the power-adapter port.
16. Remove the system board.

**NOTE:** The system board can be removed with the heat sink attached to it in order to simplify the procedure and preserve the thermal bond between the system board and heat sink.

### About this task

**NOTE:** The palm-rest and keyboard assembly cannot be further disassembled once all the components in the **Prerequisites** have been removed. If the keyboard is malfunctioning and is required to be replaced, replace the entire palm-rest and keyboard assembly.

The image below shows the palm-rest and keyboard assembly after the **Prerequisites** have been performed.

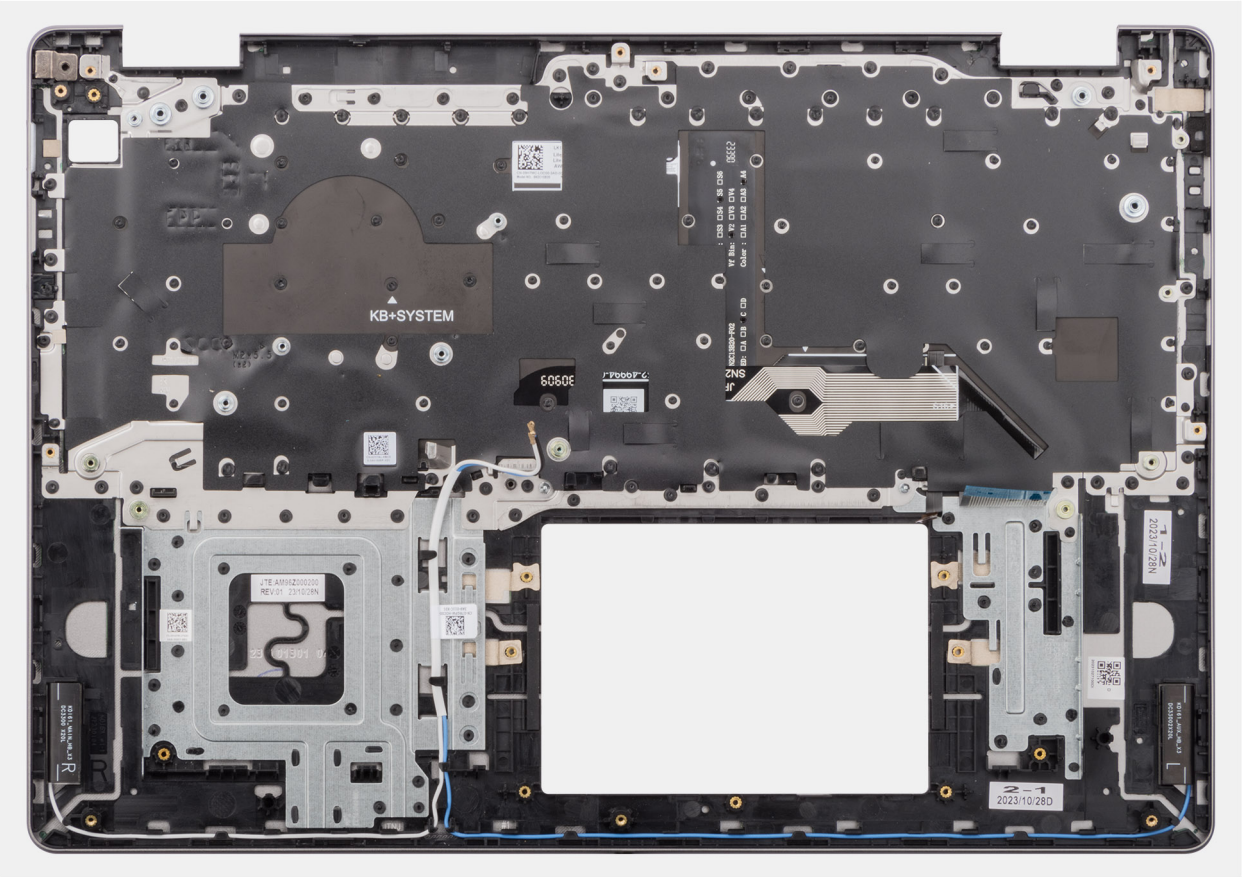


