

Inspiron 16 7640 2-in-1

Owner's Manual



Notes, cautions, and warnings

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

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

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

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Views of Inspiron 16 7640 2-in-1

Right



Figure 1. Right view

1. SD-card slot

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

- Secure Digital (SD)
- Secure Digital High Capacity (SDHC)
- Secure Digital Extended Capacity (SDXC)

2. Universal audio jack

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

3. USB 3.2 Gen 1 port

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

Left



Figure 2. Left view

1. HDMI 1.4 port

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

2. USB 3.2 Gen 1 port

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

3. Thunderbolt 4.0 with Power Delivery and DisplayPort ports (2)

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

i **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.

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

i **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 of the computer.

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

i **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.

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

2. Right speaker

Provides audio output.

3. Touchpad

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

4. Left speaker

Provides audio output.

Front



Figure 4. Image: Front view

1. Left microphone

Provides digital sound input for audio recording and voice calls.

2. Camera

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

3. Privacy shutter

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

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.

Bottom

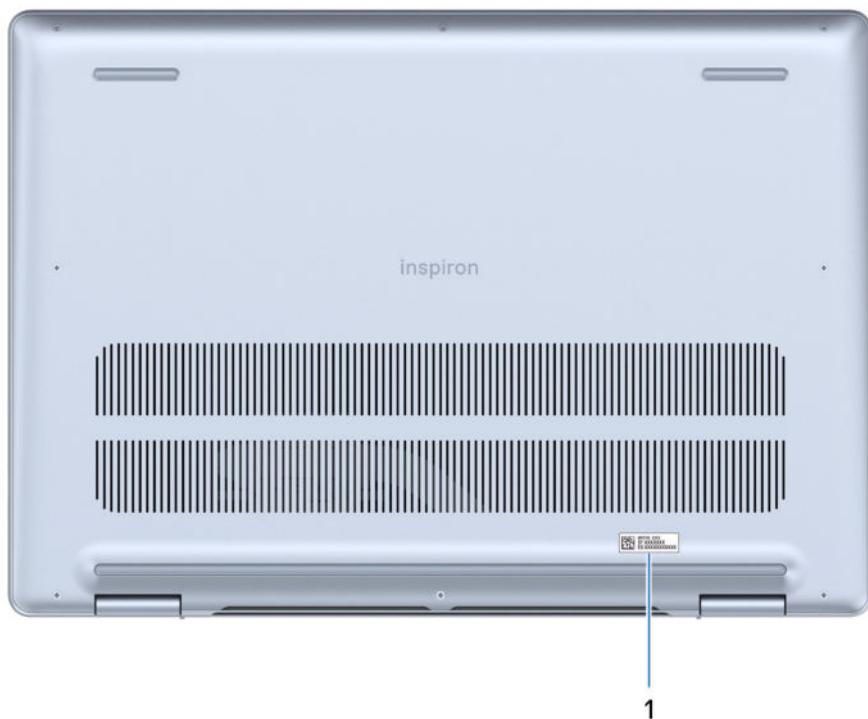


Figure 5. Image: Bottom view

1. 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.

Service Tag

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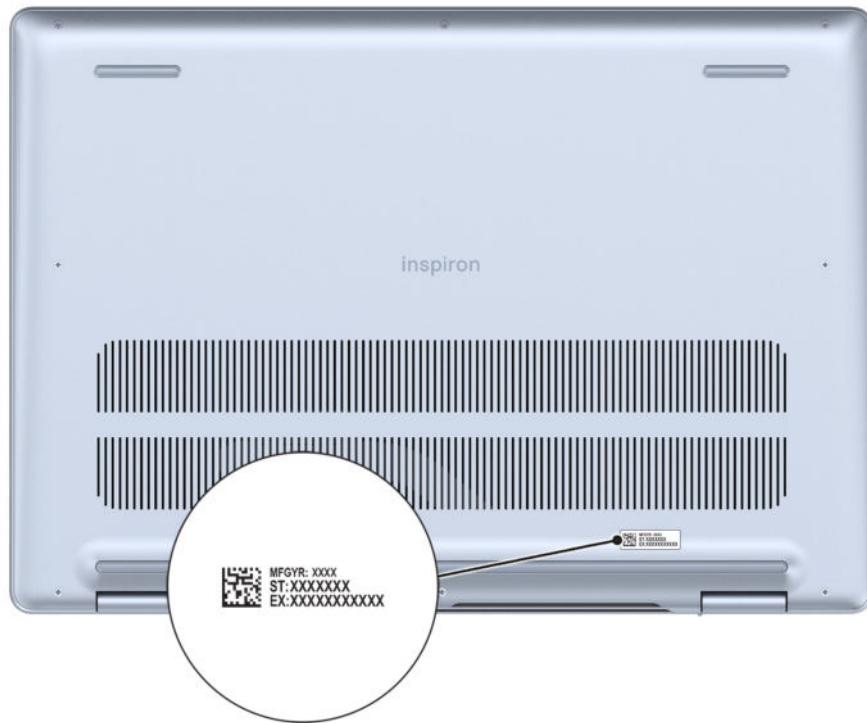


Figure 6. Image: Service Tag location

Modes

The following modes are applicable to your 2-in-1 computers.

Notebook



Figure 7. Image: Notebook mode

Tablet



Figure 8. Image: Tablet mode

Stand



Figure 9. Image: Stand mode

Tent



Figure 10. Image: Tent mode

Battery charge and status light

The following table lists the battery charge and status light behavior of your Inspiron 16 7640 2-in-1.

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.

Set up your Inspiron 16 7640 2-in-1

About this task

i **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 11. Connecting the power adapter

i **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 recommends that you:

- Connect to a network for Windows updates.
i **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 <i>SupportAssist for Home PCs User's Guide</i> 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: <ul style="list-style-type: none">● 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 <i>SupportAssist for Home PCs User's Guide</i> 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.

Specifications of Inspiron 16 7640 2-in-1

Dimensions and weight

The following table lists the height, width, depth, and weight of your Inspiron 16 7640 2-in-1.

Table 4. Dimensions and weight

Description	Values
Height:	
Front height	0.63 in. (16.12 mm)
Rear height	0.69 in. (17.45 mm)
Width	14.05 in. (356.78 mm)
Depth	9.87 in. (250.60 mm)
Weight <small>(i) NOTE:</small> The weight of your computer depends on the configuration that is ordered and manufacturing variability.	4.81 lb (2.18 kg), maximum

Processor

The following table lists the details of the processors that are supported for your Inspiron 16 7640 2-in-1.

Table 5. Processor

Description	Option one	Option two
Processor type	14th Generation Intel Core Ultra 5 125U	14th Generation Intel Core Ultra 7 155H
Processor wattage	15 W	28 W
Processor total core count	12	16
Performance-cores	2	6
Efficient-cores	8	8
Processor total thread counts ① NOTE: Intel Hyper-Threading Technology is only available on Performance-cores.	14	22
Processor speed	Up to 4.3 GHz	Up to 4.8 GHz
Performance-cores frequency		
Processor base frequency	1.3 GHz	1.4 GHz
Maximum turbo frequency	4.3 GHz	4.8 GHz
Efficient-cores frequency		
Processor base frequency	0.8 GHz	1.4 GHz
Maximum turbo frequency	3.6 GHz	3.8 GHz
Processor cache	12 MB	24 MB
Integrated graphics	Intel Arc Graphics	Intel Arc Graphics

Chipset

The following table lists the details of the chipset that is supported for your Inspiron 16 7640 2-in-1.

Table 6. Chipset

Description	Values
Chipset	Integrated on the processor
Processor	14th Generation Intel Core Ultra 5/7
DRAM bus width	64-bit
Flash EPROM	32 MB + 16 MB
PCIe bus	Up to Gen4

Operating system

Your Inspiron 16 7640 2-in-1 supports the following operating systems:

- Windows 11 Pro

- Windows 11 Pro National Education
- Windows 11 Home
- Windows 11 Home (S mode)

Memory

The following table lists the memory specifications of your Inspiron 16 7640 2-in-1.

Table 7. Memory specifications

Description	Values
Memory slots	None, onboard memory
Memory type	Dual-channel LPDDR5x
Memory speed	6400 MT/s
Maximum memory configuration	32 GB
Minimum memory configuration	16 GB
Memory configurations supported	<ul style="list-style-type: none"> • 16 GB: 2 x 8 GB (onboard) LPDDR5x at 6400 MT/s, dual-channel • 32 GB: 2 x 16 GB (onboard) LPDDR5x at 6400 MT/s, dual-channel

External ports

The following table lists the external ports on your Inspiron 16 7640 2-in-1.

Table 8. External ports

Description	Values
USB ports	<ul style="list-style-type: none"> • Two USB 3.2 Gen 1 (5 Gbps) ports • Two Thunderbolt 4 with Power Delivery and DisplayPort ports <p> NOTE: You can connect a Dell Docking Station to this port. For more information, search in the Knowledge Base Resource at www.dell.com/support.</p> <ul style="list-style-type: none"> • One universal audio jack • One HDMI 1.4 port
Audio port	One universal audio port
Video port/ports	One HDMI 1.4 port
Media-card reader	One SD-card slot
Power-adapter port	<ul style="list-style-type: none"> • 65 W AC adapter, USB Type-C • 100 W AC adapter, USB Type-C
Security-cable slot	None

Internal slots

The following table lists the internal slots of your Inspiron 16 7640 2-in-1.

Table 9. Internal slots

Description	Values
M.2	<ul style="list-style-type: none">One M.2 2230 slot for WiFi and Bluetooth combo cardOne M.2 slot for M.2 2230 or M.2 2280 solid-state drive <p>(i) 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.</p>

Wireless module

The following table lists the Wireless Local Area Network (WLAN) modules that are supported on your Inspiron 16 7640 2-in-1.

Table 10. Wireless module specifications

Description	Option one	Option two
Model number	Intel AX211	Intel BE200
Transfer rate	Up to 2.4 Gbps	Up to 5.8 Gbps
Frequency bands supported	2.4 GHz/5 GHz/6 GHz	2.4 GHz/5 GHz/6 GHz
Wireless standards	<ul style="list-style-type: none">WiFi 802.11a/b/gWi-Fi 4 (WiFi 802.11n)Wi-Fi 5 (WiFi 802.11ac)Wi-Fi 6E (WiFi 802.11ax)	<ul style="list-style-type: none">WiFi 802.11a/b/gWi-Fi 4 (WiFi 802.11n)Wi-Fi 5 (WiFi 802.11ac)Wi-Fi 6E (WiFi 802.11ax)Wi-Fi 7 (WiFi 802.11be)
Encryption	<ul style="list-style-type: none">64-bit/128-bit WEPAES-CCMPKIP	<ul style="list-style-type: none">64-bit/128-bit WEPAES-CCMPKIP
Bluetooth wireless card	Bluetooth 5.3 wireless card	Bluetooth 5.4 wireless card
	<p>(i) NOTE: The version of the Bluetooth wireless card may vary depending on the operating system that is installed on your computer.</p>	

Audio

The following table lists the audio specifications of your Inspiron 16 7640 2-in-1.

Table 11. Audio specifications

Description	Values
Audio controller	Realtek ALC3254
Stereo conversion	Supported
Internal audio interface	High-definition audio

Table 11. Audio specifications (continued)

Description	Values
External audio interface	Universal audio jack
Number of speakers	4
Internal-speaker amplifier	Supported (Ti TAS2781)
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 7640 2-in-1.

Your Inspiron 16 7640 2-in-1 supports one of the following storage configurations:

- One M.2 2230 solid-state drive
- One M.2 2280 solid-state drive

The primary drive of your Inspiron 16 7640 2-in-1 is the M.2 solid-state drive installed in your computer.

Table 12. Storage specifications

Storage type	Interface type	Capacity
M.2 2230 solid-state drive	Gen4 PCIe NVMe, Class 35	512 GB
M.2 2230 solid-state drive	Gen4 PCIe NVMe, Class 35	1 TB
M.2 2280 solid-state drive	Gen4 PCIe NVMe, Class 40	512 GB
M.2 2280 solid-state drive	Gen4 PCIe NVMe, Class 40	1 TB

Media-card reader

The following table lists the media cards that are supported on your Inspiron 16 7640 2-in-1.

Table 13. Media-card reader specifications

Description	Values
Media-card type	One SD-card slot
Media-cards supported	<ul style="list-style-type: none"> • Secure Digital (SD) • Secure Digital High Capacity (SDHC) • Secure Digital Extended Capacity (SDXC)
<p>(i) 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.</p>	

Keyboard

The following table lists the keyboard specifications of your Inspiron 16 7640 2-in-1.

Table 14. Keyboard specifications

Description	Values
Keyboard type	<ul style="list-style-type: none">Standard backlit keyboardStandard AI hotkey backlit keyboard
Keyboard layout	QWERTY
Number of keys	<ul style="list-style-type: none">United States and Canada: 79 keysUnited Kingdom: 80 keysJapan: 83 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. i NOTE: You can define the primary behavior of the function keys (F1–F12) changing Function Key Behavior in BIOS setup program.

Keyboard shortcuts of Inspiron 16 7640 2-in-1

i | 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**.

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

Table 15. List of keyboard shortcuts

Function key	Primary behavior
F1	Mute audio
F2	Decrease volume
F3	Increase volume
F4	Mute microphone

Table 15. List of keyboard shortcuts (continued)

Function key	Primary behavior
F5	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	Secondary behavior
fn + F1	Operating system and application specific F1 behavior
fn + F2	Operating system and application specific F2 behavior
fn + F3	Operating system and application specific F3 behavior
fn + F4	Operating system and application specific F4 behavior
fn + F5	Operating system and application specific F5 behavior
fn + F6	Operating system and application specific F6 behavior
fn + F8	Operating system and application specific F8 behavior
fn + F9	Operating system and application specific F9 behavior
fn + F10	Operating system and application specific F10 behavior
fn + F11	Operating system and application specific F11 behavior
fn + F12	Operating system and application specific F12 behavior
fn + prt sc	Turn off/on wireless
fn + B	Pause/Break
fn + insert	Sleep
fn + S	Toggle scroll lock
fn + H	Toggle between power and battery-status light/hard-drive activity light
fn + R	System request
fn + ctrl	Open the application menu
fn + esc	Toggle fn-key lock
fn + ^pg	Page up
fn + ^pg	Page down
fn + home	Home
fn + end	End
fn + Copilot	Open the application menu

Camera

The following table lists the camera specifications of your Inspiron 16 7640 2-in-1.

Table 17. Camera specifications

Description	Values
Number of cameras	One
Camera type	FHD camera
Camera location	Front
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 7640 2-in-1.

Table 18. Touchpad specifications

Description	Values
Touchpad resolution:	> 300 dpi
Touchpad dimensions:	
Horizontal	132.40 mm (5.21 in.)
Vertical	89.40 mm (3.52 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 7640 2-in-1.

Table 19. Power adapter specifications

Description	Option one	Option two
Type	65 W AC USB Type-C	100 W AC USB Type-C
Input voltage	100 VAC–240 VAC	100 VAC–240 VAC
Input frequency	50 Hz–60 Hz	50 Hz–60 Hz
Input current (maximum)	1.70 A	1.70 A

Table 19. Power adapter specifications (continued)

Description		Option one	Option two
Output current (continuous)		3.25 A	5 A
Rated output voltage		20 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 7640 2-in-1.

Table 20. Battery specifications

Description		Option one	Option two
Battery type		4-cell "smart" lithium-ion (64 Wh)	6-cell "smart" lithium-ion (90 Wh)
Battery voltage		15.20 VDC	11.70 VDC
Battery weight (maximum)		0.26 kg (0.57 lb)	0.34 kg (0.75 lb)
Battery dimensions:			
	Height	5.75 mm (0.23 in.)	7.56 mm (0.30 in.)
	Width	271.90 mm (10.70 in.)	294.90 mm (11.61 in.)
	Depth	82 mm (3.23 in.)	77.50 mm (3.05 in.)
Temperature range:			
	Operating	<ul style="list-style-type: none"> Charge: 0°C to 50°C (32°F to 122°F) Discharge: 0°C to 70°C (-4°F to 158°F) 	<ul style="list-style-type: none"> Charge: 0°C to 50°C (32°F to 122°F) Discharge: 0°C to 70°C (-4°F to 158°F)
	Storage	-20°C to 60°C (-4°F to 140°F)	-20°C to 60°C (-4°F to 140°F)
Battery operating time		Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.
Battery charging time (approximate) 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 .		Charging duration when the computer is turned off: <ul style="list-style-type: none"> ExpressCharge: Full charge in 2 hours (from 0% to 80% in 75 minutes; 100% in 135 minutes) Standard charge: Full charge in 3 hours 	Charging duration when the computer is turned off: <ul style="list-style-type: none"> ExpressCharge: Full charge in 2 hours (from 0% to 80% in 75 minutes; 100% in 135 minutes) Standard charge: Full charge in 3 hours

Table 20. Battery specifications (continued)

Description	Option one	Option two
Coin-cell battery	Not applicable	Not applicable
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 7640 2-in-1.

Table 21. Display specifications

Description	Option one	Option two
Display type	16-inch, Full High Definition (FHD)	16-inch, QHD+
Touch options	Yes	Yes
Display-panel technology	Wide-Viewing Angle (WVA)	Wide-Viewing Angle
Display-panel dimensions (active area):		
Height	344.68 mm	344.68 mm
Width	215.42 mm	215.42 mm
Diagonal	406.46 mm	406.46 mm
Display-panel native resolution	1920 x 1200	2560 x 1600
Luminance (typical)	300 nits	<ul style="list-style-type: none"> • 600 nits (HDR) • 278 nits (SDR)
Megapixels	2.3	4.09
Color gamut	100% sRGB (typical)	100% DCI-P3 (typical)
Pixels Per Inch (PPI)	141	189
Contrast ratio (minimum)	<ul style="list-style-type: none"> • 1000:1 (minimum) • 1200:1 (typical) 	<ul style="list-style-type: none"> • 800:1 (minimum) • 1000:1 (typical)
Response time (maximum)	35 ms	11 ms
Refresh rate	60 Hz	90 Hz
Horizontal view angle	<ul style="list-style-type: none"> • +/- 80 degrees (minimum) • +/- 85 degrees (typical) 	<ul style="list-style-type: none"> • +/- 80 degrees (minimum) • +/- 85 degrees (typical)
Vertical view angle	<ul style="list-style-type: none"> • +/- 80 degrees (minimum) • +/- 85 degrees (typical) 	<ul style="list-style-type: none"> • +/- 80 degrees (minimum) • +/- 85 degrees (typical)
Pixel pitch	0.180 mm	0.134 mm

Table 21. Display specifications (continued)

Description	Option one	Option two
Power consumption (maximum)	4.73 W	21.58 W
Anti-glare vs glossy finish	Glossy	Glossy

Fingerprint reader (optional)

The following table lists the specifications of the optional fingerprint-reader of your Inspiron 16 7640 2-in-1.

Table 22. Fingerprint reader specifications

Description	Values
Fingerprint-reader sensor technology	Capacitive
Fingerprint-reader sensor resolution	500 dpi
Fingerprint-reader sensor pixel size	100 x 88

GPU—Integrated

The following table lists the specifications of the integrated Graphics Processing Unit (GPU) supported by your Inspiron 16 7640 2-in-1.

Table 23. GPU—Integrated

Controller	Memory size	Processor
Intel Arc Graphics	Shared system memory	14th Generation Intel Core Ultra 5/7

Operating and storage environment

This table lists the operating and storage specifications of your Inspiron 16 7640 2-in-1.

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

Table 24. Computer environment

Description	Operating	Storage
Temperature range	0°C to 40°C (32°F to 104°F)	Not applicable
Relative humidity (maximum)	10% to 90% (non-condensing)	0% to 95% (non-condensing)
Vibration (maximum)*	0.66 GRMS	Not applicable
Shock (maximum)	140 G†	Not applicable
Altitude range	Not applicable	Not applicable
⚠ 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 (Hardware Solution) displays.

Low blue light (Hardware Solution) 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.

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.
- i 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**.
 - i 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 **** 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
- Torx #5 (T5) screwdriver

- Plastic scribe

Screw list

- (i) 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.
- (i) NOTE:** Some computers have magnetic surfaces. Ensure that the screws are not left attached to such surfaces when replacing a component.
- (i) NOTE:** Screw color may vary with the configuration ordered.

Table 25. Screw list

Component	Screw type	Quantity	Screw image
Base cover	M2x3	8	
Battery	M2x3		
Battery	M2x4		
Right fan	M2x4		
I/O board shield	M2x4		
Left fan	M2x4		
Solid-state drive1	M2x2		
solid-state drive2	M2x2		
Speakers	M2x2		
Graphics card-processor thermal shield cover	M2x2		
Type-C bracket	M2x4		
Display-assembly cable bracket	M2x2		
Display-assembly cable holder	M1.6x3		
Left hinge	M2.5x5.5		
Right hinge	M2.5x5.5		

Table 25. Screw list (continued)

Component	Screw type	Quantity	Screw image
Wireless-card bracket	M1.6x3		
System board	M2x4		
Touchpad	M1.6x2.5		
Touchpad	M2x2		

Major components of Inspiron 16 7640 2-in-1

The following image shows the major components of Inspiron 16 7640 2-in-1.

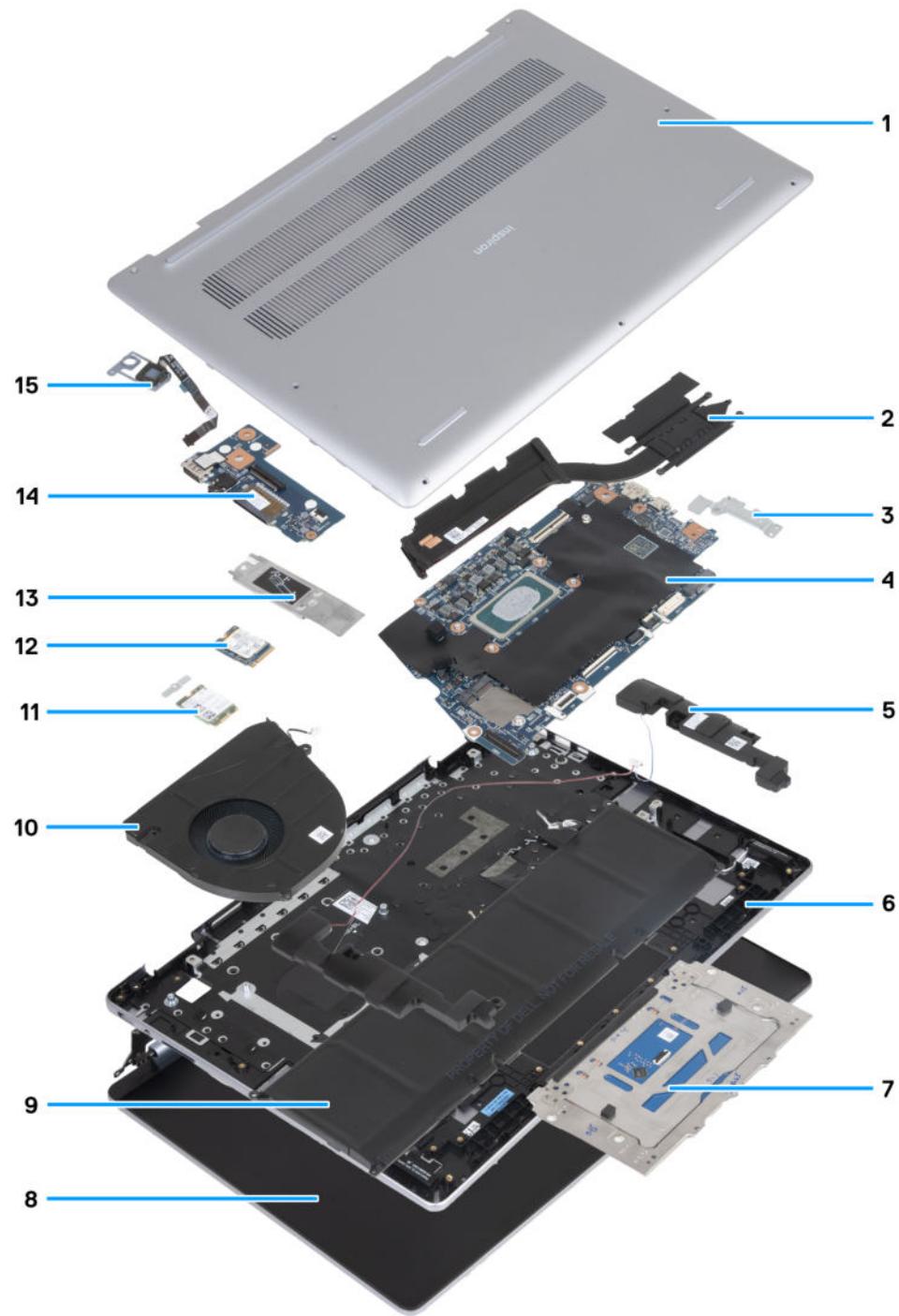


Figure 12. Major components of Inspiron 16 7640 2-in-1

1. Base cover
2. Heat sink
3. USB Type-C port bracket
4. System board
5. Speakers (2)
6. Palm-rest and keyboard assembly
7. Touchpad
8. Display assembly
9. Battery
10. Fan

11. M.2 wireless card + wireless-card bracket
12. M.2 solid-state drive (M.2 2230 solid-state drive shown)
13. M.2 thermal shield
14. I/O board
15. Power button with optional fingerprint reader

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 SD card installed in the SD-card slot on your computer.

