

Inspiron 14 5440

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 14 5440

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. Headset (headphone and microphone combo) port

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

3. USB 3.2 Gen 1 (5 Gbps) port

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

4. Wedge-shaped lock slot

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

Left



Figure 2. Left view of computers shipped with core 5 and core 7 processors

1. Power-adaptor port

Connect your power-adaptor.

2. Battery-status light

Indicates the battery-charge status.

- Solid yellow-Battery charge is low.

- Blinking yellow-Battery charge is critical.

3. HDMI 1.4 port

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

4. USB 3.2 Gen 1 (5 Gbps) port

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

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

Supports DisplayPort 1.4, enables you to connect to an external display using a display adapter. Provides data transfer rates of up to 10 Gbps.

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



Figure 3. Left view of computers shipped with i3 and i5 processors

1. Power adapter port

Connect your power-adapter.

2. Battery-status light

Indicates the battery-charge status.

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

3. HDMI 1.4 port

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

4. USB 3.2 Gen 1 (5 Gbps) port

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

5. USB 3.2 Gen 1 (5 Gbps) Type-C port Data only

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

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

Top

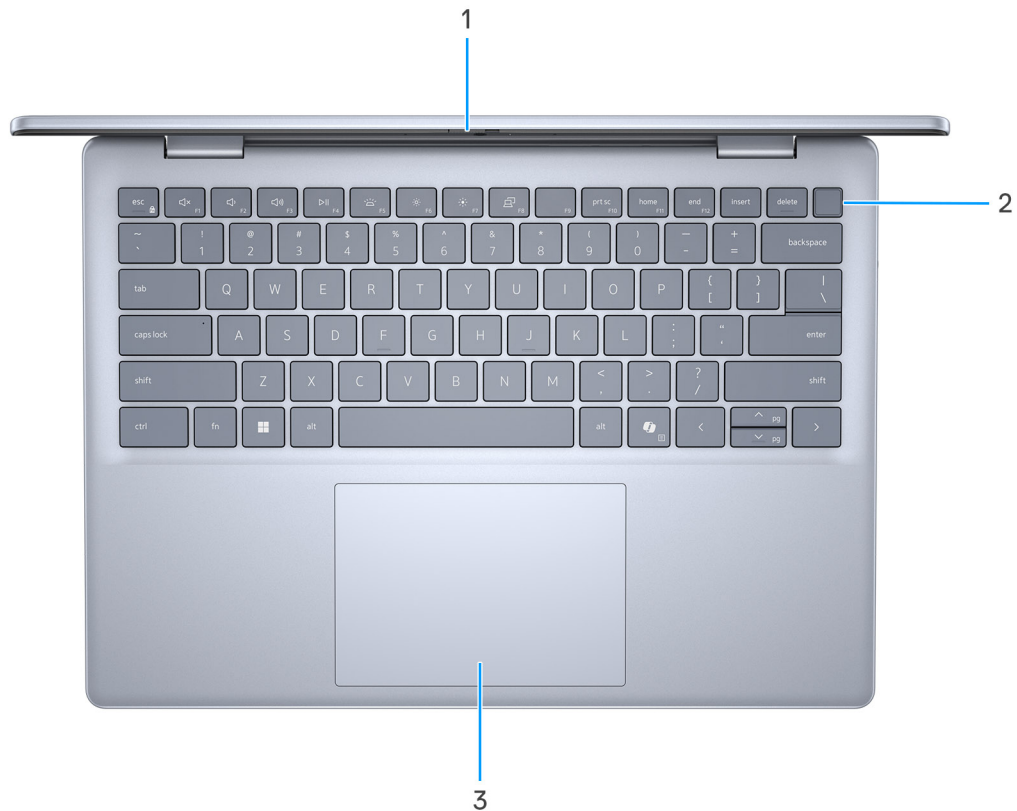


Figure 4. Top view

1. Display

Displays the data, videos, and photos.

2. Fingerprint reader (optional)

Press your finger on the fingerprint reader to log in to your computer. The fingerprint reader enables your computer to recognize your fingerprints as a password.

i NOTE: Configure the fingerprint reader to register your fingerprint and enable access.

3. Touchpad

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

Front



Figure 5. Front view

1. Left microphone

Provides digital sound input for audio recording and voice calls.

i **NOTE:** Computers that are shipped with plastic chassis have only one microphone.

2. Camera shutter

Slide the privacy shutter to the left to access the camera lens.

i **NOTE:** The camera shutter is only available on computers that are shipped with an aluminum chassis.

3. Camera

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

4. Camera-status light

Turns on when the camera is in use.

5. Right microphone

Provides digital sound input for audio recording and voice calls.

i **NOTE:** Computers that are shipped with plastic chassis have only one microphone.

6. Display

Displays the data, videos, and photos.

Bottom

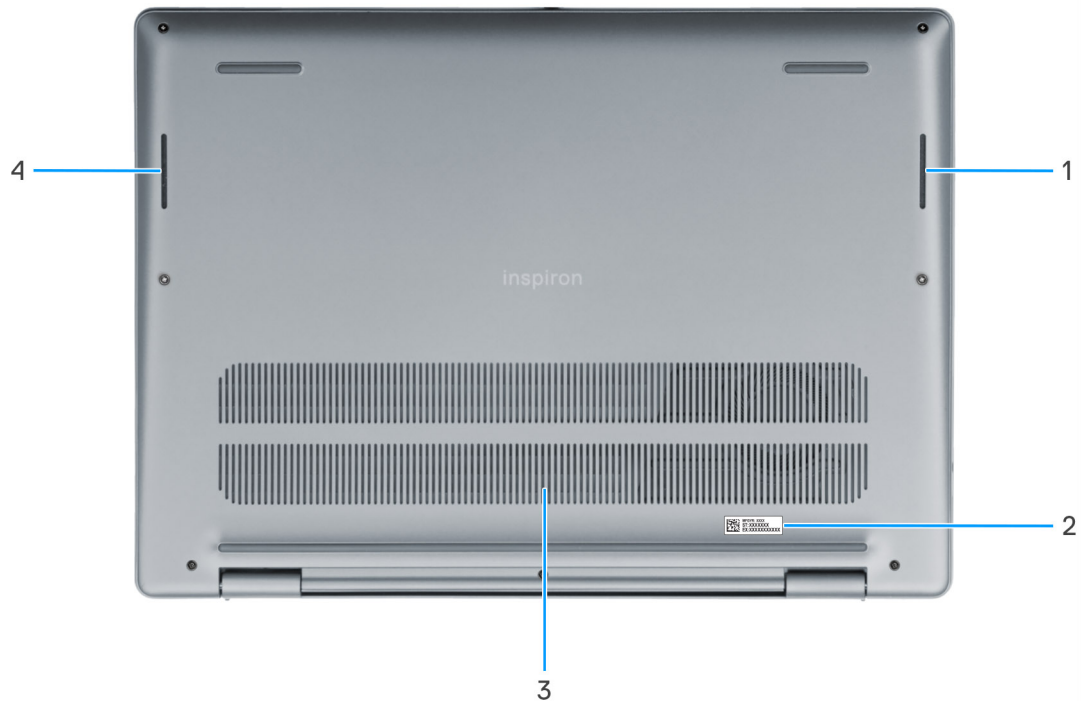


Figure 6. Bottom view

1. Right speaker

Provide audio output.

2. Service Tag label

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

3. Air vents

Air vents provide ventilation for your computer. Clogged air vents can cause overheating and can affect your computer's performance and potentially cause hardware issues. Keep the air vents clear of obstructions and clean them regularly to prevent the build-up of dust and dirt. For more information about cleaning air vents, search for articles in the Knowledge Base Resource at www.dell.com/support.

4. Left speaker

Provide audio output.

Service Tag

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



Figure 7. Service Tag location

Battery charge and status light

The following table lists the battery charge and status light behavior of your Inspiron 14 5440.

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 14 5440

About this task

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

Steps

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



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

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

2. Finish the operating system setup.

For Ubuntu:

Follow the on-screen instructions to complete the setup. For more information about installing and configuring Ubuntu, search in the Knowledge Base Resource at www.dell.com/support.

For Windows:

Follow the on-screen instructions to complete the setup. When setting up, Dell Technologies recommends that you:

- Connect to a network for Windows updates.

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

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

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

Table 2. Locate Dell apps in Windows in S-mode

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

Table 3. Locate Dell apps in Windows

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

Specifications of Inspiron 14 5440

Dimensions and weight

The following table lists the height, width, depth, and weight of your Inspiron 14 5440.

Table 4. Dimensions and weight

Description	Aluminum chassis	Plastic chassis
Height:		
Front height	0.62 in. (15.86 mm)	0.67 in. (16.90 mm)
Rear height	0.68 in. (17.31 mm)	0.71 in. (18.07 mm)
Width	12.36 in. (314.00 mm)	12.36 in. (314.00 mm)
Depth	8.90 in. (226.15 mm)	8.90 in. (226.15 mm)
Weight <i>i</i> NOTE: The weight of your computer depends on the configuration that is ordered and manufacturing variability.	Maximum: 3.59 lb (1.63 kg)	Maximum: 3.68 lb (1.67 kg)

Processor

The following table lists the details of the processors that are supported for your Inspiron 14 5440.

Table 5. Processor

Description	Option one	Option two	Option three	Option four
Processor type	13th Gen Intel Core i3-1305	13th Gen Intel Core i5-1335	13th Gen Intel Core 5-120U	Intel Core 7-150U
Processor wattage	15 W	15 W	15W	15 W
Processor total core count	5	10	10	10
Performance-cores	1	2	2	2
Efficient-cores	5	8	8	8
Processor total thread counts <i>i</i> NOTE: Intel Hyper-Threading Technology is only available on Performance-cores.	6	12	12	12
Processor speed	Up to 4.50 GHz	Up to 4.60 GHz	Up to 5.00 GHz	Up to 5.40 GHz

Table 5. Processor (continued)

Description		Option one	Option two	Option three	Option four
Performance-cores frequency					
	Processor base frequency	1.50 GHz	1.00 GHz	1.00 GHz	1.00 GHz
	Maximum turbo frequency	4.50 GHz	4.60 GHz	5.00 GHz	4.40 GHz
Efficient-cores frequency					
	Processor base frequency	1.50 GHz	0.70 GHz	0.70 GHz	0.70 GHz
	Maximum turbo frequency	3.30 GHz	3.40 GHz	3.30 GHz	3.30 GHz
Thermal Mode/Thermal Design Power (TDP)					
	Cool	9 W–15 W	9 W–15 W	9W–15W	9 W–15 W
	Optimized	9 W–29 W	9 W–29 W	9W–29W	9 W–29 W
	Quiet	9 W–15 W	9 W–15 W	9W–15W	9 W–15 W
	Ultra Performance	9 W–29 W	9 W–29 W	9W–29W	9 W–29 W
		 NOTE: Processor clock speeds and thermal design power differ according to the thermal mode selected in the My Dell app on your computer.			
Processor cache		10 MB	10 MB	12 MB	10 MB
Integrated graphics		Intel Graphics	Intel Graphics	Intel Graphics	Intel Graphics

Chipset

The following table lists the details of the chipset that is supported for your Inspiron 14 5440.

Table 6. Chipset

Description	Values
Chipset	Integrated in the processor
Processor	13th Generation Intel Core i3/i5 processors - Intel core 5/7 processors
DRAM bus width	64-bit
Flash EPROM	32 MB
PCIe bus	Up to Gen 3

Operating system

Your Inspiron 14 5440 supports the following operating systems:

- Windows 11 Home
- Windows 11 Home (S-mode)

- Windows 11 Pro
- Windows 11 Pro National Academic
- Ubuntu Linux 22.04 LTS, 64-bit

Memory

The following table lists the memory specifications of your Inspiron 14 5440.

Table 7. Memory specifications

Description	Values
Memory slots	Two-SODIMM slots
Memory type	DDR5, dual-channel
Memory speed	• 5200 MT/s • 4400 MT/s
Maximum memory configuration	32 GB
Minimum memory configuration	8 GB
Memory size per slot	8 GB
Memory configurations supported	For computers shipped with 1305/1335 processors • 8 GB: 1 x 8 GB, DDR5, 4400 MT/s, single-channel • 16 GB: 2 x 8 GB, DDR5, 4400 MT/s, dual-channel • 16 GB: 1 x 16 GB, DDR5, 4400 MT/s, single-channel • 32 GB: 2 x 16 GB, DDR5, 4400 MT/s, dual-channel For computers shipped with 120U/150U processors • 8 GB: 1 x 8 GB, DDR5, 5200 MT/s, single-channel • 16 GB: 2 x 8 GB, DDR5, 5200 MT/s, dual-channel • 24 GB: 1 x 8 GB + 1 x 16 GB, DDR5, 5200 MT/s, dual-channel • 32 GB: 2 x 16 GB, DDR5, 5200 MT/s, dual-channel

External ports

The following table lists the external ports on your Inspiron 14 5440.

Table 8. External ports

Description	Values
USB ports	for computer shipped with 1305/1335 processors • Two USB 3.2 Gen 1 (5 Gbps) ports • One USB 3.2 Gen 1 (5 Gbps) Type-C port for computer shipped with 120U/150U processors • Two USB 3.2 Gen 1 (5 Gbps) ports • One USB 3.2 Gen 2 (10 Gbps) Type-C with Power Delivery and DisplayPort™ 1.4 port
Audio port	One headset (headphone and microphone combo) port
Video port/ports	One HDMI 1.4 port  NOTE: HDMI output supports up to 1920x1080 @ 60Hz, 24bpp. No 4K/2K output supported.

Table 8. External ports (continued)

Description	Values
Media-card reader	One SD-card slot
Power-adaptor port	4.5 mm barrel
Security-cable slot	Not supported

Internal slots

The following table lists the internal slots of your Inspiron 14 5440.

Table 9. Internal slots

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

Wireless module

The following table lists the Wireless Local Area Network (WLAN) modules that are supported on your Inspiron 14 5440.

Table 10. Wireless module specifications

Description	Option one	Option two
Model number	Realtek RTL8852BE	Realtek RTL8851BE
Transfer rate	Up to 1201 Mbps	Up to 600 Mbps
Frequency bands supported	2.4 GHz/5 GHz	2.4 GHz/5 GHz
Wireless standards	- Wi-Fi 802.11 a/b/g - Wi-Fi 4 (Wi-Fi 802.11n) - Wi-Fi 5 (Wi-Fi 802.11ac) - Wi-Fi 6 (Wi-Fi 802.11ax)	- Wi-Fi 802.11 a/b/g - Wi-Fi 4 (Wi-Fi 802.11n) - Wi-Fi 5 (Wi-Fi 802.11ac) - Wi-Fi 6 (Wi-Fi 802.11ax)
Encryption	64-bit/128-bit WEP - AES-CCMP - TKIP	64-bit/128-bit WEP - AES-CCMP - TKIP
Bluetooth wireless card	Bluetooth 5.3	Bluetooth 5.3
	NOTE: The version of the Bluetooth wireless card may vary depending on the operating system that is installed on your computer.	

Audio

The following table lists the audio specifications of your Inspiron 14 5440.

Table 11. Audio specifications

Description		Values
Audio controller		Realtek ALC3254
Stereo conversion		Supported
Internal audio interface		High definition audio
External audio interface		One Universal audio jack
Number of speakers		Two
Internal-speaker amplifier		Supported (Audio codec integrated)
External volume controls		Keyboard shortcut controls
Speaker output:		
	Average speaker output	2 W x 2 = 4 W
	Peak speaker output	2.5 W x 2 = 5 W
Subwoofer output		Not supported
Microphone		Dual-array microphones in camera assembly

Storage

This section lists the storage options on your Inspiron 14 5440.

Your for example Inspiron 14 5440 supports the following storage configuration:

- One M.2 2230 solid-state drive

The primary drive of your, Inspiron 14 5440 varies with the storage configuration. For computers with a M.2 drive, the M.2 drive is the primary drive

Table 12. Storage specifications

Storage type	Interface type	Capacity
M.2 2230 solid-state drive	PCIe Gen 4 x4 NVMe	Up to 1 TB

Media-card reader

The following table lists the media cards that are supported on your Inspiron 14 5440.

Table 13. Media-card reader specifications

Description	Values
Media-card type	One SD-card slot
Media-cards supported	• Secure Digital (SD) • Secure Digital High Capacity (SDHC)

Table 13. Media-card reader specifications (continued)

Description	Values
	Secure Digital Extended Capacity (SDXC)
NOTE: The maximum capacity supported by the media-card reader varies depending on the standard of the media card that is installed on your computer.	

Keyboard

The following table lists the keyboard specifications of your Inspiron 14 5440.

Table 14. Keyboard specifications

Description	Values
Keyboard type	- AI hotkey backlit keyboard - AI hotkey non-backlit keyboard
Keyboard layout	QWERTY
Number of keys	- United States and Canada: 79 keys - United Kingdom: 80 keys - Japan: 83 keys - Brazil: 81 keys
Keyboard size	X=19.05mm key pitch Y=18.05mm 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. NOTE: You can define the primary behavior of the function keys (F1–F12) changing Function Key Behavior in BIOS setup program.

Keyboard function keys

The **F1–F12** keys at the top of the keyboard are function keys. By default, these keys are used to perform specific functions defined by the software application in use.

You can run the secondary tasks that are indicated by the symbols on the function keys by pressing the function key with **Fn**, for example, **Fn** and **F1**. See the table below for the list of secondary tasks and the key combinations to run them.

NOTE: Keyboard characters may differ depending on the keyboard language configuration. Keys that are used for tasks remain the same, regardless of the keyboard language.

NOTE: You can define the primary behavior of function keys in the **Function Key Behavior** menu of the BIOS setup program.

Table 15. Secondary tasks of keyboard keys

Key combination for task	What the task does
Fn and F1	Mutes audio
Fn and F2	Decreases audio volume

Table 15. Secondary tasks of keyboard keys (continued)

Key combination for task	What the task does
Fn and F3	Increases audio volume
Fn and F4	Plays or pauses media file
Fn and F6	Decreases display brightness
Fn and F7	Increases display brightness
Fn and F8	Switches to an external display
Fn and F10	Prints screen (Screen capture)
Fn and F11	Home (Moves cursor to the beginning of the line)
Fn and F12	End (Moves cursor to the end of the line)
Fn and Esc	Locks the Fn key on and off
Fn and Ctrl	Opens the menu of the software application

Keys with alternate characters

There are other keys on your keyboard with alternate characters. The symbols that are shown at the bottom of these keys are the main characters that are displayed when the key is pressed; the symbols that are shown at the top of these keys are displayed when the key is pressed with the shift key. For example, if you press **2**, **2** is displayed; if you press **Shift** and **2**, **@** is displayed.

Camera

The following table lists the camera specifications of your Inspiron 14 5440.

Table 16. Camera specifications

Description		Option one	Option two
Number of cameras		One	One
Camera type		FHD+ RGB	HD RGB
Camera location		Front	Front
Camera sensor type		CMOS sensor technology	CMOS sensor technology
Camera resolution:			
	Still image	2.07 megapixel	0.92 megapixel
	Video	1920 x 1080 (FHD) at 30 fps	1280 x 720 (HD) at 30 fps
Infrared camera resolution:			
	Still image	Not Supported	Not Supported
	Video	Not Supported	Not Supported
Diagonal viewing angle:			
	Camera	82 degrees	75 degrees
	Infrared camera	Not Supported	Not Supported

Touchpad

The following table lists the touchpad specifications of your Inspiron 14 5440.

Table 17. Touchpad specifications

Description		Values
Touchpad resolution:		>300 dpi
Touchpad dimensions:		
	Horizontal	115 mm (4.52 in.)
	Vertical	80 mm (3.14 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 14 5440.

Table 18. Power adapter specifications

Description		Values
Type		65 W AC adapter, 4.5 mm barrel
Input voltage		120 VAC–240 VAC
Input frequency		50 Hz–60 Hz
Input current (maximum)		1.70 A
Output current (continuous)		3.34 A
Rated output voltage		19.50 V
Temperature range:		
	Operating	0°C to 40°C (32°F to 104°F)
	Storage	-40°C to 70°C (-40°F to 158°F)

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

Battery

The following table lists the battery specifications of your Inspiron 14 5440.

Table 19. Battery specifications

Description	Option one	Option two	Option three
Battery type	4-cell lithium-ion, 54 Wh, ExpressCharge	4-cell lithium-ion, 64 Wh, ExpressCharge	3-cell lithium-ion, 41 Wh, ExpressCharge, ExpressCharge Boost

Table 19. Battery specifications (continued)

Description		Option one	Option two	Option three
Battery voltage		15 VDC	15.20 VDC	11.25 VDC
Battery weight (minimum)		0.23 Kg (0.52 lb)	0.26 Kg (0.57 lb)	0.18 Kg (0.39 lb)
Battery dimensions:				
	Height	5.75mm (0.23 in.)	5.75 mm (0.23 in.)	5.75 mm (0.23 in.)
	Width	271.90 mm (10.70 in.)	271.90 mm (10.70 in.)	206.40 mm (8.13 in.)
	Depth	82.00 mm (3.23 in.)	82.00 mm (3.23 in.)	82.00 mm (3.23 in.)
Temperature range:				
	Operating	- Charge: 0°C to 45°C (32°F to 113°F) - Discharge: 0°C to 70°C (32°F to 158°F)	- Charge: 0°C to 45°C (32°F to 113°F) - Discharge: 0°C to 70°C (32°F to 158°F)	- Charge: 0°C to 45°C (32°F to 113°F) - Discharge: 0°C to 70°C (32°F to 158°F)
	Storage	-20°C to 60°C (-4°F to 140°F)	-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.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.
Battery charging time (approximate) i 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 .		3 hours (when the computer is off)	3 hours (when the computer is off)	3 hours (when the computer is off)
⚠ 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 completely 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 14 5440.

Table 20. Display specifications

Description	Option one	Option two
Display type	14-inch Full High Definition Plus (FHD+) ComfortView	14-inch High Definition 2.2 K ComfortView Plus
Touch options	Not supported	Not supported

Table 20. Display specifications (continued)

Description		Option one	Option two
Display-panel technology		Wide-Viewing Angle (WVA)	Wide-Viewing Angle (WVA)
Display-panel dimensions (active area):			
	Height	301.59 mm (11.87 in.)	301.59 mm (11.87 in.)
	Width	188.50 mm (7.42 in.)	188.50 mm (7.42 in.)
	Diagonal	355.65 mm (14.00 in.)	355.65 mm (14.00 in.)
Display-panel native resolution		1920 x 1200	2240 x 1400
Luminance (typical)		250 nits	300 nits
Megapixels		2.3	3.1
Color gamut		45% NTSC	100% (sRGB)
Pixels Per Inch (PPI)		162	189
Contrast ratio (minimum)		600:1	1000:1
Response time (maximum)		35 ms	35 ms
Refresh rate		60 Hz	60 Hz
Horizontal view angle		• +/- 85 degrees, typical • +/- 80 degrees, minimum	• +/- 80 degrees (minimum) • +/- 85 degrees (typical)
Vertical view angle		• +/- 85 degrees, typical • +/- 80 degrees, minimum	• +/- 80 degrees (minimum) • +/- 85 degrees (typical)
Pixel pitch		0.157 mm	0.157 mm
Power consumption (maximum)		3.20 W	4.40 W
Anti-glare vs glossy finish		Anti-glare	Anti-glare

Fingerprint reader

The following table lists the fingerprint-reader specifications of your Inspiron 14 5440.

 **NOTE:** The fingerprint reader is on the power button.

Table 21. Fingerprint reader specifications

Description	Values
Fingerprint-reader sensor technology	Capacitive
Fingerprint-reader sensor resolution	500 ppi
Fingerprint-reader sensor pixel size	108 x 88

GPU—Integrated

The following table lists the specifications of the integrated Graphics Processing Unit (GPU) supported by your Inspiron 14 5440.

Table 22. GPU—Integrated

Controller	Memory size	Processor
Intel Graphics	Shared system memory	13th Generation Intel Core i3 processor
Intel UHD Graphics	Shared system memory	13th Generation Intel Core i5 processor
Intel Iris Xe Graphics	Shared system memory	Intel Core 5/7 processors

GPU—Discrete

The following table lists the specifications of the discrete Graphics Processing Unit (GPU) supported by your Inspiron 14 5440.

Table 23. GPU—Discrete

Controller	Memory size	Memory type
NVIDIA GeForce MX570A	2 GB	GDDR6

External display support

The following table lists the external display support for your Inspiron 14 5440.

Table 24. External display support

Graphics card	Supported external displays with laptop display enabled	Supported external displays with laptop display disabled
iGPU only	3	4

Operating and storage environment

This table lists the operating and storage specifications of your Inspiron 14 5440.

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

Table 25. Computer environment

Description	Operating	Storage
Temperature range	0°C to 40°C (32°F to 104°F)	-40°C to 65°C (-40°F to 149°F)
Relative humidity (maximum)	90% (non-condensing)	95% (non-condensing)
Vibration (maximum)*	0.66 GRMS	Not available
Shock (maximum)	140 G†	Not available
Altitude range	Not available	Not available

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

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

† Measured using a 2 ms half-sine pulse.

Dell support policy

For information about Dell support policy, search in the Knowledge Base Resource at www.dell.com/support.

ComfortView

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

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

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

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

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

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

Before working inside your computer

Steps

1. Save and close all open files and exit all open applications.
2. Shut down your computer. For Windows operating system, click **Start** >  **Power** > **Shut down**.
 **NOTE:** If you are using a different operating system, see the documentation of your operating system for shut-down instructions.
3. Disconnect your computer and all attached devices from their electrical outlets.
4. Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.

5. Remove any media card and optical disk from your computer, if applicable.
6. Enter the service mode, if you can turn on your computer.

Service Mode

Service Mode is used to cut off power, without disconnecting the battery cable from the system board prior to 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, 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 the **** 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** process. The **Service Mode** process 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 turn 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 or 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.

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.

Unplugging, pressing, and holding the power button for 15 seconds should discharge residual power in the system board.

Bonding

Bonding is a method for connecting two or more grounding conductors to the same electrical potential. This is done by using a field service electrostatic discharge (ESD) kit. When connecting a bonding wire, ensure that it is connected to bare metal and never to a painted or nonmetal surface. 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 DIMMs, 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. The use of wireless anti-static straps is no longer allowed; they do not provide adequate protection. Touching the chassis before handling parts does not ensure adequate ESD protection on parts with increased sensitivity to ESD damage.
- Handle all static-sensitive components in a static-safe area. If possible, use anti-static floor pads and workbench pads.
- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the anti-static packing material until you are ready to install the component. Before unwrapping the anti-static packaging, ensure that you discharge static electricity from your body.
- Before transporting a static-sensitive component, place it in an anti-static container or packaging.

ESD field service kit

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

Components of an ESD field service kit

The components of an ESD field service kit are:

- **Anti-Static Mat** – The anti-static mat is dissipative and parts can be placed on it during service procedures. When using an anti-static mat, your wrist strap should be snug and the bonding wire should be connected to the mat and to any bare metal on the 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 a bag.
- **Wrist Strap and Bonding Wire** – The wrist strap and bonding wire can be either directly connected between your wrist and bare metal on the hardware if the ESD mat is not required, or connected to the anti-static mat to protect hardware that is temporarily placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the ESD mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, mat, and bonding wire. Never use wireless wrist straps. Always be aware that the internal wires of a wrist strap are prone to damage from normal wear and tear, and must be checked regularly with a wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the wrist strap and bonding wire at least once per week.
- **ESD Wrist Strap Tester** – The wires inside an ESD strap are prone to damage over time. When using an unmonitored kit, it is a best practice to regularly test the strap prior to each service call, and at a minimum, test once per week. A wrist strap tester is the best method for doing this test. If you do not have your own wrist strap tester, check with your regional office to find out if they have one. To perform the test, plug the wrist-strap's bonding-wire into the tester while it is strapped to your wrist and push the button to test. A green LED is lit if the test is successful; a red LED is lit and an alarm sounds if the test fails.
- **Insulator Elements** – It is critical to keep ESD sensitive devices, such as plastic heat sink casings, away from internal parts that are insulators and often highly charged.
- **Working Environment** – Before deploying the ESD Field Service kit, assess the situation at the customer location. For example, deploying the kit for a server environment is different than for a desktop or 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 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 use the traditional wired ESD grounding wrist strap and protective anti-static mat always when servicing Dell products. In addition, it is critical to keep sensitive parts separate from all insulator parts while performing service and that they use anti-static bags for transporting sensitive components.

Transporting sensitive components

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

After working inside your computer

About this task

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

Steps

1. Replace all screws and ensure that no stray screws remain inside your computer.
 2. Connect any external devices, peripherals, or cables you removed before working on your computer.
 3. Replace any media cards, discs, or any other parts that you removed before working on your computer.
 4. Connect your computer and all attached devices to their electrical outlets.
-  **NOTE:** To exit service mode, ensure to connect the AC adapter to the power-adapter port on your computer.
5. Press the power button to turn on the computer. Your computer will automatically return to normal functioning mode.

BitLocker

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

The installation of the following components triggers BitLocker:

- Hard disk drive or solid-state drive
- System board

Recommended tools

The procedures in this document may require the following tools:

- Phillips screwdriver #0
- Phillips screwdriver #1
- Plastic scribe

Screw list

- NOTE:** When removing screws from a component, it is recommended to note the screw type, and the quantity of screws, and then place them in a screw storage box. This is to ensure that the correct number of screws and correct screw type is restored when the component is replaced.
- NOTE:** Some computers have magnetic surfaces. Ensure that the screws are not left attached to such surfaces when replacing a component.
- NOTE:** Screw color may vary with the configuration ordered.

Table 26. Screw list

Component	Screw type	Quantity	Screw image
Base cover for computers that are shipped with a plastic chassis	Captive Screw	2	
	M2x4	6	
Base cover for computers that are shipped with an aluminum chassis	Captive Screw	2	
	M2x4	5	
System board for computers that are shipped with a plastic chassis	M2x2	2	
	M2.5x4	2	
	M2x4	3	
System board for computers that are shipped with an aluminum chassis	M2x2	2	
	M2.5x4	2	
	M2x4	2	
Display hinges for computers that are shipped with a plastic chassis	M2.5x4	4	
Display hinges for computers that are shipped with an aluminum chassis	M2.5x4.5	4	
41W battery	M2x3	3	
54W battery	M2x3	5	
Power-button board	M2x3	1	

Table 26. Screw list (continued)

Component	Screw type	Quantity	Screw image
I/O board	M2.5x4	2	
	M2x3	1	
Wireless-card bracket	M2x3	1	
Solid-state drive	M2x3	1	
	M2x1.8	1	
Power-adapter port for computers that are shipped with a plastic chassis	M2.5x4	2	
Power-adapter port for computers that are shipped with an aluminum chassis	M2.5x4.5	2	
Heat sink for computers that are shipped with a plastic chassis	Captive	4	
Heat sink for computers that are shipped with an aluminum chassis	Captive	7	
Display assembly for computers that are shipped with a plastic chassis	M2.5x4	4	
Display assembly for computers that are shipped with an aluminum chassis	M2.5x4.5	4	
Display panel for computers that are shipped with a plastic chassis	M2.5x2.5	6	
System fan	M2x4	2	
Touchpad for computers that are shipped with a plastic chassis	M2x1.8	2	
	M1.6x2.5	4	
Touchpad for computers that are shipped with an aluminum chassis	M2x2	4	
	M2x2.5	1	

Major components of Inspiron 14 5440

The following image shows the major components of Inspiron 14 5440.



Figure 9. Major components for computers that are shipped with a plastic chassis

1. Base cover
2. Battery
3. Heat sink
4. Memory
5. System board
6. Speaker
7. Touchpad

8. Palm-rest and keyboard assembly
9. Display assembly
10. Power button
11. I/O board
12. Fan
13. Solid-state drive
14. Wireless card
15. Power adapter port



Figure 10. Major components for computers that are shipped with an aluminum chassis

1. Base cover
2. Battery
3. Heat sink

4. Memory
5. System board
6. Speaker
7. Touchpad
8. Palm-rest and keyboard assembly
9. Display assembly
10. Power button
11. I/O board
12. Fan
13. Solid-state drive
14. Wireless card
15. Power adapter port

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

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 for computers shipped with a plastic chassis

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

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



2x



6x
M2x4

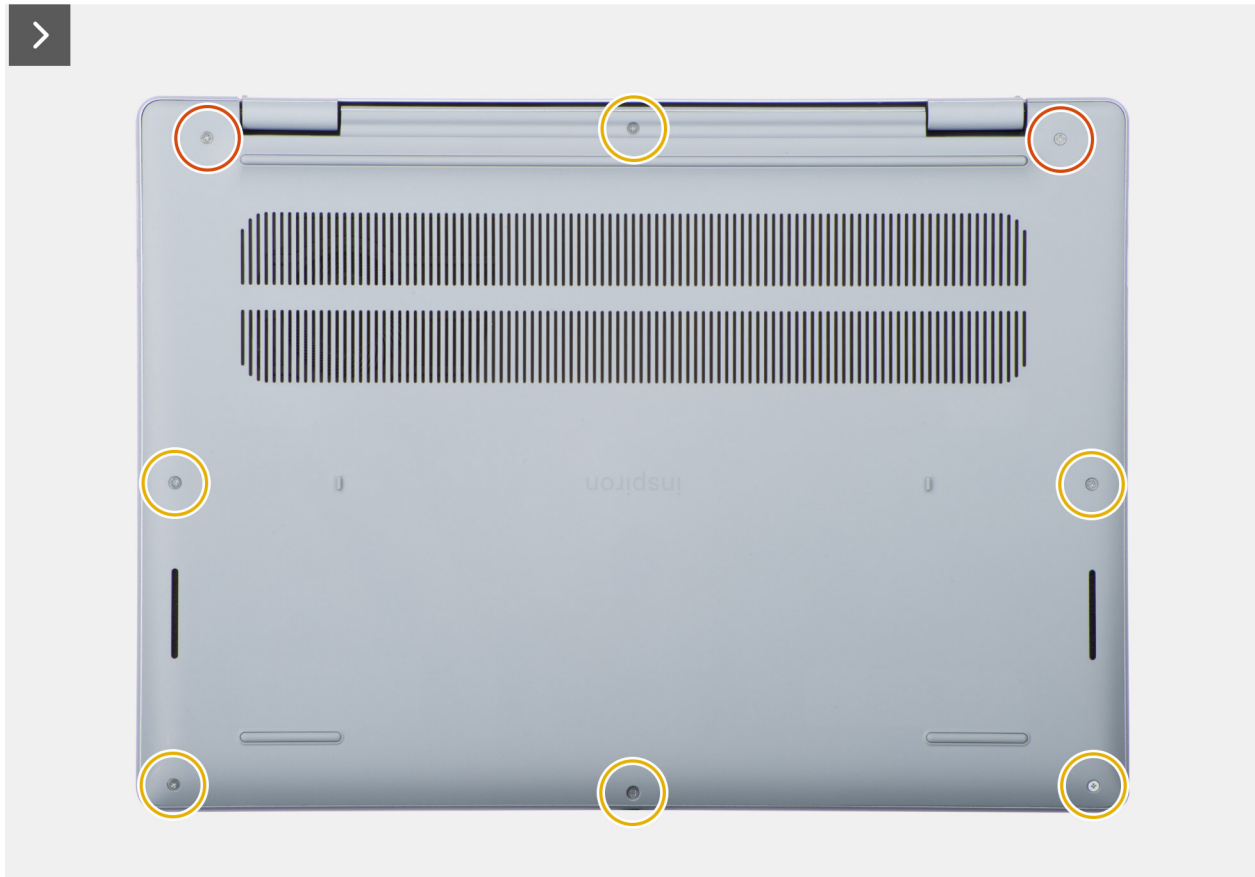


Figure 11. Removing the base cover

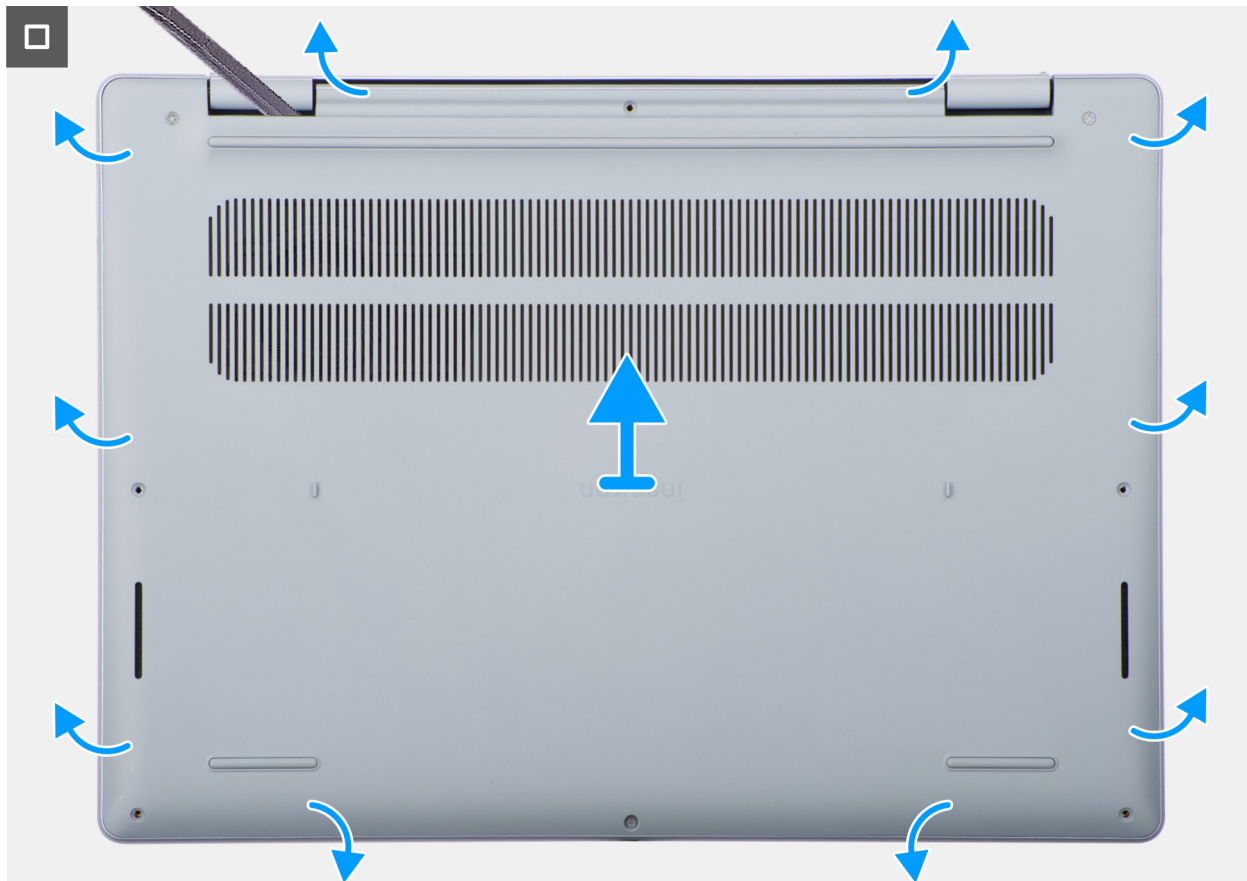


Figure 12. Removing the base cover

Steps

1. Remove the six screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
2. Loosen the two captive screws that secure the base cover to the palm-rest and keyboard assembly.
NOTE: Upon loosening the captive screws, the base cover opens up creating a gap between the base cover and the palm-rest assembly at the hinges.
3. Starting from the top-left corner of the hinge, pry the base cover to release the base cover from the palm-rest and keyboard assembly.
4. Lift the base cover off the palm-rest and keyboard assembly.

Installing the base cover for computers shipped with a plastic chassis

Prerequisites

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

About this task

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

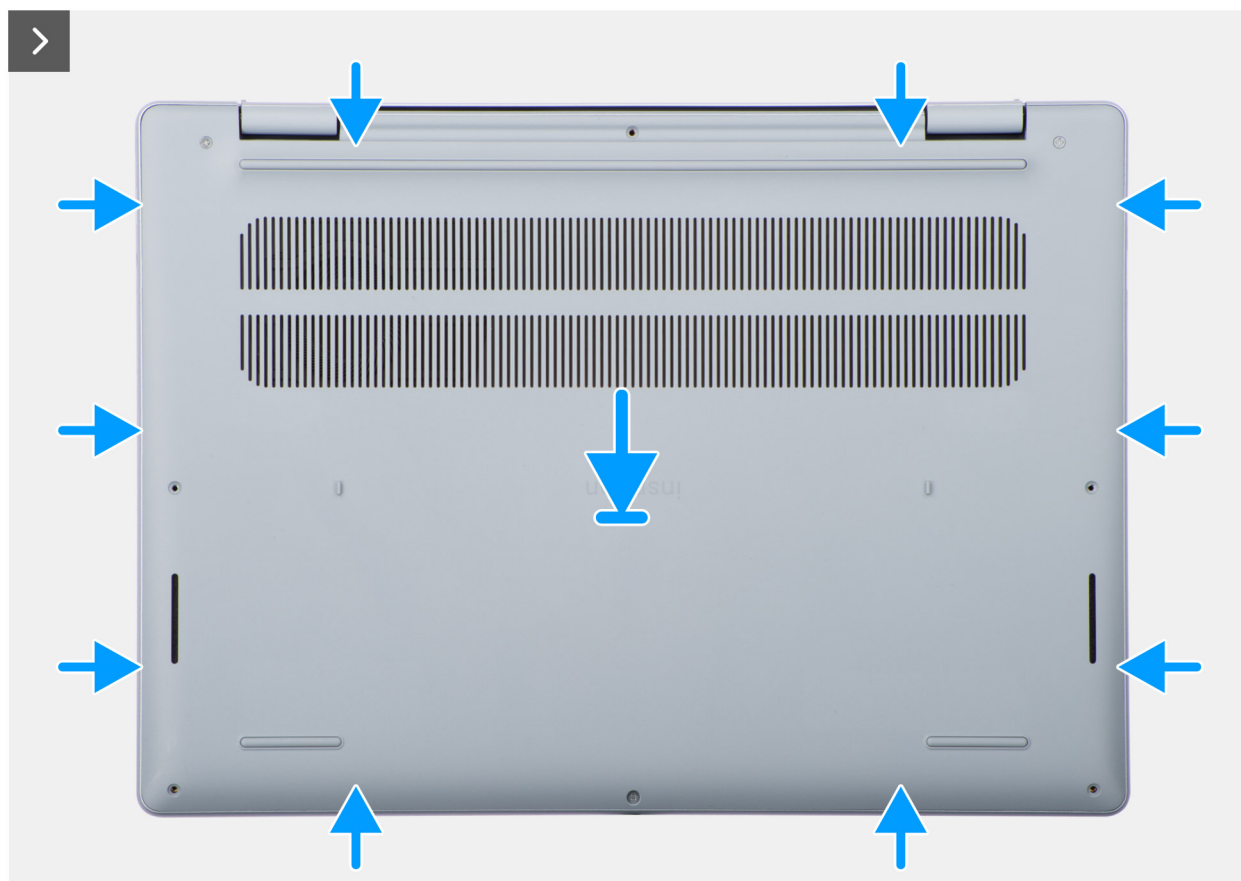
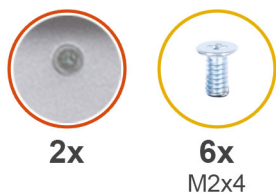


Figure 13. Installing base cover

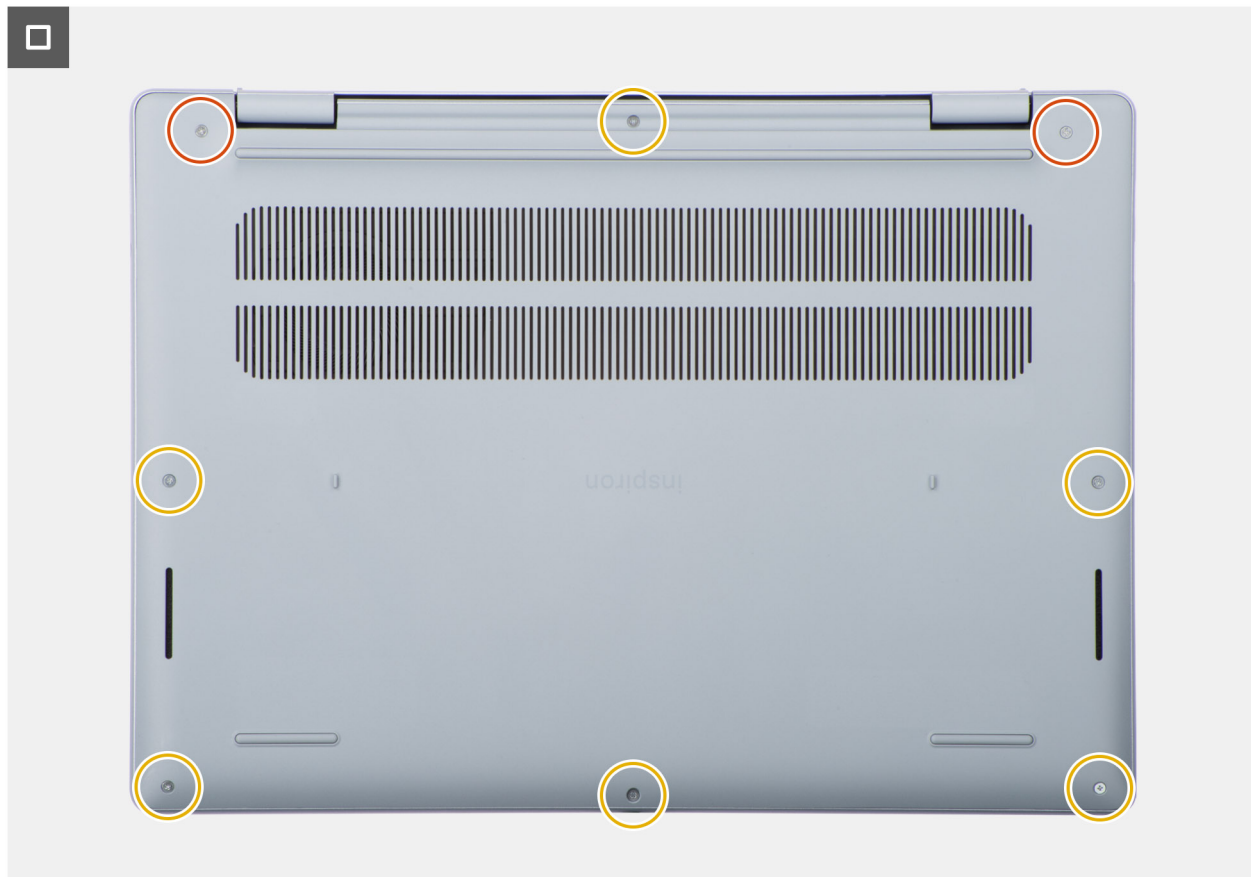


Figure 14. Installing the base cover

Steps

1. Align the screw holes on the base cover with the screw holes on the palm-rest and keyboard assembly.
2. Snap the base cover into place.
3. Tighten the two captive screws that secure the base cover to the palm-rest and keyboard assembly.
4. Replace the six 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](#).