**Figure 67. Palm-rest and keyboard assembly**

### Steps

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

# Installing the palm-rest and keyboard assembly

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

### Prerequisites

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

### About this task

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

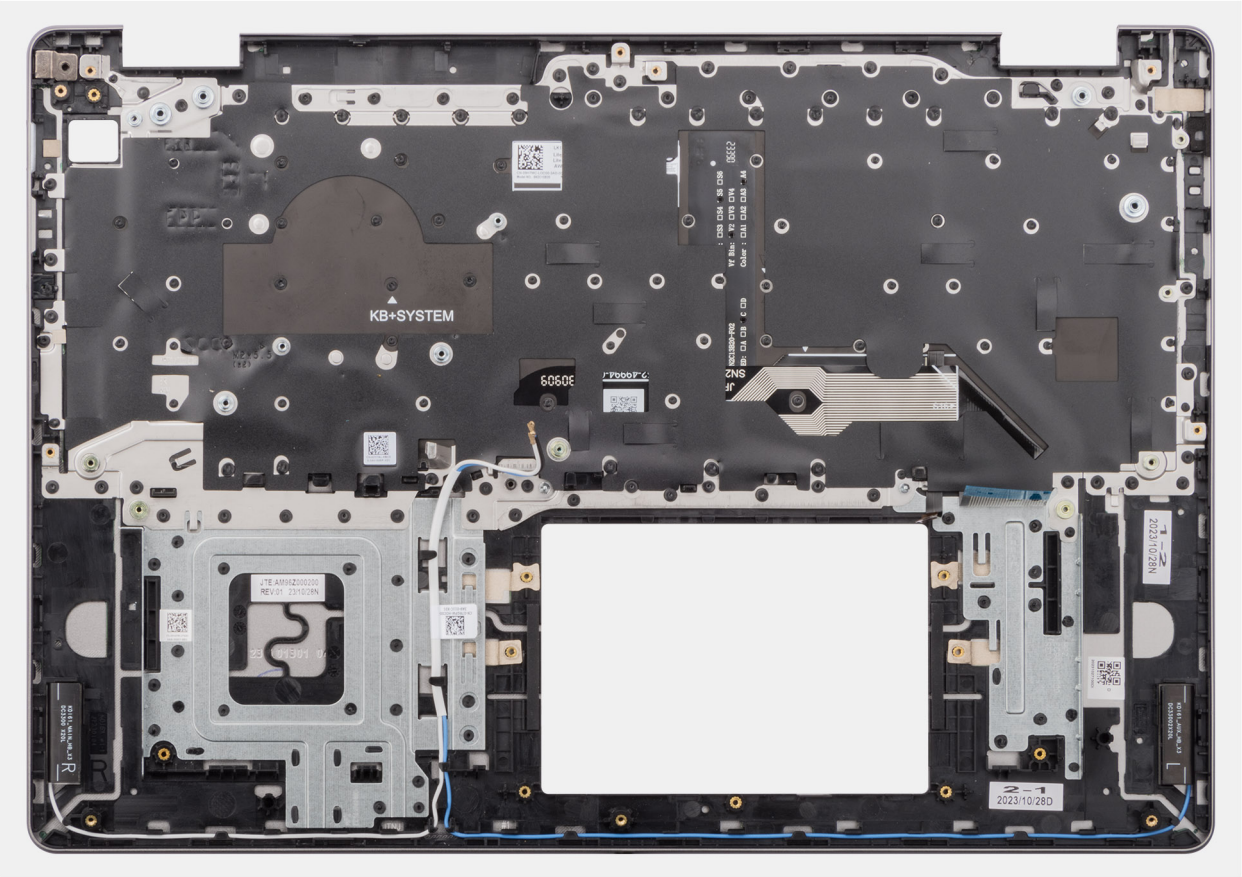


**Figure 68. Palm-rest and keyboard assembly**

### Steps

Place the palm-rest and keyboard assembly on a flat surface and install the components listed in **Next steps** to complete the palm-rest and keyboard assembly installation.