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

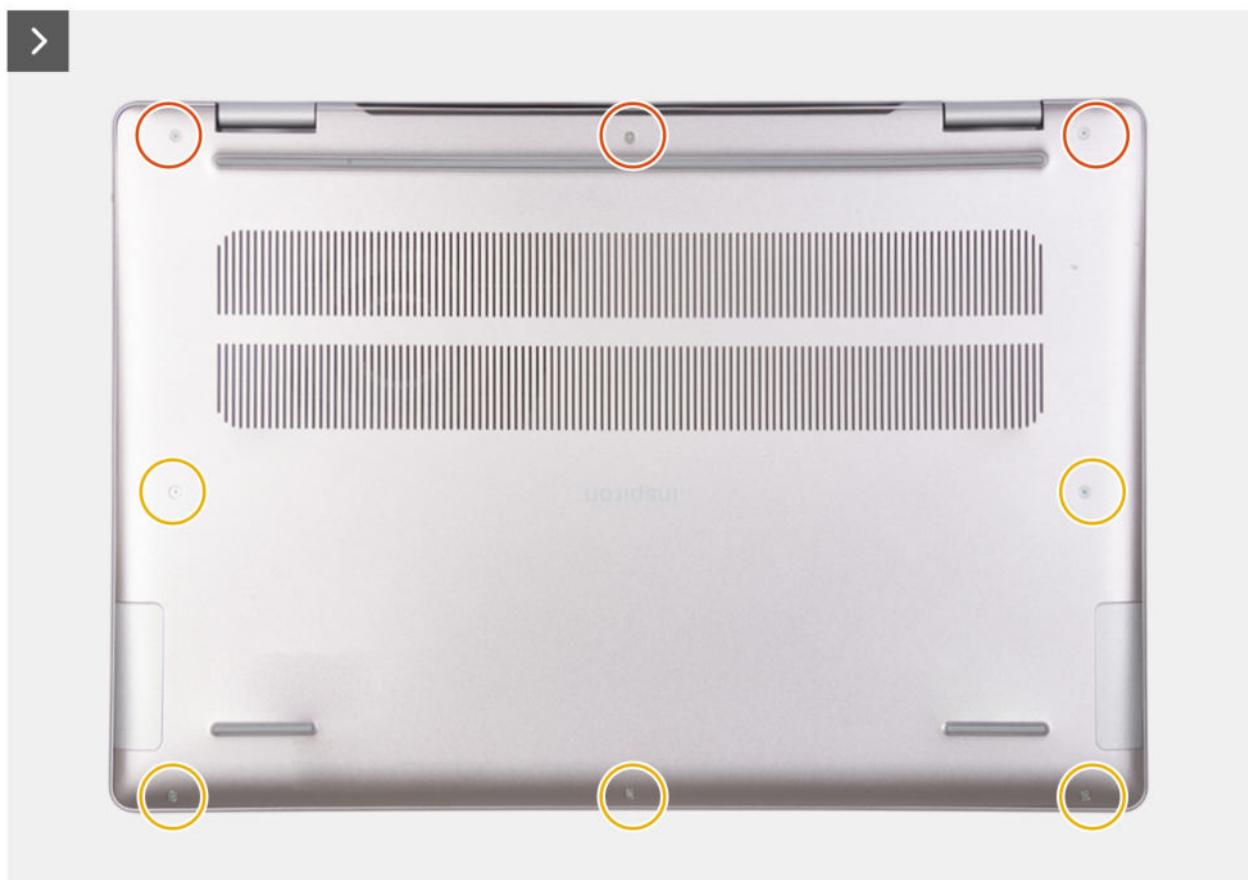
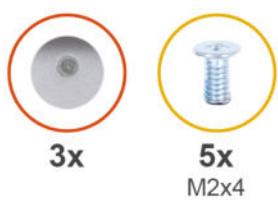


Figure 13. Removing the base cover

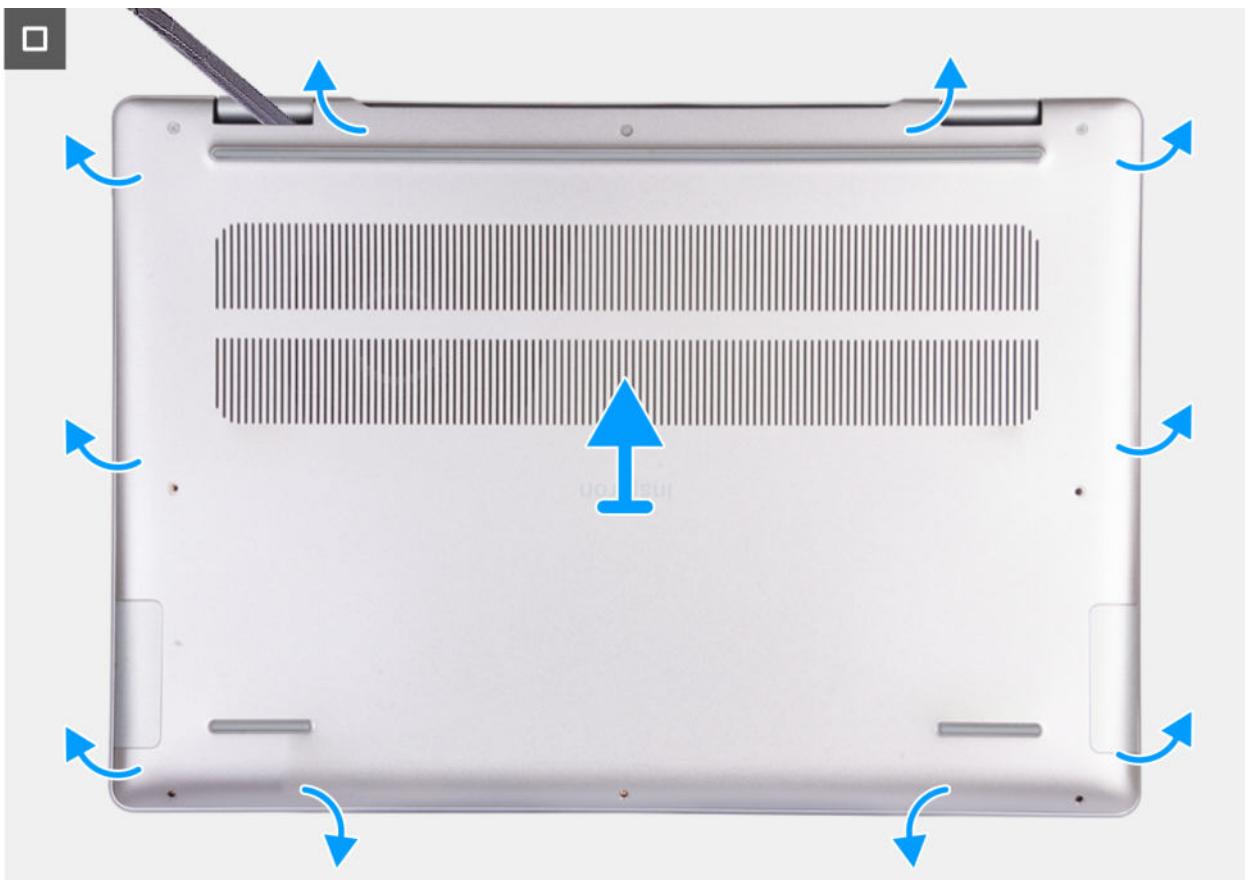


Figure 14. Removing the base cover

Steps

1. Remove the five screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
2. Loosen the three captive screws that secure the base cover to the palm-rest and keyboard assembly.
(i) NOTE: When the captive screws are loosened, a gap opens up between the base cover and the palm-rest and keyboard assembly at the hinges.
3. Using a plastic scribe, pry the base cover from the bottom left and continue to work on the sides to open 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.

(i) NOTE: The service replacement base cover is pre-attached with a sheet with two pieces of rubber bumpers. The rubber bumpers are only required for computers with 4-cell battery (64 Wh). Peel off and remove the sheet if the replacement base cover is for a computer with a 6-cell battery (90 Wh).

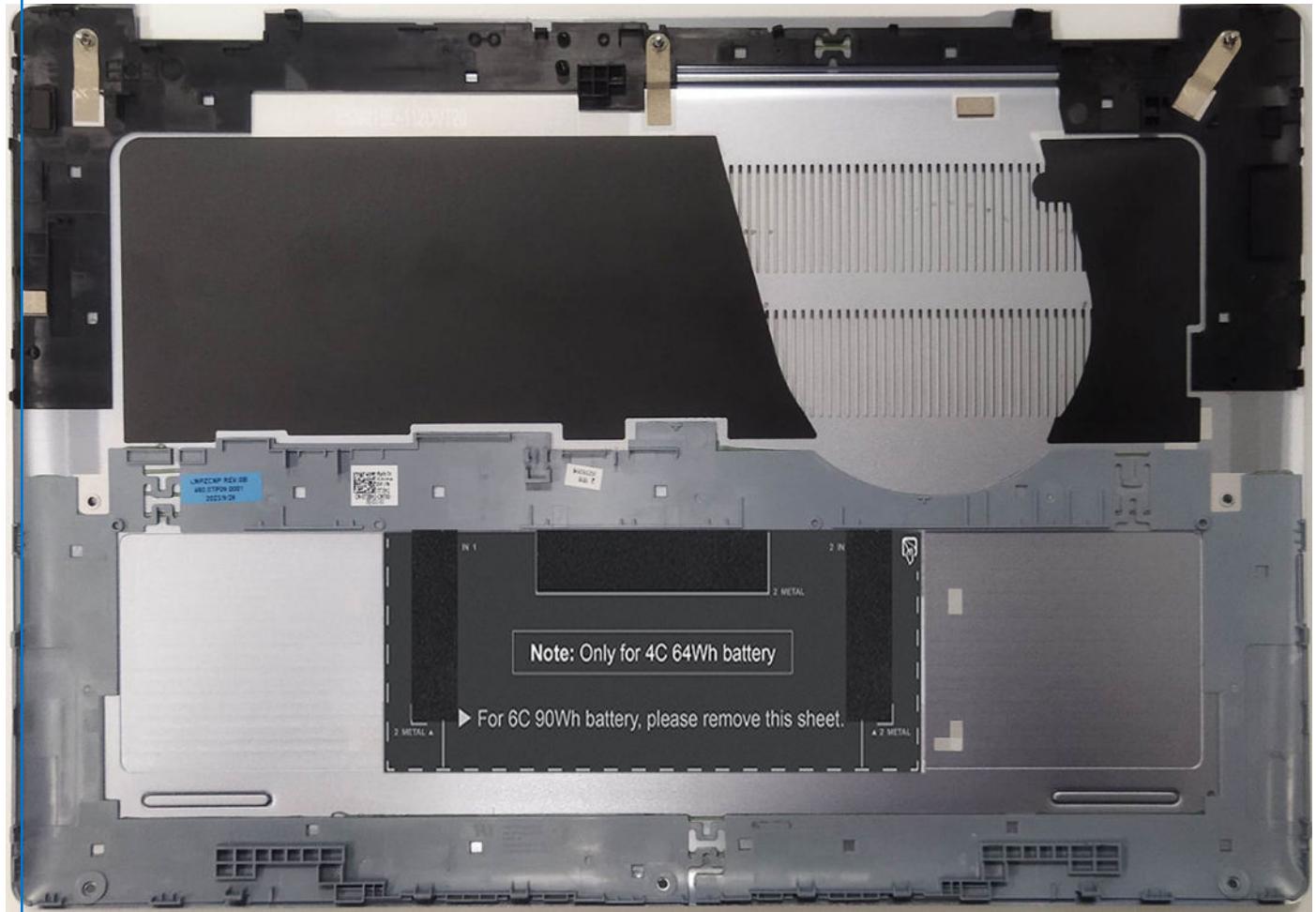


Figure 15. Rubber bumpers for 4-cell battery (64 Wh)

About this task

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

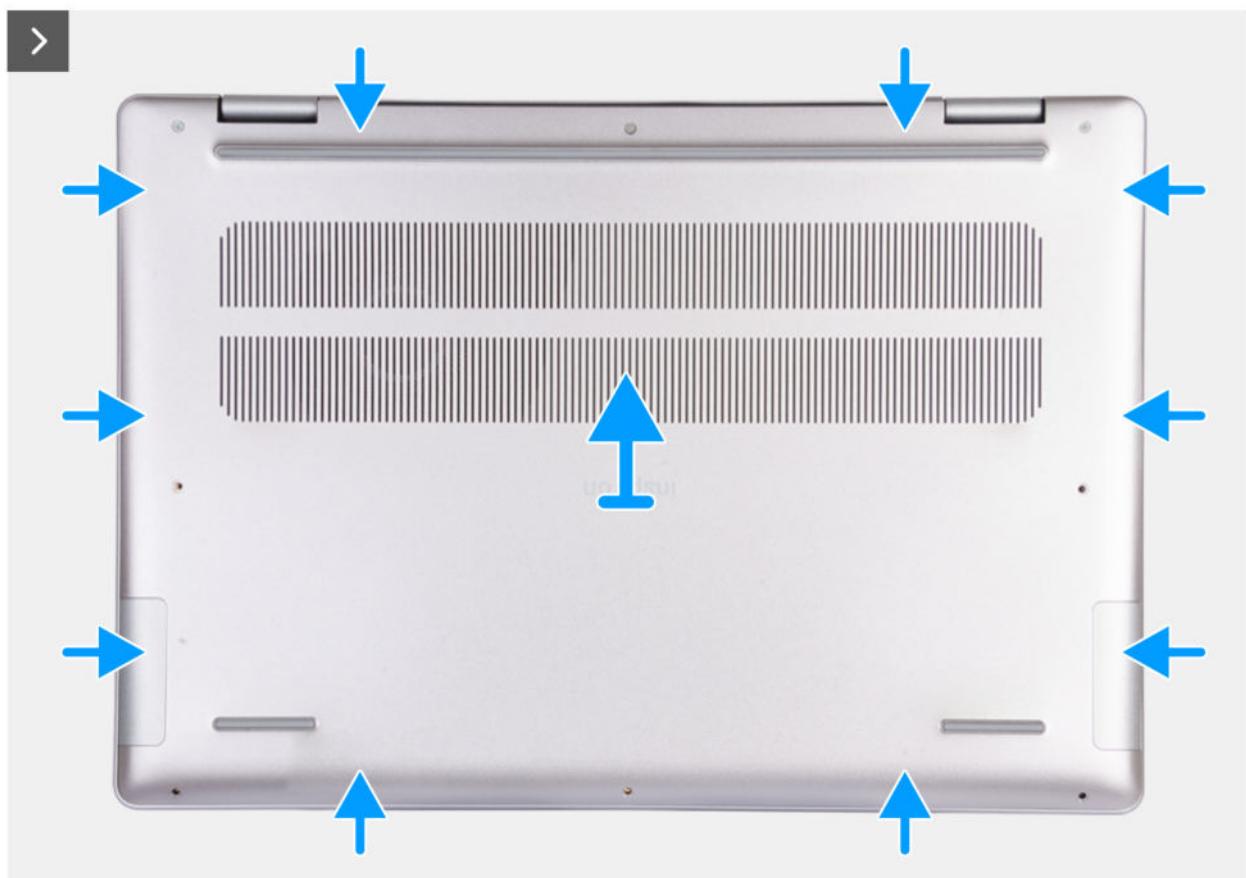
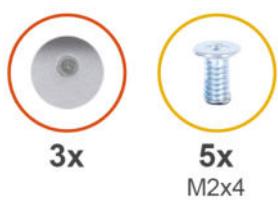


Figure 16. Installing the base cover

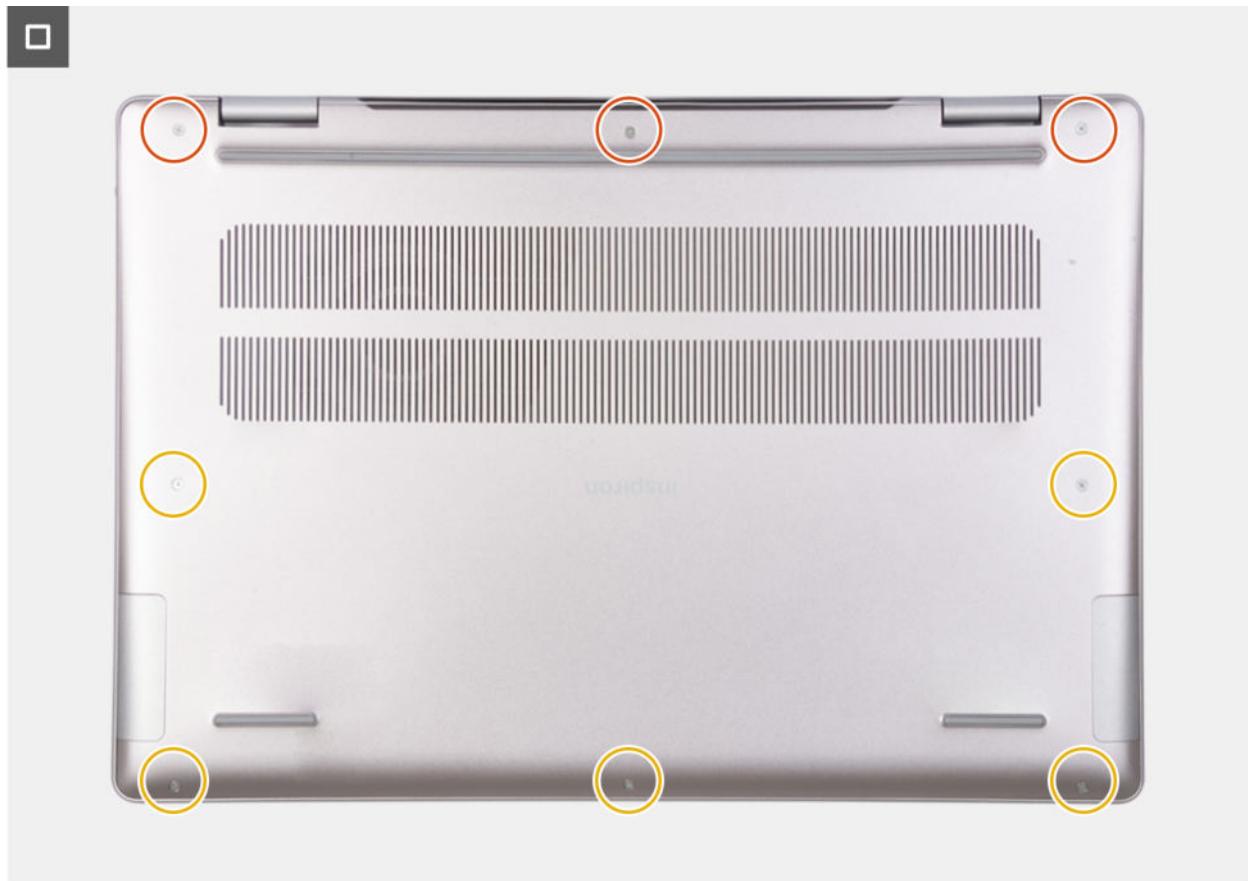


Figure 17. Installing the base cover

Steps

1. Align the screw holes on the base cover with the screw holes on the palm-rest and keyboard assembly, and then snap the base cover into place.
2. Tighten the three captive screws that secure the base cover to the palm-rest and keyboard assembly.
3. Replace the five 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](#).
(i) 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

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

- (i) 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 an M.2 2230-specific thermal shield.
 - M.2 2280 solid-state drive and an M.2 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.

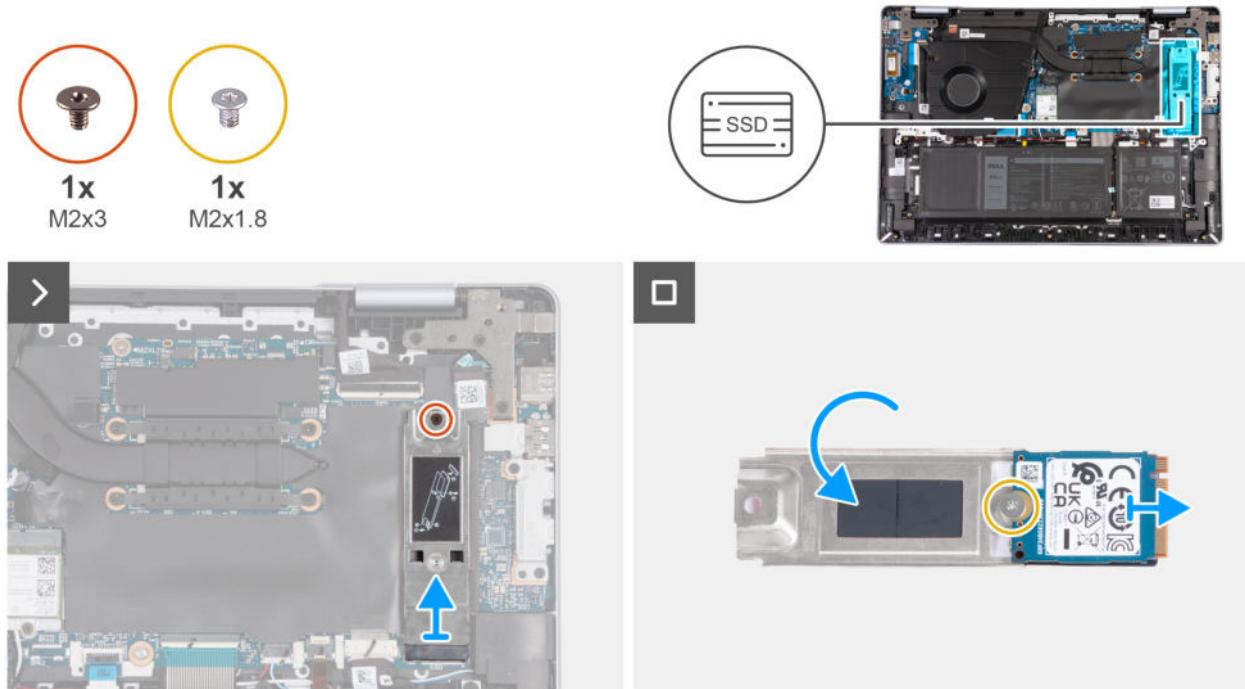


Figure 18. Removing the M.2 2230 solid-state drive

Steps

1. Remove the screw (M2x3) that secures the M.2 2230 solid-state drive assembly to the system board.
2. Slide and lift the M.2 2230 solid-state drive assembly off the system board.
3. Flip over the M.2 2230 solid-state drive assembly.
4. Remove the screw (M2x1.8) that secures the M.2 2230 solid-state drive to the M.2 2230 solid-state drive mounting bracket.
5. Lift the M.2 2230 solid-state drive off the M.2 2230 solid-state drive mounting bracket.

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

- (i) NOTE:** This procedure applies only to computers shipped with an M.2 2230 solid-state drive installed.
- (i) NOTE:** An 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.
- (i) 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 an M.2 2230-specific thermal shield.

- M.2 2280 solid-state drive and an M.2 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.

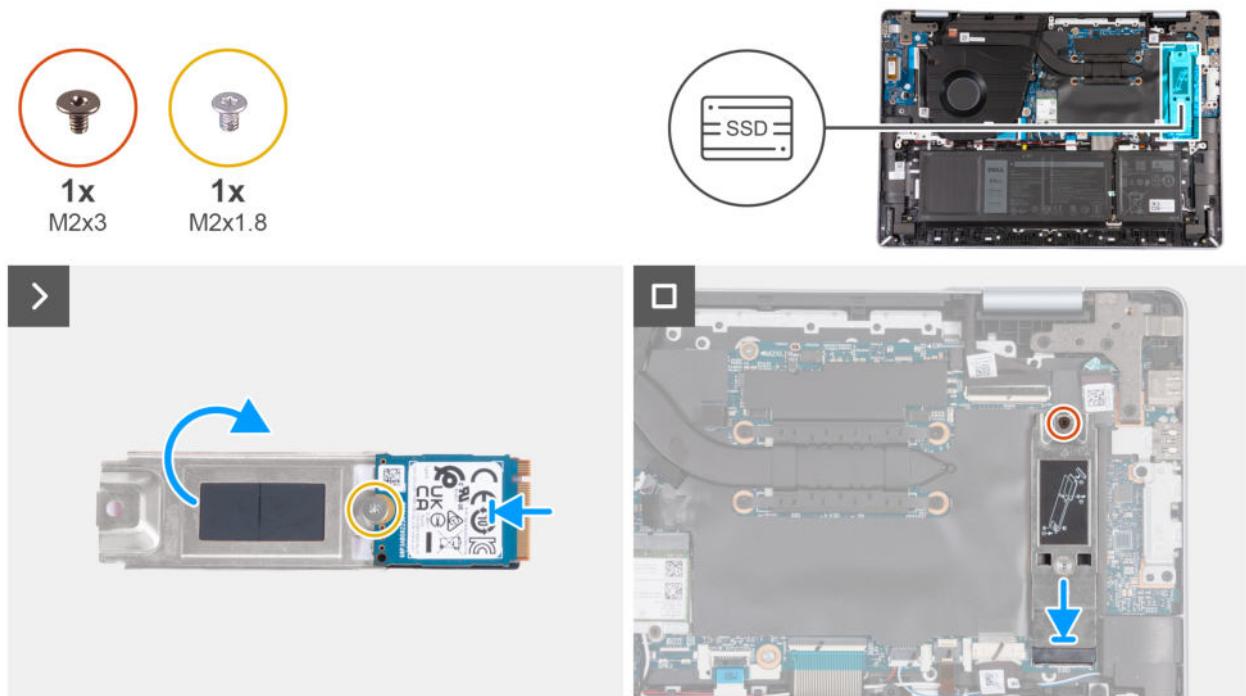


Figure 19. Installing the M.2 2230 solid-state drive

Steps

1. Place and align the M.2 2230 solid-state drive on the M.2 2230 solid-state drive mounting bracket.
2. Replace the screw (M2x1.8) that secures the M.2 2230 solid-state drive to the M.2 2230 solid-state drive mounting bracket.
3. Flip over the M.2 2230 solid-state drive assembly.
4. Align the notch on the M.2 2230 solid-state drive with the tab on the M.2 solid-state drive slot on the system board.
5. Slide the M.2 2230 solid-state drive into the M.2 solid-state drive slot on the system board.
6. Replace the screw (M2x3) that secures the M.2 2230 solid-state drive assembly 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](#).

i | 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

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

i **NOTE:** An M.2 card 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.

i **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 an M.2 2230-specific thermal shield.
- M.2 2280 solid-state drive and an M.2 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.

