Inspiron 16 Plus 7640

Owner's Manual - NVIDIA GeForce RTX 4050/4060 and Intel Graphics

Regulatory Model: P132F
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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 Inspiron 16 Plus 7640

Right

Figure 1. Right view

1. **microSD-card slot**

   Reads from and writes to the microSD card. The computer supports the following card types:

   - microSecure Digital (microSD)
   - microSecure Digital High Capacity (microSDHC)
   - microSecure Digital Extended Capacity (microSDXC)

2. **Universal audio jack**

   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 up to 5 Gbps.

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

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

Left

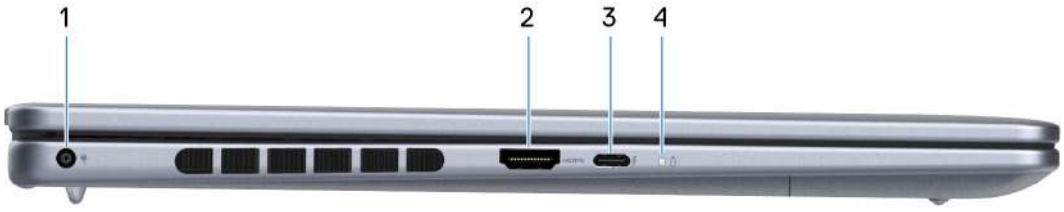

Figure 2. Left view

1. **Power-adapter port**

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

2. **HDMI 2.1 port**

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

3. **Thunderbolt 4.0 (40 Gbps) port with Power Delivery and DisplayPort**

Supports Thunderbolt 4 and DisplayPort 2.1 and also enables you to connect to an external display using a display adapter. Provides data transfer rates of up to 40 Gbps for Thunderbolt 4.

NOTE: You can connect a Dell Docking Station to the Thunderbolt 4 ports. For more information, search in the Knowledge Base Resource at www.dell.com/support.

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

NOTE: Thunderbolt 4 supports two 4K displays or one 8K display.

4. **Battery-status light**

   Indicates the battery-charge status.

   - Solid yellow - Battery charge is low.
   - Blinking yellow - Battery charge is critical.

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.

   NOTE: The power-status light on the power button is available only on computers without the fingerprint reader. Computers that are shipped with the fingerprint reader that is integrated on the power button will not have the power-status light on the power button.

   NOTE: You can customize the power-button behavior in Windows.

2. **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 4. Front view

1. **Left microphone**

   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. **Right microphone**

   Provides digital sound input for audio recording and voice calls.

6. **Display panel**

   Provides visual output to the user.

7. **Speakers (Front-firing)**

   Provides audio output.

Bottom

Figure 5. Bottom view

1. **Right speaker (down-firing)**

   Provides audio output.

2. **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.

3. **Left speaker (down-firing)**

   Provides audio output.

Service Tag

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.

Figure 6. Service Tag location

Battery charge and status light

The following table lists the battery charge and status light behavior of your Inspiron 16 Plus 7640.

Table 1. Battery charge and status light behavior

Power Source	LED Behavior	System Power State	Battery Charge Level
AC Adapter	Off	S0 - S5	Fully Charged
AC Adapter	Solid White	S0 - S5	< Fully Charged
Battery	Off	S0 - S5	11-100%
Battery	Solid Amber (590+/-3 nm)	S0 - S5	< 10%

- S0 (ON) - System is turned on.
- S4 (Hibernate) - The system consumes the least power compared to all other sleep states. The system is almost at an OFF state, except for a trickle power. The context data is written to a hard drive.
- S5 (OFF) - The system is in a shutdown state.

2

Set up your Inspiron 16 Plus 7640

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 7. Connect the power adapter

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 Windows setup.

   Follow the on-screen instructions to complete the setup. When setting up, Dell Technologies recommends 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 or create a Microsoft 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 in Windows in S-mode

Resources	Description
	**Dell Product Registration** Register your computer with Dell.
	**Dell Help & Support** Access help and support for your computer.
	**SupportAssist** SupportAssist proactively and predictively identifies hardware and software issues on your computer and automates the engagement process with Dell Technical support. It addresses performance and stabilization issues, prevents security threats, monitors, and detects hardware failures. For more information, see *SupportAssist for Home PCs User's Guide* at www.dell.com/support/home/product-support/product/dell-supportassist-pcs-tablets/docs. **NOTE:** In SupportAssist, click the warranty expiry date to renew or upgrade your warranty.

Table 3. Locate Dell apps in Windows

Resources	Description
	**My Dell** MyDell is a software application that offers you a single streamlined engagement platform including account access, device information, and hardware settings. This software delivers intelligent features that automatically fine-tune your computer for the best possible audio, power, and performance. Get the most out of your Dell device with intelligent, personalized technology from MyDell. Following are the key features of MyDell: • Application • Audio • Power • Color and Display • Presence detection For more information about how to use MyDell, see product guides at www.dell.com/support.
	**Dell Update** Updates your computer with critical fixes and latest device drivers as they become available. For more information about using Dell Update, see the product guides and third-party license documents at www.dell.com/support.
	**Dell Digital Delivery** Download software applications, which are purchased but not preinstalled on your computer. For more information about using Dell Digital Delivery, search in the Knowledge Base Resource at www.dell.com/support.
	**SupportAssist** SupportAssist proactively and predictively identifies hardware and software issues on your computer and automates the engagement process with Dell Technical support. It addresses performance and stabilization issues, prevents security threats, monitors, and detects hardware failures. For more information, see *SupportAssist for Home PCs User's Guide* at www.dell.com/support/home/product-support/product/dell-supportassist-pcs-tablets/docs. **NOTE:** In SupportAssist, click the warranty expiry date to renew or upgrade your warranty.

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Specifications of Inspiron 16 Plus 7640

Dimensions and weight

The following table lists the height, width, depth, and weight of your Inspiron 16 Plus 7640.

Table 4. Dimensions and weight

Description	Values
Height:	
Front height	17.40 mm (0.69 in.)
Rear height	18.30 mm (0.72 in.)
Width	356.78 mm (14.05 in.)
Depth	250.60 mm (9.87 in.)
Weight **NOTE:** The weight of your computer depends on the configuration that is ordered and manufacturing variability.	• 5.07 lb (2.30 kg), maximum • 4.94 lb (2.24 kg), minimum

Processor

The following table lists the details of the processors that are supported for your Inspiron 16 Plus 7640.

Table 5. Processor

Description	Option one
Processor type	14th Generation Intel Ultra 7 155H
Processor wattage	28 W
Processor total core count	14
Performance-cores	6
Efficient-cores	8
Processor total thread counts **NOTE:** Intel® Hyper-Threading Technology is only available on Performance-cores.	22
Processor speed	Up to 4.80 GHz
Performance-cores frequency	
Processor base frequency	1.40 GHz
Maximum turbo frequency	4.80 GHz

Table 5. Processor (continued)

Description		Option one
Efficient-cores frequency		
	Processor base frequency	1.40 GHz
	Maximum turbo frequency	3.80 GHz
Processor cache		24 MB
Integrated graphics		Intel Arc Graphics

Chipset

The following table lists the details of the chipset that is supported for your Inspiron 16 Plus 7640.

Table 6. Chipset

Description	Values
Chipset	Integrated in the processor
Processor	14th Generation Intel Ultra 7
DRAM bus width	64-bit
Flash EPROM	32 MB + 16 MB
PCIe bus	Up to Gen4

Operating system

Your Inspiron 16 Plus 7640 supports the following operating systems:

- Windows 11 Pro, 64-bit
- Windows 11 Pro National Education, 64-bit
- Windows 11 Home, 64-bit

Memory

The following table lists the memory specifications of your Inspiron 16 Plus 7640.

Table 7. Memory specifications

Description	Values
Memory slots	Two DIMM slots
Memory type	DDR5
Memory speed	5600 MT/s
Maximum memory configuration	32 GB
Minimum memory configuration	8 GB
Memory size per slot	8 GB, 16 GB, or 32 GB

Table 7. Memory specifications (continued)

Description	Values
Memory configurations supported	• 16 GB, 2 x 8 GB, DDR5, dual-channel, 5600 MT/s • 32 GB, 2 x 16 GB, DDR5, dual-channel, 5600 MT/s • 64 GB, 2 x 32 GB, DDR5, dual-channel, 5600 MT/s

External ports

The following table lists the external ports on your Inspiron 16 Plus 7640.

Table 8. External ports

Description	Values
USB ports	• Two USB 3.2 Gen 1 (5 Gbps) ports • One Thunderbolt 4 (40 Gbps) port with DisplayPort Alt Mode and Power Delivery **NOTE:** A USB Type-C to DisplayPort adapter (sold separately) is required to connect to a DisplayPort device.
Audio port	One universal audio jack
Video port/ports	One HDMI 2.1 port
Media-card reader	One microSD-card slot
Power-adapter port	• One 4.5 mm x 2.9 mm DC-in • One Thunderbolt 4 port with DisplayPort and Power Delivery
Security-cable slot	Not supported

Internal slots

The following table lists the internal slots of your Inspiron 16 Plus 7640.

Table 9. Internal slots

Description	Values
M.2	• One M.2 slot for WiFi and Bluetooth combo card • One M.2 slot for a M.2 2230 or M.2 2280 solid-state drive • One M.2 slot for a M.2 2230 solid-state drive **NOTE:** To learn more about the features of different types of M.2 cards, search in the Knowledge Base Resource at www.dell.com/support.

Wireless module

The following table lists the Wireless Local Area Network (WLAN) modules that are supported on your Inspiron 16 Plus 7640.

Table 10. Wireless module specifications

Description	Option one	Option two
Model number	Intel AX211	Intel BE200
Transfer rate	Up to 2400 Mbps	Up to 5760 Mbps
Frequency bands supported	2.4 GHz/5 GHz/6 GHz	2.4 GHz/5 GHz/6 GHz
Wireless standards	• WiFi 802.11a/b/g • Wi-Fi 4 (WiFi 802.11n) • Wi-Fi 5 (WiFi 802.11ac) • Wi-Fi 6E (WiFi 802.11ax)	• WiFi 802.11a/b/g • Wi-Fi 4 (WiFi 802.11n) • Wi-Fi 5 (WiFi 802.11ac) • Wi-Fi 6E (WiFi 802.11ax) • Wi-Fi 7 (WiFi 802.11be)
Encryption	• 64-bit/128-bit WEP • AES-CCMP • TKIP	• 64-bit/128-bit WEP • AES-CCMP • TKIP
Bluetooth wireless card	Bluetooth 5.3	Bluetooth 5.4
	NOTE: The version of the Bluetooth wireless card may vary depending on the operating system that is installed on your computer.	

Audio

The following table lists the audio specifications of your Inspiron 16 Plus 7640.

Table 11. Audio specifications

Description		Values
Audio controller		Realtek ALC3254
Stereo conversion		Supported
Internal audio interface		High definition audio interface
External audio interface		One universal audio jack
Number of speakers		4
Internal-speaker amplifier		Supported
External volume controls		Keyboard shortcut controls
Speaker output:		
	Average speaker output	2 W x 4 = 8 W
	Peak speaker output	2.5 W x 4 = 10 W
Subwoofer output		Not supported
Microphone		Digital-array microphones in camera assembly

Storage

This section lists the storage options on your Inspiron 16 Plus 7640.

Your Inspiron 16 Plus 7640 supports one M.2 2230 or M.2 2280 solid-state drive. The primary drive of your Inspiron 16 Plus 7640 is the M.2 solid-state drive installed.

Table 12. Storage specifications

Storage type	Interface type	Capacity
M.2 2230 solid-state drive	PCIe NVMe Gen4 x4, up to 64 Gbps	Up to 1 TB
M.2 2280 solid-state drive	PCIe NVMe Gen4 x4, up to 64 Gbps	Up to 2 TB

Media-card reader

The following table lists the media cards that are supported on your Inspiron 16 Plus 7640.

Table 13. Media-card reader specifications

Description	Values
Media-card type	One microSD-card slot
Media-cards supported	• Micro Secure Digital (mSD) • Micro Secure Digital High Capacity (mSDHC) • Micro Secure Digital Extended Capacity (mSDXC)
NOTE: The maximum capacity supported by the media-card reader varies depending on the standard of the media card that is installed on your computer.	

Keyboard

The following table lists the keyboard specifications of your Inspiron 16 Plus 7640.

Table 14. Keyboard specifications

Description	Values
Keyboard type	AI hotkey backlit keyboard
Keyboard layout	QWERTY
Number of keys	• United States and Canada: 79 keys • United Kingdom: 80 keys • Japan: 83 keys • Brazil: 81 keys
Keyboard size	X=19.05 mm key pitch Y=18.05 mm key pitch
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. To type the alternate character, press Shift and the desired key. To perform secondary functions, press Fn and the desired key.

Table 14. Keyboard specifications (continued)

Description	Values
	NOTE: You can define the primary behavior of the function keys (F1–F12) changing **Function Key Behavior** in BIOS setup program. For more information, see Keyboard shortcuts.

Keyboard shortcuts of Inspiron 16 Plus 7640

NOTE: Keyboard characters may differ depending on the keyboard language configuration. Keys 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 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 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 multi-media control, as indicated by the icon at the bottom of the key. Press the function key to invoke the task represented by the icon. For example, pressing f1 mutes the audio (refer to the table below).

However, if the function keys f1-f12 are needed for specific software applications, multi-media functionality can be disabled by pressing **fn** + **esc**. Subsequently, multi-media control can be invoked by pressing **fn** and the respective function key. For example, mute audio by pressing **fn** + **f1**.

Table 15. List of keyboard shortcuts

Function key	Primary behavior
f1	Mute audio
f2	Decrease volume
f3	Increase volume
f4	Play/Pause
f5	Keyboard-backlight **NOTE:** Toggle to cycle the keyboard backlight status through off, low-backlight, and high-backlight
f6	Decrease brightness
f7	Increase brightness
f8	Switch to external display
f10	Print screen
f11	Home
f12	End

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

Table 16. Secondary behavior

Function key	Behavior
fn + B	Pause/Break
fn + S	Toggle scroll lock
Fn + R	System request
fn + T	Toggle Ultra performance mode

Table 16. Secondary behavior (continued)

Function key	Behavior
fn + Copilot	Open application menu
fn + esc	Toggle fn-key lock
fn + Left arrow	Home
fn + Right arrow	End

Camera

The following table lists the camera specifications of your Inspiron 16 Plus 7640.

Table 17. Camera specifications

Description		Values
Number of cameras		One
Camera type		FHD 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 degrees

Touchpad

The following table lists the touchpad specifications of your Inspiron 16 Plus 7640.

Table 18. Touchpad specifications

Description		Values
Touchpad resolution:		> 300 dpi
Touchpad dimensions:		
	Horizontal	115 mm (4.53 in.)
	Vertical	80 mm (3.15 in.)
Touchpad gestures		For more information about touchpad gestures available on Windows, see the Microsoft Knowledge Base article at support.microsoft.com.

Power adapter

The following table lists the power adapter specifications of your Inspiron 16 Plus 7640.

Table 19. Power adapter specifications

Description		Option one	Option two
Type		130 W AC	130 W USB Type-C
Connector dimensions:			
	External diameter	4.50 mm	Not applicable
	Internal diameter	2.90 mm	Not applicable
Power-adapter dimensions:			
	Height	25.40 mm (1 in.)	22.30 mm (0.88 in.)
	Width	76.20 mm (3 in.)	66.30 mm (2.61 in.)
	Depth	154.70 mm (6.09 in.)	143 mm (5.63 in.)
Input voltage		100 VAC – 240 VAC	100 VAC – 240 VAC
Input frequency		50 Hz – 60 Hz	50 Hz – 60 Hz
Input current (maximum)		1.80 A	1.80 A
Output current (continuous)		6.70 A	6.50 A
Rated output voltage		19.50 VDC	20 VDC
Temperature range:			
	Operating	0°C to 40°C (32°F to 104°F)	0°C to 40°C (32°F to 104°F)
	Storage	-40°C to 70°C (-40°F to 158°F)	-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.

Battery

The following table lists the battery specifications of your Inspiron 16 Plus 7640.

Table 20. Battery specifications

Description		Values
Battery type		6-cell, 90 Wh "smart" lithium-ion
Battery voltage		11.70 VDC
Battery weight (maximum)		0.34 kg (0.75 lb)
Battery dimensions:		
	Height	7.56 mm (0.30 in.)

Table 20. Battery specifications (continued)

Description		Values
	Width	294.90 mm (11.31 in.)
	Depth	77.50 mm (3.05 in.)
Temperature range:		
	Operating	• Charge: 0°C to 45°C, 32°F to 113°F • Discharge: 0°C to 70°C, 32°F to 158°F
	Storage	-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.
Battery charging time (approximate) **NOTE:** Control the charging time, duration, start and end time, and so on, using the Dell Power Manager application. For more information about Dell Power Manager, search in the Knowledge Base Resource at www.dell.com/support.		• 2 hours (ExpressCharge) • 3 hours (standard charge)
Coin-cell battery		Not supported
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. **CAUTION: Dell Technologies recommends that you charge the battery regularly for optimal power consumption. If your battery charge is depleted, connect the power adapter, turn on your computer, and then restart your computer to reduce the power consumption.**		

Display

The following table lists the display specifications of your Inspiron 16 Plus 7640.

Table 21. Display specifications

Description		Values
Display type		16-inch, 2.5K with Dolby Vision
Touch options		Not supported
Display-panel technology		Wide-viewing angle (WVA)
Display-panel dimensions (active area):		
	Height	344.68 mm (13.57 in.)
	Width	215.42 mm (8.48 in.)
	Diagonal	406.46 mm (16 in.)
Display-panel native resolution		2560 x 1600
Luminance (typical)		300 nits
Megapixels		4.09

Table 21. Display specifications (continued)

Description	Values
Color gamut	100% sRGB (typical)
Pixels Per Inch (PPI)	189
Contrast ratio (minimum)	• 1000:1 (minimum) • 1200:1 (typical)
Response time (maximum)	35 ms
Refresh rate	120 Hz
Horizontal view angle	• +/- 80 degrees (minimum) • +/- 85 degrees (typical)
Vertical view angle	• +/- 80 degrees (minimum) • +/- 85 degrees (typical)
Pixel pitch	0.134 mm
Power consumption (maximum)	4 W (at mosaic pattern, 120 Hz)
Anti-glare vs glossy finish	Anti-glare

Fingerprint reader (optional)

The following table lists the specifications of the optional fingerprint-reader of your Inspiron 16 Plus 7640.

Table 22. Fingerprint reader specifications

Description	Values
Fingerprint-reader sensor technology	Trans-capactive sensing
Fingerprint-reader sensor resolution	500 ppi
Fingerprint-reader sensor pixel size	100 x 88 pixels

GPU—Integrated

The following table lists the specifications of the integrated Graphics Processing Unit (GPU) supported by your Inspiron 16 Plus 7640.

Table 23. GPU—Integrated

Controller	Memory size	Processor
Intel Arc Graphics	Shared system memory	14th Generation Intel Ultra 7

GPU—Discrete

The following table lists the specifications of the discrete Graphics Processing Unit (GPU) supported by your Inspiron 16 Plus 7640.

Table 24. GPU—Discrete

Controller	Memory size	Memory type
NVIDIA GeForce RTX 4050	6 GB	GDDR6
NVIDIA GeForce RTX 4060	8 GB	GDDR6

Multiple display support matrix

The following table lists the multiple display support matrix for your Inspiron 16 Plus 7640.

Table 25. Multiple display support matrix

Graphics Card	Direct Graphics Controller Direct Output Mode	Supported external displays with computer internal display on	Supported external displays with computer internal display off
Intel Arc Graphics	Not supported	3	Not applicable
NVIDIA GeForce RTX 4050	Supported by HDMI port and Type-C	3	Not applicable
NVIDIA GeForce RTX 4060	Supported by HDMI port and Type-C	3	Not applicable

Operating and storage environment

This table lists the operating and storage specifications of your Inspiron 16 Plus 7640.

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

Table 26. Computer environment

Description	Operating	Storage
Temperature range	0°C to 35°C (32°F to 95°F)	-40°C to 65°C (-40°F to 149°F)
Relative humidity (maximum)	10% to 90% (non-condensing)	0% to 95% (non-condensing)
Vibration (maximum)*	0.66 GRMS	Not applicable
Shock (maximum)	110 G†	Not applicable
Altitude range	-15.2 m to 3048 m (-49.87 ft to 10000 ft)	-15.2 m to 10668 m (-49.87 ft to 35000 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.

ComfortView Plus

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.

The display on this computer is designed to minimize blue light and complies with TÜV Rheinland's requirement for low blue light displays.

Low blue light mode is enabled at the factory, so no further configuration is necessary.

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.
- 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.
- Take an extended break for 20 minutes every two hours.

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

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

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

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

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

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

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

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

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

NOTE: The color of your computer and certain components may differ from what is shown in this document.

Before working inside your computer

Steps

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

   NOTE: If you are using a different operating system, see the documentation of your operating system for shut-down instructions.
3. Disconnect your computer and all attached devices from their electrical outlets.
4. Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.

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

   Service Mode

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

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

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

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

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

Safety precautions

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

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

- Turn off the computer and all attached peripherals.
- Disconnect the computer and all attached peripherals from AC power.
- Disconnect all network cables, telephone, and telecommunications lines from the computer.
- Use an ESD field service kit when working inside any to avoid electrostatic discharge (ESD) damage.
- After removing any computer component, carefully place the removed component on an anti-static mat.
- Wear shoes with non-conductive rubber soles to reduce the chance of getting electrocuted.
- Unplugging, pressing, and holding the power button for 15 seconds should discharge residual power in the system board.

Standby power

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

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. The wrist strap should be secure and in full contact with your skin, and ensure that you remove all jewelry such as watches, bracelets, or rings prior to bonding yourself and the equipment.

Electrostatic discharge—ESD protection

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

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

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

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

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

Perform the following steps to prevent ESD damage:

- Use a wired ESD wrist strap that is properly grounded. 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, ensure that you discharge static electricity from your body.
- Before transporting a static-sensitive component, place it in an anti-static container or packaging.

ESD Field Service kit

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

Components of an ESD field service kit

The components of an ESD field service kit are:

- **Anti-Static Mat** – The anti-static mat is dissipative and parts can be placed on it during service procedures. When using an anti-static mat, your wrist strap should be snug and the bonding wire should be connected to the mat and to any bare metal on the computer being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the mat. ESD-sensitive items are safe in your hand, on the ESD mat, in the computer, or inside an ESD bag.
- **Wrist Strap and Bonding Wire** – The wrist strap and bonding wire can be either directly connected between your wrist and bare metal on the hardware if the ESD mat is not required, or connected to the anti-static mat to protect hardware that is temporarily placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the ESD mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, mat, and bonding wire. Never use wireless wrist straps. Always be aware that the internal wires of a wrist strap are prone to damage from normal wear and tear, and must be checked regularly with a wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the wrist strap and bonding wire at least once per week.
- **ESD Wrist Strap Tester** – The wires inside an ESD strap are prone to damage over time. When using an unmonitored kit, it is a best practice to regularly test the strap prior to each service call, and at a minimum, test once per week. A wrist strap tester is the best method for doing this test. If you do not have your own wrist strap tester, check with your regional office to find out if they have one. To perform the test, plug the bonding-wire of wrist-strap into the tester while it is strapped to your wrist and push the button to test. A green LED is lit if the test is successful; a red LED is lit and an alarm sounds if the test fails.
- **Insulator Elements** – It is critical to keep ESD sensitive devices, such as plastic heat sink casings, away from internal parts that are insulators and often highly charged.
- **Working Environment** – Before deploying the ESD Field Service kit, assess the situation at the customer location. For example, deploying the kit for a server environment is different than for a desktop or 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 part using the same ESD bag and packaging that the new part arrived in. The ESD bag should be folded over and taped shut and all the same foam packing material should be used in the original box that the new part arrived in. ESD-sensitive devices should be removed from packaging only at an ESD-protected work surface, and parts should never be placed on top of the ESD bag because only the inside of the bag is shielded. Always place parts in your hand, on the ESD mat, in the computer, or inside an anti-static bag.
- **Transporting Sensitive Components** – When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

ESD protection summary

It is recommended to 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 performing service and use anti-static bags for transporting sensitive components.

Transporting sensitive components

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

After working inside your computer

About this task

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

Steps

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

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

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

BitLocker

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

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
- Phillips screwdriver #1
- 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 with the configuration ordered.

Table 27. Screw list

Component	Screw type	Quantity	Screw image
Base cover	M2x4	7	
Base cover	Captive screws (M2x8.6)	2	
90 Wh battery	M2x4	5	
M.2 2230 solid-state drive and M.2 thermal shield	M2x3	1	
M.2 2280 solid-state drive and M.2 thermal shield	M2x3	1	
M.2 2230 thermal shield	M2x1.8	1	
Processor fan	M2x5	2	
Graphics processing unit fan	M2x5	2	
Wireless-card bracket	M2x3	1	
Type-C port bracket	M2x4	2	
Display assembly	M2.5x5.5	4	
I/O board	M2x3	1	
Audio board	M2x4	2	
System board	M2x3	3	
Touchpad	M2x1.8	4	
Touchpad	M2x2.5	5	

Major components of Inspiron 16 Plus 7640

The following image shows the major components of Inspiron 16 Plus 7640.

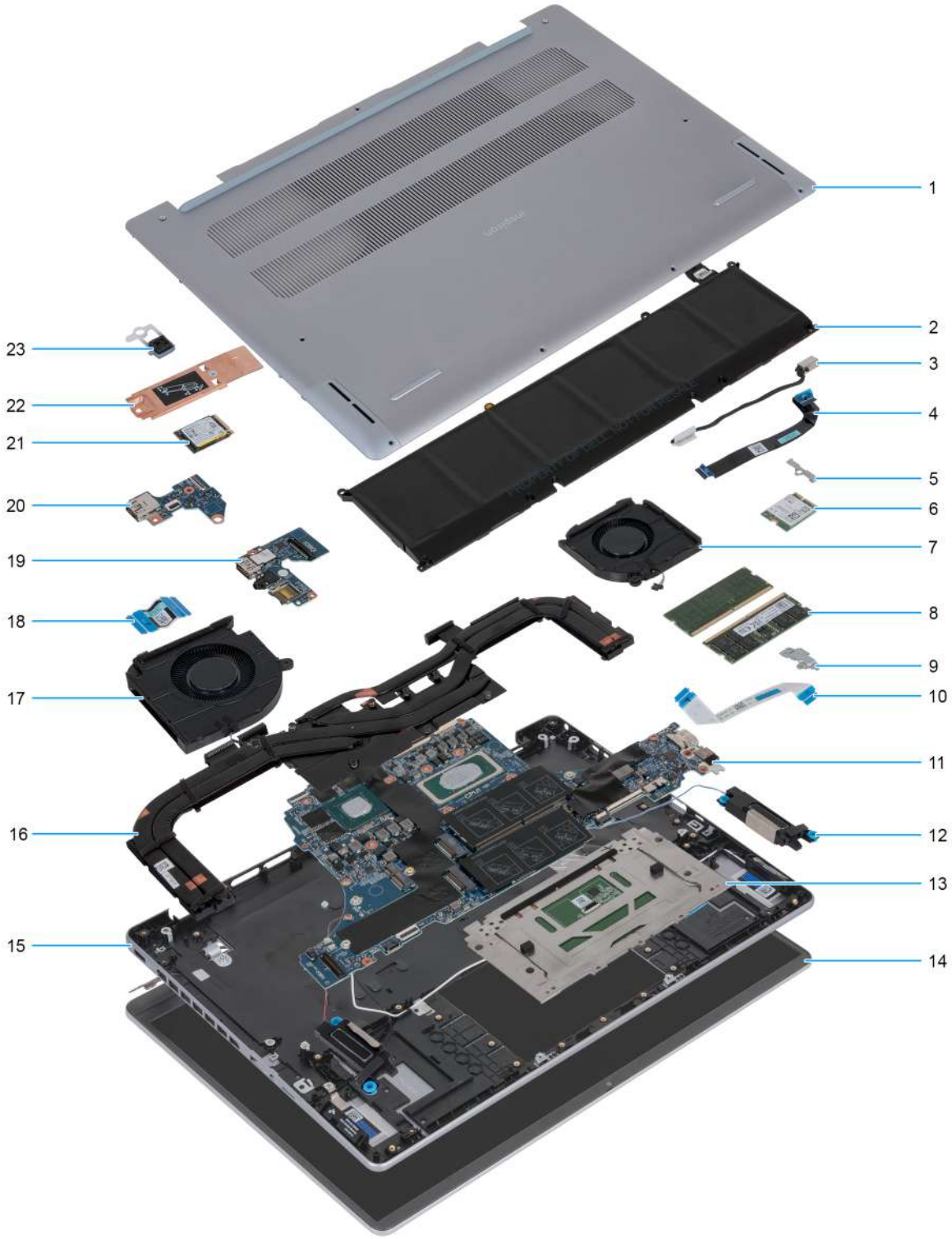

Figure 8. Major components ofInspiron 16 Plus 7640

1. Base cover
2. Battery
3. Power-adapter port

4. I/O-board cable
5. Wireless-card bracket
6. M.2 wireless card
7. Processor fan
8. Memory module
9. USB Type-C port bracket
10. Touchpad cable
11. System board
12. Speakers (down-firing) (2)
13. Touchpad
14. Display assembly
15. Palm-rest and keyboard assembly
16. Heat sink
17. Graphics processing unit fan
18. Audio-board cable
19. Audio-board
20. I/O board
21. M.2 solid-state drive (M.2 2230 solid-state drive shown)
22. M.2 solid-state drive thermal shield
23. Power-button with an 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 coverages 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.

   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.

About this task

NOTE: Before removing the base cover, ensure that there is no microSD card installed in the microSD-card slot on your computer.

The following image(s) shows the base cover and provides a visual representation of the removal procedure.