Removing the base cover for computers shipped with an aluminum chassis

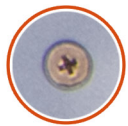
Prerequisites

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

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



2x



5x
M2x4



Figure 15. Removing the base cover

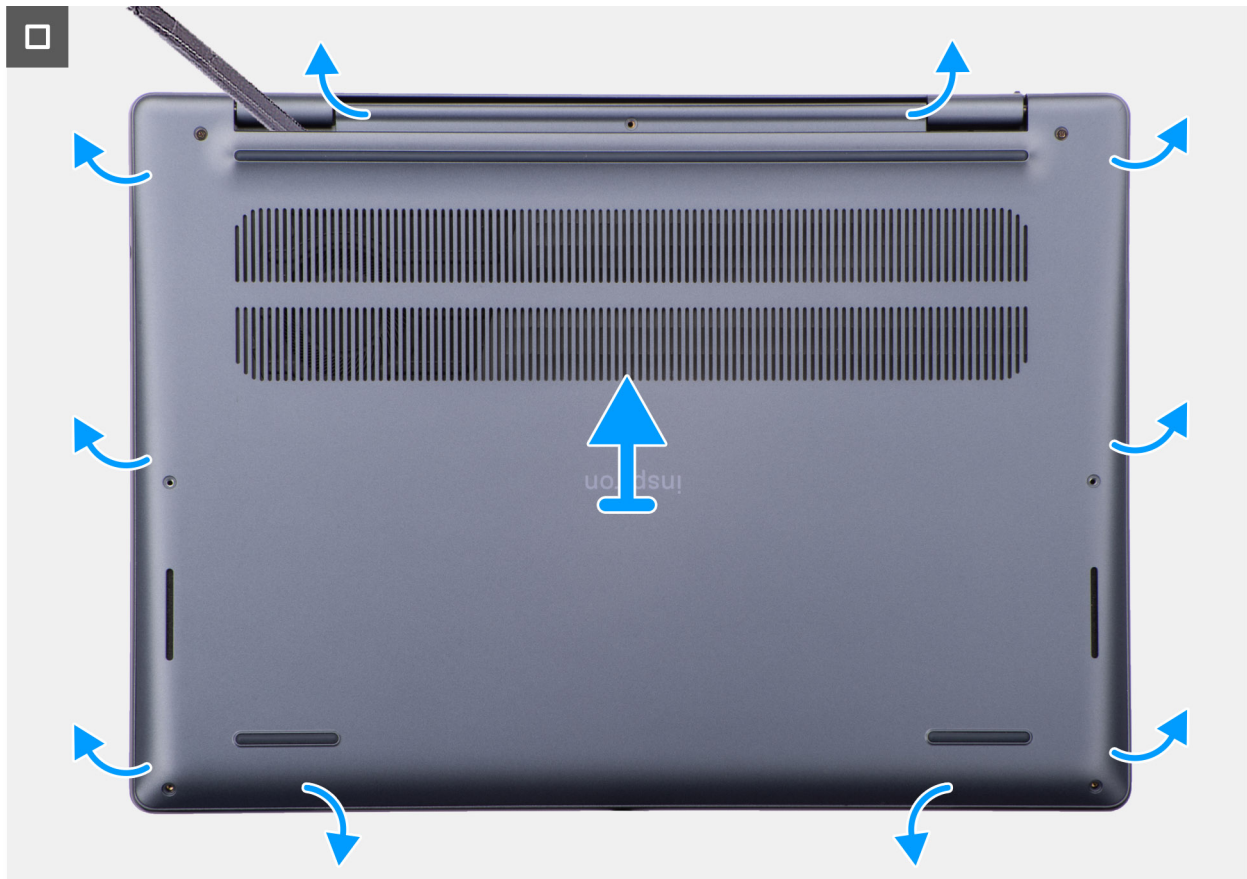


Figure 16. Removing the base cover

Figure 17. Disconnect the battery cable

Steps

1. Loosen the two captive screws that secure the base cover to the palm-rest and keyboard assembly.
 ⓘ **NOTE:** Upon loosening the captive screws, the base cover opens up creating a gap between the base cover and the palm-rest assembly at the hinges.
2. Remove the five screws (M2x4) that secure the base cover to the palm-rest and keyboard assembly.
3. Starting from the top-left corner of the hinge, pry the base cover to release the base cover from the palm-rest and keyboard assembly.
4. Lift the base cover off the palm-rest and keyboard assembly.

Installing the base cover for computers shipped with an aluminum chassis

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 base cover and provides a visual representation of the installation procedure.

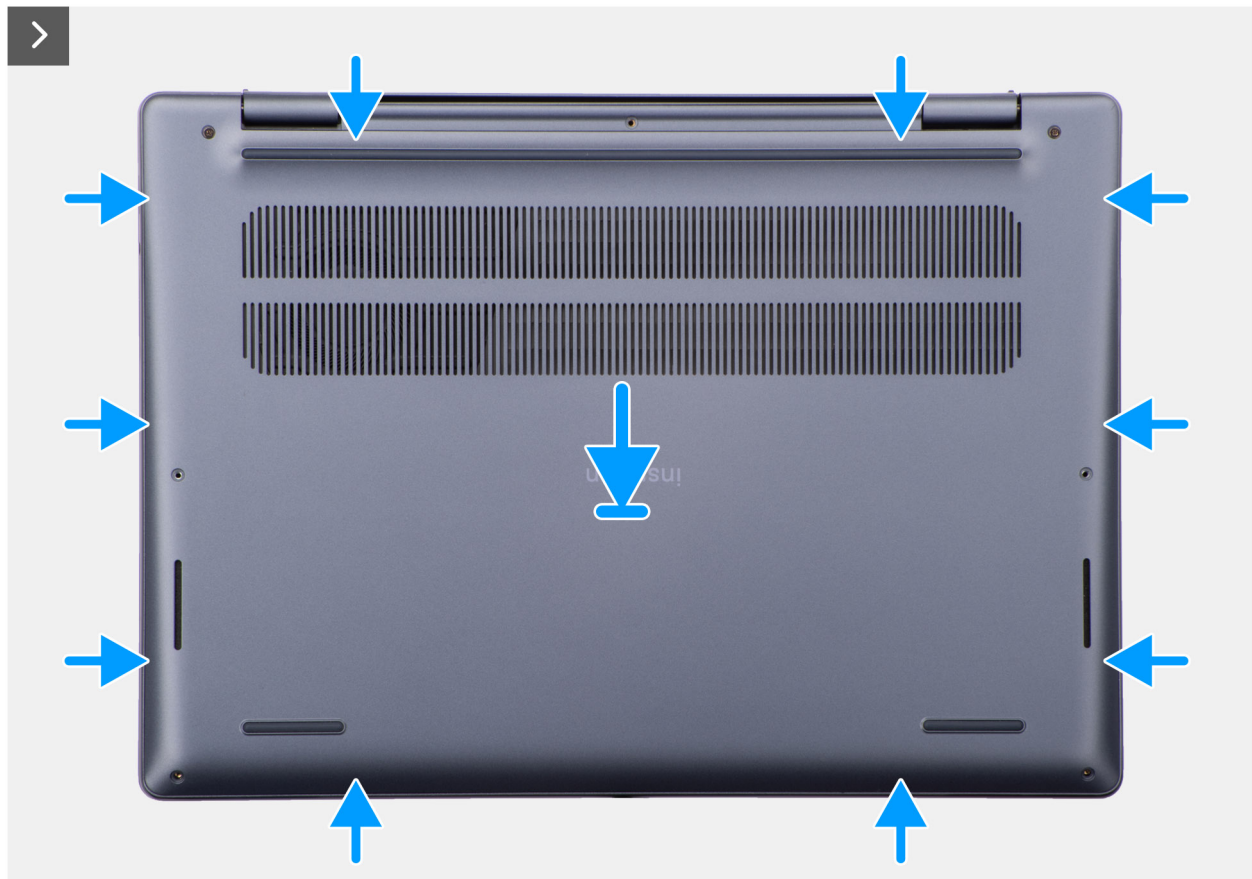


Figure 18. Installing the base cover



Figure 19. 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.
2. Snap the base cover into place.
3. Tighten the two captive screws that secure the base cover to the palm-rest and keyboard assembly.
4. 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](#).

Memory module

Removing the memory module for computers shipped with a plastic chassis

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 for computers shipped with a plastic chassis](#).

About this task

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

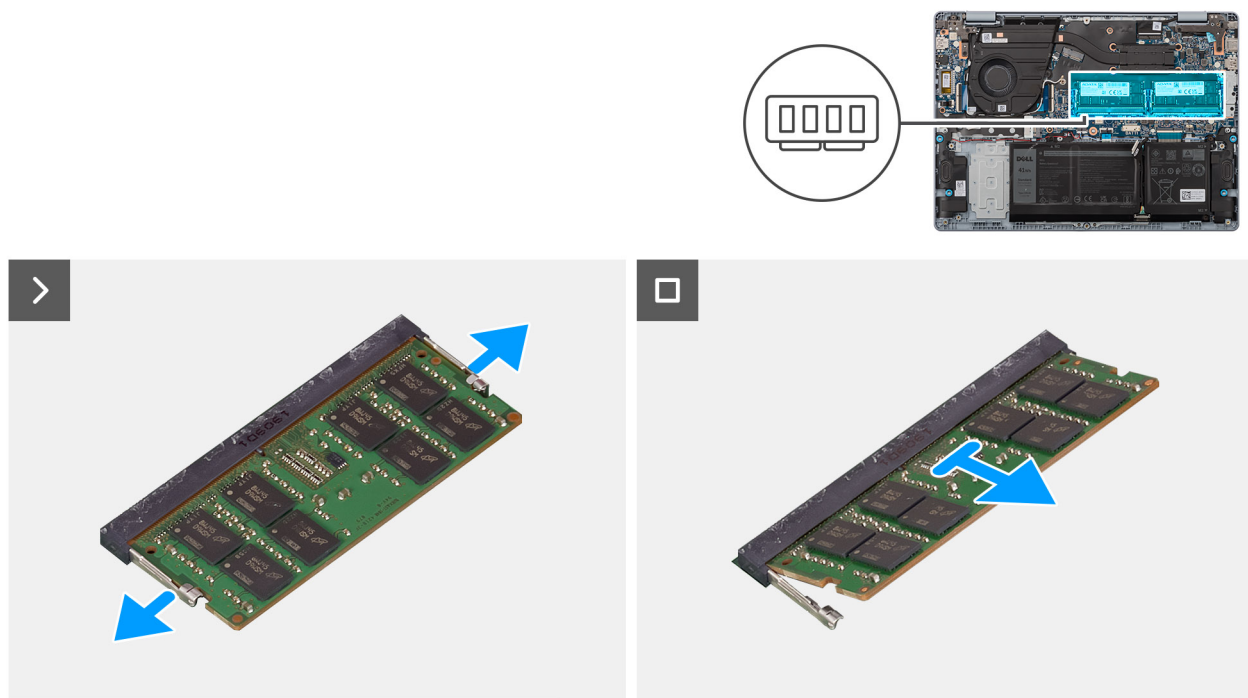


Figure 20. Removing the memory module

Steps

1. Carefully spread apart the securing-clips on each end of the memory-module slot until the memory module pops-up.
2. Remove the memory module from the memory-module slot on the system board.

Installing the memory module for computers shipped with a plastic chassis

Prerequisites

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

About this task

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

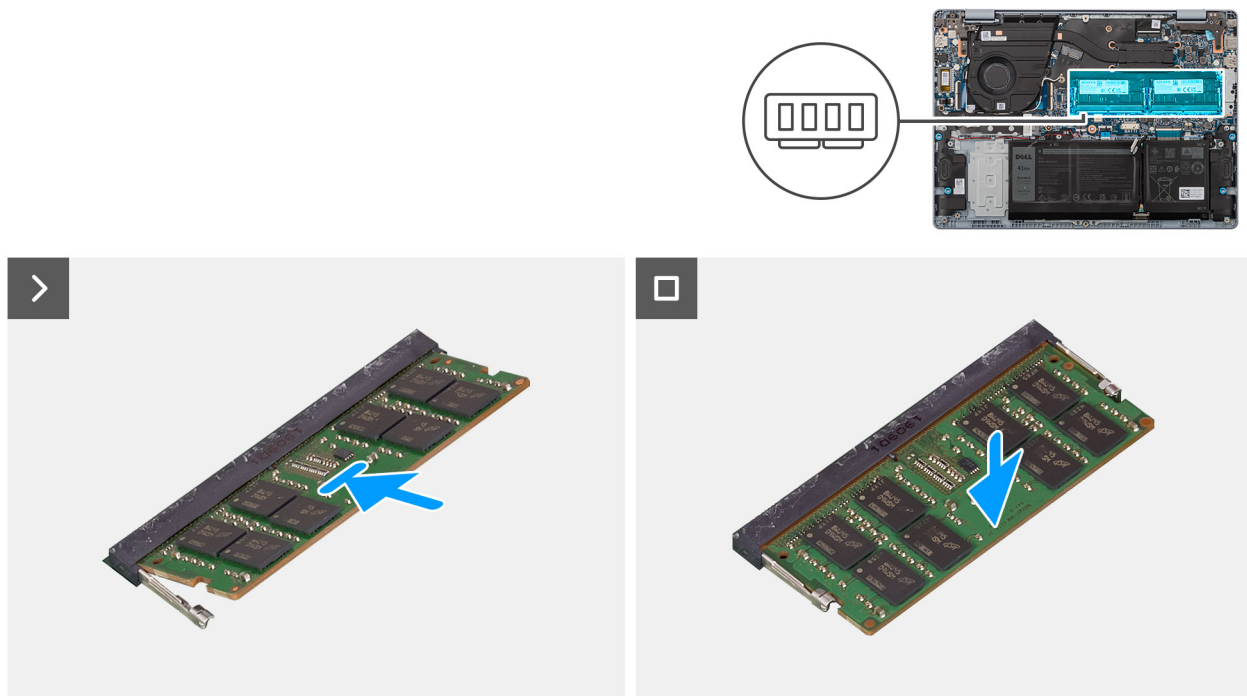


Figure 21. Installing the memory module

Steps

1. Align the notch on the memory module with the tab on the memory-module slot on the system board.
2. Slide the memory module into the memory-module slot on the system board.
3. Press down on the memory module till the securing clips click, locking the memory module in place.

Next steps

1. Install the [base cover for computer shipped with a plastic chassis](#).
2. Follow the procedure in [After working inside your computer](#).

Removing the memory module for computers shipped with an aluminum chassis

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 for computers shipped with an aluminum chassis](#).

About this task

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

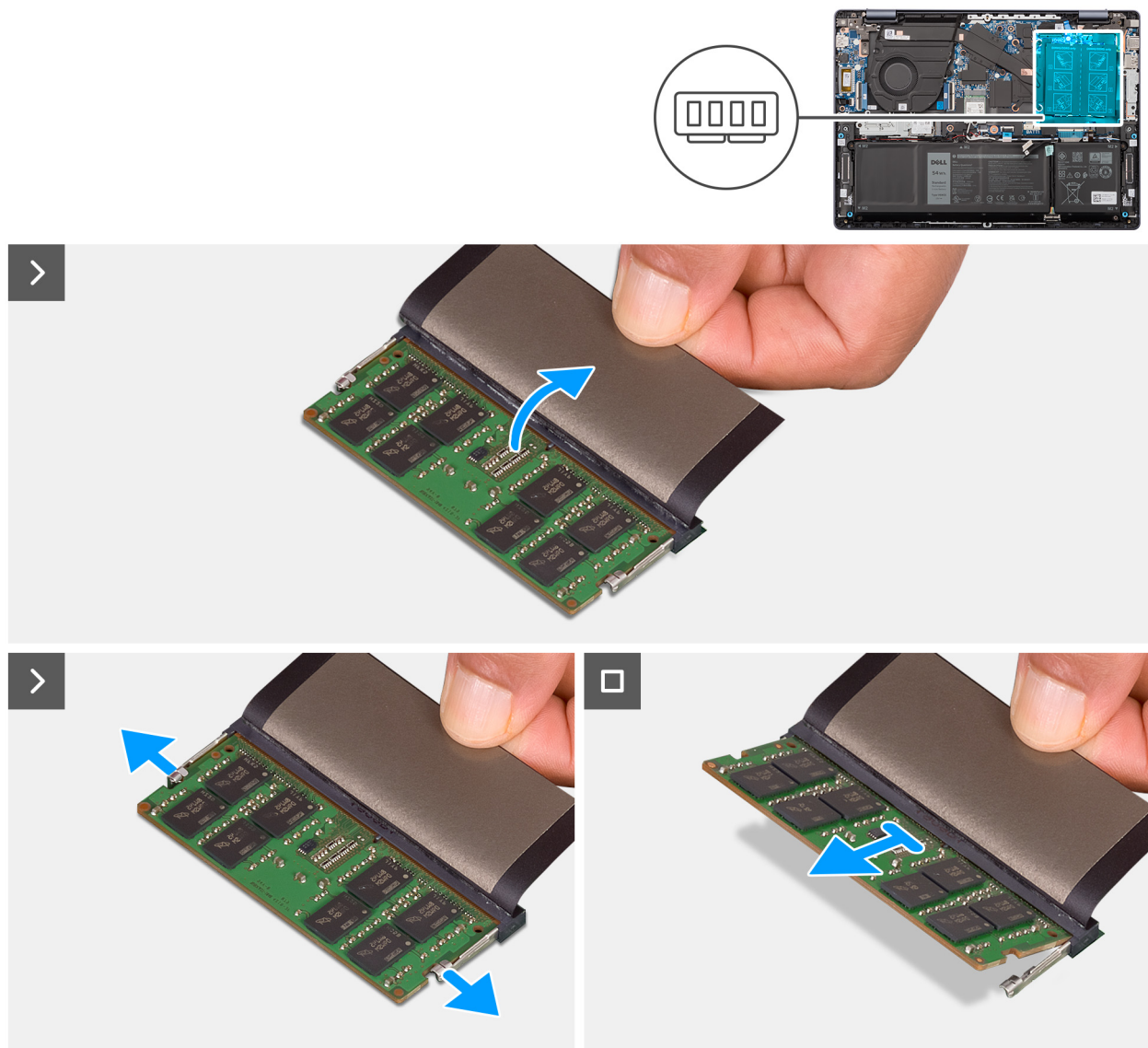


Figure 22. Removing the memory module

Steps

1. Lift the Mylar to access the memory module.
2. Carefully spread apart the securing-clips on each end of the memory-module slot until the memory module pops-up.
3. Remove the memory module from the memory-module slot on the system board.

Installing the memory module for computers shipped with an aluminum chassis

Prerequisites

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

About this task

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

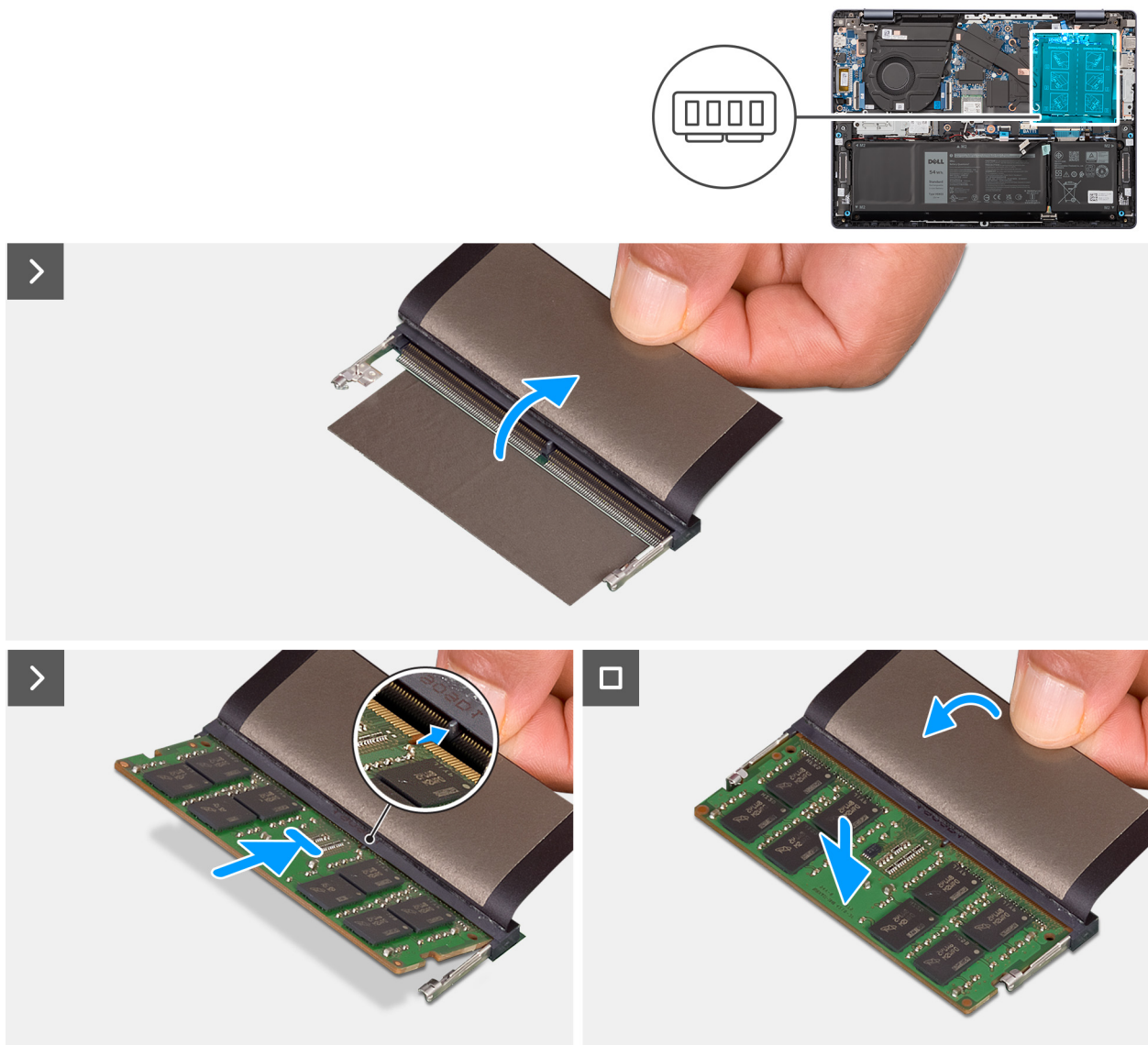


Figure 23. Installing the memory module

Steps

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

Next steps

1. Install the [base cover for computer shipped with an aluminum chassis](#).
2. Follow the procedure in [After working inside your computer](#).

Solid-state drive

Removing the M.2 2230 solid-state drive for computers shipped with a plastic chassis

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](#) for computers shipped with a plastic chassis.

About this task

- NOTE:** The support card configuration on the M.2 card slot is:
- M.2 2230 solid-state drive + M.2 2230 solid-state drive mounting bracket

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

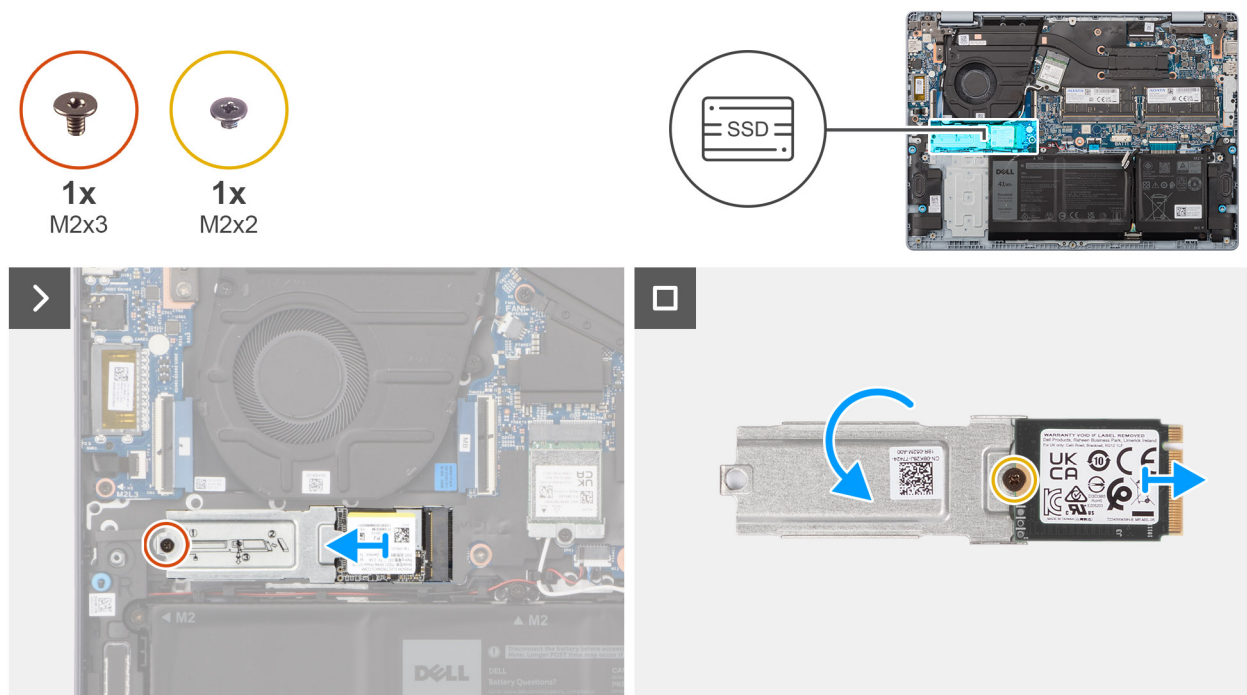


Figure 24. Removing the solid-state drive

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 (M2x2) 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 for computers shipped with a plastic chassis

Prerequisites

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

About this task

- NOTE:** The support card configuration on the M.2 card slot is:
- M.2 2230 solid-state drive + M.2 2230 solid-state drive mounting bracket

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

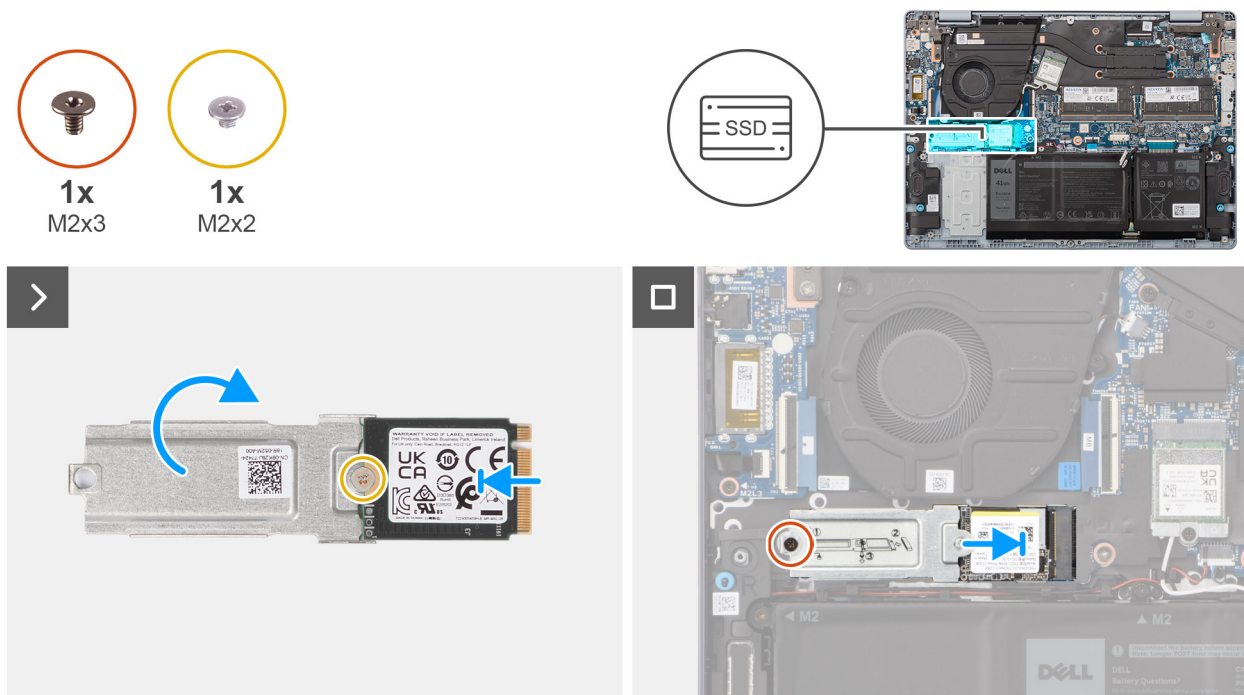


Figure 25. Installing the solid-state drive

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 (M2x2) 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 and place the M.2 2230 solid-state drive in 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 for computer shipped with a plastic chassis](#).
2. Follow the procedure in [After working inside your computer](#).

Removing the M.2 2230 solid-state drive for computers shipped with an aluminum chassis

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 for computers shipped with an aluminum chassis.](#)

About this task

- NOTE:** The support card configuration on the M.2 card slot is:
- M.2 2230 solid-state drive + M.2 2230 solid-state drive mounting bracket

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

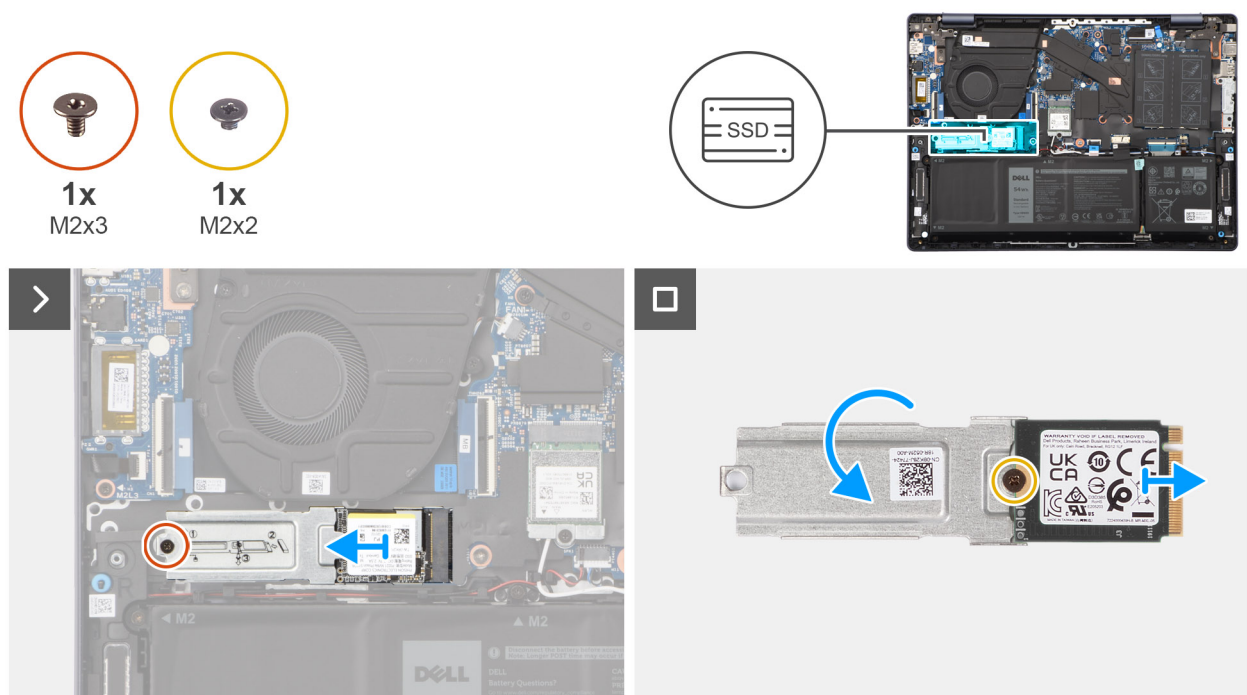


Figure 26. Removing the solid-state drive

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 (M2x2) 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 for computers shipped with an aluminum chassis

Prerequisites

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

About this task

NOTE: The support card configuration on the M.2 card slot is:

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

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

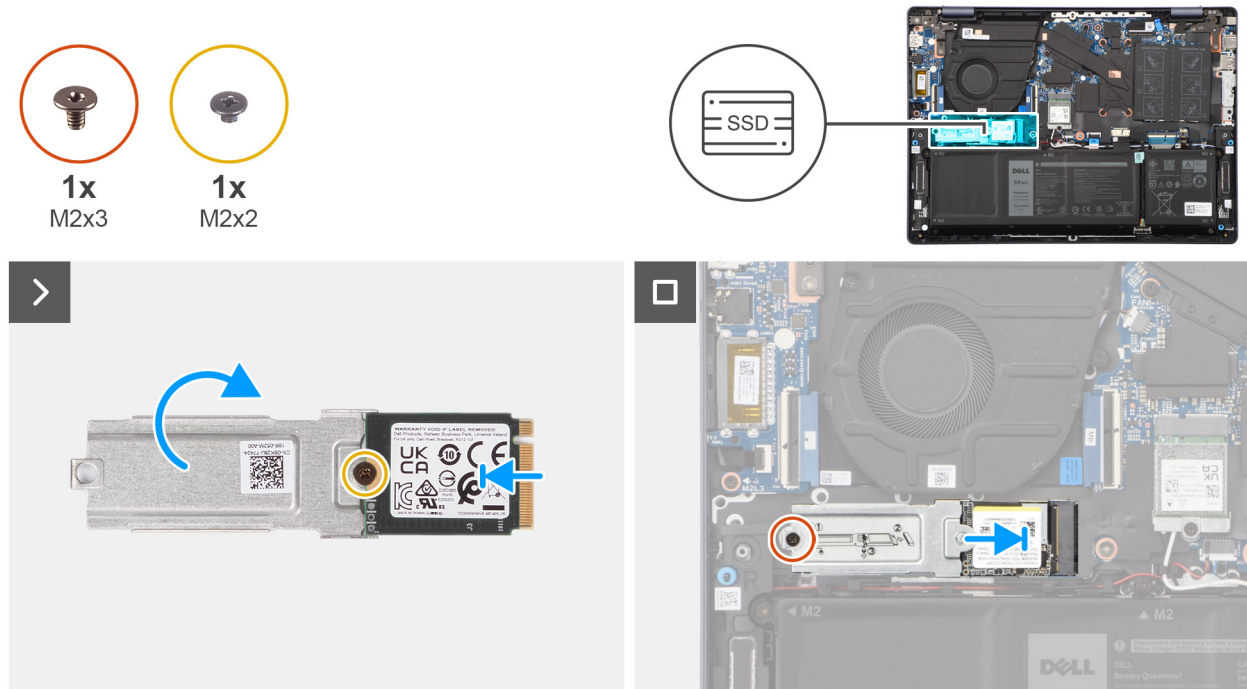


Figure 27. Installing the solid-state drive

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 (M2x2) 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 and place the M.2 2230 solid-state drive in 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 .
2. Install the [base cover for computer shipped with an aluminum chassis](#).
3. Follow the procedure in [After working inside your computer](#).

Wireless card

Removing the wireless card for computers shipped with a plastic chassis

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 for computers shipped with a plastic chassis](#).

About this task

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

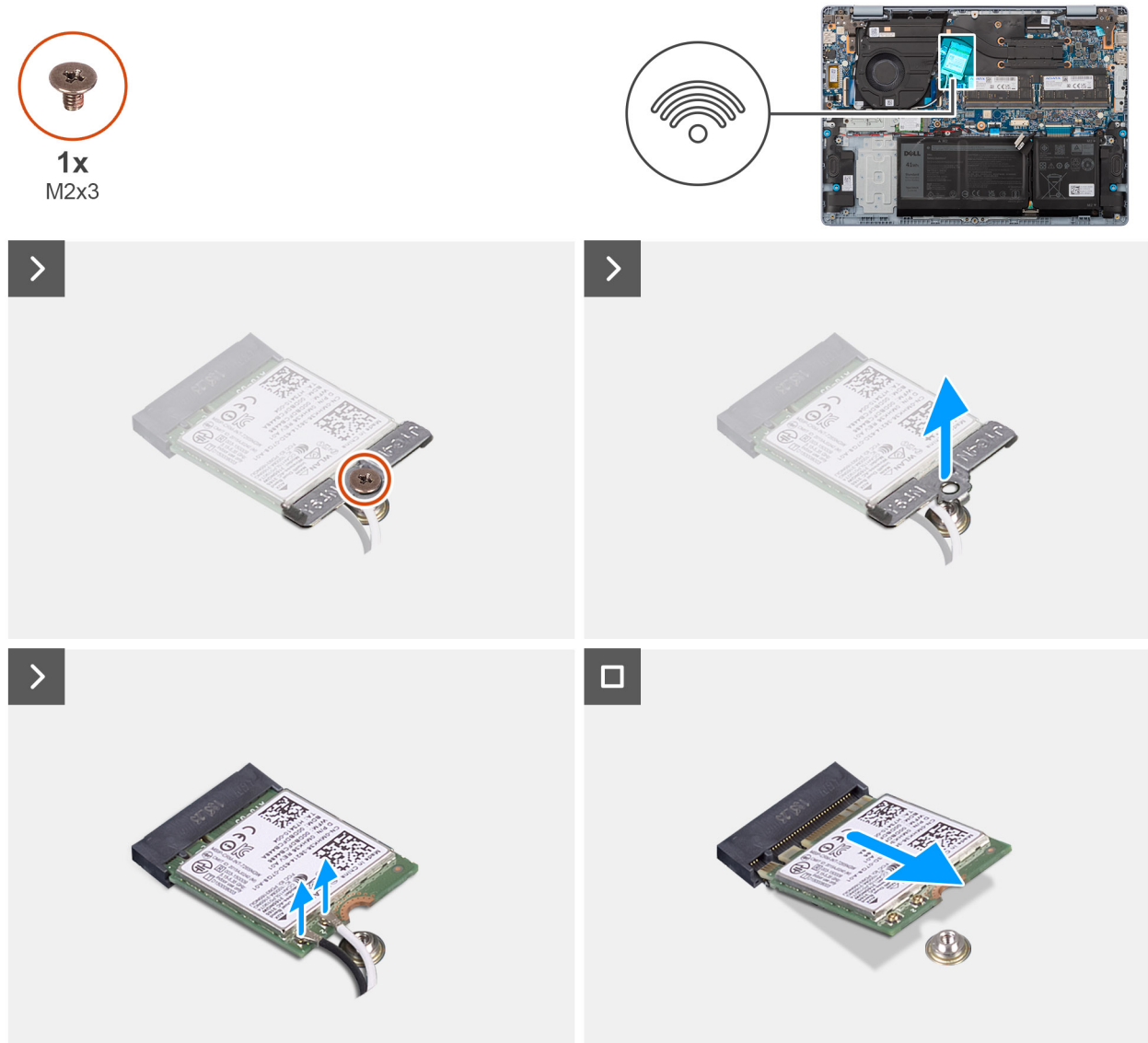


Figure 28. Removing the wireless card

Steps

1. Remove the screw (M2x3) that secures the wireless-card bracket to the wireless card and 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 for computers shipped with a plastic chassis

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 wireless card and provides a visual representation of the installation procedure.

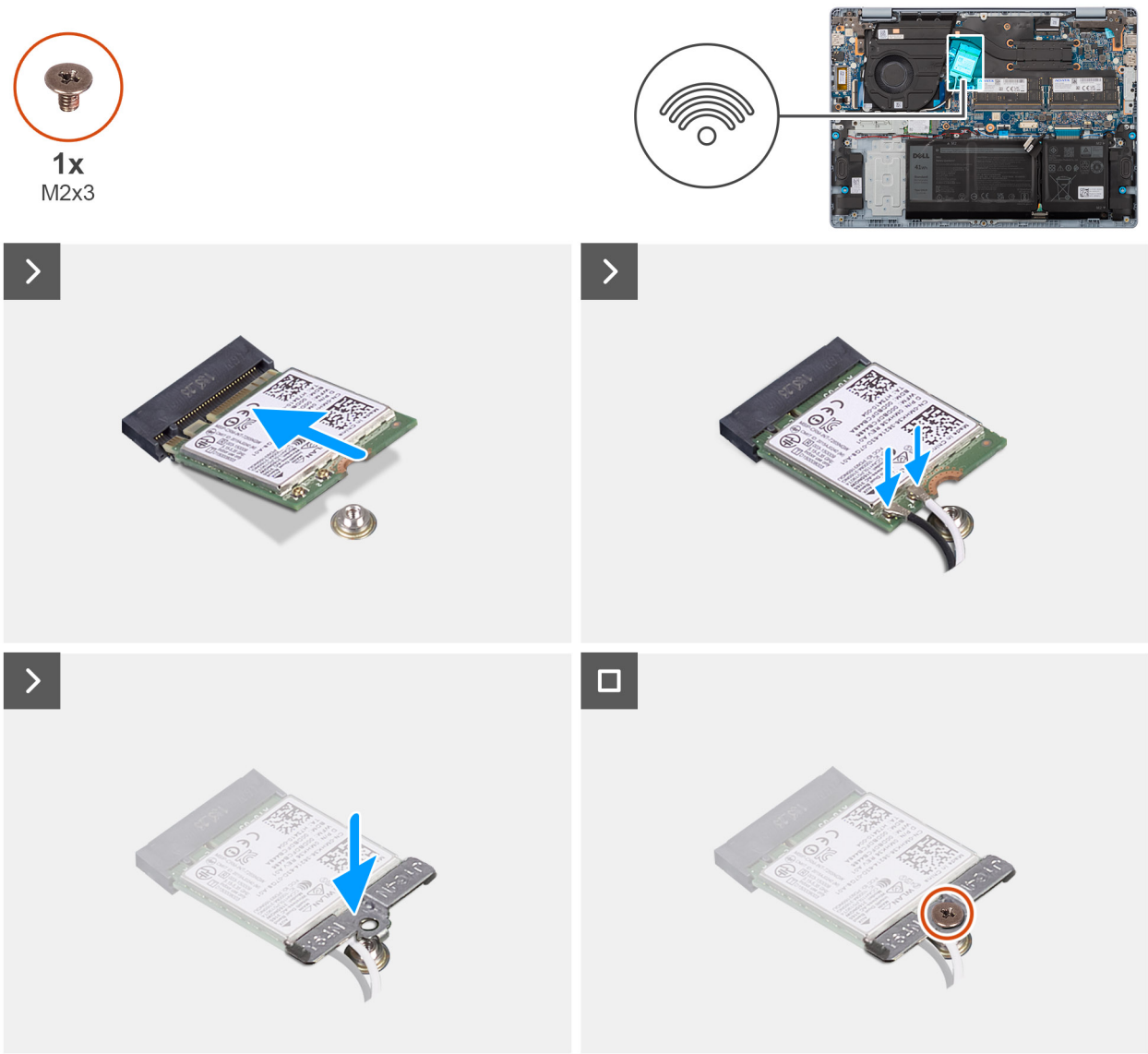


Figure 29. Installing the wireless card

Steps

1. Connect the antenna cables to the wireless card.

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

Table 27. Antenna-cable color scheme

Connectors 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. Replace the screw (M2x3) that secures the wireless card and wireless-card bracket to the system board.

Next steps

1. Install the [base cover for computers shipped with a plastic chassis](#).
2. Follow the procedure in [After working inside your computer](#).

Removing the wireless card for computers shipped with an aluminum chassis

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 for computers shipped with an aluminum chassis](#).

About this task

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



1x
M2x3

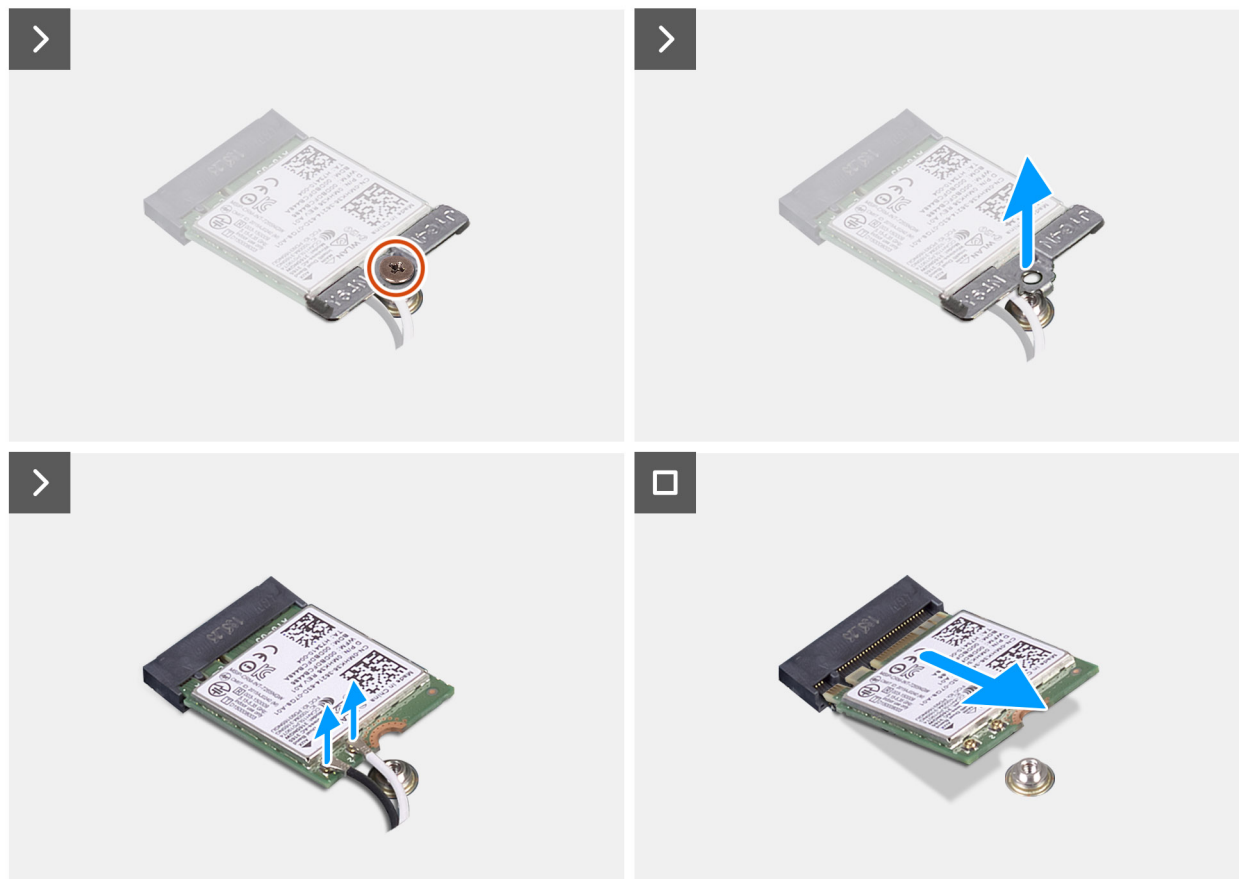


Figure 30. Removing the wireless card

Steps

1. Remove the screw (M2x3) that secures the wireless-card bracket to the wireless card and 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 for computers shipped with an aluminum chassis

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 wireless card and provides a visual representation of the installation procedure.