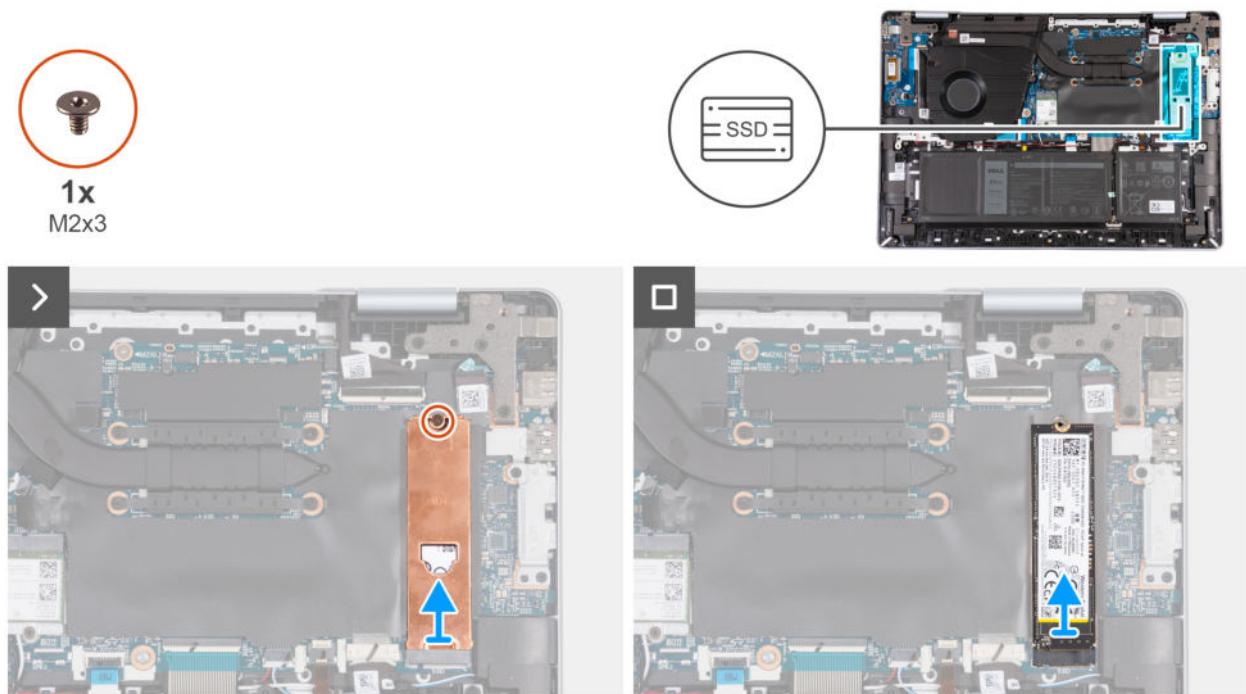


Figure 20. Removing the M.2 2280 solid-state drive

Steps

1. Remove the screw (M2x3) that secures the M.2 2280 solid-state drive and 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. Slide and lift the M.2 2280 solid-state drive off 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

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

i **NOTE:** An 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.

i **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 an M.2 2230-specific thermal shield.
- M.2 2280 solid-state drive and an M.2 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.

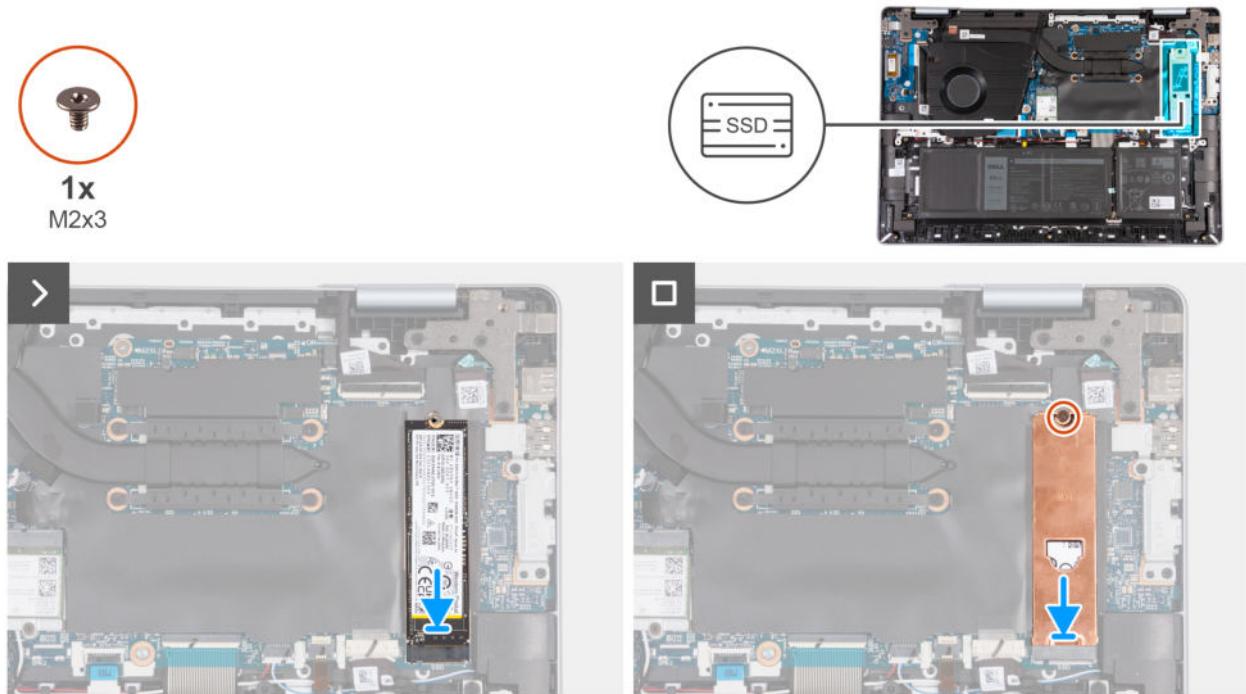


Figure 21. Installing the M.2 2280 solid-state drive

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 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 the 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](#).
(i) 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 images indicate the location of the wireless card and provides a visual representation of the removal procedure.

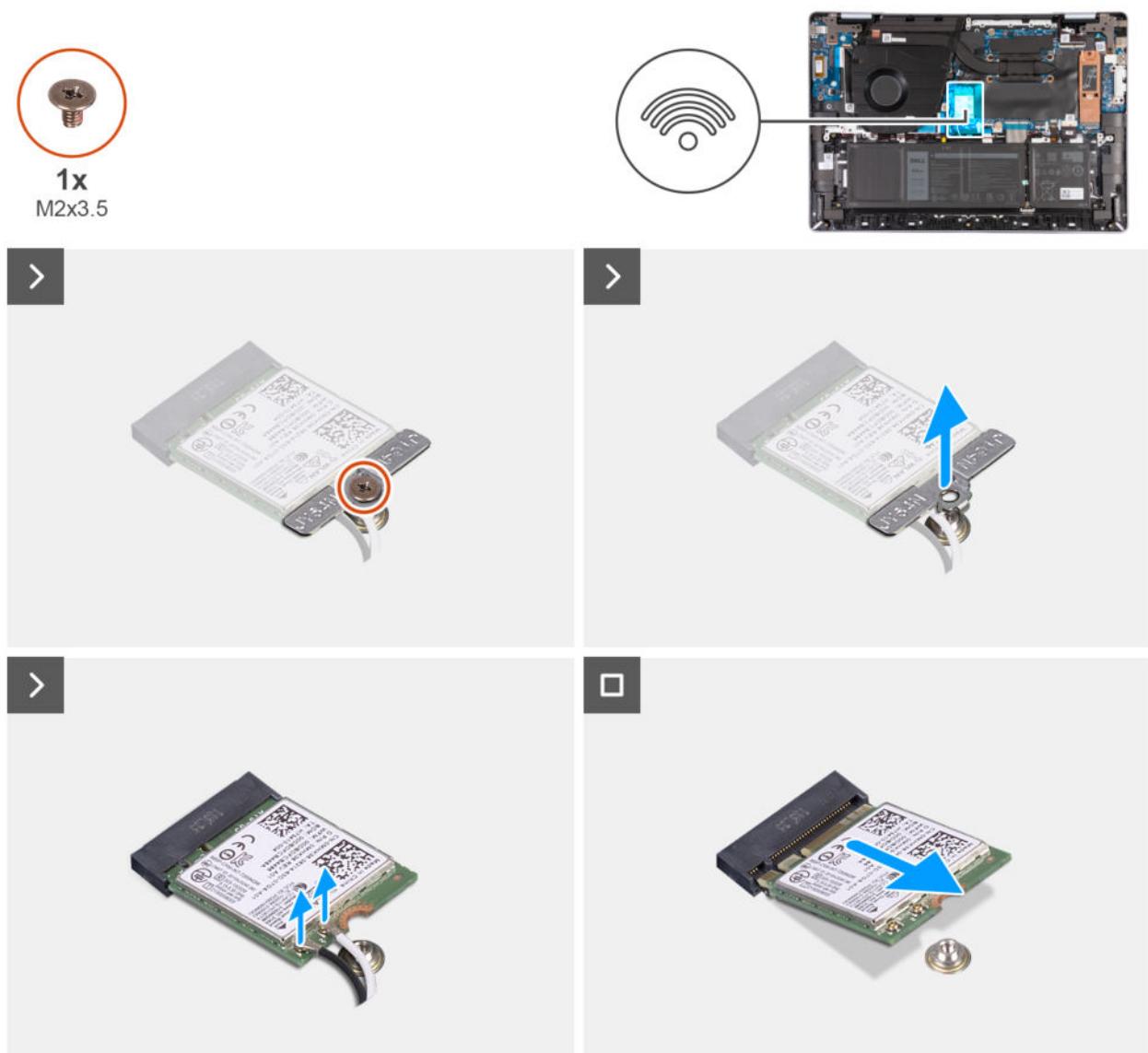


Figure 22. Removing the wireless card

Steps

1. Remove the screw (M2x3.5) that secures the wireless-card bracket and the wireless card to the system board.
2. Lift the wireless-card bracket off the wireless card.
3. Disconnect the antenna cables from the wireless card.
4. Slide and lift the wireless card off 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 images indicate the location of the wireless card and provides a visual representation of the installation procedure.

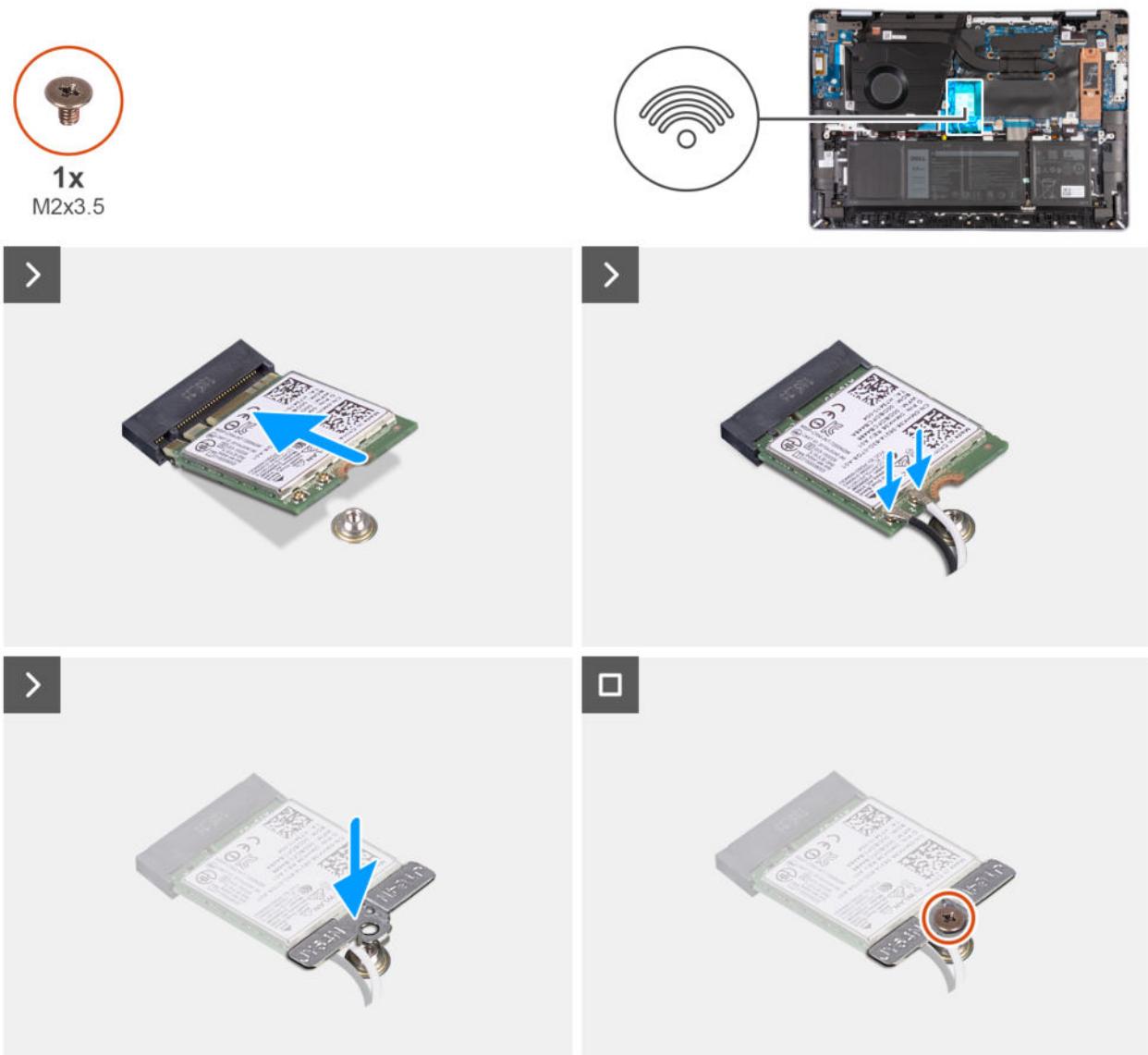


Figure 23. Installing the wireless card

Steps

1. Connect the antenna cables to the wireless card.

The following table provides the antenna-cable color scheme for the wireless card that your computer supports:

Table 26. 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 on the system board.
4. Place the wireless-card bracket on the wireless card.
5. Replace the screw (M2x3.5) that secures the wireless card and 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](#).

Fan

Removing the fan

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
(i) 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 fan and provide a visual representation of the removal procedure.

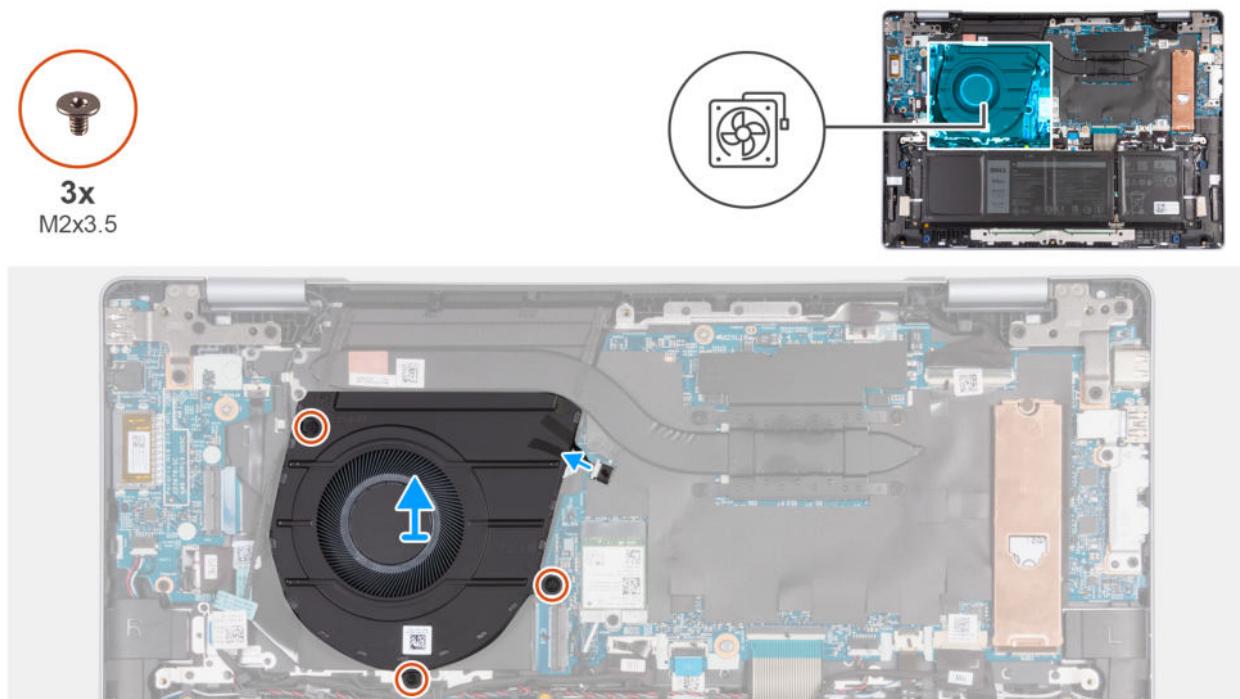


Figure 24. Removing the fan

Steps

1. Disconnect the fan cable from the system board.
2. Remove the three screws (M2x3.5) that secure the fan to the palm-rest and keyboard assembly.
3. Lift the fan off the palm-rest and keyboard assembly.

Installing the fan

Prerequisites

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

About this task

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

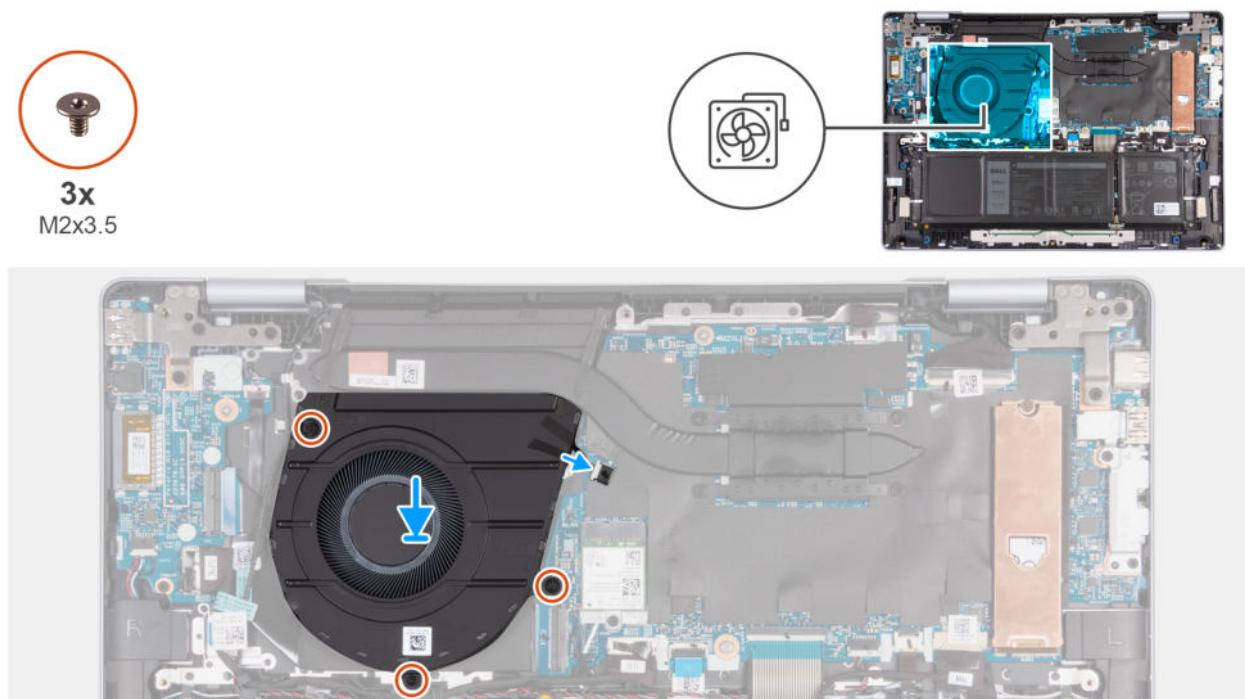


Figure 25. Installing the fan

Steps

1. Place the fan on the palm-rest and keyboard assembly.
2. Align the screw holes on the fan with the screw holes on the palm-rest and keyboard assembly.
3. Replace the three screws (M2x3.5) that secure the fan to the palm-rest and keyboard assembly.
4. Connect the fan cable to the system board.

Next steps

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

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 4-cell battery (64 Wh)

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

Prerequisites

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

i | 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

i | NOTE: This procedure only applies to computers shipped with a 4-cell battery (64 Wh) installed.

The following image(s) indicate the location of the 4-cell battery (64 Wh) and provides a visual representation of the removal procedure.

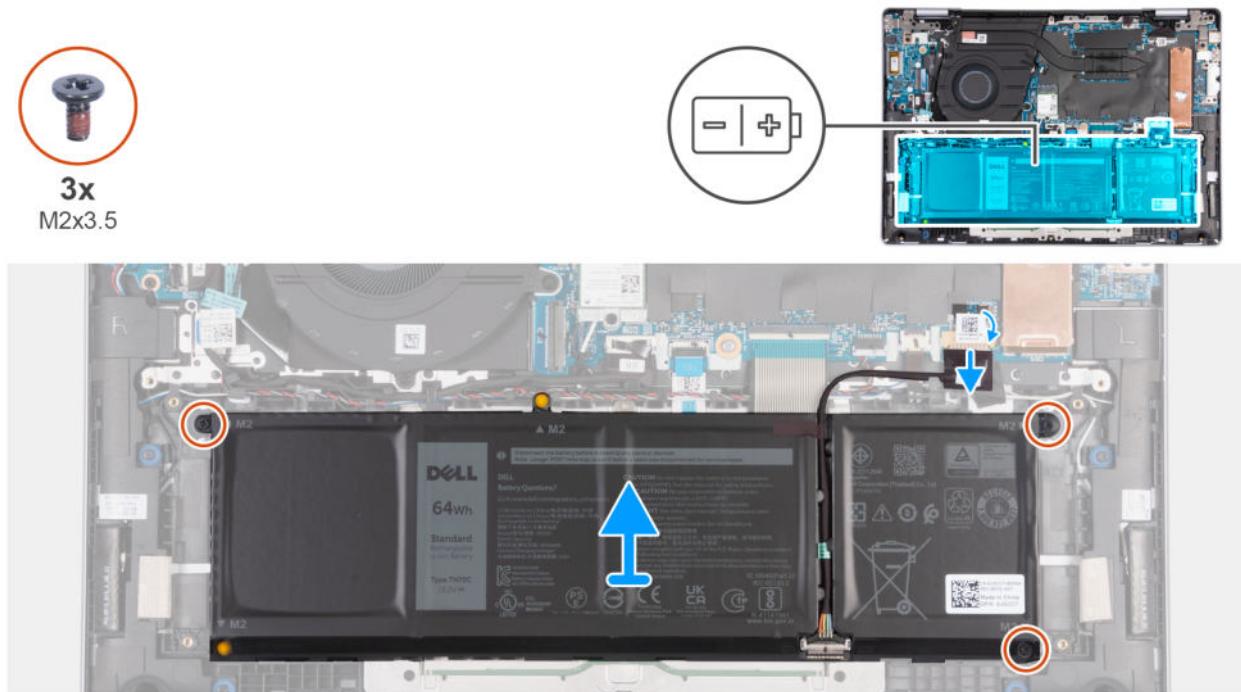


Figure 26. Removing the 4-cell battery (64 Wh)

Steps

1. Disconnect the battery cable from the system board.
2. Remove the three screws (M2x3.5) that secure the battery to the palm-rest and keyboard assembly.
3. Lift the battery off the palm-rest and keyboard assembly.

Installing the 4-cell battery (64 Wh)

⚠ | 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 4-cell battery (64 Wh) and provides a visual representation of the installation procedure.