Figure 9. Removing the base cover

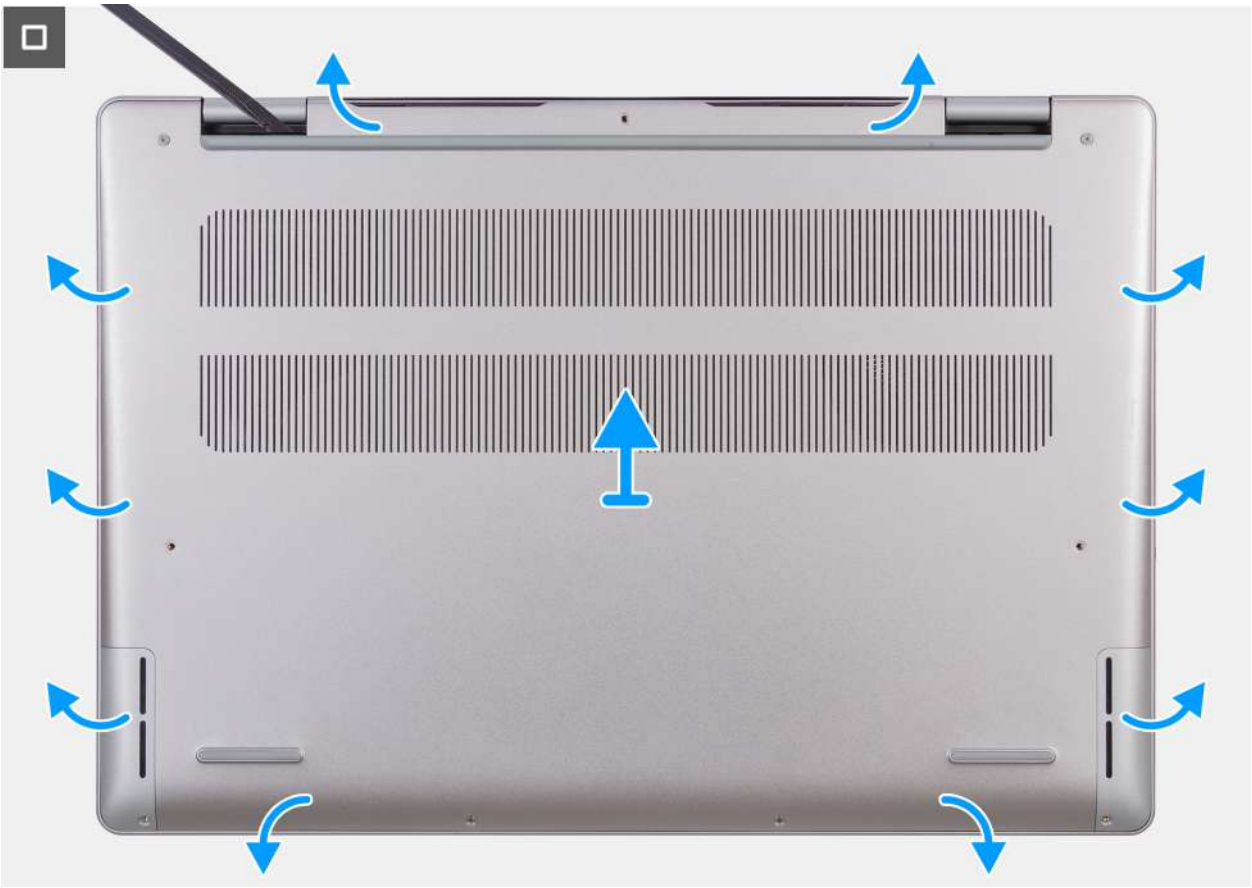

Figure 10. Removing the base cover

Steps

1. Remove the seven screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
2. Loosen the two captive screws (M2x8.6) that secure the base cover to the palm-rest and keyboard assembly.
3. Using a plastic scribe, pry the base cover from the hinge area and continue prying on all its sides to loosen the base cover.
4. Lift 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 process.

About this task

The following image(s) shows the base cover and provides a visual representation of the installation procedure.

Figure 11. Installing the base cover

Figure 12. Installing the base cover

Steps

1. Place the base cover on the palm-rest and keyboard assembly.
2. Press on the sides of the base cover to snap it into place.
3. Tighten the two captive screws (M2x8.6) that secure the base cover to the palm-rest and keyboard assembly.
4. Replace the seven screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.

Next steps

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

Solid-state drive

Removing the M.2 2230 solid-state drive

Prerequisites

1. Follow the procedure in Before working inside your computer.
   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.

About this task

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

NOTE: A M.2 thermal shield for the M.2 2230 solid-state drive is required. Do not install the M.2 2230 solid-state drive without its M.2 thermal shield.

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

- M.2 2230 solid-state drive and an M.2 2230 thermal shield.

  Your M.2 2230 is mounted on a 2230-specific thermal shield.

- M.2 2280 solid-state drive and a 2280-specific thermal shield.

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

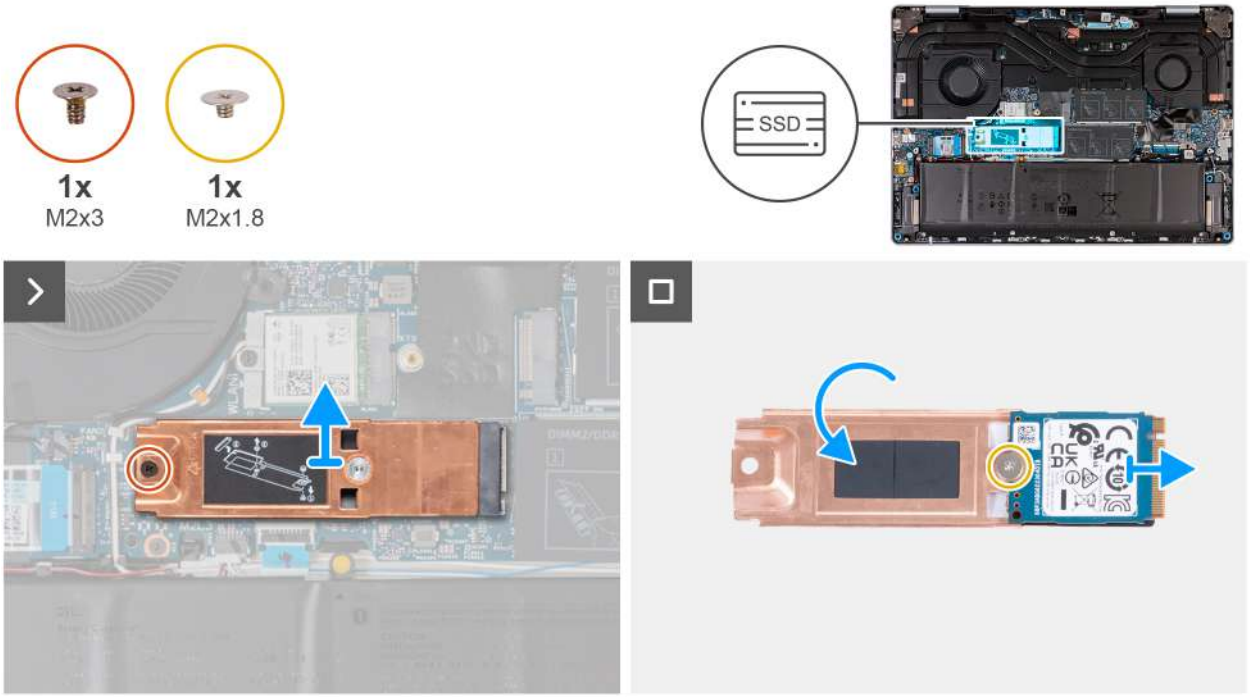

Figure 13. Removing the M.2 2230 solid-state drive

Steps

1. Remove the screw (M2x3) that secures the M.2 2230 thermal shield to the system board.
2. Lift at an angle and slide the M.2 2230 solid-state drive assembly from the M.2 solid-state drive slot (2ND SSD) on the system board.
3. Flip over the M.2 2230 solid-state drive assembly and place it on a flat surface.
4. Remove the screw (M2x1.8) that secures the M.2 2230 solid-state drive to the M.2 2230 thermal shield.
5. Remove the M.2 2230 solid-state drive from the M.2 2230 thermal shield.

Installing the M.2 2230 solid-state drive

Prerequisites

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

About this task

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

NOTE: An M.2 2230 thermal shield is required to install an M.2 2230 solid-state drive. If this thermal shield is not present on your computer, contact Dell support to purchase the M.2 2230 thermal shield.

NOTE: The M.2 slot supports the installation of one of the following solid-state drives:

- M.2 2230 solid-state drive and an M.2 2230 thermal shield.

  Your M.2 2230 is mounted on a 2230-specific thermal shield.

- M.2 2280 solid-state drive and a 2280-specific thermal shield.

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

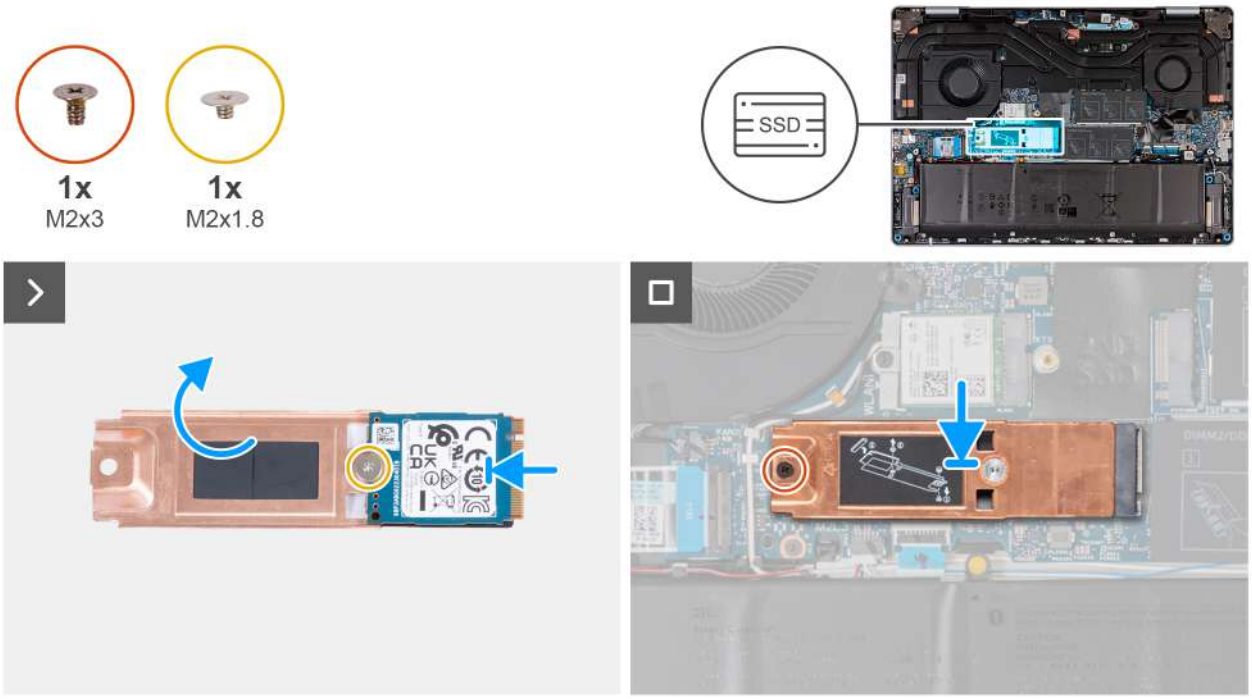

Figure 14. Installing the M.2 2230 solid-state drive

Steps

1. Place the M.2 2230 solid-state drive on the M.2 2230 thermal shield.
2. Align the screw hole on the M.2 2230 solid-state drive with the screw hole on the M.2 2230 thermal shield.
3. Replace the screw (M2x1.8) that secures the M.2 2230 solid-state drive to the M.2 2230 thermal shield.
4. Flip over the M.2 2230 solid-state drive assembly.
5. Align the notch on the M.2 2230 solid-state drive with the tab on the solid-state drive slot on the system board.
6. Slide the M.2 2230 solid-state drive assembly into the M.2 solid-state drive slot (2ND SSD) on the system board.
7. Replace the screw (M2x3) that secures the M.2 2230 thermal shield to the system board.

Next steps

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

Removing the M.2 2280 solid-state drive

Prerequisites

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

   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.

About this task

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

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

- M.2 2230 solid-state drive and an M.2 2230 thermal shield.

  Your M.2 2230 is mounted on a 2230-specific thermal shield.

- M.2 2280 solid-state drive and a 2280-specific thermal shield.

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

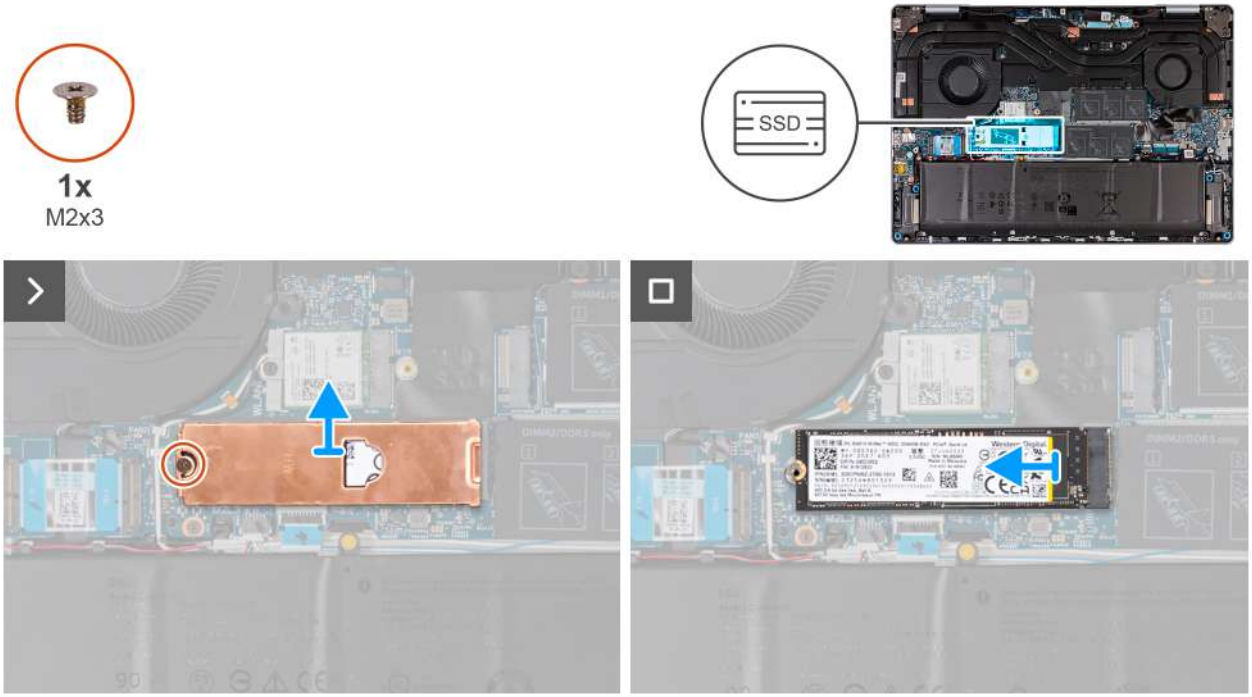

Figure 15. Removing the M.2 2280 solid-state drive

Steps

1. Remove the screw (M2x3) that secures the M.2 2280 thermal shield to the system board.
2. Slide and lift the M.2 2280 thermal shield off the M.2 2280 solid-state drive.
3. Lift at an angle and remove the M.2 2280 solid-state drive from the M.2 solid-state drive slot (MAIN SSD) on the system board.

Installing the M.2 2280 solid-state drive

Prerequisites

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

About this task

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

NOTE: An M.2 2280 thermal shield is required to install an M.2 2280 solid-state drive. If this thermal shield is not present on your computer, contact Dell support to purchase the M.2 2280 thermal shield.

NOTE: The M.2 slot supports the installation of one of the following solid-state drives:

- M.2 2230 solid-state drive and an M.2 2230 thermal shield.

  Your M.2 2230 is mounted on a 2230-specific thermal shield.

- M.2 2280 solid-state drive and a 2280-specific thermal shield.

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

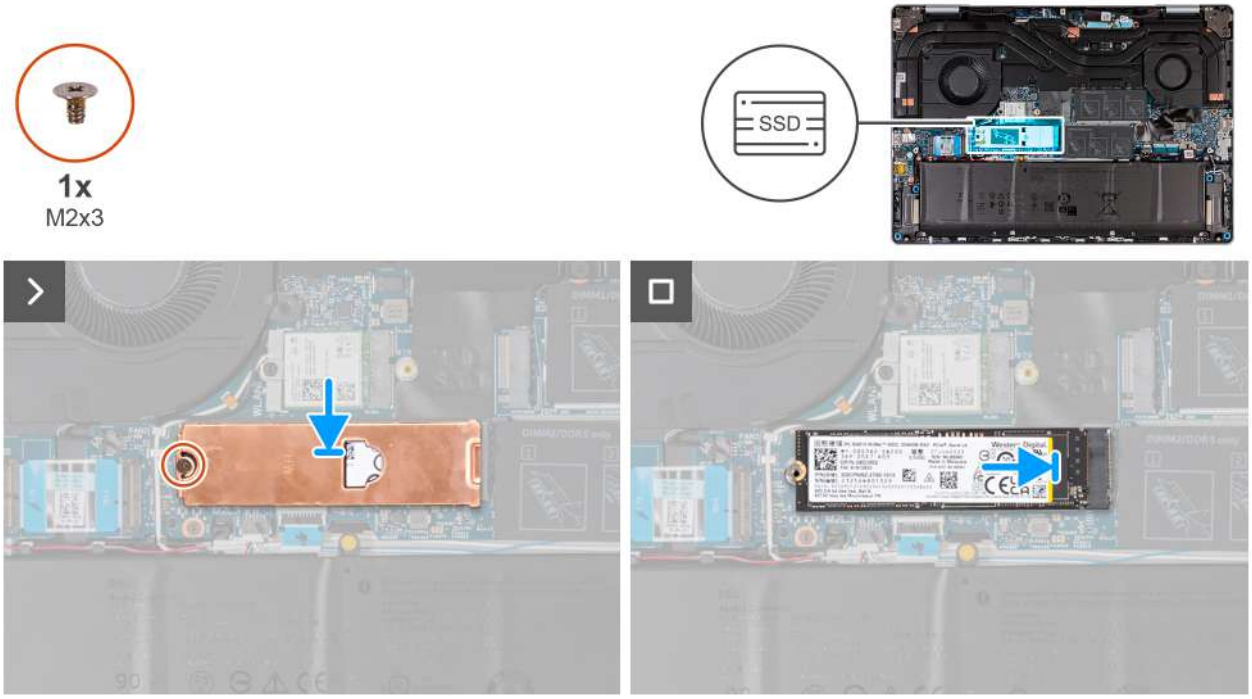

Figure 16. Installing the M.2 2280 solid-state drive

Steps

1. Align the notch on the M.2 2280 solid-state drive with the tab on the M.2 solid-state drive slot on the system board.
2. Slide the M.2 2280 solid-state drive into the M.2 solid-state drive slot (MAIN SSD) on the system board.
3. Place the M.2 2280 thermal shield on the M.2 2280 solid-state drive.
4. Replace the screw (M2x3) that secures the M.2 2280 solid-state drive and M.2 2280 thermal shield to the system board.

Next steps

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

Wireless card

Removing the wireless card

Prerequisites

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

   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.

About this task

The following image(s) indicate the location of the wireless card and provides a visual representation of the removal procedure.

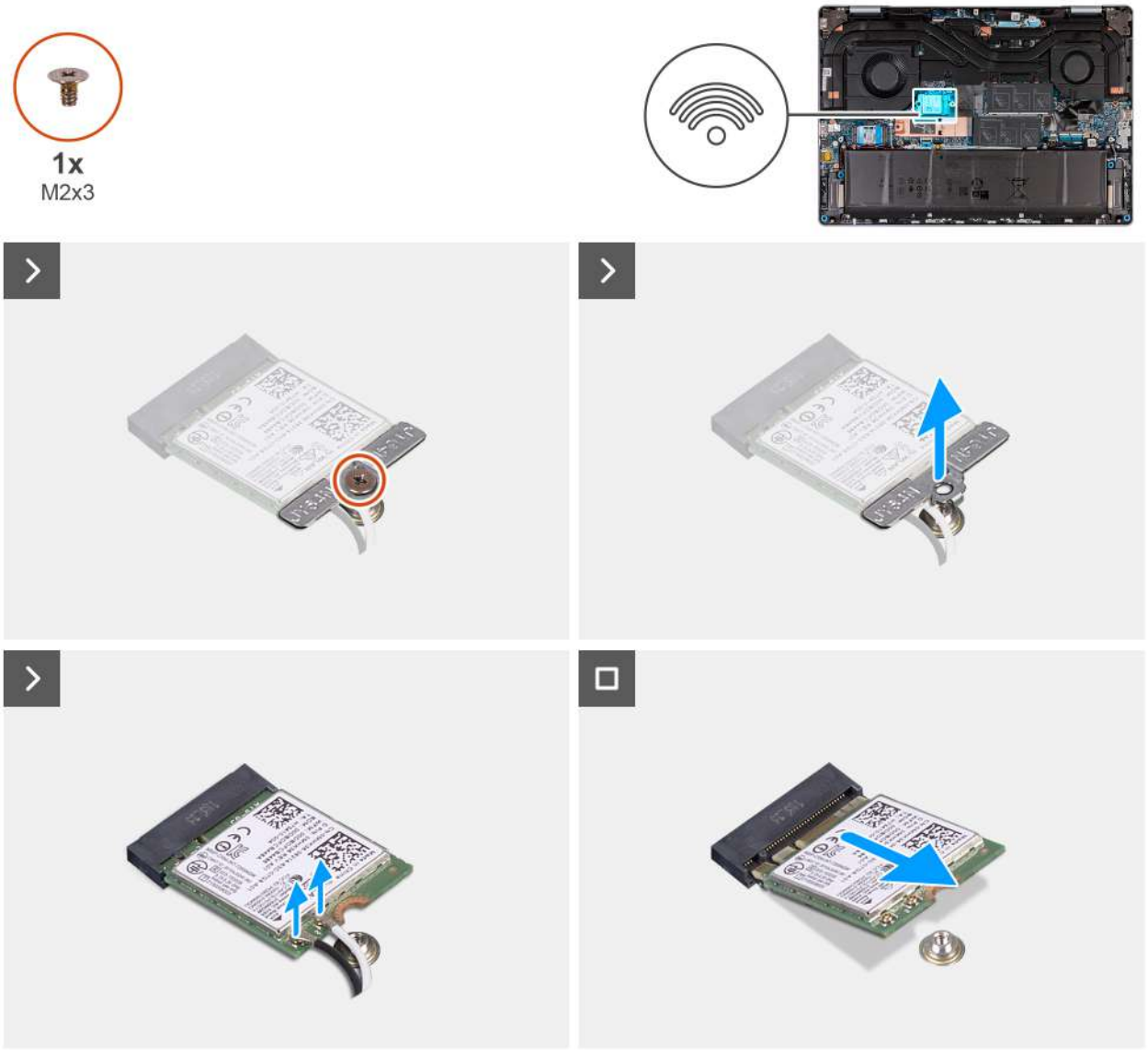

Figure 17. Removing the wireless card

Steps

1. Remove the screw (M2x3) that secures the wireless-card bracket to the system board.
2. Lift the wireless-card bracket off the wireless card.
3. Disconnect the antenna cables from the wireless card.
4. Lift at an angle and remove the wireless card from the M.2 wireless card slot (WLAN1) on the system board.

Installing the wireless card

Prerequisites

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

About this task

The following image(s) indicate the location of the wireless card and provides a visual representation of the installation procedure.

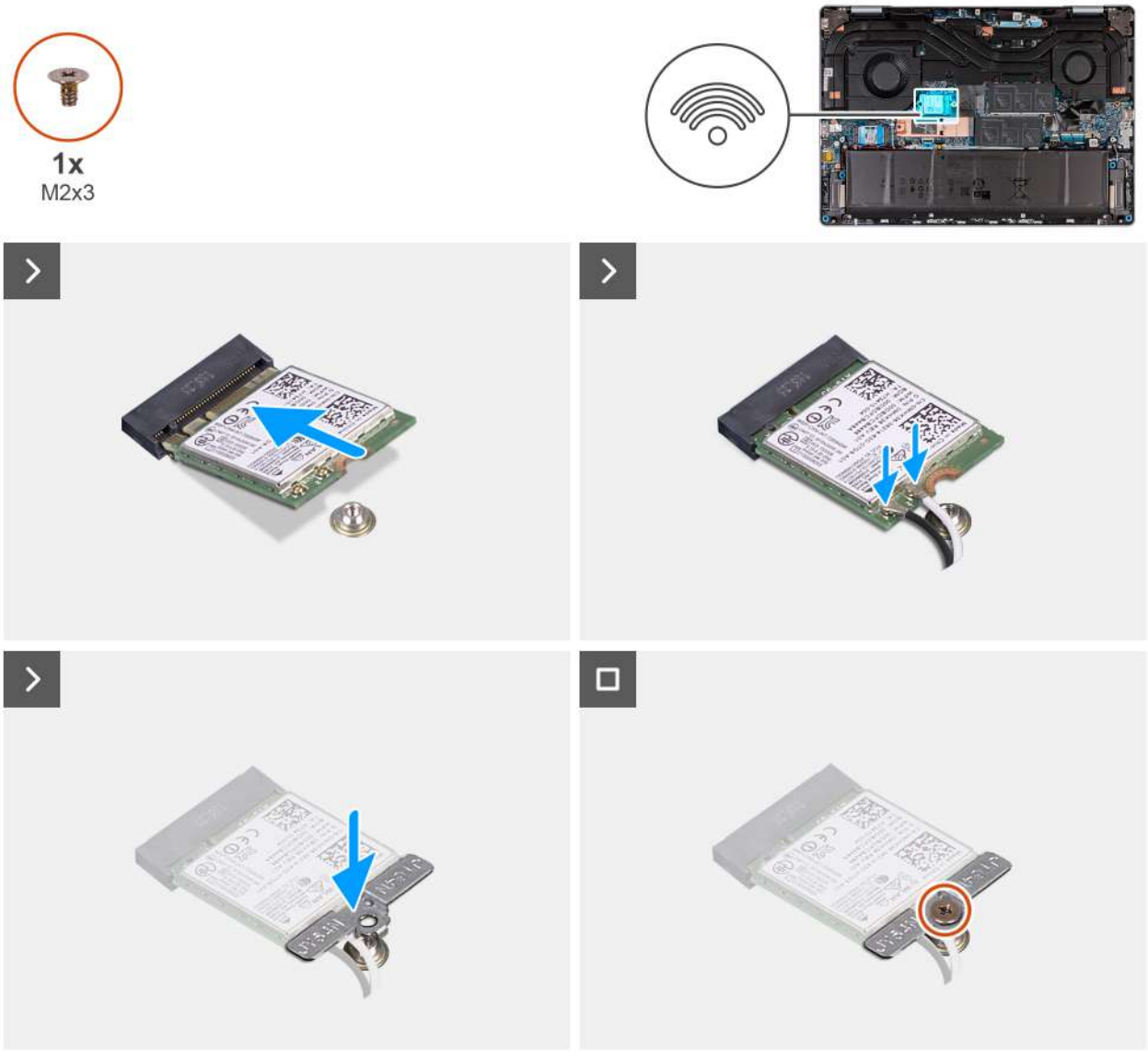

Figure 18. Installing the wireless card

Steps

1. Connect the antenna cables to the wireless card.

Table 28. Antenna-cable color scheme

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

2. Align the notch on the wireless card with the tab on the M.2 wireless-card slot on the system board.
3. Slide the wireless card into the M.2 wireless-card slot (WLAN1) on the system board.
4. Place the wireless-card bracket on the M.2 wireless card.
5. Align the screw hole on the wireless-card bracket to the screw mount on the system board.
6. Replace the screw (M2x3) that secures the wireless-card bracket to the system board.

Next steps

1. Install the base cover.

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

Memory module

Removing the memory module

Prerequisites

1. Follow the procedure in Before working inside your computer.
   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.

About this task

The following image(s) indicate the location of the memory module and provides a visual representation of the removal procedure.