### Next steps

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

# 7

# Software

This chapter details the supported operating systems along with instructions on how to install the drivers.

## Operating system

Your Dell 16 DC16251 supports the following operating systems:

- Windows 11 Pro
- Windows 11 Pro National Education
- Windows 11 Home
- Windows 11 Home (S Mode)
- Ubuntu Linux 24.04 LTS, 64-bit

## Drivers and downloads

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

# 8

# BIOS Setup

**CAUTION: Certain changes can make your computer work incorrectly. Before you change the settings in BIOS Setup, it is recommended that you note down the original settings for future reference.**

**NOTE:** Depending on the computer and the installed devices, the options that are listed in this section may differ.

Use BIOS Setup for the following purposes:

- Get information about the hardware installed in your computer, such as the amount of RAM and the capacity of the storage device.
- Change the system configuration information.
- Set or change user-selectable options such as the user password, enabling or disabling base devices, and configuring hard drive settings.

## Entering BIOS Setup program

Turn on or restart your computer and press F2 immediately.

## Navigation keys

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

### Table 32. Navigation keys

| Keys | Navigation |
|---|---|
| Up arrow | Moves to the previous field. |
| Down arrow | Moves to the next field. |
| Enter | Selects a value in the selected field (if applicable) or follows the link in the field. |
| Spacebar | Expands or collapses a drop-down list, if applicable. |
| Tab | Moves to the next focus area. |
| Esc | Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restart the computer. |

## F12 One Time Boot menu

To enter the One Time Boot menu, turn on or restart your computer, and then press F12 immediately.

**NOTE:** If you are unable to enter the One Time Boot menu, repeat the above action.

The One Time Boot menu displays the devices that you can boot from and also display the options to start diagnostics. The boot menu options are:

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

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

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

The One Time Boot menu screen also displays the option to access BIOS Setup.

# System setup options

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

### Table 33. System setup options—Overview menu

| **Overview** | |
|---|---|
| **Dell 16 DC16251** | |
| 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. |
| **Battery Information** | |
| Primary | Displays the primary battery of the computer. |
| Battery Level | Displays the battery level of the computer. |
| Battery State | Displays the battery state of the computer. |
| Health | Displays the battery health of the computer. |
| AC Adapter | Displays whether an AC adapter is connected. If connected, displays the type of AC adapter that is connected. |
| Battery Life Type | Displays the battery life of the computer. |
| **Processor Information** | |
| Processor Type | Displays the processor type. |
| Maximum Clock Speed | Displays the maximum processor clock speed. |
| Processor L2 Cache | Displays the processor L2 cache size. |
| Processor L3 Cache | Displays the processor L3 cache size. |
| **Memory Information** | |
| Memory Installed | Displays the total memory installed on the computer. |
| Memory Speed | Displays the memory speed. |
| DIMM A Size | Displays the size of the memory module installed in the DIMM A slot. |
| DIMM B Size | Displays the size of the memory module installed in the DIMM B slot. |
| **Devices Information** | |
| Panel Type | Displays the type of display panel available on the computer. |

### Table 33. System setup options—Overview menu (continued)

| Overview | |
|---|---|
| Video Controller | Displays the type of video controller available on the computer. |
| Video Memory | Displays information about available video memory on the computer. |
| Wi-Fi Device | Displays information about available wireless device on the computer. |
| Native Resolution | Displays information about the native resolution of the display. |
| Audio Controller | Displays the type of audio controller available on the computer. |
| Bluetooth Device | Displays information about the wireless device available on the computer. |
| dGPU Video Controller | Displays the information about discrete graphic card available on the computer. |