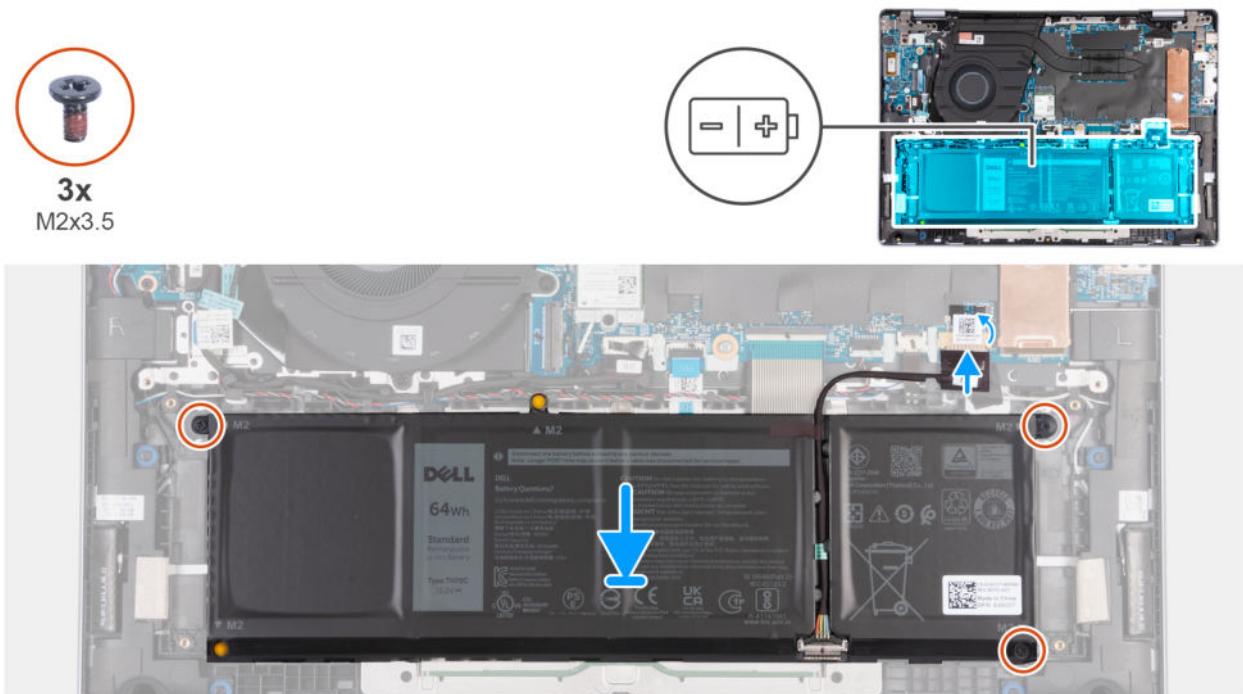


Figure 27. Installing the 4-cell battery (64 Wh)

Steps

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

Next steps

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

Removing the 6-cell battery (90 Wh)

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

Prerequisites

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

(i) **NOTE:** This procedure only applies to computers shipped with a 6-cell battery (90 Wh) installed.

The following image(s) indicate the location of the 6-cell battery (90 Wh) and provides a visual representation of the removal procedure.

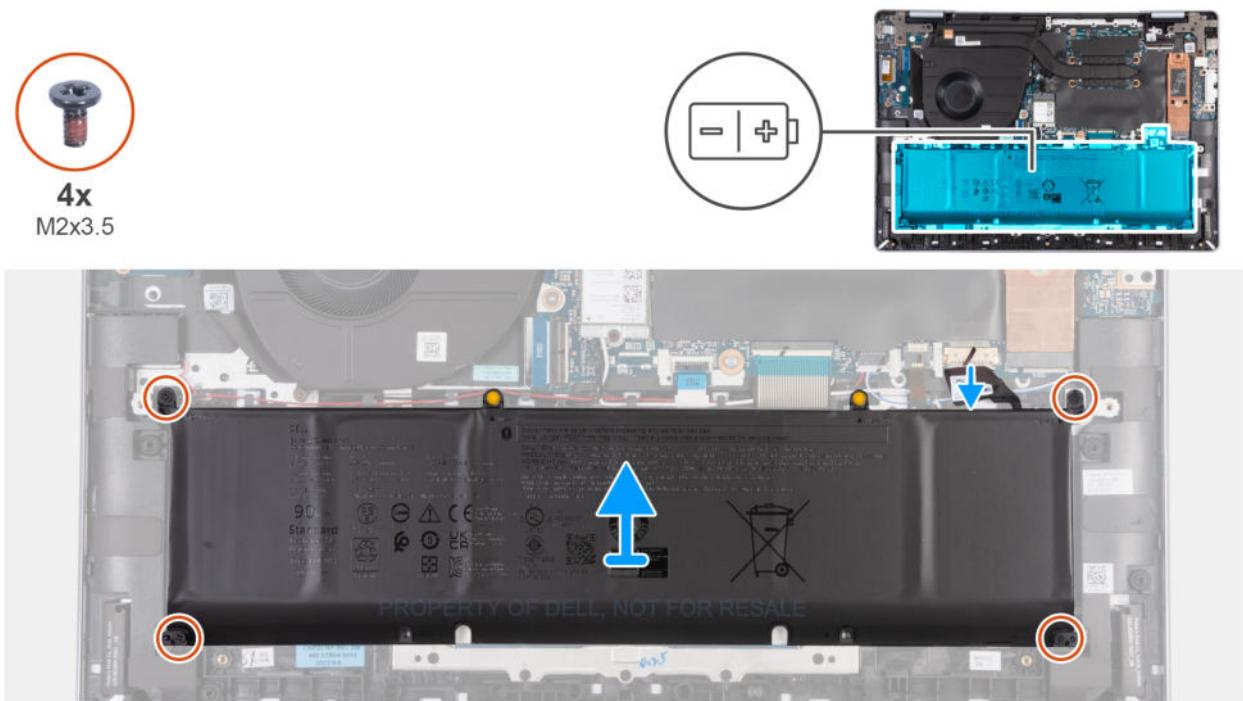


Figure 28. Removing the 6-cell battery (90 Wh)

Steps

1. Disconnect the battery cable from the system board.
2. Remove the four screws (M2x3.5) that secure the battery to the palm-rest and keyboard assembly.
3. Lift the battery off the palm-rest and keyboard assembly.

Installing the 6-cell battery (90 Wh)

 **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:** This procedure only applies if you are installing a 6-cell battery (90 Wh) into your computer.

The following image(s) indicate the location of the 6-cell battery (90 Wh) and provides a visual representation of the installation procedure.

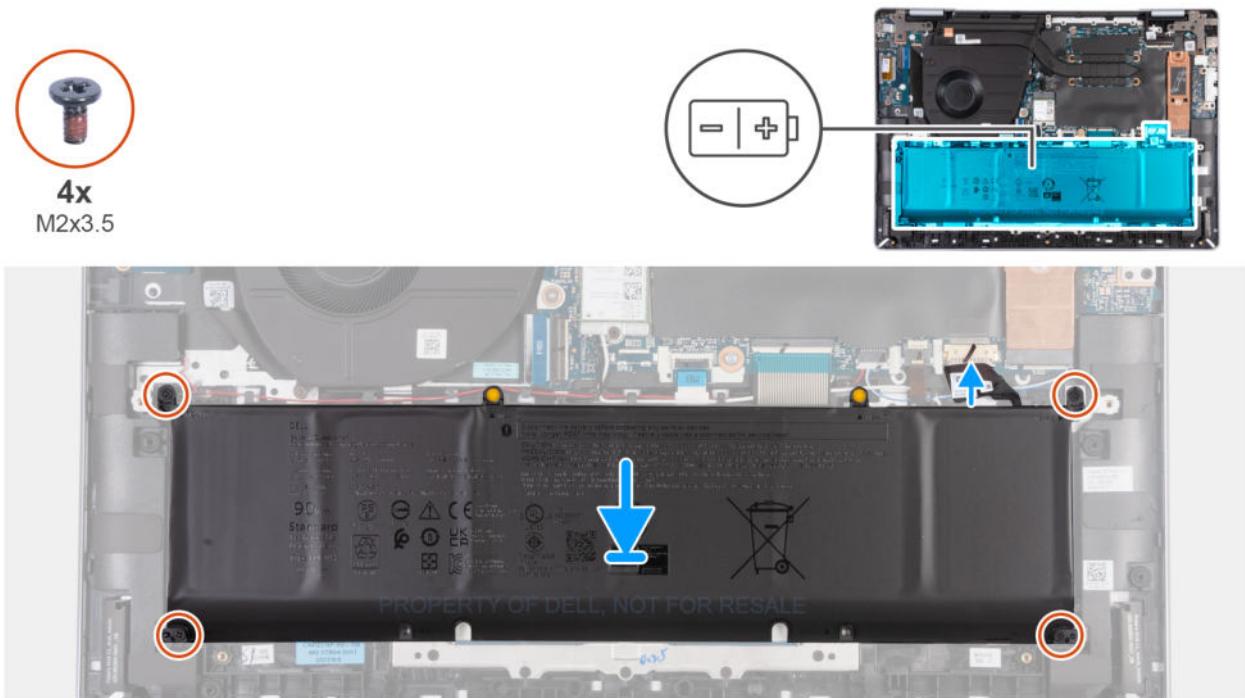


Figure 29. Installing the 6-cell battery (90 Wh)

Steps

1. Using the alignment posts, 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 four screws (M2x3.5) that secure the battery to the palm-rest and keyboard assembly.
4. Connect the battery cable to the system board.

Next steps

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

Battery cable

Removing the battery cable (for 4-cell battery, 64 Wh)

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

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
(i) 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 [4-cell battery \(64 Wh\)](#).

About this task

The following images indicate the location of the battery cable (for 4-cell battery, 64 Wh) and provide a visual representation of the removal procedure.

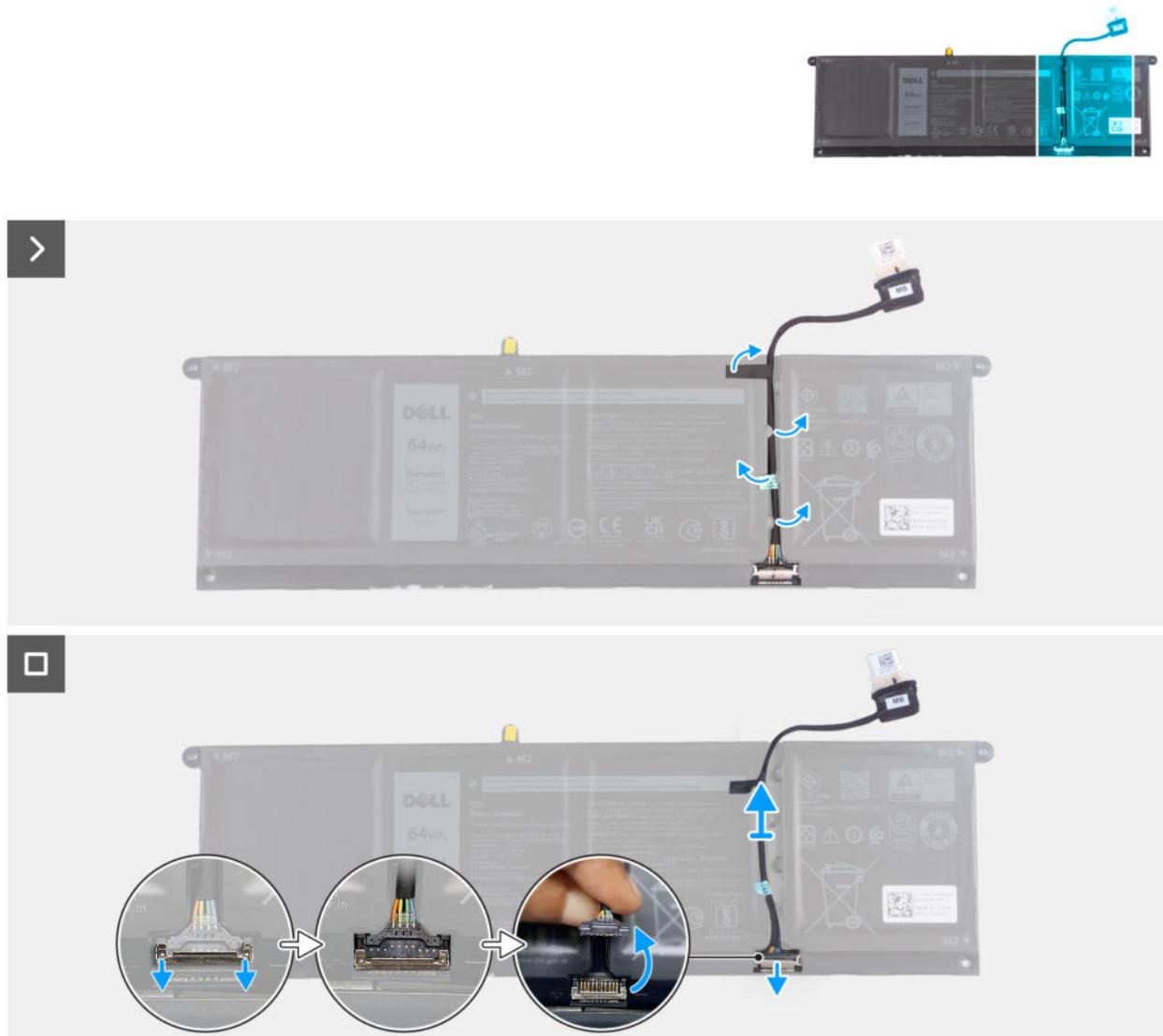


Figure 30. Removing the battery cable (for 4-cell battery, 64 Wh)

Steps

1. Peel the adhesive tape that secures the battery cable to the connector on the battery.
2. Slide down the clamp that secures the battery cable to the battery.
3. Disconnect and remove the battery cable from the battery.

Installing the battery cable (for 4-cell battery, 64 Wh)

⚠ 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 (for 4-cell battery, 64 Wh) and provides a visual representation of the installation procedure.

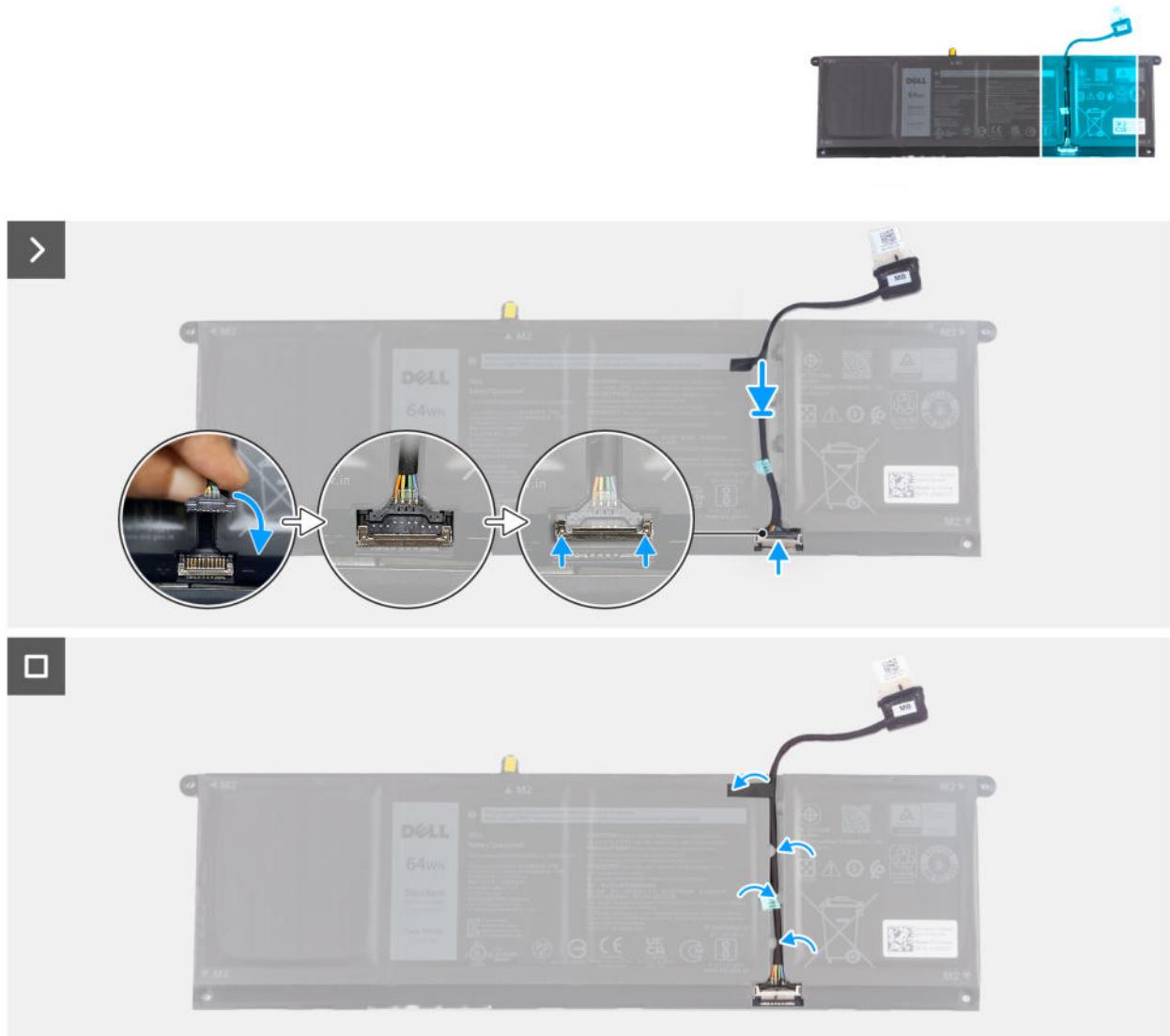


Figure 31. Installing the battery cable (for 4-cell battery, 64 Wh)

Steps

1. Connect the battery cable to its connector on the battery.
2. Slide the clamp upwards to secure the battery cable to the battery.
3. Route the battery cable through the routing guides on the battery.
4. Adhere the tape that secures the battery cable to the battery.

Next steps

1. Install the [4-cell battery \(64 Wh\)](#).
2. Install the [base cover](#).
3. Follow the procedure in [After working inside your computer](#).

Removing the battery cable (for 6-cell battery, 90 Wh)

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

Prerequisites

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

i | 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 [6-cell battery \(90 Wh\)](#).

About this task

The following images indicate the location of the battery cable (for 6-cell battery, 90 Wh) and provide a visual representation of the removal procedure.

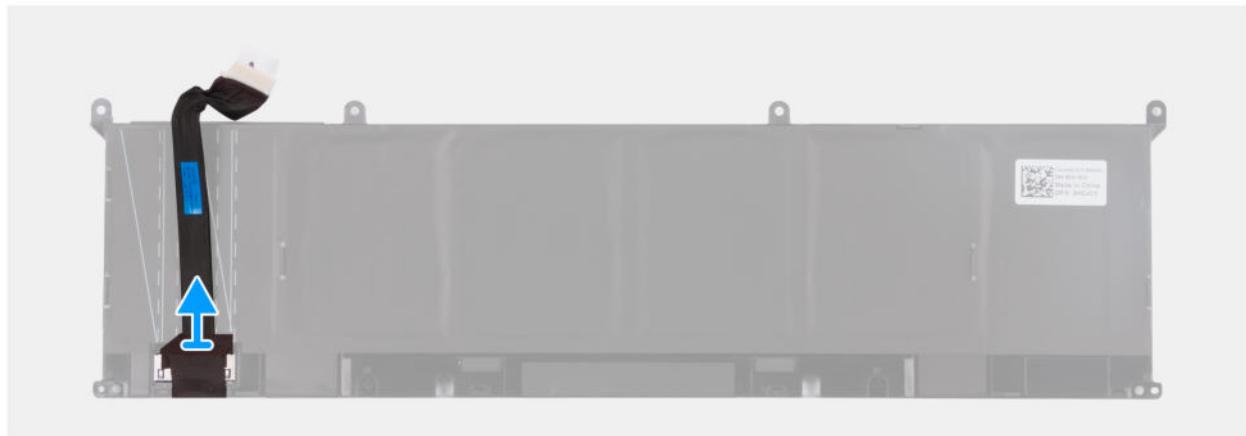


Figure 32. Removing the battery cable (for 6-cell battery, 90 Wh)

Steps

1. Flip over the battery to access the underside of 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 from the battery.

Installing the battery cable (for 6-cell battery, 90 Wh)

⚠ | 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 (for 6-cell battery, 90 Wh) and provides a visual representation of the installation procedure.



Figure 33. Installing the battery cable (for 6-cell battery, 90 Wh)

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 [6-cell battery \(90 Wh\)](#).
2. Install the [base cover](#).
3. Follow the procedure in [After working inside your computer](#).

Speaker assembly

Removing the speakers

 **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 [4-cell battery \(64 Wh\)](#) or the [6-cell battery \(90 Wh\)](#), whichever is applicable.

About this task

 **NOTE:** The speakers cannot be separated for individual replacement. If any of the speakers needs to be replaced, the speaker assembly (consisting of the two speakers and the cables) will be dispatched as a single serviceable component.

The following images indicate the location of the speakers and provides a visual representation of the removal procedure.

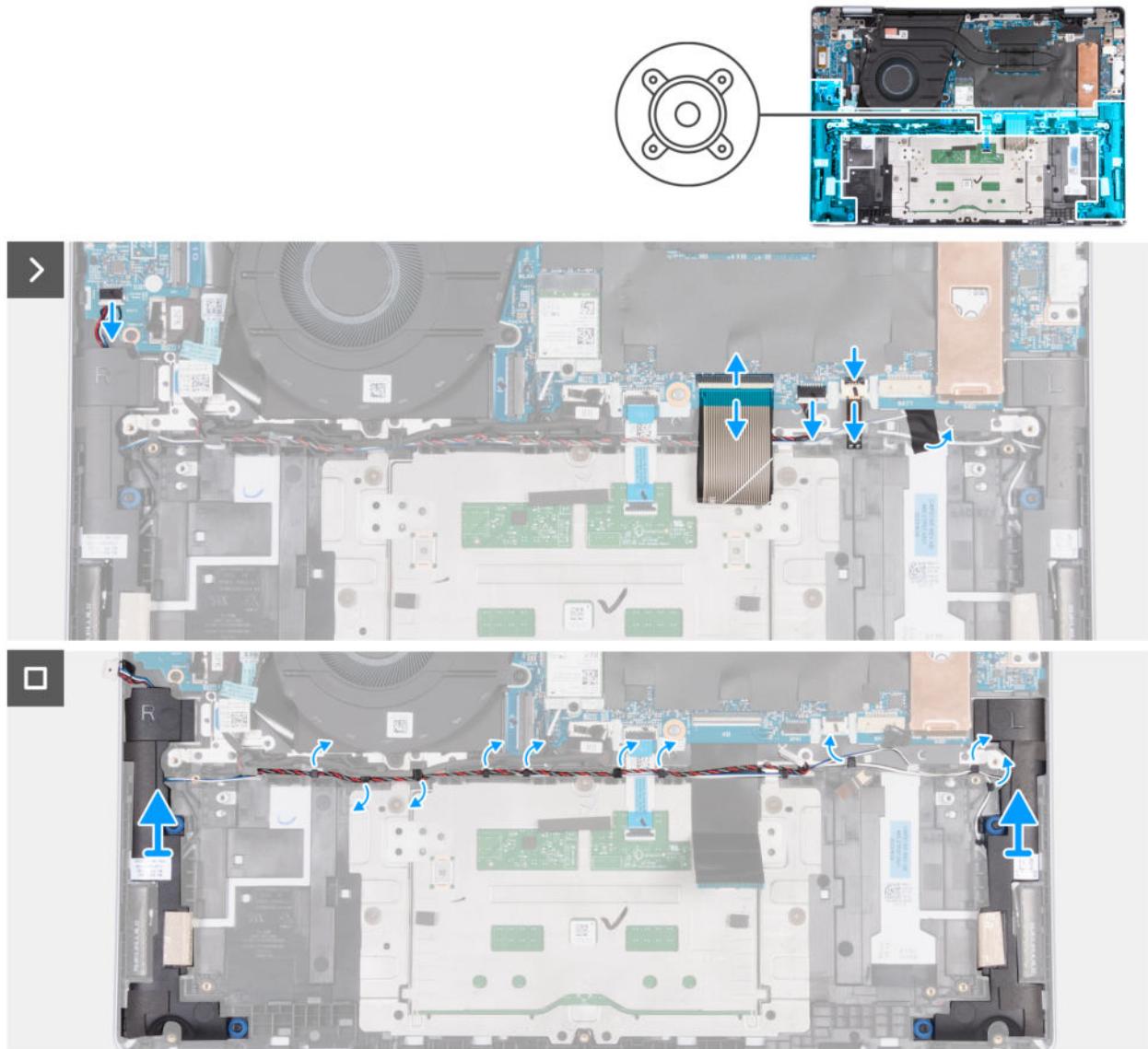


Figure 34. Removing the speakers

Steps

1. Disconnect the speaker cable from the I/O board.
2. Lift the latch and disconnect the keyboard cable from the system board.
3. Disconnect the speaker cable from the system board.
4. Lift the latch and disconnect the keyboard-backlight cable from the system board.
5. Peel the tape that secures the speaker cable to the palm-rest and keyboard assembly.
6. Remove the speaker cables from the routing guides on the palm-rest and keyboard assembly.
7. Lift the left and right speakers along with their cables off the palm-rest and keyboard assembly.

Installing the speakers

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

(i) NOTE: The speakers cannot be separated for individual replacement. If any of the speakers needs to be replaced, the speaker assembly (consisting of the two speakers and the cables) will be dispatched as a single serviceable component.

The following images indicate the location of the speakers and provides a visual representation of the installation procedure.