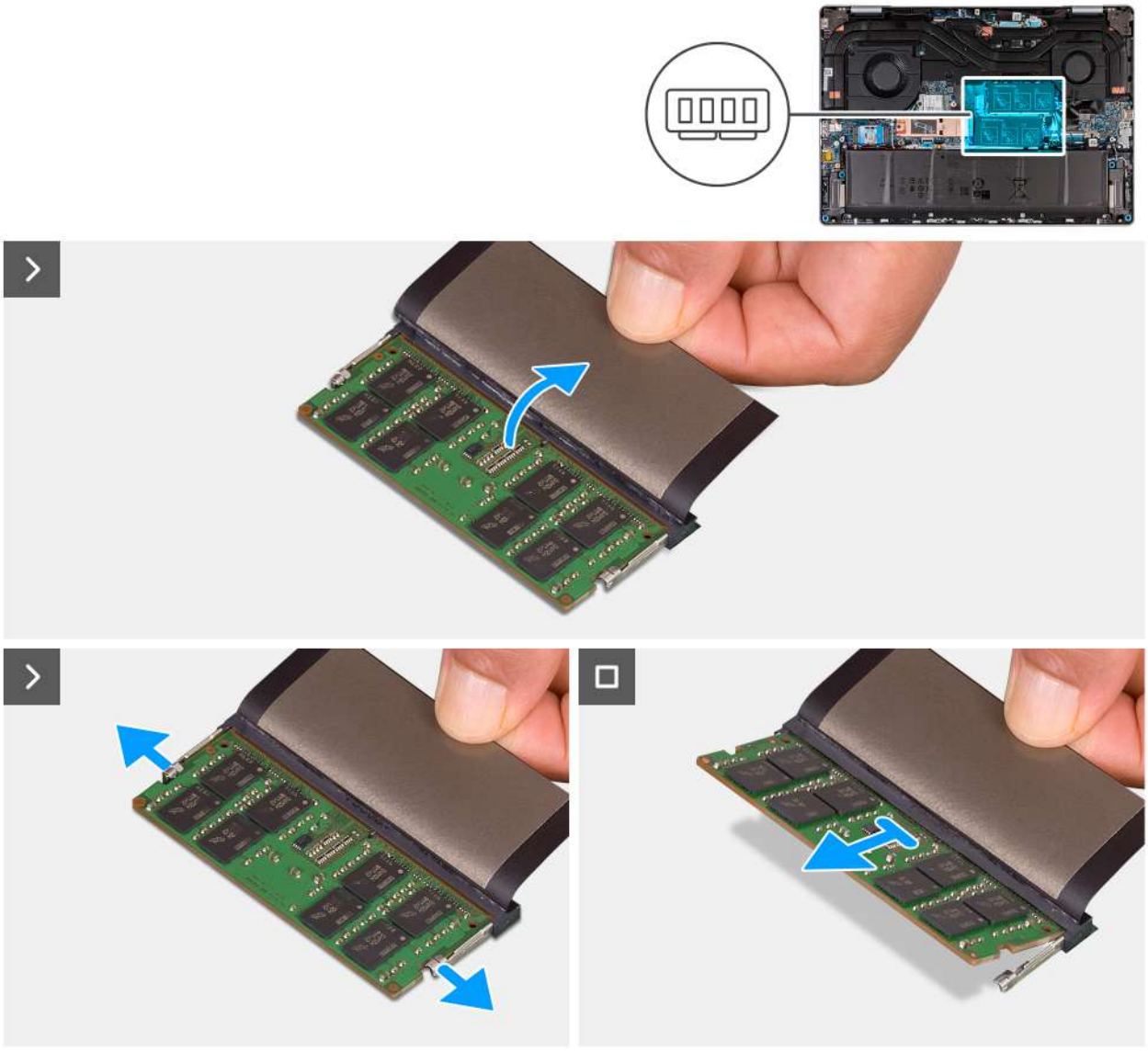

Figure 19. Removing memory module

Steps

1. Lift the Mylar covering the memory module.
2. Using your fingertips, carefully spread apart the securing clips on each end of the memory-module slot (DIMM1) until the memory module pops up.
3. Remove the memory module from the memory-module slot (DIMM1) on the system board.

   NOTE: Repeat **step 1** to **step 3** for the memory module that is installed in the memory-module slot (DIMM2) on the system board.

Installing the memory module

Prerequisites

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

About this task

The following image(s) indicate the location of the memory module and provides a visual representation of the installation procedure.

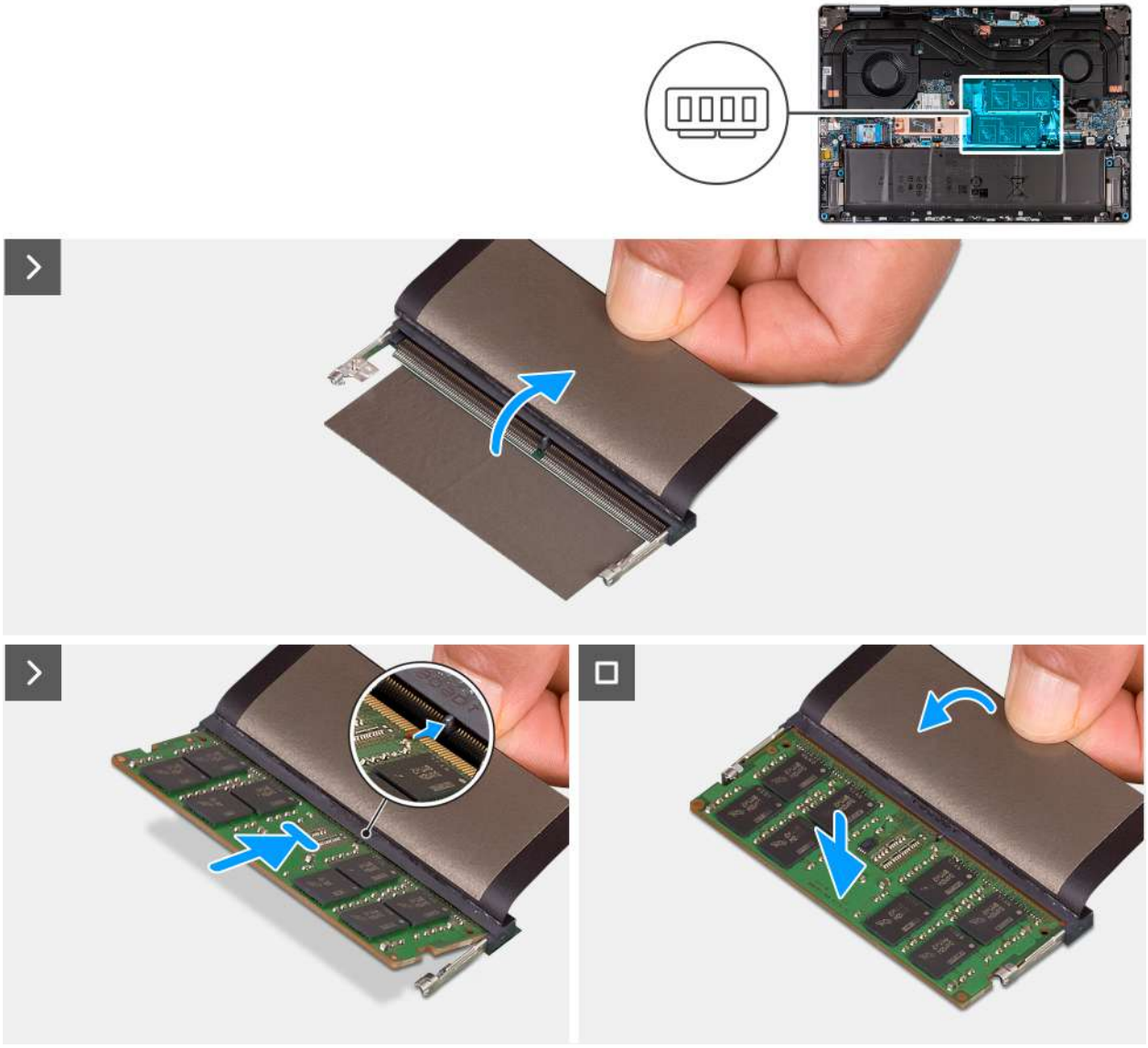

Figure 20. Installing the memory module

Steps

1. Lift the Mylar covering the memory-module slot.
2. Align the notch on the memory module with the tab on the memory-module slot (DIMM1) on the system board.
3. Slide the memory module into the memory-module slot (DIMM2) on the system board.
4. Press down on the memory module till the securing clips click, locking the memory module in place.

   NOTE: Repeat **step 1** to **step 4** for the second memory module that is being installed into its memory-module slot (DIMM2) on the system board.

Next steps

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

Fans

Removing the graphics processing unit fan

Prerequisites

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

   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.

About this task

The following image(s) indicate the location of the graphics processing unit fan and provides a visual representation of the removal procedure.

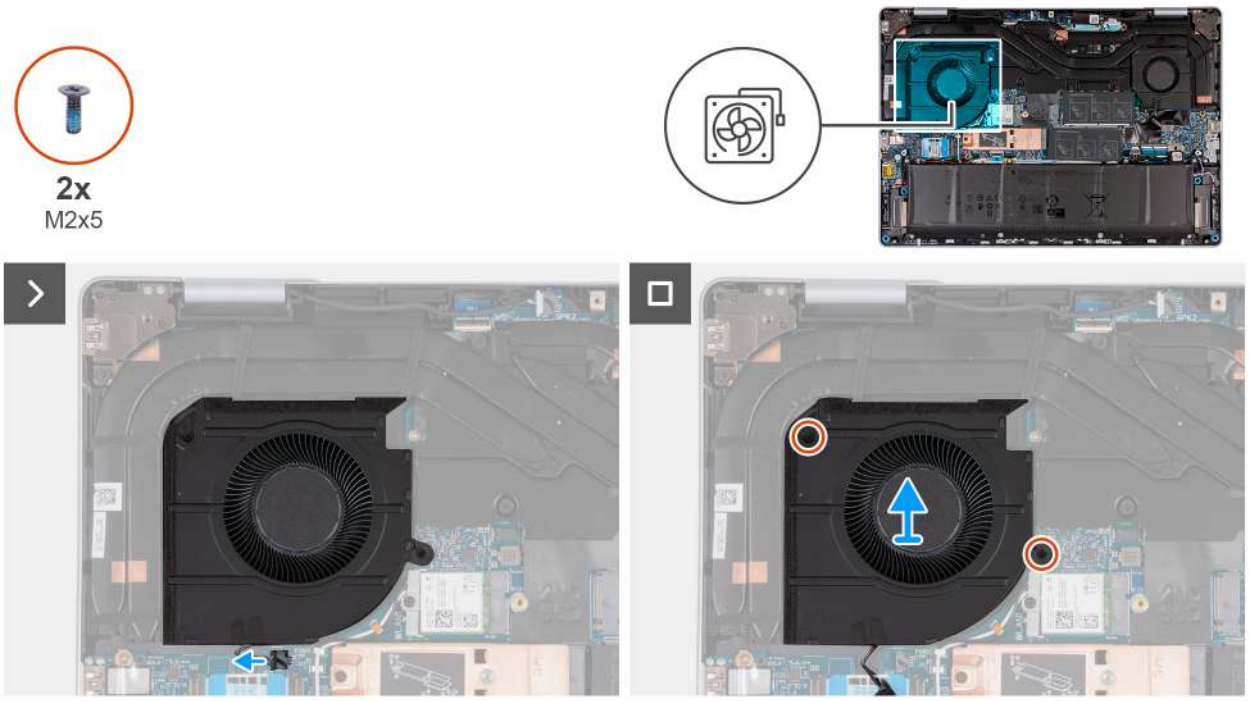

Figure 21. Removing the graphics processing unit fan

Steps

1. Disconnect the graphics processing unit-fan cable from its connector (FAN2) on the system board.

2. Remove the two screws (M2x5) that secure the graphics processing unit fan to the palm-rest and keyboard assembly.
3. Lift the graphics processing unit fan off the palm-rest and keyboard assembly.

Installing the graphics processing unit fan

Prerequisites

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

About this task

The following image(s) indicate the location of the graphics processing unit fan and provides a visual representation of the installation procedure.

Figure 22. Installing the graphics processing unit fan

Steps

1. Place the graphics processing unit fan on the palm-rest and keyboard assembly.
2. Align the screw holes of the graphics processing unit fan with the screw holes on the palm-rest and keyboard assembly.
3. Replace the two screws (M2x5) that secure the graphics processing unit fan to the palm-rest and keyboard assembly.
4. Connect the graphics processing unit-fan cable to its connector (FAN2) on the system board.

Next steps

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

Removing the processor fan

Prerequisites

1. Follow the procedure in Before working inside your computer.
   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.

About this task

The following image(s) indicate the location of the processor fan and provides a visual representation of the removal procedure.

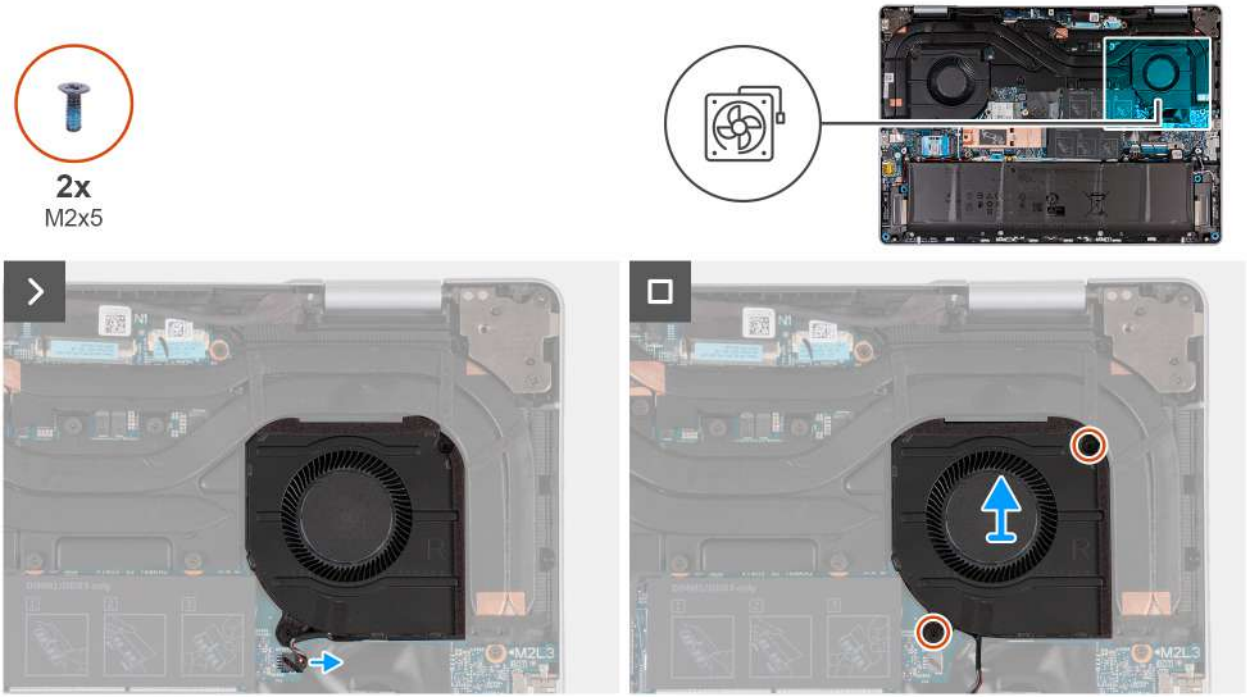

Figure 23. Removing the processor fan

Steps

1. Disconnect the processor fan cable from its connector (FAN1) on the system board.
2. Remove the two screws (M2x5) that secure the processor fan to the palm-rest and keyboard assembly.
3. Lift the processor fan off the palm-rest and keyboard assembly.

Installing the processor fan

Prerequisites

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

About this task

The following image(s) indicate the location of the processor fan and provides a visual representation of the installation procedure.

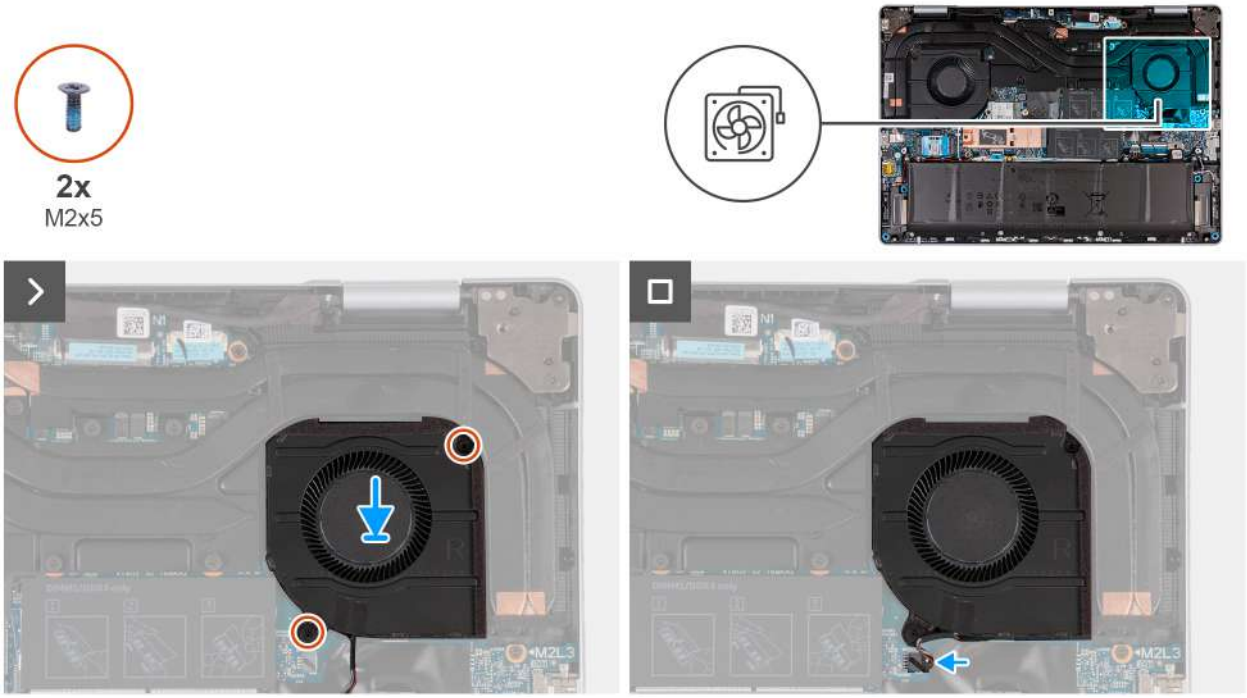

Figure 24. Installing the processor fan

Steps

1. Place the processor fan on the palm-rest and keyboard assembly.
2. Align the screw holes of the processor fan with the screw holes on the palm-rest and keyboard assembly.
3. Replace the two screws (M2x5) that secure the processor fan to the palm-rest and keyboard assembly.
4. Connect the processor fan cable to its connector (FAN1) 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 removing and installing FRU's 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 this set of repairs, if needed, to be conducted by trained technical repair specialists.

CAUTION: As a reminder, 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.

Battery

Rechargeable Li-ion battery precautions

CAUTION:

- **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.**
- **Ensure any screws during the servicing of this product are not lost or misplaced, to prevent accidental puncture or damage to the battery and other computer components.**
- **If the battery gets stuck inside your computer as a result of swelling, do not try to release it as puncturing, bending, or crushing a rechargeable Li-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See www.dell.com/contactdell.**
- **Always purchase genuine batteries from www.dell.com or authorized Dell partners and resellers.**
- **Swollen batteries should not be used and should be replaced and disposed properly. For guidelines on how to handle and replace swollen rechargeable Li-ion batteries, see Handling swollen rechargeable Li-ion batteries.**

Removing the battery

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

Prerequisites

1. Follow the procedure in Before working inside your computer.
   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.

About this task

The following image(s) indicate the location of the battery and provides a visual representation of the removal procedure.

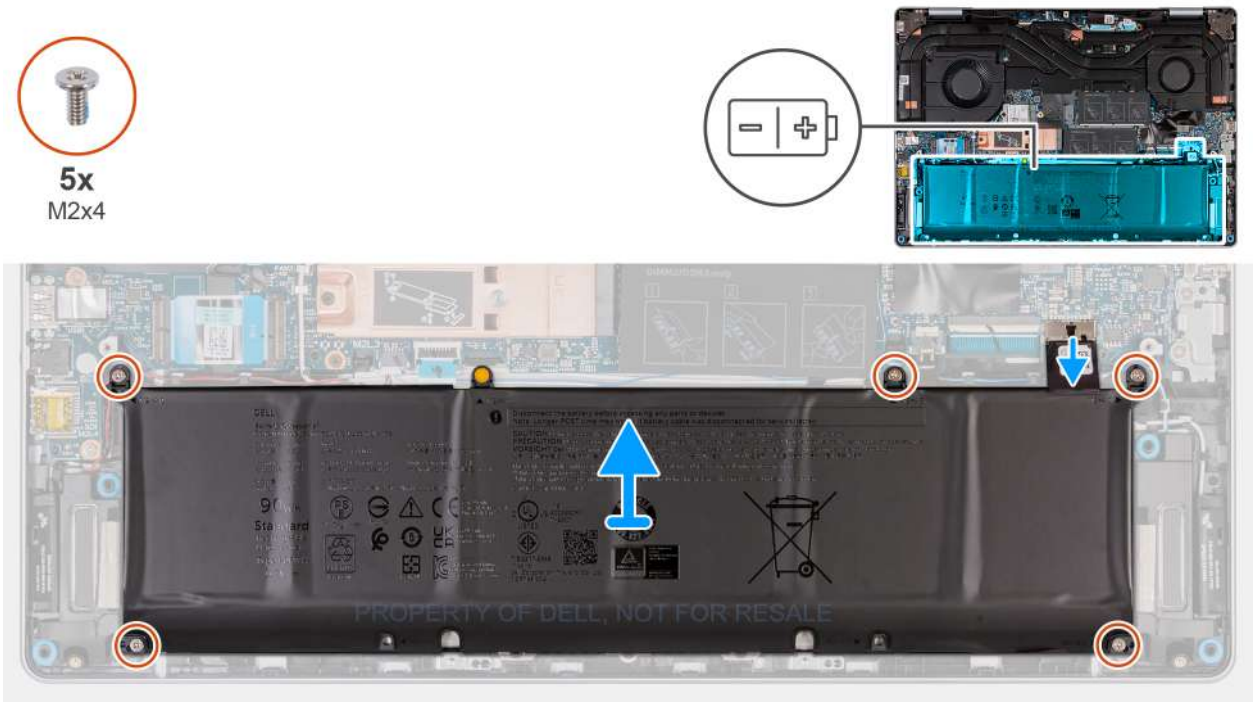

Figure 25. Removing the battery

Steps

1. Disconnect the battery cable from its connector (BATT1) on the system board.
2. Remove the five screws (M2x4) that secure the battery to the palm-rest and keyboard assembly.
3. Lift the battery off the palm-rest and keyboard assembly.

Installing the battery

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 process.

About this task

The following image(s) indicate the location of the battery and provides a visual representation of the installation procedure.

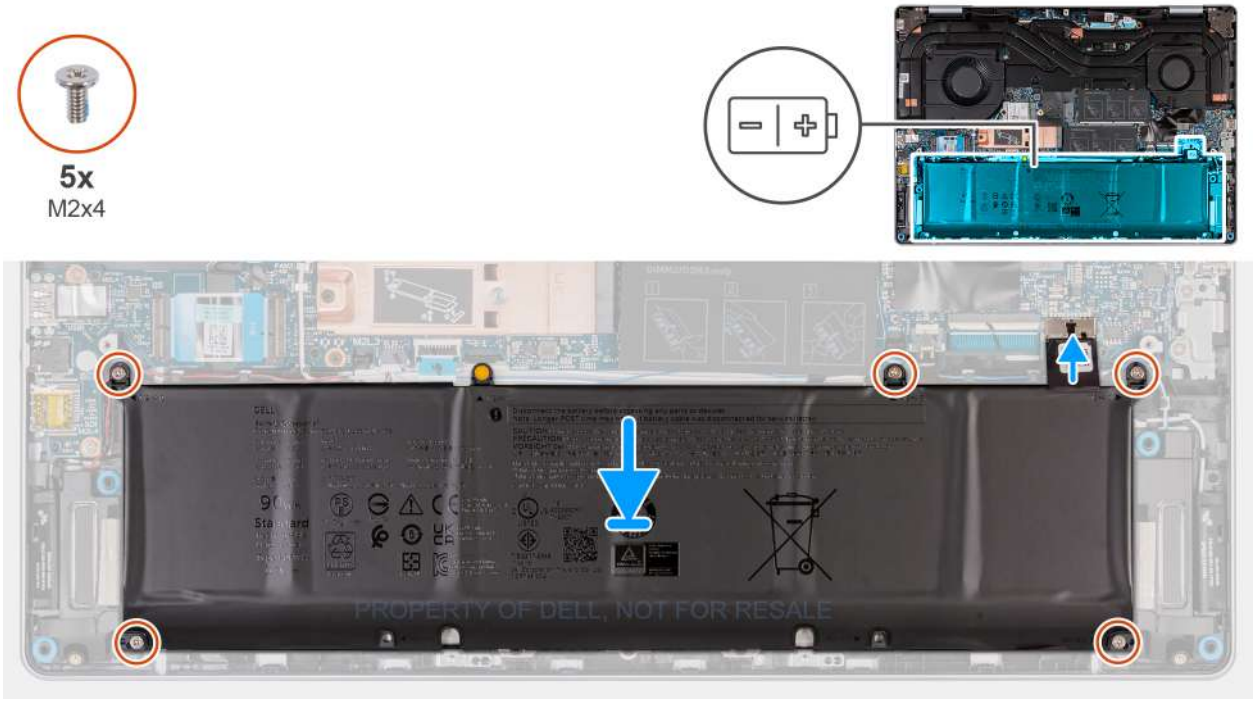

Figure 26. Installing the battery

Steps

1. Place the battery on the palm-rest and keyboard assembly.
2. Align the screw holes on the battery with the screw holes on the palm-rest and keyboard assembly.
3. Replace the five screws (M2x4) that secure the battery to the palm-rest and keyboard assembly.

   NOTE: There is a cosmetic rubber nut which is used to cover up one of the screw holes that is not in use. Do not attempt to insert a screw into this screw hole.

4. Connect the battery cable to its connector (BATT1) on the system board.

Next steps

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

Battery cable

Removing the battery 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.

   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** 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 battery cable and provide a visual representation of the removal procedure.

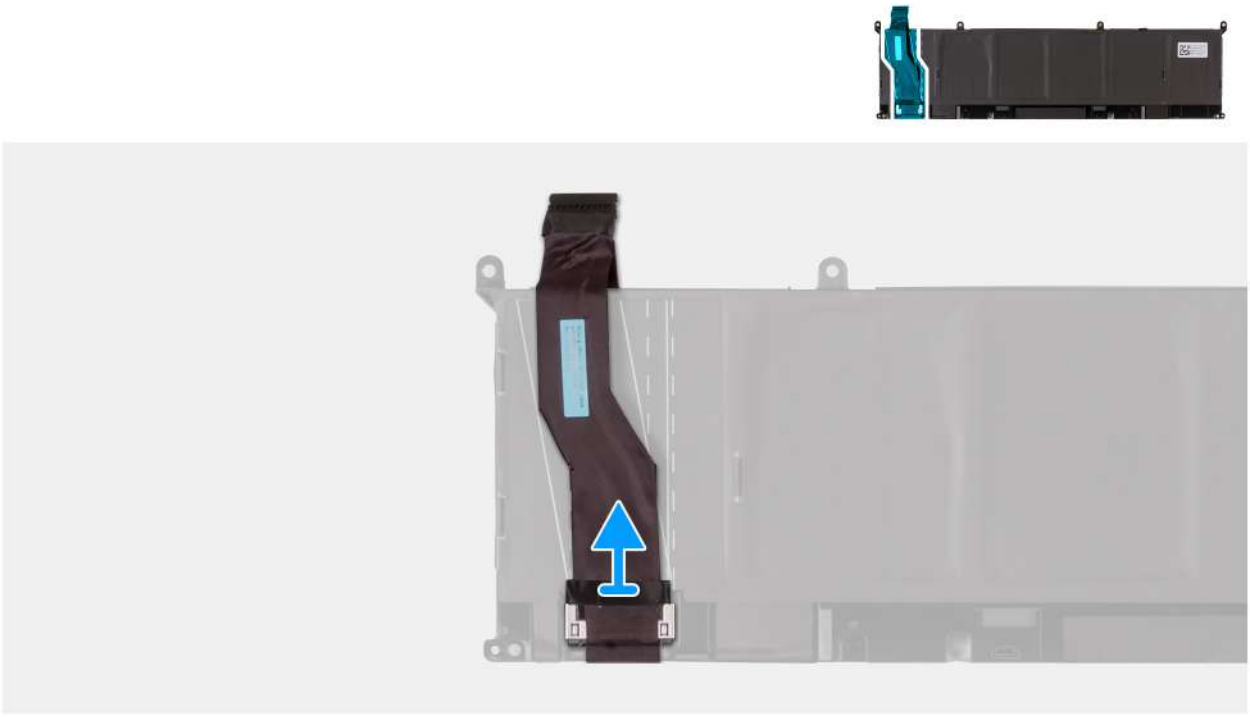

Figure 27. Removing the battery cable

Steps

1. Flip over the battery.
2. Peel the adhesive tape that secures the battery cable to the connector on the battery.
3. Hold the battery cable near its connector and gently pull the battery cable up to disconnect it from the battery.
4. Peel the battery cable away from the battery.

Installing the battery 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 battery cable and provides a visual representation of the installation procedure.