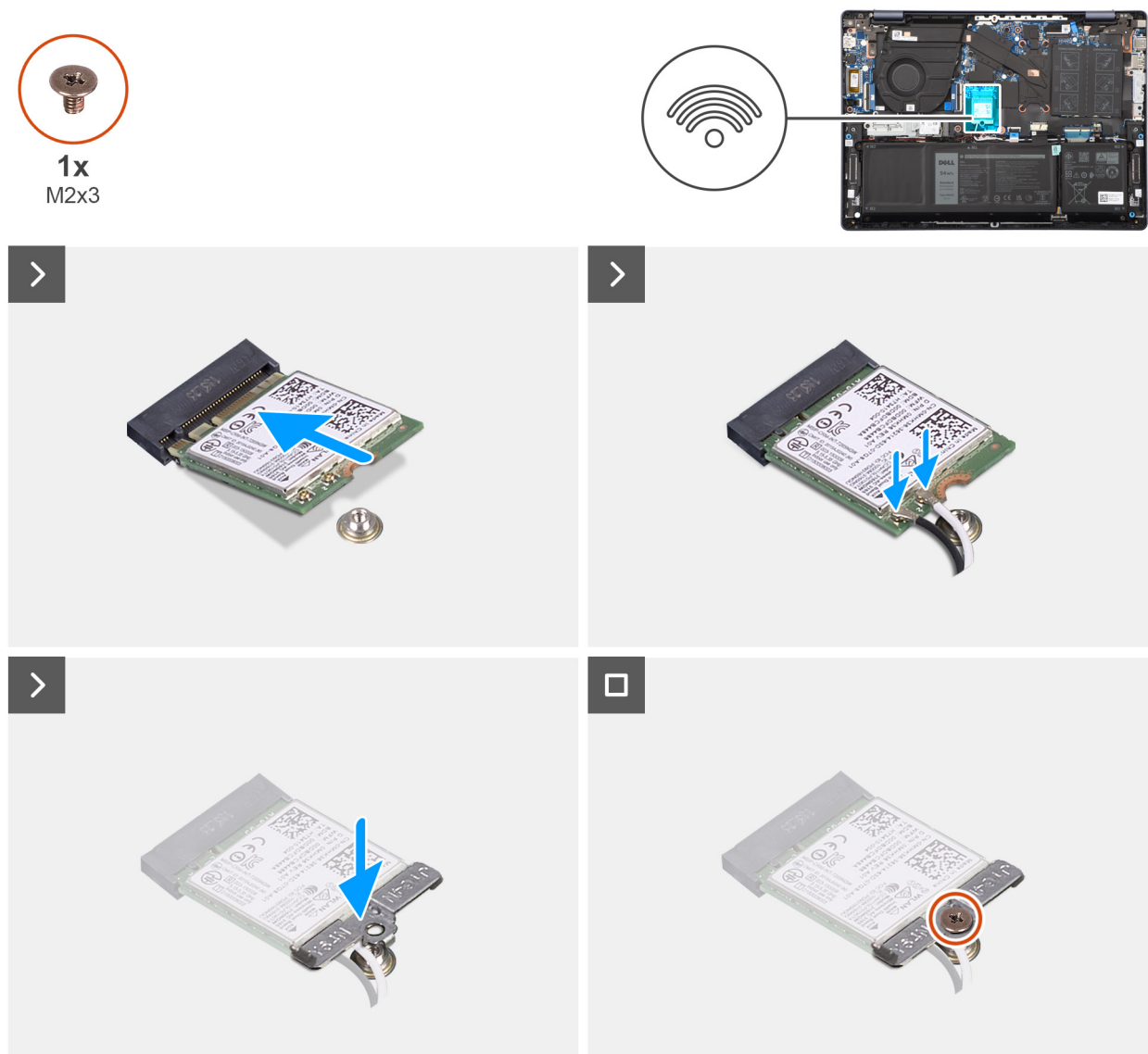


Figure 31. Installing the wireless card

Steps

1. Connect the antenna cables to the wireless card.

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

Table 28. Antenna-cable color scheme

Connectors 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. Replace the screw (M2x3) that secures the wireless card and wireless-card bracket to the system board.

Next steps

1. Install the [base cover for computer shipped with an aluminum chassis](#).
2. Follow the procedure in [After working inside your computer](#).

System fan

Removing the system fan for computers shipped with a plastic chassis

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 for computers shipped with a plastic chassis](#).

About this task

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

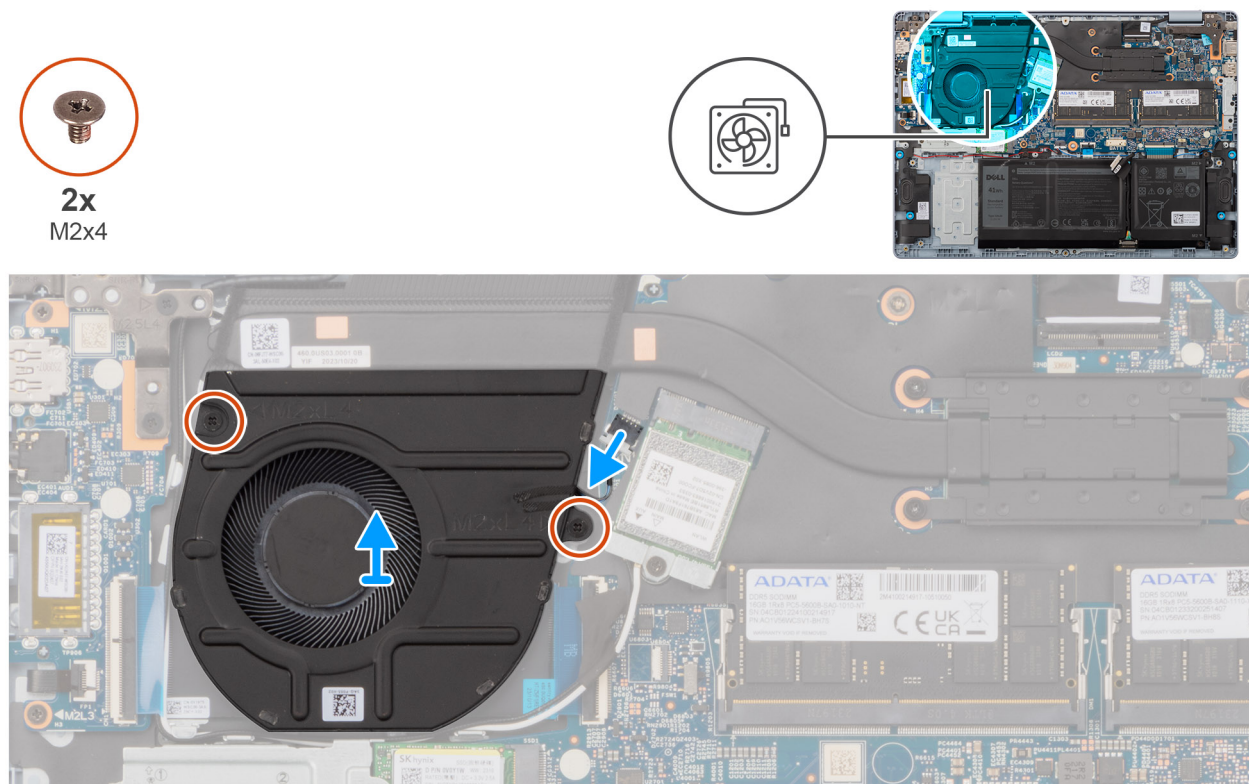


Figure 32. Removing the fan

Steps

1. Disconnect the fan cable (FN1) from the system board.
2. Remove the two screws (M2x4) that secure the fan to the palm-rest and keyboard assembly.
3. Lift the fan off the palm-rest and keyboard assembly.

Installing the system fan for computers shipped with a plastic chassis

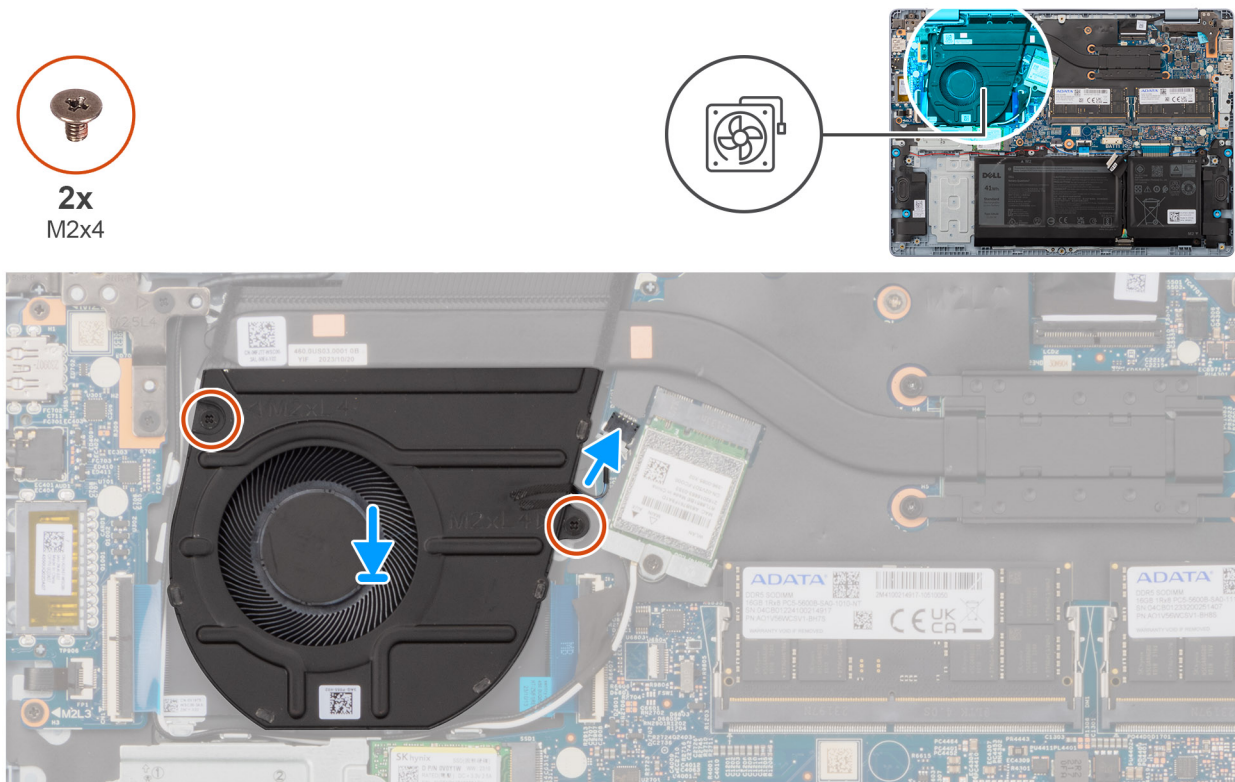
Prerequisites

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

About this task

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

Figure 33. 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 two screws (M2x4) that secure the fan to the palm-rest and keyboard assembly.
4. Connect the fan cable (FN1) to the system board.

Next steps

1. Install the [base cover for computers shipped with a plastic chassis](#).
2. Follow the procedure in [After working inside your computer](#).

Removing the system fan for computers shipped with an aluminum chassis

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 for computers shipped with an aluminum chassis](#).

About this task

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



2x
M2x4

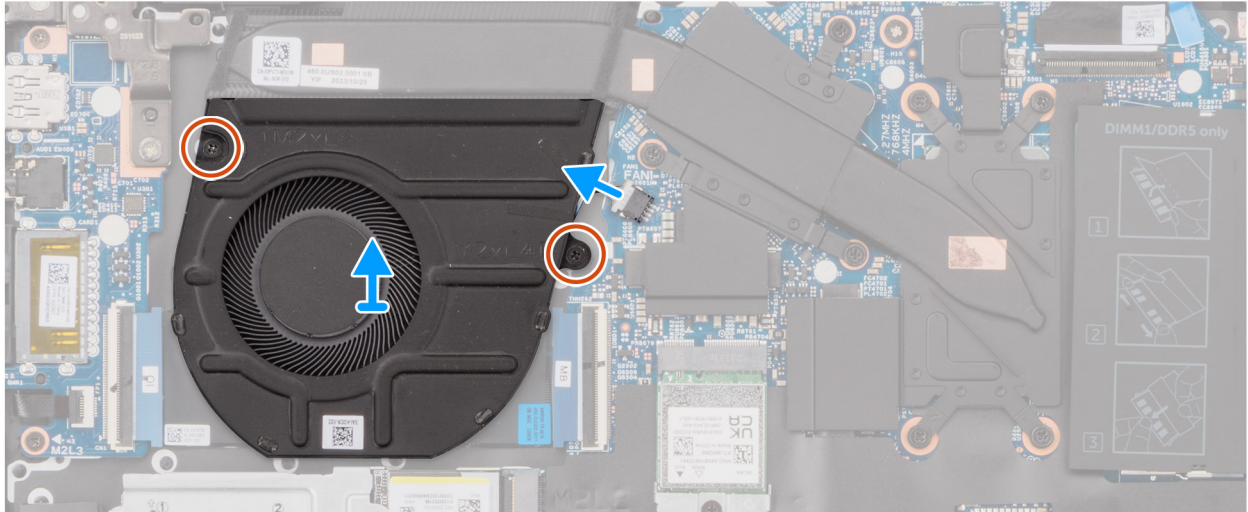
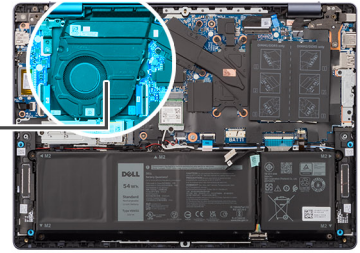
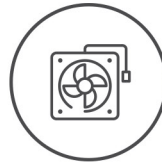


Figure 34. Removing the fan

Steps

1. Disconnect the fan cable (FN1) from the system board.
2. Remove the two screws (M2x4) that secure the fan to the palm-rest and keyboard assembly.
3. Lift the fan off the palm-rest and keyboard assembly.

Installing the system fan for computers shipped with an aluminum chassis

Prerequisites

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

About this task

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

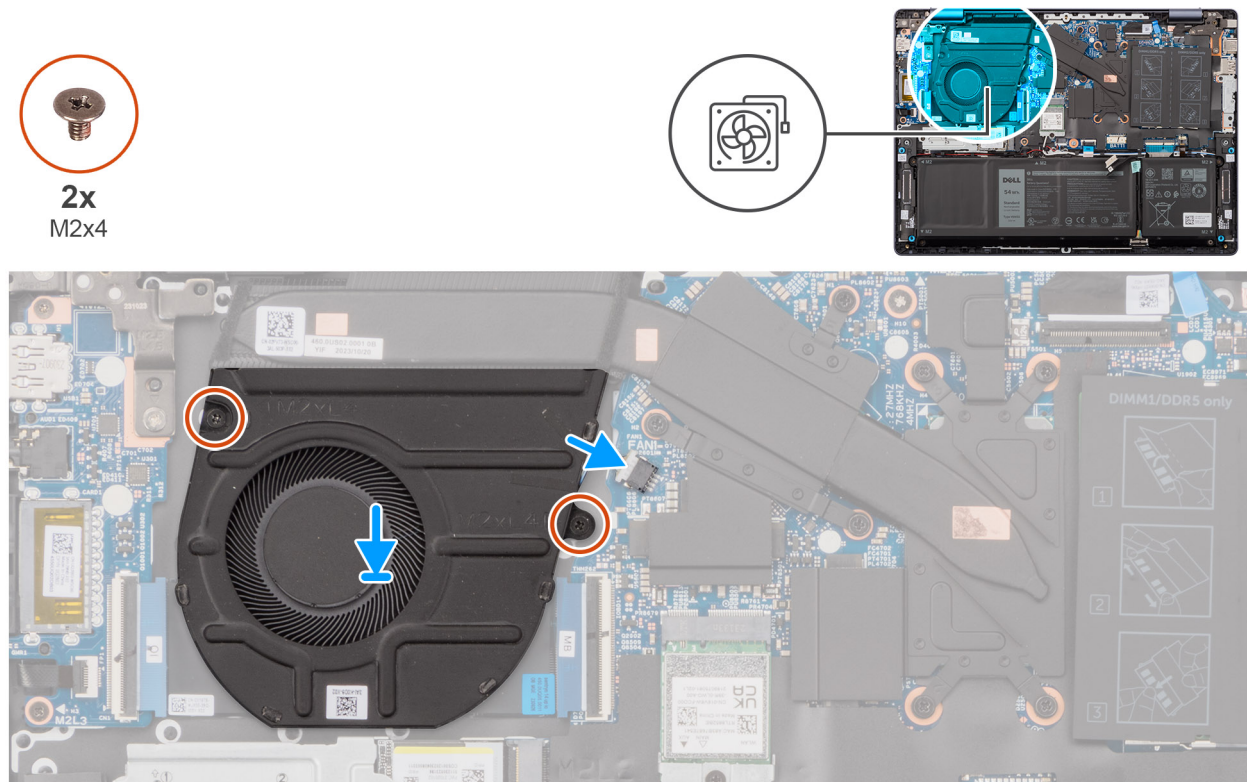


Figure 35. Installing the fan

Steps

1. Place the system fan on the palm-rest and keyboard assembly.
2. Align the screw holes on the system fan with the screw holes on the palm-rest and keyboard assembly.
3. Replace the two screws (M2x4) that secure the fan to the palm-rest and keyboard assembly.
4. Connect the fan cable (FN1) to the system board.

Next steps

1. Install the [base cover for computer shipped with an aluminum chassis](#).
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 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 41 W battery for computers shipped with a plastic chassis

CAUTION: The information in this removal 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, [Before working inside your computer.](#)
2. Remove the [base cover for computers shipped with a plastic chassis.](#)

About this task

CAUTION: Removing the battery resets the BIOS setup settings to default. It is recommended that you note the BIOS setup settings before removing the battery.

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

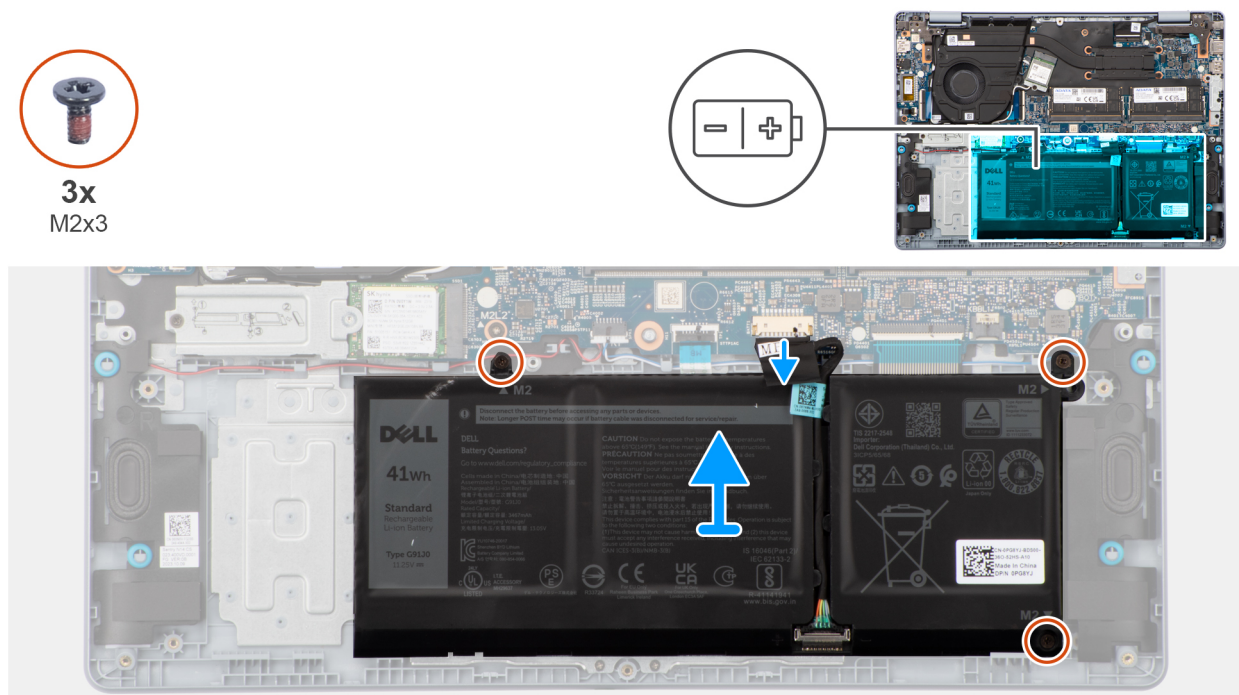


Figure 36. Removing the battery

Steps

1. Peel the adhesive tape that secures the battery cable to the system board.
2. Disconnect the battery cable from the connector (BATT1) on the system board.
3. Remove the three screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
4. Lift the battery off the palm-rest and keyboard assembly.

Installing the 41 W battery for computers shipped with a plastic chassis

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

Prerequisites

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

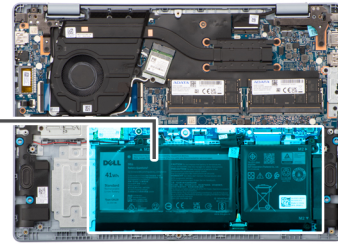
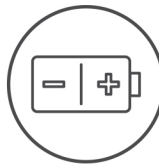
About this task

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

Figure 37. Installing the battery



3x
M2x3



Steps

1. Align the screw holes on the battery with the screw holes on the palm-rest and keyboard assembly.
2. Replace the three screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
3. Connect the battery cable to the connector (BATT1) on the system board.
4. Adhere the adhesive tape that secures the battery cable to the system board.

Next steps

1. Install the [base cover for computer shipped with a plastic chassis](#).
2. Follow the procedure in [After working inside your computer](#).

Removing the 54 W battery for computers shipped with a plastic chassis

CAUTION: The information in this removal 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, [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with a plastic chassis](#).

About this task

CAUTION: Removing the battery resets the BIOS setup settings to default. It is recommended that you note the BIOS setup settings before removing the battery.

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

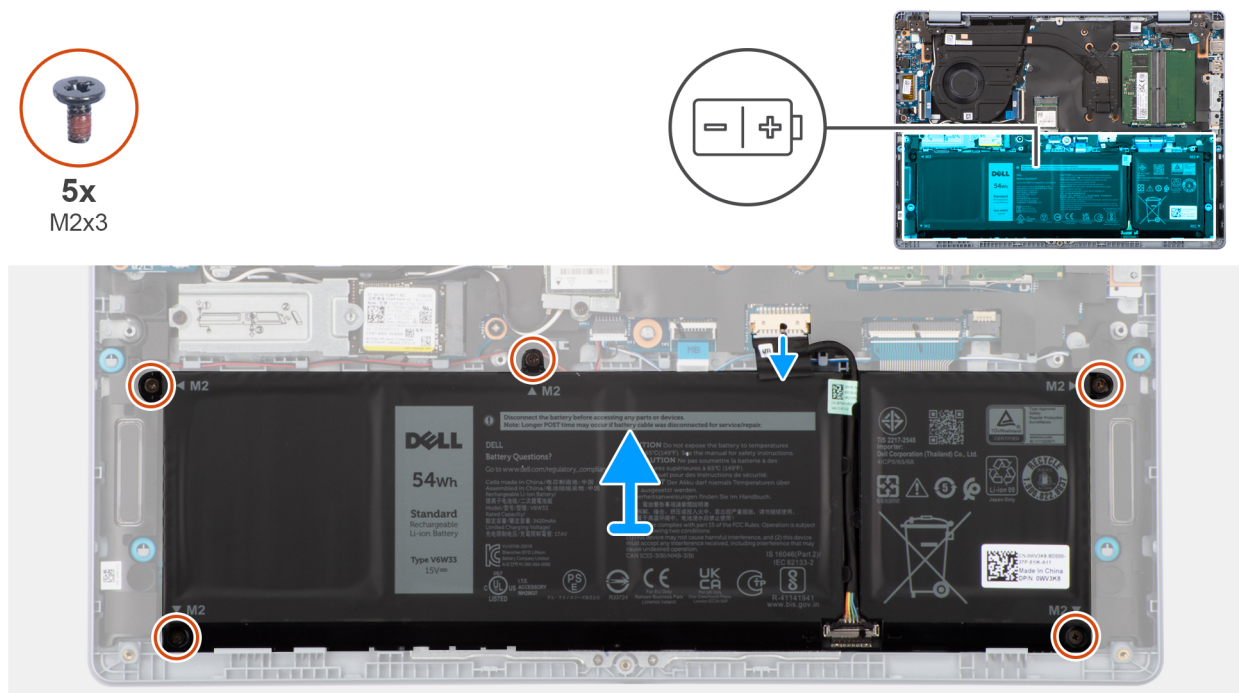


Figure 38. Removing the battery

Steps

1. Peel the tape that secures the battery cable to the system board and disconnect the battery cable from the connector (BATT1) on the system board.
2. Remove the five screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
3. Lift the battery off the palm-rest and keyboard assembly.

Installing the 54 W battery for computers shipped with a plastic chassis

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

Prerequisites

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

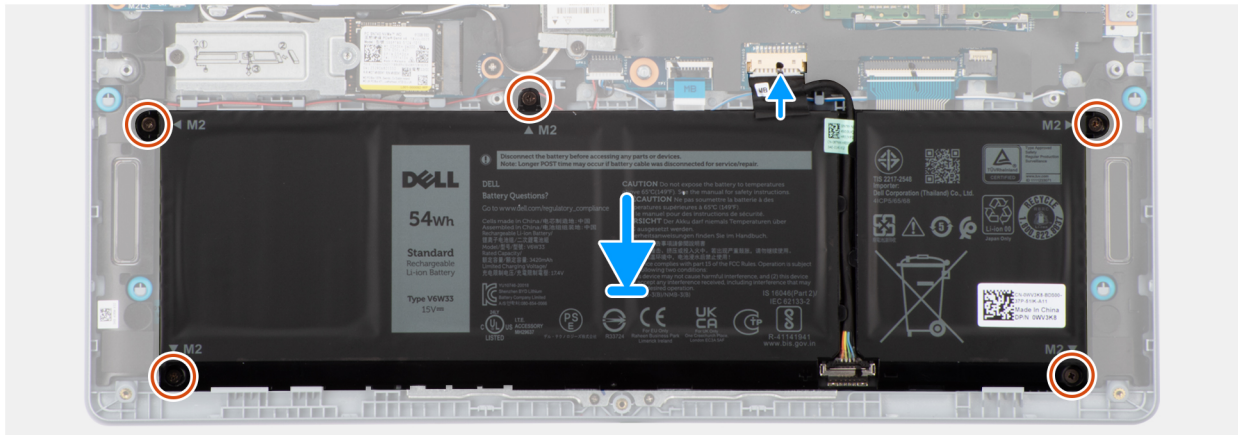
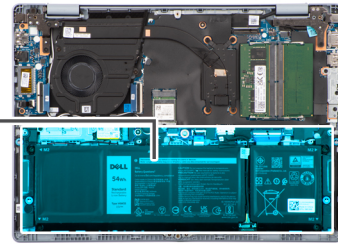
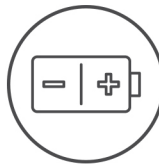
About this task

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

Figure 39. Installing the battery



5x
M2x3



Steps

1. Align the screw holes on the battery with the screw holes on the palm-rest and keyboard assembly.
2. Replace the five screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
3. Connect the battery cable to the connector (BATT1) on the system board and adhere the tape that secures the battery cable to the battery.

Next steps

1. Install the [base cover for computer shipped with a plastic chassis](#).
2. Follow the procedure in [After working inside your computer](#).

Removing the 54 W battery for computers shipped with an aluminum chassis

CAUTION: The information in this removal 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, [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with an aluminum chassis](#).

About this task

CAUTION: Removing the battery resets the BIOS setup settings to default. It is recommended that you note the BIOS setup settings before removing the battery.

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

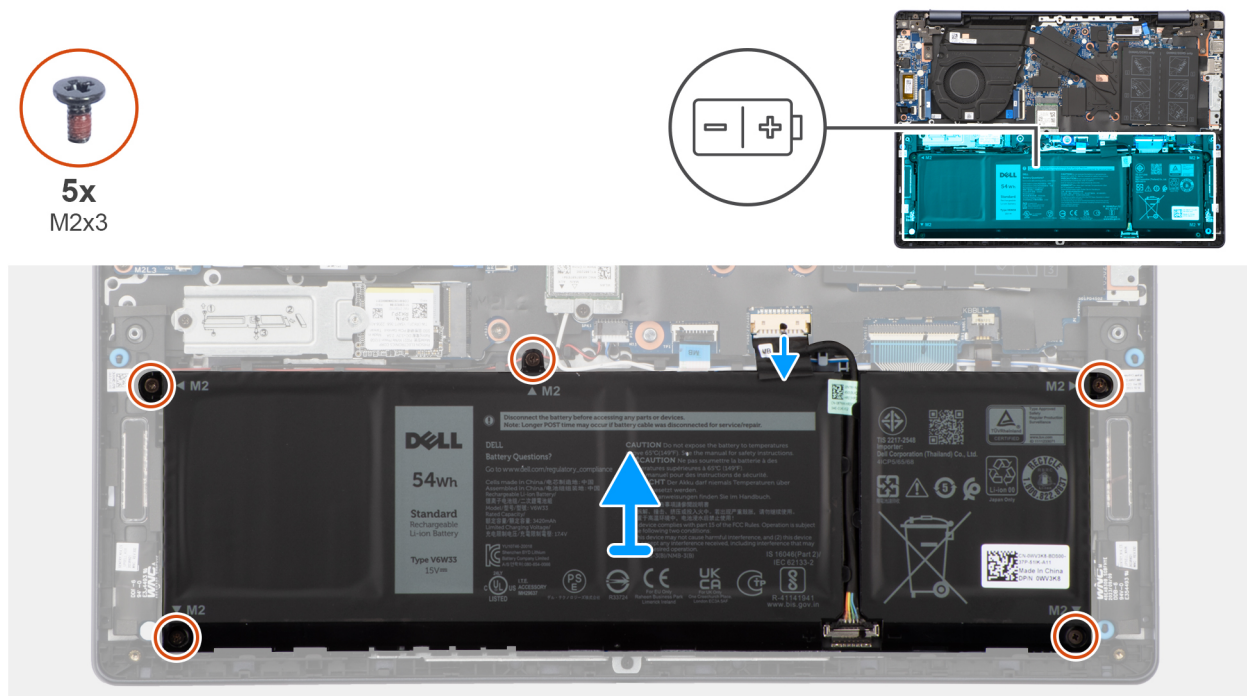


Figure 40. Removing the battery

Steps

1. Peel the tape that secures the battery cable to the system board and disconnect the battery cable from the connector on the system board.
2. Remove the five screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
3. Lift the battery off the palm-rest and keyboard assembly.

Installing the 54 W battery for computers shipped with an aluminum chassis

CAUTION: The information in this installation 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 location of the battery and provides a visual representation of the installation procedure.

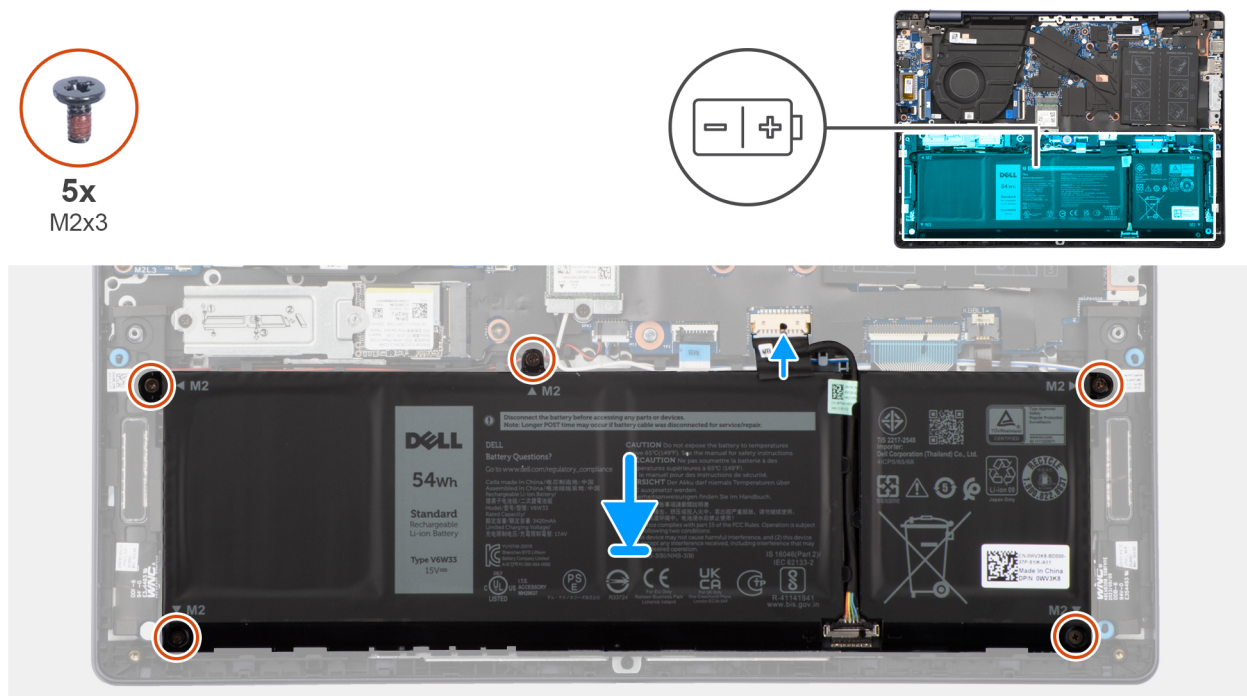


Figure 41. Installing the battery

Steps

1. Align the screw holes on the battery with the screw holes on the palm-rest and keyboard assembly.
2. Replace the five screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
3. Connect the battery cable to the connector (BATT1) on the system board and adhere the tape that secures the battery cable to the battery.

Next steps

1. Install the [base cover for computer shipped with an aluminum chassis](#).
2. Follow the procedure in [After working inside your computer](#).

Disconnecting the battery cable

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

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with a plastic chassis](#), or the [base cover for computers shipped with an aluminum chassis](#).
3. Remove the [54 W battery for computers shipped with a plastic chassis](#), or the [54 W battery for computers shipped with an aluminum chassis](#).

About this task

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



Figure 42. Disconnecting the battery cable

Steps

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

CAUTION: DO NOT pull the battery cable to disconnect it from the battery, it may damage the battery or the battery cable.

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

Connecting the battery cable

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

Prerequisites

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

About this task

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

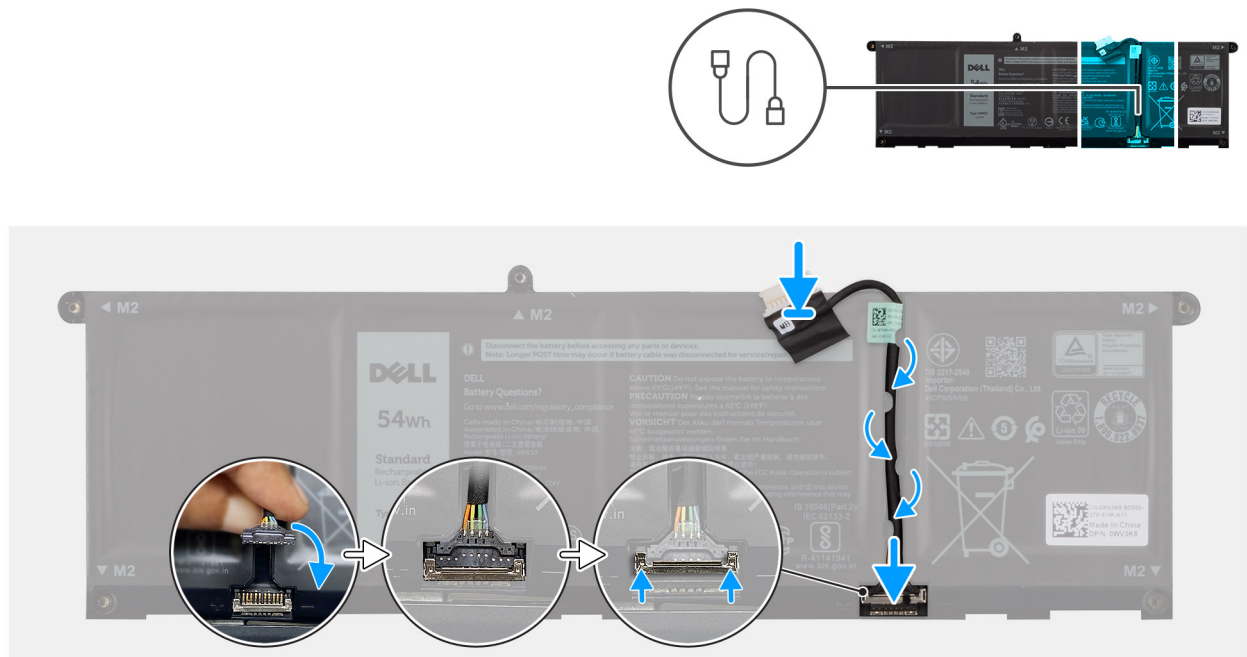


Figure 43. Connecting the battery cable

Steps

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

Next steps

1. Install the [54 W battery](#) for computers shipped with a plastic chassis, or the [54 W battery](#) for computers shipped with an [aluminum chassis](#).
2. Install the [base cover](#) for computers shipped with a plastic chassis, or the [base cover](#) for computers shipped with an [aluminum chassis](#).
3. Follow the procedure in [After working inside your computer](#).

Heat sink

Removing the heat sink for computers shipped with a plastic chassis - UMA

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, [Before working inside your computer](#).
2. Remove the [base cover](#) for computers shipped with a plastic chassis.

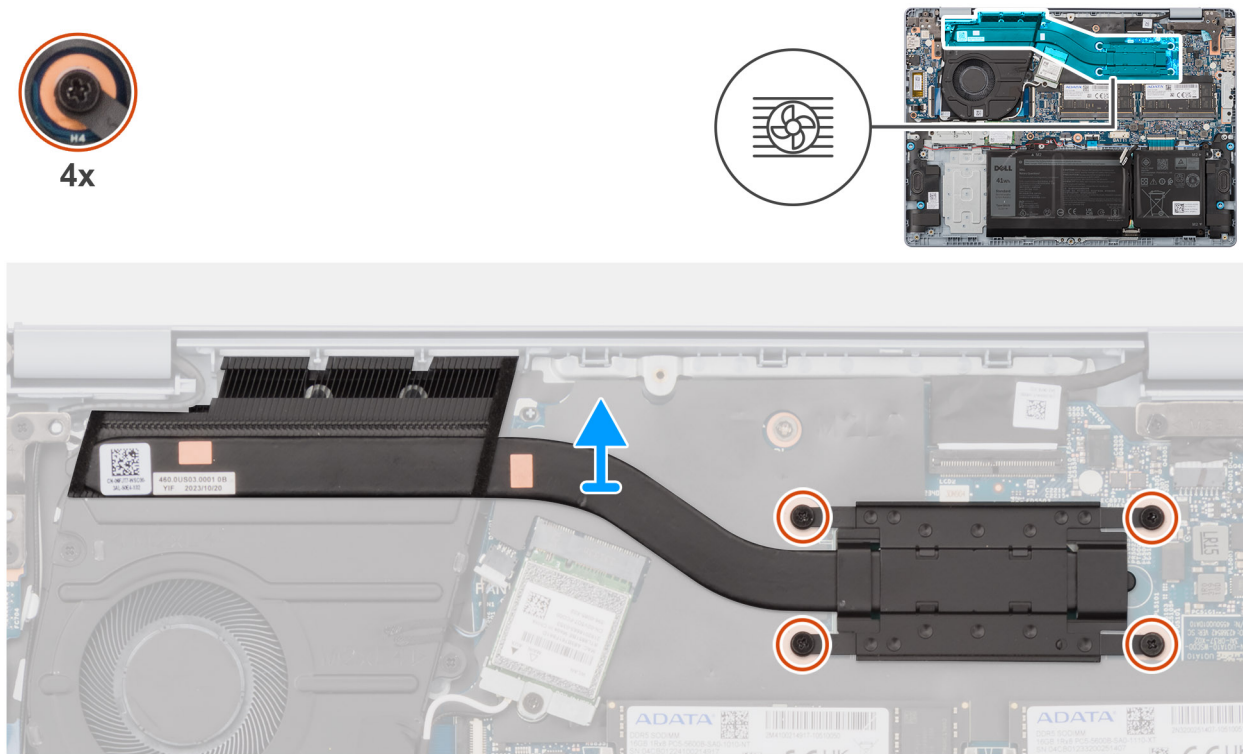
About this task

- 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 indicates the location of the battery and provides a visual representation of the removal procedure.

Figure 44. 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 for computers shipped with a plastic chassis - UMA

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.

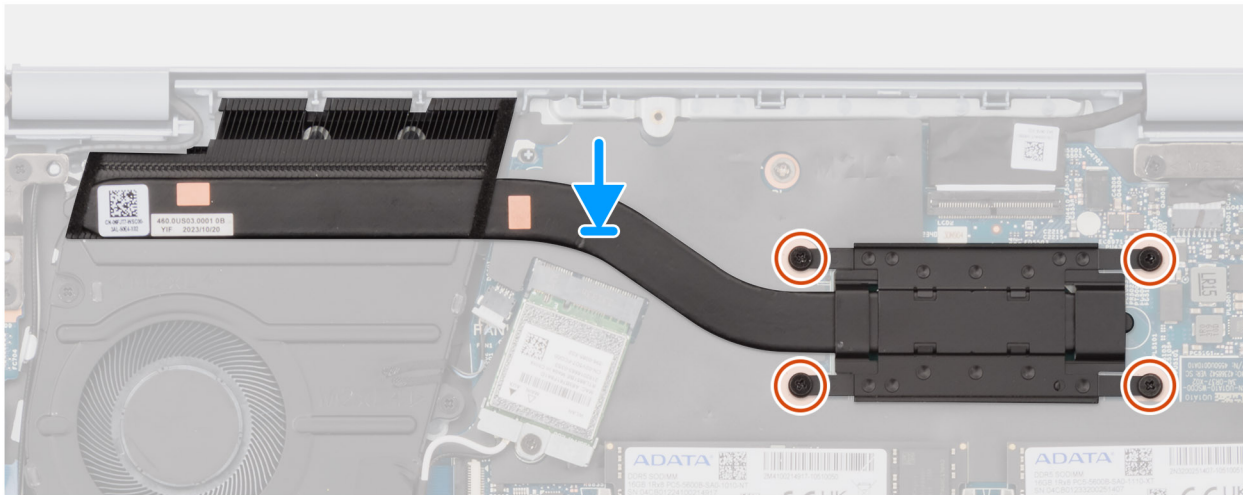
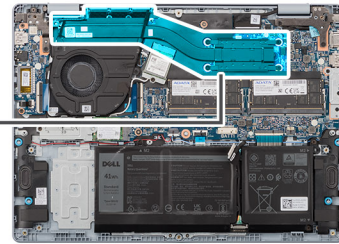
About this task

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

Figure 45. Installing the heat sink



4x



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 for computer shipped with a plastic chassis](#).
2. Follow the procedure in [After working inside your computer](#).

Removing the heat sink for computers shipped with an aluminum chassis - Discrete

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, [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with an aluminum chassis](#).

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 indicates the location of the discrete heat sink and provides a visual representation of the removal procedure.

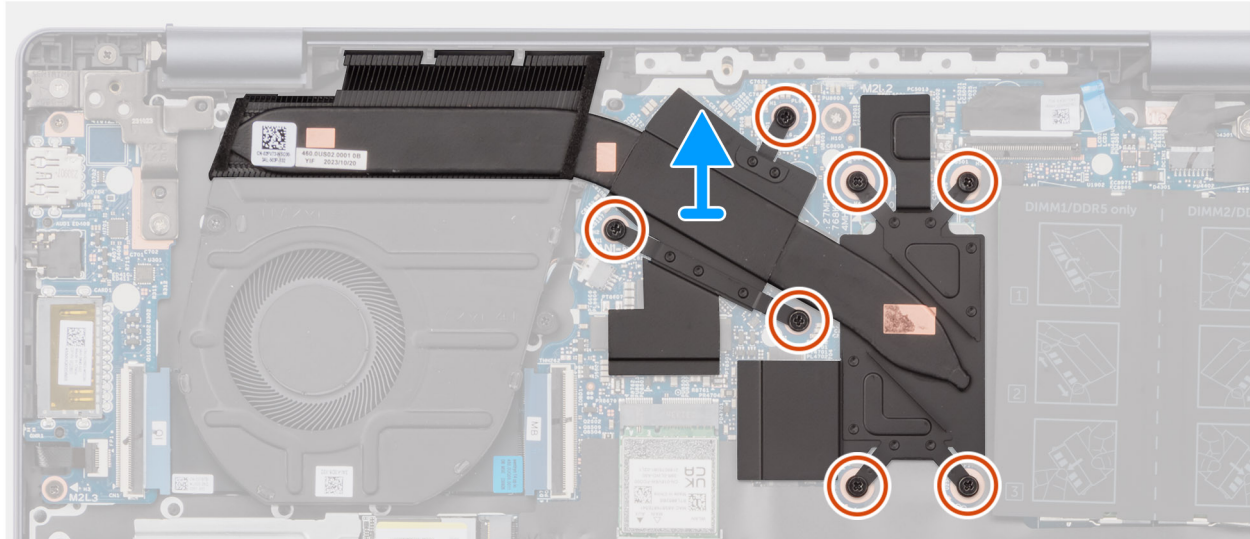
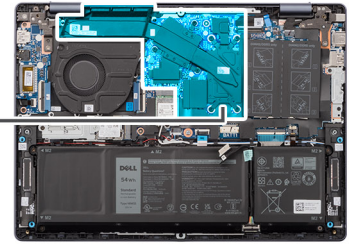
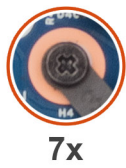


Figure 46. Removing the heat sink

Steps

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

Installing the heat sink for computers shipped with an aluminum chassis - Discrete

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 location of the discrete heat sink and provides a visual representation of the installation procedure.