### Table 34. System setup options—Boot Configuration menu

| Boot Configuration | |
|---|---|
| **Boot Sequence** | |
| Boot Sequence | Displays the boot sequence.<br>**NOTE:** Legacy Boot mode is not supported on this platform. |
| **Secure Boot** | Secure Boot is a method of guaranteeing the integrity of the boot path by performing additional validation of the operating system. The computer stops booting to the operating system when a component is not authenticated during the boot process. |
| Enable Secure Boot | Enables the computer to boot using only validated boot software.<br>By default, the **Enable Secure Boot** option is enabled.<br>For additional security, Dell Technologies recommends keeping the **Secure Boot** option enabled to ensure that the UEFI firmware validates the operating system during the boot process. |
| Enable Microsoft UEFI CA | When disabled, the UEFI CA is removed from the BIOS UEFI Secure Boot database.<br>**CAUTION: When disabled, the Microsoft UEFI CA can cause your computer to not boot, computer graphics may not function, some devices may not function properly, and the computer could become unrecoverable.**<br>By default, the **Enable Microsoft UEFI CA** option is enabled.<br>For additional security, Dell Technologies recommends keeping the **Enable Microsoft UEFI CA** option enabled to ensure the broadest compatibility with devices and operating systems. |
| Secure Boot Mode | Enables or disables the Secure Boot operation mode.<br>By default, the **Deployed Mode** is selected.<br>**NOTE: Deployed Mode** should be selected for normal operation of Secure Boot. |

### Table 35. System setup options—Integrated Devices menu

| Integrated Devices | |
|---|---|
| **Date/Time** | |
| Date | Sets the computer date in MM/DD/YYYY format. Changes to the date format take effect immediately. |
| Time | Sets the computer time in HH/MM/SS 24-hour format. You can switch between a 12-hour and 24-hour clock. Changes to the time format take effect immediately. |

### Table 35. System setup options—Integrated Devices menu (continued)

| Integrated Devices | |
|---|---|
| **USB Configuration** | |
| Enable USB Boot Support | Enables booting from USB mass storage devices that are connected to external USB ports.<br>By default, the **Enable USB Boot Support** option is enabled. |

### Table 36. System setup options—Storage menu

| Storage | |
|---|---|
| **Drive Information** | |
| M.2 PCIe SSD-0 | Displays information about the M.2 PCIe SSD-0 type and device. |

### Table 37. BIOS Setup options—Power menu

| Power | |
|---|---|
| **Lid Switch** | |
| Enable Lid Switch | Enables or disables the Lid Switch.<br>By default, the **Enable Lid Switch** option is enabled. |

### Table 38. System setup options—Security menu

| Security | |
|---|---|
| Absolute | Absolute Software provides various cyber security solutions, some requiring software preloaded on Dell computers and integrated into the BIOS. To use these features, you must enable the Absolute BIOS setting and contact Absolute for configuration and activation.<br>By default, the **Absolute** option is enabled.<br>For additional security, Dell Technologies recommends keeping the **Enable Absolute** option enabled.<br>**NOTE:** When the Absolute features are activated, the Absolute integration cannot be disabled from the BIOS setup screen. |

### Table 39. System setup options—Passwords menu

| Passwords | |
|---|---|
| **Admin Password** | Enables the user to set, change, or delete the administrator (admin) password. The administrator password enables several security features.<br>Dell Technologies recommends using an administrator password to prevent unauthorized changes to BIOS setup options. |
| **System Password** | Enables the user to set, change, or delete the system password. The system password prevents the computer from booting to an operating system without entering the correct password.<br>Dell Technologies recommends using the computer password in situations where it is likely that a computer may be lost or stolen. |
| **M.2 PCIe SSD-0** | Enables the user to set, change, or delete the M.2 PCIe SSD-0 password. |

### Table 40. System setup options—System Management menu

| System Management | |
|---|---|
| **Service Tag** | Displays the Service Tag of the computer. |

### Table 41. System setup options—Keyboard menu

| Keyboard | |
|---|---|
| **Keyboard Illumination** | Configures the operating mode of the keyboard illumination feature.<br>By default, the **Bright** option is selected. Enables the keyboard illumination feature at 50% brightness level.<br>Use **<Fn>+<F5>** hotkey to change this setting during normal system operation. |
| **Keyboard Backlight Timeout on AC** | Sets the timeout value for the keyboard backlight when an AC adapter is connected to the computer.<br>By default, the **1 minute** option is selected. |
| **Keyboard Backlight Timeout on Battery** | Sets the timeout value for the keyboard backlight when the computer is running only on the battery power. The keyboard backlight timeout value is only effective when the backlight is enabled.<br>By default, the **1 minute** option is selected. |