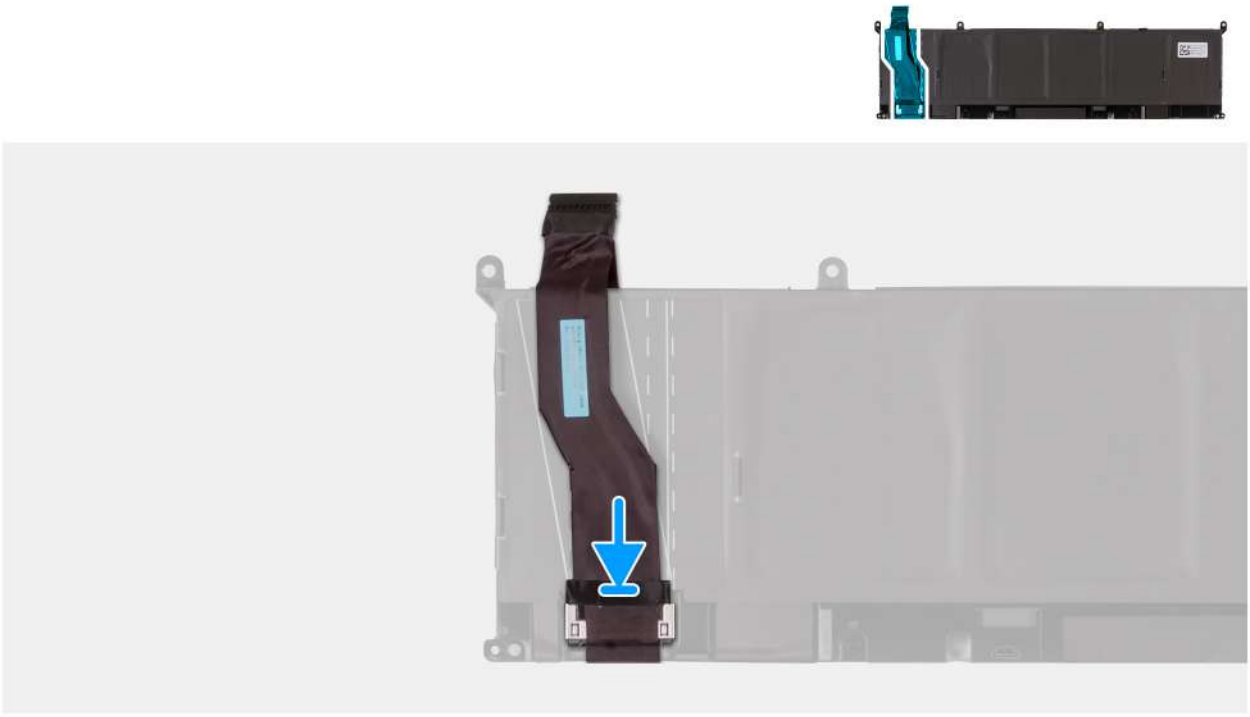

Figure 28. Installing the battery cable

Steps

1. Connect the battery cable to its connector on the battery.
2. Using the markings on the battery, adhere the battery cable to the battery.
3. Adhere the tape that secures the battery cable to its connector on the battery.
4. Flip over the battery.

Next steps

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

Speakers

Removing the speakers (down-firing)

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

Prerequisites

1. Follow the procedure in Before working inside your computer.
   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.

About this task

NOTE: The left and right speakers cannot be separated for individual replacement. When either speaker needs to be replaced, services will dispatch both the speaker assembly as a single serviceable component.

The following image(s) indicate the location of the down-firing speakers and provides a visual representation of the installation procedure.

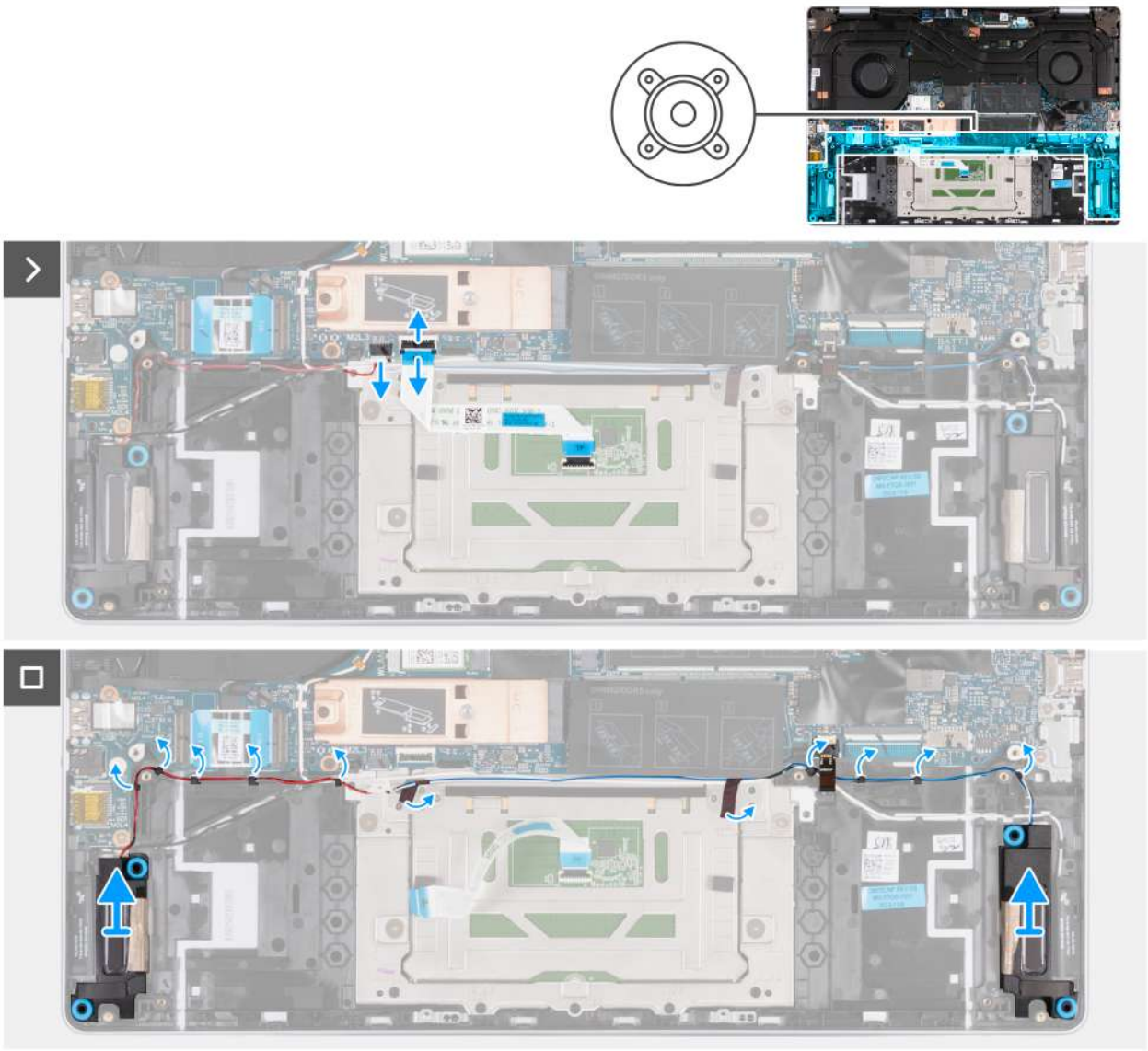

Figure 29. Removing the speakers

Steps

1. Lift the latch and disconnect the touchpad cable from its connector (TP1) on the system board.
2. Move the touchpad cable off the down-firing speaker cables.
3. Disconnect the down-firing speaker cables from their connector (SPK1) on the system board.
4. Remove the down-firing speaker cables from their routing guides on the palm-rest and keyboard assembly.
5. Peel up the adhesive tapes that secure the down-firing speaker cables to the touchpad and touchpad bracket.

   NOTE: Ensure that the down-firing speaker cables are moved away from the touchpad and touchpad bracket.

6. Lift the down-firing speakers off the palm-rest and keyboard assembly.

Installing the speakers (down-firing)

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 process.

About this task

NOTE: The left and right speakers cannot be separated for individual replacement. When either speaker needs to be replaced, services will dispatch the speaker assembly as a single serviceable component.

The following image(s) indicate the location of the down-firing speakers and provides a visual representation of the installation procedure.

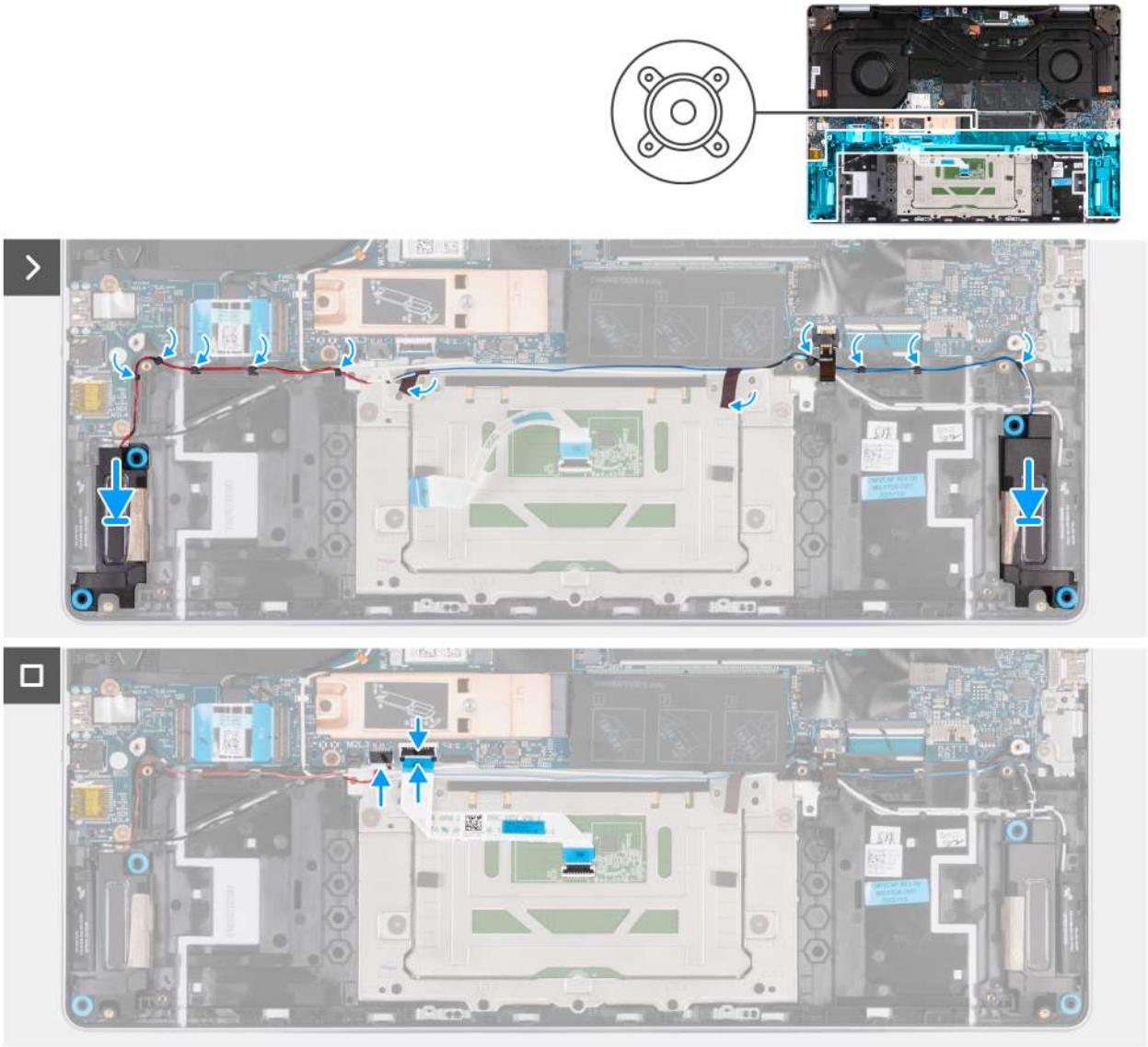

Figure 30. Installing the speakers

Steps

1. Using the alignment posts, place the down-firing speakers on the palm-rest and keyboard assembly.

   NOTE: Ensure that the four rubber grommets are seated into the slot and installed correctly on the speakers.

2. Route the down-firing speaker cables through their routing guides on the palm-rest and keyboard assembly.
3. Connect the touchpad cable to its connector (TP1) on the system board.

   NOTE: The touchpad cable should be folded over the speaker and antenna cables during the connection procedure.

4. Connect the down-firing speaker cables to their connector (SPK1) on the system board.

Next steps

1. Install the battery.
2. Install the base cover.
3. 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.

Prerequisites

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

   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.

2. Remove the base cover.

About this task

The following image(s) indicate the location of the display assembly and provides a visual representation of the removal procedure.

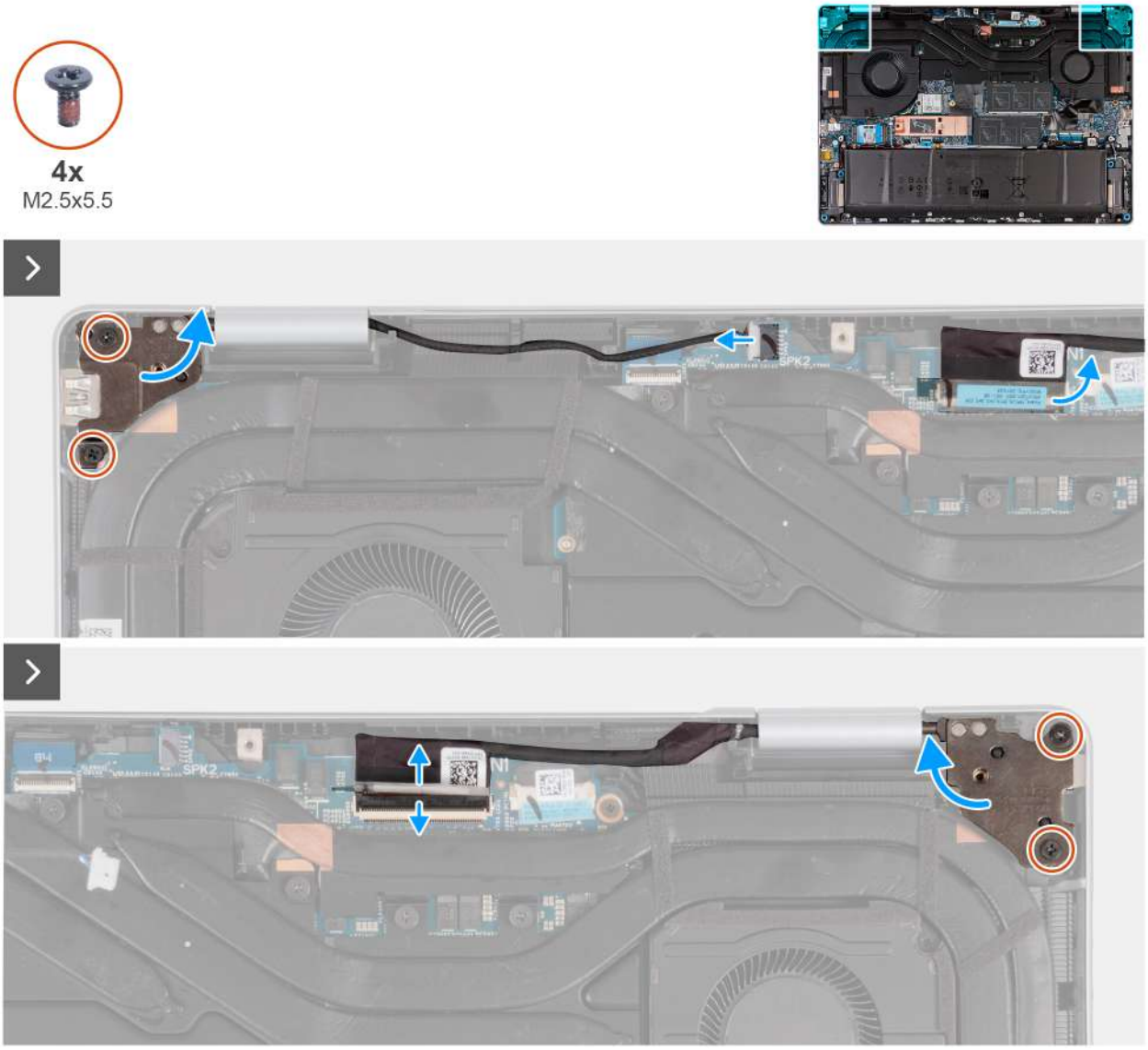

Figure 31. Removing the display assembly

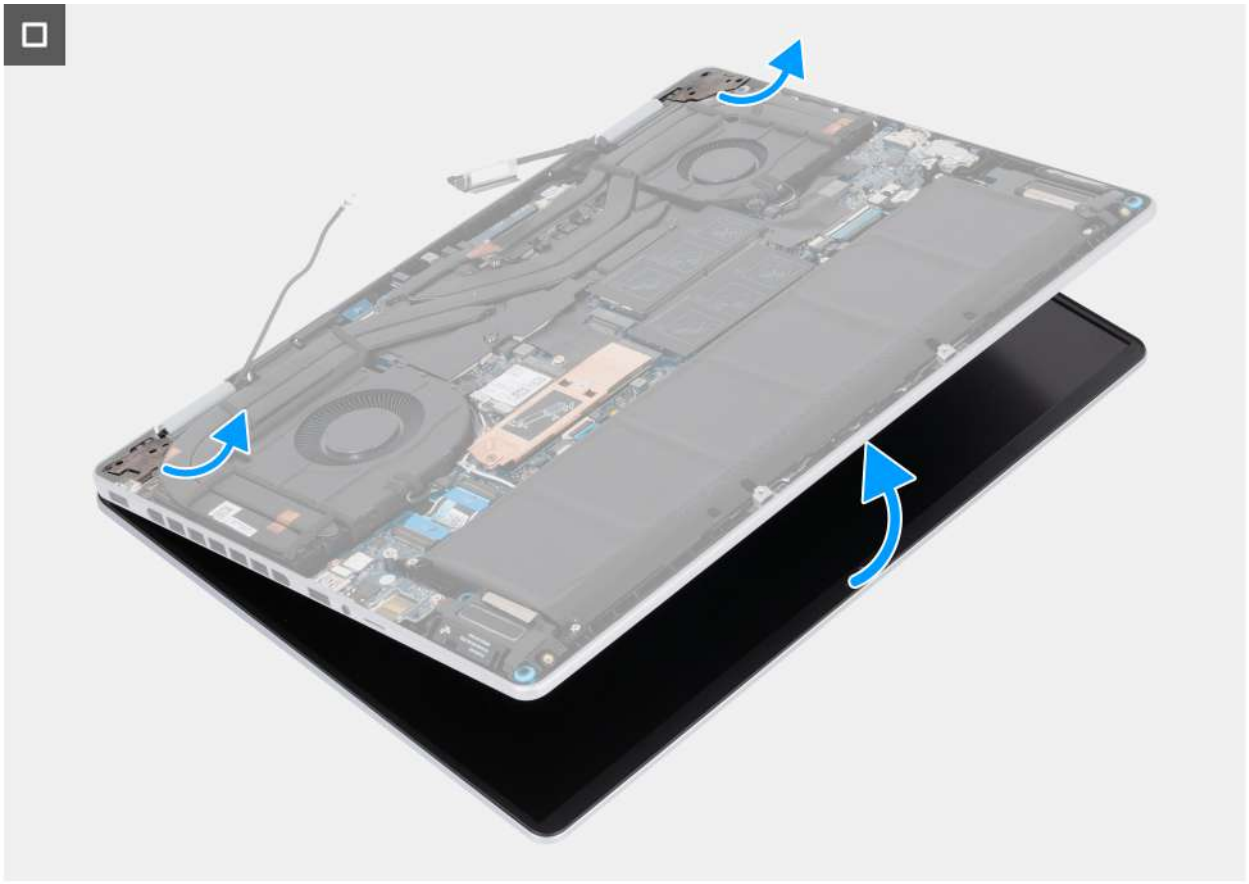

Figure 32. Removing the display assembly

Figure 33. Display assembly

Steps

1. Disconnect the speaker cable from its connector (SPK2) on the system board.
2. Remove the speaker cable from its routing guides.
3. Remove the two screws (M2.5x5.5) that secure the left display assembly hinge to the system board.
4. Pry open the left-display assembly hinge at an angle of 90 degrees.
5. Peel the tape that secures the display-cable latch to its connector.
6. Lift the latch and disconnect the display-assembly cable from its connector (LCD1) on the system board.
7. Remove the two screws (M2.5x5.5) that secure the right-display assembly hinge to the system board.
8. Pry open the right-display assembly hinge at an angle of 90 degrees.
9. Lift the palm-rest and keyboard assembly at an angle off the display assembly.

Installing the display 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 process.

About this task

The following image(s) indicate the location of the display assembly and provides a visual representation of the installation procedure.

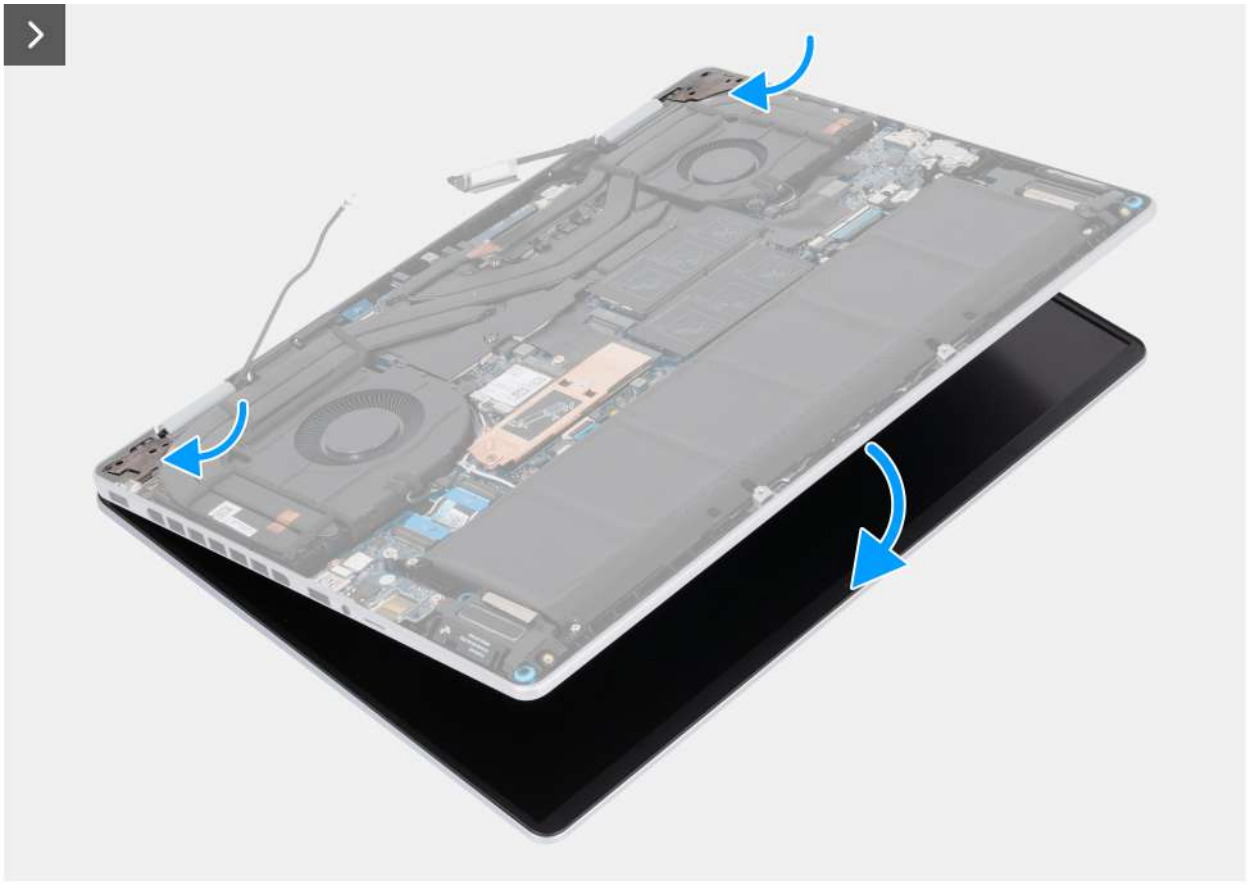

Figure 34. Installing the display assembly

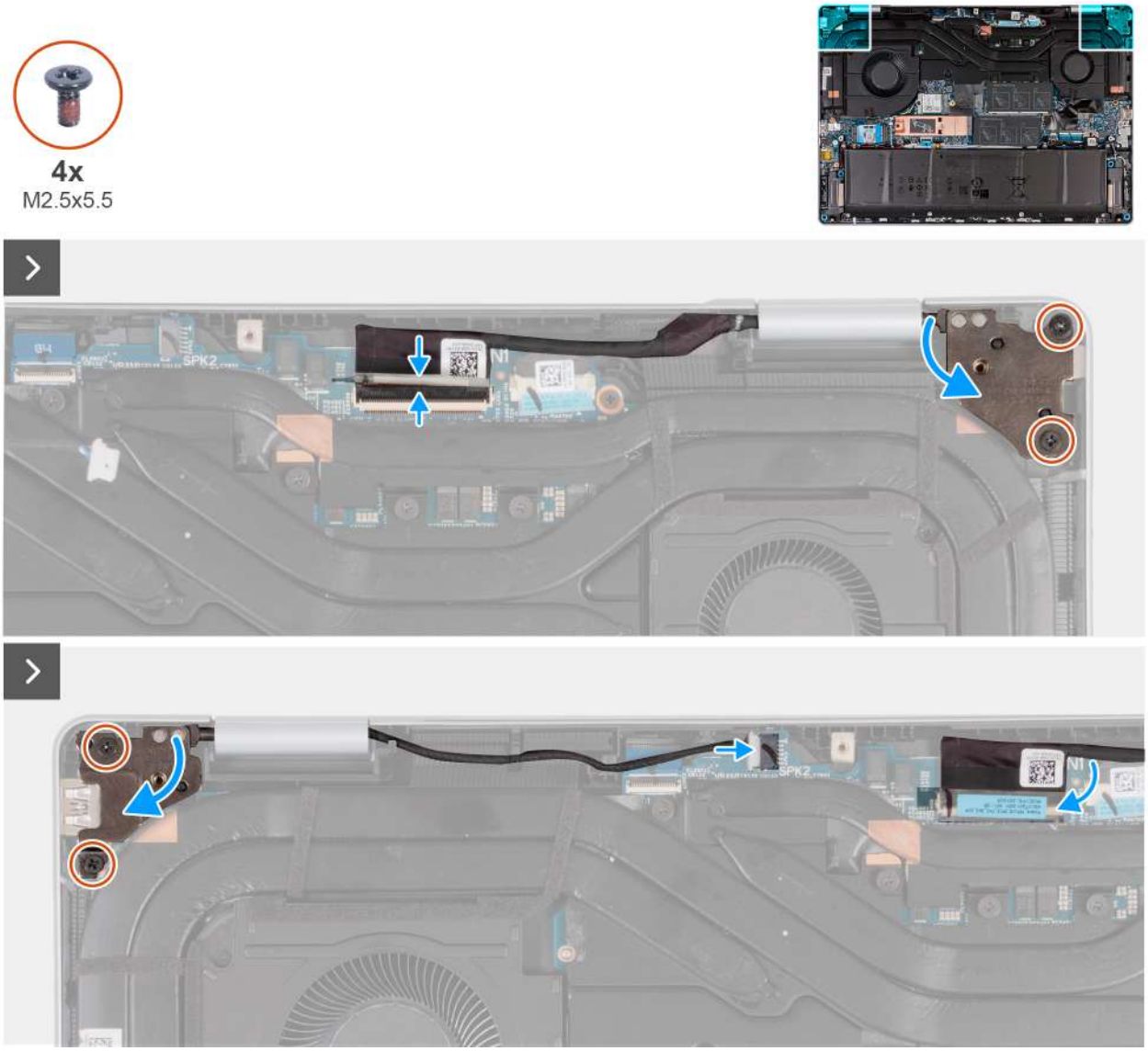

Figure 35. Installing the display assembly

Steps

1. Place the display assembly on a clean and flat surface with the display panel facing up.
2. Align and place the palm-rest and keyboard assembly under the display hinges.
3. Close the right-display assembly hinge and align the screw holes on the right-display assembly hinge with the screw holes on the palm-rest and keyboard assembly.
4. Connect the display-assembly cable to its connector (LCD1) on the system board and close the latch.
5. Adhere the tape to secure the display-cable latch to its connector (LCD1) to the system board.
6. Replace the two screws (M2.5x5.5) that secure the right-display assembly hinge to the palm-rest and keyboard assembly.
7. Close the left display hinge and align the screw holes on the left-display hinge with the screw holes on the palm-rest and keyboard assembly.
8. Replace the two screws (M2.5x5.5) that secure the left-display assembly hinge to the palm-rest and keyboard assembly.
9. Place the speaker cable into its routing guides.
10. Connect the speaker cable to its connector (SPK2) on the system board.

Next steps

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

Audio board

Removing the audio 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.
   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.

About this task

The following image(s) indicate the location of the audio board and provides a visual representation of the removal procedure.

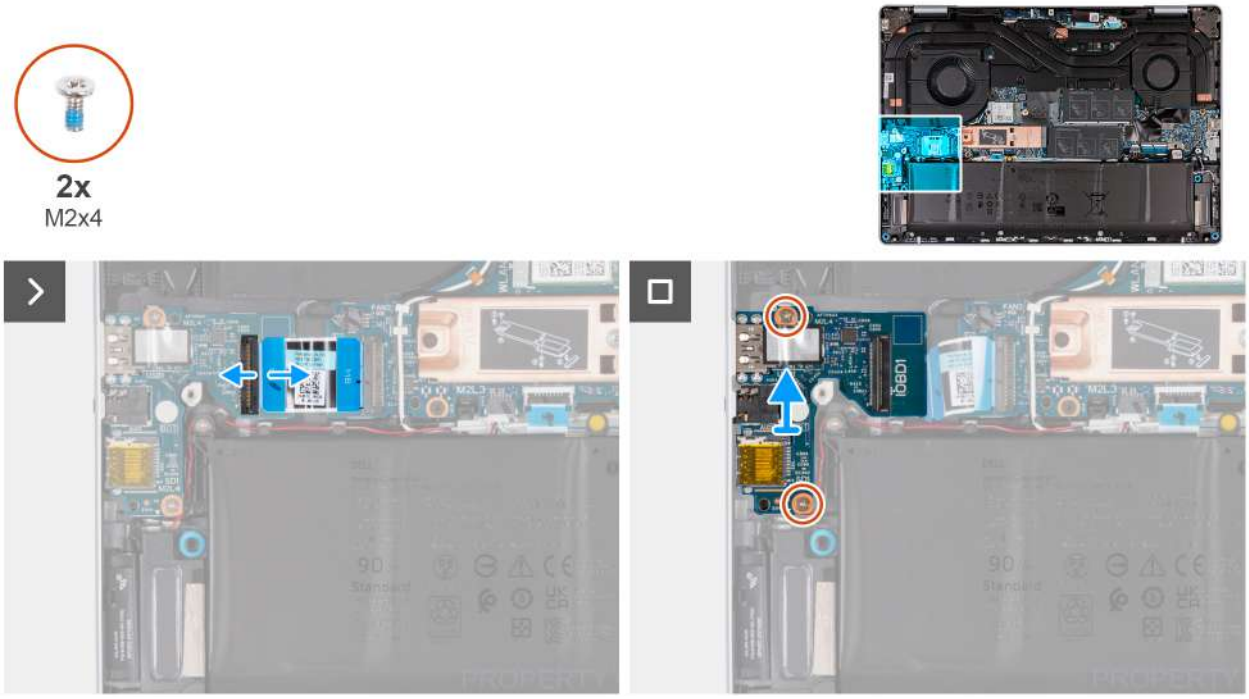

Figure 36. Removing the audio board

Steps

1. Lift the latch and disconnect the audio-board cable from its connector (IOBD1) on the audio board.
2. Remove the two screws (M2x4) that secure the audio board to the palm-rest and keyboard assembly.
3. Lift the audio board off the palm-rest and keyboard assembly.