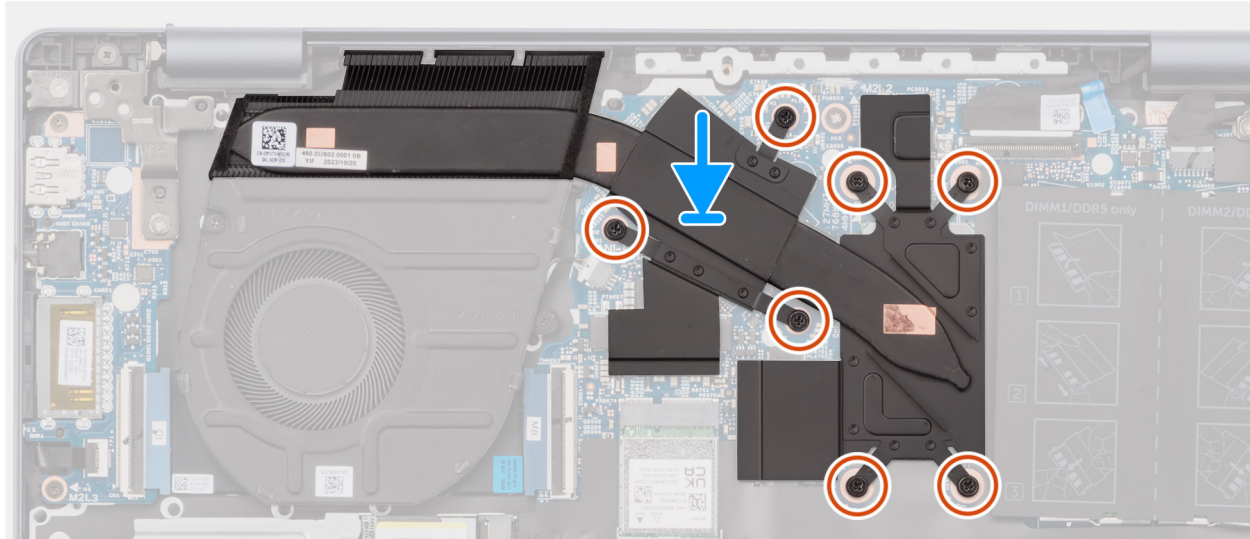
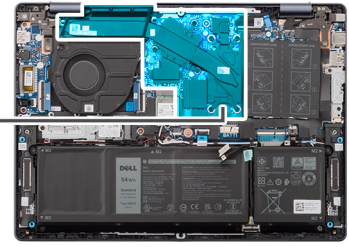
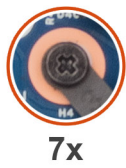


Figure 47. Installing the heat sink

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 > 5 > 6 > 7) tighten the seven captive screws that secure the heat sink to the system board.

Next steps

1. Install the [base cover](#) for computers shipped with an aluminum chassis.
2. Follow the procedure in [After working inside your computer](#).

Power-adapter port

Removing the power-adapter port for computers shipped with a plastic chassis

CAUTION: The information in this removal 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, [Before working inside your computer](#).
2. Remove the [base cover](#) for computers shipped with a plastic chassis.

About this task

CAUTION: Removing the battery resets the BIOS setup settings to default. It is recommended that you note the BIOS setup settings before removing the battery.

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

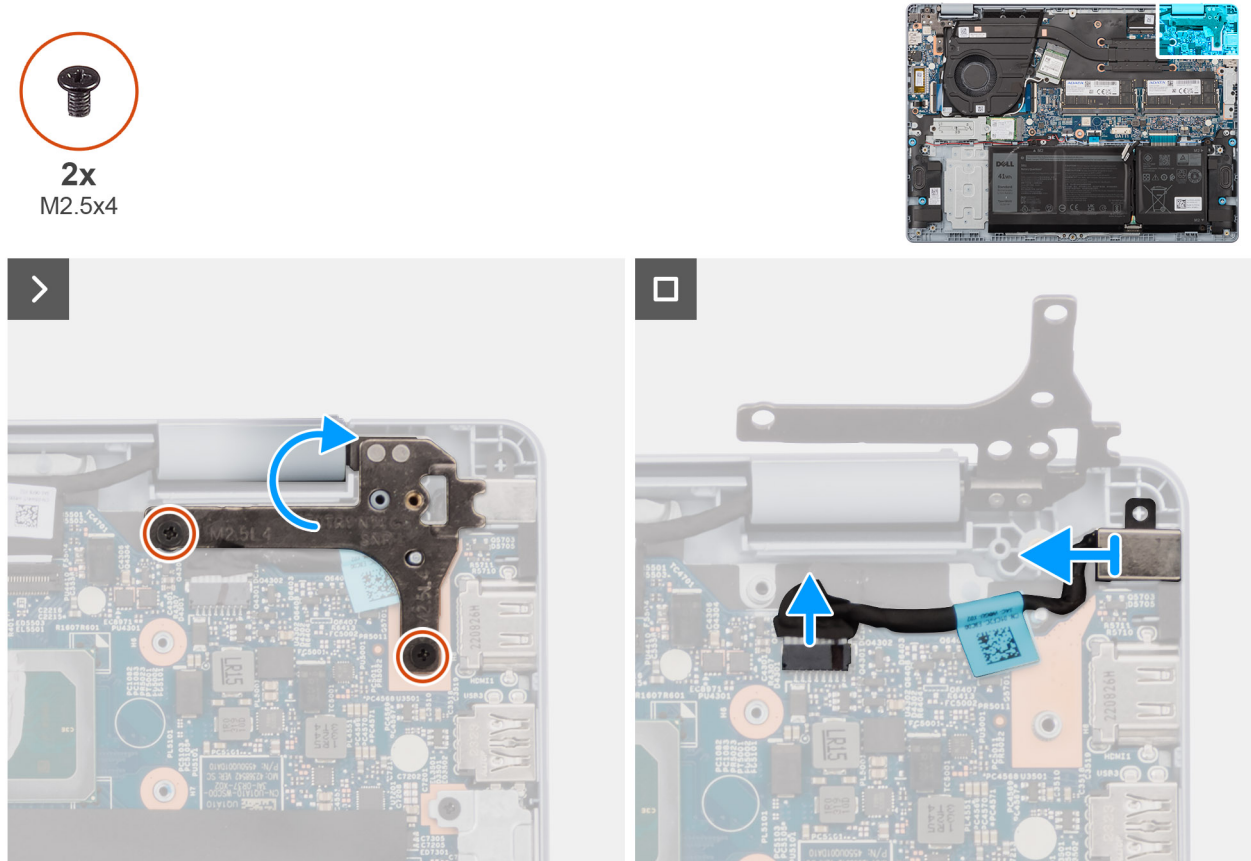


Figure 48. Removing the power adapter port

Steps

1. Remove the two screws (M2.5x4) that secure the right hinge to the palm-rest and keyboard assembly.
2. Rotate to open the right hinge.
3. Peel the tape that secures the power-adapter cable to the system board and disconnect the power-adapter cable from the connector (DC IN1) on the system board.
4. Lift the power-adapter port off the palm-rest and keyboard assembly.

Installing the power-adapter port for computers shipped with a plastic chassis

CAUTION: The information in this installation 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 location of the power-adapter port and provides a visual representation of the installation procedure.



2x
M2.5x4

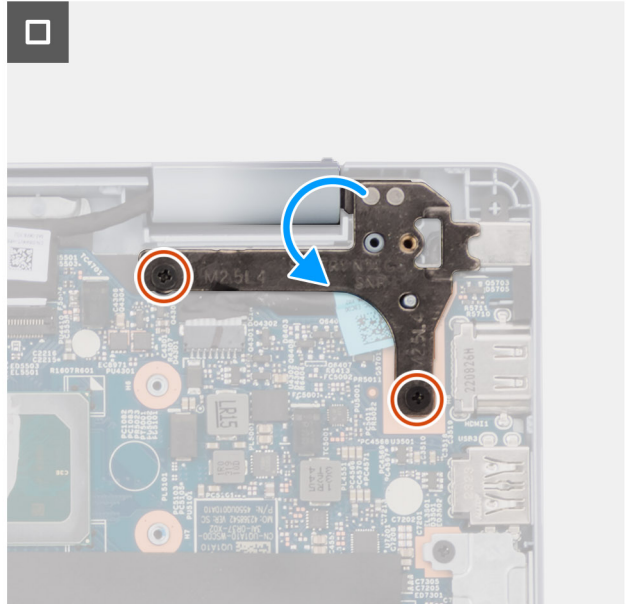
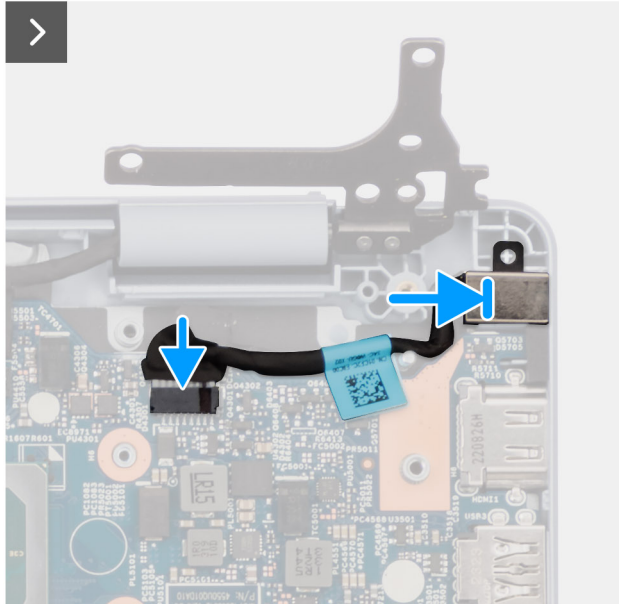


Figure 49. Installing the power adapter port

Steps

1. Place the power-adapter port in its slot on the palm-rest and keyboard assembly.
2. Connect the power-adapter cable to the connector (DC IN1) on the system board.
3. Adhere the tape that secures the power-adapter cable to the system board.
4. Replace the two screws (M2.5x4) that secure the right hinge to the palm-rest and keyboard assembly.

Next steps

1. Install the [base cover for computers shipped with a plastic chassis](#).
2. Follow the procedure in [After working inside your computer](#).

Removing the power-adapter port for computers shipped with an aluminum chassis

 **CAUTION:** The information in this removal 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, [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with an aluminum chassis](#).

About this task

 **CAUTION:** Removing the battery resets the BIOS setup settings to default. It is recommended that you note the BIOS setup settings before removing the battery.

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

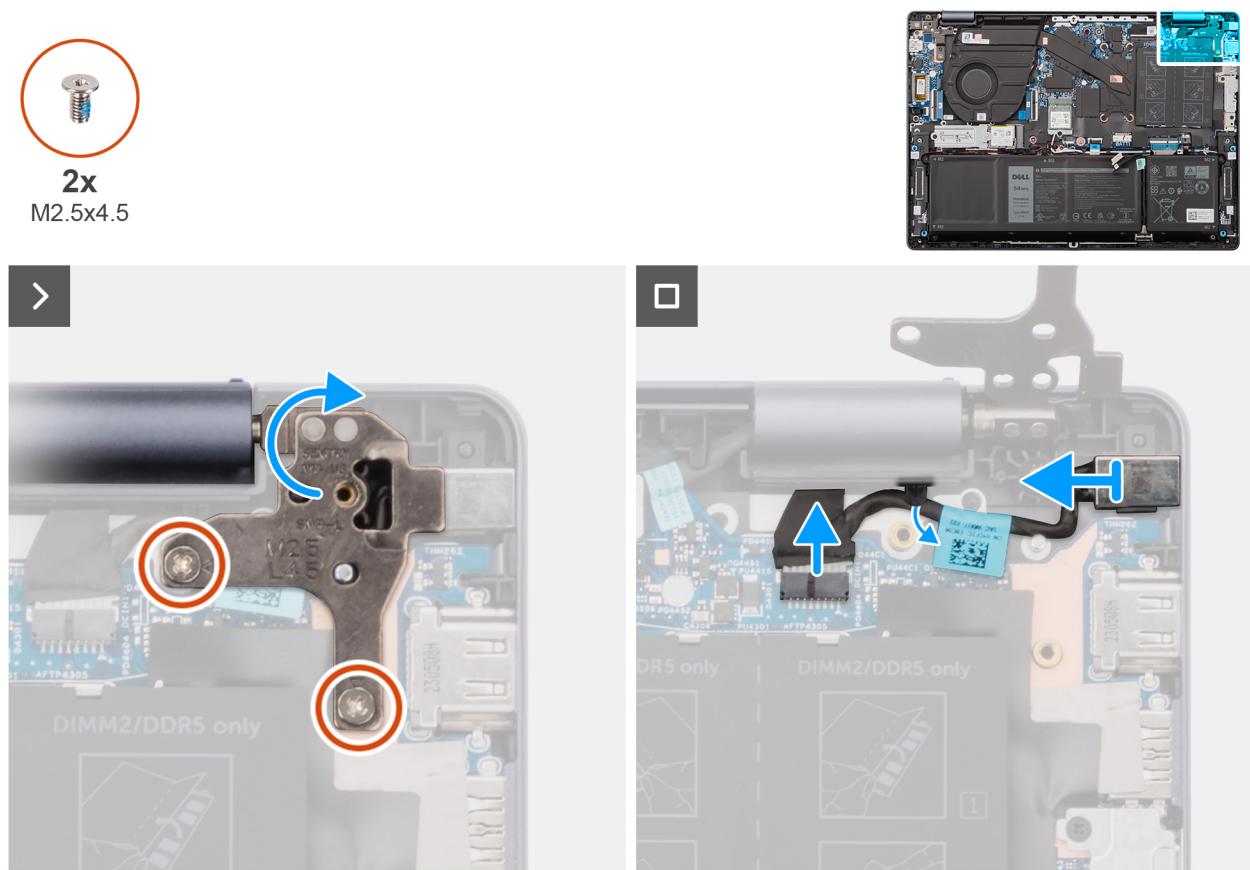


Figure 50. Removing the power adapter port

Steps

1. Remove the two screws (M2.5x4.5) that secure the right hinge to the palm-rest and keyboard assembly.
2. Rotate to open the right hinge.
3. Peel the tape that secures the power-adaptor cable to the system board and disconnect the power-adaptor cable from the connector (DC IN1) on the system board.
4. Lift the power-adaptor port off the palm-rest and keyboard assembly.

Installing the power-adaptor port for computers shipped with an aluminum chassis

CAUTION: The information in this installation 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 location of the power-adaptor port and provides a visual representation of the installation procedure.



2x
M2.5x4.5

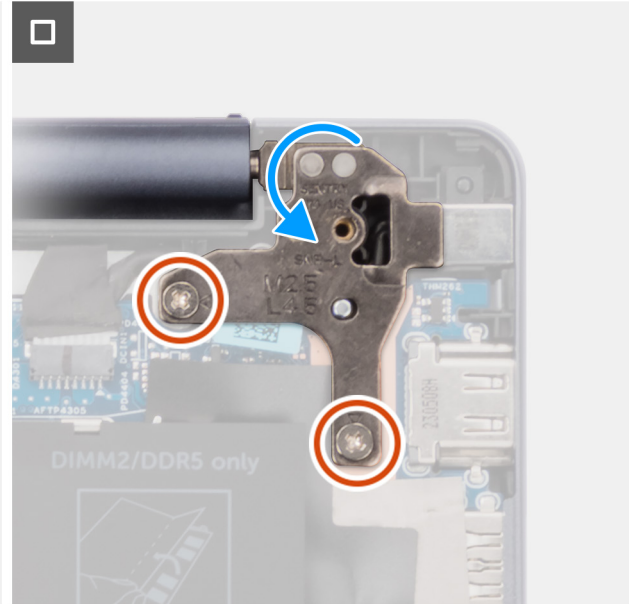
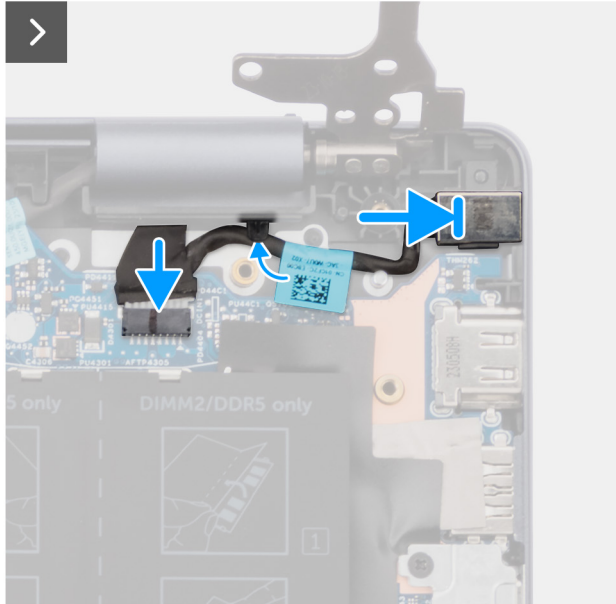
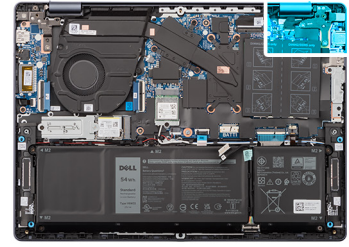


Figure 51. Installing the power adapter port

Steps

1. Place the power-adapter port in its slot on the palm-rest and keyboard assembly.
2. Connect the power-adapter cable to the connector (DC IN1) on the system board.
3. Adhere the tape that secures the power-adapter cable to the system board.
4. Rotate to close the right hinge.
5. Replace the two screws (M2.5x4.5) that secure the right hinge to the palm-rest and keyboard assembly.

Next steps

1. Install the [base cover for computers shipped with an aluminum chassis](#).
2. Follow the procedure in [After working inside your computer](#).

I/O board

Removing the I/O board for computers shipped with a plastic chassis

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

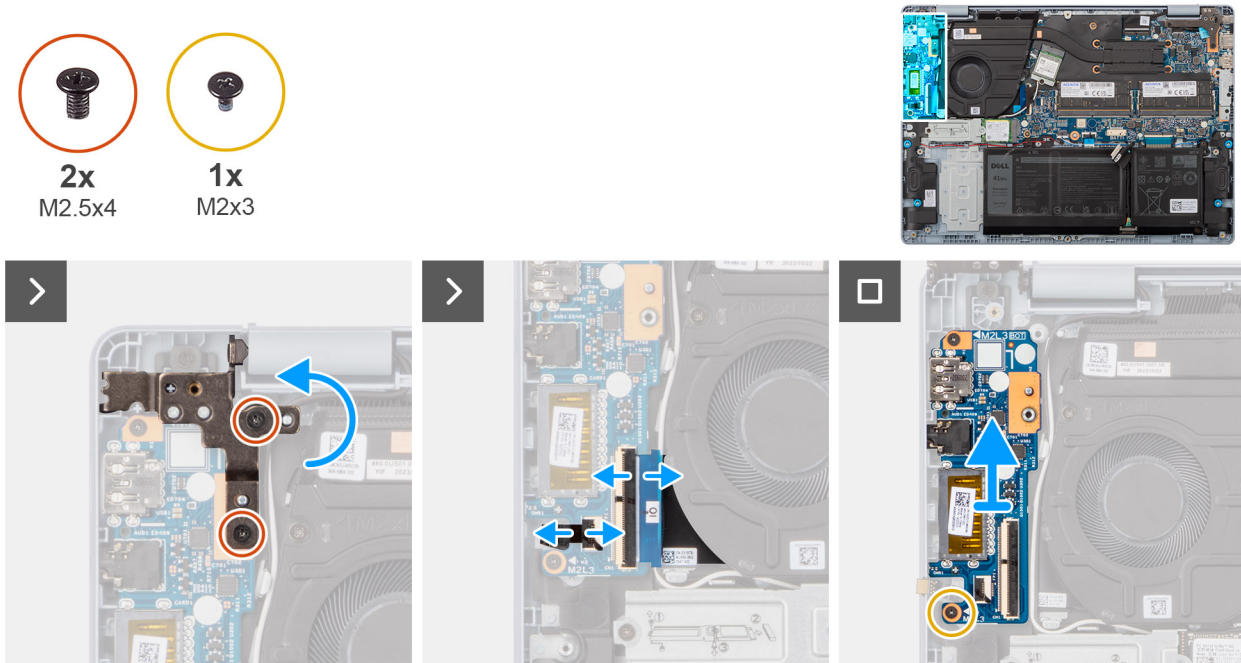
Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
NOTE: Ensure that your computer is in Service Mode. For more information see, [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with a plastic chassis](#).

About this task

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

Figure 52. Removing the I/O board



Steps

1. Remove the two screws (M2.5x4) that secure the left display hinge to the palm-rest and keyboard assembly.
2. Rotate the left display hinge to an angle of 90 degrees.
3. Lift the latch and disconnect the power-button with fingerprint reader cable from the I/O board.

NOTE: This step is only applicable to computers shipped with the optional fingerprint reader.

4. Lift the I/O-board cable-connector latch and disconnect the I/O-board cable from the I/O board.
5. Remove the screw (M2x3) that secure the I/O board to the palm-rest and keyboard assembly.
6. Lift the I/O board off the palm-rest and keyboard assembly.

Installing the I/O board for computers shipped with a plastic chassis

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

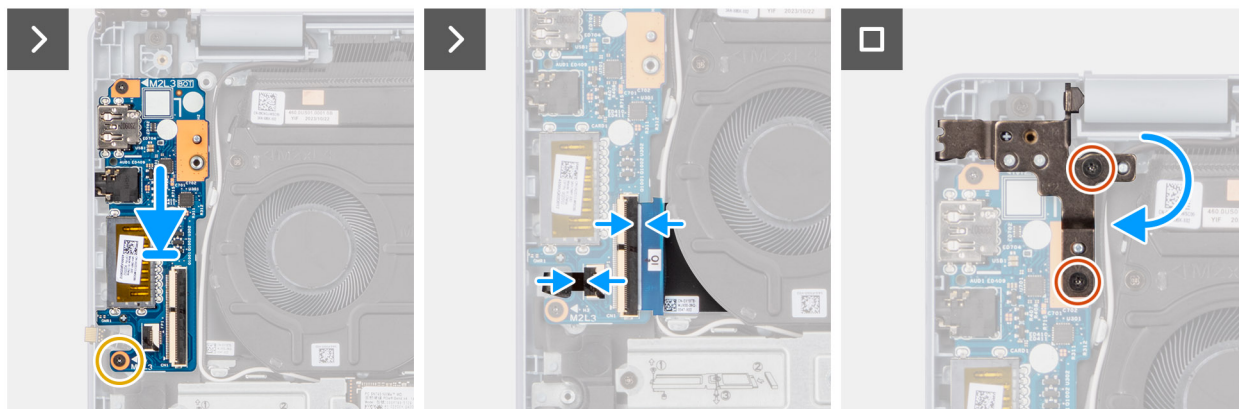
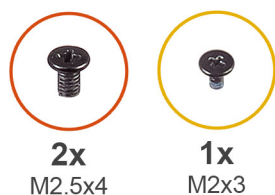
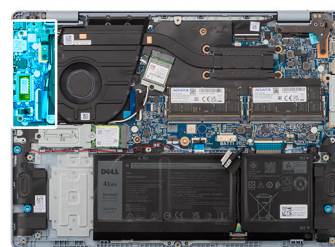
Prerequisites

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

About this task

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

Figure 53. 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 (M2x3) that secure the I/O board to the palm-rest and keyboard assembly.
4. Connect the I/O-board cable to the connector on the I/O board and close the latch.
5. Connect the power-button with fingerprint-reader cable to the connector on the I/O board and close the latch.

NOTE: This step is only applicable to computers shipped with the optional fingerprint reader.

6. Close the left display hinge and align the screw holes on the left display hinge with the screw holes on the I/O board.
7. Replace the two screws (M2.5x4) that secure the left display hinge to the palm-rest and keyboard assembly.

Next steps

1. Install the [base cover for computers shipped with a plastic chassis](#).
2. Follow the procedure in [After working inside your computer](#).

Removing the I/O board for computers shipped with an aluminum chassis

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 for computers shipped with an aluminum chassis](#).

About this task

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

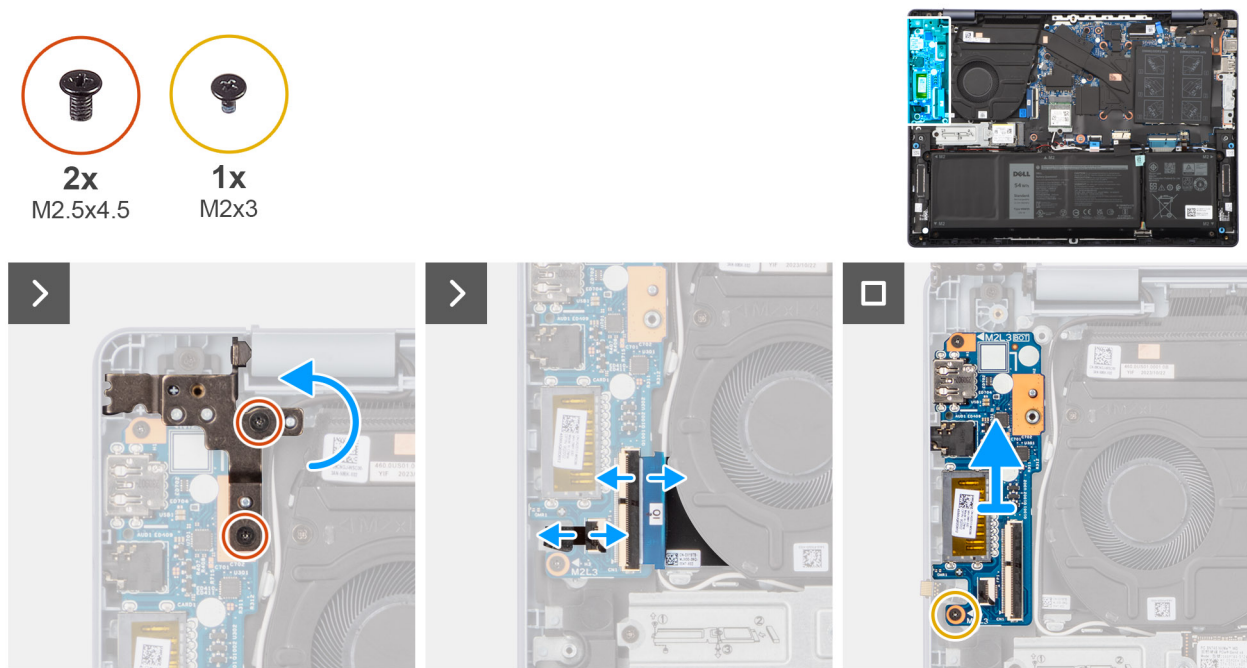


Figure 54. Removing the I/O board

Steps

1. Remove the two screws (M2.5x4.5) that secure the left display hinge to the palm-rest and keyboard assembly.
2. Rotate the left display hinge to an angle of 90 degrees.
3. Lift the latch and disconnect the power-button with fingerprint reader cable from the I/O board.
i **NOTE:** This step is only applicable to computers shipped with the optional fingerprint reader.
4. Lift the I/O-board cable-connector latch and disconnect the I/O-board cable from the I/O board.
5. Remove the screw (M2x3) that secure the I/O board to the palm-rest and keyboard assembly.
6. Lift the I/O board off the palm-rest and keyboard assembly.

Installing the I/O board for computers shipped with an aluminum chassis

△ **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 location of the I/O board and provides a visual representation of the installation procedure.

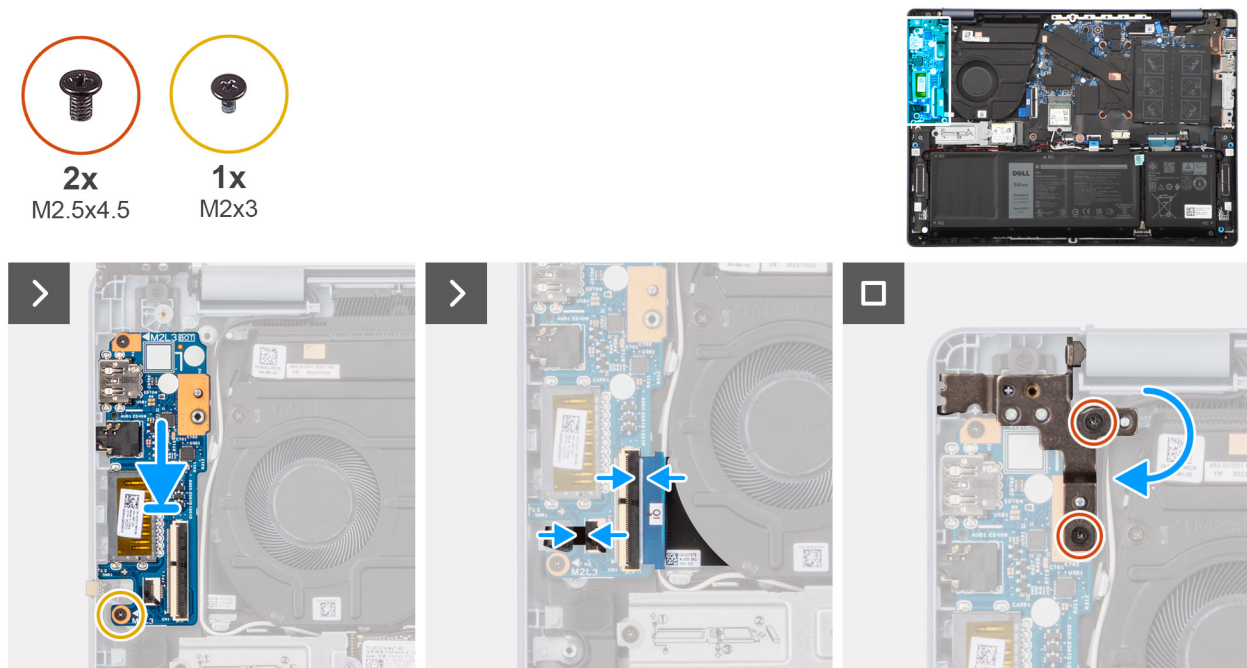


Figure 55. Installing the I/O board

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 (M2x3) that secure the I/O board to the palm-rest and keyboard assembly.
4. Connect the I/O-board cable to the connector on the I/O board and close the latch.
5. Connect the power-button with fingerprint-reader cable to the connector on the I/O board and close the latch.

NOTE: This step is only applicable to computers shipped with the optional fingerprint reader.

6. Close the left display hinge and align the screw holes on the left display hinge with the screw holes on the I/O board.
7. Replace the two screws (M2.5x4.5) that secure the left display hinge to the palm-rest and keyboard assembly.

Next steps

1. Install the [base cover for computers shipped with an aluminum chassis](#).
2. Follow the procedure in [After working inside your computer](#).

Power button with fingerprint reader

Removing the power-button with fingerprint reader for computers shipped with a plastic chassis

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, [Before working inside your computer](#).

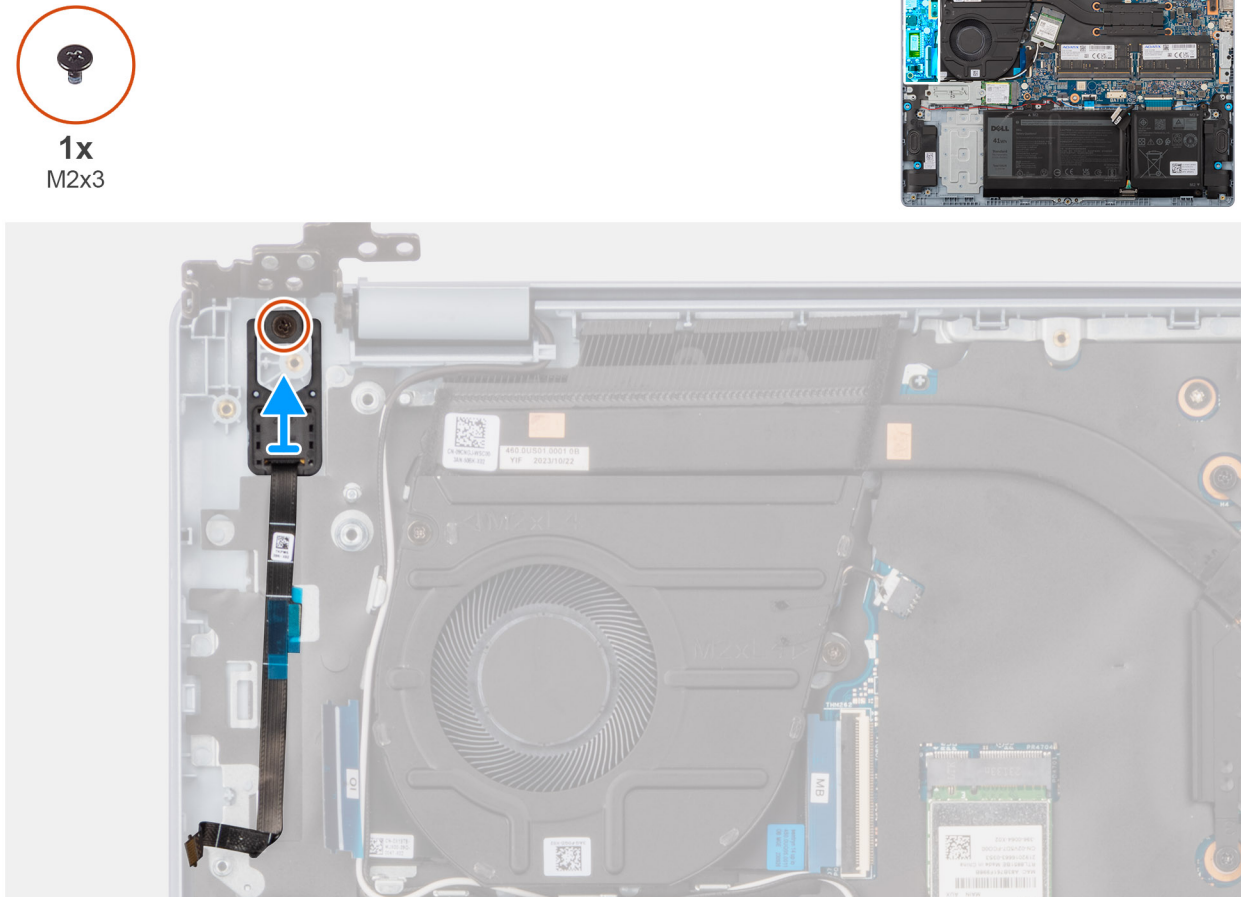
2. Remove the [base cover for computers shipped with a plastic chassis](#).
3. Remove the [I/O board for computers shipped with a plastic chassis](#).

About this task

NOTE: This procedure is applicable only for computers that are shipped without the optional fingerprint reader.

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

Figure 56. Removing the power-button



Steps

1. Remove the screw (M2x3) that secures the power-button to the palm-rest and keyboard assembly.
2. Lift the power-button off the palm-rest and keyboard assembly.

Installing the power-button with fingerprint reader for computers shipped with a plastic chassis

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

Prerequisites

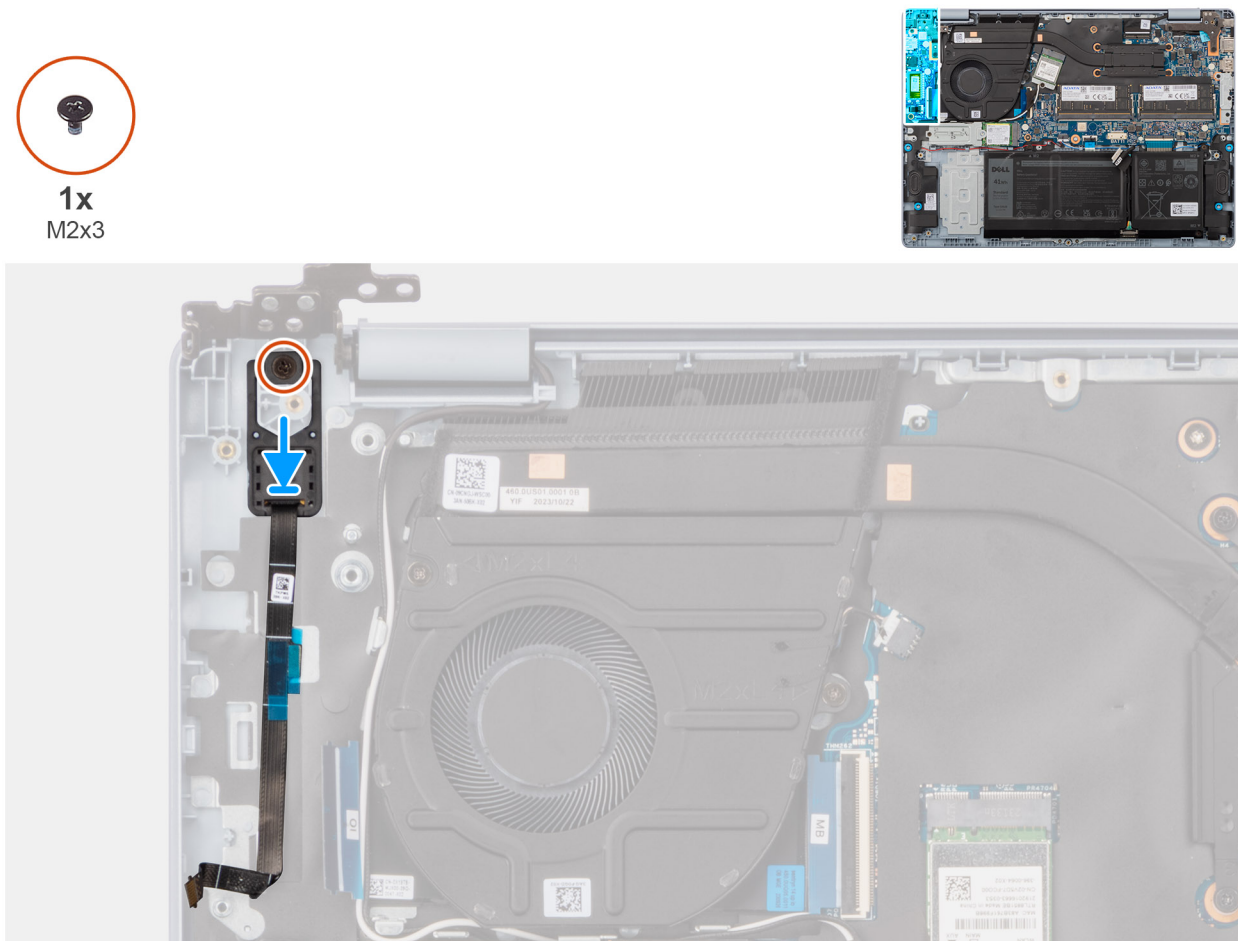
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

NOTE: This procedure is applicable only when you are installing a power-button without the optional fingerprint reader.

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

Figure 57. Installing the power-button with 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 with the screw hole on the palm-rest and keyboard assembly.
3. Replace the screw (M2x3) that secures the power-button to the palm-rest and keyboard assembly.

Next steps

1. Install the [I/O board](#) for computers shipped with a plastic chassis.
2. Install the [base cover](#) for computers shipped with a plastic chassis.
3. Follow the procedure in [After working inside your computer](#).

Removing the power-button with fingerprint reader for computers shipped with an aluminum chassis

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, [Before working inside your computer](#).

2. Remove the [base cover](#) for computers shipped with an aluminum chassis.
3. Remove the [I/O board](#) for computers shipped with an aluminum chassis.

About this task

NOTE: This procedure is applicable only for computers that are shipped without the optional fingerprint reader.

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

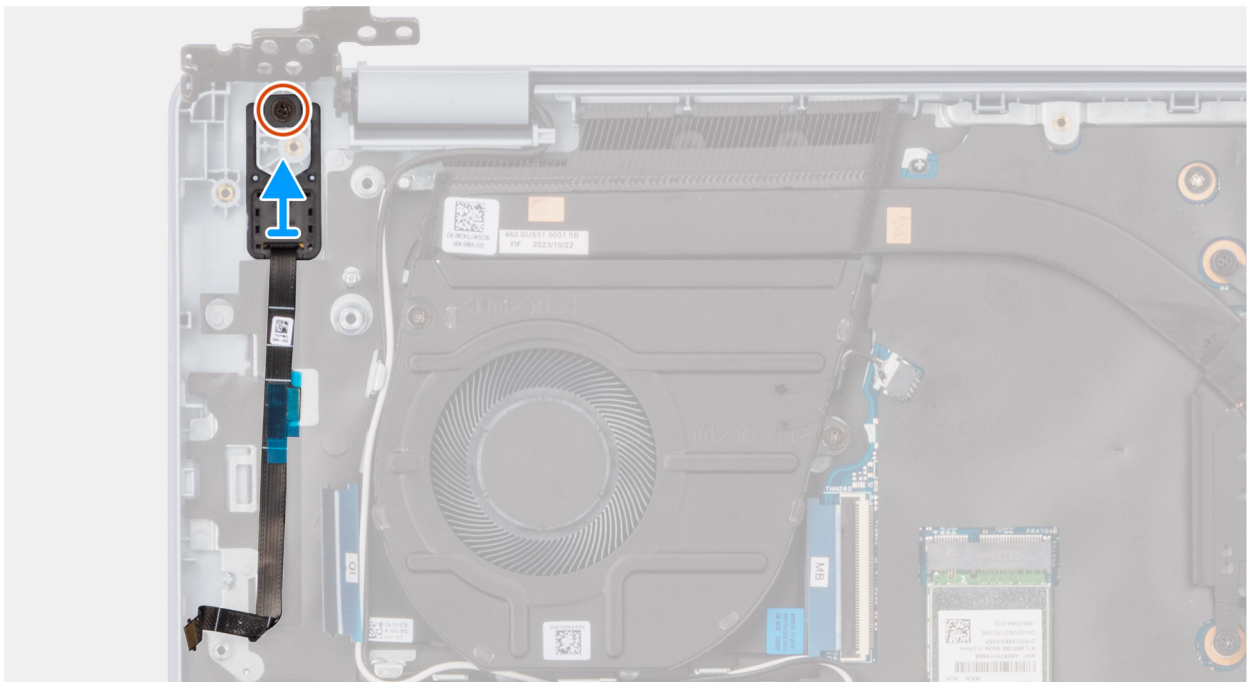
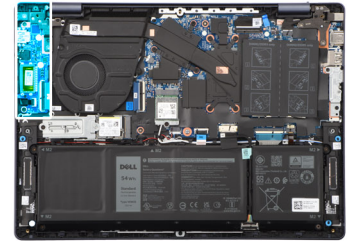


Figure 58. Removing the power-button with fingerprint reader

Steps

1. Remove the screw (M2x3) that secures the power-button to the palm-rest and keyboard assembly.
2. Lift the power-button off the palm-rest and keyboard assembly.

Installing the power-button with fingerprint reader for computers shipped with an aluminum chassis

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

Prerequisites

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

About this task

NOTE: This procedure is applicable only when you are installing a power-button without the optional fingerprint reader.

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



Figure 59. Installing the power-button with 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 with the screw hole on the palm-rest and keyboard assembly.
3. Replace the screw (M2x3) that secures the power-button to the palm-rest and keyboard assembly.

Next steps

1. Install the [I/O board](#) for computers shipped with an aluminum chassis.
2. Install the [base cover](#) for computers shipped with an aluminum chassis.
3. Follow the procedure in [After working inside your computer](#).

Touchpad

Removing the touchpad for computers shipped with a plastic chassis

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

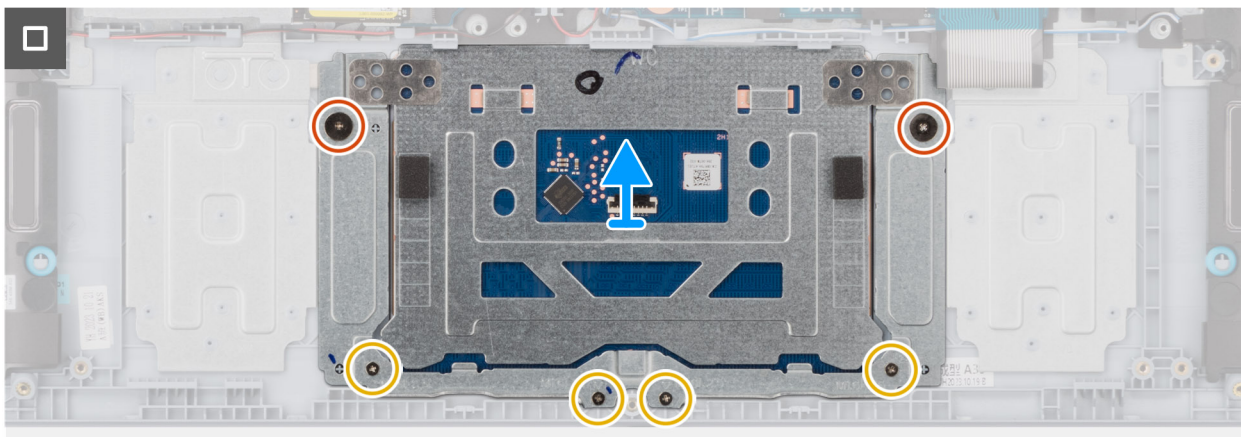
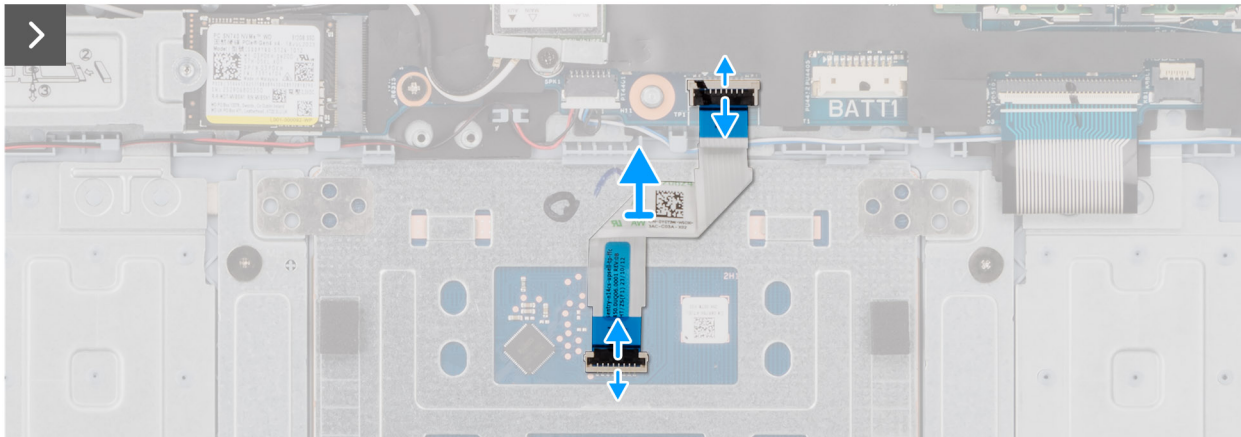
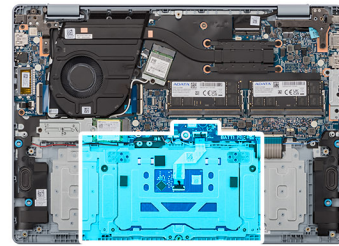
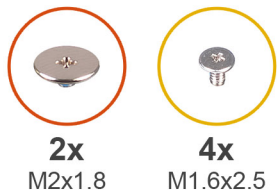
Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
 **NOTE:** Ensure that your computer is in Service Mode. For more information see, [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with a plastic chassis](#).
3. Remove the [41W battery for computers shipped with a plastic chassis](#), or the [54W battery for computers shipped with a plastic chassis](#).