### Table 42. System setup options—Pre-boot Behavior menu

| Preboot Behavior | |
|---|---|
| **Adapter Warnings** | |
| Enable Adapter Warnings | Enables or disables the computer to display warning messages when adapters with too little power capacity are detected.<br>By default, the option **Enable Adapter Warnings** is enabled. |
| **Warnings and Errors** | Enables or disables the action to be taken when a warning or error is encountered.<br>By default, the **Prompt on Warnings and Errors** option is selected.<br>**NOTE:** Errors deemed critical to the operation of the computer hardware stop the functioning of the computer. |

### Table 43. System setup options—System Logs menu

| System Logs | |
|---|---|
| **BIOS Event Log** | |
| Clear BIOS Event Log | Allows you to select option to keep or clear BIOS events logs.<br>By default, the **Keep Log** option is selected. |
| **Thermal Event Log** | |
| Clear Thermal Event Log | Allows you to select option to keep or clear thermal events logs.<br>By default, the **Keep Log** option is selected. |
| **Power Event Log** | |
| Clear Power Event Log | Allows you to select option to keep or clear power events logs.<br>By default, the **Keep Log** option is selected. |

# Updating the BIOS

## Updating the BIOS in Windows

**About this task**

**CAUTION: If BitLocker is not suspended before updating the BIOS, the BitLocker key is not recognized the next time you reboot the computer. You will then be prompted to enter the recovery key to proceed, and the computer displays a prompt for the recovery key on each reboot. Failure to provide the recovery key can result in data loss or an operating system reinstall. For more information, see the Knowledge Base Resource Updating the BIOS on Dell systems with BitLocker enabled.**

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

**Steps**

1. Go to Dell Support Site.
2. Go to **Identify your product or ask support**. In the box, enter the product identifier, model, service request or describe what you are looking for, and then click **Search**.

   **NOTE:** If you do not have the Service Tag, click **Detect This PC**. The site automatically detects your device, and you can then click **Explore Product Support** to go to the support page for your device. You can also use the product ID or manually browse for your computer model.

3. Click **Drivers & Downloads**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, navigate to the folder where the BIOS update file has been saved.
8. Double-click the BIOS update file and follow the on-screen instructions.

   For more information, search in the Knowledge Base Resource at Dell Support Site.

## Updating the BIOS using the USB drive in Windows

**About this task**

**CAUTION: If BitLocker is not suspended before updating the BIOS, the BitLocker key is not recognized the next time you reboot the computer. You will then be prompted to enter the recovery key to proceed, and the computer displays a prompt for the recovery key on each reboot. Failure to provide the recovery key can result in data loss or an operating system reinstall. For more information, see the Knowledge Base Resource Updating the BIOS on Dell systems with BitLocker enabled.**

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

**Steps**

1. Go to Dell Support Site.
2. Go to **Identify your product or ask support**. In the box, enter the product identifier, model, service request or describe what you are looking for, and then click **Search**.

   **NOTE:** If you do not have the Service Tag, click **Detect This PC**. The site automatically detects your device, and you can then click **Explore Product Support** to go to the support page for your device. You can also use the product ID or manually browse for your computer model.

3. Click **Drivers & Downloads**.

4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. Create a bootable USB drive. For more information, search the Knowledge Base Resource at Dell Support Site.
8. Copy the BIOS Setup program file to the bootable USB drive.
9. Connect the bootable USB drive to the computer that needs the BIOS update.
10. Restart the computer and press **F12**.
11. Select the USB drive from the **One Time Boot Menu**.
12. Type the BIOS Setup program filename and press **Enter**.
    The **BIOS Update Utility** appears.
13. Follow the on-screen instructions to complete the BIOS update.

## Updating the BIOS in Linux and Ubuntu

To update the system BIOS on a computer that is installed with Linux or Ubuntu, see the Dell Knowledge Base article 000131486 at Dell Support Site.

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

To update the BIOS from the One-Time boot menu, see Knowledge base article 000128928 at Dell Support Site.