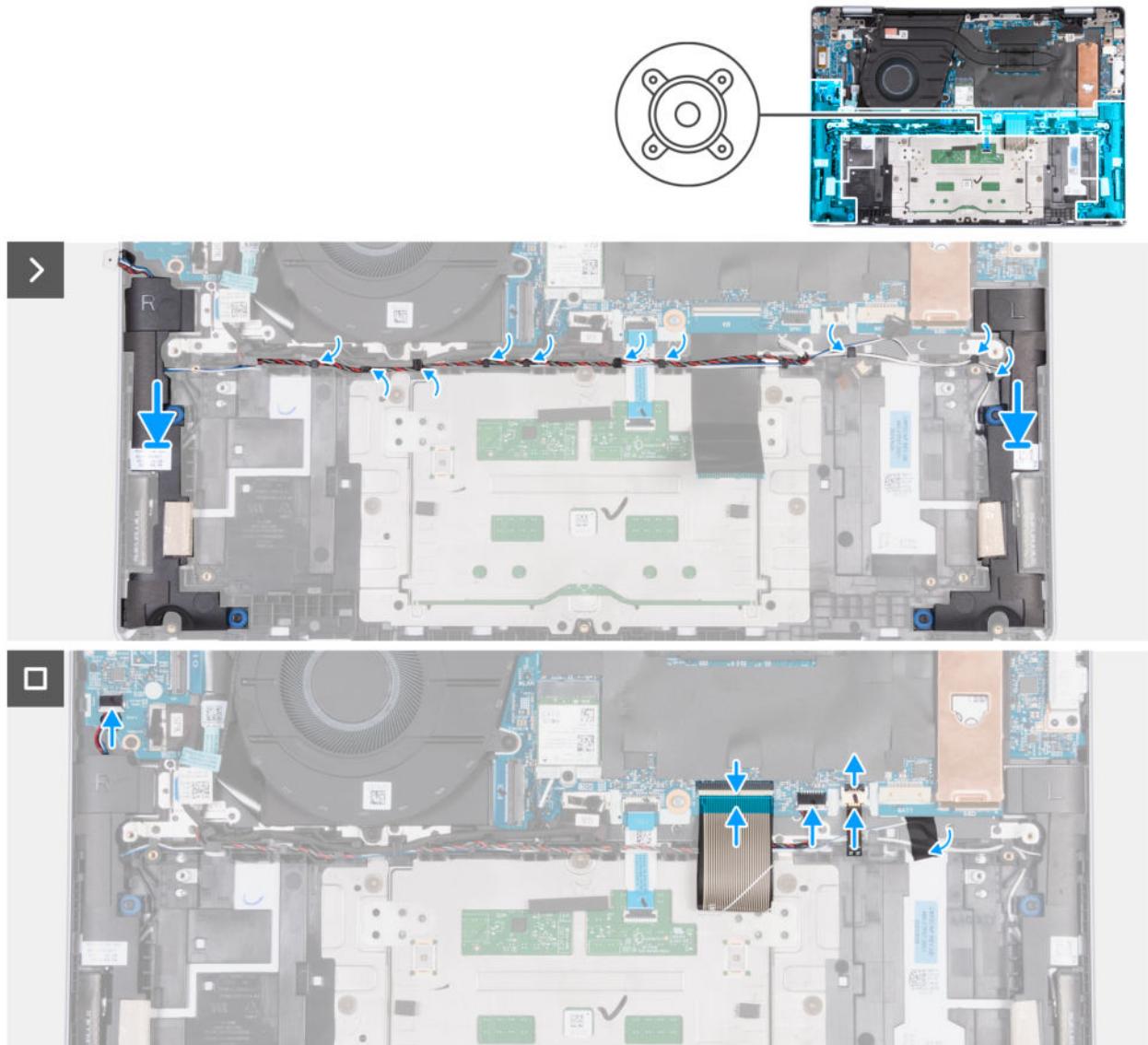


Figure 35. Installing the speakers

Steps

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

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

2. Route the speaker cables through the routing guides on the palm-rest and keyboard assembly.

3. Connect the speaker cable to the I/O board.

4. Connect the keyboard cable to the system board and close the latch.

(i) NOTE: The keyboard cable should be placed over the speaker cables.

5. Connect the speaker cable to the system board.

6. Connect the keyboard-backlight cable to the system board and close the latch.

 **NOTE:** The keyboard-backlight cable should be placed over the speaker cables.

7. Adhere the tape that secures the speaker cable to the palm-rest and keyboard assembly.

Next steps

1. Install the [4-cell battery \(64 Wh\)](#) or the [6-cell battery \(90 Wh\)](#), whichever is applicable.
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 images indicate the location of the display assembly and provides a visual representation of the removal procedure.



6x
M2.5x5

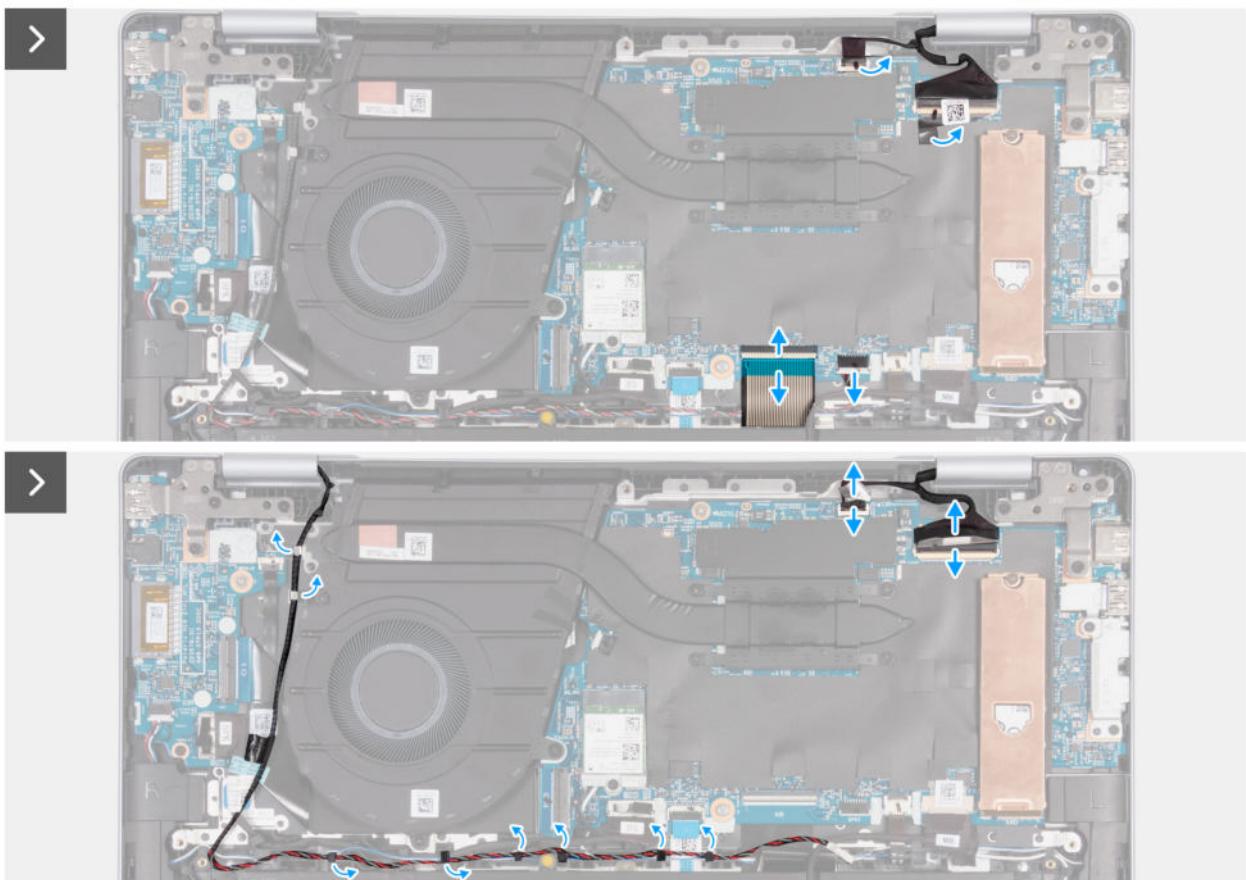


Figure 36. Removing the display assembly



Figure 37. Removing the display assembly

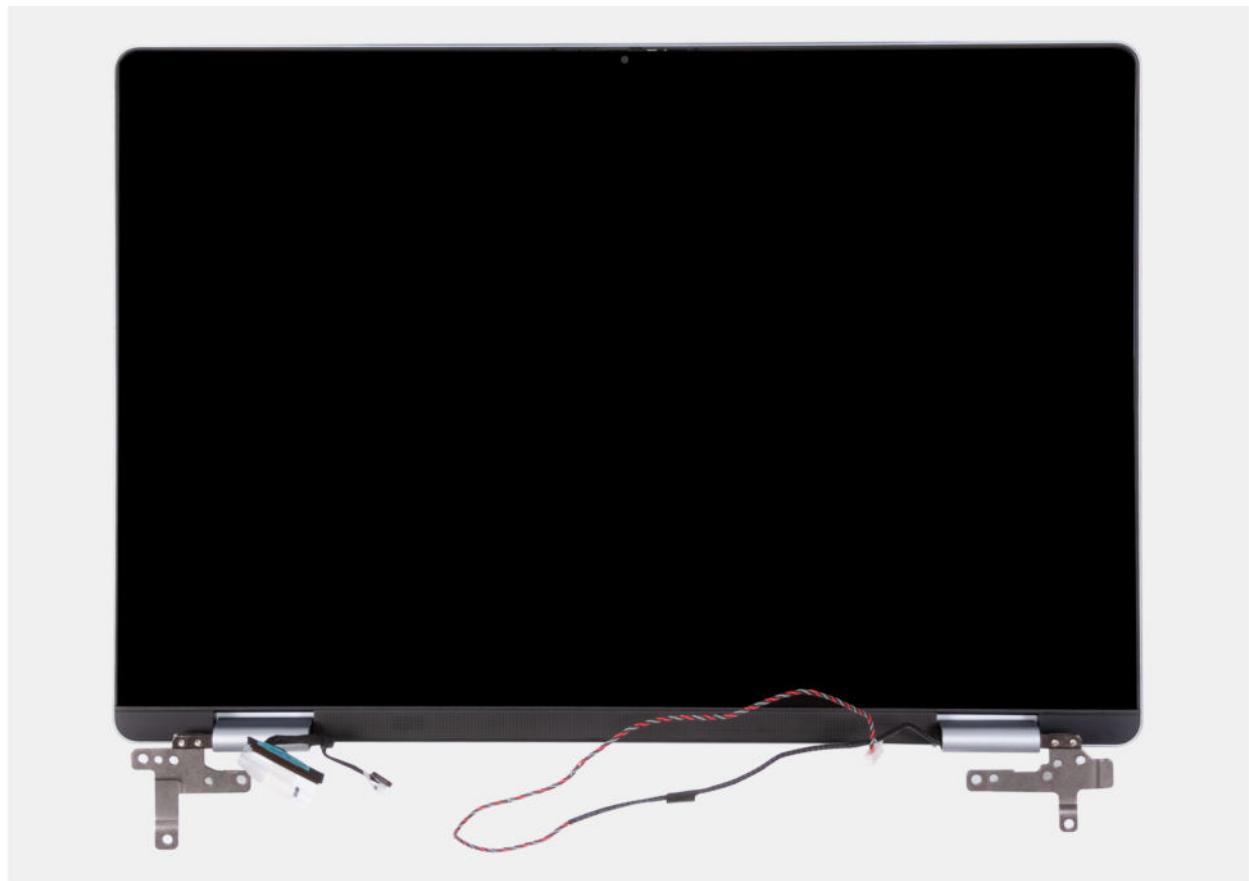


Figure 38. Display assembly

Steps

1. Peel the tape that secures the display-board cable to the system board.
2. Peel the tape that secures the display-cable connector latch to the system board.
3. Disconnect the display-speaker cable from the system board.
4. Lift the latch and disconnect the keyboard cable from the system board.
5. Lift the latch and disconnect the display-board cable from the system board.
6. Lift the latch and disconnect the display cable from the system board.
7. Peel the tape that secures the display-speaker cable to the palm-rest and keyboard assembly.
8. Remove the display-speaker cable from the routing guides.
9. Open the display and place the computer on a clean and flat surface.
10. Remove the three screws (M2.5x5) that secure the left display hinge to the palm-rest and keyboard assembly.
11. Remove the three screws (M2.5x5) that secure the right display hinge to the palm-rest and keyboard assembly.
12. Gently lift the display assembly off the palm-rest and keyboard 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 images indicate the location of the display assembly and provides a visual representation of the installation procedure.



6x
M2.5x5



Figure 39. Installing the display assembly

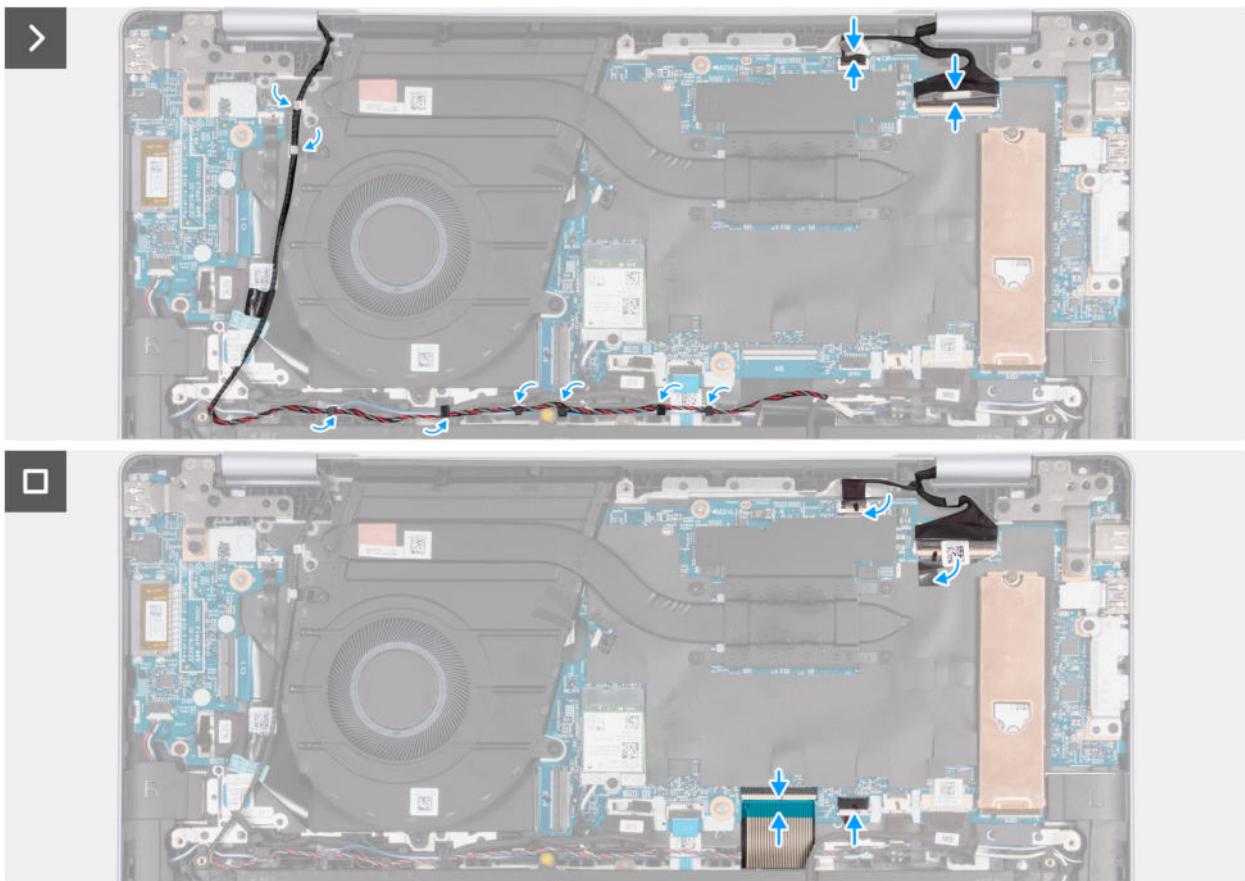


Figure 40. Installing the display assembly

Steps

1. Place the palm-rest and keyboard assembly on a clean and flat surface.
 2. Place the display assembly on the palm-rest and keyboard assembly.
- ⚠ CAUTION: To avoid damaging the display, do not slide the display assembly.**
3. Align the screw holes on the left display hinge with the screw holes on the palm-rest and keyboard assembly.
 4. Replace the three screws (M2.5x5) that secure the left display hinge to the palm-rest and keyboard assembly.
 5. Align the screw holes on the right display hinge with the screw holes on the system board.
 6. Replace the three screws (M2.5x5) that secure the right display hinge to the palm-rest and keyboard assembly.
 7. Close the display lid and place the computer on a clean and flat surface.
 8. Route the display-speaker cable through the routing guides on the palm-rest and keyboard assembly.
 9. Adhere the tape that secures the display-speaker cable to the palm-rest and keyboard assembly.
 10. Connect the display-board cable to the system board and close the latch.
 11. Connect the display cable to the system board and close the latch.
 12. Adhere the tape that secures the display-board connector latch to the system board.
 13. Adhere the tape that secures the display connector latch to the system board.
 14. Connect the display-speaker cable to the system board.
- ⓘ NOTE:** The keyboard cable should be folded over the display-speaker cable.
15. Connect the keyboard cable to the system board and close the latch.

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](#).

About this task

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

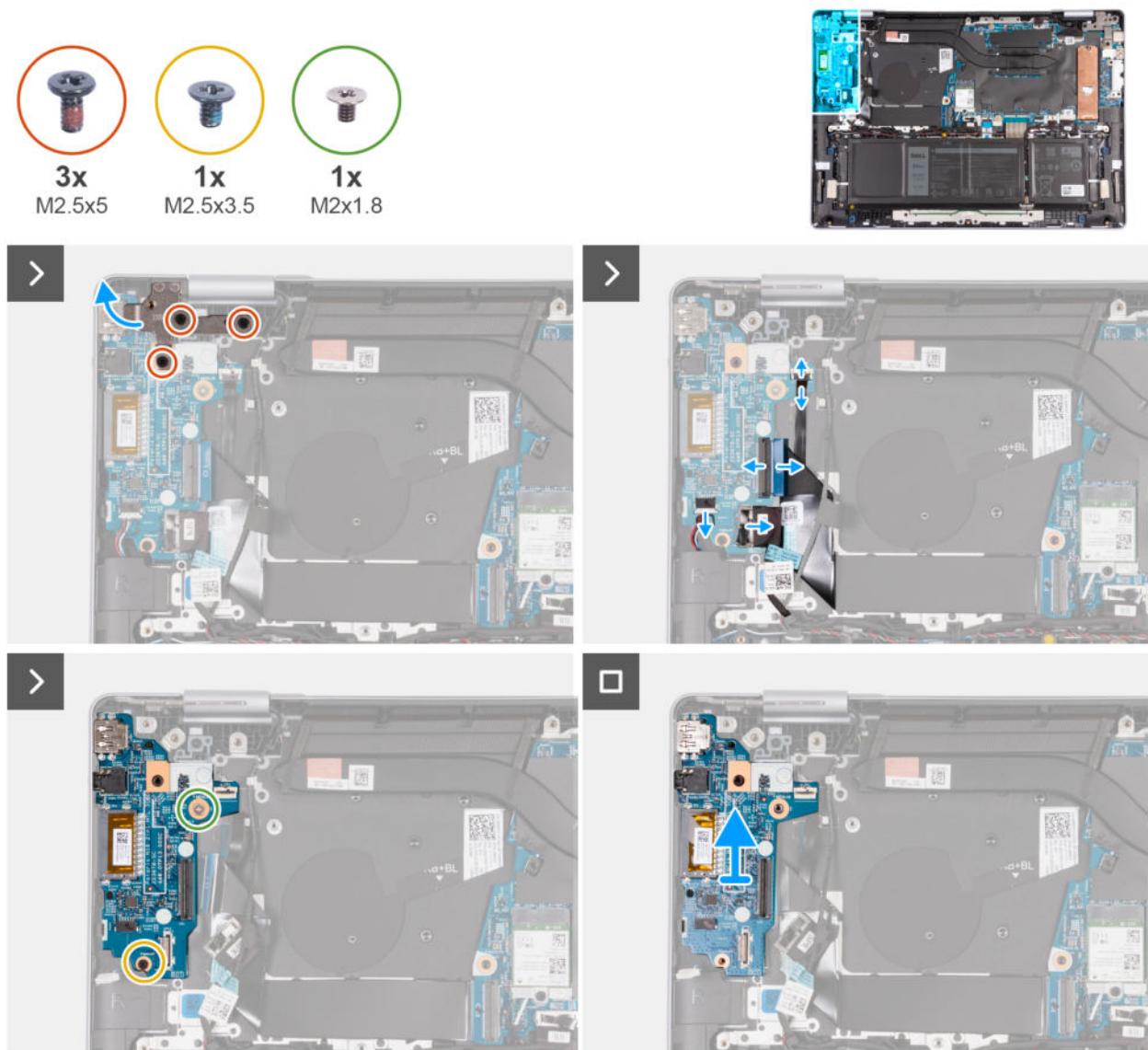


Figure 41. Removing the I/O board

Steps

1. Remove the three screws (M2.5x5) that secure the display hinge to the palm-rest and keyboard assembly.
2. Pry open the left display hinge to an angle of 90 degrees.
3. Lift the latch and disconnect the power-button cable from the I/O board.
4. Lift the latch and disconnect the I/O-board cable from the I/O board.
5. Disconnect the speaker-I/O cable from the I/O board.
6. Disconnect the speaker cable from the I/O board.
7. Peel the tape that secures the I/O-board connector latch to the I/O board.
8. Lift the I/O-board cable-connector latch and disconnect the I/O-board cable from the I/O board.
9. Remove the screw (M2x1.8) and the screw (M2.5x3.5) that secure the I/O board to the palm-rest and keyboard assembly.
10. 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 images indicate the location of the I/O board and provides a visual representation of the installation procedure.

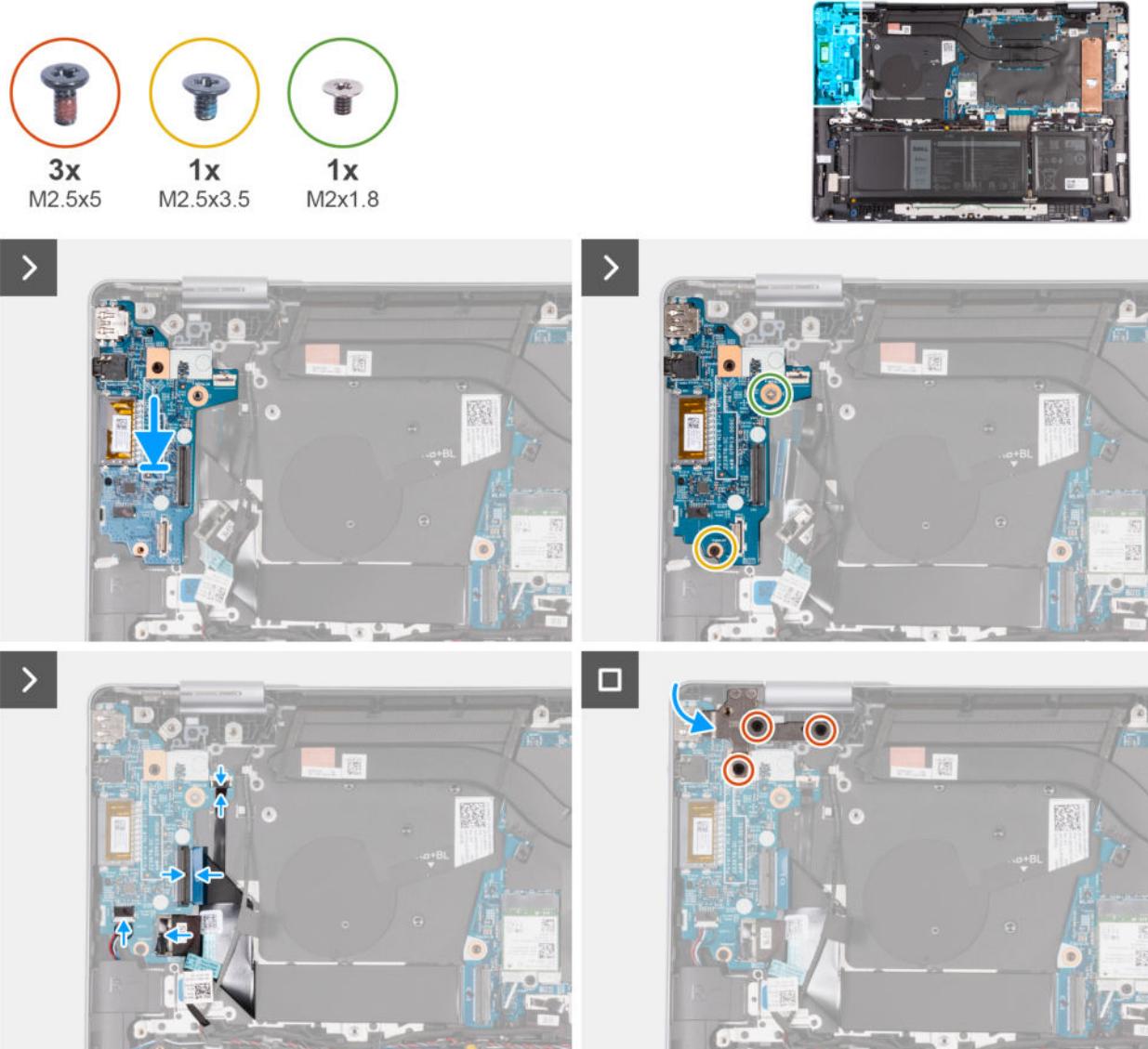


Figure 42. Installing the I/O board

Steps

1. Place the I/O board on the palm-rest and keyboard assembly.
2. Align the screw holes on the I/O board with the screw holes on the palm-rest and keyboard assembly.
3. Replace the screw (M2x1.8) and the screw (M2.5x3.5) that secure the I/O board to the palm-rest and keyboard assembly.
4. Connect the power-button cable to the I/O board and close the latch.
5. Connect the I/O-board cable to the I/O board and close the latch.
6. Connect the speaker-I/O cable to the I/O board.
7. Connect the speaker cable to the I/O board.
8. Close the left display hinge and align the screw holes on the left display hinge with the screw holes on the I/O board.
9. Replace the three screws (M2.5x5) that secure the display hinge to the palm-rest and keyboard assembly.