Installing the audio 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 process.

About this task

The following image(s) indicate the location of the audio board and provides a visual representation of the installation procedure.

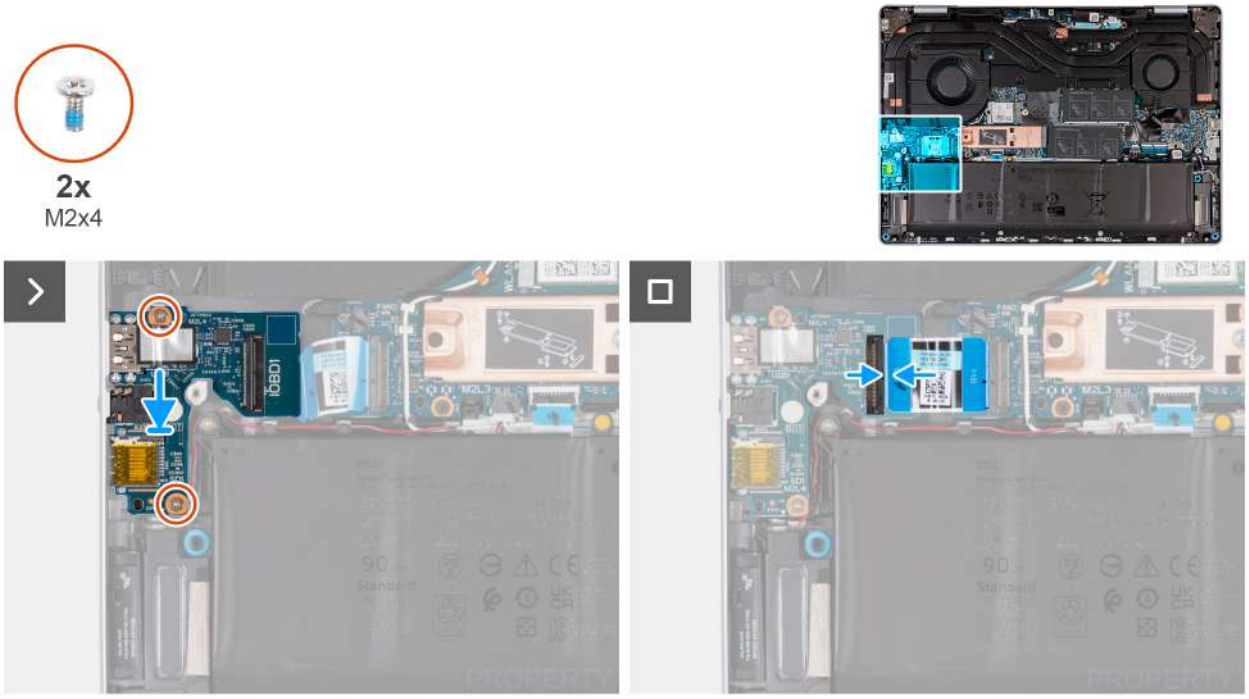

Figure 37. Installing the audio board

Steps

1. Place the audio board onto the palm-rest and keyboard assembly .
2. Align the ports on the audio board to the slots on the palm-rest and keyboard assembly.
3. Align the screw holes on the audio board to the screw holes on the palm-rest and keyboard assembly.
4. Replace the two screws (M2x4) that secure the audio board to the palm-rest and keyboard assembly.
5. Connect the audio-board cable to its connector (IOBD1) on the audio board and close the latch.

Next steps

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

Audio-board cable

Removing the audio-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.
   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.

About this task

The following image(s) indicate the location of the audio-board cable and provides a visual representation of the removal procedure.

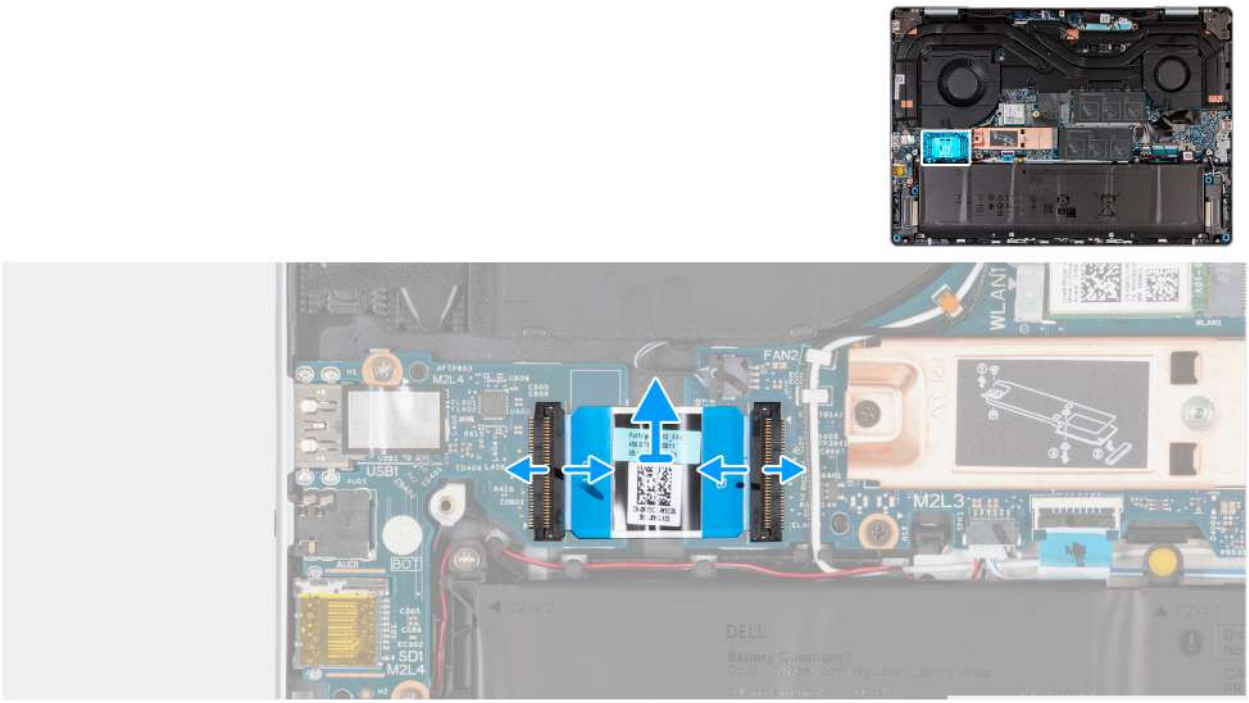

Figure 38. Removing the audio-board cable

Steps

1. Lift the latch and disconnect the audio-board cable from its connector (IOBD1) on the audio board.
2. Lift the latch and disconnect the audio-board cable from its connector (IOBD2) on the system board.
3. Remove the audio-board cable from the palm-rest and keyboard assembly.

Installing the audio-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 process.

About this task

The following image(s) indicate the location of the audio-board and provides a visual representation of the installation procedure.

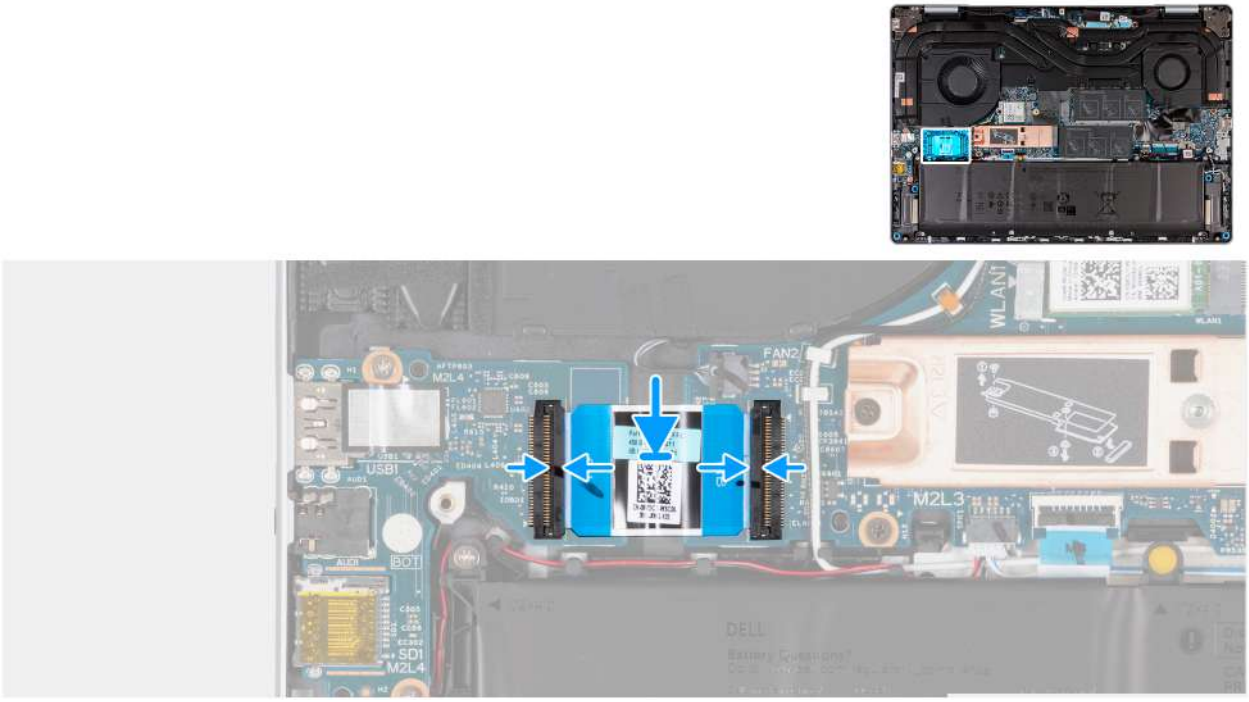

Figure 39. Installing the audio-board cable

Steps

1. Place the audio-board cable on the palm-rest and keyboard assembly.
2. Connect the audio-board cable to its connector (IOBD1) on the audio board and close the latch.
3. Connect the audio-board cable to its connector (IOBD2) on the system board and close the latch.

Next steps

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

Heat sink

Removing the heat sink

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

Prerequisites

1. Follow the procedure in Before working inside your computer.
   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.

About this task

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

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

The following image(s) indicate the location of the heat sink and provides a visual representation of the removal procedure.

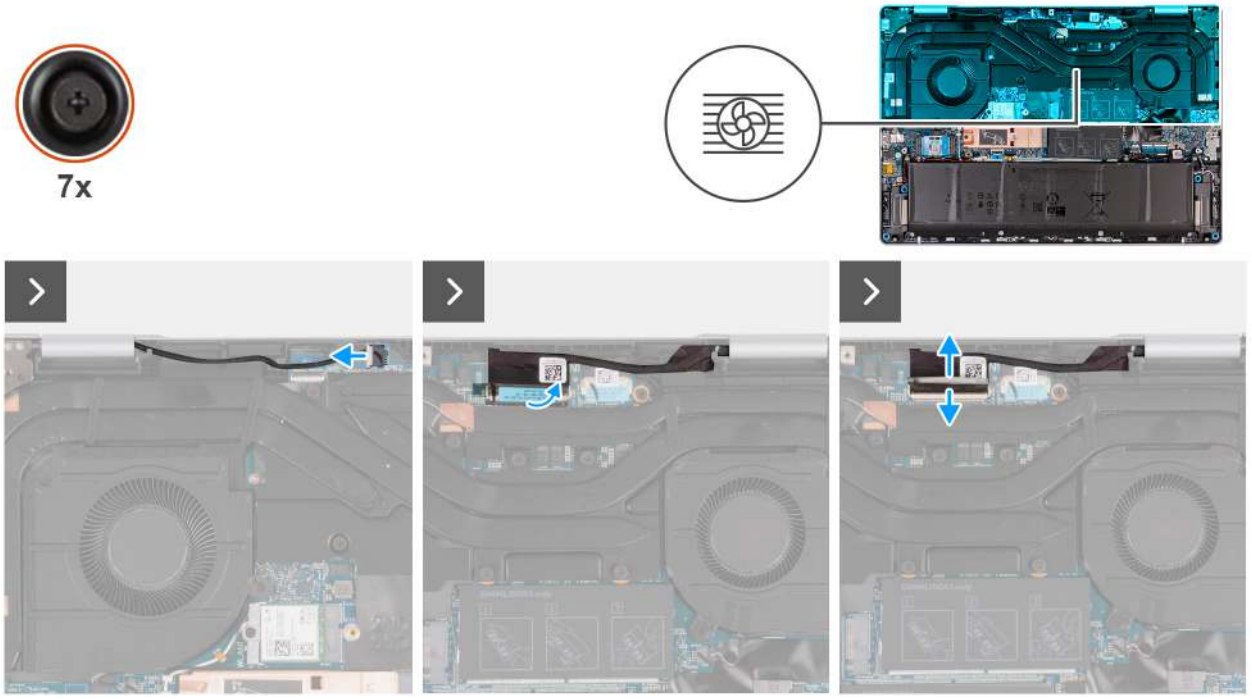

Figure 40. Removing the heat sink

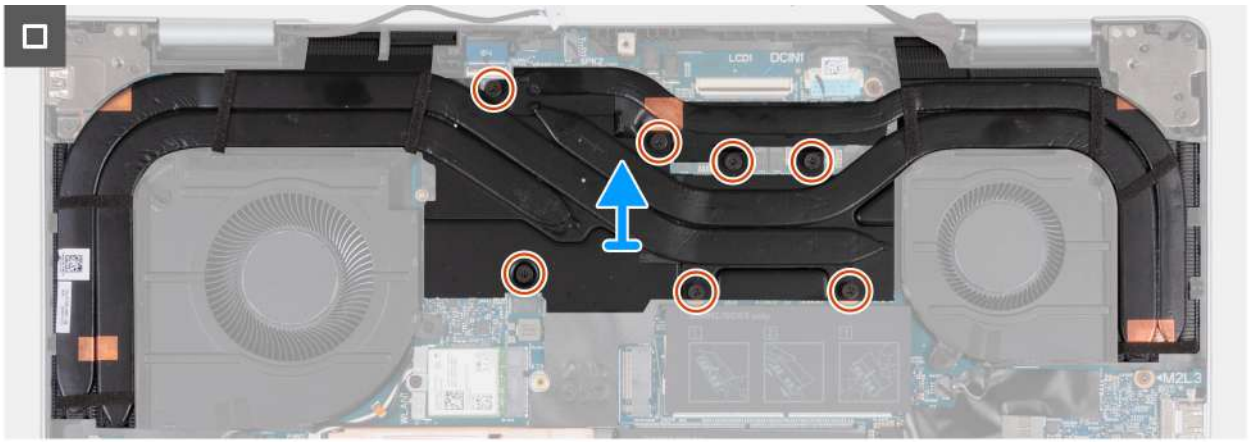

Figure 41. Removing the heat sink

Steps

1. Disconnect the front-firing speaker cable from its connector (SPK2) on the system board.
2. Remove the front-firing speaker cable from its routing guides.

   NOTE: Ensure that the front-firing speaker cable does not obstruct the section of the heat sink.

3. Peel the tape that secures the display-cable latch to its connector.
4. Lift the latch and disconnect the display-assembly cable from its connector (LCD1) on the system board.

   NOTE: Ensure that the display-assembly cable does not obstruct the section of the heat sink.

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

Installing the heat sink

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 process.

About this task

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.

The following image(s) indicate the location of the heat sink and provides a visual representation of the installation procedure.

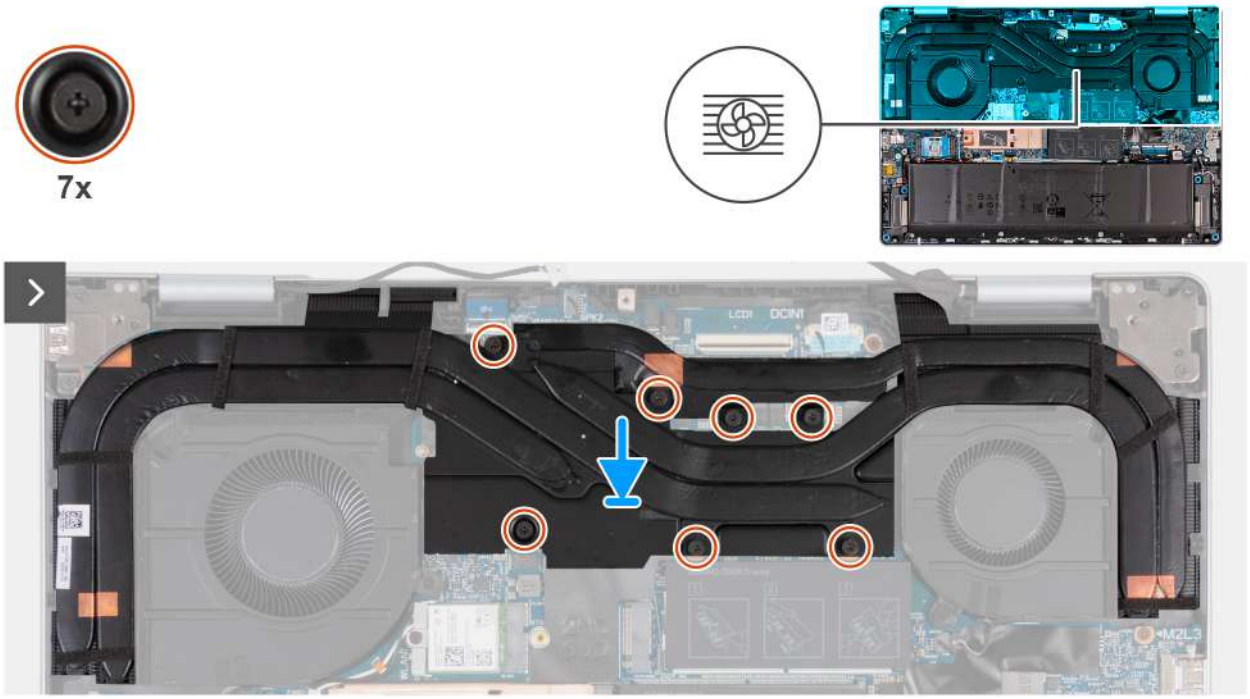

Figure 42. Installing the heat sink

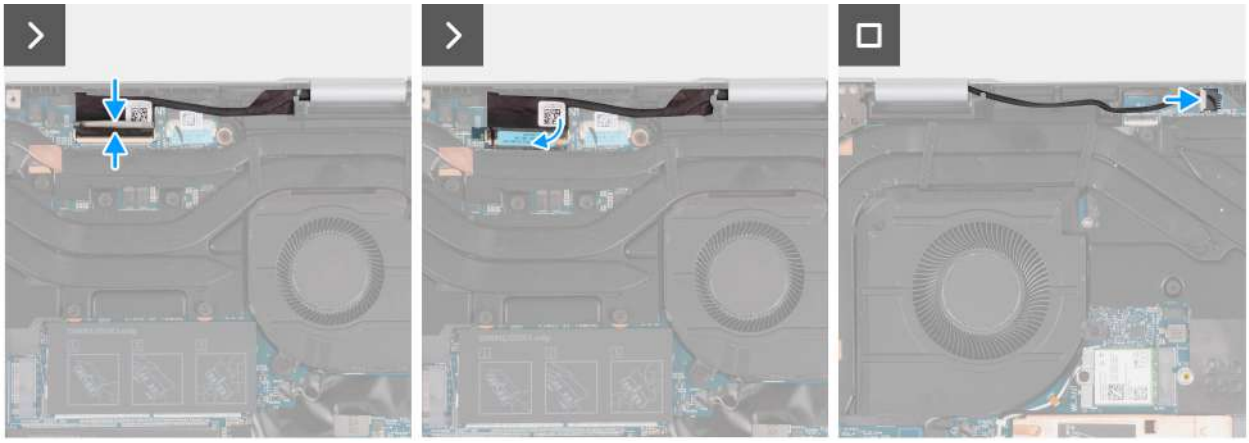

Figure 43. Installing the heat sink

Steps

1. Place the heat sink on the palm-rest and keyboard assembly.

2. Align the captive screws on the heat sink to the screw holes on the system board.
3. In sequential order (1>2>3>4>5>6>7), tighten the seven captive screws that secure the heat sink to the system board.
4. Connect the display-assembly cable to its connector (LCD1) on the system board and close the latch.
5. Adhere the tape to secure the display-cable latch to its connector (LCD1) to the system board.
6. Place the front-firing speaker cable into its routing guides.
7. Connect the front-firing speaker cable to its connector (SPK2) on the system board.

Next steps

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

I/O board

Removing the I/O board

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

Prerequisites

1. Follow the procedure in Before working inside your computer.
   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.
3. Remove the graphics processing unit fan.
4. Remove the heat sink.

About this task

The following image(s) indicate the location of the I/O board and provides a visual representation of the removal procedure.

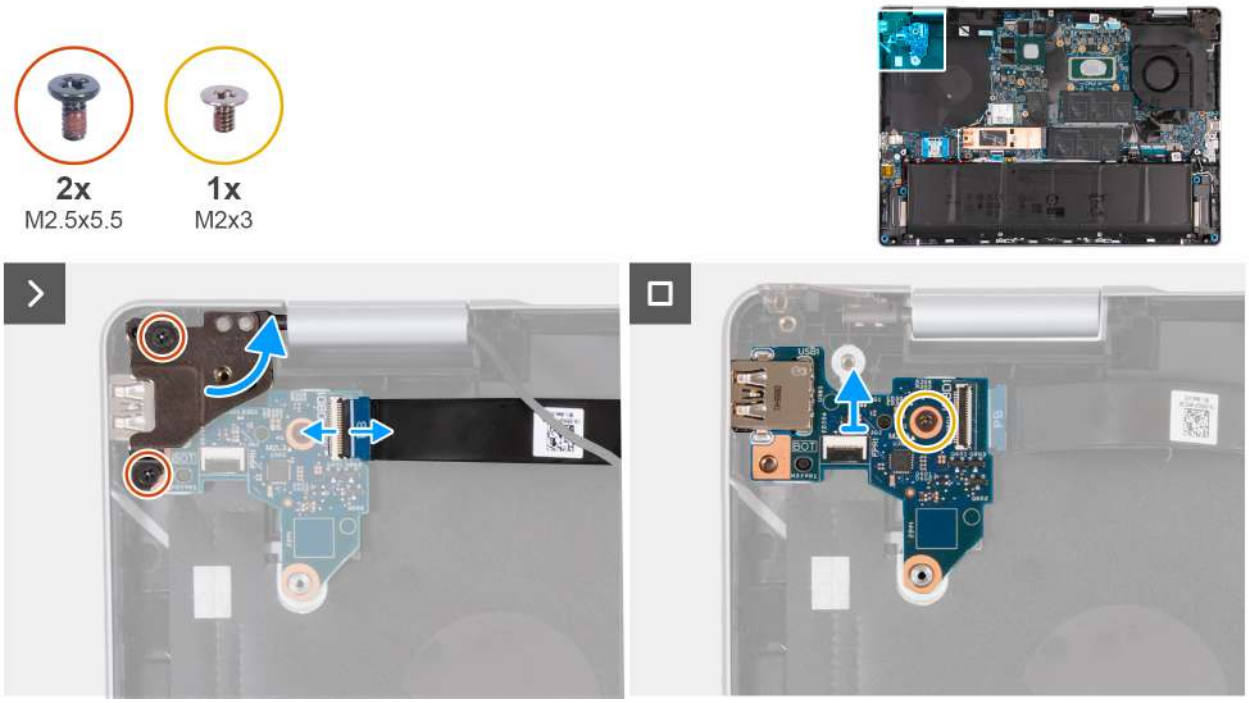

Figure 44. Removing the I/O board

Steps

1. Remove the two screws (M2.5x5.5) that secure the display-assembly hinge to the palm-rest and keyboard assembly.
2. Pry open the left-display assembly hinge at an angle of 90 degrees.
3. Lift the latch and disconnect the I/O-board cable from its connector (IOBD1) on the I/O board.
4. Lift the latch and disconnect the optional fingerprint cable from its connector (FPR1) on the I/O board.

   NOTE: This step is only applicable for computers that are shipped with the power button with an optional fingerprint reader.

5. Remove the screws (M2x3) that secures the I/O board to the palm-rest and keyboard assembly.
6. Lift the I/O board off 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 process.

About this task

The following image(s) indicate the location of the I/O board and provides a visual representation of the installation procedure.

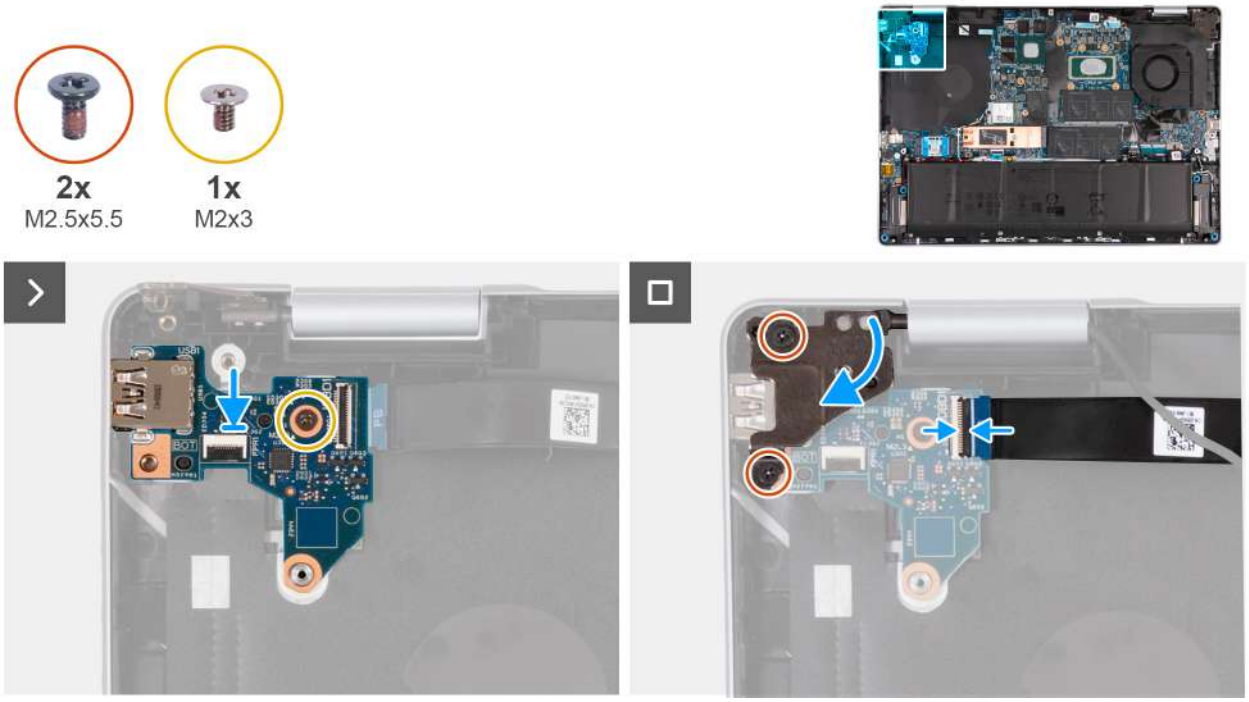

Figure 45. Installing the I/O board

Steps

1. Place the I/O board onto the palm-rest and keyboard assembly .
2. Align the ports on the I/O board to the slots on the palm-rest and keyboard assembly.
3. Align the screw holes on the I/O board to the screw holes on the palm-rest and keyboard assembly.
4. Replace the screws (M2x3) that secures the I/O board to the palm-rest and keyboard assembly.
5. Connect the I/O-board cable to its connector (IOBD1) on the I/O board and close the latch.
6. Connect the optional fingerprint cable to its connector (FPR1) on the I/O board and close the latch.

NOTE: This step is only applicable for computers that are shipped with the power button with an optional fingerprint reader.

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

Next steps

1. Install the heat sink.
2. Install the graphics processing unit fan.
3. Install the base cover.
4. 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.
   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.
3. Remove the processor fan.
4. Remove the graphics processing unit fan.
5. Remove the wireless card.
6. Remove the system board.
   NOTE: The system board can be removed with the heat sink attached.

About this task

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

Figure 46. Removing the I/O-board cable

Steps

1. Lift the latch and disconnect the I/O-board cable from its connector (IOBD1) on the I/O board.
2. Peel the I/O-board cable off 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 process.

About this task

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.

The following image(s) indicate the location of the I/O-board and provides a visual representation of the installation procedure.