About this task

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

Figure 60. Removing the touchpad



Steps

1. Lift the latch and disconnect the touchpad cable from the connector (TP1) on the system board.
2. Lift the latch and disconnect the touchpad cable from the connector on the touchpad.
3. Lift the touchpad cable off the palm-rest and keyboard assembly.
4. Remove the two screws (M2x1.8) and the four screws (M1.6x2.5) that secure the touchpad to the palm-rest and keyboard assembly.
5. Lift the touchpad off the palm-rest and keyboard assembly.

Installing the touchpad for computers shipped with a plastic chassis

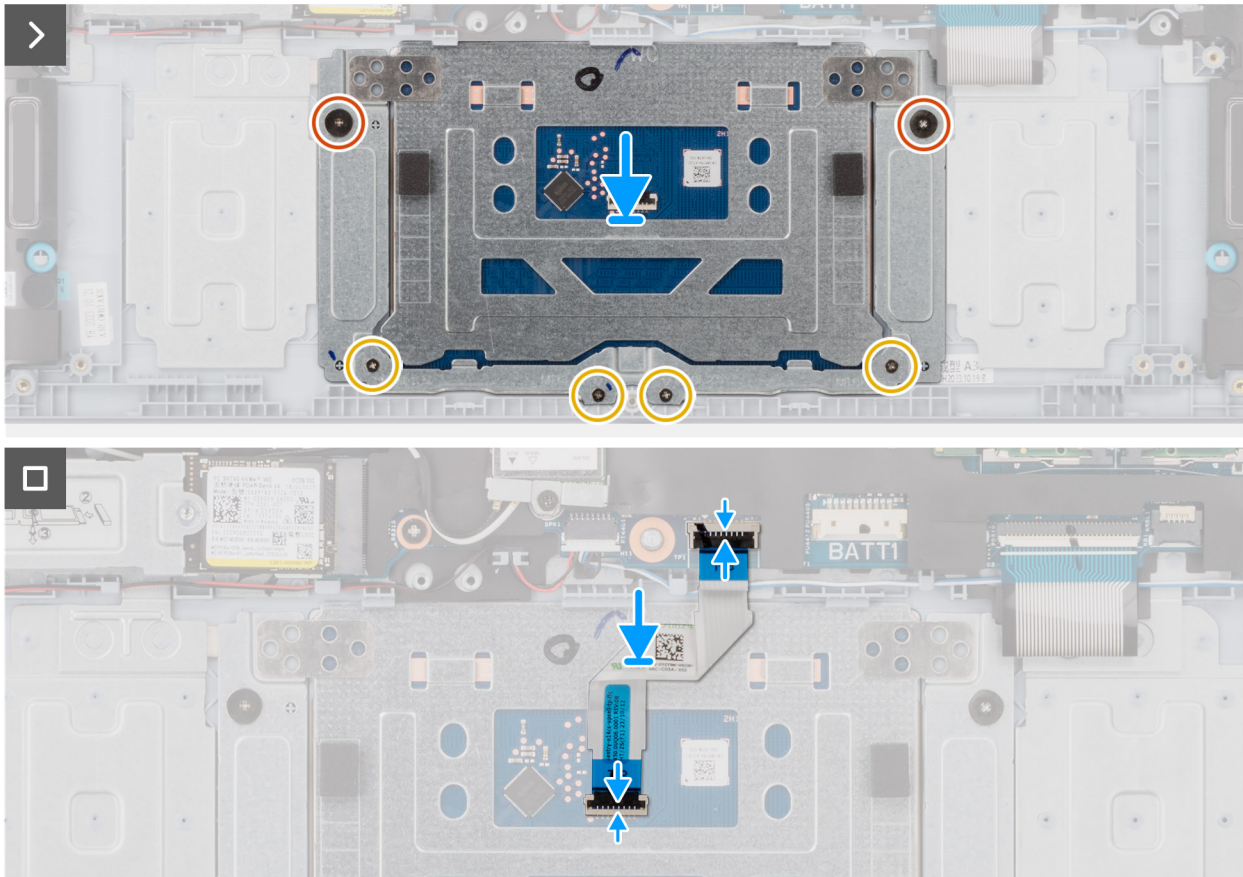
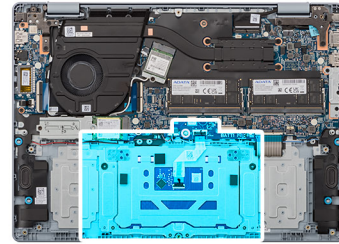
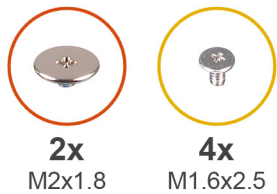
Prerequisites

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

About this task

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

Figure 61. Installing the touchpad



Steps

1. Place the touchpad into its slot on the palm-rest and keyboard assembly.
2. Align the screw holes on the touchpad with the screw holes on the palm-rest and keyboard assembly.
3. Replace the two screws (M2x1.8) and the four screws (M1.6x2.5) that secure the touchpad to the palm-rest and keyboard assembly.
4. Place the touchpad cable on the palm-rest and keyboard assembly.
5. Connect the touchpad cable to the connector on the touchpad and close the latch.
6. Connect the touchpad cable to the connector (TP1) on the system board and close the latch.

Next steps

1. Install the [41W battery](#) for computers shipped with a plastic chassis, or the [54W battery](#) for computers shipped with a plastic chassis .
2. Install the [base cover](#) for computers shipped with a plastic chassis.
3. Follow the procedure in [After working inside your computer](#).

Removing the touchpad for computers shipped with an aluminum chassis

 **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, [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with an aluminum chassis](#).
3. Remove the [54W battery for computers shipped with an aluminum chassis](#).

About this task

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

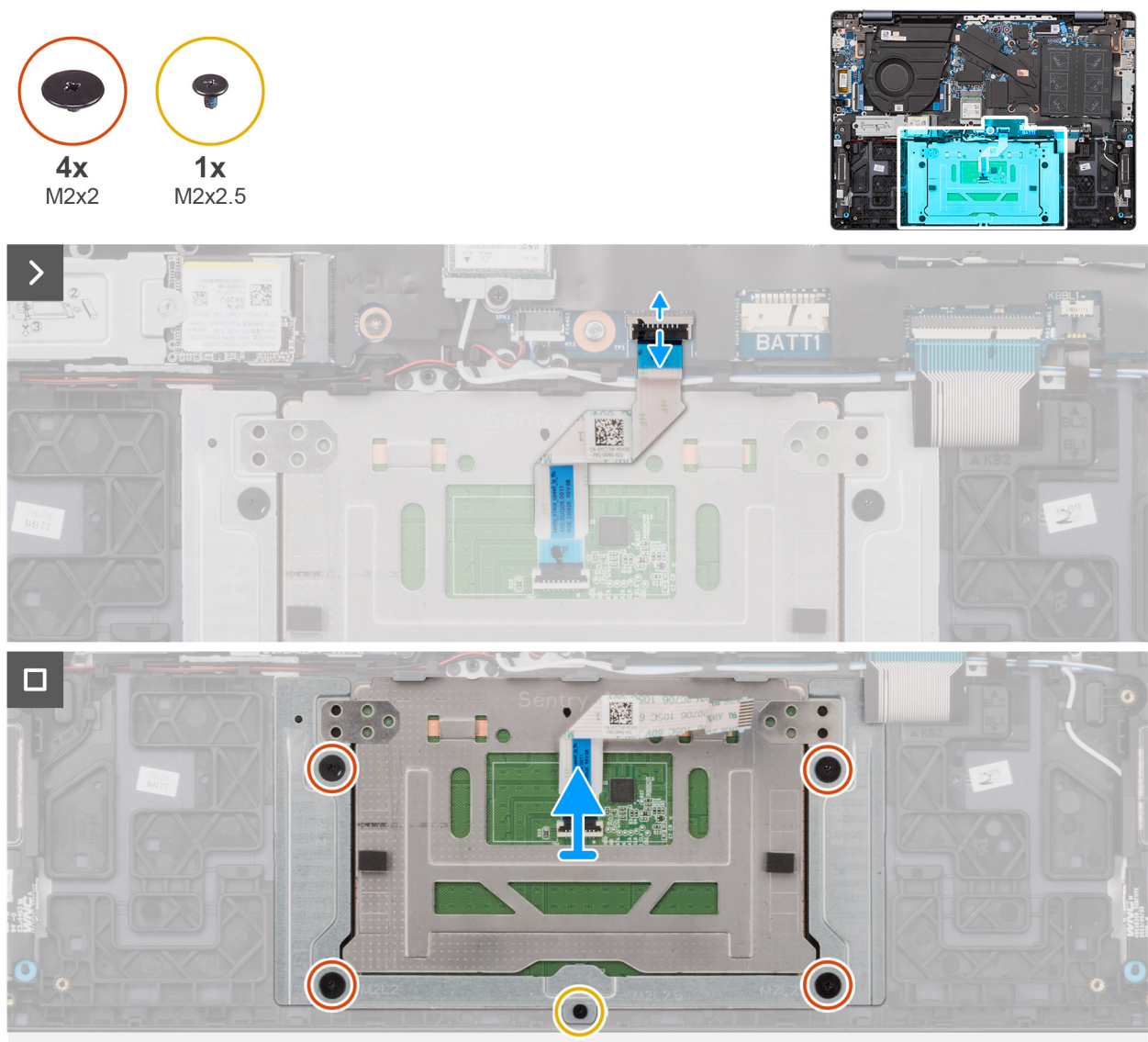


Figure 62. Removing the touchpad

Steps

1. Lift the latch and disconnect the touchpad cable from the connector (TP1) on the system board.

2. Lift the latch and disconnect the touchpad cable from the connector on the touchpad.
3. Lift the touchpad cable off the palm-rest and keyboard assembly.
4. Remove the one screw (M2x2.5) and the four screws (M2x2) that secure the touchpad to the palm-rest and keyboard assembly.
5. Lift the touchpad off the palm-rest and keyboard assembly.

Installing the touchpad for computers shipped with an aluminum chassis

Prerequisites

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

About this task

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

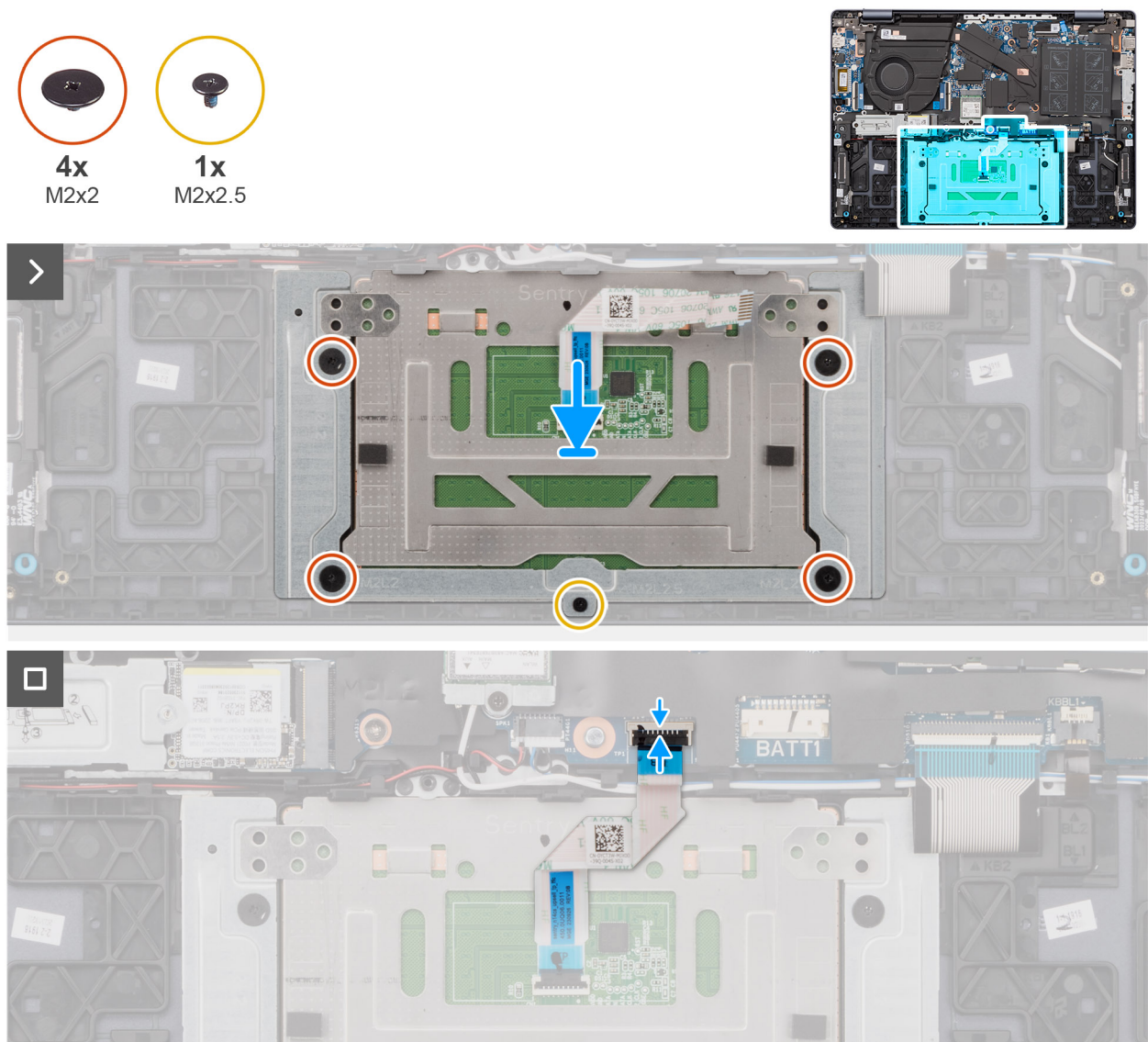


Figure 63. Installing the touchpad

Steps

1. Place the touchpad into its slot on the palm-rest and keyboard assembly.

2. Align the screw holes on the touchpad with the screw holes on the palm-rest and keyboard assembly.
3. Replace the single screw (M2x2.5) and the four screws (M2x2) that secure the touchpad to the palm-rest and keyboard assembly.
4. Place the touchpad cable on the palm-rest and keyboard assembly.
5. Connect the touchpad cable to the connector on the touchpad and close the latch.
6. Connect the touchpad cable to the connector (TP1) on the system board and close the latch.

Next steps

1. Install the [54W battery for computers shipped with an aluminum chassis](#).
2. Install the [base cover for computers shipped with an aluminum chassis](#).
3. Follow the procedure in [After working inside your computer](#).

Speakers

Removing the speakers for computers shipped with a plastic chassis

 **NOTE:** 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, [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with a plastic chassis](#).
3. Remove the [41 W battery for computers shipped with a plastic chassis](#), or the [54 W battery for computers shipped with a plastic chassis](#).

About this task

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

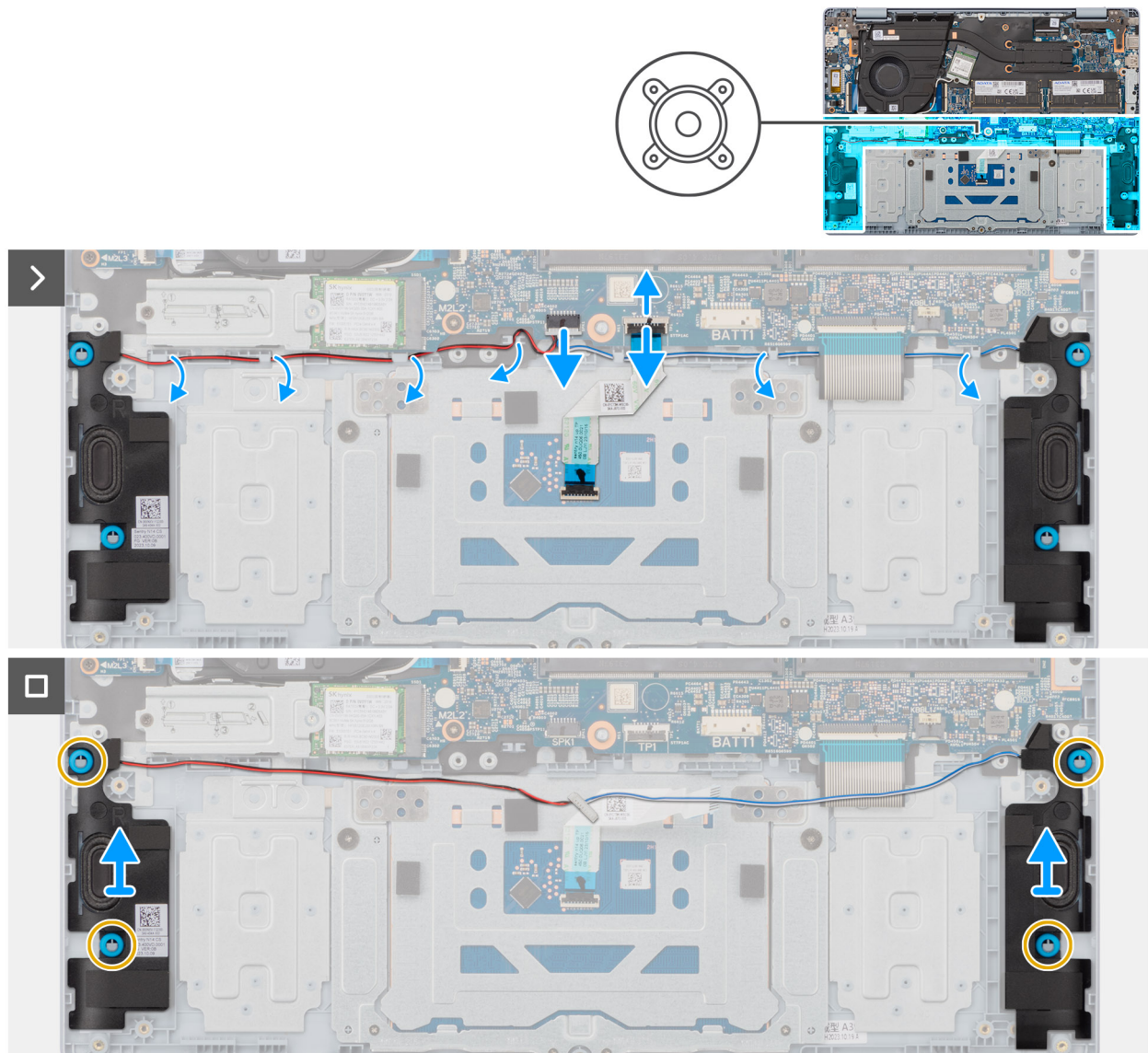


Figure 64. Removing the speakers

Steps

1. Lift the latch and disconnect the keyboard-backlight cable from the connector (KBBL1) on the system board.
2. Lift the latch and disconnect the keyboard cable from the connector (KB1) on the system board.
3. Lift the latch and disconnect the touchpad cable from the connector (TP1) on the system board.
4. Disconnect the speaker cable from the connector (SPK1) on the system board.
5. Remove the speaker from the routing guides on the palm-rest and keyboard assembly.
6. Lift the left and right speakers along with the cables, off the palm-rest and keyboard assembly.

Installing the speakers for computers shipped with a plastic chassis

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 speakers and provides a visual representation of the installation procedure.

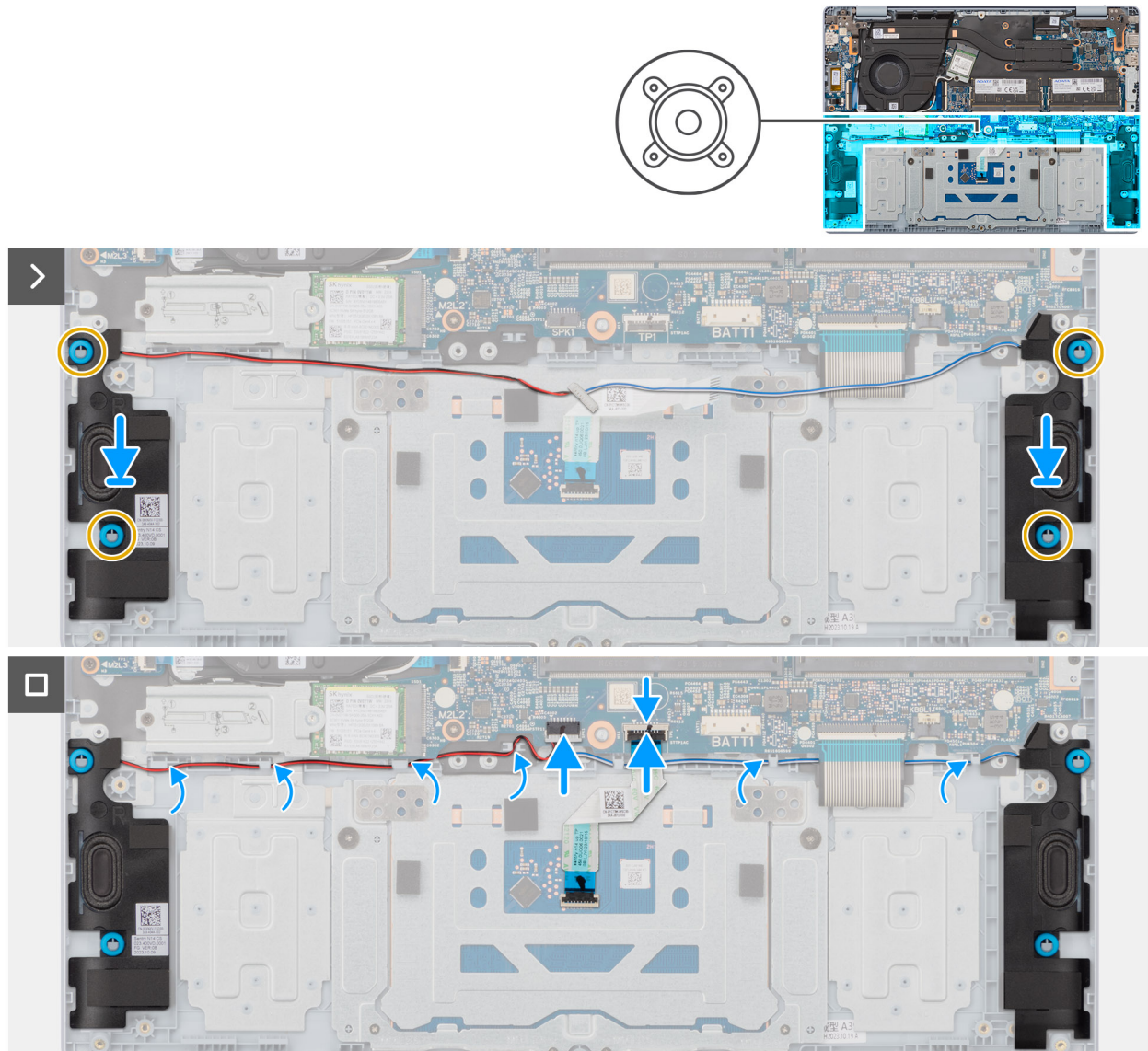


Figure 65. Installing the speakers

Steps

1. Using the alignment posts and rubber grommets, place the speakers on the slots of the palm-rest and keyboard assembly.
NOTE: Ensure that the rubber grommets on the speakers are threaded through the alignment posts and the four rubber grommets are seated into the slot and installed on the speakers properly .
2. Route the speaker cables through the routing guides on the palm-rest and keyboard assembly.
NOTE: Ensure the wires of the speakers and wireless antennas are placed in their routing guides accordingly.
3. Connect the speaker cable to the connector (SPK1) on the system board.
4. Connect the touchpad cable to the connector (TP1) on the system board and close the latch.
5. Connect the keyboard cable to the connector (KB1) on the system board and close the latch.
6. Connect the keyboard-backlight cable to the connector (KBBL1) on the system board and close the latch.

Next steps

1. Install the [41W battery](#) for computers shipped with a plastic chassis, or the [54W battery](#) for computers shipped with a plastic chassis.
2. Install the [base cover](#) for computers shipped with a plastic chassis.
3. Follow the procedure in [After working inside your computer](#).

Removing the speakers for computers shipped with an aluminum chassis

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

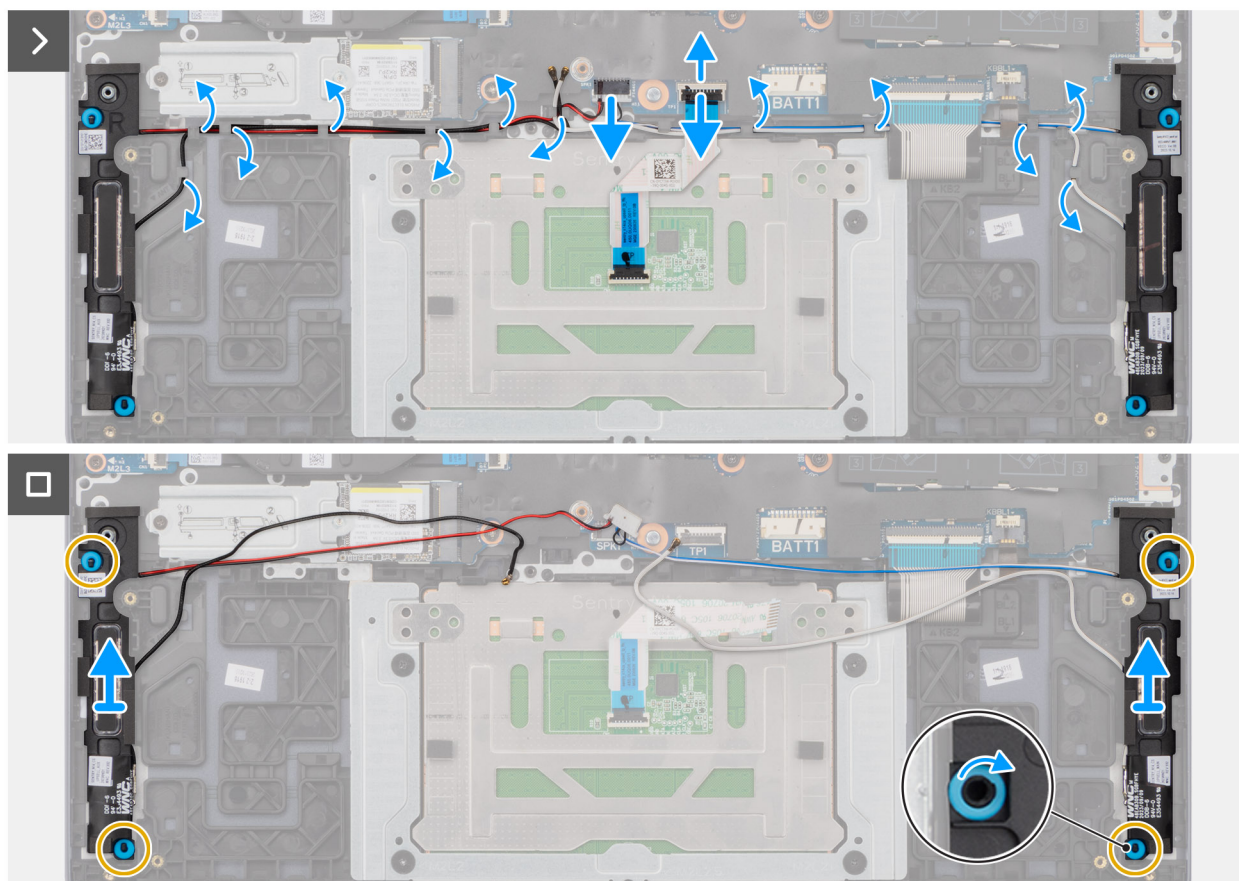
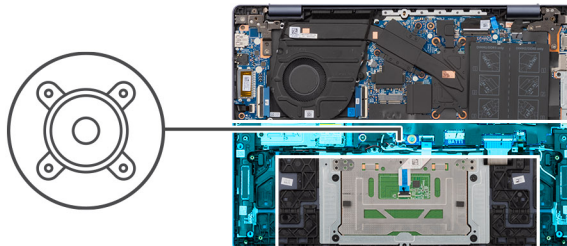
Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
 **NOTE:** Ensure that your computer is in Service Mode. For more information see, [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with an aluminum chassis](#).
3. Remove the [54W battery for computers shipped with an aluminum chassis](#).
4. Remove the [wireless card for computers shipped with an aluminum chassis](#).

About this task

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

Figure 66. Removing the speakers



Steps

1. Lift the latch and disconnect the keyboard-backlight cable from the connector (KBBL1) on the system board.
2. Lift the latch and disconnect the keyboard cable from the connector (KB1) on the system board.
3. Lift the latch and disconnect the touchpad cable from the connector (TP1) on the system board.
4. Disconnect the speaker cable from the connector (SPK1) on the system board.
5. Remove the speaker and wireless antenna module cables and from the routing guides on the palm-rest and keyboard assembly.
6. Lift the left and right speakers along with the cables, off the palm-rest and keyboard assembly.

Installing the speakers for computers shipped with an aluminum chassis

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

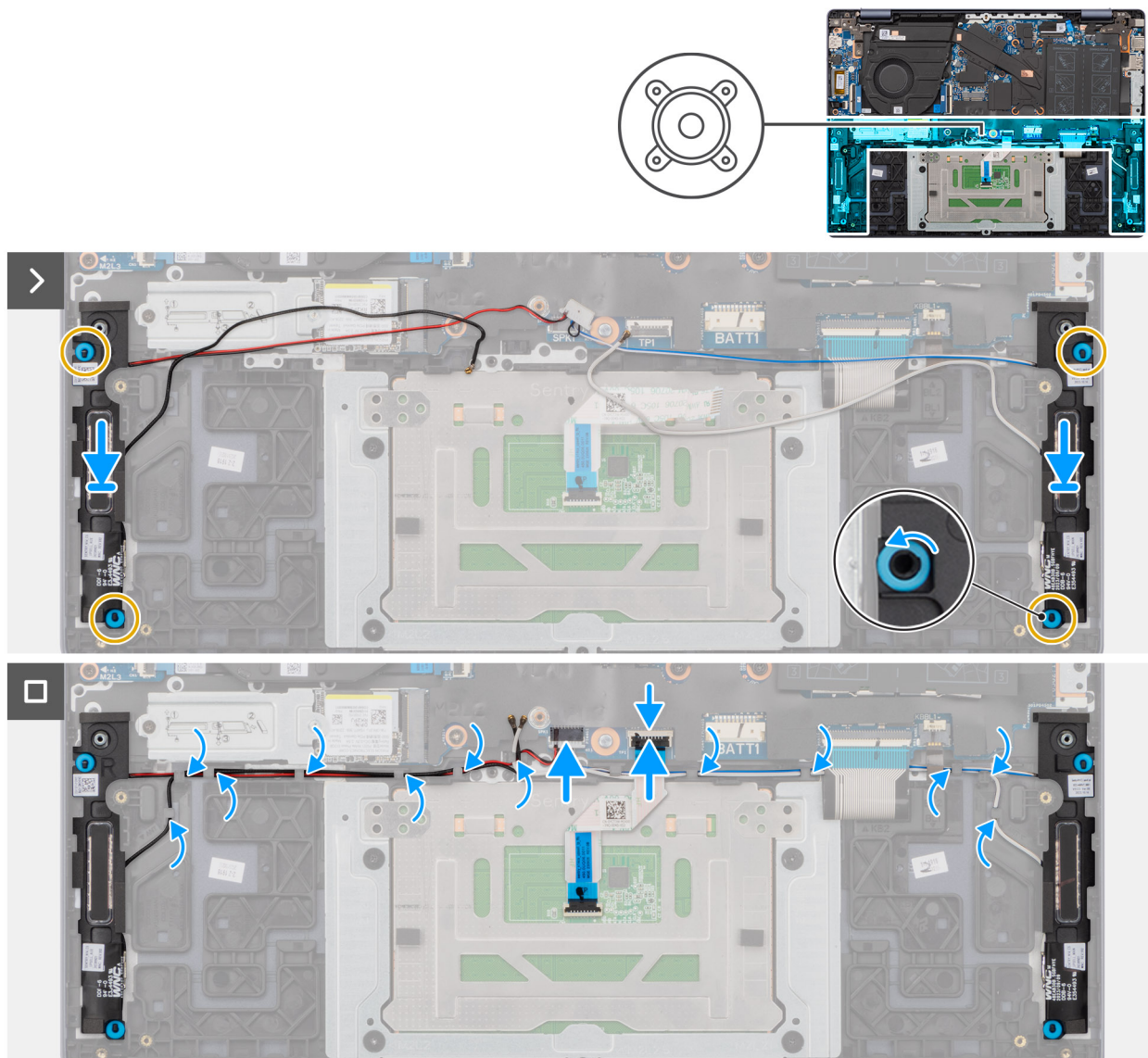
Prerequisites

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 speakers and provides a visual representation of the installation procedure.

Figure 67. Installing the speakers



Steps

1. Using the alignment posts and rubber grommets, place the speakers on the slots of the palm-rest and keyboard assembly.
NOTE: Ensure that the rubber grommets on the speakers are threaded through the alignment posts and the four rubber grommets are seated into the slot and installed on the speakers properly .
2. Route the speaker and wireless antenna module cables through the routing guides on the palm-rest and keyboard assembly.
NOTE: Ensure the wires of the speakers and wireless antennas are placed in their routing guides accordingly.
3. Connect the speaker cable to the connector (SPK1) on the system board.
4. Connect the touchpad cable to the connector (TP1) on the system board and close the latch.
5. Connect the keyboard cable to the connector (KB1) on the system board and close the latch.
6. Connect the keyboard-backlight cable to the connector (KBBL1) on the system board and close the latch.

Next steps

1. Install the [wireless card](#) for computers shipped with an aluminum chassis.
2. Install the [54 W battery](#) for computers shipped with an aluminum chassis.
3. Install the [base cover](#) for computers shipped with an aluminum chassis.
4. Follow the procedure in [After working inside your computer](#).

Display assembly

Removing the display assembly for computers shipped with a plastic chassis

 **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, [Before working inside your computer](#).
2. Remove the [base cover](#) for computers shipped with a plastic chassis.

About this task

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

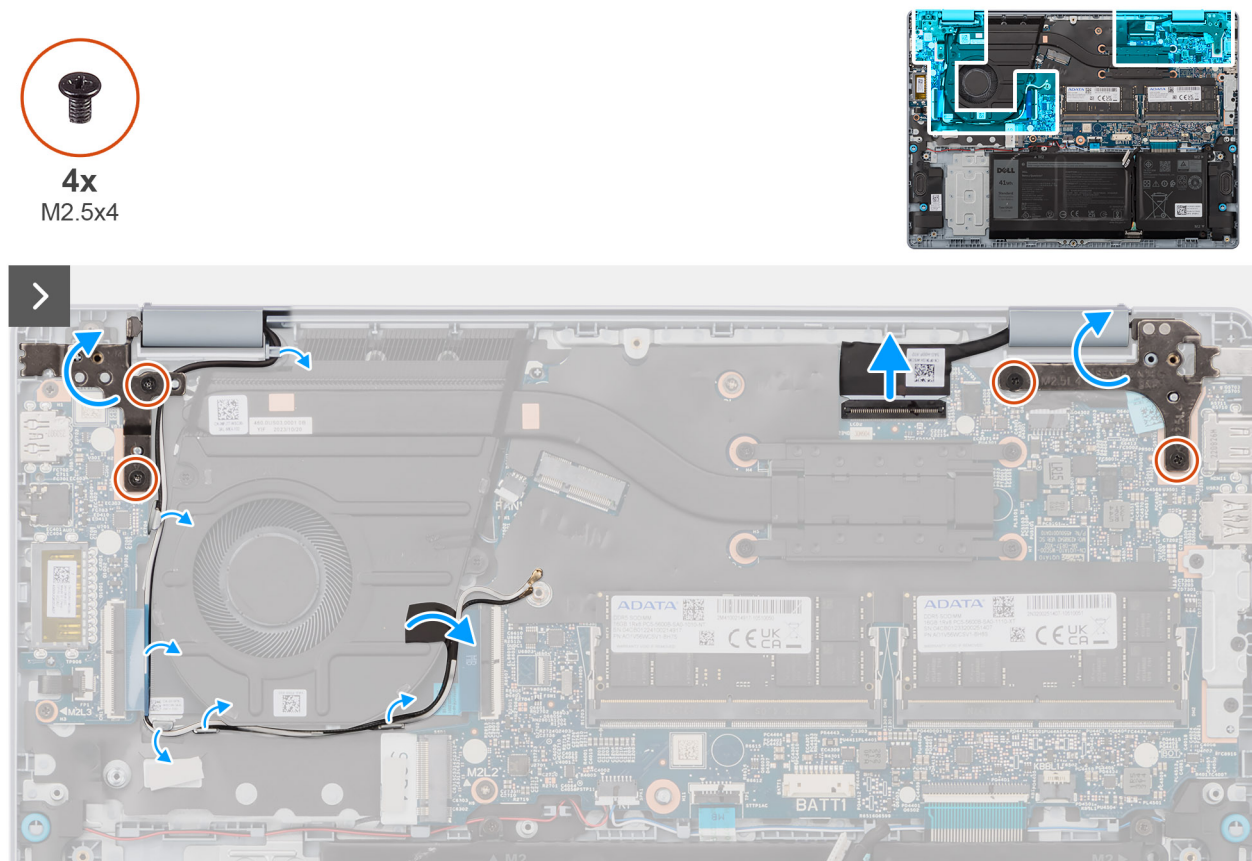


Figure 68. Removing the screws

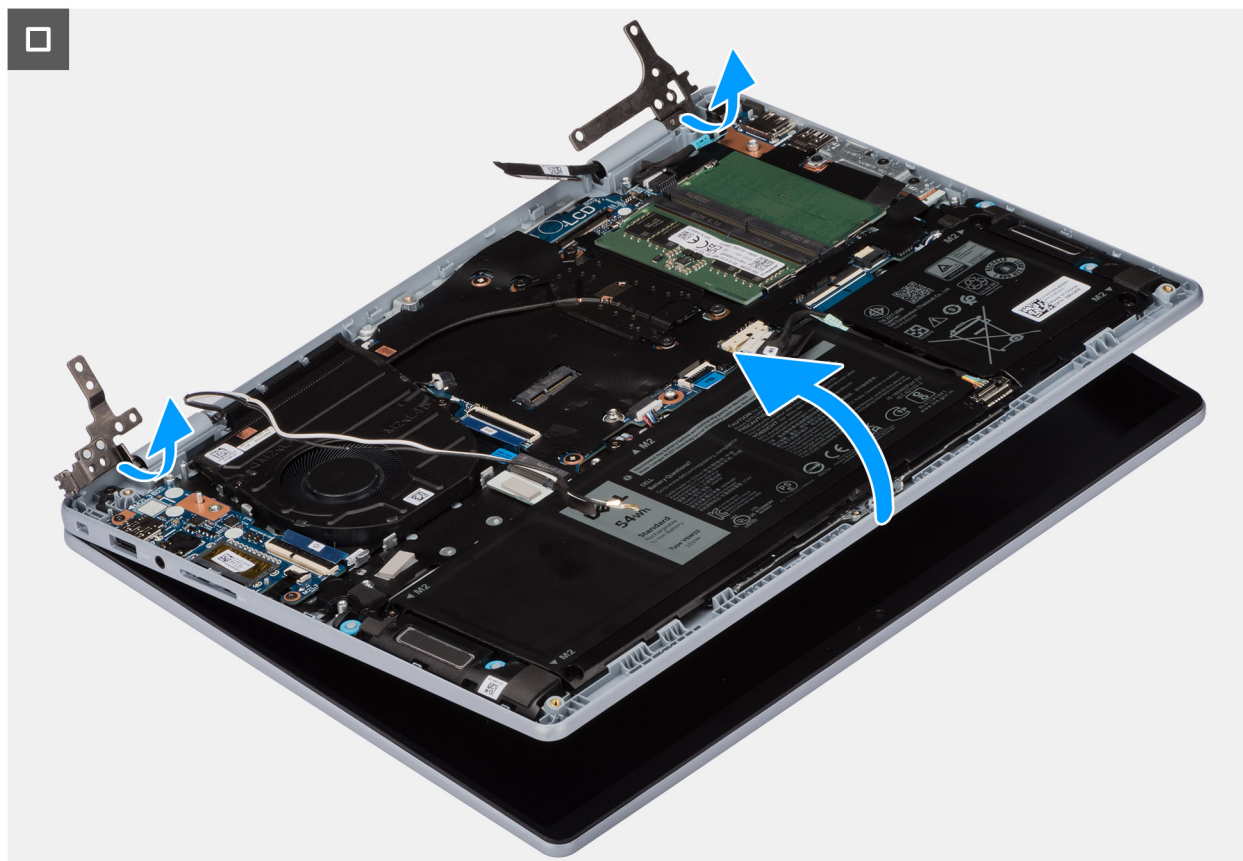


Figure 69. Removing the display assembly

Steps

1. Remove the two screws (M2.5x4) that secure the left display hinge to the palm-rest and keyboard assembly.
2. Remove the two screws (M2.5x4) that secure the right display hinge to the palm-rest and keyboard assembly.
3. Peel the tape that secures the display-cable connector latch to the system board.
4. Lift the latch and disconnect the display cable from the connector on the system board.
5. Peel the tape that secures the wireless antenna cables to the system board.
6. Unroute the wireless antenna cables from the routing guides of the palm-rest and keyboard assembly.
7. Gently lift the palm-rest and keyboard assembly off the display assembly.

Installing the display assembly for computers shipped with a plastic chassis

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 provide a visual representation of the installation procedure.



4x
M2.5x4

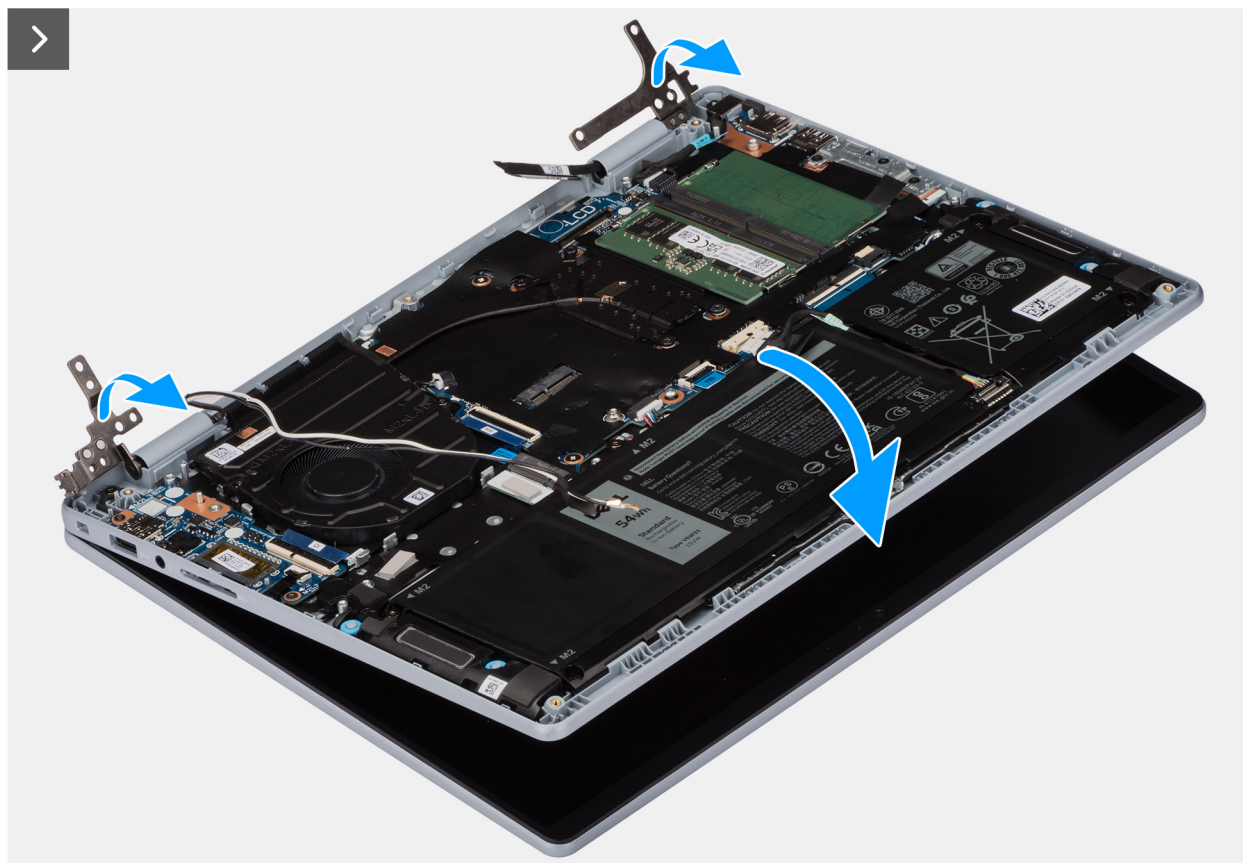
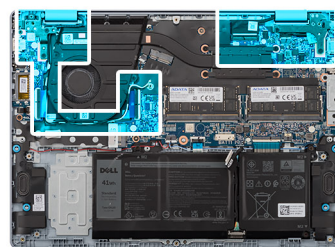
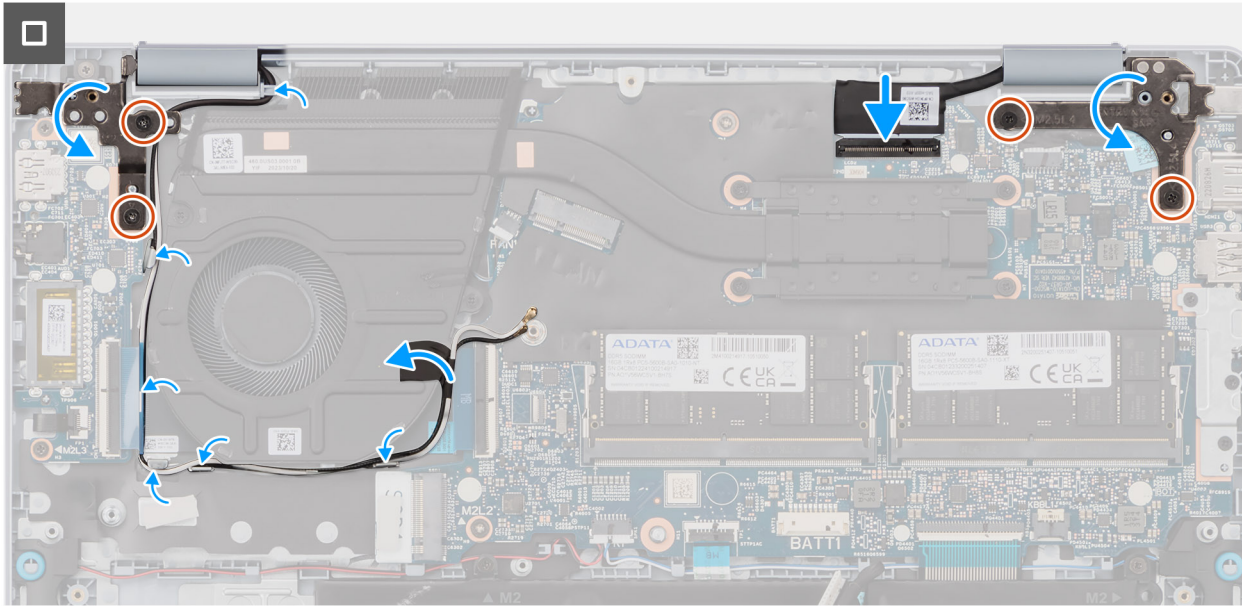


Figure 70. Installing the display assembly

Figure 71. Replacing the screws



Steps

1. Place the display assembly on a clean and flat surface.
2. Place the palm-rest and keyboard assembly on the display assembly.
3. Rotate to close the left and right hinges.
4. Align the screw holes on the display hinges with the screw holes on the palm-rest and keyboard assembly.
5. Replace the two screws (M2.5x4) that secure the left display hinge to the palm-rest and keyboard assembly.
6. Replace the two screws (M2.5x4) that secure the right display hinge to the palm-rest and keyboard assembly.
7. Connect the display cable to the connector on the system board and close the latch.
8. Adhere the tape that secures the display-cable connector latch to the system board.
9. Route the wireless antenna cables through the routing guides on the palm-rest and keyboard assembly.
10. Adhere the tape that secures the wireless antenna cables to the system board.