# System and admin password

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

**CAUTION: Ensure that your computer is locked when it is not in use. Anyone can access the data that is stored on your computer, when left unattended.**

### Table 44. System and admin password

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

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

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

## Assigning a System Setup password

### Prerequisites

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

### Steps

1. In the **System BIOS** or **System Setup** screen, select **Passwords** and press Enter.
   The **Passwords** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to create the system password:
   - Password can be up to 32 characters.

- Password must contain at least one special character: "( ! " # $ % & ' * + , - . / : ; < = > ? @ [ \ ] ^ _ ` { | } )"
- The password can contain numbers from 0 to 9.
- The password can contain alphabets A to Z and a to z.

3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Y to save the changes.
   The computer restarts.

## Deleting or changing an existing system password or admin password

### Prerequisites

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

### Steps

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

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

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

# Clearing system and admin passwords

### About this task

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

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

# 9

# Troubleshooting

## Handling swollen rechargeable Li-ion batteries

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

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

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

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

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

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

## Dell SupportAssist Pre-boot System Performance Check diagnostics

**About this task**

SupportAssist diagnostics (also known as system diagnostics) performs a complete check of your hardware. The Dell SupportAssist Pre-boot System Performance Check diagnostics is embedded within the BIOS and launched by the BIOS internally. The embedded system diagnostics provides options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode.
- Repeat the tests.
- Display or save test results.
- Run thorough tests to add more options and obtain details about any failed devices.

- View status messages that inform you when the tests are completed successfully.
- View error messages that inform you of problems encountered during testing.

**NOTE:** Some tests for specific devices require user interaction. Always ensure that you are present at the computer when the diagnostic tests are performed.

For more information, see the knowledge base article 000181163.

## Running the SupportAssist Pre-Boot System Performance Check

**Steps**

1. Turn on your computer.
2. As the computer boots, press the F12 key.
3. On the boot menu screen, select **Diagnostics**.
   The diagnostic quick test begins.
   **NOTE:** For more information about running the SupportAssist Pre-Boot System Performance Check on a specific device, see Dell Support Site.
4. If there are any issues, error codes are displayed.
   Note the error code and validation number and contact Dell.

# Built-in self-test (BIST)

## Motherboard Built-In Self-Test (M-BIST)

M-BIST is the system board onboard self-test diagnostics tool that improves the diagnostics accuracy of system board Embedded Controller (EC) failures.

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

### How to run M-BIST

**NOTE:** Before initiating M-BIST, ensure that the computer is in a power-off state.

1. Press and hold both the **M** key and the power button to initiate M-BIST.
2. The battery-status light may exhibit two states:
   - Off: No fault was detected.
   - Amber and White: Indicates a problem with the system board.
3. If there is a failure with the system board, the battery-status light flashes one of the following error codes for 30 seconds:

**Table 45. LED error codes**

| Blinking Pattern | | Possible Problem |
|---|---|---|
| **Amber** | **White** | |
| 2 | 1 | CPU Failure |
| 2 | 8 | LCD Power Rail Failure |
| 1 | 1 | TPM Detection Failure |
| 2 | 4 | Memory/RAM failure |

4. If there is no failure with the system board, the LCD cycles through the solid color screens (that are described in the LCD-BIST) for 30 seconds and then turn off.

# Logic Built-in Self-test (L-BIST)

L-BIST is an enhancement to the single LED error code diagnostics and is automatically initiated during POST. L-BIST will check the LCD power rail. If there is no power being supplied to the LCD (that is if the L-BIST circuit fails), the battery status LED flashes either an error code [2,8] or an error code [2,7].

**NOTE:** If L-BIST fails, LCD-BIST cannot function as no power will be supplied to the LCD.

## How to invoke the L-BIST

1. Turn on your computer.
2. If the computer does not start up normally, look at the battery status LED:
   - If the battery status LED flashes an error code [2,7], the display cable may not be connected properly.
   - If the battery status LED flashes an error code [2,8], there is a failure on the LCD power rail of the system board, hence there is no power that is supplied to the LCD.
3. For cases, when a [2,7] error code is shown, check to see if the display cable is properly connected.
4. For cases when a [2,8] error code is shown, replace the system board.