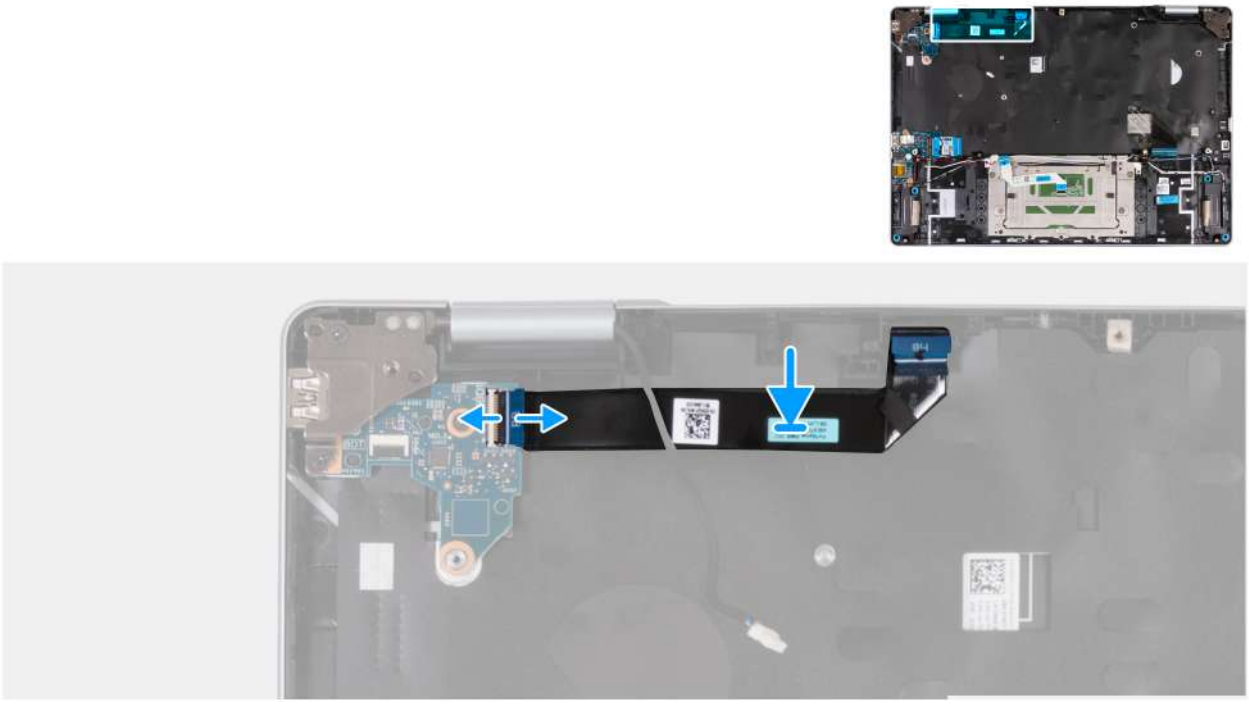

Figure 47. Installing the I/O-board cable

Steps

1. Place the I/O-board cable on the palm-rest and keyboard assembly.
2. Connect the I/O-board cable to its connector (IOBD1) on the I/O board and close the latch.
3. Adhere the I/O-board cable to the palm-rest and keyboard assembly.

Next steps

1. Install the system board.
   NOTE: The system board can be installed with the heat sink pre-attached.
2. Install the wireless card.
3. Install the graphics procesing unit fan.
4. Install the processor fan.
5. Install the base cover.
6. 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.
   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.
3. Remove the heat sink.
4. Remove the I/O board.

About this task

The following image(s) indicate the location of the power button and provides a visual representation of the removal procedure.

NOTE: Depending on the configuration of your computer, you may have a power-button with an optional fingerprint reader installed.

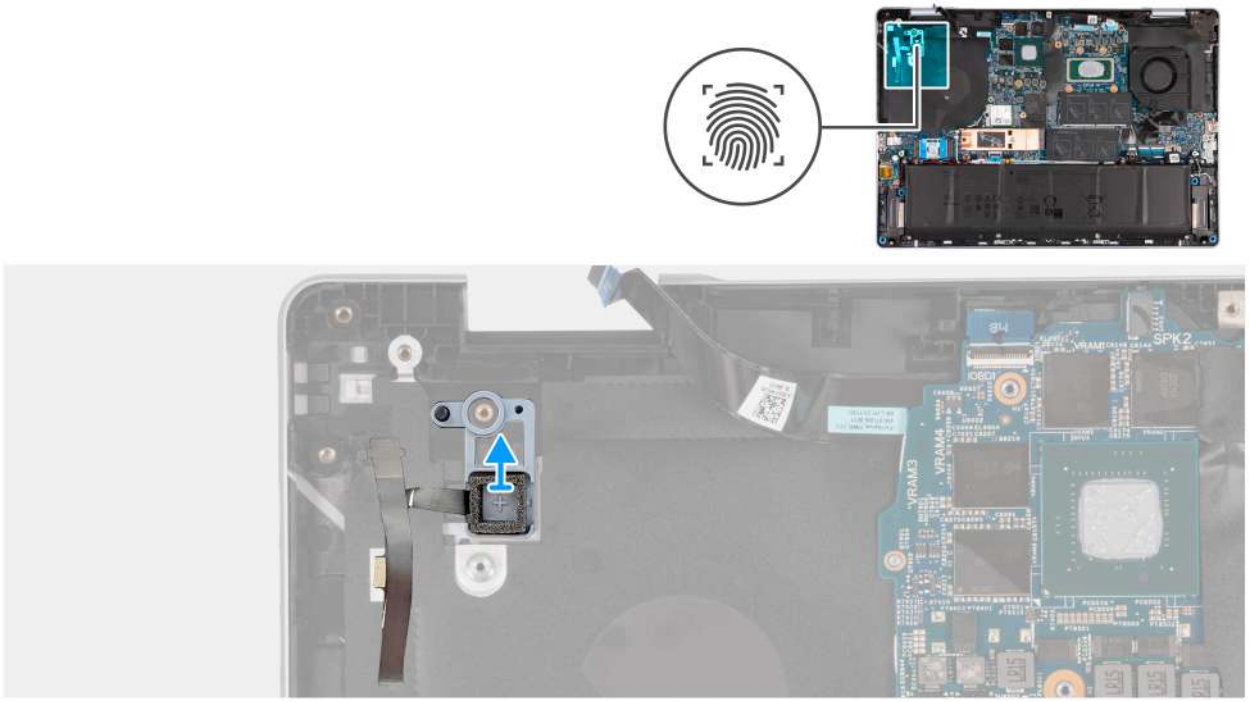

Figure 48. Removing the power button with an optional fingerprint reader

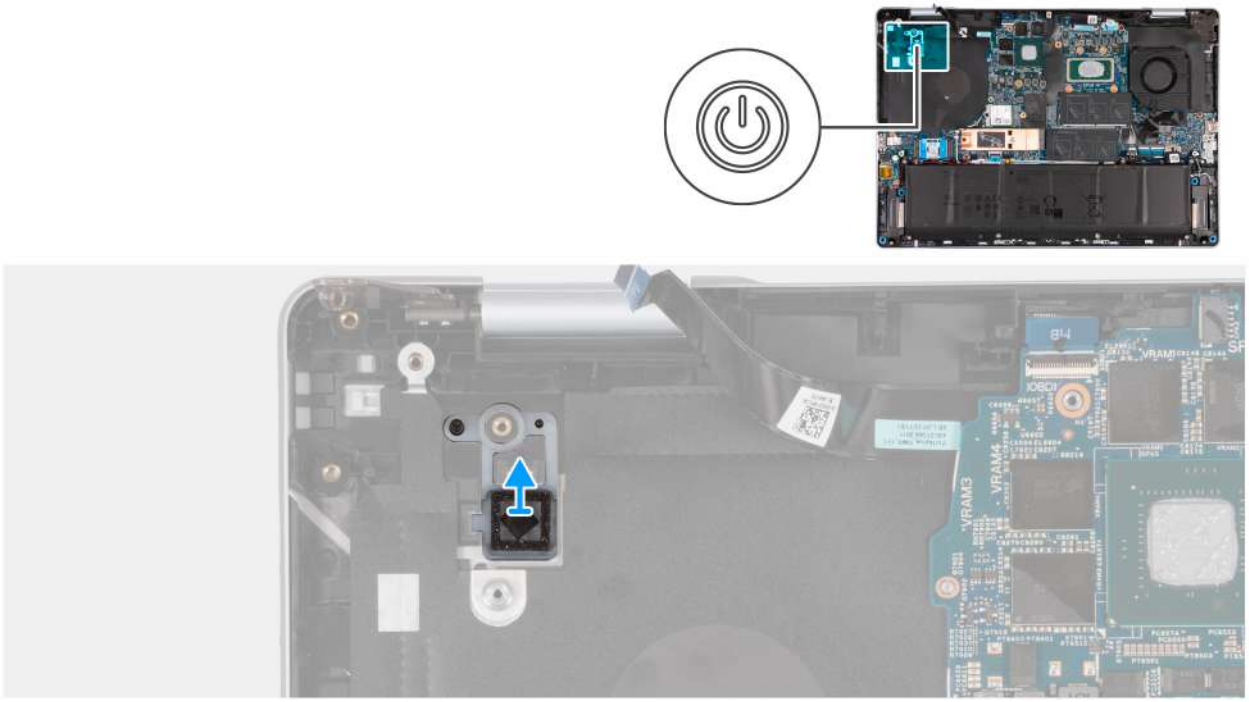

Figure 49. Removing the power button

Steps

1. Peel back the tape that secures the fingerprint-reader cable to the palm-rest and keyboard assembly.

NOTE: This step is only applicable for computers that are shipped with the power button with an optional fingerprint reader.

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 process.

About this task

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.

NOTE: Depending on the configuration of your computer, you may have a power-button with an optional fingerprint reader installed.

The following image(s) indicate the location of the power button and provides a visual representation of the installation procedure.

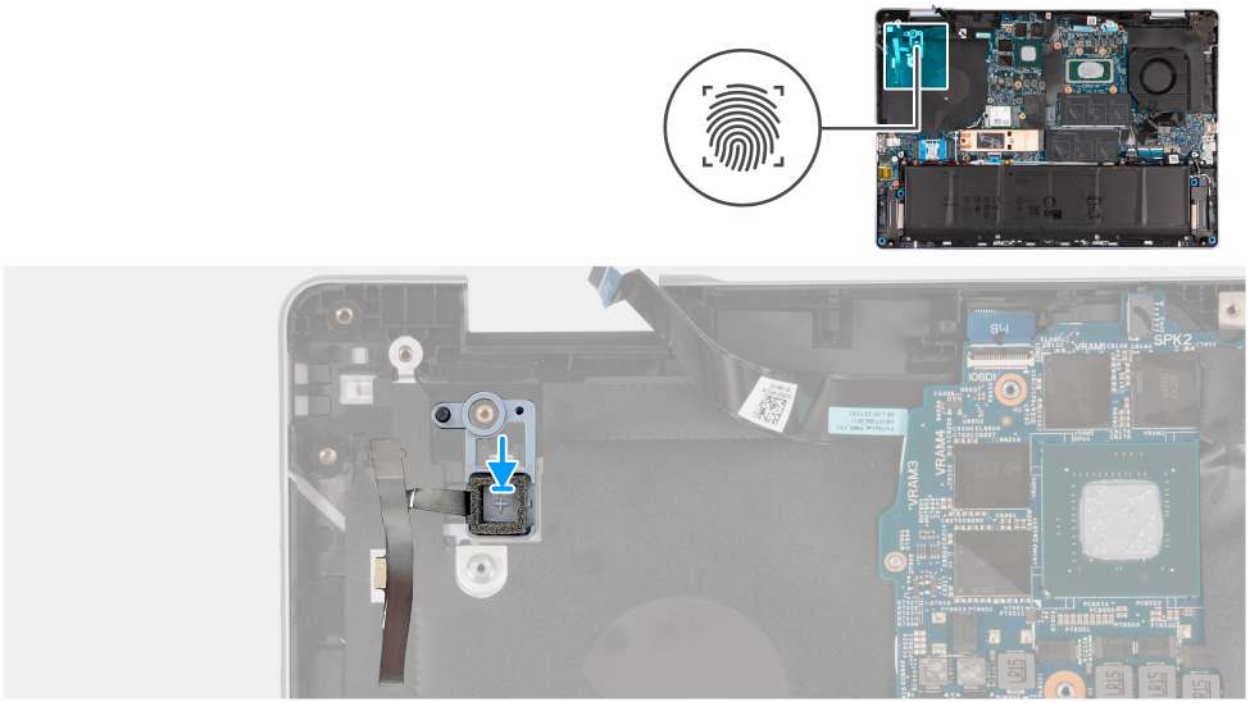

Figure 50. Installing power button with an optional fingerprint reader

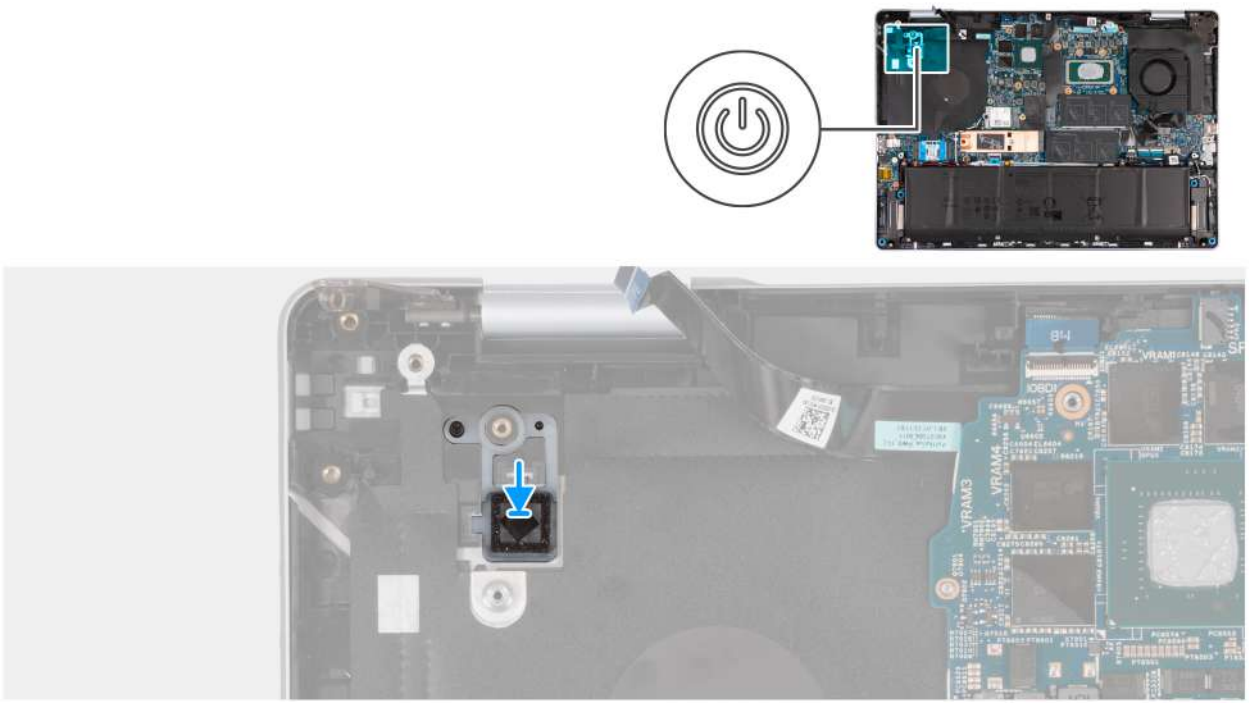

Figure 51. Installing power button

Steps

1. Place the power button into its 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 tape that secures the fingerprint-reader cable to the palm-rest and keyboard assembly.

   NOTE: This step is only applicable for computers that are shipped with the power button with an optional fingerprint reader.

Next steps

1. Install the I/O board.
2. Install the heat sink.
3. Install the base cover.
4. 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.

   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.
3. Remove the heat sink.

About this task

The following image(s) indicate the location of the power-adapter port and provides a visual representation of the removal procedure.

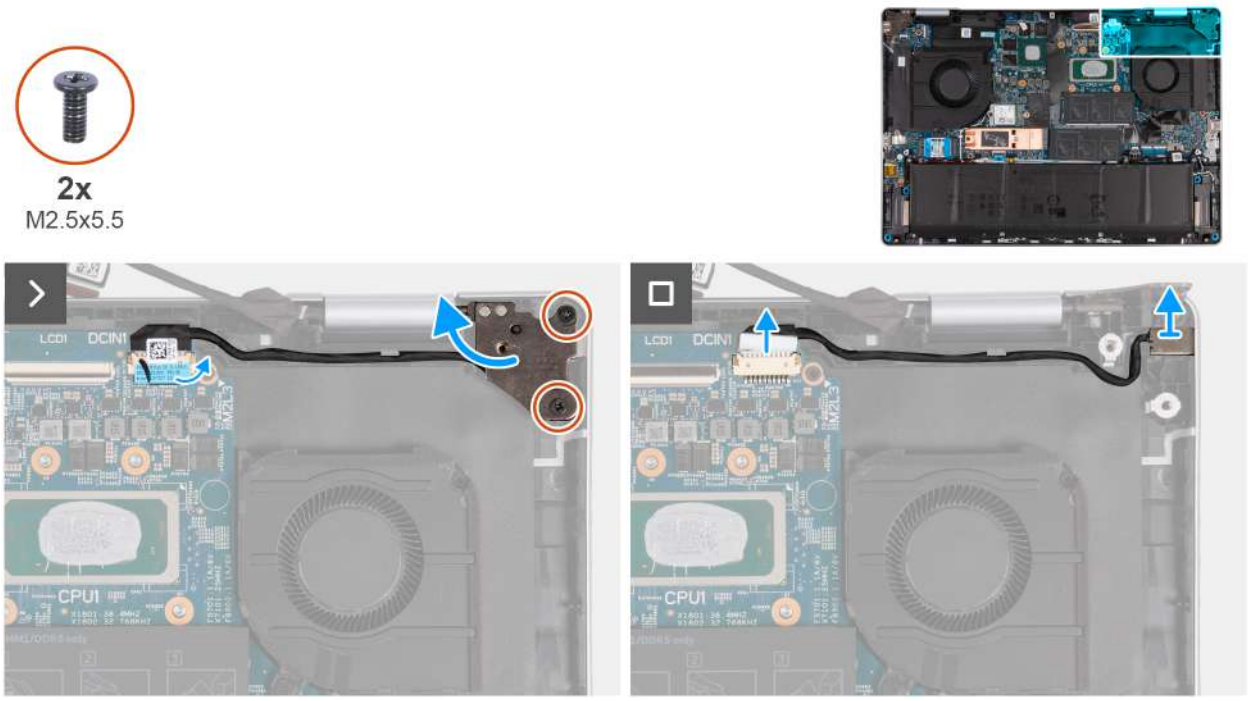

Figure 52. Removing the power-adapter port

Steps

1. Remove the two screws (M2.5x5.5) that secure the right-display assembly hinge to the system board.
2. Pry open the right-display assembly hinge at an angle of 90 degrees.
3. Peel off the tape that secures the power-adapter port cable to its connector (DCIN1) on the system board.
4. Disconnect the power-adapter port cable from its connector (DCIN1) on the system board.
5. Remove the power-adapter port cable from the routing guide on the palm-rest and keyboard assembly.
6. Lift the power-adapter port off 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 process.

About this task

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.

The following image(s) indicate the location of the power-adapter port and provides a visual representation of the installation procedure.

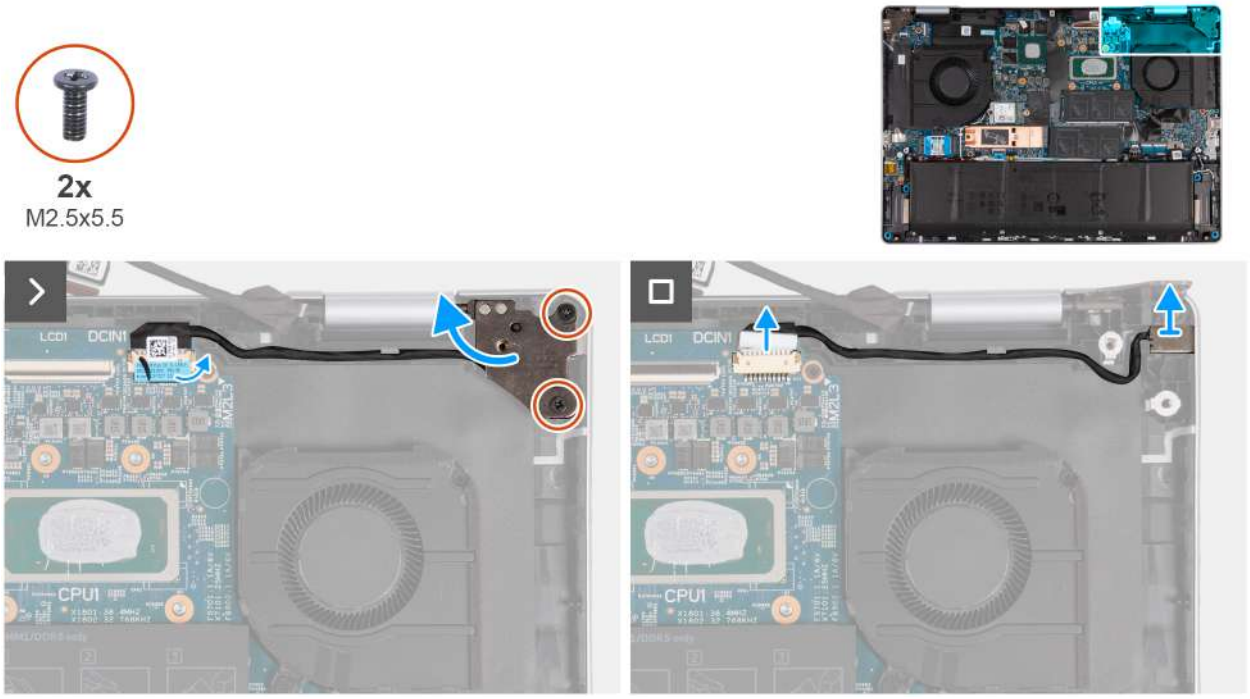

Figure 53. Installing the power-adapter port

Steps

1. Place the power-adapter port into the slot on the palm-rest and keyboard assembly.
2. Route the power-adapter port cable through the routing guide on the palm-rest and keyboard assembly.
3. Connect the power-adapter port to its connector (DCIN1) on the system board.
4. Adhere the tape that secures the power-adapter port cable to its connector (DCIN1) on the system board.
5. Close the right-display assembly hinge and align the screw holes on the right-display assembly hinge with the screw holes on the palm-rest and keyboard assembly.
6. Replace the two screws (M2.5x5.5) that secure the right-display assembly hinge to the system board.

Next steps

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

System board

Removing the system board

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

Prerequisites

1. Follow the procedure in Before working inside your computer.
   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the graphics processing unit fan.
5. Remove the processor fan.

6. Remove the heat sink.
7. Remove the wireless card.
8. Remove the M.2 2230 solid-state drive or the M.2 2280 solid-state drive, whichever is applicable.

About this task

The following image indicates the connectors on your system board.

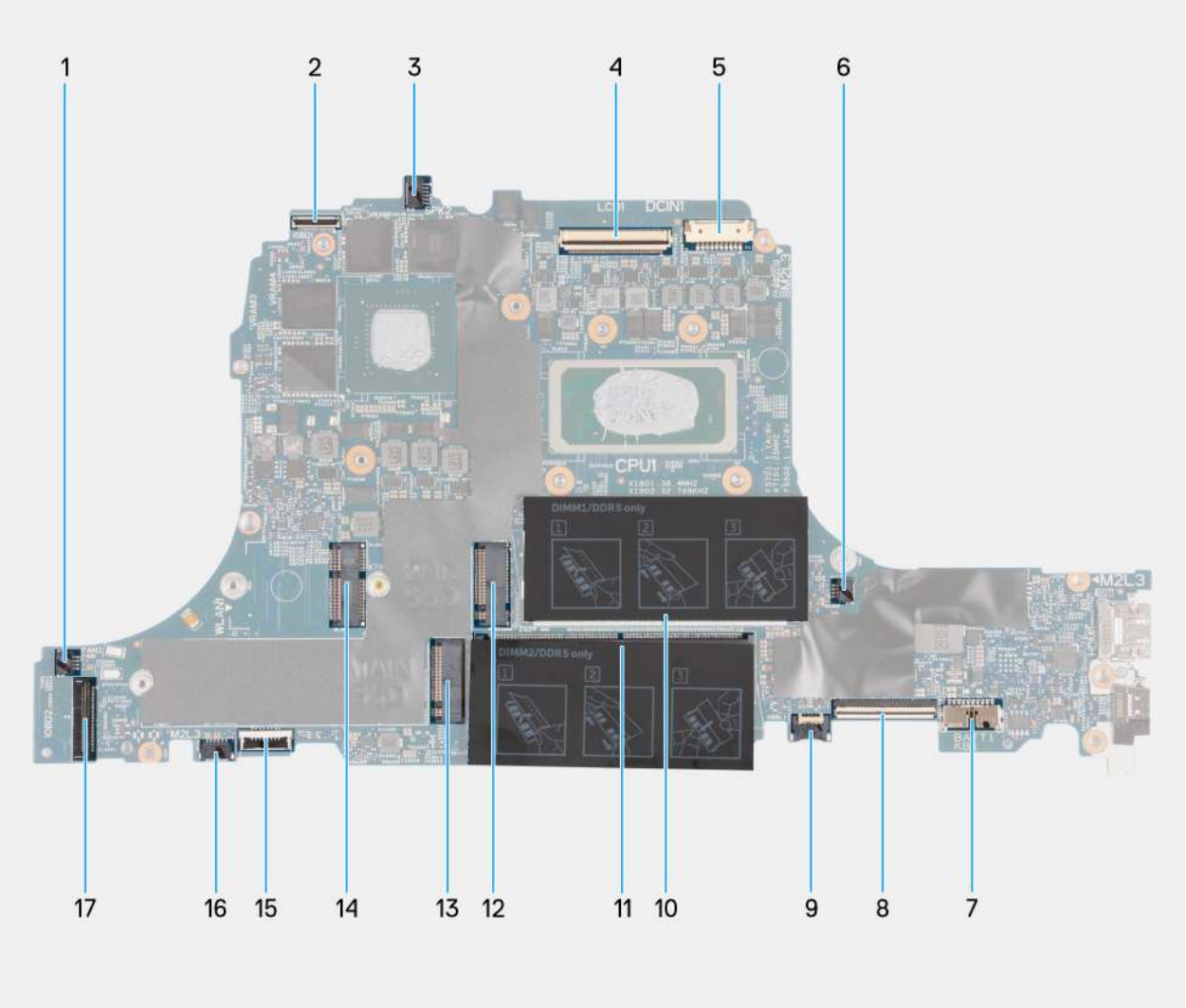

Figure 54. System board connectors

1. Fan cable connector (FAN2)
2. I/O board-cable connector (IOBD1)
3. Front-firing speaker cable connector (SPK2)
4. Display-assembly cable connector (LCD1)
5. Power-adapter port cable connector (DCIN1)
6. Fan cable connector (FAN1)
7. Battery cable connector (BATT1)
8. Keyboard-cable connector (KB)
9. Keyboard-backlight cable connector (KBBL1)
10. Memory-module slot (DIMM1)
11. Memory-module slot (DIMM2)
12. M.2 2230 solid-state drive slot (SSD2)
13. M.2 2280 solid-state drive slot (SSD1)
14. M.2 wireless card slot (WLAN1)
15. Touchpad-cable connector (TP1)

16. Down-firing speaker cable connector (SPK1)
17. Audio board-cable connector (IOBD2)

The following image(s) indicate the location of the system board and provides a visual representation of the removal procedure.