Next steps

1. Install the [base cover for computer shipped with a plastic chassis](#).
2. Follow the procedure in [After working inside your computer](#).

Removing the display assembly for computers shipped with an aluminum chassis

 **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, [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with an aluminum chassis](#).

About this task

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



4x
M2.5x4.5

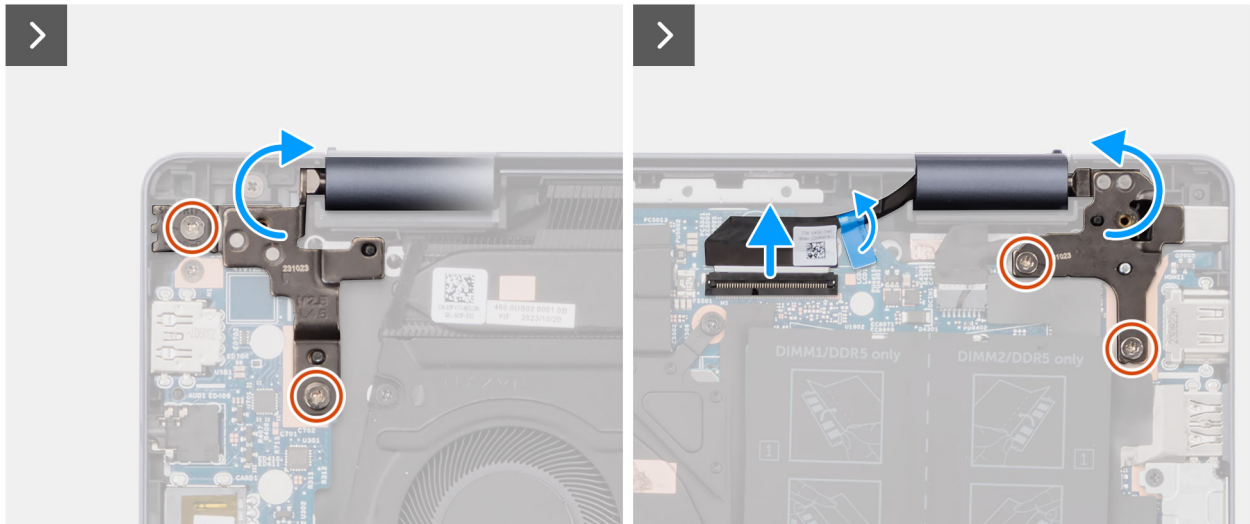
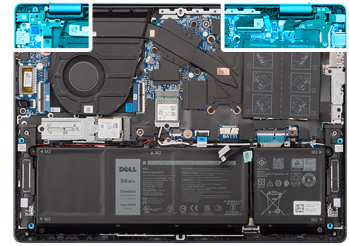


Figure 72. Removing the screws

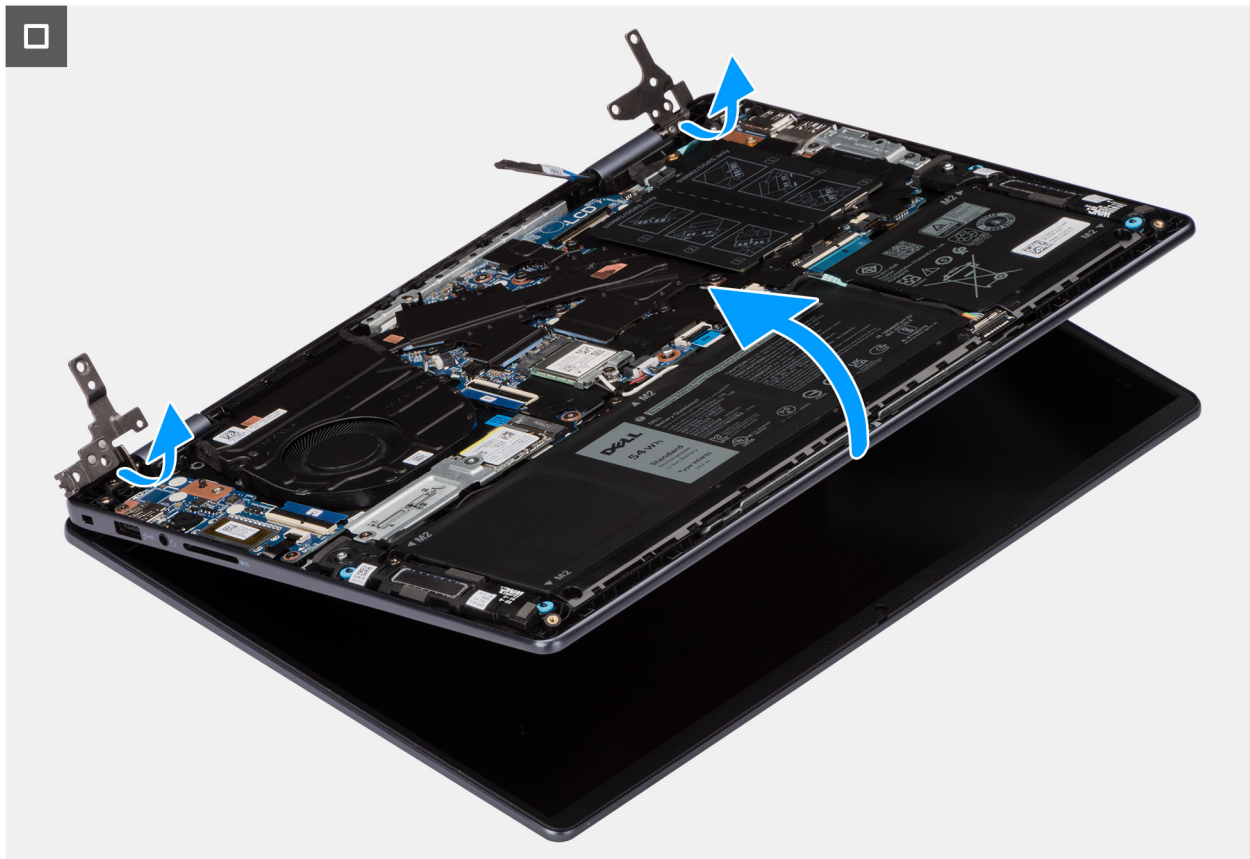


Figure 73. Removing the display assembly

Steps

1. Remove the two screws (M2.5x4.5) that secure the left display hinge to the palm-rest and keyboard assembly.
2. Remove the two screws (M2.5x4.5) that secure the right display hinge to the palm-rest and keyboard assembly.
3. Peel the tape that secures the display-cable connector latch to the system board.
4. Lift the latch and disconnect the display cable from the connector on the system board.
5. Peel the tape that secures the wireless antenna cables to the system board.
6. Unroute the wireless antenna cables from the routing guides of the palm-rest and keyboard assembly.
7. Gently lift the palm-rest and keyboard assembly off the display assembly.

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

Installing the display assembly for computers shipped with an aluminum chassis

 **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 provide a visual representation of the installation procedure.



4x
M2.5x4.5

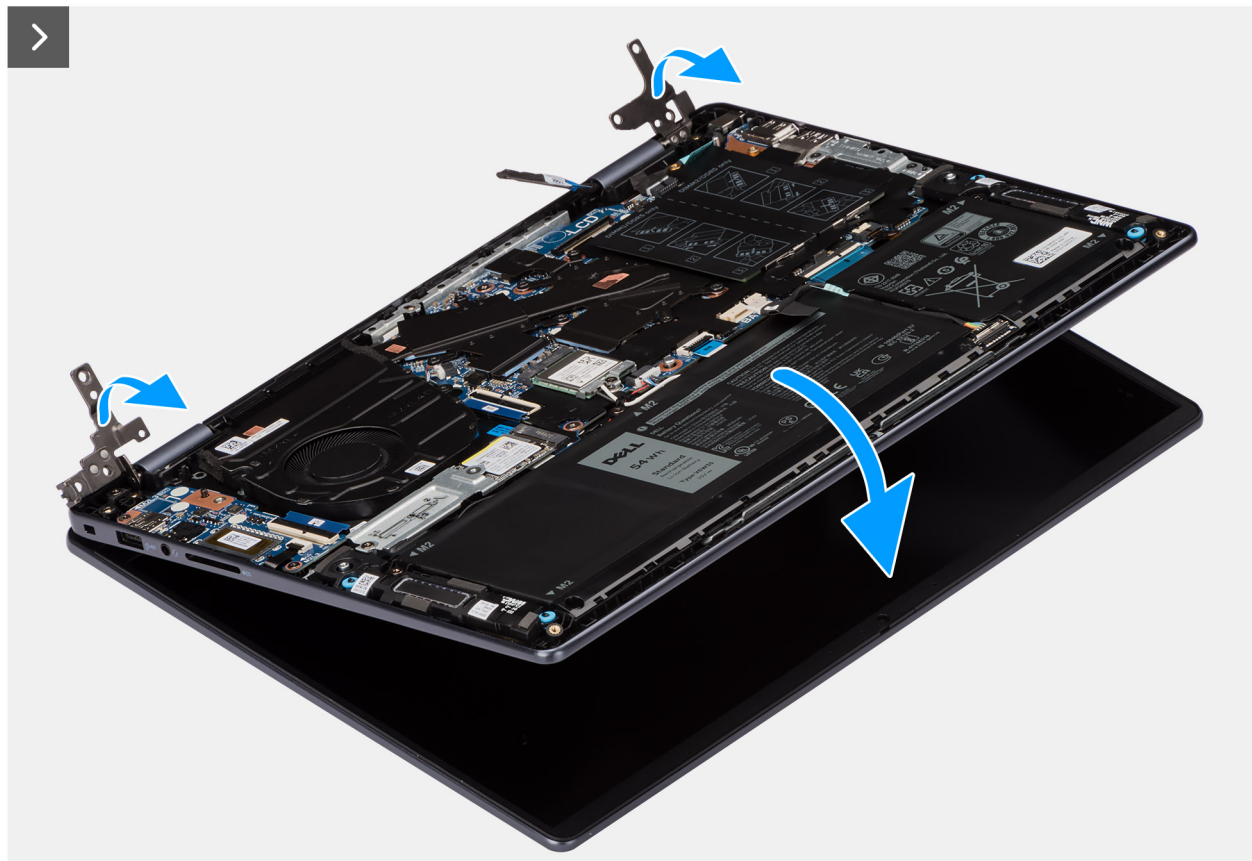
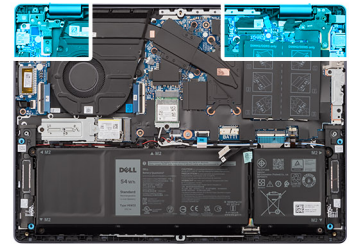


Figure 74. Installing the display assembly

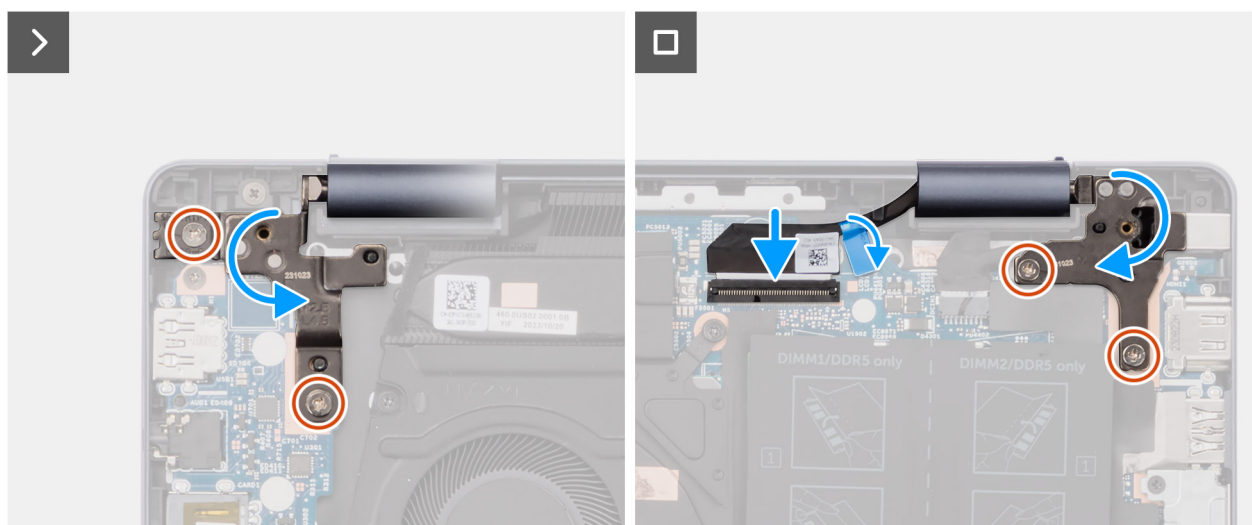


Figure 75. Replacing the screws

Steps

1. Place the display assembly on a clean and flat surface.
2. Place the palm-rest and keyboard assembly on the display assembly.
3. Rotate to close the left and right hinges.
4. Align the screw holes on the display hinges with the screw holes on the palm-rest and keyboard assembly.
5. Replace the two screws (M2.5x4.5) that secure the left display hinge to the palm-rest and keyboard assembly.
6. Replace the two screws (M2.5x4.5) that secure the right display hinge to the palm-rest and keyboard assembly.
7. Connect the display cable to the connector on the system board and close the latch.
8. Adhere the tape that secures the display-cable connector latch to the system board.

Next steps

1. Install the [base cover for computers shipped with an aluminum chassis](#).
2. Follow the procedure in [After working inside your computer](#).

Display bezel

Removing the display bezel for computers shipped with a plastic chassis

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

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with a plastic chassis](#).
3. Remove the [M.2 2230 solid-state drive for computers shipped with a plastic chassis](#).
4. Remove the [wireless card for computers shipped with a plastic chassis](#).
5. Remove the [display assembly for computers shipped with a plastic chassis](#).

About this task

 **NOTE:** The display-hinge caps are a part of the display bezel.

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

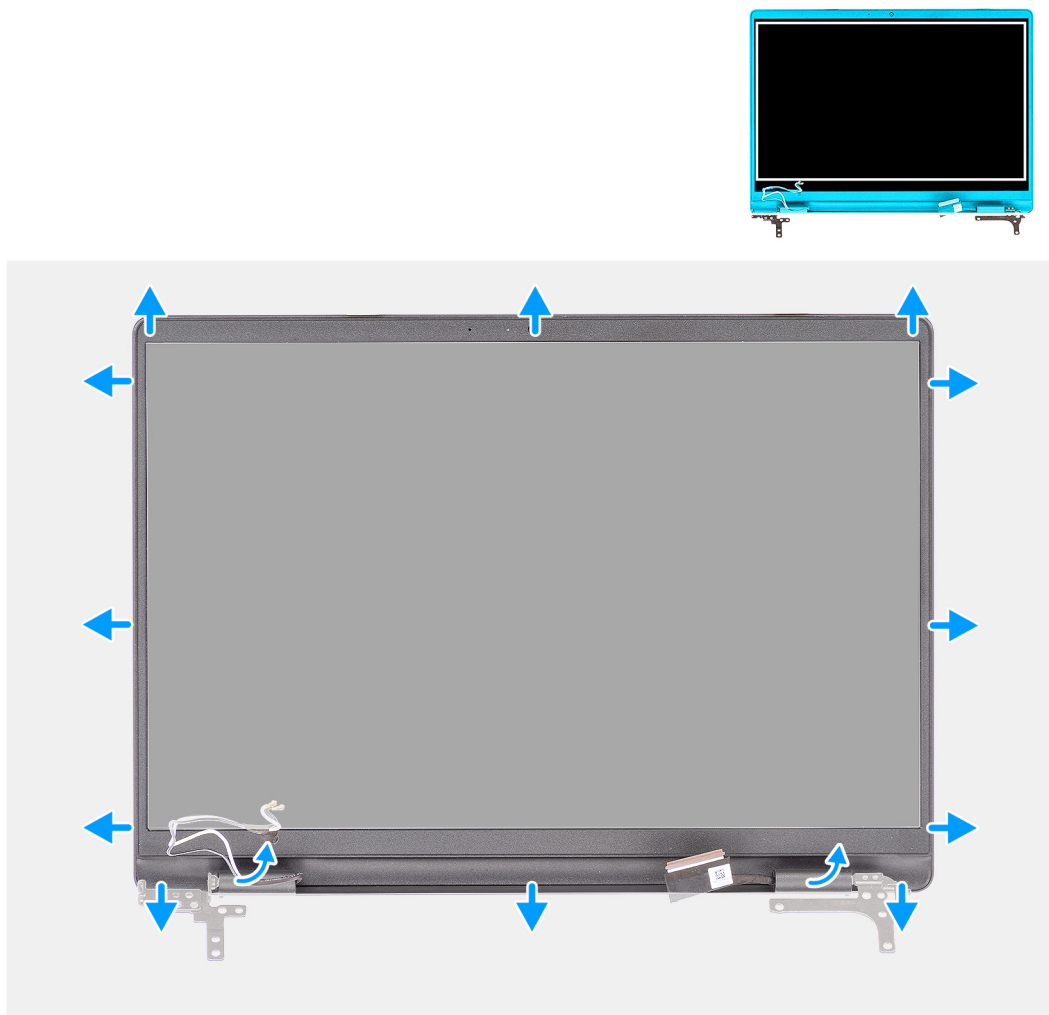


Figure 76. Removing the display bezel

Steps

1. Place the display assembly on a clean, flat surface and gently open the display hinges to at least 90 degrees.
2. Using a plastic scribe, pry open the left display-hinge cap from its right side and pry open the right display-hinge cap from its left side.
3. Carefully pry open the outer edge of the bottom side of the display bezel.
4. Using the plastic scribe, pry open the outside edge of the left, right, and top sides of the display bezel.



5. Lift and remove the display bezel from the display assembly.

Installing the display bezel for computers shipped with a plastic chassis

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

Prerequisites

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

About this task

NOTE: The display-hinge caps are a part of the display bezel.

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

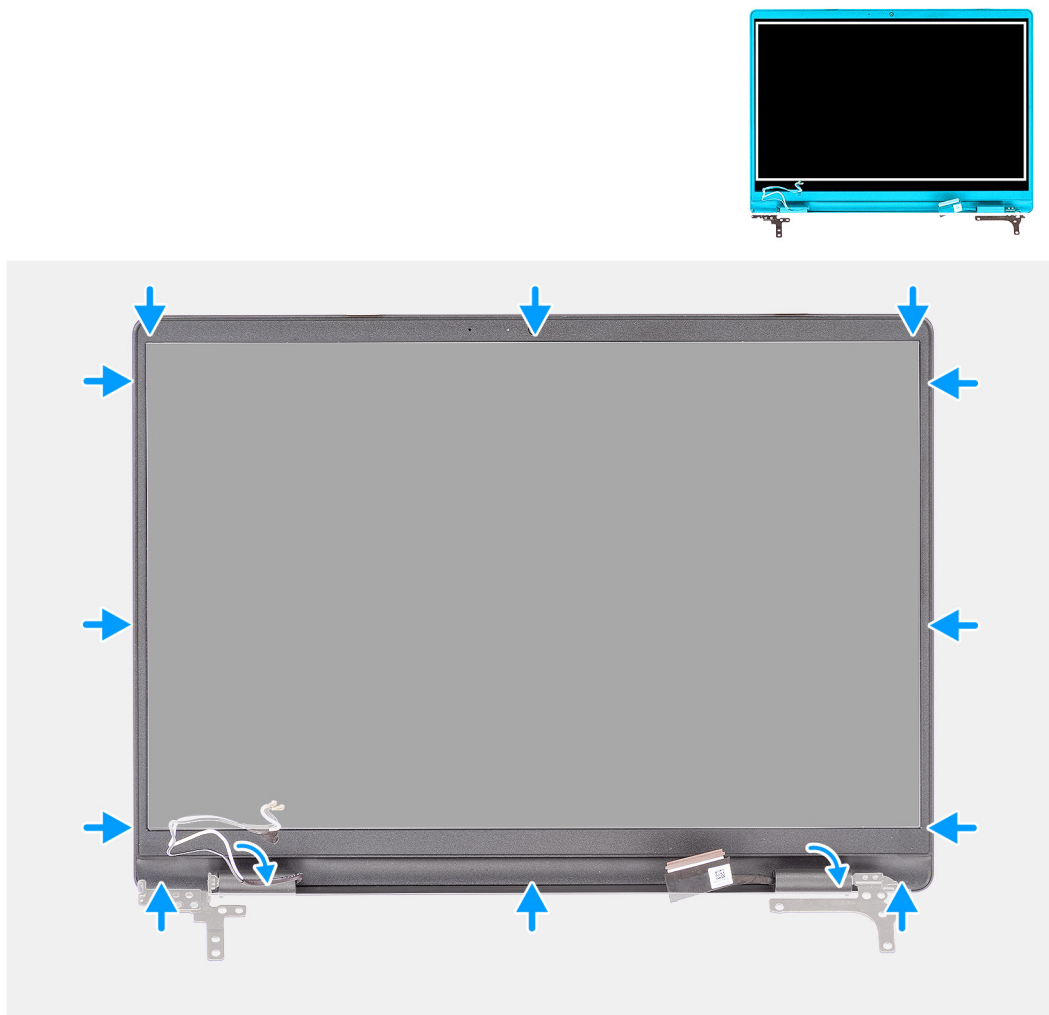


Figure 77. installing the display bezel

Steps

1. Place the display assembly on a clean and flat surface.
2. Align and place the display bezel on the display assembly.
3. Starting from the top corner, press on the display bezel and work around the entire bezel until it clicks onto the display assembly.
4. Press the display-hinge caps down on the display hinges, until they click in place.

Next steps

1. Install the [display assembly for computers shipped with a plastic chassis](#).
2. Install the [wireless card for computers shipped with a plastic chassis](#).
3. Install the [M.2 2230 solid-state drive for computers shipped with a plastic chassis](#).
4. Install the [base cover for computer shipped with a plastic chassis](#).
5. Follow the procedure in [After working inside your computer](#).

Display panel

Removing the display panel for computers shipped with a plastic chassis

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

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#) for computers shipped with a plastic chassis.
3. Remove the [M.2 2230 solid-state drive](#) for computers shipped with a plastic chassis.
4. Remove the [wireless card](#) for computers shipped with a plastic chassis.
5. Remove the [display assembly](#) for computers shipped with a plastic chassis.
6. Remove the [display bezel](#) for computers shipped with a plastic chassis.

About this task

 **NOTE:** The display panel is assembled with the display brackets and display hinges as a single service part.

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

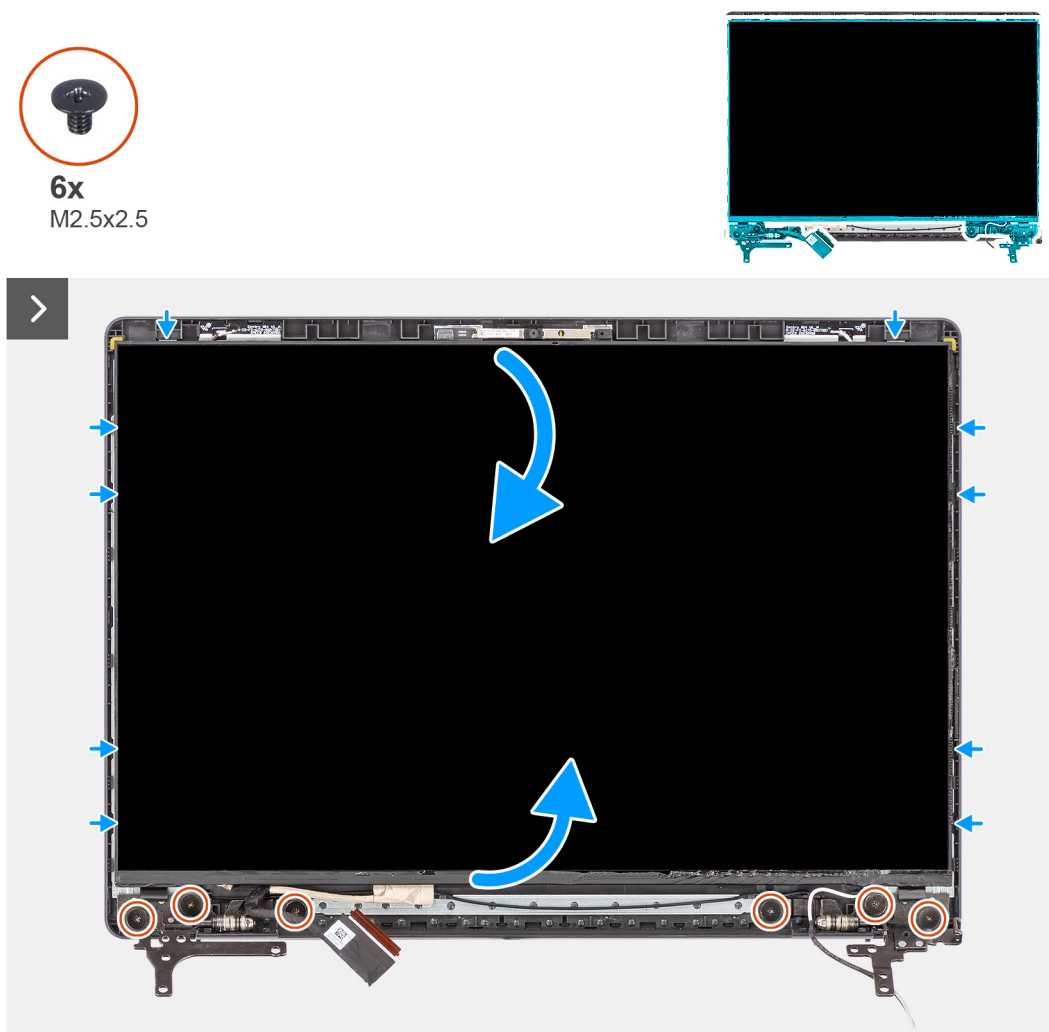


Figure 78. Removing the display panel screws

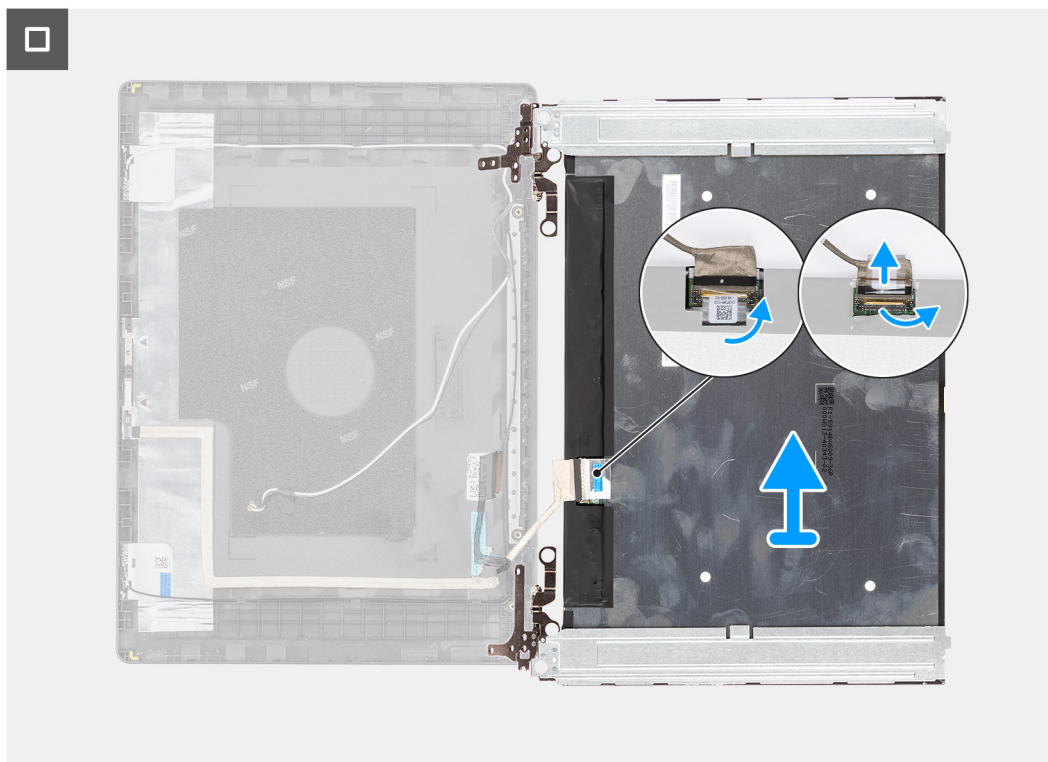


Figure 79. Removing the display panel

Steps

1. Place the display back-cover and antenna assembly on a clean and flat surface.
2. Remove the six screws (M2.5x2.5) that secure the display panel to the display back-cover and antenna assembly.
3. Holding the display hinge, gently bend the bottom corner of the display back-cover and antenna assembly to release the right and left display hinges.
4. Holding the display hinges, slightly lift and slide the display panel down to release it from the catches on the top of the display back-cover and antenna assembly.
5. Gently flip the display panel assembly forward, peel back the tape that secures the display cable to the connector on the rear of the display panel.

NOTE: Ensure that the panel has a clean and smooth surface to rest on, to prevent damage.

6. Disconnect the display cable from the connector on the display panel and remove the display panel.

NOTE: The display panel is assembled with the display brackets and display hinges as a single service part. DO NOT pull the two pieces of elastic tape and separate the brackets from the panel.



Installing the display panel for computers shipped with a plastic chassis

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

Prerequisites

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

About this task

NOTE: The display panel is assembled with the display brackets and display hinges as a single service part.

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



6x
M2.5x2.5

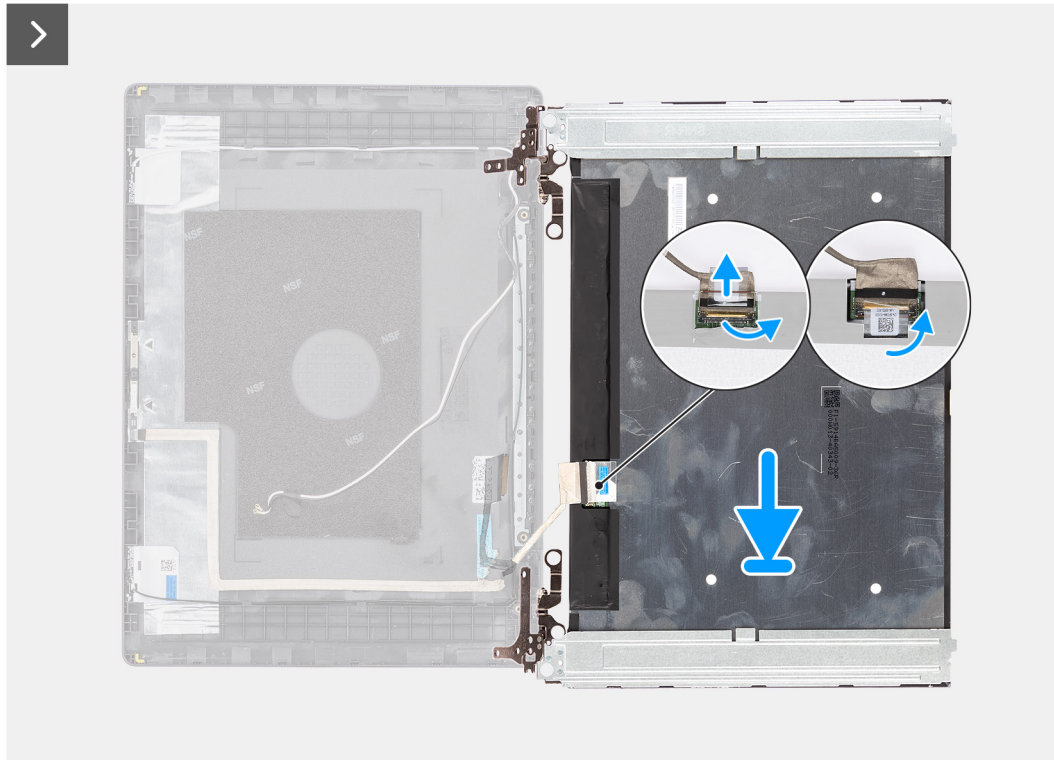
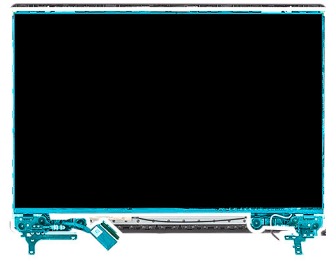


Figure 80. Installing the display panel

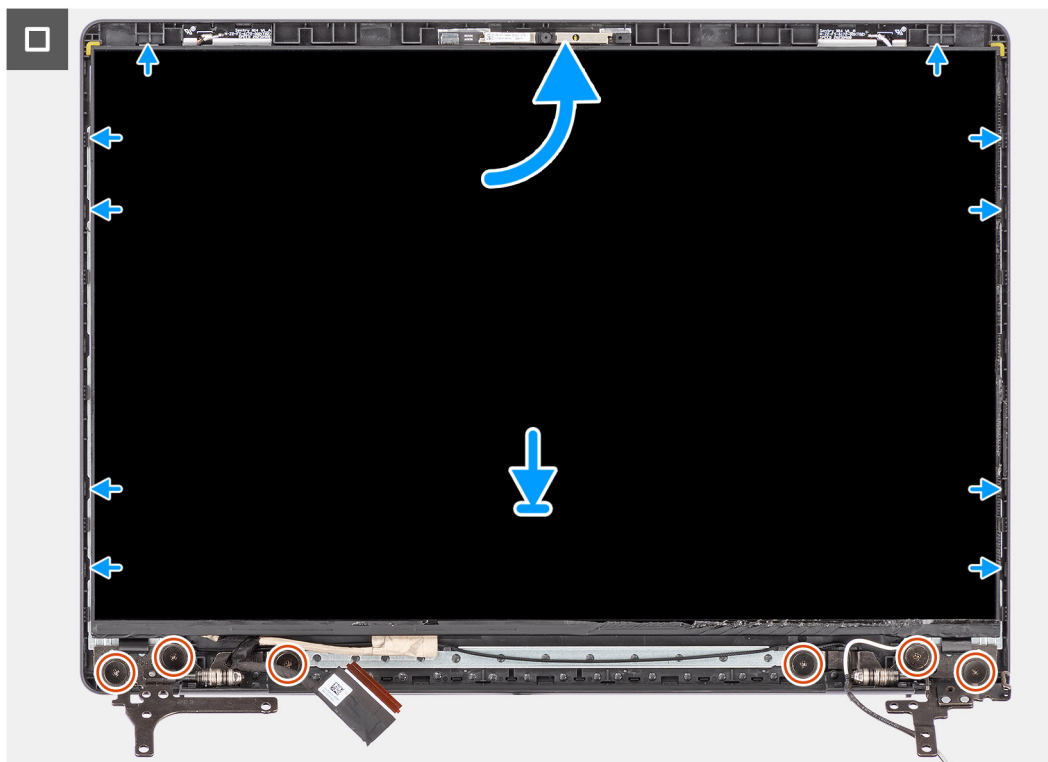


Figure 81. Installing the screws

Steps

1. Place the display panel and display assembly on a clean and flat surface.
-  **NOTE:** Ensure that all cables are properly seated in their routing channels.
2. Connect the display cable to the connector on the display panel and close the latch.
3. Adhere the tape to secure the display cable to the connector on the display panel.
4. Turn the display panel over and place the display panel on the display back-cover.
5. Lift the bottom side of the display panel and slide the top side into the catches at the top of the display back-cover.
6. Slightly bend the bottom corner of the display back-cover and lower the right and left display hinges into the clips on the display back-cover.
7. Replace the six screws (M2.5x2.5) to secure the display hinges to the display back-cover and antenna assembly.

Next steps

1. Install the [display bezel for computers shipped with a plastic chassis](#).
2. Install the [display assembly for computers shipped with a plastic chassis](#).
3. Install the [wireless card for computers shipped with a plastic chassis](#).
4. Install the [M.2 2230 solid-state drive for computers shipped with a plastic chassis](#).
5. Install the [base cover for computer shipped with a plastic chassis](#).
6. Follow the procedure in [After working inside your computer](#).

Display cable

Removing the display cable for computers shipped with a plastic chassis

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

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with a plastic chassis](#).
3. Remove the [M.2 2230 solid-state drive for computers shipped with a plastic chassis](#).
4. Remove the [wireless card for computers shipped with a plastic chassis](#).
5. Remove the [display assembly for computers shipped with a plastic chassis](#).
6. Remove the [display bezel for computers shipped with a plastic chassis](#).
7. Remove the [display panel for computers shipped with a plastic chassis](#).

About this task

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

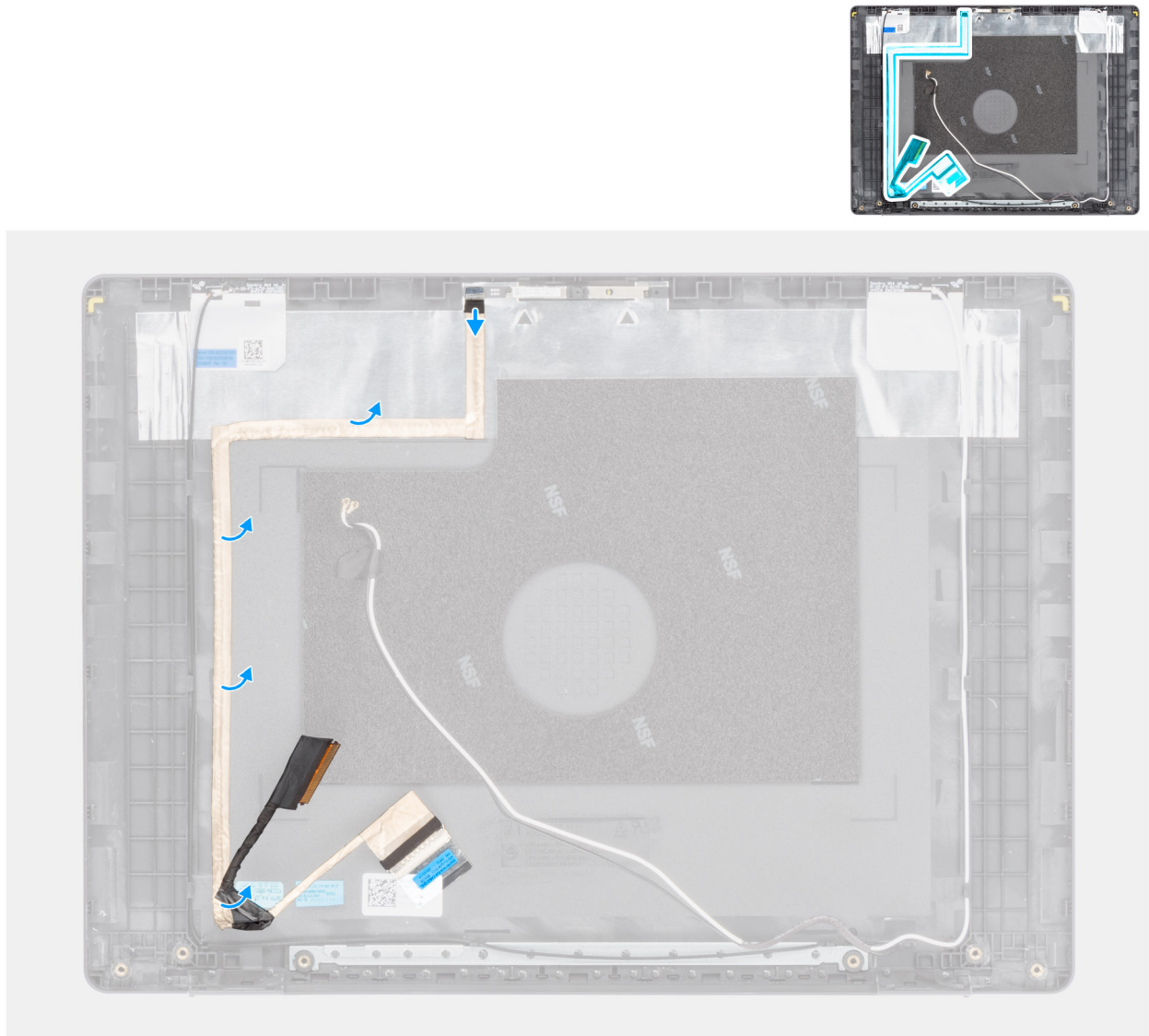


Figure 82. Removing the display cable

Steps

1. Disconnect the display eDP cable from the connector on the camera module.
2. Carefully peel back and remove the display eDP cable from the display back-cover and antenna assembly.

Installing the display cable for computers shipped with a plastic chassis

 **CAUTION:** The information in this installation 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 display cable and provides a visual representation of the installation procedure.

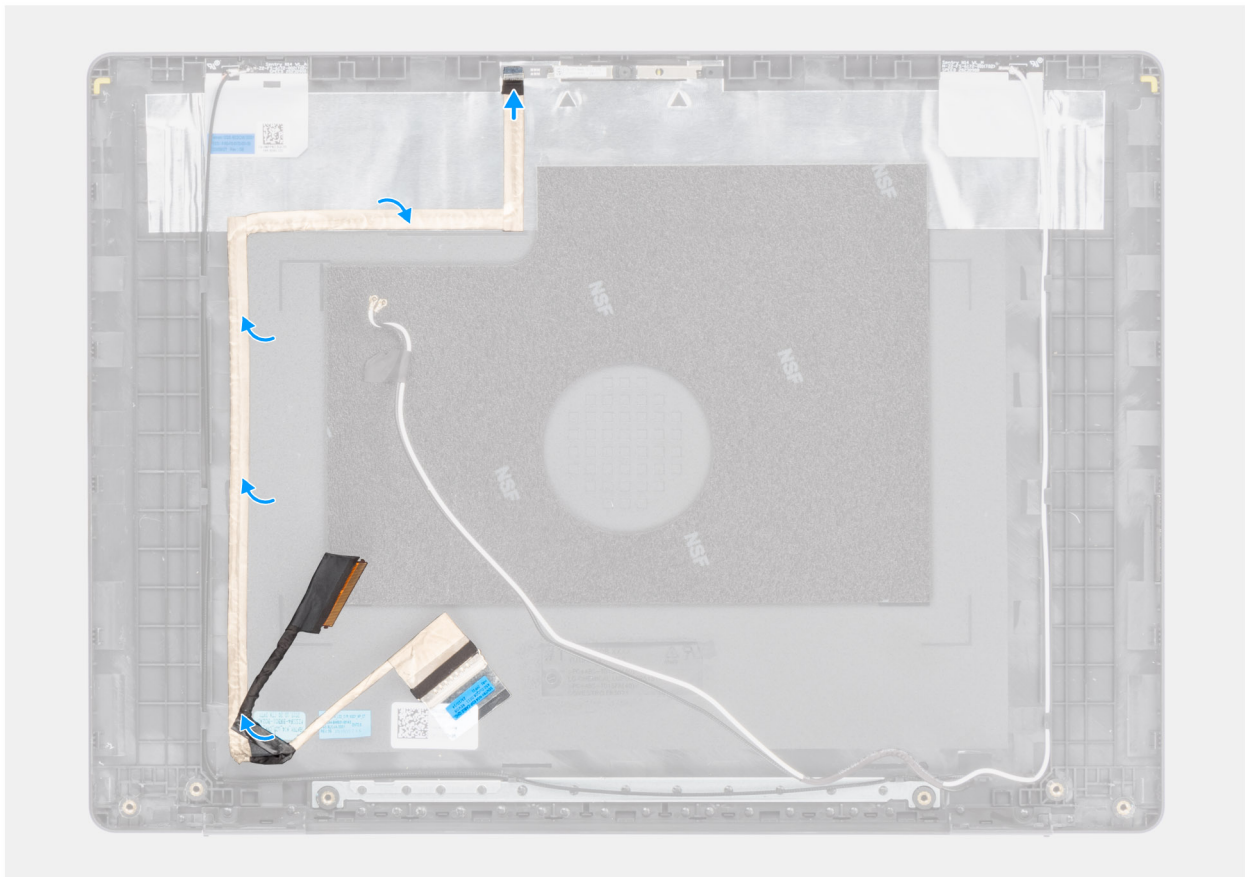
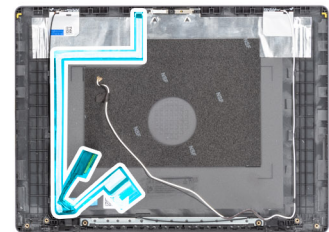


Figure 83. Installing the display cable

Steps

1. Adhere the display eDP cable to the display back-cover and antenna assembly.
2. Connect the display eDP cable to the connector on the camera module.