# LCD Built-in Self-Test (LCD-BIST)

Dell laptops have a built-in diagnostic tool that helps you determine if the screen abnormality you are experiencing is an inherent problem with the LCD (screen) of the Dell laptop or with the video card (GPU) and computer settings.

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

## How to invoke the LCD-BIST

1. Turn off your computer.
2. Disconnect any peripherals that are connected to the computer. Connect only the AC adapter (charger) to the computer.
3. Ensure that the LCD (screen) is clean (no dust particles on the surface of the screen).
4. Press and hold the **D** key and press the power button to enter LCD-BIST mode. Continue to hold the **D** key until the computer boots up.
5. The screen displays solid colors and changes colors on the entire screen to white, black, red, green, and blue twice.
6. Then it displays the colors white, black, and red.
7. Carefully inspect the screen for abnormalities (any lines, fuzzy color, or distortion on the screen).
8. At the end of the last solid color (red), the computer shuts down.

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

# System-diagnostic lights

This section lists the system-diagnostic lights of your Dell 16 DC16251.

**Table 46. System-diagnostic lights**

| Blinking pattern | | Problem description |
|---|---|---|
| **Amber** | **White** | |
| 1 | 1 | TPM detection failure |
| 1 | 2 | Unrecoverable SPI Flash Failure |
| 1 | 3 | Short in hinge cable tripped OCP1 |
| 1 | 4 | Short in hinge cable tripped OCP2 |
| 1 | 5 | EC unable to program i-Fuse |

**Table 46. System-diagnostic lights (continued)**

| Blinking pattern | | Problem description |
|---|---|---|
| **Amber** | **White** | |
| 1 | 6 | Generic catch-all for ungraceful EC code flow errors |
| 1 | 7 | Non-RPMC Flash on Boot Guard fused system |
| 1 | 8 | Chipset “Catastrophic Error” signal has tripped |
| 2 | 1 | CPU failure |
| 2 | 2 | System board failure (included BIOS corruption or ROM error) |
| 2 | 3 | No memory or RAM detected |
| 2 | 4 | Memory or RAM failure |
| 2 | 5 | Invalid memory installed |
| 2 | 6 | System board or chipset error |
| 2 | 7 | LCD failure (SBIOS message) |
| 2 | 8 | LCD failure (EC detection of power rail failure) |
| 3 | 2 | PCI or Video card or chip failure |
| 3 | 3 | BIOS Recovery image not found |
| 3 | 4 | BIOS Recovery image found but invalid. |
| 3 | 5 | Power rail failure |
| 3 | 6 | Flash corruption is detected by SBIOS. |
| 3 | 7 | Timeout waiting on ME to reply to HECI message. |
| 4 | 3 | Display panel failure |
| 4 | 4 | Cable and display power rail failure |
| 4 | 5 | Display power rail, cable, and display panel failure |
| 4 | 6 | Display cable failure |

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

# Recovering the operating system

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

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

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

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

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

# Real-Time Clock (RTC Reset)

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

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

# Backup media and recovery options

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

# Network power cycle

### About this task

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

### Steps

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

# Drain flea power (perform hard reset)

### About this task

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

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

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

Perform the following steps to drain the flea power:

### Steps

1. Turn off the computer.
2. Disconnect the power adapter from the computer.

3. Remove the base cover.
4. Remove the battery.

   **CAUTION: The battery is a Field Replaceable Unit (FRU) and the removal and installation procedures are intended for authorized service technicians only.**

5. Press and hold the power button for 20 seconds to drain the flea power.
6. Install the battery.
7. Install the base cover.
8. Connect the power adapter to the computer.
9. Turn on the computer.

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

# 10

# 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 47. Self-help resources**

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

## Contacting Dell

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

**NOTE:** Availability of the services may vary depending on the country or region, and product.

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

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# Revision history

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

**Table 48. Revision history**

| Revision | Date | Description |
|---|---|---|
| A00 | 05-19-2025 | Original publish date. |
| A01 | 07-23-2025 | Updated MyDell QR description in view section |