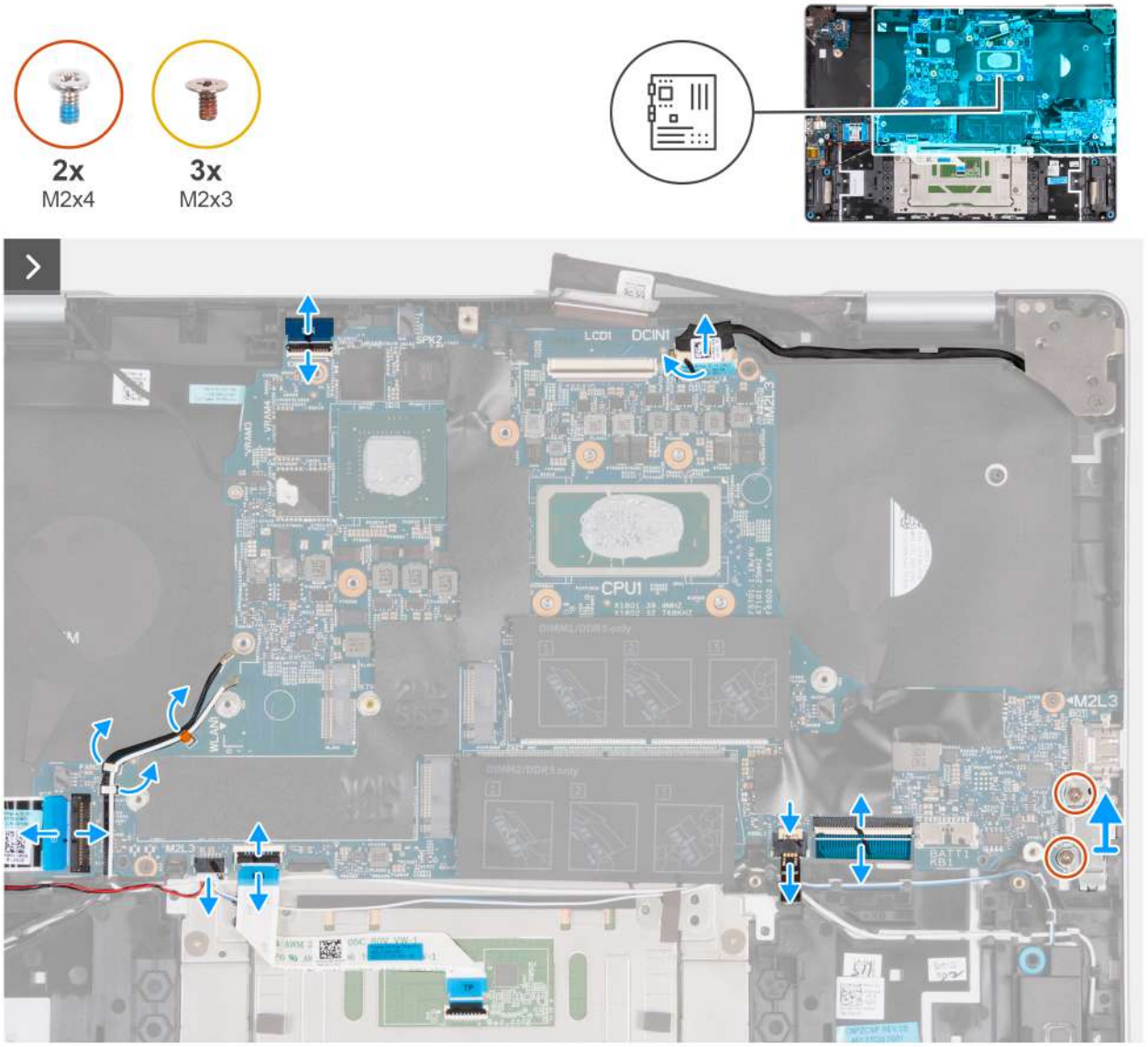

Figure 55. Removing the system board

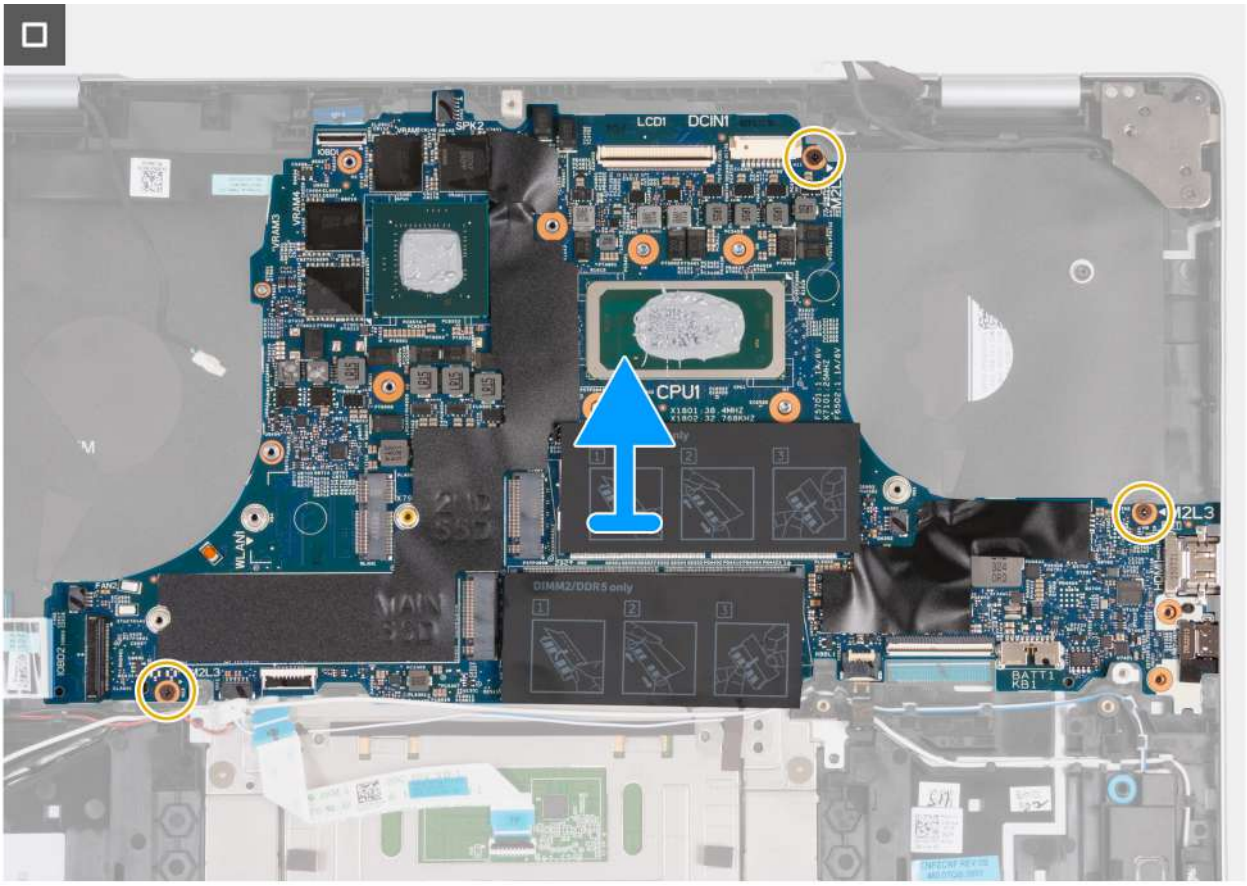

Figure 56. Removing the system board

Steps

1. Lift the latch and disconnect the I/O-board cable from its connector (IOBD1) on the system board.
2. Peel off the tape that secures the power-adapter port cable to its connector (DCIN1) on the system board.
3. Disconnect the power-adapter port cable from its connector (DCIN1) on the system board.
4. Remove the two screws (M2x4) that secure the Type-C bracket to the system board.
5. Lift the Type-C port bracket off the system board.
6. Lift the latch and disconnect the keyboard cable from its connector (KB1) on the system board.
7. Lift the latch and disconnect the keyboard-backlight cable from its connector (KBBL1) on the system board.
8. Lift the latch and disconnect the touchpad cable from its connector (TP1) on the system board.
9. Disconnect the down-firing speaker cables from their connector (SPK1) on the system board.
10. Remove the antenna cables from their routing guides on the system board.
11. Lift the latch and disconnect the audio-board cable from its connector (IOBD2) on the system board.
12. Remove the three screws (M2x3) that secure the system board to the palm-rest and keyboard assembly.
13. Lift the system board off 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 process.

About this task

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.

The following image indicates the connectors on your system board.

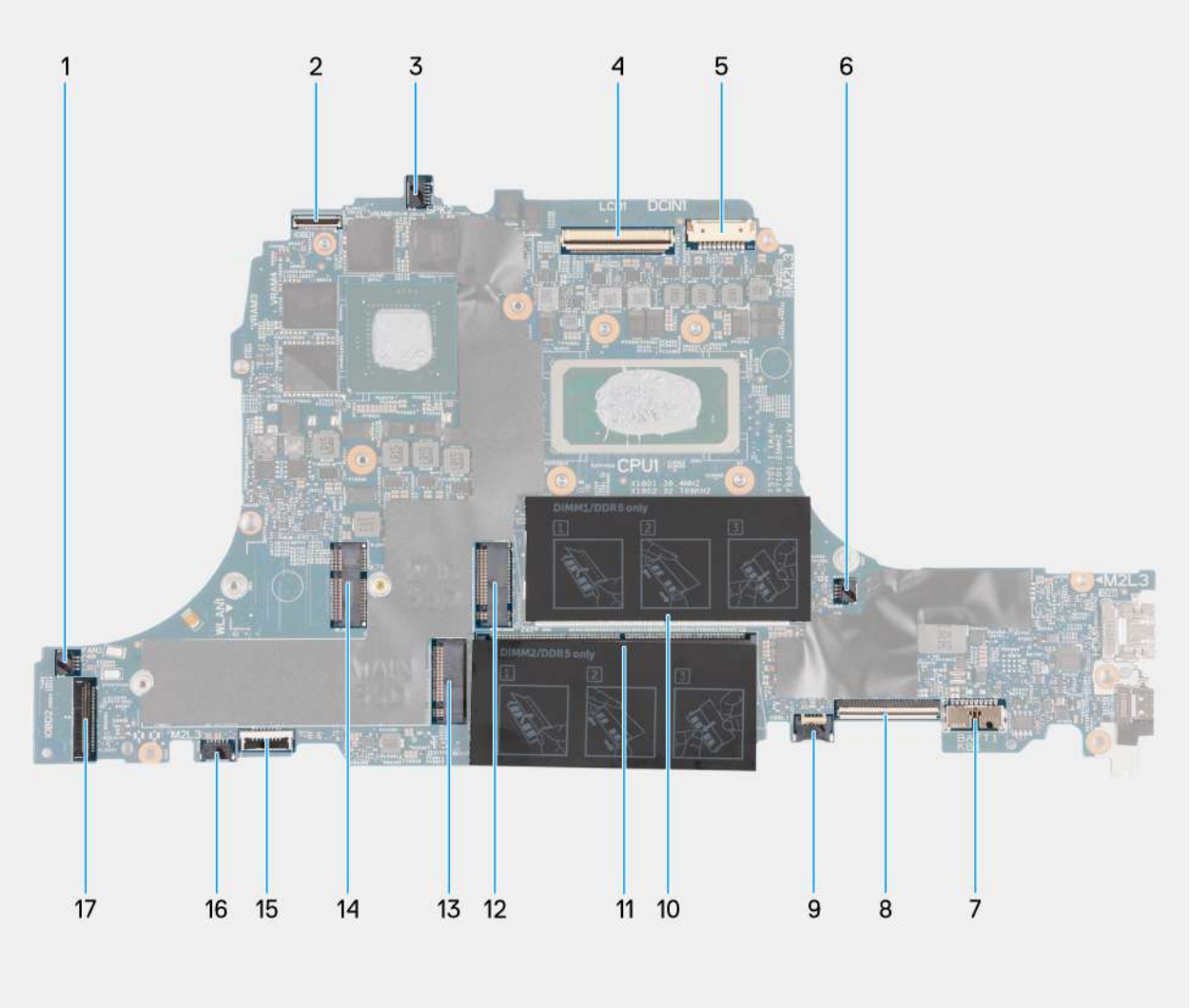

Figure 57. System board connectors

1. Fan cable connector (FAN2)
2. I/O board-cable connector (IOBD1)
3. Front-firing speaker cable connector (SPK2)
4. Display-assembly cable connector (LCD1)
5. Power-adapter port cable connector (DCIN1)
6. Fan cable connector (FAN1)
7. Battery cable connector (BATT1)
8. Keyboard-cable connector (KB)
9. Keyboard-backlight cable connector (KBBL1)
10. Memory-module slot (DIMM1)
11. Memory-module slot (DIMM2)
12. M.2 2230 solid-state drive slot (SSD2)
13. M.2 2280 solid-state drive slot (SSD1)
14. M.2 wireless card slot (WLAN1)
15. Touchpad-cable connector (TP1)
16. Down-firing speaker cable connector (SPK1)

17. Audio board-cable connector (IOBD2)

The following image(s) indicate the location of the system board and provides a visual representation of the installation procedure.

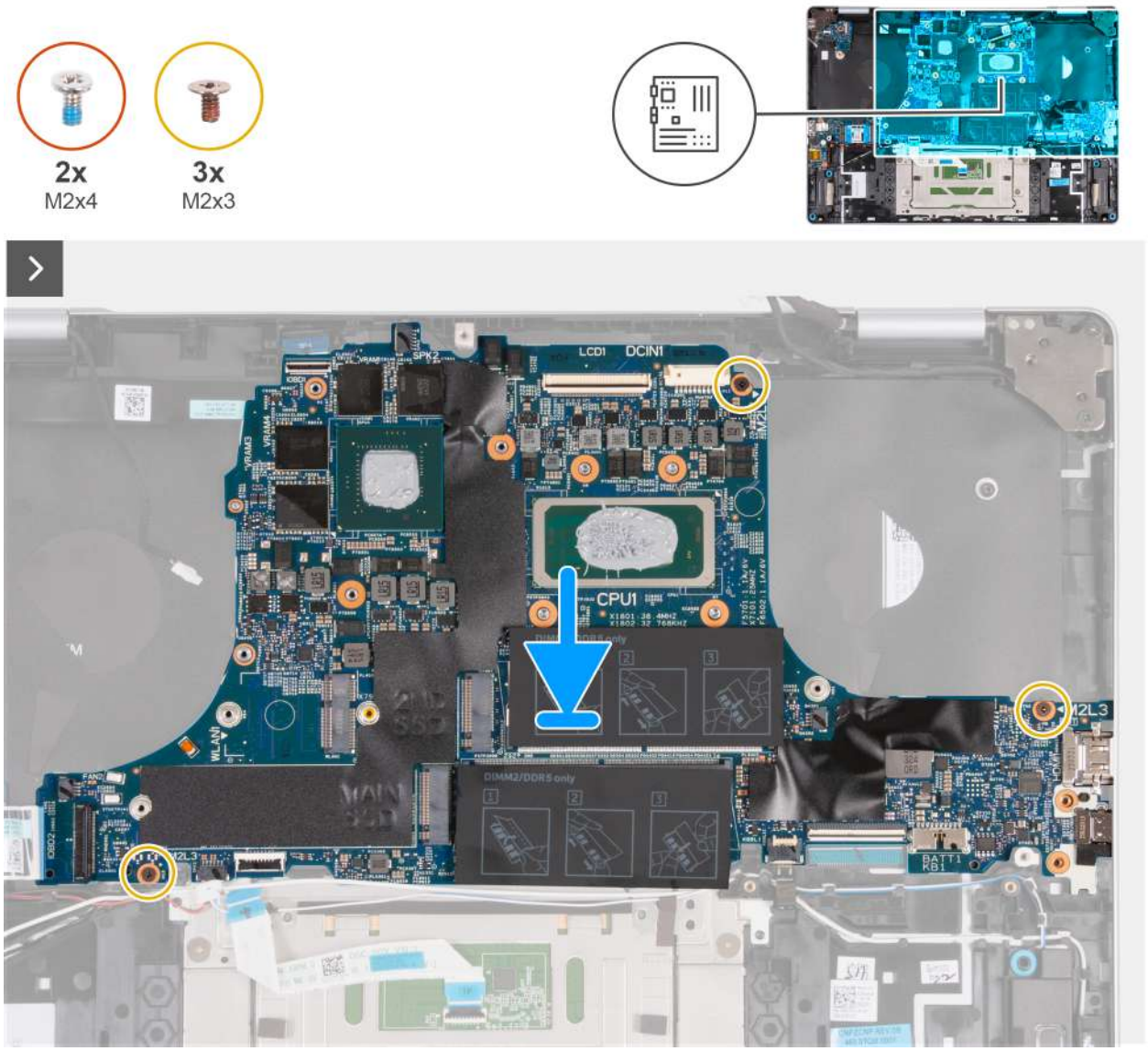

Figure 58. Installing the system board 1

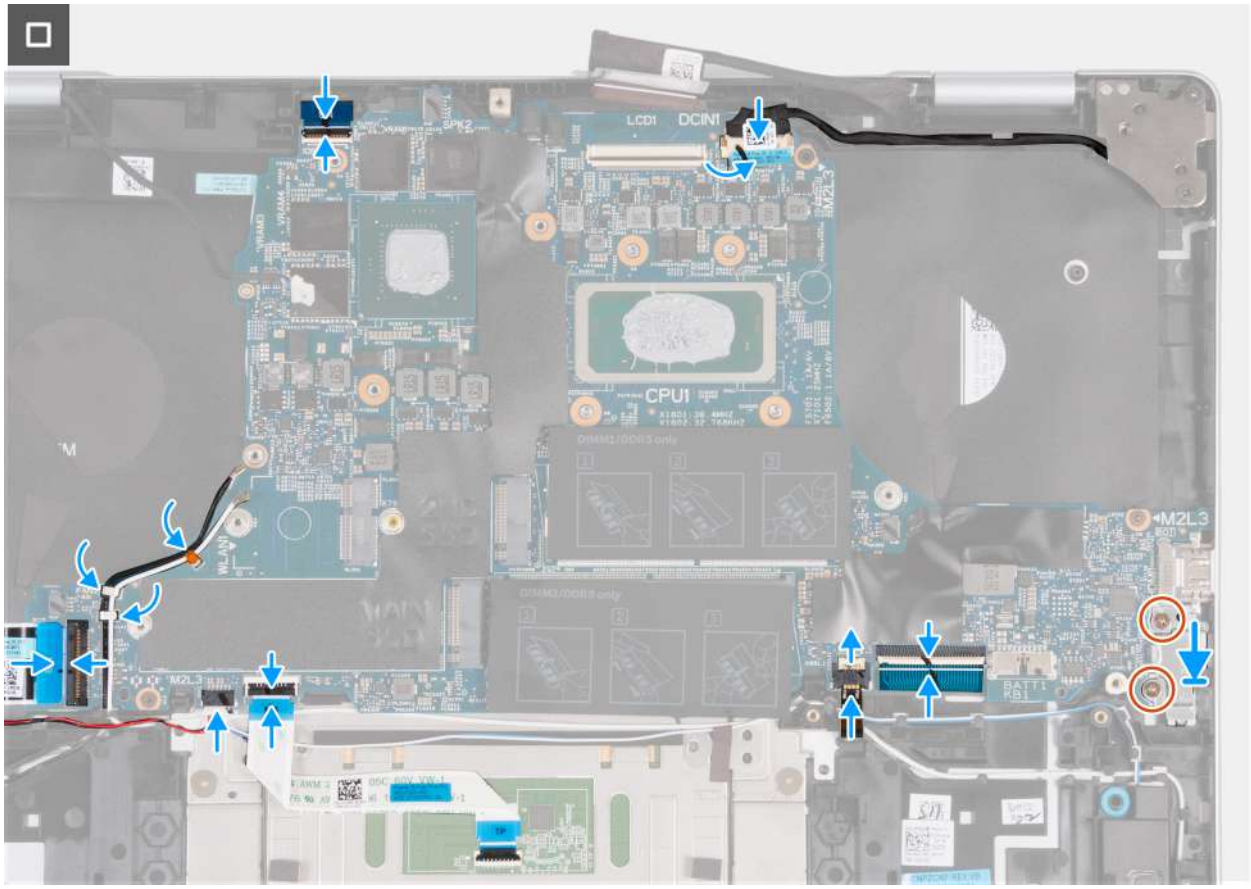

Figure 59. Installing the system board 2

Steps

1. Place the system board on the palm-rest and keyboard assembly.
2. Align the ports on the system board with the ports 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 three screws (M2x3) that secure the system board to the palm-rest and keyboard assembly.
5. Connect the I/O-board cable from its connector (IOBD1) on the system board and close the latch.
6. Connect the power-adapter port cable from its connector (DCIN1) on the system board.
7. Adhere the tape that secures the power-adapter port cable to its connector (DCIN1) on the system board.
8. Place the Type-C port-bracket on the system board.
9. Replace the two screws (M2x4) that secure the Type-C bracket to the system board.
10. Connect the keyboard cable to its connector (KB1) on the system board and close the latch.
11. Connect the keyboard-backlight cable to its connector (KBBL1) on the system board and close the latch.
12. Connect the touchpad cable to its connector (TP1) on the system board and close the latch.
13. Connect the down-firing speaker cables to their connector (SPK1) on the system board.
14. Place the antenna cables into their routing guides on the system board.
15. Connect the audio-board cable to its connector (IOBD2) on the system board and close the latch.

Next steps

1. Install the M.2 2230 solid-state drive or M.2 2280 solid-state drive, whichever is applicable.
2. Install the wireless card.
3. Install the heat sink.

   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.
4. Install the processor fan.
5. Install the graphics processing unit fan.

6. Install the battery.
7. Install the base cover.

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.
   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.

About this task

NOTE: Before removing the base cover, ensure that there is no microSD card that is installed in the microSD-card slot on your computer.

The following image(s) indicate the location of the touchpad and provides a visual representation of the removal procedure.

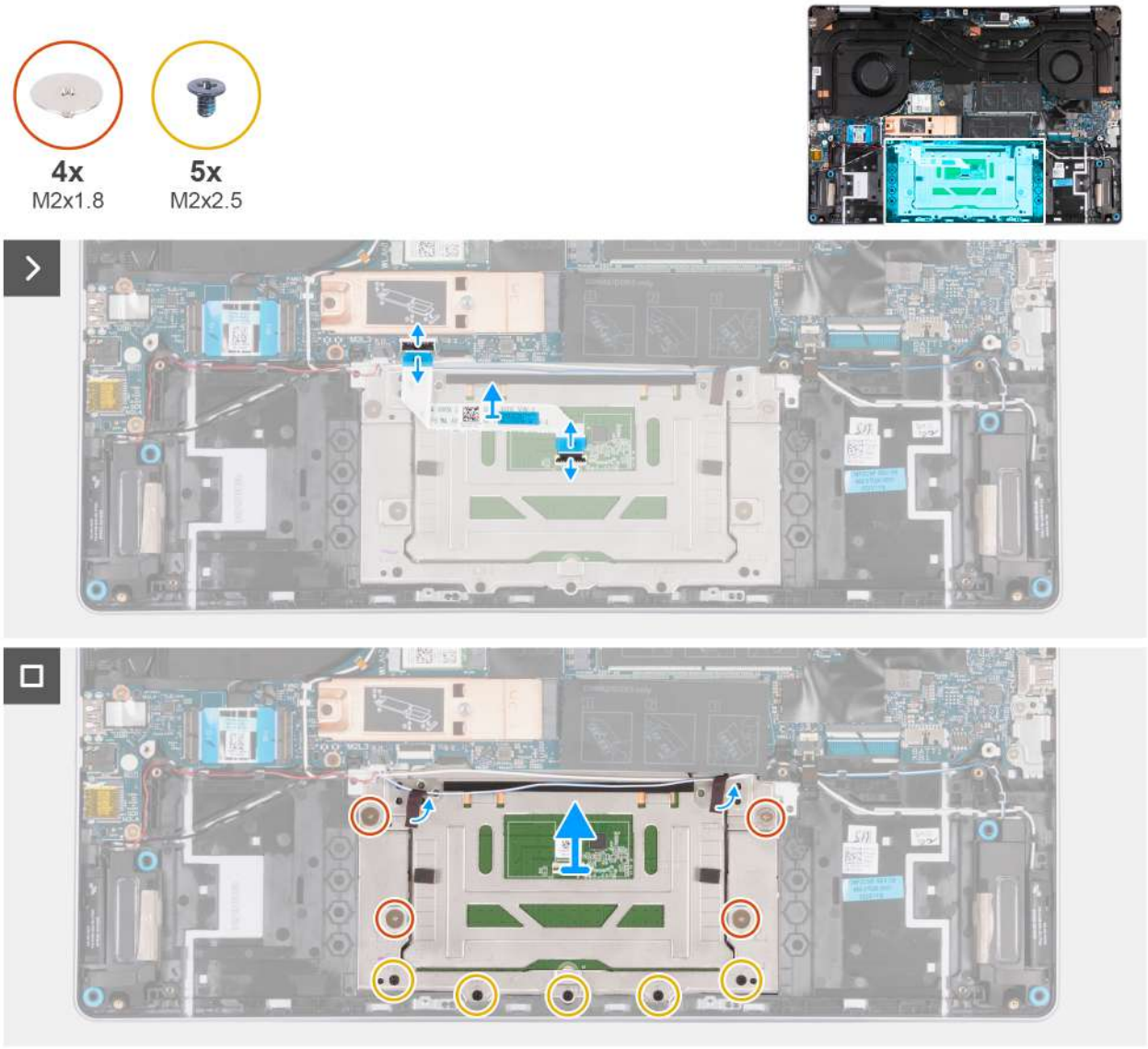

Figure 60. Removing the touchpad

Steps

1. Open the latch and disconnect the touchpad cable from its connector (TP1) on the system board.
2. Open the latch and disconnect the touchpad cable from its connector on the touchpad.
3. Remove the touchpad cable from the touchpad.
4. Peel up the adhesive tapes that secure the down-firing speaker cables to the touchpad and touchpad bracket.

   NOTE: Ensure that the down-firing speaker cables are moved away from the touchpad and touchpad bracket.

5. Remove the five screws (M2x2.5) and the four screws (M2x1.8) that secure the touchpad bracket to the palm-rest and keyboard assembly.
6. Lift the touchpad bracket off the palm-rest and keyboard assembly.
7. Lift the touchpad off the palm-rest and keyboard assembly.

Installing the touchpad

Prerequisites

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

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

About this task

The following image(s) indicate the location of the touchpad and provides a visual representation of the installation procedure.

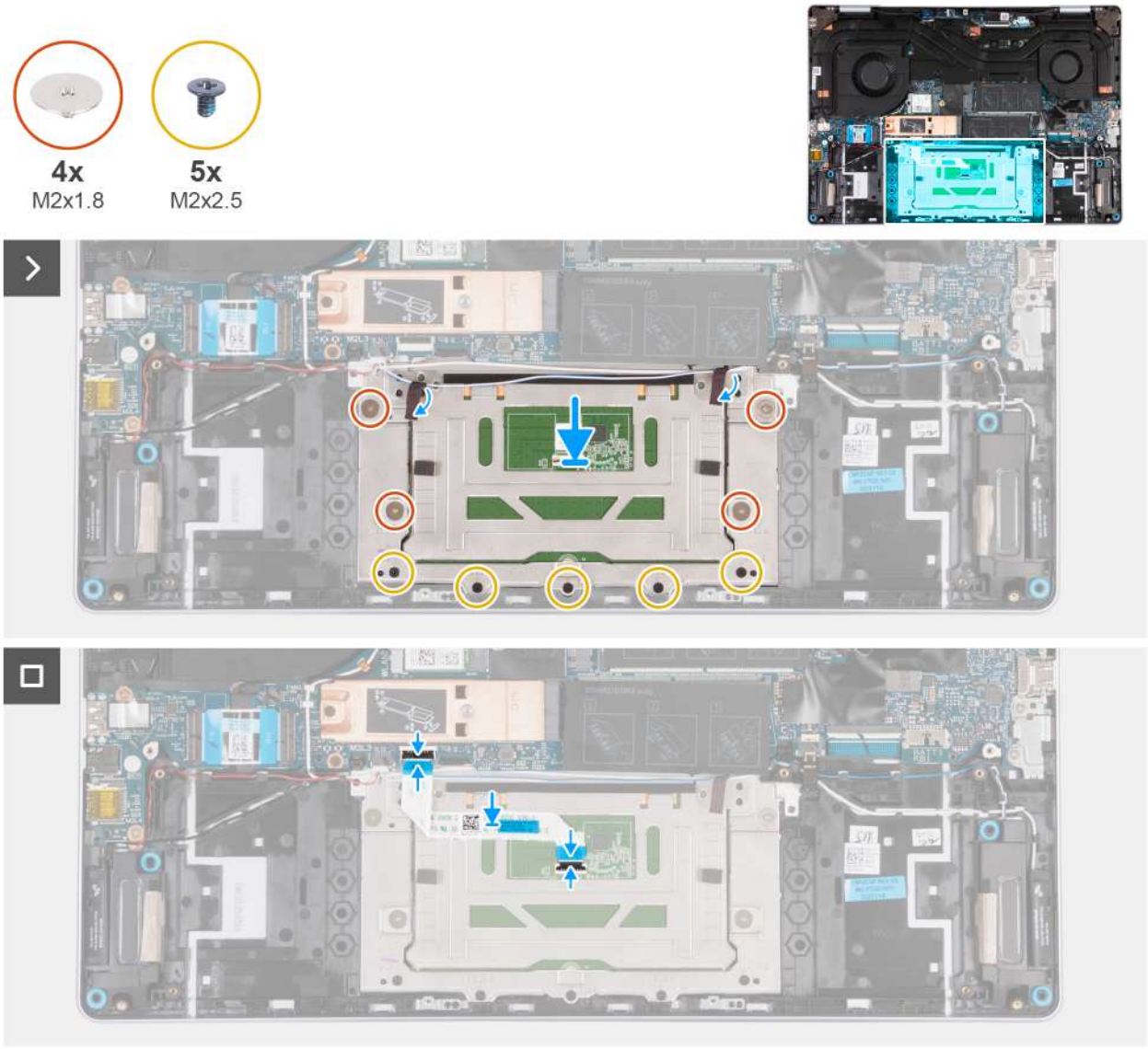

Figure 61. Installing the touchpad

Steps

1. Place the touchpad onto the palm-rest and keyboard assembly.
2. Place the touchpad bracket onto the touchpad and align the screw holes on the touchpad bracket to the screw holes on the palm-rest and keyboard assembly.
3. Replace the five screws (M2x2.5) and four screws (M2x1.8) that secure the touchpad bracket to the palm-rest and keyboard assembly.
4. Adhere the adhesive tapes that secure the down-firing speaker cables to the touchpad and touchpad bracket.
5. Place the touchpad cable on the palm-rest and keyboard assembly.
6. Connect the touchpad cable to its connector on the touchpad and close the latch.
7. Connect the touchpad cable to its connector (TP1) on the system board and close the latch.

Next steps

1. Install the battery.

2. Install the base cover.
3. 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.
   NOTE: Ensure that your computer is in Service Mode. For more information, see **step 6** in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the speakers.
5. Remove the graphics procesing unit fan.
6. Remove the processor fan.
7. Remove the heat sink.
8. Remove the wireless card.
9. Remove the display assembly.
10. Remove the system board.
    NOTE: The system board can be removed with the heat sink attached.
11. Remove the power-adapter port.
12. Remove the I/O board.
13. Remove the power button.
14. Remove the I/O-board cable.
15. Remove the audio board.
16. Remove the touchpad.

About this task

The following image(s) indicate the location of the palm-rest and keyboard assembly and provides a visual representation of the removal procedure.