Next steps

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

Power button

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 [fan](#).
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.

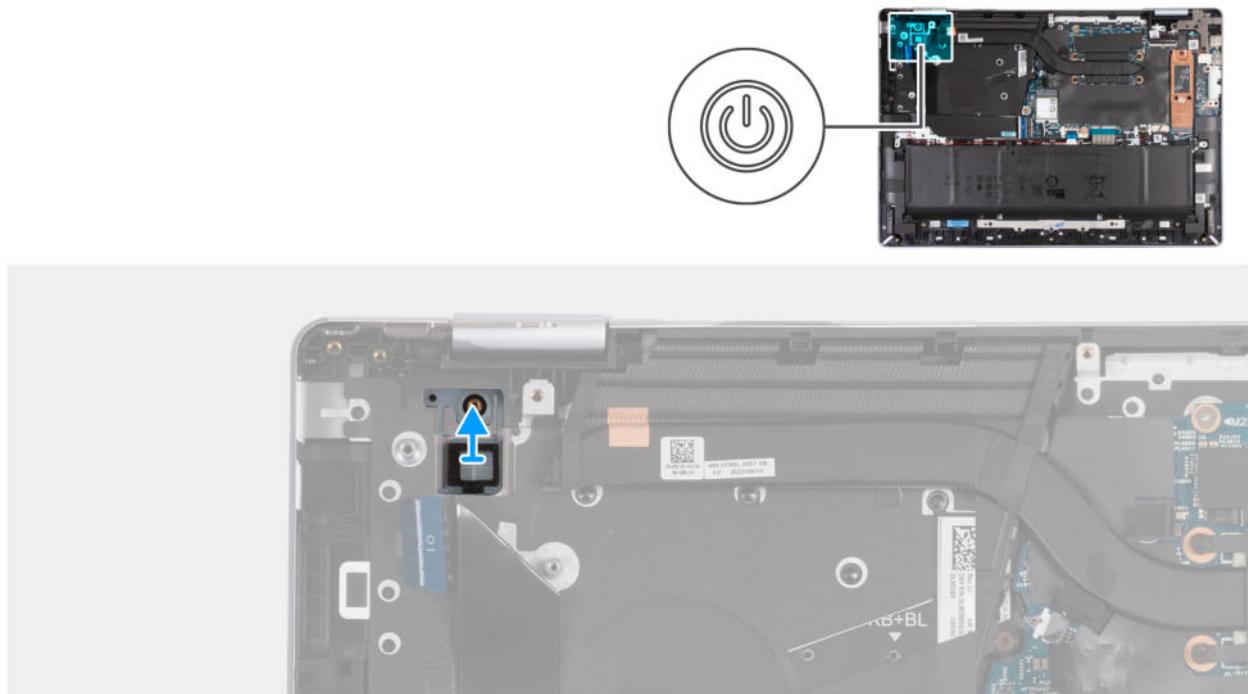


Figure 43. Removing the power button

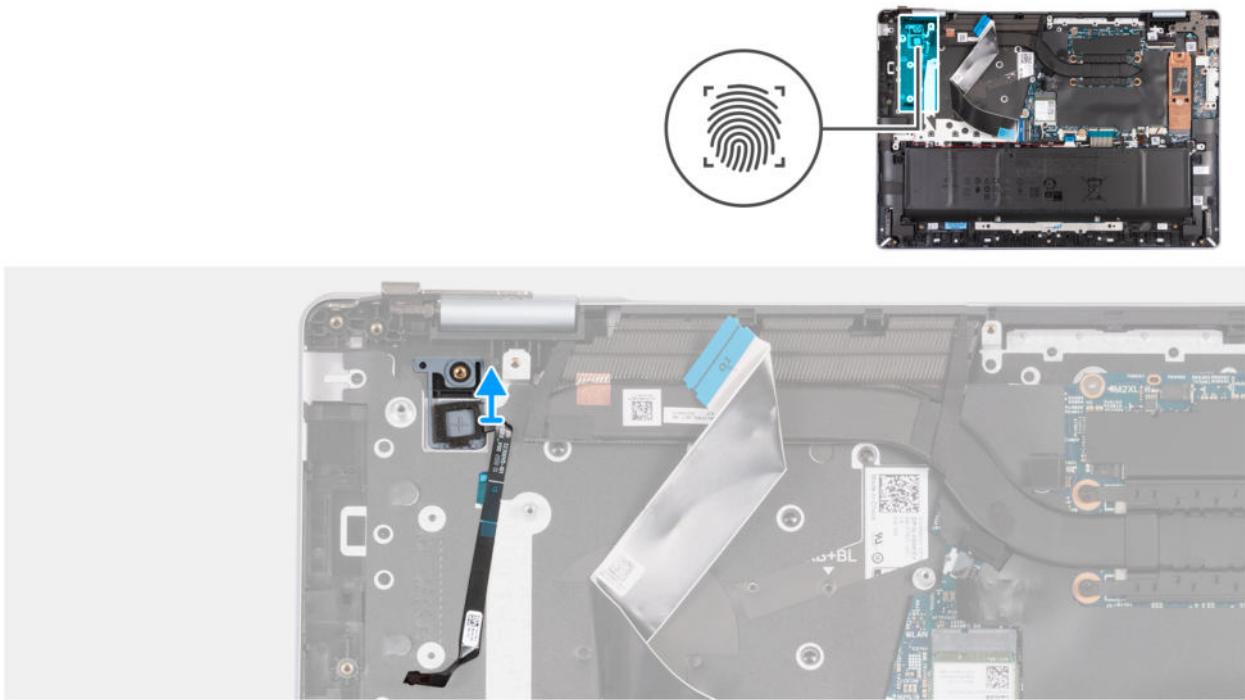


Figure 44. Removing the power button with an optional fingerprint reader

Steps

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

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

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

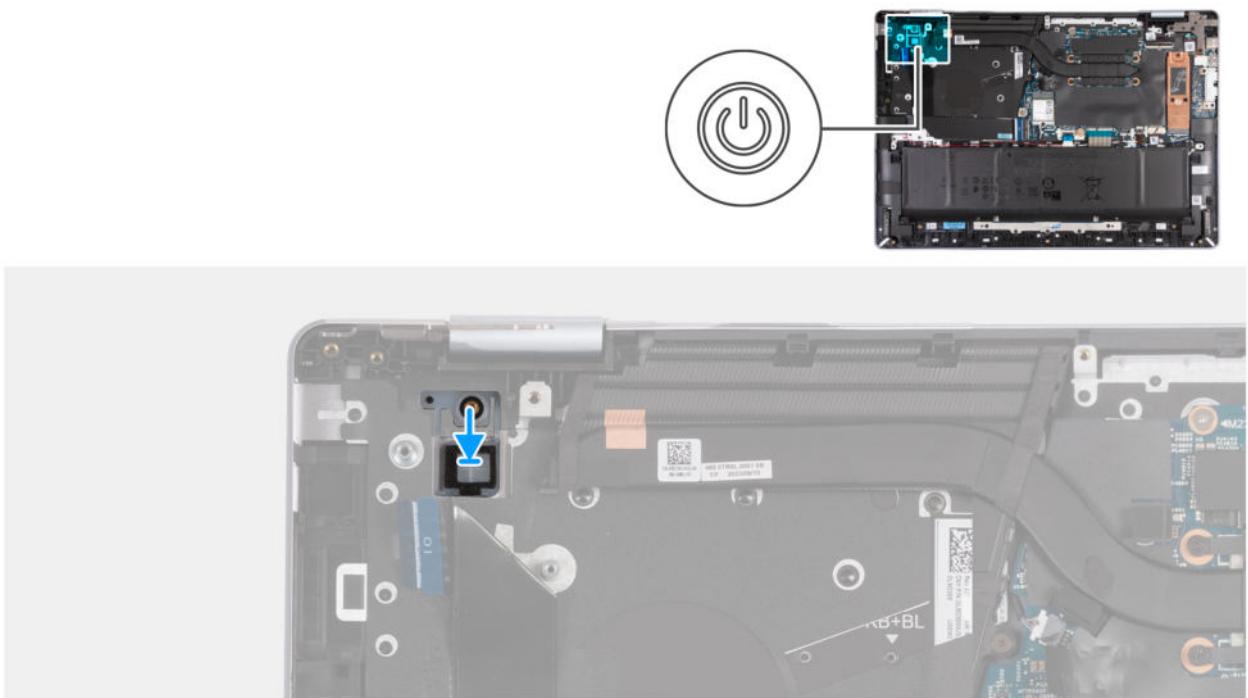


Figure 45. Installing power button

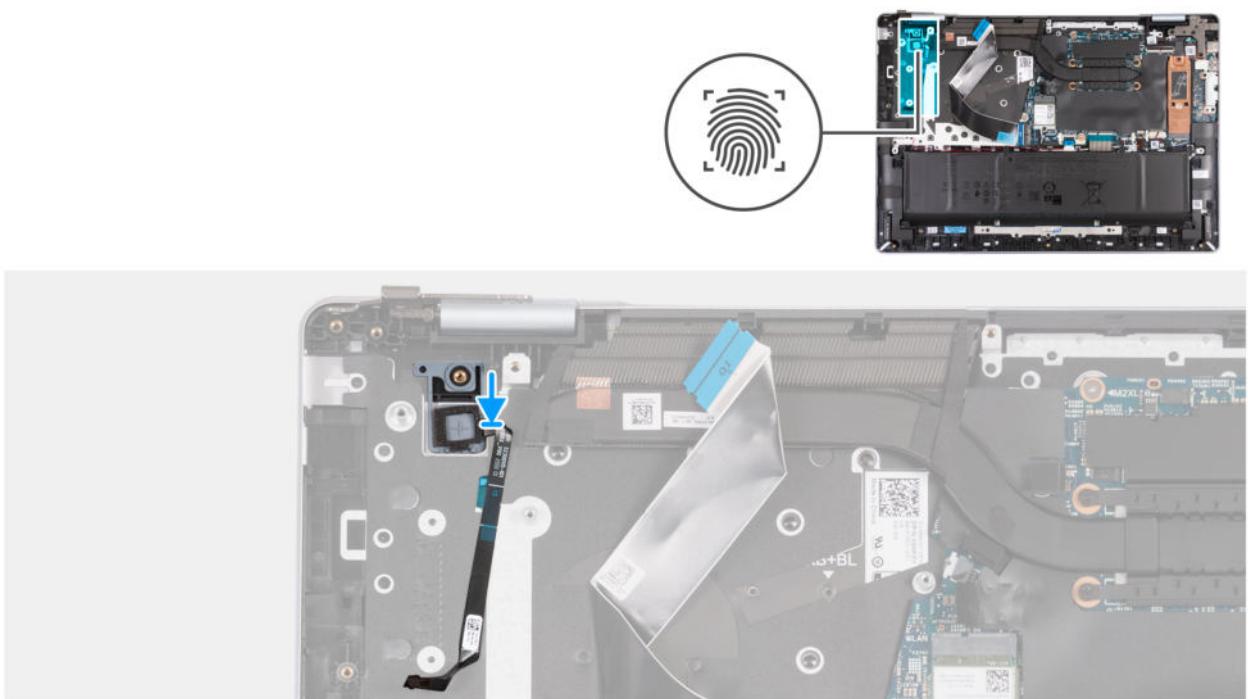


Figure 46. Installing power button with an optional fingerprint reader

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.

(i) 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 [fan](#).
3. Install the [base cover](#).
4. 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

-  **NOTE:** 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.

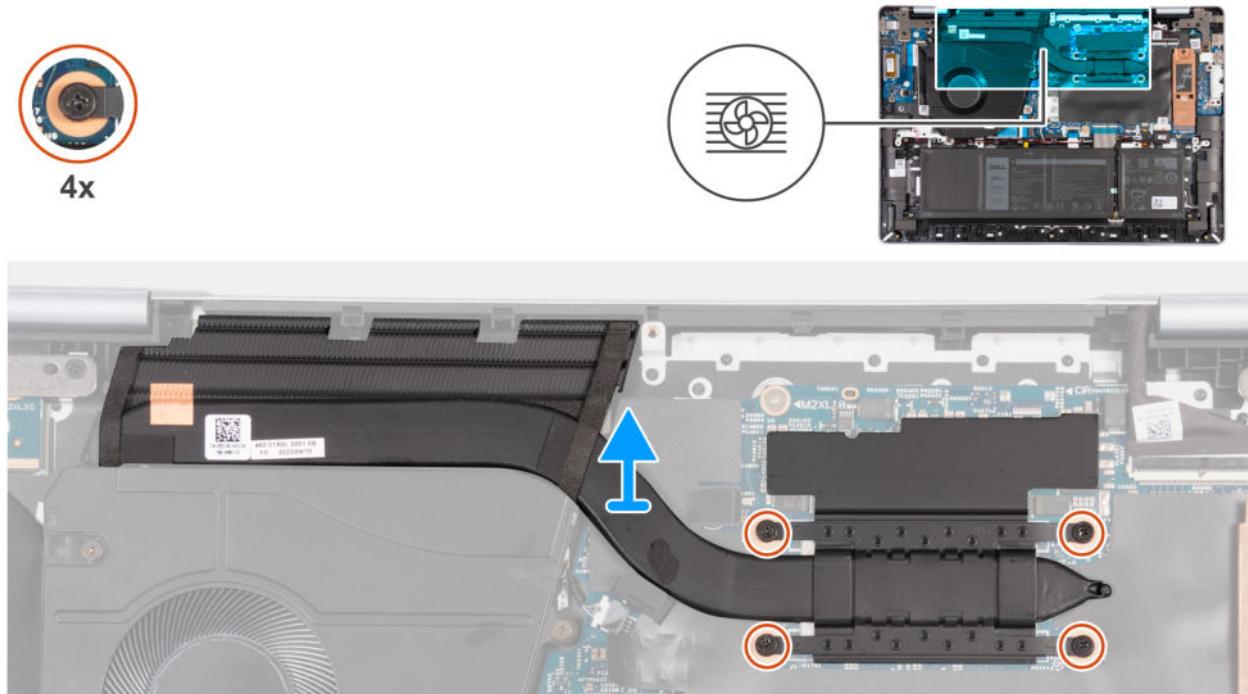


Figure 47. Removing the heat sink

Steps

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

2. 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

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

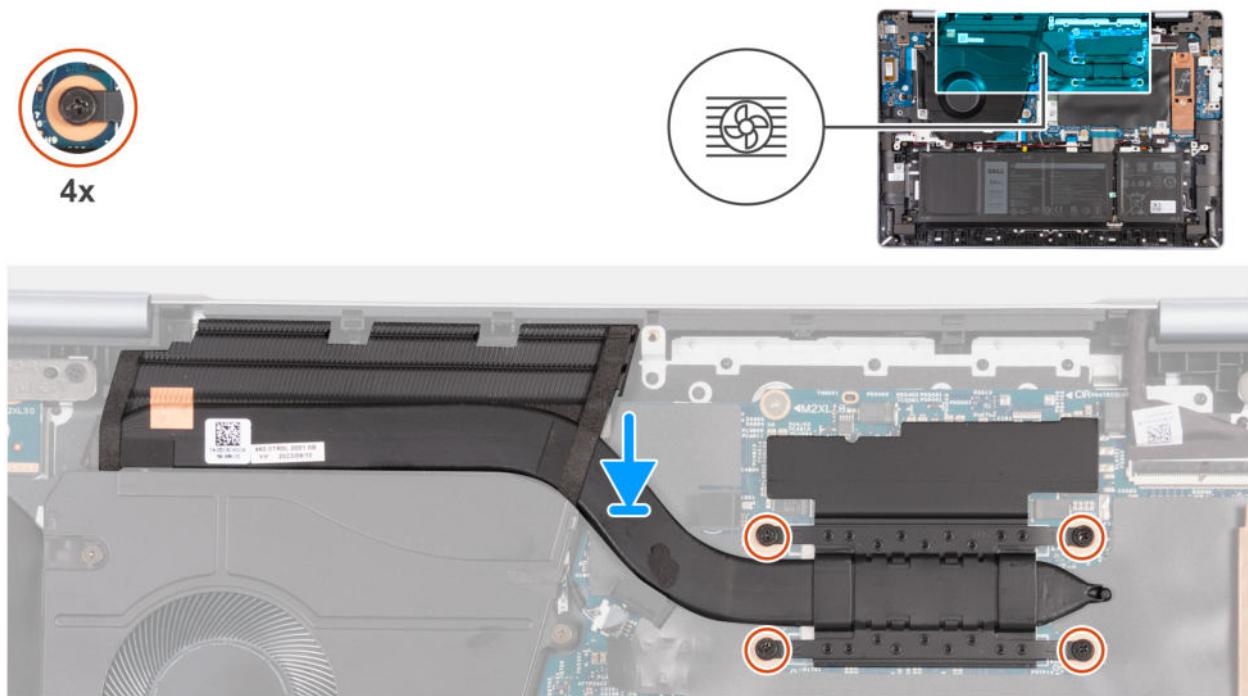


Figure 48. Installing the heat sink

Steps

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

Next steps

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

System board

Removing the system board

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

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#).
3. Remove the [4-cell battery \(64 Wh\)](#) or the [6-cell battery \(90 Wh\)](#), whichever is applicable.
4. Remove the [M.2 2230 solid-state drive](#) or the [M.2 2280 solid-state drive](#), whichever is applicable.
5. Remove the [wireless card](#).
6. Remove the [fan](#).
7. Remove the [heat sink](#).

About this task

The following image indicates the connectors on your system board.

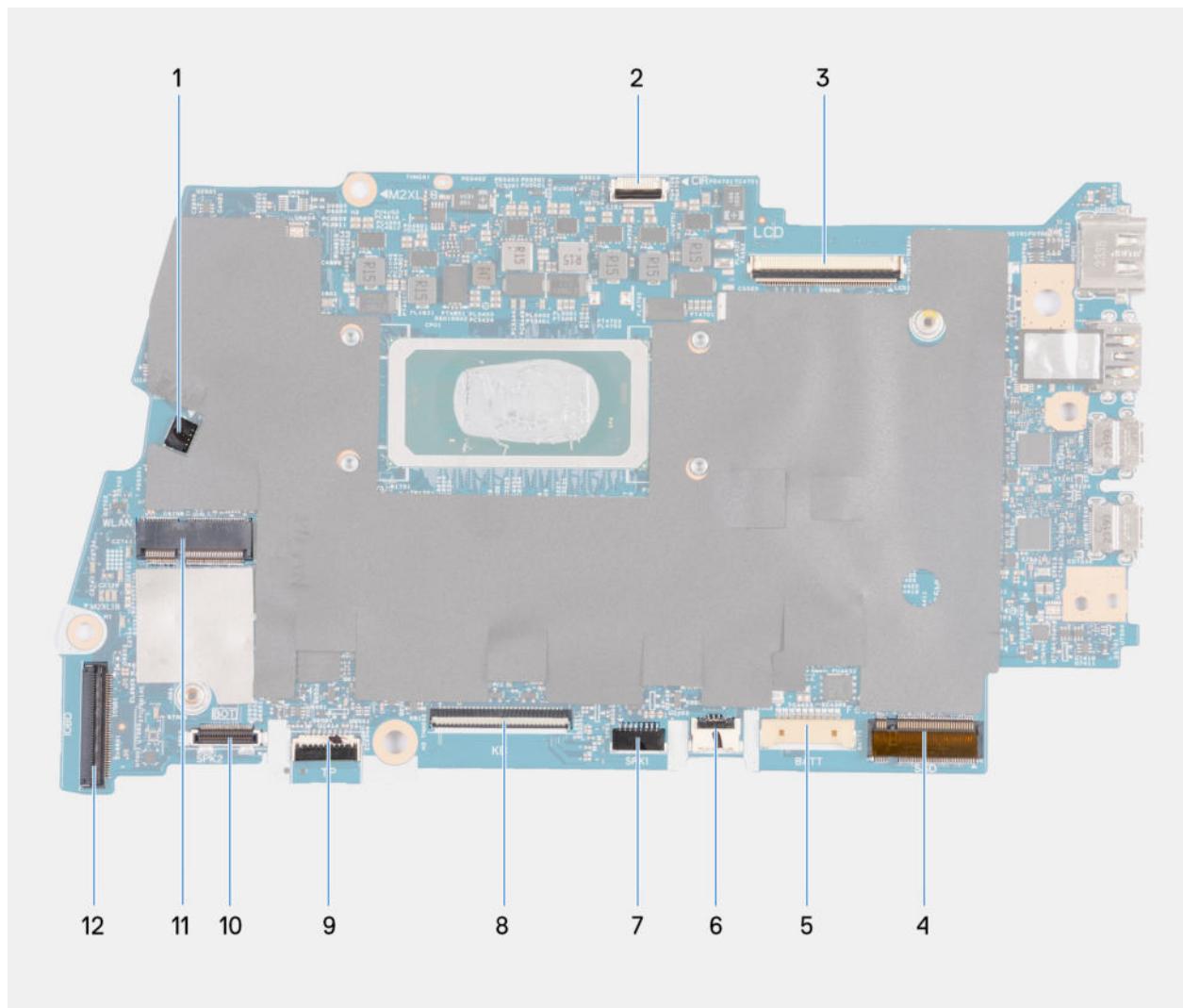


Figure 49. System-board connectors

1. Fan-cable connector
2. Display-board cable connector
3. Display-cable connector
4. M.2 solid-state drive connector
5. Battery-cable connector
6. Keyboard-backlight cable connector
7. Display-speaker cable connector

8. Keyboard-cable connector
9. Touchpad-cable connector
10. Speaker-I/O cable connector
11. M.2 wireless card connector
12. I/O-board cable connector