Next steps

1. Install the [display panel](#) for computers shipped with a plastic chassis.
2. Install the [display bezel](#) for computers shipped with a plastic chassis.
3. Install the [display assembly](#) for computers shipped with a plastic chassis.
4. Install the [wireless card](#) for computers shipped with a plastic chassis.
5. Install the [M.2 2230 solid-state drive](#) for computers shipped with a plastic chassis.
6. Install the [base cover](#) for computers shipped with a plastic chassis.
7. Follow the procedure in [After working inside your computer](#).

Camera

Removing the camera for computers shipped with a plastic chassis

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

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#) for computers shipped with a plastic chassis.
3. Remove the [M.2 2230 solid-state drive](#) for computers shipped with a plastic chassis.
4. Remove the [wireless card](#) for computers shipped with a plastic chassis.
5. Remove the [display assembly](#) for computers shipped with a plastic chassis.
6. Remove the [display bezel](#) for computers shipped with a plastic chassis.
7. Remove the [display panel](#) for computers shipped with a plastic chassis.

About this task

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



Figure 84. Removing the camera

Steps

1. Disconnect the display cable from the connector on the camera module.

2. Using a plastic scribe, gently pry the camera off the display back-cover and antenna assembly.
3. Remove the camera module from the display assembly.

Installing the camera for computers shipped with a plastic chassis

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

Prerequisites

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

About this task

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

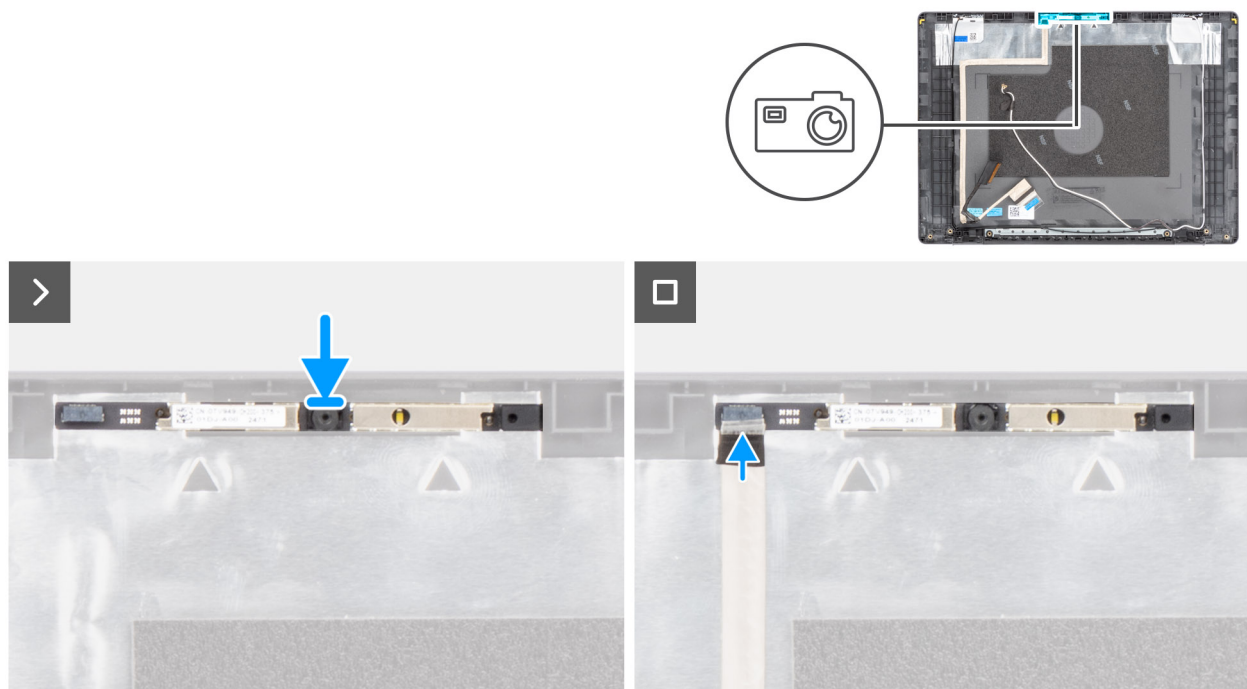


Figure 85. Installing the camera

Steps

1. Using the alignment post, adhere the camera module on the display back-cover and antenna assembly.
2. Connect the display cable to the connector on the camera module.

Next steps

1. Install the [display panel](#) for computers shipped with a plastic chassis.
2. Install the [display bezel](#) for computers shipped with a plastic chassis.
3. Install the [display assembly](#) for computers shipped with a plastic chassis.
4. Install the [wireless card](#) for computers shipped with a plastic chassis.
5. Install the [M.2 2230 solid-state drive](#) for computers shipped with a plastic chassis.
6. Install the [base cover](#) for computers shipped with a plastic chassis.
7. Follow the procedure in [After working inside your computer](#).

Display back-cover and antenna assembly

Removing the display back-cover and antenna assembly

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

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [base cover](#) for computers shipped with a plastic chassis.
3. Remove the [M.2 2230 solid-state drive](#) for computers shipped with a plastic chassis.
4. Remove the [wireless card](#) for computers shipped with a plastic chassis.
5. Remove the [display assembly](#) for computers shipped with a plastic chassis.
6. Remove the [display bezel](#) for computers shipped with a plastic chassis.
7. Remove the [display panel](#) for computers shipped with a plastic chassis.
8. Remove the [camera](#) for computer shipped with a plastic chassis.

About this task

NOTE: The display back-cover and antenna assembly cannot be further disassembled once all the **Prerequisites** are completed. If the wireless antennas are malfunctioning and are required to be replaced, replace the entire display back-cover and antenna assembly.

The image below shows the display back-cover and antenna assembly after the **Prerequisites** have been performed.

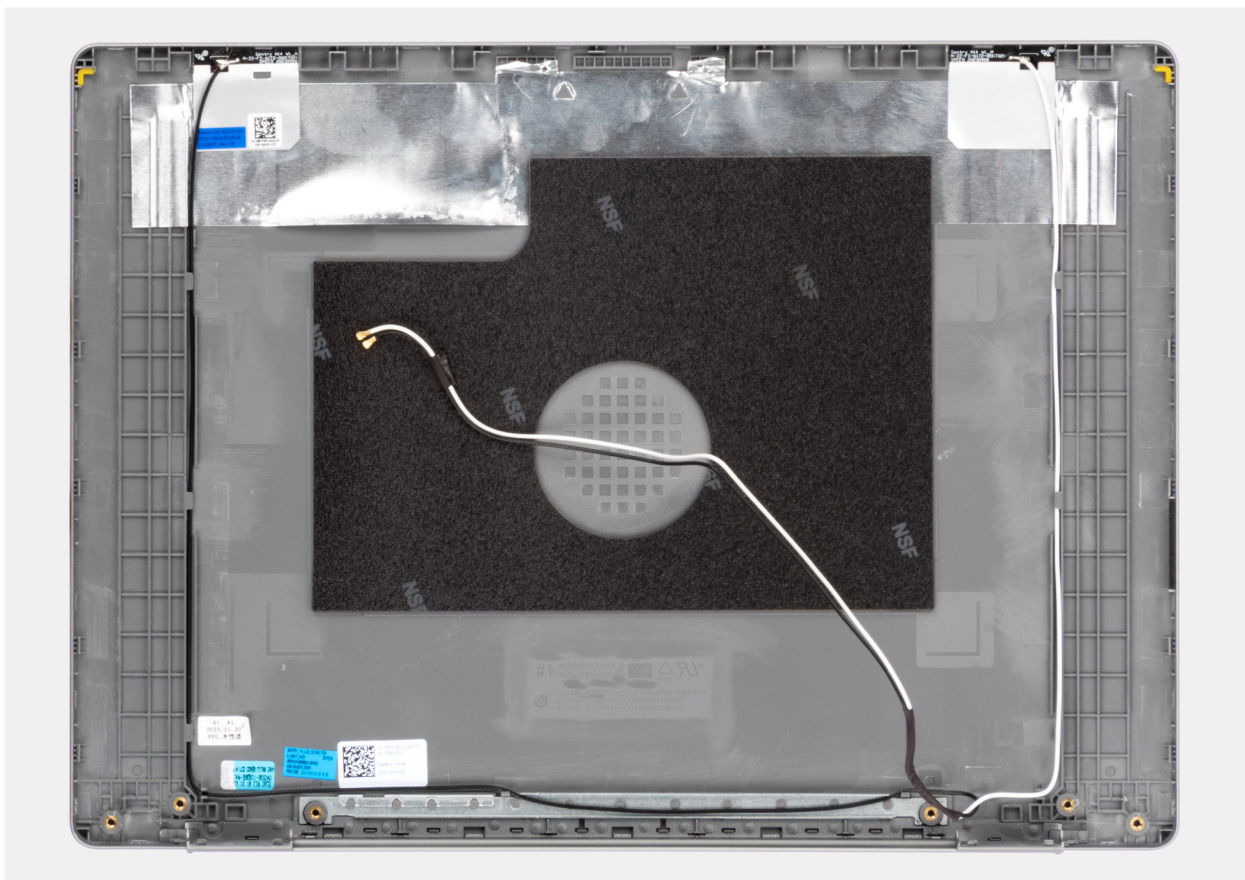


Figure 86. Display back-cover and antenna assembly

Steps

After performing the **Prerequisites**, you are left with the display back-cover and antenna assembly.

Installing the display back-cover and antenna assembly

 **CAUTION:** The information in this installation 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 display back-cover and antenna assembly and provides a visual representation of the installation procedure.

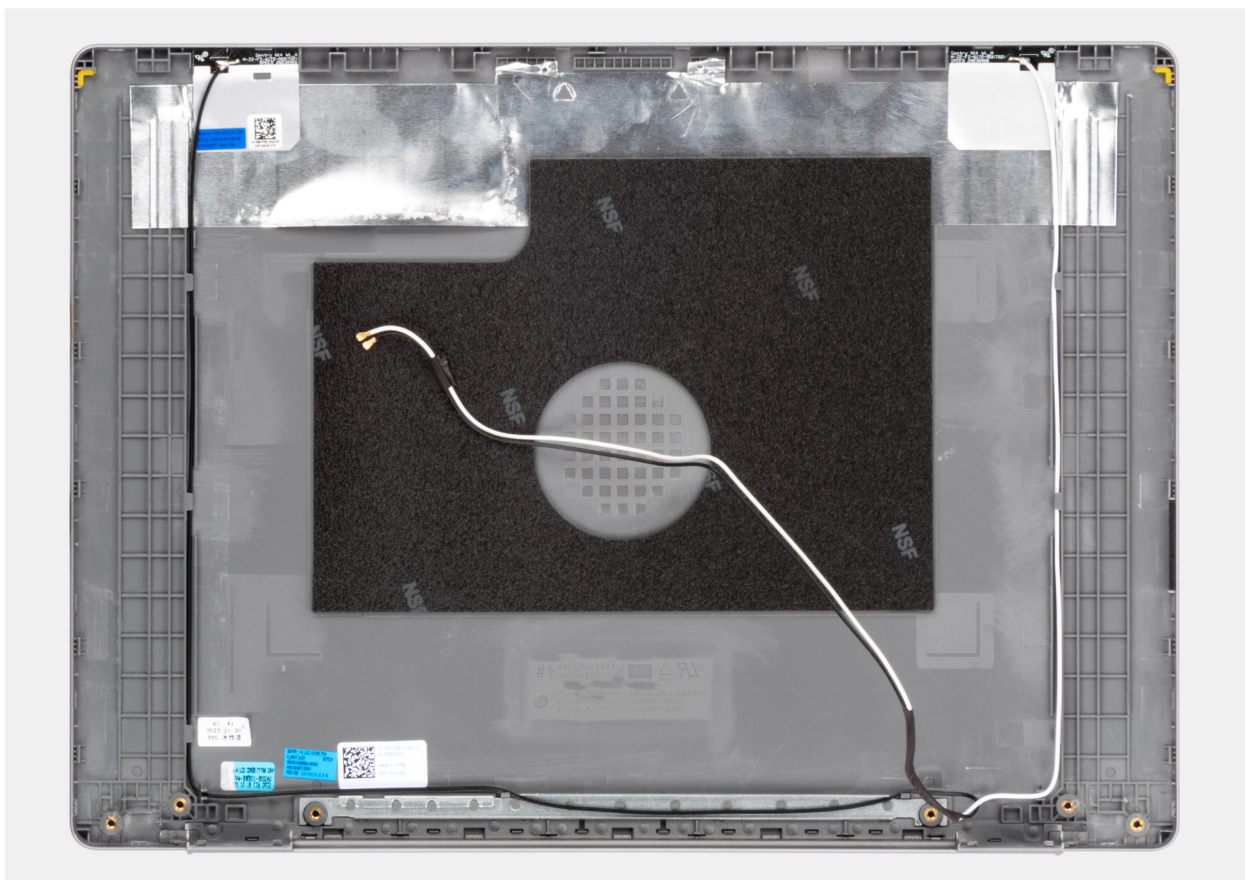


Figure 87. Display back-cover and antenna assembly

Steps

Place the display back-cover and antenna assembly on a flat surface and perform the **Next steps** to install the display back-cover and antenna assembly.

Next steps

1. Install the [camera](#) for computers shipped with a plastic chassis.
2. Install the [display panel](#) for computers shipped with a plastic chassis.
3. Install the [display bezel](#) for computers shipped with a plastic chassis.
4. Install the [display assembly](#) for computers shipped with a plastic chassis.
5. Install the [wireless card](#) for computers shipped with a plastic chassis.

6. Install the [M.2 2230 solid-state drive for computers shipped with a plastic chassis](#).
7. Install the [base cover for computers shipped with a plastic chassis](#).
8. Follow the procedure in [After working inside your computer](#).

System board

Removing the system board for computers shipped with a plastic chassis

 **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, [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with a plastic chassis](#).
3. Remove the [battery for computers shipped with a plastic chassis](#).
4. Remove the [wireless card for computers shipped with a plastic chassis](#).
5. Remove the [M.2 2230 solid-state drive for computers shipped with a plastic chassis](#).
6. Remove the [fan for computers shipped with a plastic chassis](#).
7. Remove the [heatsink for computers shipped with a plastic chassis](#).
-  **NOTE:** The system board can be removed and installed along with the heat sink, when you replace the palm-rest and keyboard assembly. This simplifies the removal and installation procedure and prevents damage to the thermal bond between the system board and heat sink.
8. Remove the [display assembly for computers shipped with a plastic chassis](#).

About this task

The following image indicates the connectors on your system board.

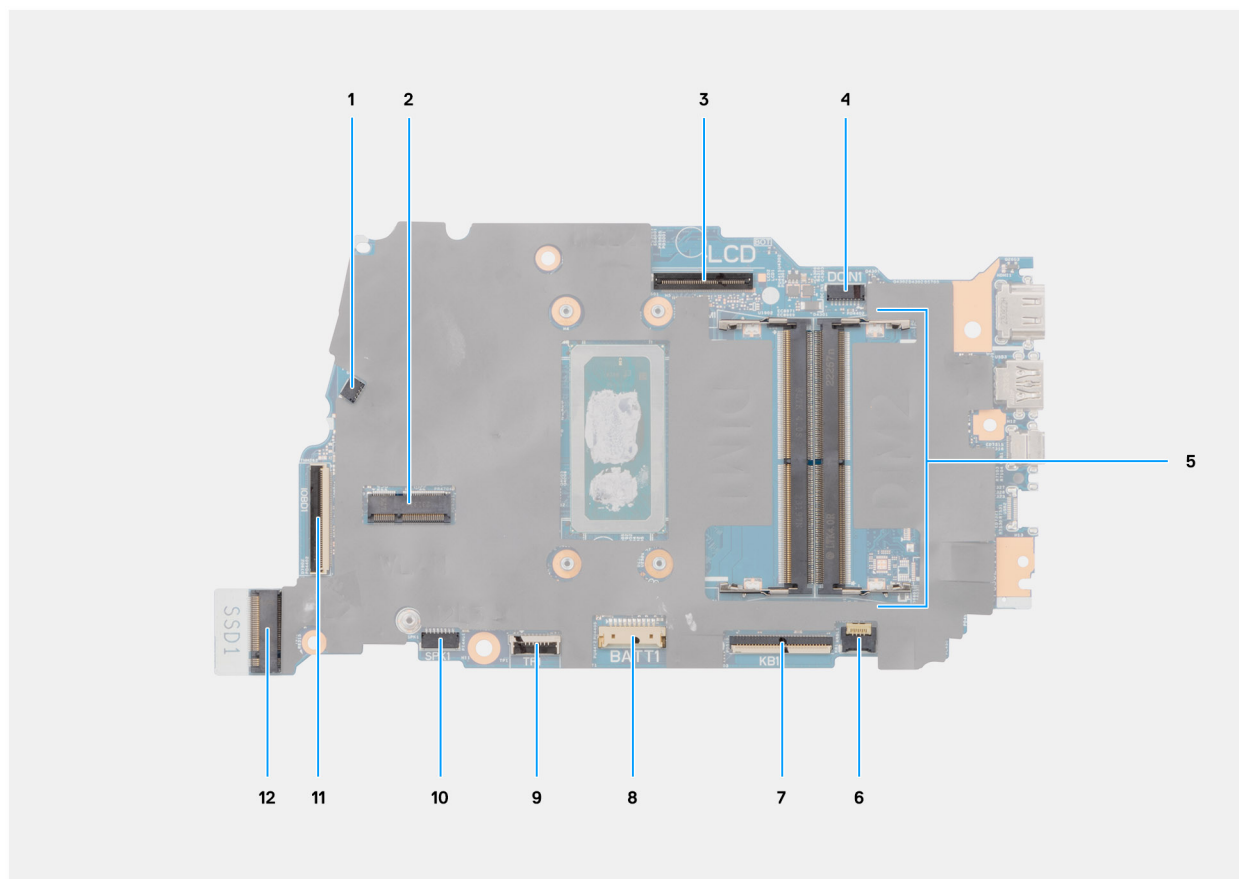
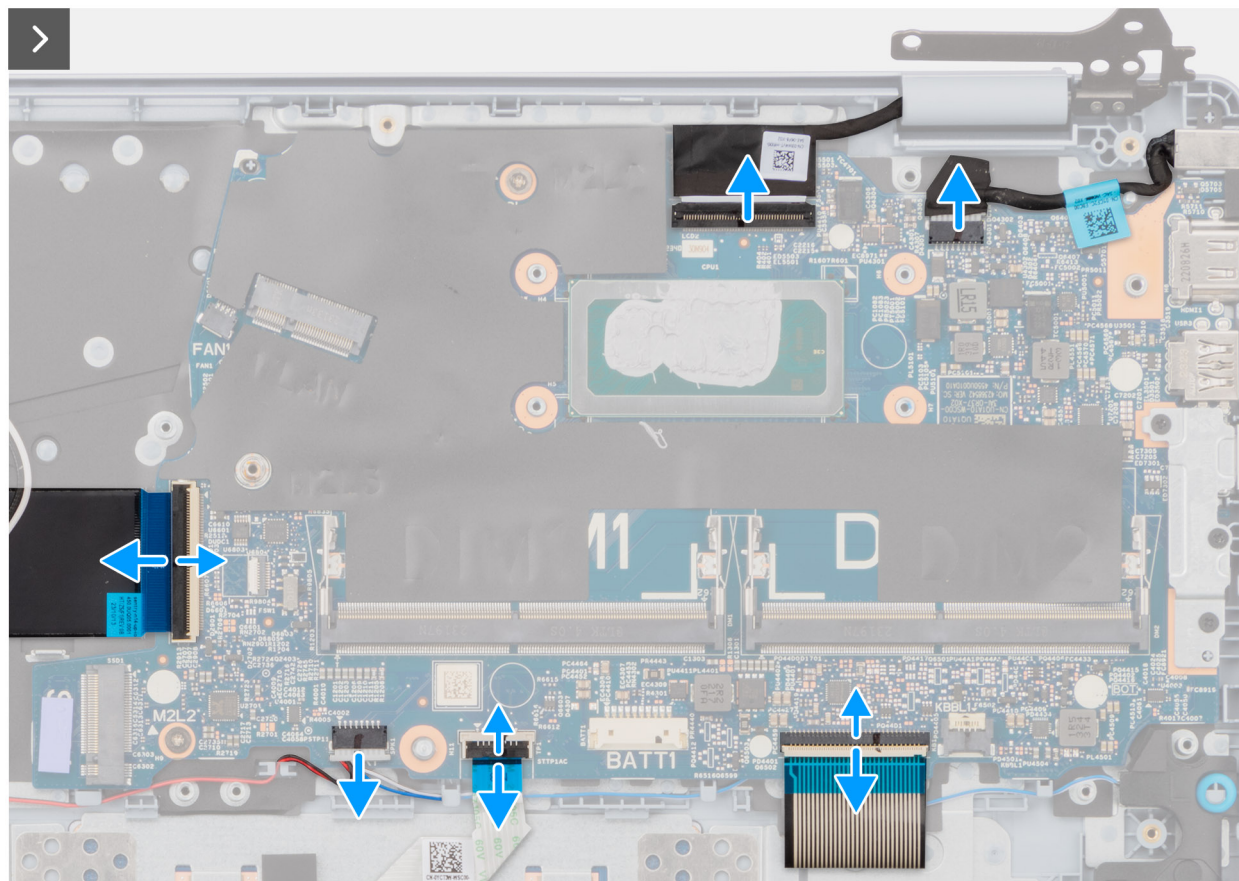
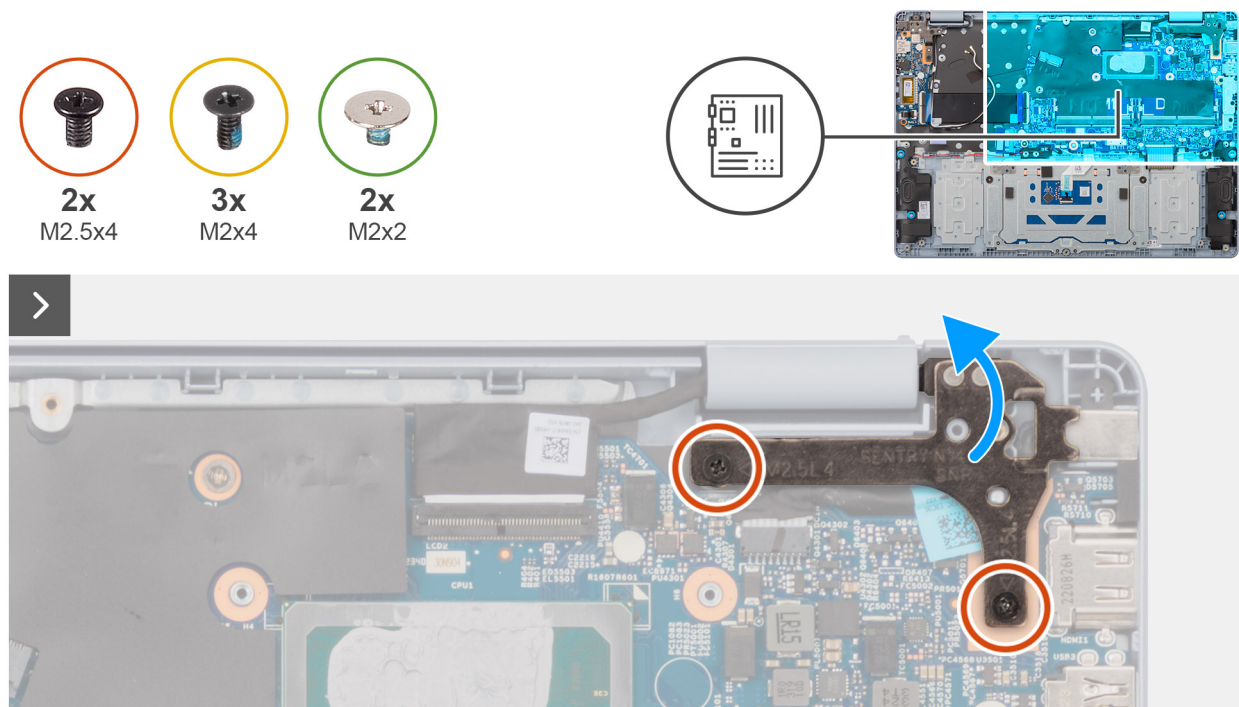


Figure 88. Connectors on the system board

1. Fan-cable connector (FN1)
2. M.2 wireless-card connector
3. Display-cable connector (LCD)
4. Power port connector (DC IN1)
5. Memory module connector
6. Keyboard-backlight cable connector (KBBL1)
7. Keyboard-cable connector (KB1)
8. Battery-cable connector (BATT1)
9. Touchpad-cable connector (TP1)
10. Speaker-cable connector (SPK1)
11. I/O-board cable connector (IOBD1)
12. M.2 solid-state drive connector (SSD1)

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



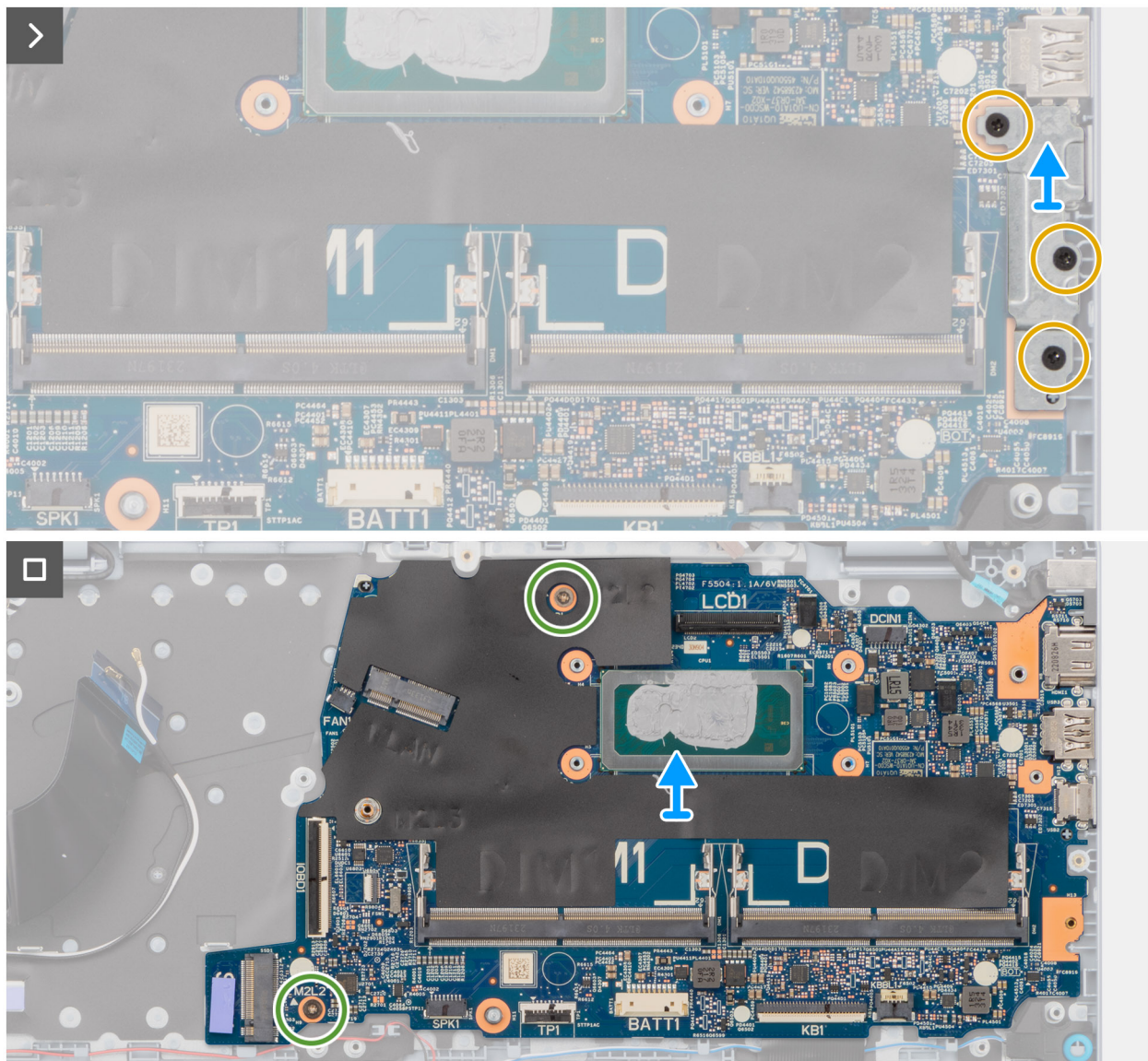


Figure 91. Removing the system board

Steps

1. Remove the two screws (M2.5x4) that secure the right hinge to the system board.
2. Rotate and open the right hinge.
3. Peel the tape that secures the I/O-board connector (IOBD1) latch to the system board.
4. Lift the latch and disconnect the I/O-board cable from the connector (IOBD1) on the system board.
5. Disconnect the speaker cable from the connector (SPK1) on the system board.
6. Lift the latch and disconnect the touchpad cable from the connector (TP1) on the system board.
7. Lift the latch and disconnect the keyboard cable from the connector (KB1) on the system board.
8. Lift the latch and disconnect the keyboard-backlight cable from the connector (KBBL1) on the system board.
9. Remove the three screws (M2x4) that secure the USB Type-C bracket to the system board.
10. Lift the USB Type-C bracket off the system board.
11. Remove the two screws (M2x2) that secure the system board to the palm-rest and keyboard assembly.
12. Lift the system board off the palm-rest and keyboard assembly.

Installing the system board for computers shipped with a plastic chassis

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.

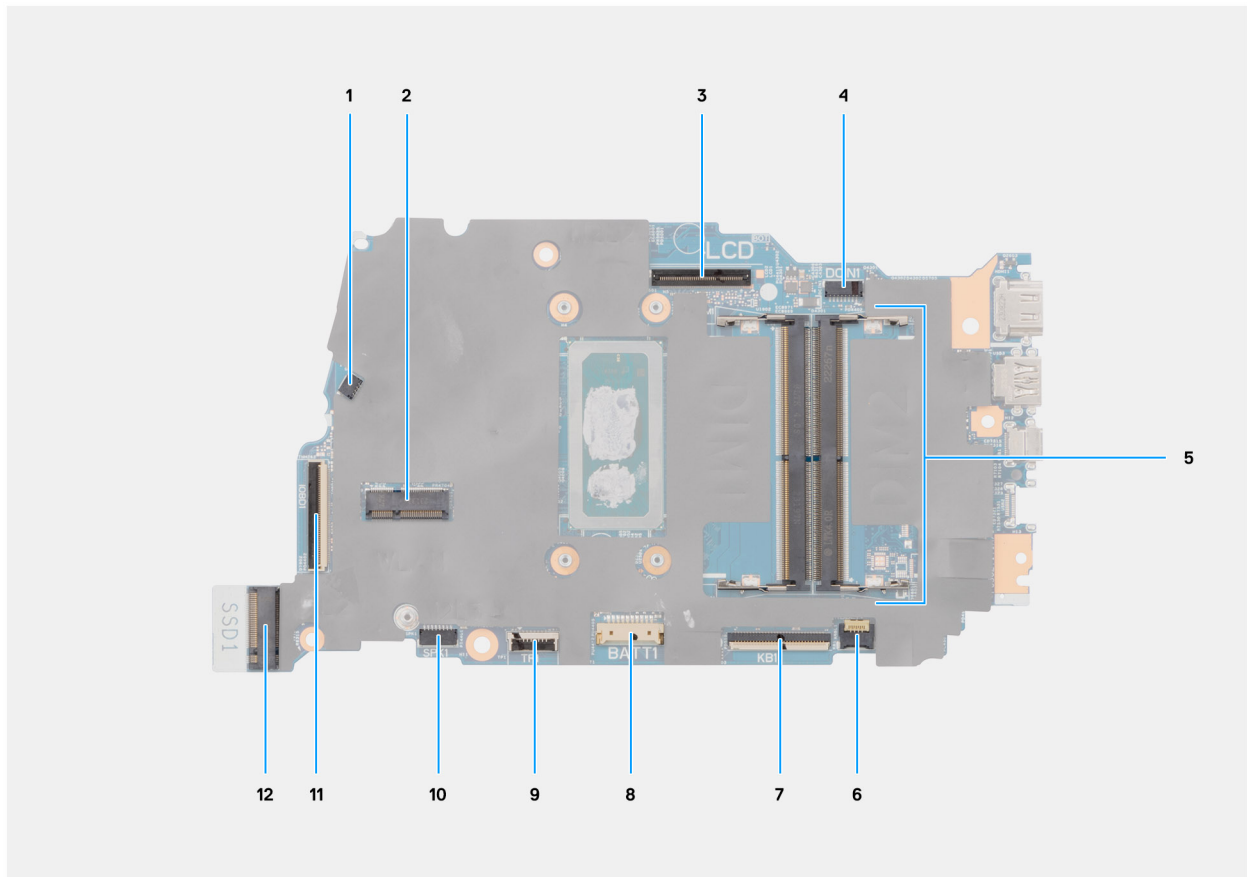


Figure 92. Connectors on the system board

1. Fan-cable connector (FN1)
2. M.2 wireless-card connector
3. Display-cable connector (LCD)
4. Power port connector (DC IN1)
5. Memory module connector
6. Keyboard-backlight cable connector (KBBL1)
7. Keyboard-cable connector (KB1)
8. Battery-cable connector (BATT1)
9. Touchpad-cable connector (TP1)
10. Speaker-cable connector (SPK1)
11. I/O-board cable connector (IOBD1)
12. M.2 solid-state drive connector (SSD1)

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

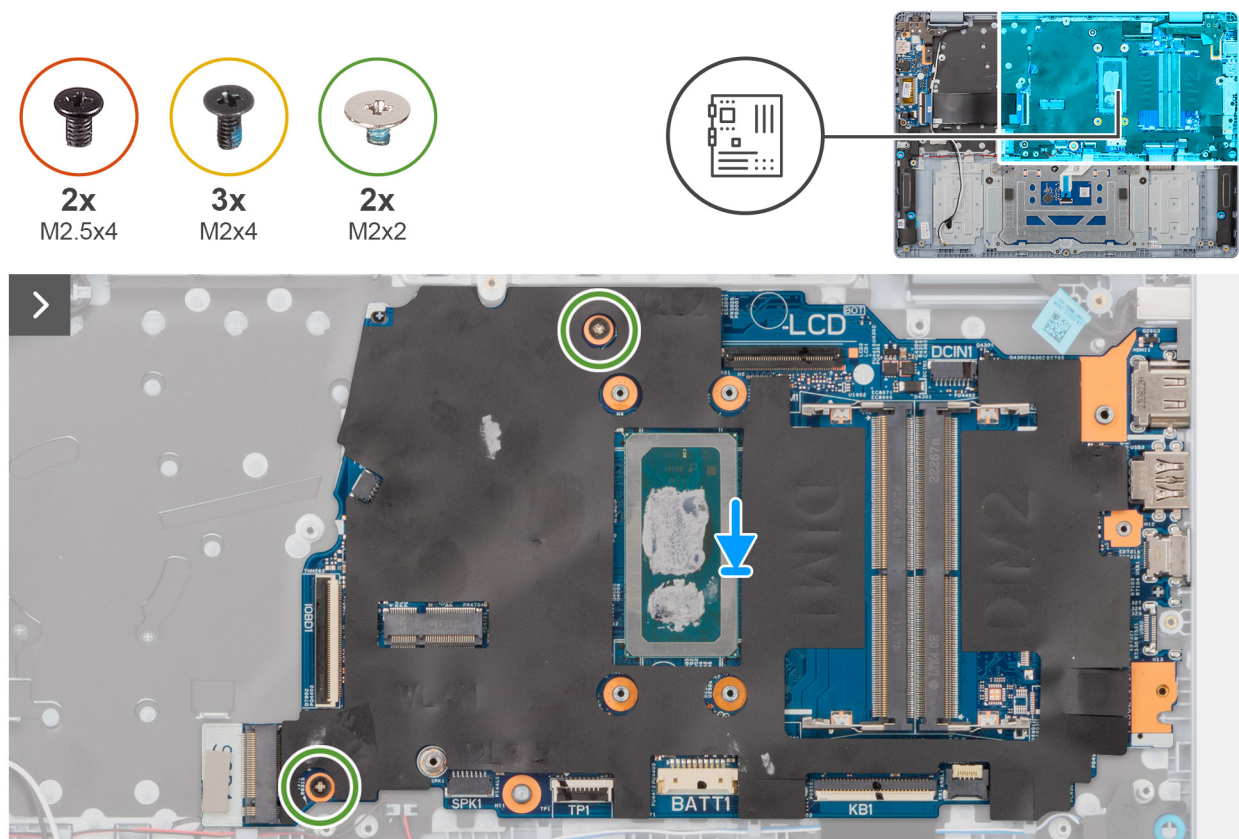


Figure 93. Installing the system board

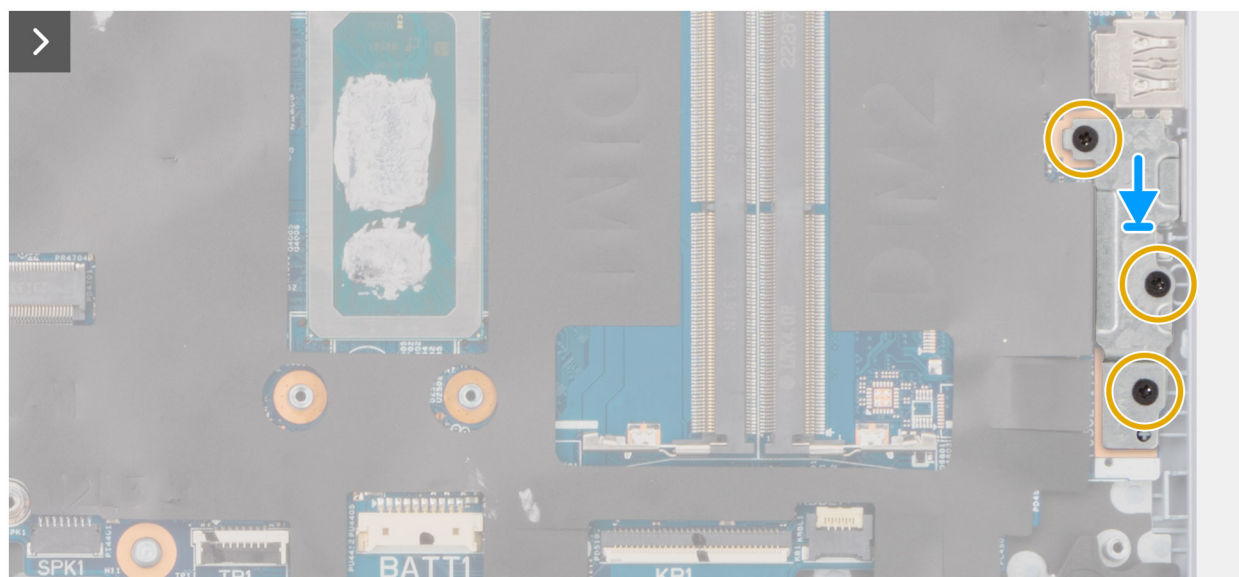


Figure 94. Replacing the USB Type-C bracket

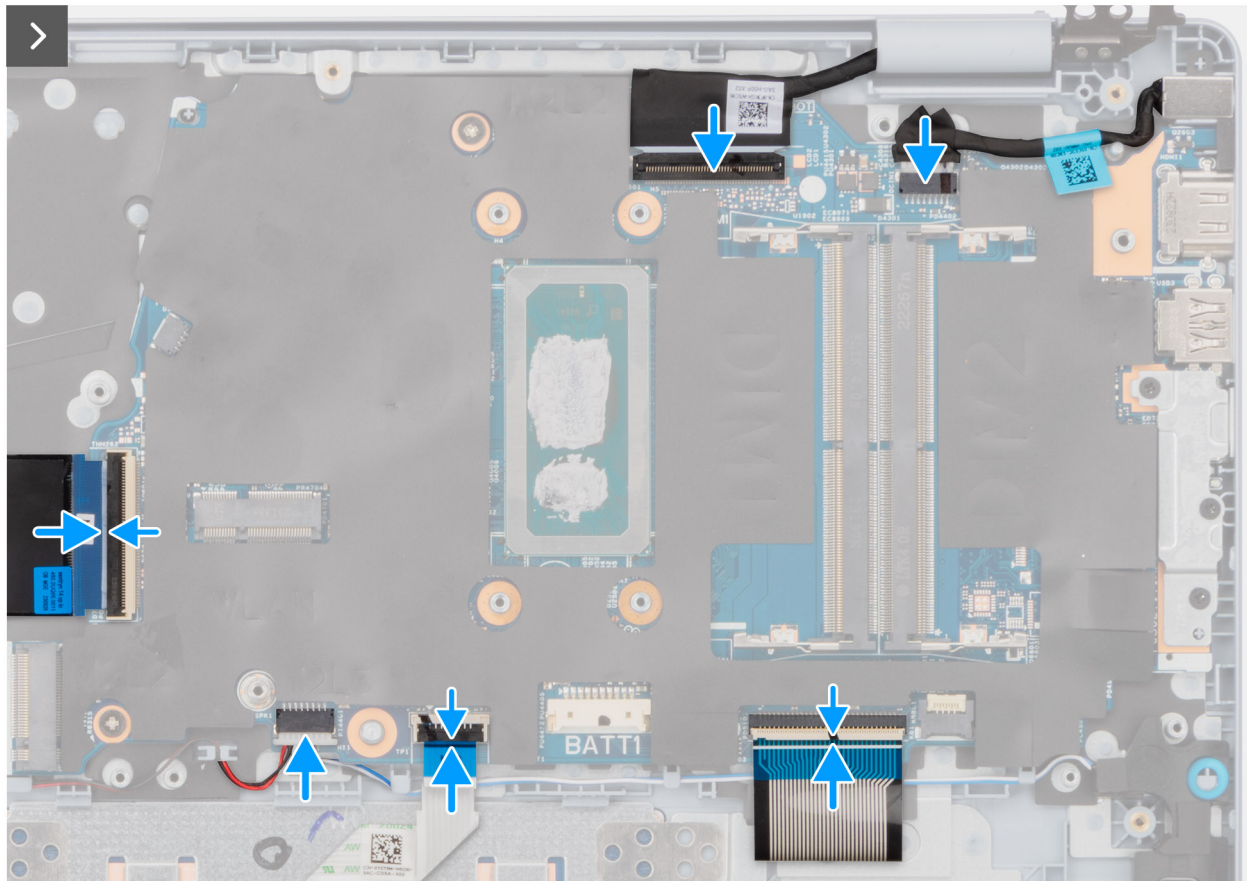


Figure 95. Replacing the cable connectors

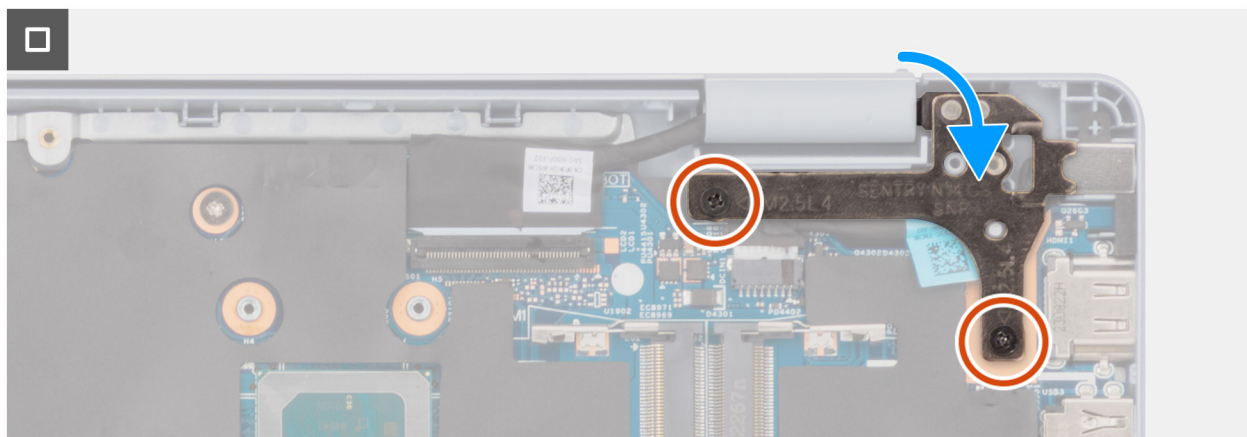


Figure 96. Replacing the hinge screws

Steps

1. Align the screw holes on the system board with the screw holes on the palm-rest and keyboard assembly.
2. Replace the two screws (M2x2) that secure the system board to the palm-rest and keyboard assembly.
3. Align the screw holes on the USB Type-C bracket to the screw holes on the system board.
4. Replace the three screws (M2x4) that secure the USB Type-C bracket to the system board.
5. Connect the I/O board cable to the connector (IOBD1) on the system board.
6. Connect the speaker cable to the connector (SPK1) on the speaker board.
7. Connect the touchpad cable to the connector (TP1) system board and close the latch.
8. Connect the keyboard cable to the connector (KB1) system board and close the latch.

9. Connect the keyboard-backlight cable to the connector (KBBL1) system board and close the latch.
10. Rotate to close the right hinge.
11. Replace the two screws (M2.5x4) to secure the right hinge to the system board.

Next steps

1. Install the [display assembly for computers shipped with a plastic chassis](#).
2. Install the [heatsink for computers shipped with a plastic chassis](#).
 **NOTE:** The system board can be removed and installed along with the heat sink, when you replace the palm-rest and keyboard assembly. This simplifies the removal and installation procedure and prevents damage to the thermal bond between the system board and heat sink.
3. Install the [fan for computers shipped with a plastic chassis](#).
4. Install the [M.2 2230 solid-state drive for computers shipped with a plastic chassis](#).
5. Install the [wireless card for computers shipped with a plastic chassis](#).
6. Install the [battery for computers shipped with a plastic chassis](#).
7. Install the [base cover for computers shipped with a plastic chassis](#).
8. Follow the procedure in [After working inside your computer](#).