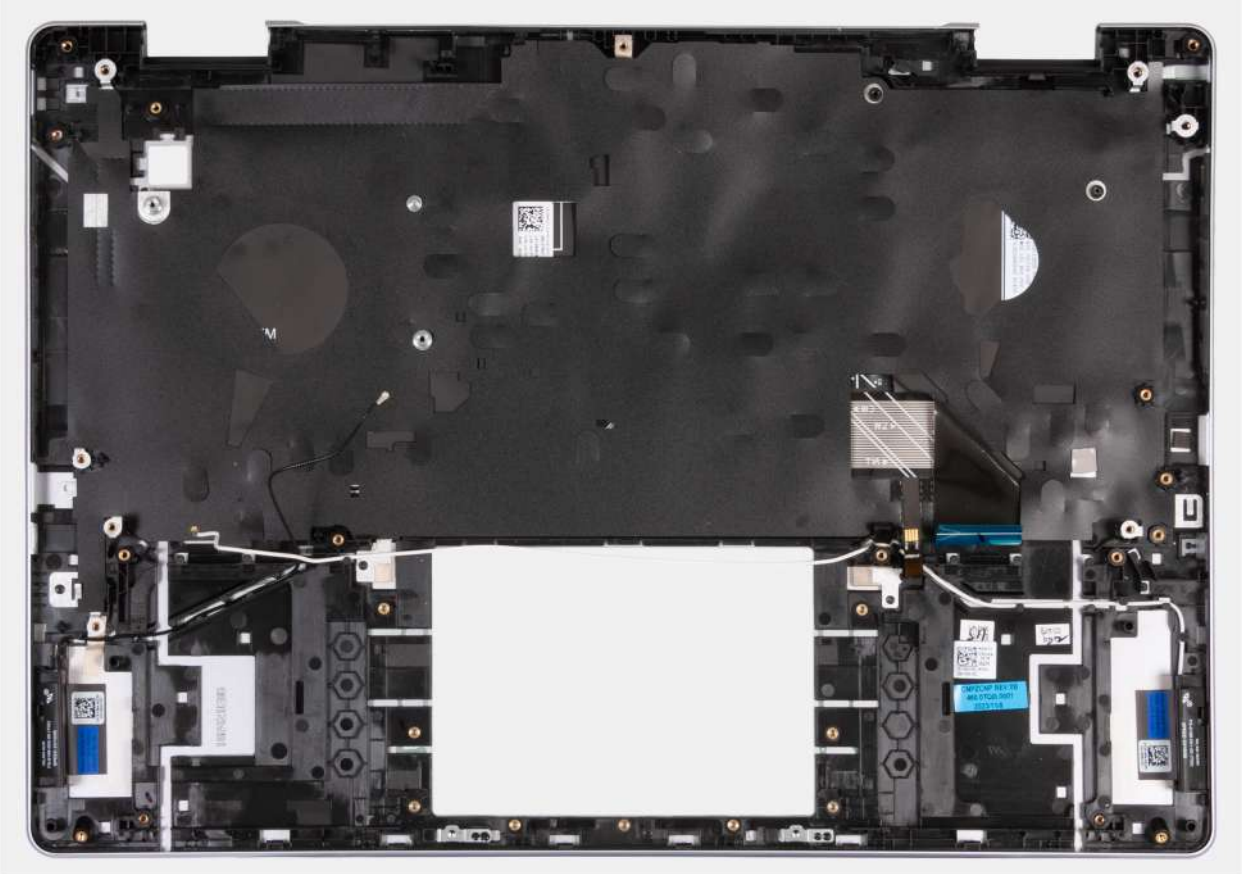

Figure 62. Palm-rest and keyboard assembly

Steps

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

NOTE: The palm-rest and keyboard assembly consists of the following components:

- Palm rest
- Keyboard
- Wireless antenna (2)

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 process.

About this task

The following image(s) indicate the location of the palm-rest and keyboard assembly and provides a visual representation of the installation procedure.

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.

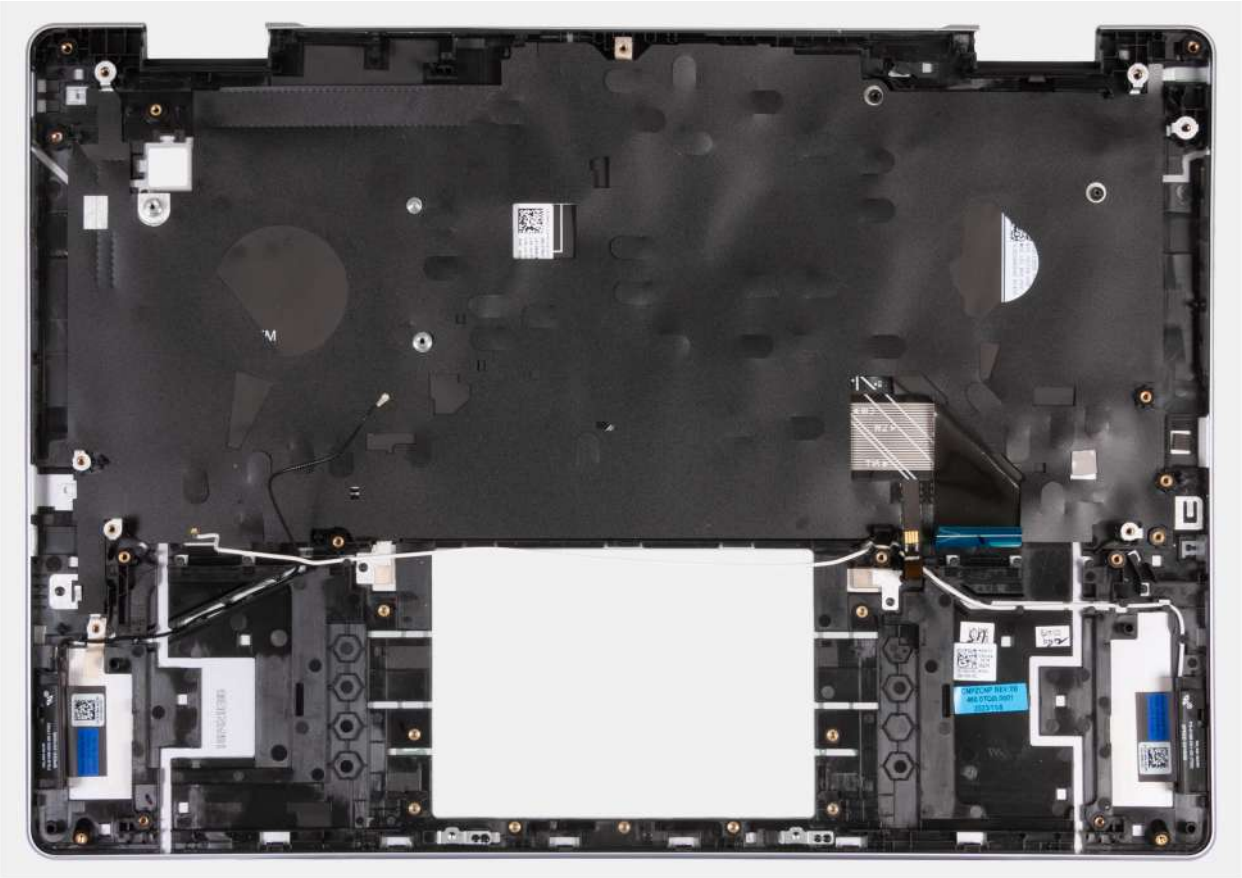

Figure 63. Palm-rest and keyboard assembly

Steps

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

NOTE: The palm-rest and keyboard assembly consists of the following components:

- Palm rest
- Keyboard
- Wireless antenna (2)

Next steps

1. Install the touchpad.
2. Install the audio board.
3. Install the I/O-board cable.
4. Install the power button.
5. Install the I/O board.
6. Install the power-adapter port.
7. Install the system board.

   NOTE: The system board can be installed with the heat sink pre-attached.
8. Install the heat sink.

   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.
9. Install the display assembly.
10. Install the wireless card.
11. Install the processor fan.
12. Install the graphics procesing unit fan.

13. Install the speakers.
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 Inspiron 16 Plus 7640 supports the following operating systems:

- Windows 11 Pro, 64-bit
- Windows 11 Pro National Education, 64-bit
- Windows 11 Home, 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: Unless you are an expert computer user, do not change the settings in the BIOS Setup. Certain changes can make your computer work incorrectly.

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

NOTE: Before you change the settings in BIOS Setup, it is recommended that you note down the original settings for future reference.

Use BIOS Setup for the following purposes:

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

Entering BIOS setup program

About this task

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

Navigation keys

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

Table 29. 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. **NOTE:** For the standard graphical user interface only.
Esc	Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restart the computer.

F12 One Time Boot menu

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

NOTE: It is recommended to shut down the computer, if it is on.

The F12 One Time Boot menu displays the devices that you can boot from including the diagnostic option. The boot menu options are:

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

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

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

System setup options

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

Table 30. System setup options—Overview menu

Overview	
Inspiron 16 Plus 7640	
BIOS Version	Displays the BIOS version number.
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Displays the Asset Tag of the computer.
Manufacture Date	Displays the manufacture date of the computer.
Ownership Date	Displays the ownership date of the computer.
Express Service Code	Displays the express service code of the computer.
Ownership Tag	Displays the ownership tag of the computer.
Signed Firmware Update	Displays whether the signed firmware update is enabled. Default: Enabled
BATTERY	Displays the battery health information.
Primary	Displays the primary battery.
Battery Level	Displays the battery level.
Battery State	Displays the battery state.
Health	Displays the battery health.
AC Adapter	Displays whether an AC adapter is connected. If connected, the AC adapter type.
PROCESSOR	
Processor Type	Displays the processor type.
Maximum Clock Speed	Displays the maximum processor clock speed.
Minimum Clock Speed	Displays the minimum processor clock speed.
Current Clock Speed	Displays the current processor clock speed.
Core Count	Displays the number of cores on the processor.
Processor ID	Displays the processor identification code.
Processor L2 Cache	Displays the processor L2 Cache size.
Processor L3 Cache	Displays the processor L3 Cache size.

Table 30. System setup options—Overview menu (continued)

Overview	
Microcode Version	Displays the microcode version.
Intel® Hyper-Threading Capable	Displays whether the processor is Hyper-Threading (HT) capable.
64-Bit Technology	Displays whether 64-bit technology is used.
MEMORY	
Memory Installed	Displays the total computer memory installed.
Memory Available	Displays the total computer memory available.
Memory Speed	Displays the memory speed.
Memory Channel Mode	Displays single or dual channel mode.
Memory Technology	Displays the technology that is used for the memory.
DEVICES	
Panel Type	Displays the panel type of the computer.
Panel Revision	Displays the panel revision of the computer.
Video Controller	Displays the integrated graphics information of the computer.
Video Memory	Displays the video memory information of the computer.
Wi-Fi Device	Displays the Wi-Fi device installed in the computer.
Native Resolution	Displays the native resolution of the computer.
Video BIOS Version	Displays the video BIOS version of the computer.
Audio Controller	Displays the audio controller information of the computer.
Bluetooth® Device	Displays whether a Bluetooth device is installed in the computer.

Table 31. System setup options—Boot Configuration menu

Boot Configuration	
Boot Sequence	
Boot Mode: UEFI only	Displays the boot mode of this computer.
Boot Sequence	Specifies the order that the BIOS searches the list of devices to find an operating system to boot. By default, Windows Boot Manager is selected. By default, UEFI Hard Drive is selected.
Secure Digital (SD) Card Boot	
Enable Secure Digital (SD) Card Boot	Enable or disable booting from a Secure Digital (SD) card.
Secure Boot	
Enable Secure Boot	Enables secure boot using only validated boot software. Default: OFF
Enable Microsoft UEFI CA	Enables UEFI CA to be included in the BIOS UEFI Secure Boot DB. Default: ON
Secure Boot Mode	Modifies the behavior of Secure Boot to allow evaluation or enforcement of UEFI driver signatures. Deployed Mode should be selected for normal operation of Secure Boot. By default, Deployed Mode is selected.
Expert Key Management	
Enable Custom Mode	Allows the PK, KEK, db, and dbx security key databases to be modified.

Table 31. System setup options—Boot Configuration menu (continued)

Boot Configuration	
	Default: OFF **NOTE:** If Custom Mode is not enabled, any changes made with respect to the keys will not be saved.
Custom Mode Key Management	Allows for selection of key database. • Save to File will save the key to a user-selected file. • Replace from File will replace the current key with a key from a user-selected file. • Append from File will add a key to the current database from a user-selected file. • Delete will delete the selected key. • Reset All Keys will reset all four keys to their default settings. By default, PK security key database is selected. By default, Save to File is selected.

Table 32. System setup options—Integrated Devices menu

Integrated Devices	
Date/Time	
Date	Sets the computer date in MM/DD/YYYY format. Changes to the date take effect immediately.
Time	Sets the computer time in HH/MM/SS 24-hour format. You can switch between 12-hour and 24-hour clock. Changes to the time take effect immediately.
Camera	
Enable Camera	Enables or disables the camera. By default, Enable Camera is selected.
Audio	Enables or disables all integrated audio controller. Default: ON
Enable Microphone	Enables or disables microphone. By default, Enable Microphone is selected.
Enable Internal Speaker	Enables or disables internal speaker. By default, Enable Internal Speaker is selected.
USB/Thunderbolt Configuration	
Enable External USB Ports	Enables or disables external USB ports. By default, Enable External USB Ports is selected.
Enable USB Boot Support	Enables or disables booting from USB mass storage devices such as external hard drive, optical drive, and USB drive. By default, Enable USB Boot Support is selected.
Enable Thunderbolt™ Boot Support	Enables or disables Thunderbolt adapter features during pre-boot. Default: OFF
Enable Thunderbolt™ (and PCIe behind TBT) pre-boot modules	Enables or disables pre-boot execution of option ROMs of PCIe devices that are connected through the Thunderbolt adapter features. Default: OFF
Miscellaneous Devices	Enable or disable the fingerprint reader device.

Table 33. System setup options—Storage menu

Storage	
SATA/NVMe Operation	
SATA/NVMe Operation	Configures operating mode of the integrated storage device controller. Default: RAID On. Storage device is configured to support RAID functions. When enabled, all NVMe and SATA devices will be mapped under VMD controller. Windows RST (Intel Rapid Restore Technology) driver, or Linux kernel VMD driver must be loaded in order to boot the OS.
Storage Interface	
Port Enablement	Enables or disables the onboard drives. Default: ON
Smart Reporting	
Enable Smart Reporting	Enables BIOS to receive analytical information from integrated drives and send notifications during startup about possible future failure of the hard drive. Default: OFF
Drive Information	Displays the information of various onboard drives.
M.2 PCIe SSD	
Type	Displays the M.2 PCIe SSD type information of the system.
Device	Displays the M.2 PCIe SSD device information of the system.
Enable MediaCard	Enable or disable the Secure Digital (SD) card. By default, **Secure Digital (SD) Card** is enabled.

Table 34. System setup options—Display menu

Display	
Display Brightness	
Brightness on battery power	Sets the screen brightness when the computer is running on battery power. Default: 40
Brightness on AC power	Sets the screen brightness when the computer is running on AC power. Default: 40
Full Screen Logo	
Full Screen Logo	Enables or disables display of full screen logo if the image matches screen resolution. Default: OFF

Table 35. System setup options—Connection menu

Connection	
Wireless Device Enable	
WLAN	Enables or disables the internal WLAN device. Default: Selected
Bluetooth®	Enables or disables the internal Bluetooth device. Default: Selected
Enable UEFI Network Stack	Enables or disables the UEFI Network Stack. Default: Selective Enabled

Table 35. System setup options—Connection menu (continued)

Connection	
Dynamic Wireless Transmit Power	Enables or disables increase of transmit power of WLAN device. Default: Selected
HTTP(s) Boot Feature	
HTTP(s) Boot	Enables or disables HTTP(s) boot. Default: ON
HTTP(s) Boot Modes	Enables selection of Auto or Manual boot mode. Default: Auto Mode
Upload	Enables uploading of CA certificate required for connecting to the HTTPs boot server.
Delete	Enables deleting of CA certificate.

Table 36. System setup options—Power menu

Power	
Battery Configuration	Configures basic battery settings. Default: Adaptive
Advanced Configuration	
Enable Advanced Battery Charge Configuration	Enables or disables advanced battery configuration settings for maximizing battery health. Default: OFF Beginning of Day: Configures the beginning of day for Monday to Sunday. Default: 8.00 AM Work Period: Configures the number of work hours for Monday to Sunday. Default: 10.00
Thermal Management	Configures settings for cooling fan and processor heat management. Default: Optimized
USB Wake Support	
Wake on Dell USB-C Dock	Enables or disables waking up a computer from Standby, Hibernate, or Power Off, when connecting a Dell USB-C Dock. Default: ON
Block Sleep	Allows or blocks Sleep (S3) mode in the operating system. Default: OFF
Lid Switch	
Enable Lid Switch	Enables or disables the lid switch. Default: ON
Power On Lid Open	Enables or disables the computer to power on from the off state when the lid is opened. Default: ON
Intel Speed Shift Technology	Enables or disables Intel Speed Shift Technology support.

Table 36. System setup options—Power menu (continued)

Power	
	Default: ON

Table 37. System setup options—Security menu

Security	
Intel® Platform Trust Security	
Intel Platform Trust Security On	Select whether Intel® Platform Trust Security is visible to the operating system. Default: ON
PPI Bypass for Clear Commands	Controls whether the operating system can skip BIOS Physical Presence Interface (PPI) prompts when the Clear command is issued. Default: OFF
Clear	Clears PPI owner information and returns PTT to the default state. Default: OFF
SMM Security Mitigation	Enables or displays additional UEFI SMM Security Mitigation protections. Default: OFF
Data Wipe on Next Boot	
Start Data Wipe	Enables the BIOS to queue up a data wipe cycle for storage devices during next reboot. Default: OFF
Absolute®	Enables, disables, or permanently disables the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software. Default: Enable Absolute
UEFI Boot Path Security	Selects whether or not administrator password is required when booting to a UEFI boot path device from the F12 boot menu. Default: Always Except Internal HDD

Table 38. System setup options—Passwords menu

Passwords	
Admin Password	Enables the user to set, change, or delete the administrator (admin) password. The admin password enables several security features
System Password	Enables the user to set, change, or delete the system password.
M.2 PCIe SSD-0	Enables the user to set, change, or delete the password for the internal storage.
Password Configuration	
Upper Case Letter	Forces the password to have at least one uppercase letter. Default: OFF
Lower Case Letter	Forces the password to have at least one lowercase letter. Default: OFF
Digit	Forces the password to have at least one digit number. Default: OFF
Special Character	Forces the password to have at least one special character. Default: OFF

Table 38. System setup options—Passwords menu (continued)

Passwords	
Minimum Characters	Sets the minimum characters allowed for the password. Default: 04
Password Bypass	Enables or disables prompting for system and hard drive passwords when powered on from the OFF state. Default: Disabled
Password Changes	
Allow Non-Admin Password Changes	Enables changing of system and hard drive passwords without the need for admin password. Default: ON
Admin Setup Lockout	
Enable Admin Setup Lockout	Enables administrators to control how the users can access the BIOS Setup. Default: OFF
Master Password Lockout	
Enable Master Password Lockout	Enables or disables master password support. Default: OFF
Allow Non-Admin PSID Revert	
Enable Allow Non-Admin PSID Revert	Allows or prohibits PSID revert without the need for BIOS administrator password. Default: OFF

Table 39. System setup options—Update,Recovery menu

Update,Recovery	
UEFI Capsule Firmware Updates	
Enable UEFI Capsule Firmware Updates	Enables or disables BIOS updates through UEFI capsule update packages. Default: ON
BIOS Recovery from Hard Drive	Enables or disables system recovery through BIOS recovery file on the primary hard drive or an external USB key. Default: ON
BIOS Downgrade	
Allow BIOS Downgrade	Enables or disables BIOS downgrade to earlier revisions. Default: ON
SupportAssist OS Recovery	Enables or disables the boot flow for SupportAssist OS Recovery tool, in the event of certain system error. Default: ON
BIOSConnect	Enables or disables cloud Service OS recovery if the main OS fails to boot within the number of failures equal or greater than the value specified by Dell Auto OS Recovery Threshold, and local Service does not boot, or is not installed. Default: ON
Dell Auto OS Recovery Threshold	Controls the automatic boot flow for SupportAssist System Resolution Console and for Dell operating system Recovery tool. Default: 2.

Table 40. System setup options—System Management menu

System Management	
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Creates a system Asset Tag that can be used by an IT administrator to uniquely identify a particular system. Once set in BIOS, the Asset Tag cannot be changed.
AC Behavior	
Wake on AC	Enables the computer to briefly power on when AC power is connected. Default: OFF
Auto On Time	Enables the computer to automatically power on for defined days or times. Default: Disabled
Diagnostics	
OS Agent Requests	Enables or disables Dell OS Agents to schedule onboard diagnostics on a subsequent boot. Default: ON

Table 41. System setup options—Keyboard menu

Keyboard	
Numlock Enable	
Enable Numlock	Enables or disables the numlock during boot. Default: ON
Fn Lock Options	
Fn Lock Options	Enables or disables the function lock mode. Default: ON
Lock Mode	Selects the lock mode. Default: Lock Mode Secondary
Keyboard Illumination	Allows for selection of keyboard illumination settings. Default: Bright
Keyboard Backlight Timeout on AC	Allows for selection of keyboard backlight timeout value, when an AC adapter is plugged into the computer. Default: 1 minute
Keyboard Backlight Timeout on Battery	Allows for selection of keyboard backlight timeout value, when the computer is running on battery power. Default: 1 minute

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

Pre-boot Behavior	
Adapter warnings	
Enable Adapter warnings	Enables or disables the computer to display adapter warning messages when adapters with too little power capacity are detected. Default: ON
Warnings and Errors	Selects an action on encountering a warning or error during boot. Default: Prompt on Warnings and Errors. Stop, prompt, and wait for user input when warnings or errors are detected.

Table 42. System setup options—Pre-boot Behavior menu (continued)

Pre-boot Behavior	
	NOTE: Errors deemed critical to the operation of the computer hardware will always halt the computer.
USB-C Warnings	
Enable Dock Warning Messages	Enables or disables dock warning messages.
Fastboot	Selects the speed of the UEFI boot process Default: Thorough
Extend BIOS Post Time	Selects the BIOS POST load time. Default: 0 seconds

Table 43. System setup options—Virtualization Support menu

Virtualization Support	
Intel® Virtualization Technology	
Enable Intel Virtualization Technology (VT)	Enables or disables Intel Virtualization technology. Default: ON
VT for Direct I/O	
Enable Intel VT for Direct I/O	Enables or disables Intel Virtualization technology for direct I/O. Default: ON
DMA Protection	
Enable Pre-Boot DMA Support	Enables or disables pre-boot DMA protection for both internal and external ports. Default: ON
Enable OS Kernel DMA Support	Enables or disables Kernel DMA protection for both internal and external ports. Default: ON

Table 44. System setup options—Performance menu

Performance	
Multi-core Support	
Active Cores	Allows to change the number of CPU cores available to the operating system. Default: All Cores
Multiple Atom Cores	Allows to change the number of Atom cores available to the operating system. Default: All Cores
Intel SpeedStep	
Enable Intel® SpeedStep Technology	Enables or disables Intel® SpeedStep technology. Default: ON
C-States Control	
Enable C-State Control	Enables or disables C-states. Default: ON
Intel® Turbo Boost Technology	
Enable Turbo Boost Technology	Enables or disables Turbo Boost mode of the processor. Default: ON

Table 44. System setup options—Performance menu (continued)

Performance	
Intel® Hyper-Threading Technology	
Enable Intel® Hyper-Threading Technology	Enables or disables Intel® Hyper-Threading technology. Default: ON

Table 45. System setup options—System Logs menu

System Logs	
BIOS Event Log	
Clear Bios Event Log	Select keep or clear BIOS events. Default: Keep Log
Thermal Event Log	
Clear Thermal Event Log	Select keep or clear Thermal events. Default: Keep Log
Power Event Log	
Clear Power Event Log	Select keep or clear Power events. Default: Keep Log

Updating the BIOS

Updating the BIOS in Windows

Steps

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

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

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

   For more information about how to update the system BIOS, search in the Knowledge Base Resource at www.dell.com/support.

Updating the BIOS using the USB drive in Windows

Steps

1. Follow the procedure from step 1 to step 6 in Updating the BIOS in Windows to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information, search the Knowledge Base Resource at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12** .

6. Select the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
   The **BIOS Update Utility** appears.
8. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS from the F12 One Time Boot menu

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

About this task

BIOS Update

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

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

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

Updating from the One Time Boot menu

To update your BIOS from the F12 **One Time Boot** menu, you need the following:

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

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

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

Steps

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

System and setup password

Table 46. System and setup password

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

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

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

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

NOTE: System and setup password feature is disabled.

Assigning a System Setup password

Prerequisites

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

About this task

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

Steps

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

Deleting or changing an existing system setup password

Prerequisites

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

About this task

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

Steps

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

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

Clearing CMOS settings

About this task

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

Steps

1. Remove the base cover.
2. Disconnect the battery cable from the system board.
3. Wait for one minute.
4. Connect the battery cable to the system board.
5. Replace the base cover.

Clearing BIOS (System Setup) and System passwords

About this task

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

NOTE: For information 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 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 should be replaced and disposed of properly. We recommend contacting Dell product support for options to replace a swollen battery under the terms of the applicable warranty or service contract, including options for replacement by a Dell authorized service technician.

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

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

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 www.dell.com/support.

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

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

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

Dell SupportAssist Pre-boot System Performance Check diagnostics

About this task

SupportAssist diagnostics (also known as system diagnostics) performs a complete check of your hardware. The Dell SupportAssist Pre-boot System Performance Check diagnostics is embedded with the BIOS and 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 introduce additional test options to provide extra information about one or more failed devices.
- View status messages that inform you 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 terminal when the diagnostic tests are performed.

For more information, see the knowledge base article 000180971.

Running the SupportAssist Pre-Boot System Performance Check

Steps

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

Built-in self-test (BIST)

M-BIST

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

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

How to run M-BIST

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

1. Press and hold both the **M** key on the keyboard and the **power button** to initiate M-BIST.
2. The battery indicator LED may exhibit two states:
   a. OFF: No fault was detected with the system board.
   b. AMBER: Amber indicates a problem with the system board.

3. If there is a failure with the system board, the battery status LED flashes one of the following error codes for 30 seconds:

Table 47. 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 section for 30 seconds and then turn off.

LCD Power rail test (L-BIST)

L-BIST is an enhancement to the single LED error code diagnostics and is automatically initiated during POST. L-BIST will check the LCD power rail. If there is no power being supplied to the LCD (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 Test:

1. Press the power button to start the 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 (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 and so on, it is always a good practice to isolate the LCD (screen) by running the Built-In Self-Test (BIST).

How to invoke the LCD BIST Test

1. Power off the Dell laptop.
2. Disconnect any peripherals that are connected to the laptop. Connect only the AC adapter (charger) to the laptop.
3. Ensure that the LCD (screen) is clean (no dust particles on the surface of the screen).
4. Press and hold the **D** key and **Power on** the laptop to enter LCD built-in self-test (BIST) mode. Continue to hold the D key until the computer boots up.
5. The screen displays solid colors and change 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 Inspiron 16 Plus 7640.

Table 48. 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
1	6	EC internal failure
1	7	Non-RPMC Flash on boot guard fused system
2	1	Processor failure
2	2	System board: BIOS or ROM (Read-Only Memory) failure
2	3	No memory or RAM (Random-Access Memory) detected
2	4	Memory or RAM (Random-Access Memory) failure
2	5	Memory or RAM (Random-Access Memory) failure
2	6	System-board or chipset error
2	7	Display failure - SBIOS message
2	8	Display failure - EC detection of power rail failure
3	2	PCI of video card/chip failure
3	3	BIOS recovery image not found
3	4	BIOS recovery image found but invalid
3	5	Power-rail failure
3	6	System BIOS Flash corruption.
3	7	Management Engine (ME) error
4	1	Memory or RAM (Random-Access Memory) failure
4	2	Processor failure

NOTE: Blinking pattern 3-3-3 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 the "Dell SupportAssist Pre-boot System Performance Check" diagnostics.

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

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

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

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

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 in all Dell computers that are installed with 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, or restore your computer to its factory state.

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

For more information about the Dell SupportAssist OS Recovery, see *Dell SupportAssist OS Recovery User's Guide* at www.dell.com/serviceabilitytools. Click **SupportAssist** and then, click **SupportAssist OS Recovery**.

Real-Time Clock (RTC Reset)

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

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

thirty (30) 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 proposes multiple options for recovering the Windows operating system on your Dell computer. For more information, see Dell Windows Backup Media and Recovery Options.

Wi-Fi power cycle

About this task

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

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

Steps

1. Turn off your computer.
2. Turn off the modem.
3. Turn off the wireless router.
4. Wait for 30 seconds.
5. Turn on the wireless router.
6. Turn on the modem.
7. Turn on your computer.

Drain residual flea power (perform hard reset)

About this task

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

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

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

Procedure to drain residual flea power (perform a hard reset)

Steps

1. Turn off your computer.
2. Disconnect the power adapter from your computer.
3. Remove the base cover.
4. Remove the battery.
5. Press and hold the power button for 20 seconds to drain the flea power.
6. Install the battery.
7. Install the base cover.
8. Connect the power adapter to your computer.
9. Turn on your computer.

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

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Getting help and contacting Dell

Self-help resources

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

Table 49. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
My Dell app	
Tips	
Contact Support	In Windows search, type `Contact Support`, and press Enter.
Online help for operating system	www.dell.com/support/windows
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals, and documents.	Your Dell computer is uniquely identified by a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, enter the Service Tag or Express Service Code at www.dell.com/support. For more information 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 www.dell.com/support. 2. On the menu bar at the top of the Support page, select **Support** > **Knowledge Base**. 3. In the Search field on the Knowledge Base page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles.

Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see www.dell.com/contactdell.

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

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