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

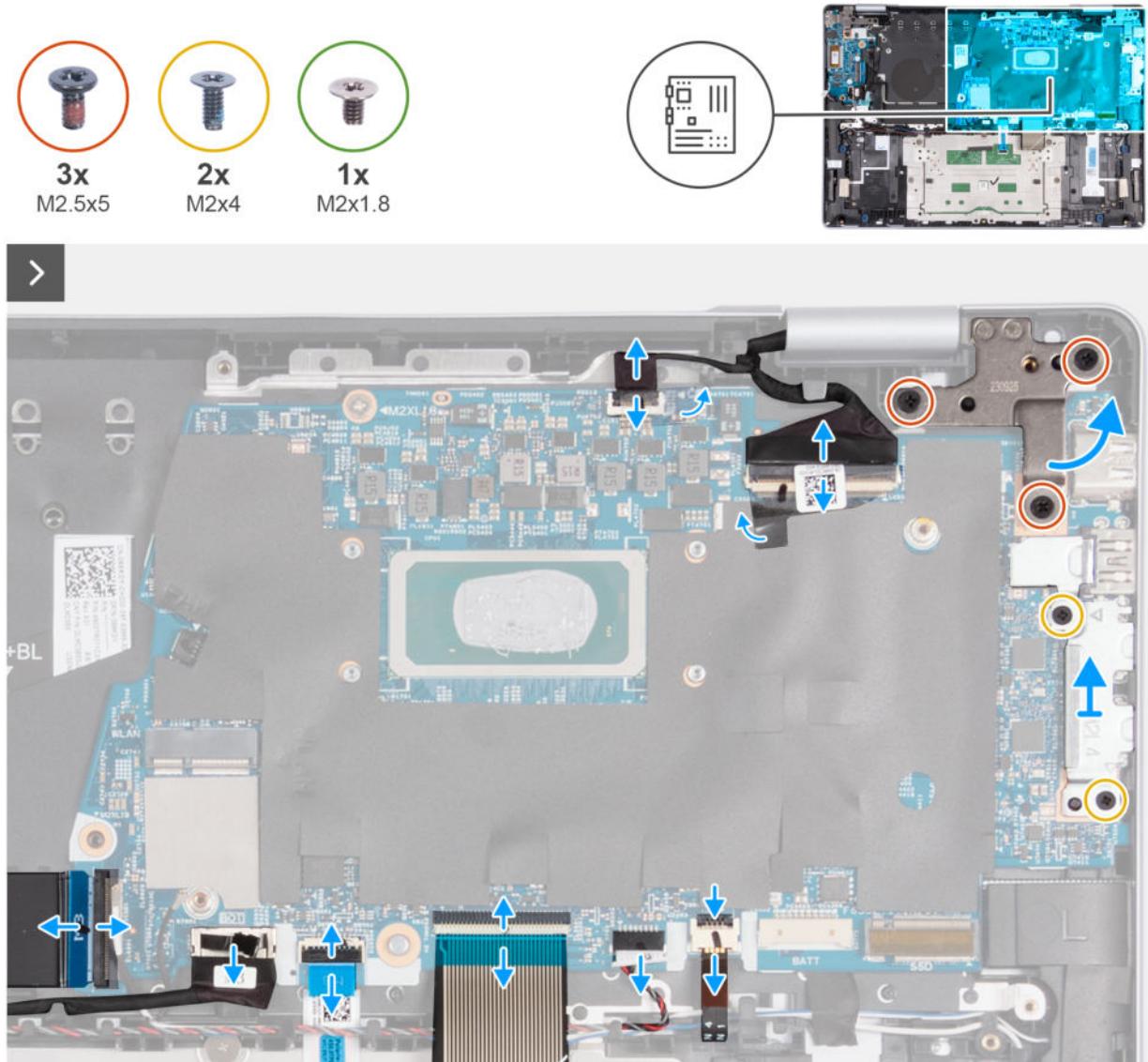


Figure 50. Removing the system board

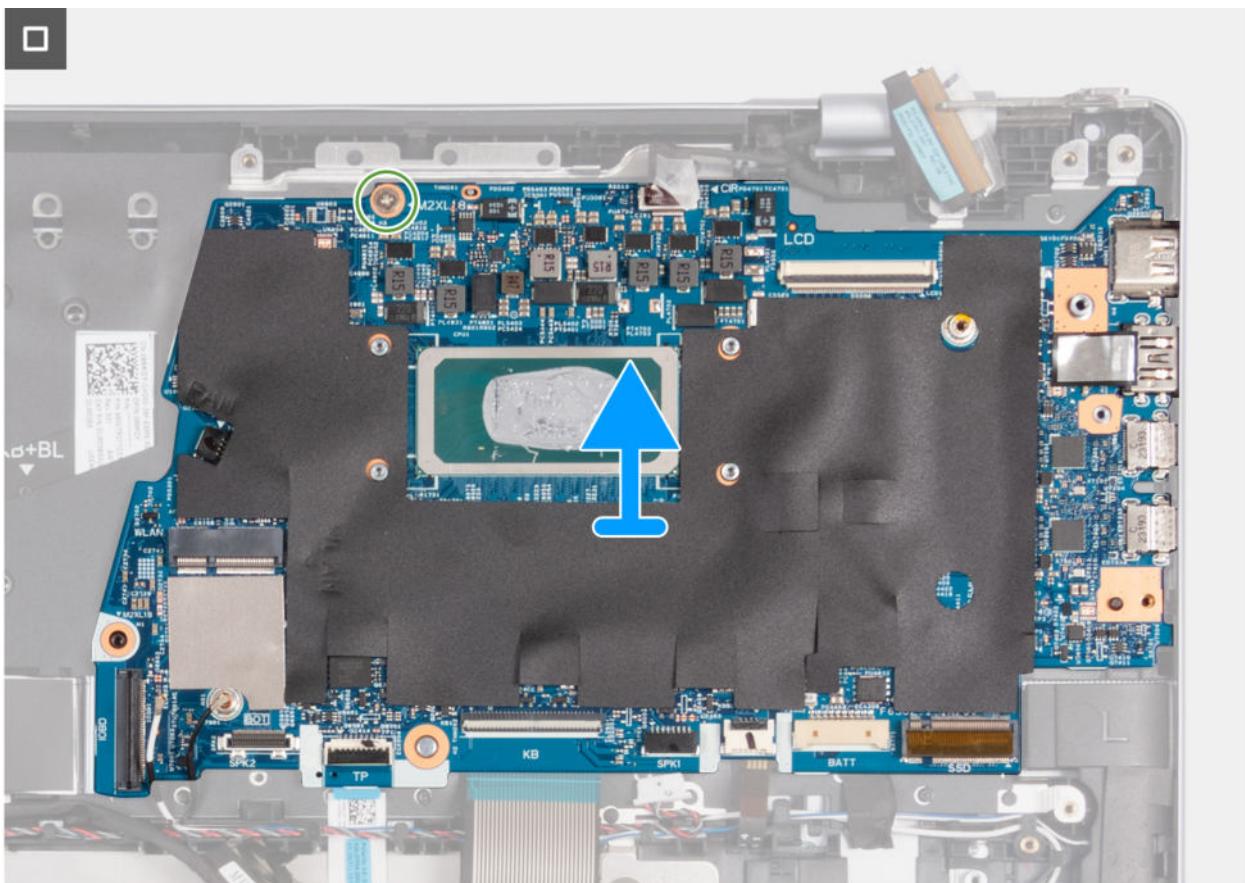


Figure 51. Removing the system board

Steps

1. Lift the latch and disconnect the display-board cable from the system board.
2. Lift the latch and disconnect the display cable from the system board.
3. Remove the three screws (M2.5x5) that secure the display hinge to the palm-rest and keyboard assembly.
4. Pry open the display hinge to an angle of 90 degrees.
5. Remove the two screws (M2x4) that secure the USB Type-C bracket to the system board.
6. Lift the USB Type-C bracket off the system board.
7. Lift the latch and disconnect the keyboard-backlight cable from the system board.
8. Disconnect the display-speaker cable from the system board.
9. Lift the latch and disconnect the keyboard cable from the system board.
10. Lift the latch and disconnect the touchpad cable from the system board.
11. Lift the latch and disconnect the speaker-I/O cable from the system board.
12. Lift the latch and disconnect the I/O-board cable from the system board.
13. Remove the screw (M2x1.8) that secures the system board to the palm-rest and keyboard assembly.
14. Lift one side of the system board and then slide 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

The following image indicates the connectors on your system board.

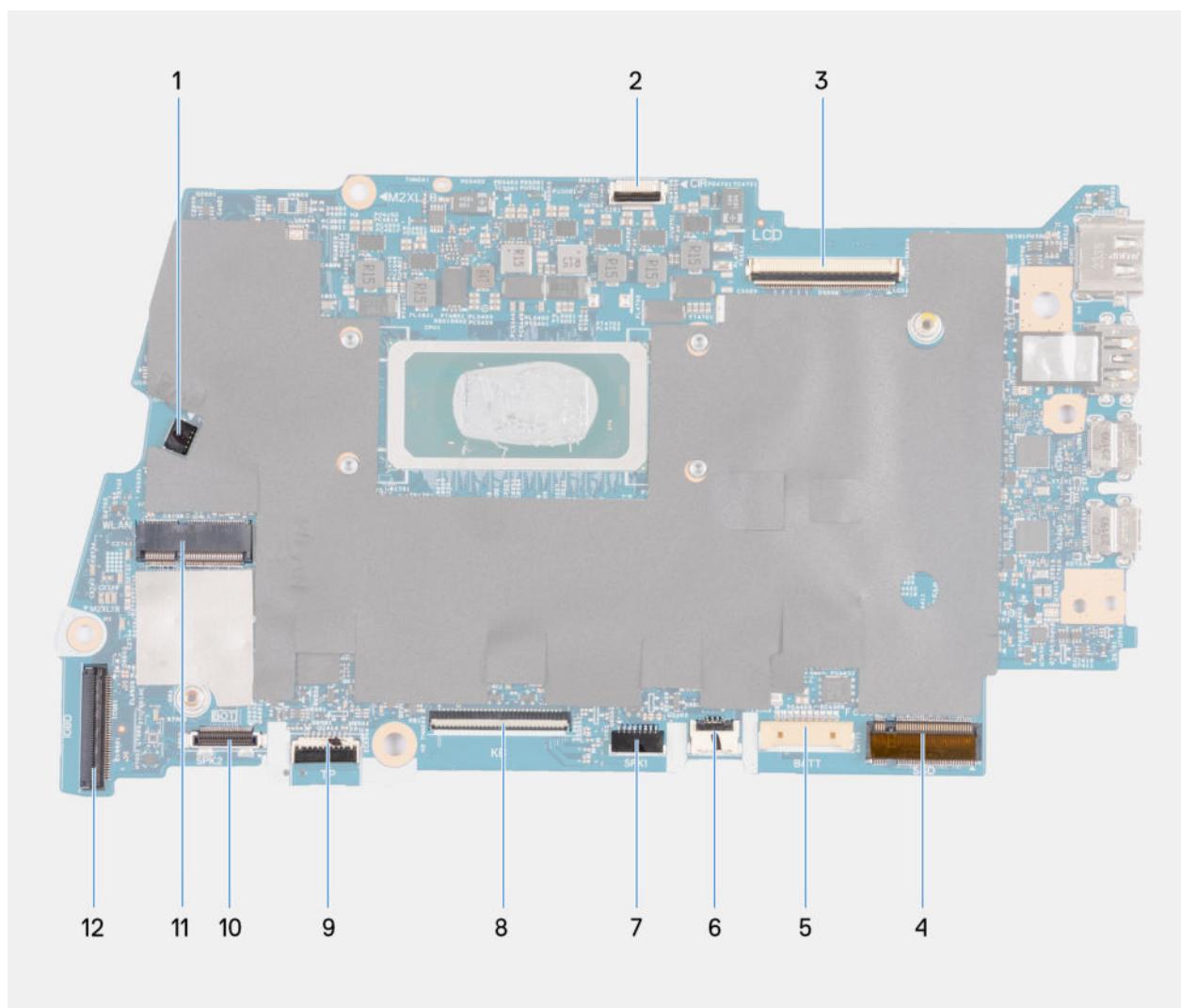


Figure 52. System-board connectors

1. Fan-cable connector
2. Display-board cable connector
3. Display-cable connector
4. M.2 solid-state drive connector
5. Battery-cable connector
6. Keyboard-backlight cable connector
7. Display-speaker cable connector
8. Keyboard-cable connector
9. Touchpad-cable connector
10. Speaker-I/O cable connector
11. M.2 wireless card connector
12. I/O-board cable connector

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

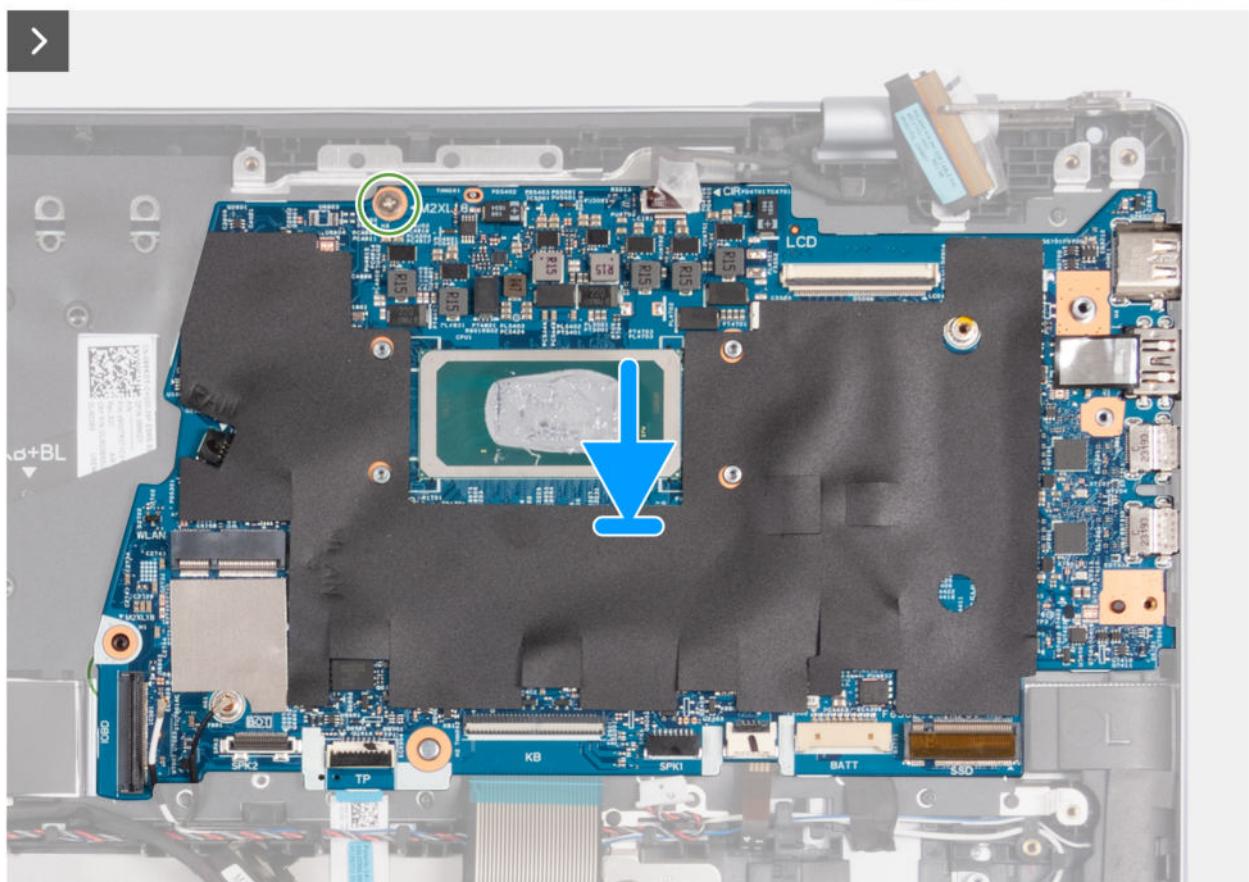
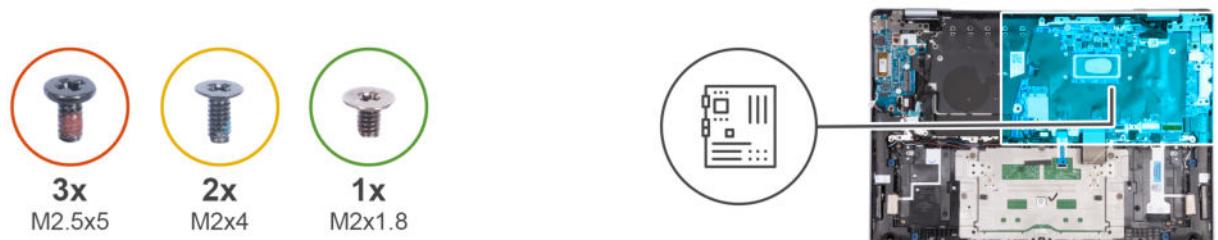


Figure 53. Installing the system board

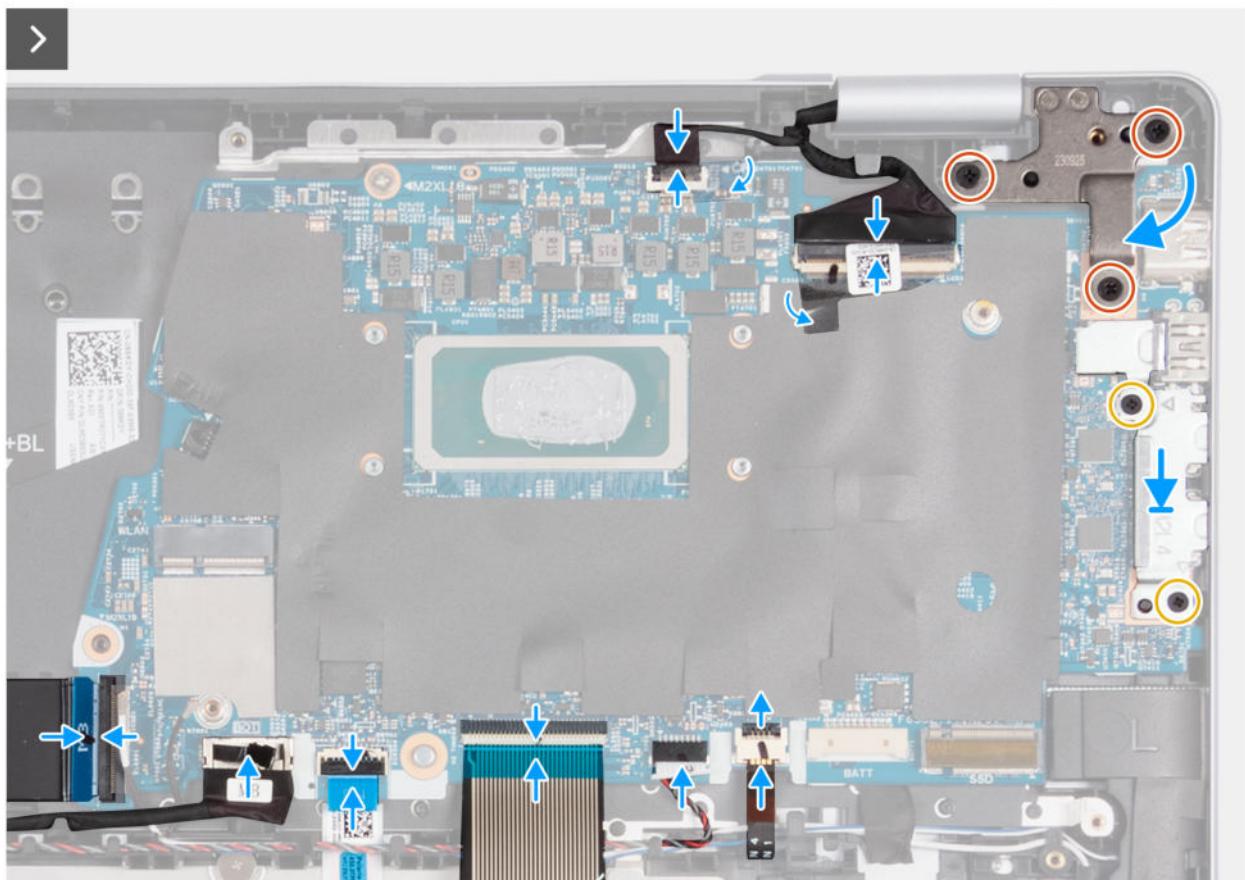
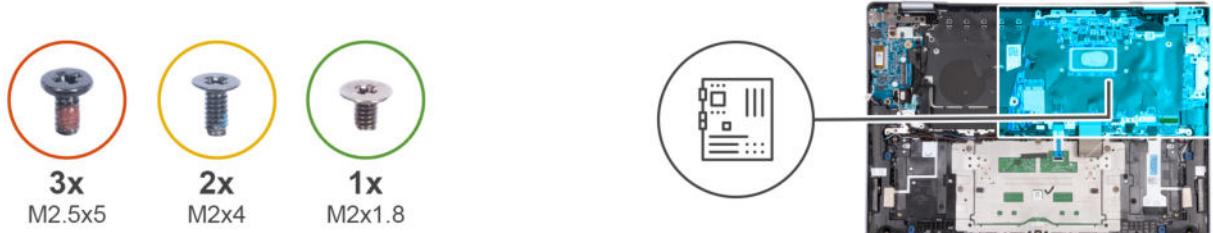


Figure 54. Installing the system board

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 screw (M2x1.8) that secures the system board to the palm-rest and keyboard assembly.
5. Close the display hinge and align the screw holes on the display hinge with the screw holes on the palm-rest and keyboard assembly.
6. Replace the three screws (M2.5x5) that secure the display-assembly hinge to the palm-rest and keyboard assembly
7. Place the USB Type-C bracket on the system board.
8. Align the screw holes on the USB Type-C bracket to the screw holes on the system board.
9. Replace the two screws (M2x4) that secure the USB Type-C bracket to the system board.
10. Connect the display-board cable to the system board and close the hatch.
11. Connect the display cable to the system board and close the hatch.
12. Connect the keyboard-backlight cable to the system board and close the latch.
13. Connect the display-speaker cable to the connector on the system board.
14. Connect the keyboard cable to the system board and close the latch.
15. Connect the touchpad cable to the system board and close the latch.

16. Connect the speaker-I/O cable to the connector on the system board.
17. Connect the I/O-board cable to the connector on the system board and close the latch.

Next steps

1. Install the [heat sink](#).
2. Install the [fan](#).
3. Install the [wireless card](#).
4. Install the [M.2 2230 solid-state drive](#) or [M.2 2280 solid-state drive](#), whichever is applicable.
5. Install the [4-cell battery \(64 Wh\)](#) or the [6-cell battery \(90 Wh\)](#), whichever is applicable.
6. Install the [base cover](#).
7. Follow the procedure in [After working inside your computer](#).

Touchpad

Removing the touchpad

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

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
 2. Remove the [base cover](#).
 3. Remove the [4-cell battery \(64 Wh\)](#) or the [6-cell battery \(90 Wh\)](#), whichever is applicable.
-  **NOTE:** Ensure that your computer is in Service Mode. For more information, see step 6 in [Before working inside your computer](#).

About this task

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

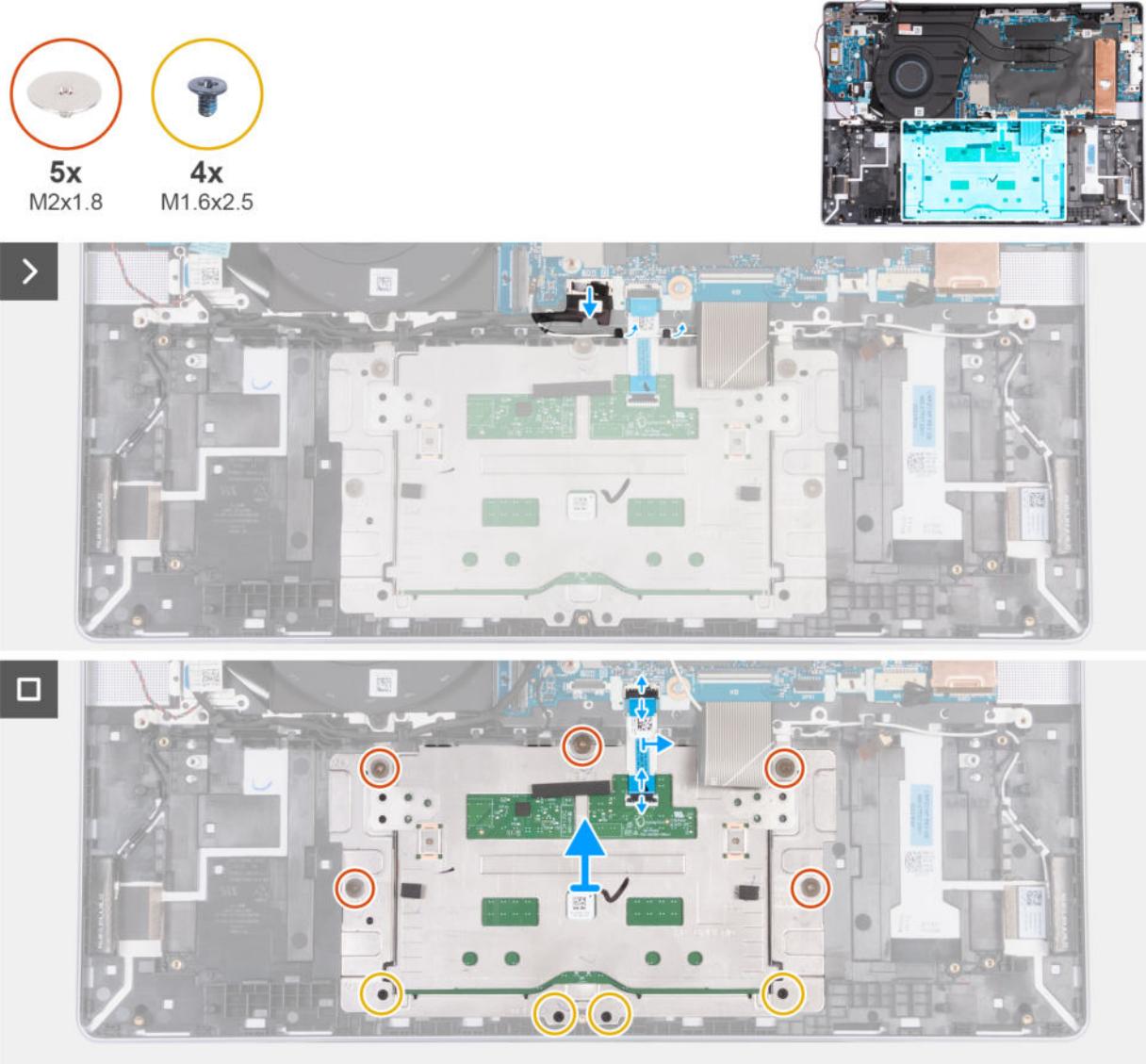


Figure 55. Removing the touchpad

Steps

1. Lift the latch and disconnect the touchpad cable from the system board.
2. Lift the speaker-I/O cable from their routing guides so that the touchpad cable is not obstructed.
3. Lift the latch and disconnect the touchpad cable from the touchpad.
4. Remove the five screws (M2x1.8) and the four screws (M1.6x2.5) that secure the touchpad bracket to the palm-rest and keyboard assembly.
5. Lift the touchpad bracket off the palm-rest and keyboard assembly.
6. Lift the touchpad off the palm-rest and keyboard assembly.

Installing the touchpad

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

Prerequisites

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

About this task

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

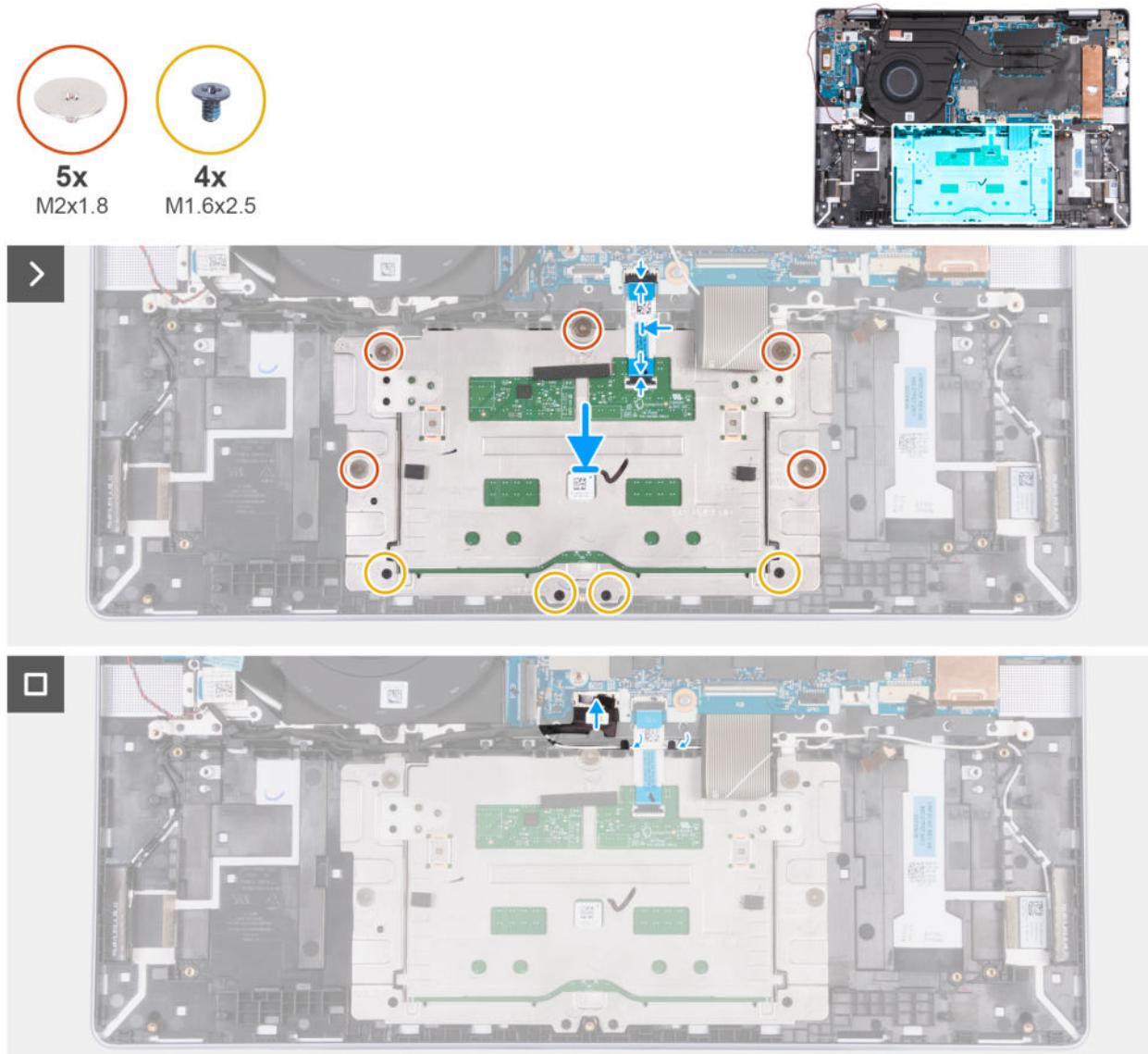


Figure 56. Installing the touchpad

Steps

1. Place the touchpad into its slot on the palm-rest and keyboard assembly.
2. Place the touchpad bracket on the touchpad.
3. Align the screw holes on the touchpad bracket with the screw holes on the palm-rest and keyboard assembly.
4. Replace the five screws (M2x1.8) and the four screws (M1.6x2.5) that secure the touchpad bracket to the palm-rest and keyboard assembly.
5. Connect the touchpad cable to the touchpad and close the latch.
6. Connect the touchpad cable to the system board and close the latch.
7. Route the speaker-I/O cable through the routing guides.

Next steps

1. Install the [4-cell battery \(64 Wh\)](#) or the [6-cell battery \(90 Wh\)](#), whichever is applicable.
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 [4-cell battery \(64 Wh\)](#) or the [6-cell battery \(90 Wh\)](#), whichever is applicable.
4. Remove the [M.2 2230 solid-state drive](#) or the [M.2 2280 solid-state drive](#), whichever is applicable.
5. Remove the [wireless card](#).
6. Remove the [display assembly](#).
7. Remove the [fan](#).
8. Remove the [I/O board](#).
9. Remove the [system board](#).
 **NOTE:** The system board can be removed with the heat sink attached.
10. Remove the [power button](#).
11. Remove the [speakers](#).
12. Remove the [touchpad](#).

About this task

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

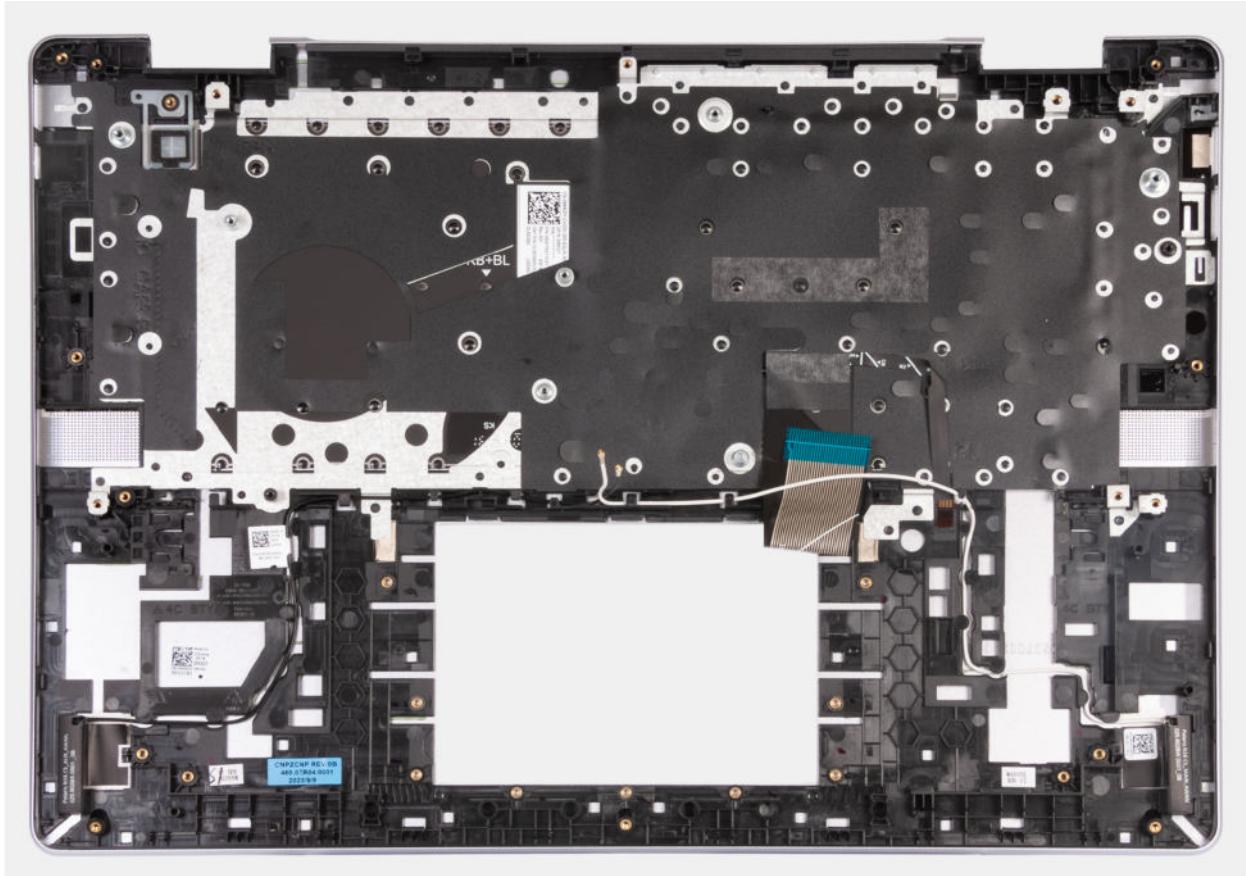


Figure 57. Palm-rest and keyboard assembly of Inspiron 16 7640 2-in-1

Steps

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

Installing the palm-rest and keyboard assembly

 **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 replacement palm-rest and keyboard assembly comes pre-assembled with the following components.

- Palm rest
- Keyboard
- Wireless antennas

 **NOTE:** The service replacement palm-rest and keyboard assembly comes with two support brackets. These brackets are for computers that are shipped with a 4-cell battery (64 Wh). If the replacement palm-rest and keyboard assembly is for a computer with a 6-cell battery (90 Wh), remove the two brackets from the palm-rest and keyboard assembly before installing the 6-cell battery (90 Wh).

For more information about the support brackets, see the technical sheet that is shipped along with the service replacement palm-rest and keyboard assembly.

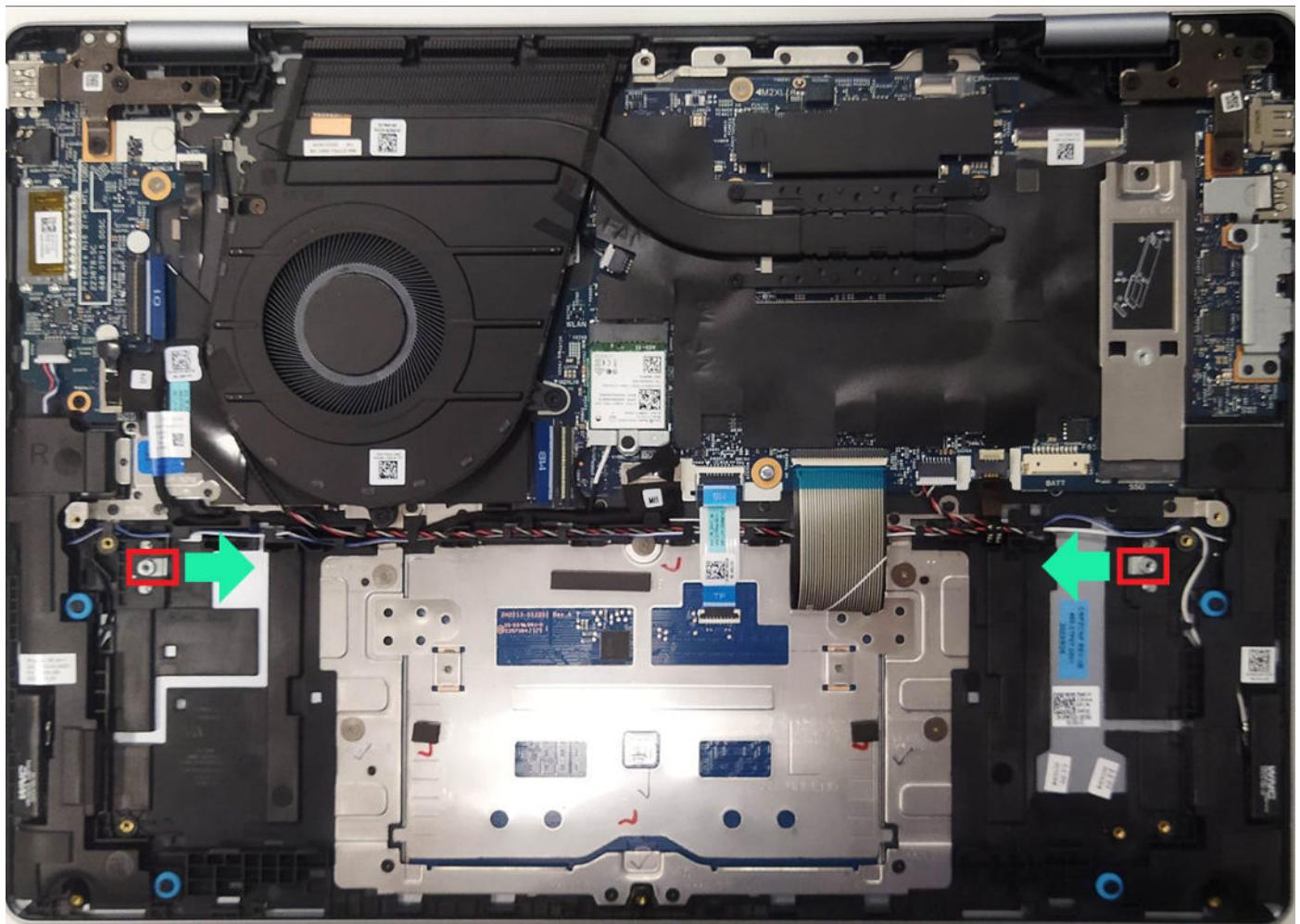


Figure 58. Support brackets for the 4-cell battery (64 Wh)

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

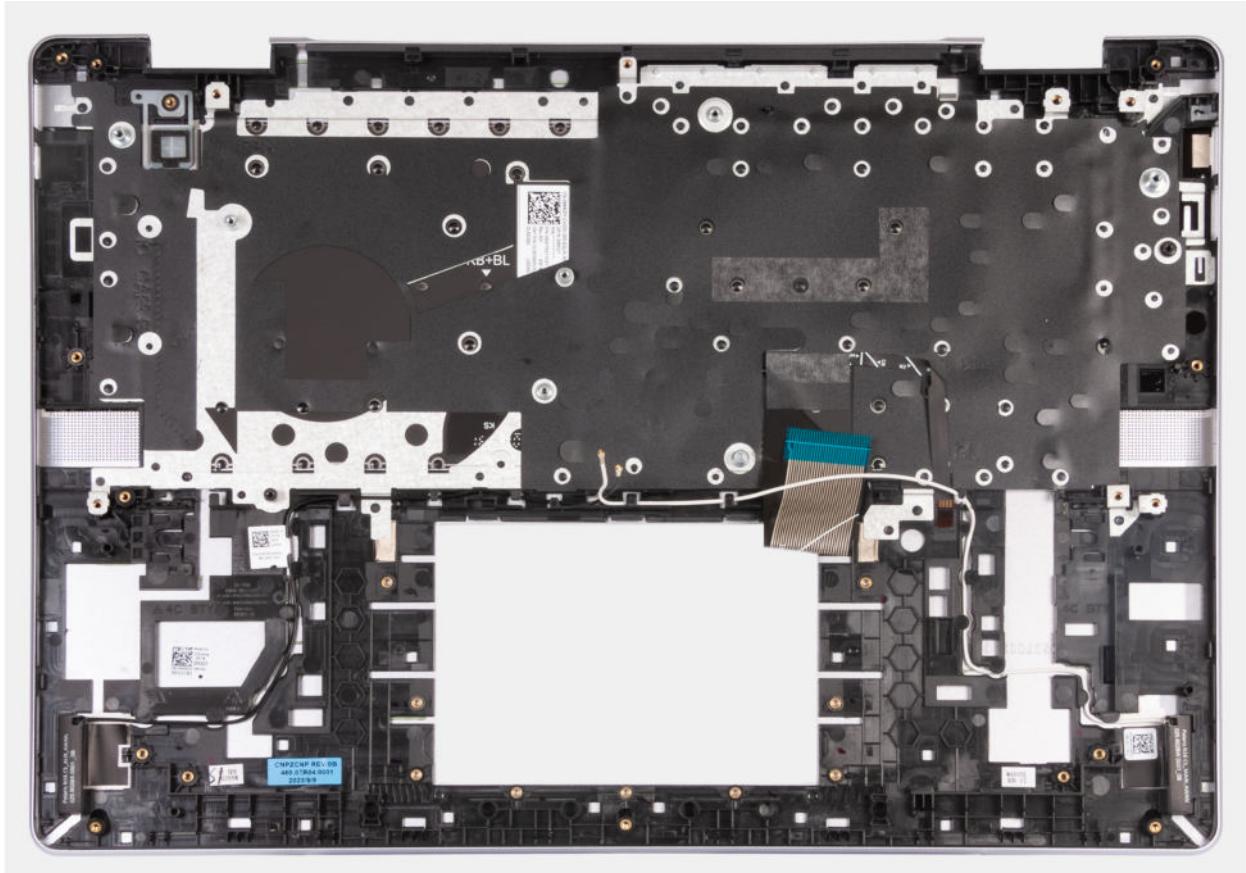


Figure 59. Palm-rest and keyboard assembly of Inspiron 16 7640 2-in-1

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.

Next steps

1. Install the [touchpad](#).
2. Install the [speakers](#).
3. Install the [power button](#).
4. Install the [system board](#).
i **NOTE:** The system board can be replaced with the heat sink pre-attached.
5. Install the [I/O board](#).
6. Install the [fan](#).
7. Install the [display assembly](#).
8. Install the [wireless card](#).
9. Install the [M.2 2230 solid-state drive](#) or the [M.2 2280 solid-state drive](#), whichever is applicable.
10. Install the [4-cell battery \(64 Wh\)](#) or the [6-cell battery \(90 Wh\)](#), whichever is applicable.
11. Install the [base cover](#).
12. Follow the procedure in [After working inside your computer](#).

Software

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

Operating system

Your Inspiron 16 7640 2-in-1 supports the following operating systems:

- Windows 11 Pro
- Windows 11 Pro National Education
- Windows 11 Home
- Windows 11 Home (S mode)

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](#).

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 27. 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.

(i) | 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)
- (i) | 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

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

Table 28. System setup options—Overview menu

Overview	
Inspiron 16 7640 2-in-1	
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	
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 28. 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 29. 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 29. System setup options—Boot Configuration menu (continued)

Boot Configuration	
	<p>Default: OFF</p> <p>(i) NOTE: If Custom Mode is not enabled, any changes made with respect to the keys will not be saved.</p>
Custom Mode Key Management	<p>Allows for selection of key database.</p> <ul style="list-style-type: none">● 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. <p>By default, PK security key database is selected.</p> <p>By default, Save to File is selected.</p>

Table 30. 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	
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 31. 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	
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 32. 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
Touchscreen	
Touchscreen	Enable or disable the touchscreen. By default, Touchscreen is enabled.
Full Screen Logo	
Full Screen Logo	Enables or disables display of full screen logo if the image matches screen resolution. Default: OFF

Table 33. System setup options—Connection menu

Connection	
Wireless Device Enable	
WLAN	Enables or disables the internal WLAN device. By default, WLAN is selected.

Table 33. System setup options—Connection menu (continued)

Connection	
Bluetooth®	Enables or disables the internal Bluetooth device. By default, Bluetooth is selected.
Enable UEFI Network Stack	Enables or disables the UEFI Network Stack. Default: Selective Enabled
Dynamic Wireless Transmit Power	Enables or disables increase of transmit power of WLAN device. By default, Dynamic Wireless Transmit Power is 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 34. 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

Table 34. System setup options—Power menu (continued)

Power	
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. Default: ON

Table 35. 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	By default, the PPI Bypass for Clear Commands option is disabled. For additional security, Dell Technologies recommends keeping the PPI Bypass for Clear Commands option disabled.
Clear	When enabled, the Clear option clears information that is stored in the TPM after exiting the computer's BIOS. This option returns to the disabled state when the computer restarts. By default, the Clear option is disabled. Dell Technologies recommends enabling the Clear option only when TPM data is required to be cleared.
SMM Security Mitigation	Enables or disables additional UEFI SMM Security Mitigation protections. This option uses the Windows SMM Security Mitigations Table (WSMT) to confirm to the operating system that security best practices have been implemented by the UEFI firmware. By default, the SMM Security Mitigation option is enabled. For additional security, Dell Technologies recommends keeping the SMM Security Mitigation option enabled unless you have a specific application which is not compatible.
NOTE: This feature may cause compatibility issues or loss of functionality with some legacy tools and applications.	
Data Wipe on Next Boot	
Start Data Wipe	Data Wipe is a secure wipe operation that deletes information from a storage device. CAUTION: The secure Data Wipe operation deletes information in a way that it cannot be reconstructed. Commands such as delete and format in the operating system may remove files from showing up in the file system. However, they can be reconstructed through forensic means as they are still represented on the physical media. Data Wipe prevents this reconstruction and is not recoverable. When enabled, the data wipe option will prompt to wipe any storage devices that are connected to the computer on the next boot. By default, the Start Data Wipe option is disabled.
Absolute®	Absolute Software provides various cyber security solutions, some requiring software preloaded on Dell computers and integrated into the BIOS. To use these features, you must enable the Absolute BIOS setting and contact Absolute for configuration and activation.

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

Security	
	<p>By default, the Absolute option is enabled.</p> <p>For additional security, Dell Technologies recommends keeping the Absolute option enabled.</p> <p>NOTE: When the Absolute features are activated, the Absolute integration cannot be disabled from the BIOS setup screen.</p>
UEFI Boot Path Security	<p>Enables or disables the computer to prompt the user to enter the Administrator password (if set) when booting to a UEFI boot path device from the F12 boot menu.</p> <p>By default, the Always Except Internal HDD option is enabled.</p>

Table 36. 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
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

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

Passwords	
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 37. 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	Allows 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 38. 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 39. 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 40. 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.
	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 41. 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	

Table 41. System setup options—Virtualization Support menu (continued)

Virtualization Support	
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 42. 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
Intel® Hyper-Threading Technology	
Enable Intel® Hyper-Threading Technology	Enables or disables Intel® Hyper-Threading technology. Default: ON

Table 43. 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**.
(i) 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.

(i) 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 44. 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 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. Install the [base cover](#).

Clearing BIOS (System Setup) and System passwords

About this task

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

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

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.

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

Table 45. LED error codes

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

- 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].

i|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:

- Press the power button to start the computer.
- 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.
- For cases, when a [2,7] error code is shown, check to see if the display cable is properly connected.
- 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

- Power off the Dell laptop.
- Disconnect any peripherals that are connected to the laptop. Connect only the AC adapter (charger) to the laptop.
- Ensure that the LCD (screen) is clean (no dust particles on the surface of the screen).
- 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.
- The screen displays solid colors and change colors on the entire screen to white, black, red, green, and blue twice.
- Then it displays the colors white, black, and red.
- Carefully inspect the screen for abnormalities (any lines, fuzzy color, or distortion on the screen).
- At the end of the last solid color (red), the computer shuts down.

i|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 7640 2-in-1.

Table 46. System-diagnostic lights

Blinking pattern		Problem description	Suggested resolution
Amber	White		
1	1	TPM detection failure	Replace the system board.
1	2	Unrecoverable SPI Flash Failure	Replace the system board.
1	5	EC unable to program i-Fuse	Replace the system board.
1	6	Generic catch-all for ungraceful EC code flow errors	Disconnect all the power sources (AC and battery) and drain the flea power by pressing and holding down the power button for 3 to 5 seconds to ensure the power is drained.
2	1	CPU failure	<ul style="list-style-type: none"> Run the Dell Support Assist/Dell Diagnostics tool. If the problem persists, replace the system board.
2	2	System board failure (included BIOS corruption or ROM error)	<ul style="list-style-type: none"> Flash latest BIOS version If the problem persists, replace the system board.
2	3	No memory/RAM detected	<ul style="list-style-type: none"> Confirm that the memory module is installed properly. If the problem persists, replace the memory module.
2	6	System board/Chipset Error	Replace the system board.
2	7	LCD failure (SBIOS message)	Replace the LCD module.
2	8	LCD failure (EC detection of power rail failure)	Replace the system board.
3	1	CMOS battery failure	<ul style="list-style-type: none"> Reset the main battery connection. If the problem persists, replace the main battery.
3	2	PCI or Video card/chip failure	Replace the system board.
3	3	BIOS Recovery image not found	<ul style="list-style-type: none"> Flash latest BIOS version If the problem persists, replace the system board.
3	4	BIOS Recovery image found but invalid	<ul style="list-style-type: none"> Flash latest BIOS version If the problem persists, replace the system board.
3	5	Power rail failure	Replace the system board.

Table 46. System-diagnostic lights (continued)

Blinking pattern		Problem description	Suggested resolution
Amber	White		
3	6	Flash corruption detected by SBIOS.	<ul style="list-style-type: none">• Press the power button for over 25 seconds to do an RTC reset. If the problem persists, replace the system board.• Disconnect all the power sources (AC and battery) and drain the flea power by pressing and holding down the power button for 3 to 5 seconds to ensure the power is drained.• Run "BIOS recovery from USB", and the instructions are in the website Dell support.• If the problem persists, replace the system board.
3	7	Timeout waiting on ME to reply to HECI message.	Replace the system board.

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

Recovering the operating system

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

Dell SupportAssist OS Recovery is a stand-alone tool that is preinstalled 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**.

Recovering the operating system

When your Chromebook operating system is not working properly, you can recover it. Recovery is removing and reinstalling the operating system.

To know how to recover your Chromebook operating system, see [Recover your Chromebook](#) at <https://support.google.com/chromebook>.

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 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.

Getting help and contacting Dell

Self-help resources

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

Table 47. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	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.	<p>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.</p> <p>For more information about how to find the Service Tag for your computer, see Locate the Service Tag on your computer.</p>
Dell knowledge base articles	<ol style="list-style-type: none"> 1. Go to www.dell.com/support. 2. On the menu bar at the top of the Support page, select Support > Knowledge Base. 3. In the Search field on the Knowledge Base page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles.

Contacting Dell

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

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

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