Removing the system board for computers shipped with an aluminum chassis

 **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, [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with an aluminum chassis](#).
3. Remove the [54 W battery for computers shipped with an aluminum chassis](#).
4. Remove the [wireless card for computers shipped with an aluminum chassis](#).
5. Remove the [M.2 2230 solid-state drive for computers shipped with an aluminum chassis](#).
6. Remove the [fan for computers shipped with an aluminum chassis](#).
7. Remove the [heatsink for computers shipped with an aluminum chassis](#).
 **NOTE:** The system board can be removed and installed along with the heat sink, when you replace the palm-rest and keyboard assembly. This simplifies the removal and installation procedure and prevents damage to the thermal bond between the system board and heat sink.
8. Remove the [display assembly for computers shipped with an aluminum chassis](#).

About this task

The following image indicates the connectors on your system board.

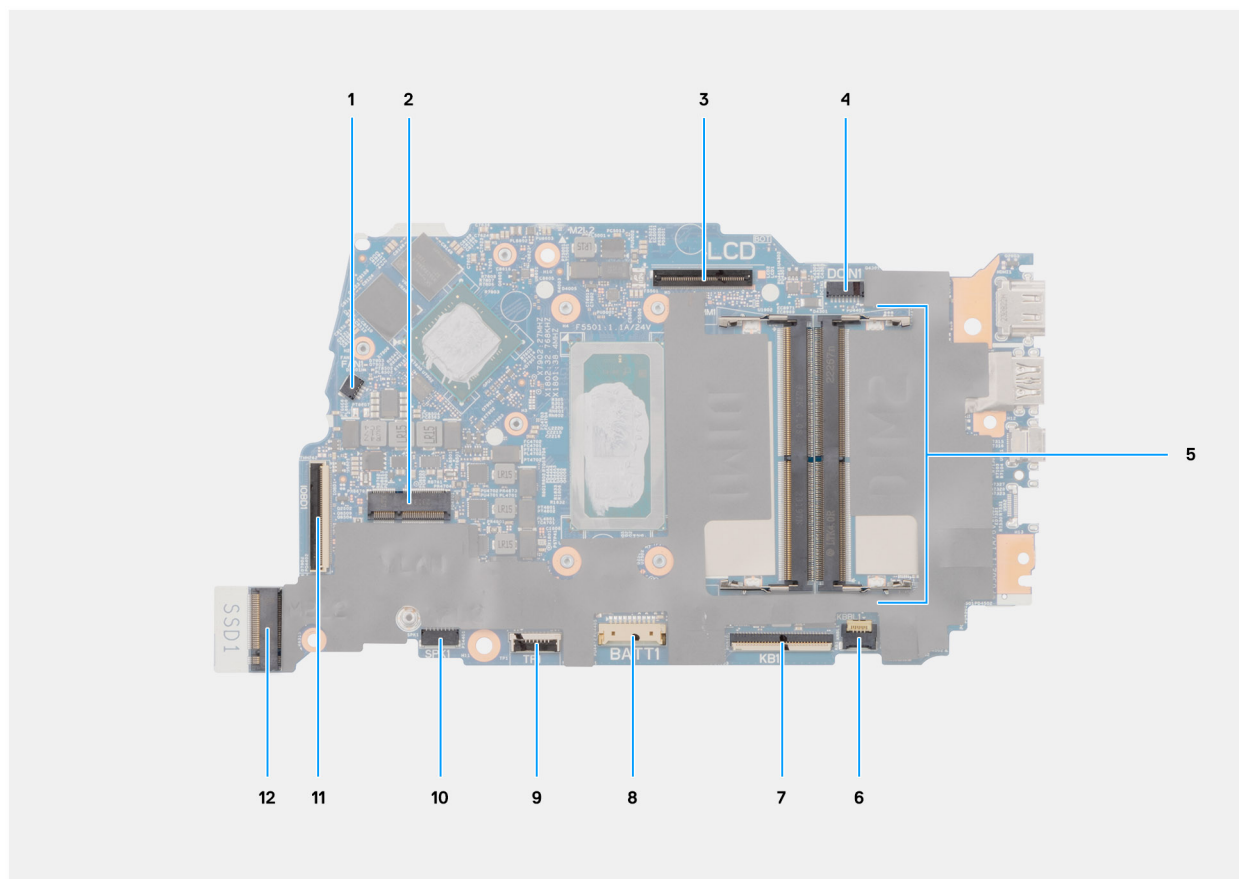


Figure 97. Connectors on the system board

1. Fan-cable connector (FN1)
2. M.2 wireless-card connector
3. Display-cable connector (LCD)
4. Power port connector (DC IN1)
5. Memory module connector
6. Keyboard-backlight cable connector (KBBL1)
7. Keyboard-cable connector (KB1)
8. Battery-cable connector (BATT1)
9. Touchpad-cable connector (TP1)
10. Speaker-cable connector (SPK1)
11. I/O-board cable connector (IOBD1)
12. M.2 solid-state drive connector (SSD1)

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

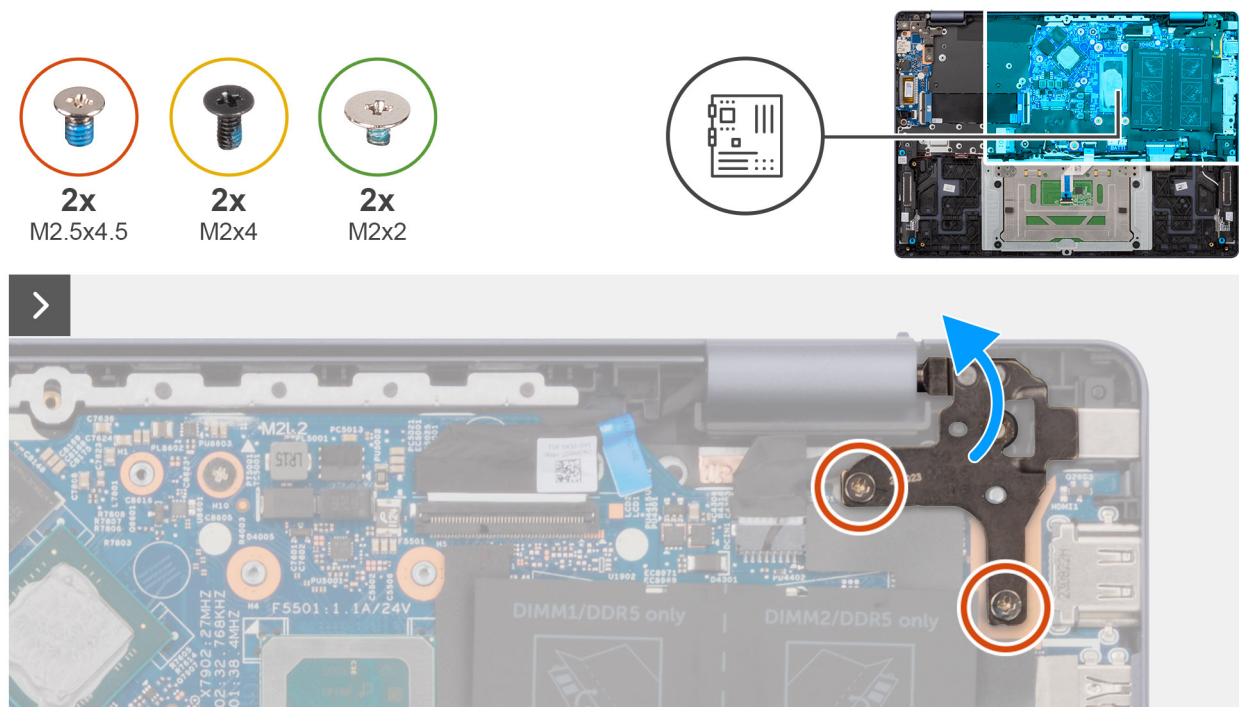


Figure 98. Removing the hinge screws

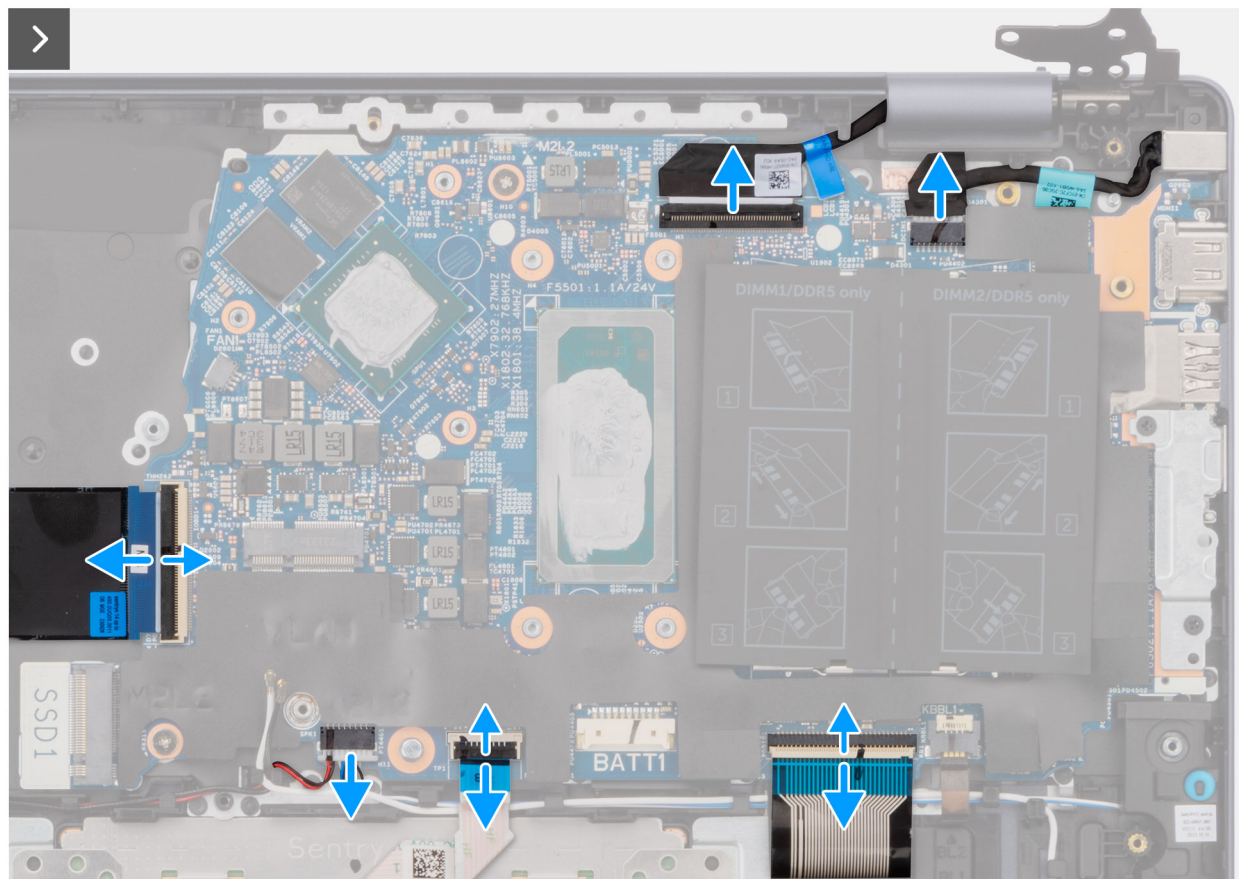


Figure 99. Removing the cable connectors

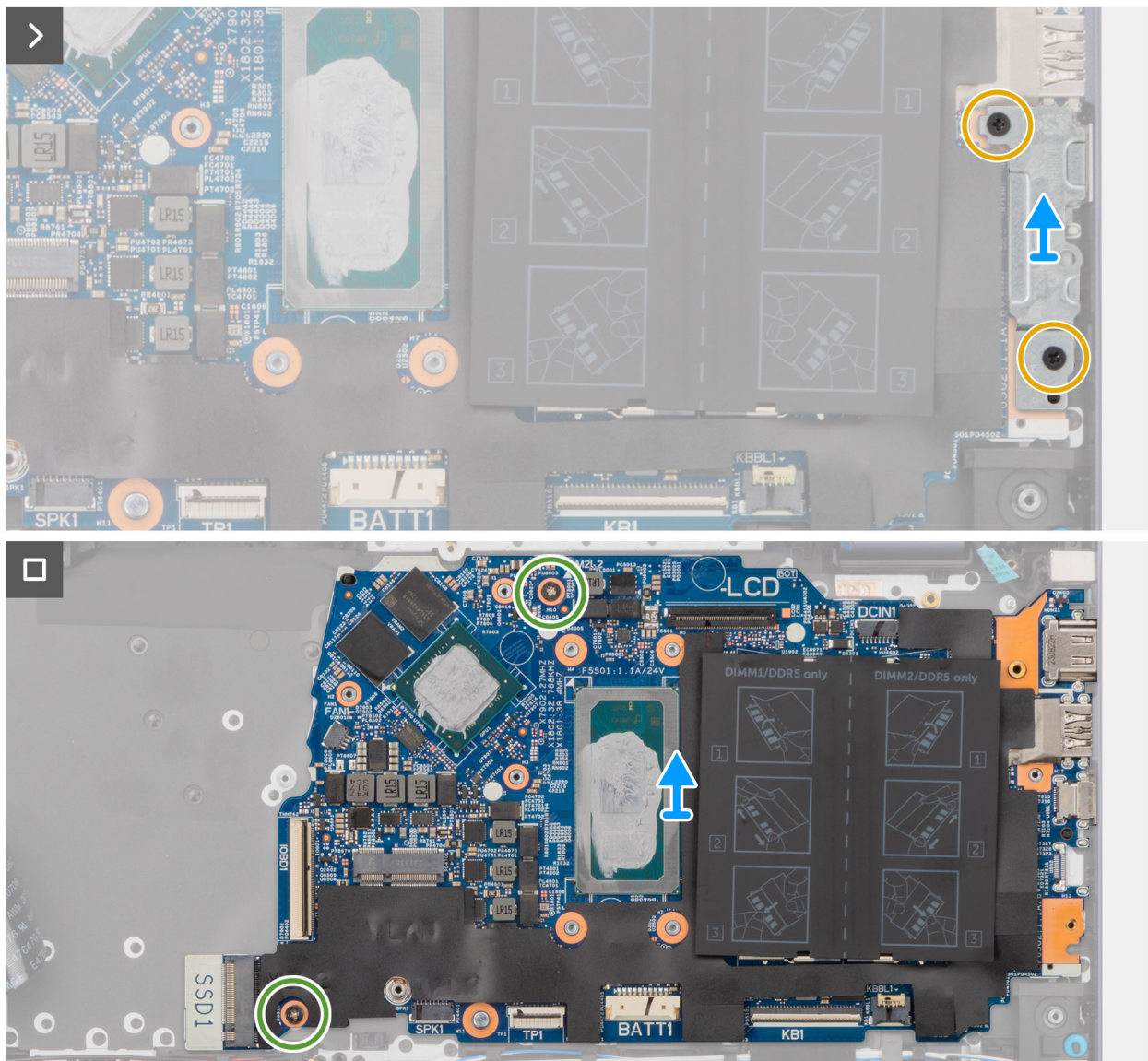


Figure 100. Removing the system board

Steps

1. Remove the two screws (M2.5x4.5) that secure the right hinge to the system board.
2. Rotate and open the right hinge.
3. Peel the tape that secures the I/O-board connector (IOBD1) latch to the system board.
4. Lift the latch and disconnect the I/O-board cable from the connector (IOBD1) on the system board.
5. Disconnect the speaker cable from the connector (SPK1) on the system board.
6. Lift the latch and disconnect the touchpad cable from the connector (TP1) on the system board.
7. Lift the latch and disconnect the keyboard cable from the connector (KB1) on the system board.
8. Lift the latch and disconnect the keyboard-backlight cable from the connector (KBBL1) on the system board.
9. Remove the two screws (M2x4) that secure the USB Type-C bracket to the system board.
10. Lift the USB Type-C bracket off the system board.
11. Remove the two screws (M2x2) that secure the system board to the palm-rest and keyboard assembly.
12. Lift the system board off the palm-rest and keyboard assembly.

Installing the system board for computers shipped with an aluminum chassis

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.

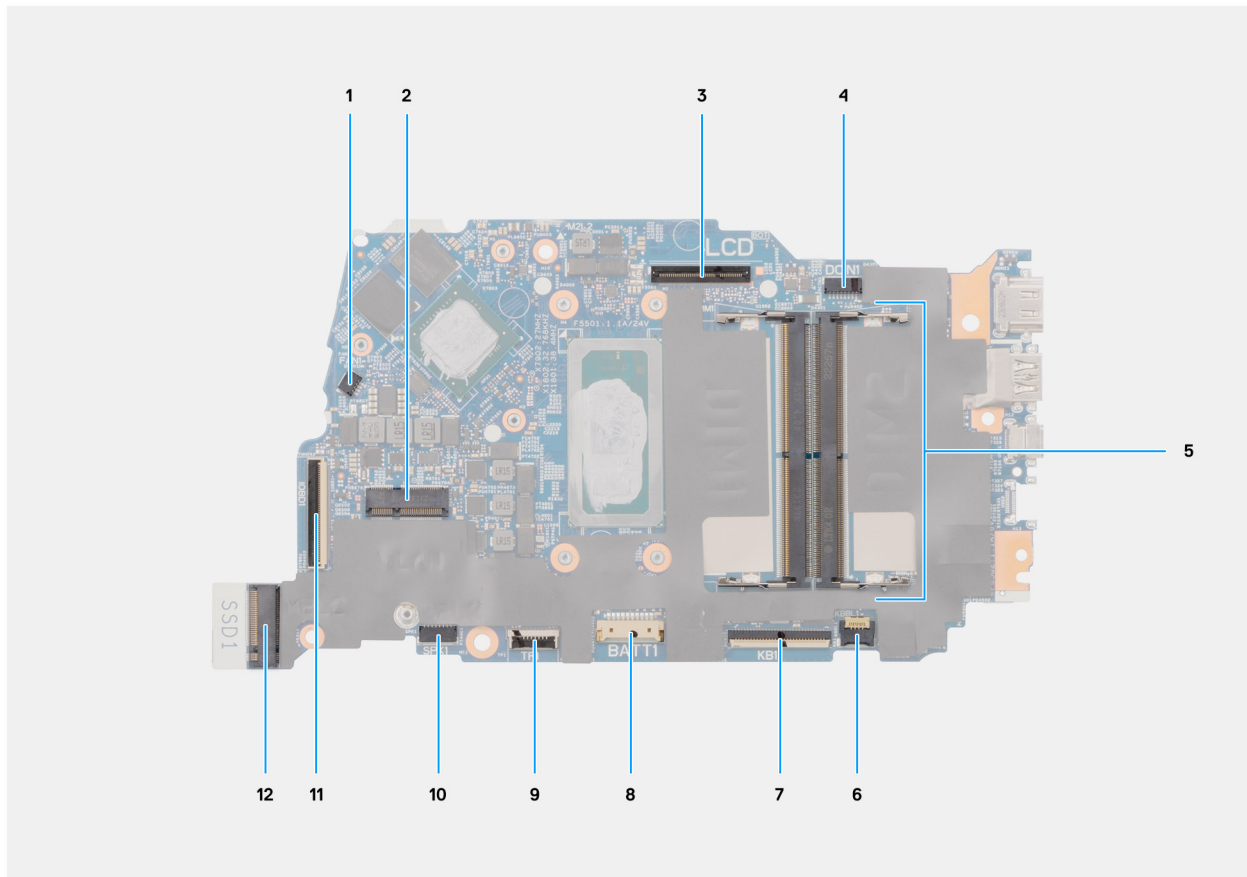


Figure 101. Connectors on the system board

1. Fan-cable connector (FN1)
2. M.2 wireless-card connector
3. Display-cable connector (LCD)
4. Power port connector (DC IN1)
5. Memory module connector
6. Keyboard-backlight cable connector (KBBL1)
7. Keyboard-cable connector (KB1)
8. Battery-cable connector (BATT1)
9. Touchpad-cable connector (TP1)
10. Speaker-cable connector (SPK1)
11. I/O-board cable connector (IOBD1)
12. M.2 solid-state drive connector (SSD1)

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

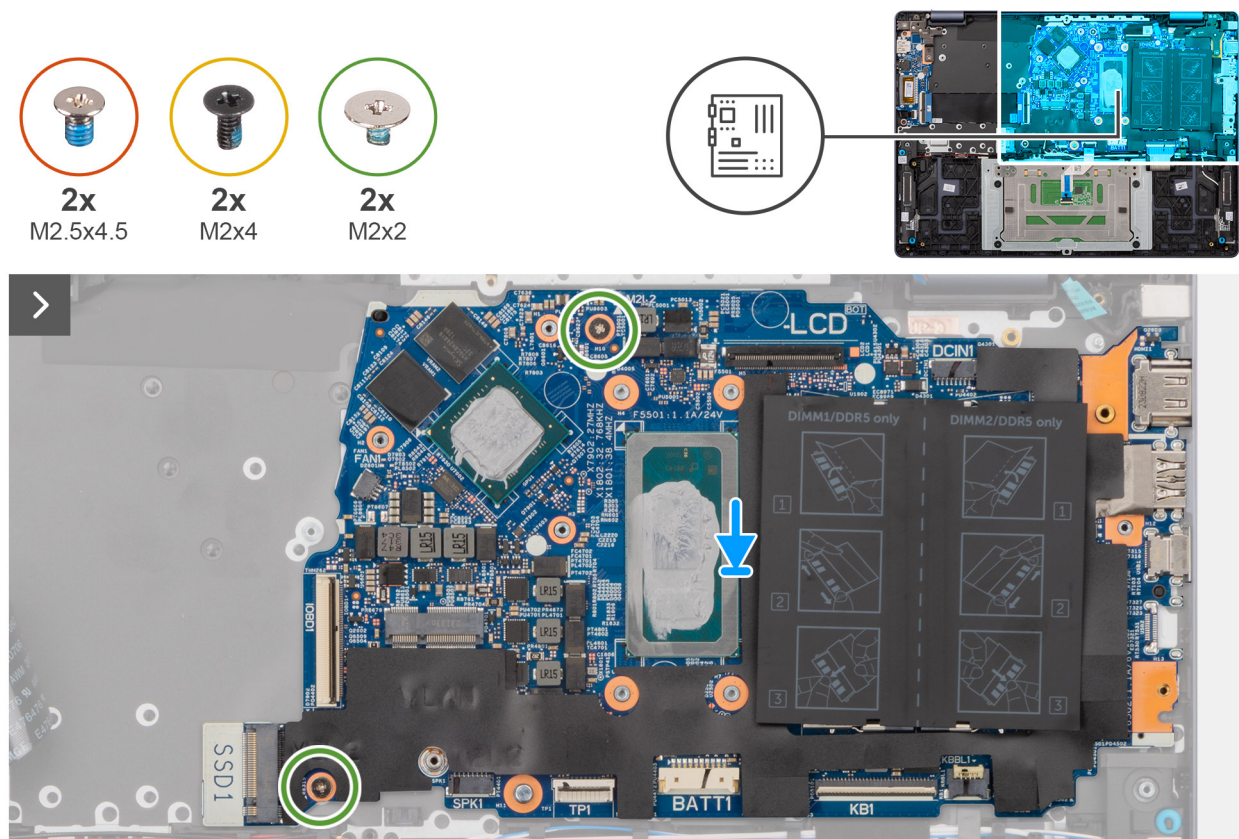


Figure 102. Installing the system board

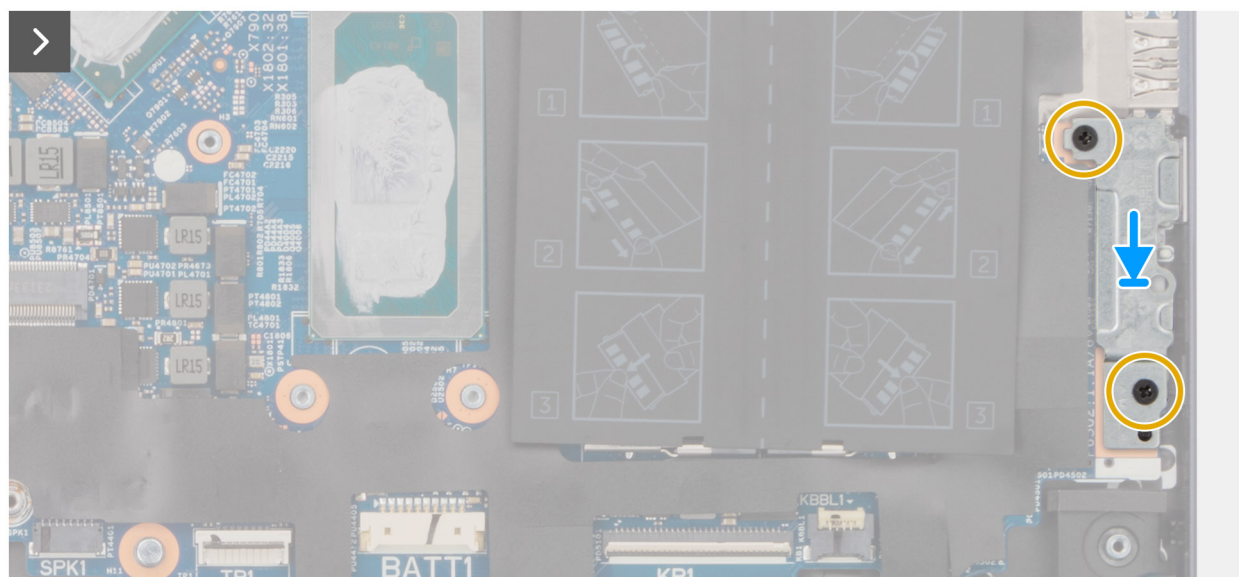


Figure 103. Replacing the USB Type-C bracket

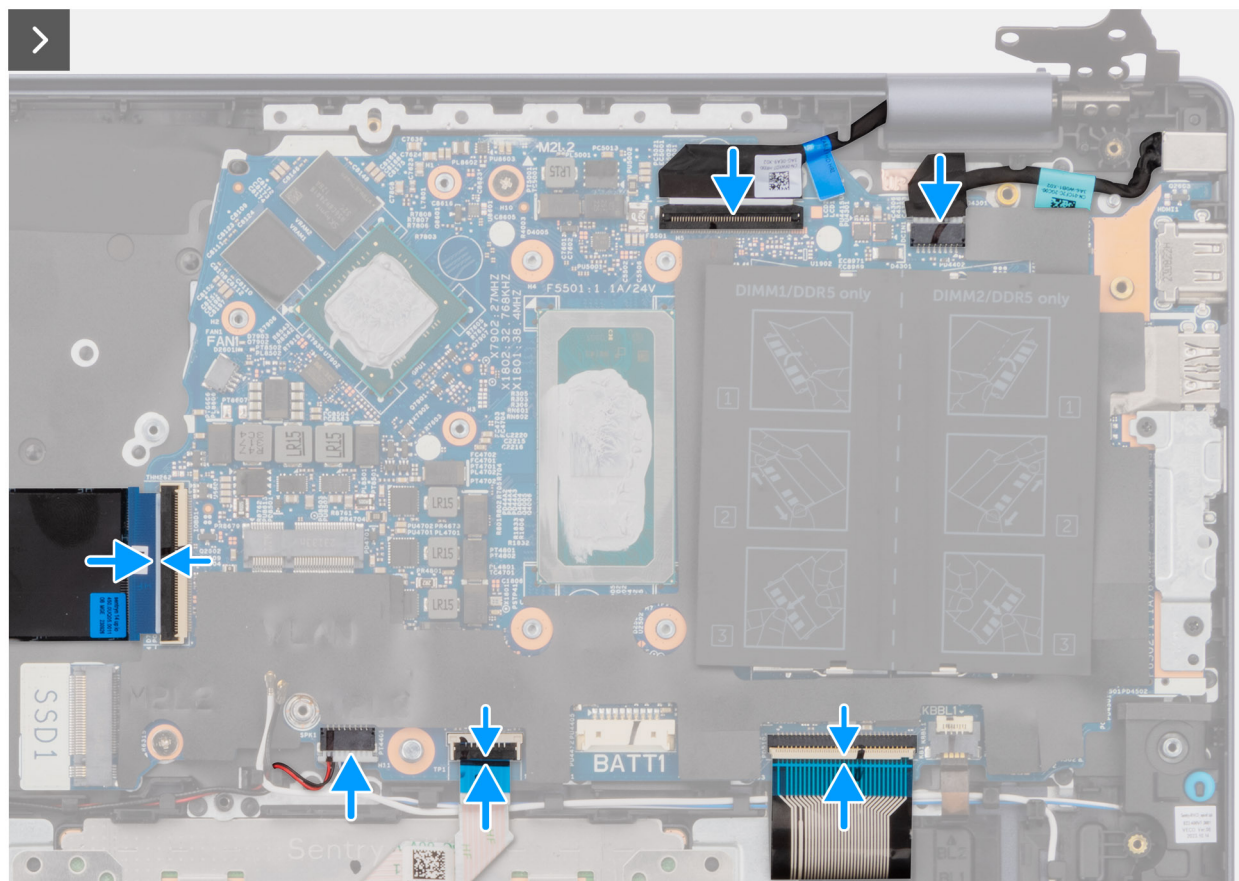


Figure 104. Replacing the cable connectors

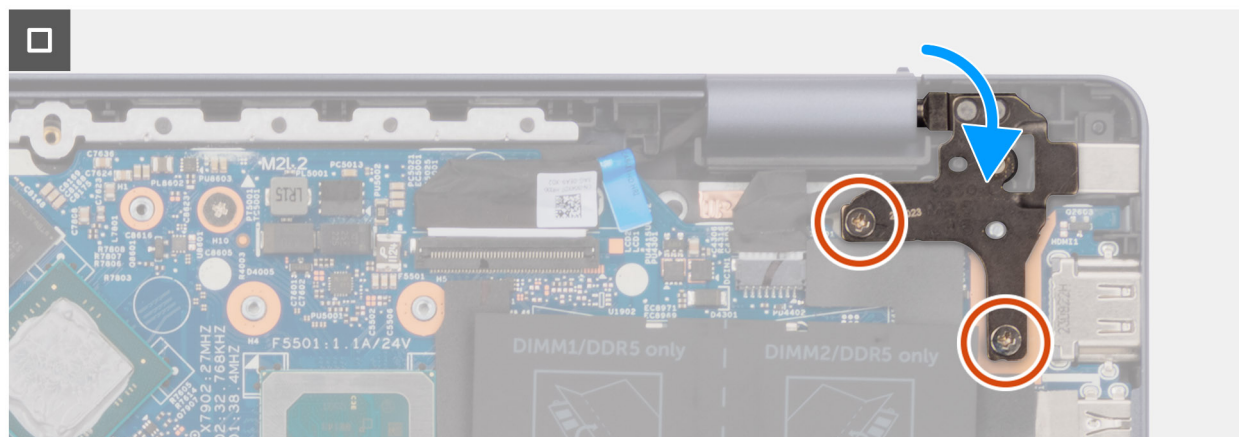


Figure 105. Replacing the hinge screws

Steps

1. Align the screw holes on the system board with the screw holes on the palm-rest and keyboard assembly.
2. Replace the two screws (M2x2) that secure the system board to the palm-rest and keyboard assembly.
3. Align the screw holes on the USB Type-C bracket to the screw holes on the system board.
4. Replace the two screws (M2x4) that secure the USB Type-C bracket to the system board.
5. Connect the I/O board cable to the connector (IOBD1) on the system board.
6. Connect the speaker cable to the connector (SPK1) on the speaker board.
7. Connect the touchpad cable to the connector (TP1) system board and close the latch.
8. Connect the keyboard cable to the connector (KB1) system board and close the latch.

9. Connect the keyboard-backlight cable to the connector (KBBL1) system board and close the latch.
10. Rotate to close the right hinge.
11. Replace the two screws (M2.5x4.5) to secure the right hinge to the system board.

Next steps

1. Install the [display assembly for computers shipped with an aluminum chassis](#).
2. Install the [heatsink for computers shipped with an aluminum chassis](#).
 **NOTE:** The system board can be removed and installed along with the heat sink, when you replace the palm-rest and keyboard assembly. This simplifies the removal and installation procedure and prevents damage to the thermal bond between the system board and heat sink.
3. Install the [fan for computers shipped with an aluminum chassis](#).
4. Install the [M.2 2230 solid-state drive for computers shipped with an aluminum chassis](#).
5. Install the [wireless card for computers shipped with an aluminum chassis](#).
6. Install the [54 W battery for computers shipped with an aluminum chassis](#).
7. Install the [base cover for computer shipped with an aluminum chassis](#).
8. Follow the procedure in [After working inside your computer](#).

Palm-rest and keyboard assembly

Removing the palm-rest and keyboard assembly for computers shipped with a plastic chassis

 **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, [Before working inside your computer](#).
2. Remove the [base cover for computers shipped with a plastic chassis](#).
3. Remove the [battery for computers shipped with a plastic chassis](#).
4. Remove the [wireless card for computers shipped with a plastic chassis](#).
5. Remove the [M.2 2230 solid-state drive for computers shipped with a plastic chassis](#).
6. Remove the [I/O board for computers shipped with a plastic chassis](#).
7. Remove the [speakers for computers shipped with a plastic chassis](#).
8. Remove the [fan for computers shipped with a plastic chassis](#).
9. Remove the [heatsink for computers shipped with a plastic chassis](#).
 **NOTE:** The system board can be removed and installed along with the heat sink, when you replace the palm-rest and keyboard assembly. This simplifies the removal and installation procedure and prevents damage to the thermal bond between the system board and heat sink.
10. Remove the [power button for computers shipped with a plastic chassis](#).
11. Remove the [touchpad for computers shipped with a plastic chassis](#).
12. Remove the [display assembly for computers shipped with a plastic chassis](#).
13. Remove the [system board for computers shipped with a plastic chassis](#).

About this task

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

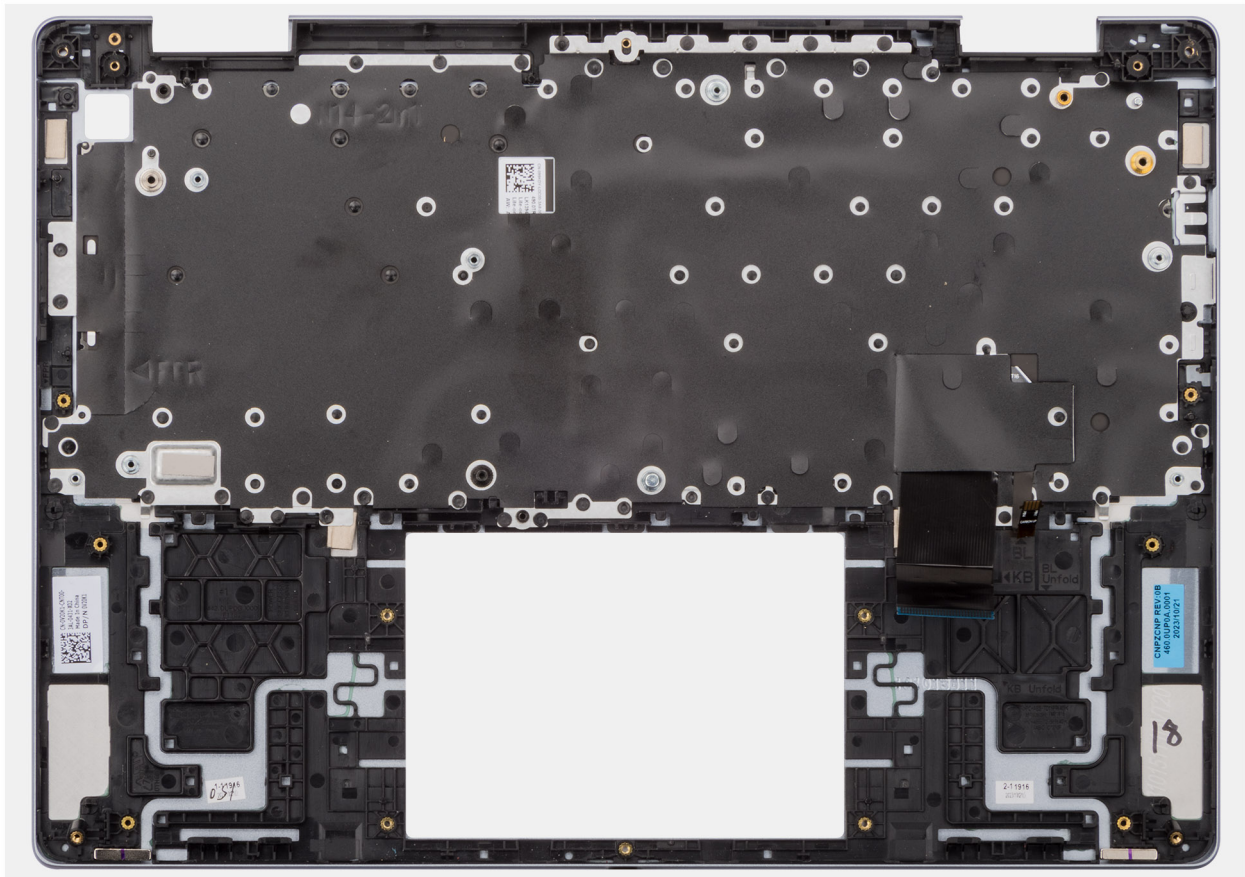


Figure 106. Removing the palm-rest and keyboard assembly

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 for computers shipped with a plastic chassis

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

Prerequisites

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

About this task

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

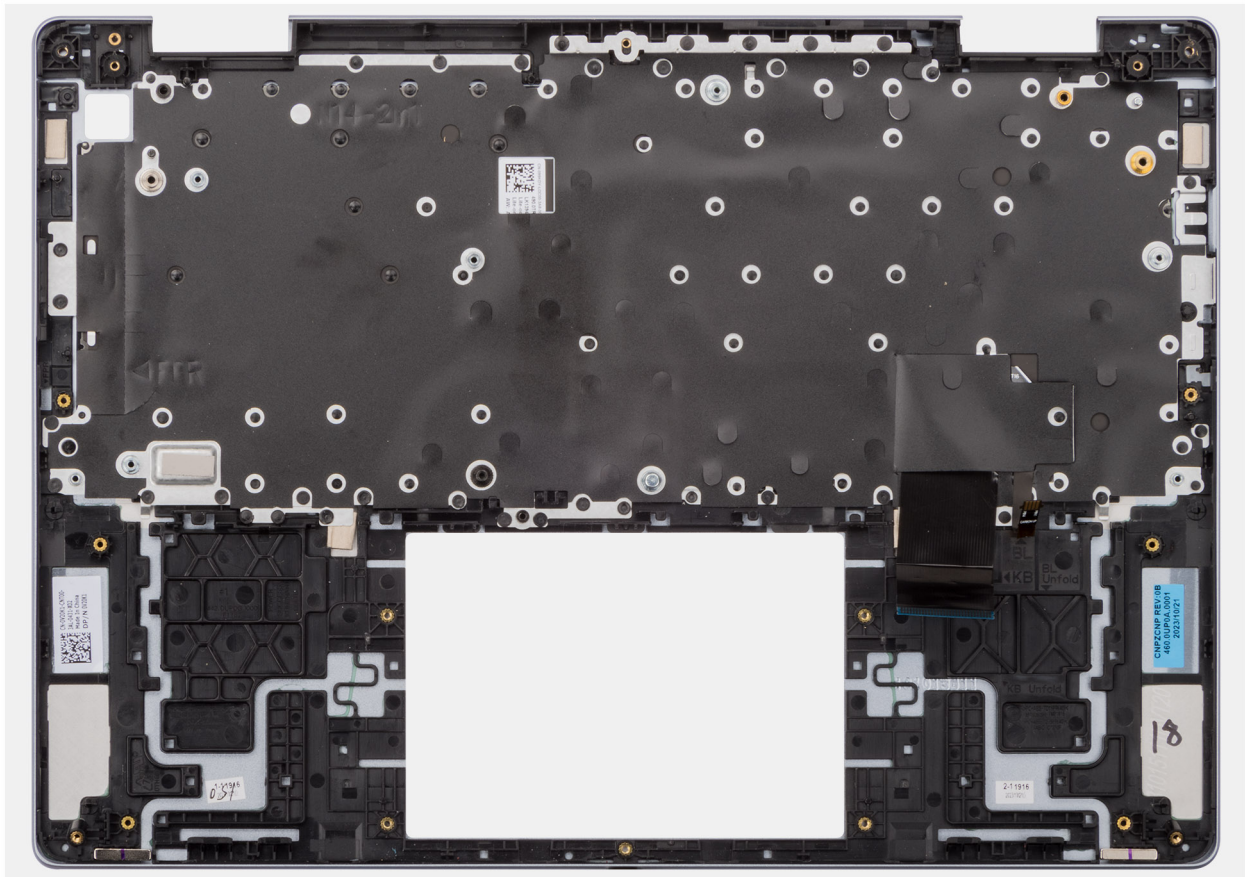


Figure 107. Installing the palm-rest and keyboard assembly

Steps

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

Next steps

1. Install the [system board](#) for computers shipped with a plastic chassis.
2. Install the [display assembly](#) for computers shipped with a plastic chassis.
3. Install the [touchpad](#) for computers shipped with a plastic chassis.
4. Install the [power button](#) for computers shipped with a plastic chassis.
5. Install the [heatsink](#) for computers shipped with a plastic chassis.
6. Install the [fan](#) for computers shipped with a plastic chassis.
7. Install the [speakers](#) for computers shipped with a plastic chassis.
8. Install the [I/O board](#) for computers shipped with a plastic chassis.
9. Install the [M.2 2230 solid-state drive](#) for computers shipped with a plastic chassis.
10. Install the [wireless card](#) for computers shipped with a plastic chassis.
11. Install the [battery](#) for computers shipped with a plastic chassis.
12. Install the [base cover](#) for computers shipped with a plastic chassis.
13. Follow the procedure in [After working inside your computer](#).

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, [Before working inside your computer](#).

2. Remove the [base cover for computers shipped with an aluminum chassis](#).
3. Remove the [54 W battery for computers shipped with an aluminum chassis](#).
4. Remove the [wireless card for computers shipped with an aluminum chassis](#).
5. Remove the [M.2 2230 solid-state drive for computers shipped with an aluminum chassis](#).
6. Remove the [I/O board for computers shipped with an aluminum chassis](#).
7. Remove the [speakers for computers shipped with an aluminum chassis](#).
8. Remove the [fan for computers shipped with an aluminum chassis](#).
9. Remove the [heatsink for computers shipped with an aluminum chassis](#).

NOTE: The system board can be removed and installed along with the heat sink, when you replace the palm-rest and keyboard assembly. This simplifies the removal and installation procedure and prevents damage to the thermal bond between the system board and heat sink.

10. Remove the [power button with fingerprint reader for computers shipped with an aluminum chassis](#).
11. Remove the [touchpad for computers shipped with an aluminum chassis](#).
12. Remove the [display assembly for computers shipped with an aluminum chassis](#).
13. Remove the [system board for computers shipped with an aluminum chassis](#).

About this task

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

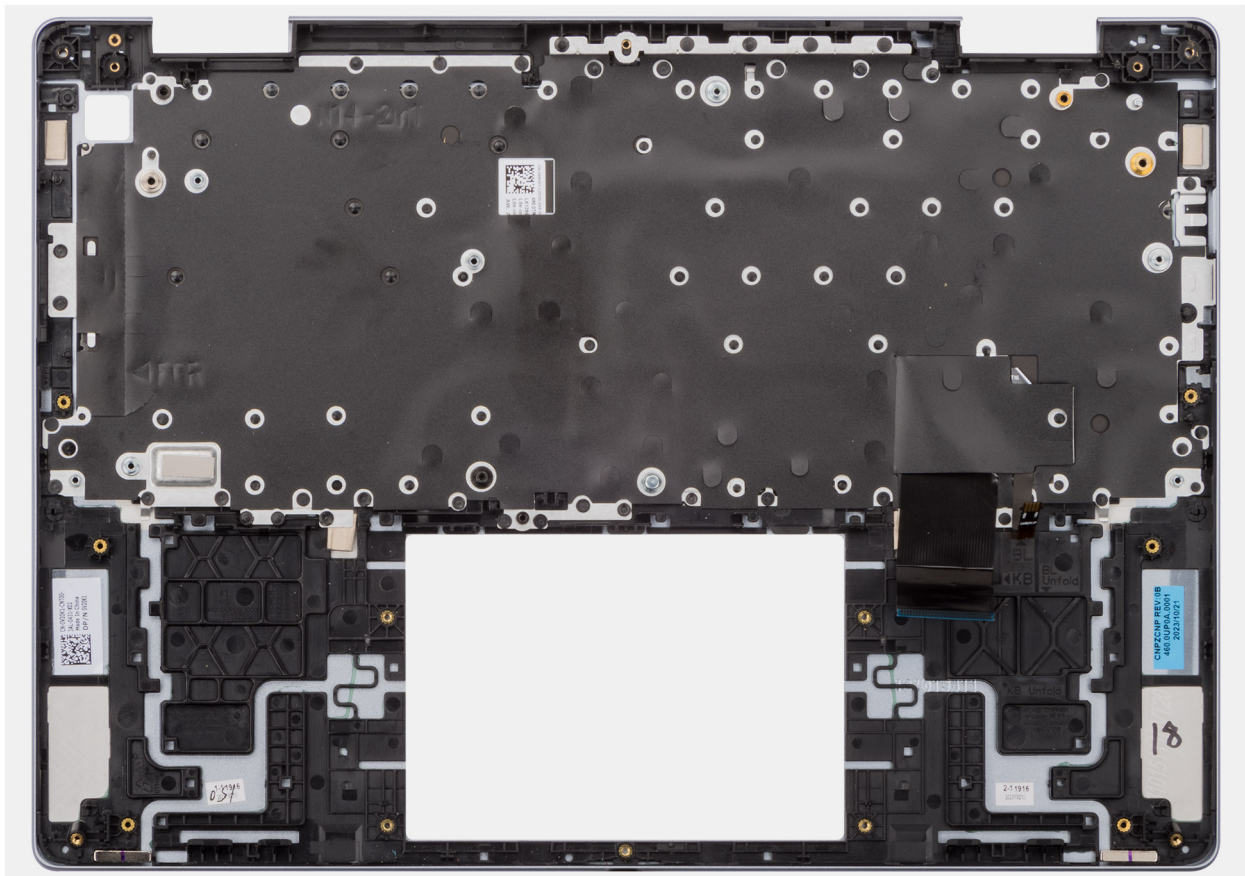


Figure 108. Removing the palm-rest and keyboard assembly

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 for computers shipped with an aluminum chassis

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

Prerequisites

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

About this task

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

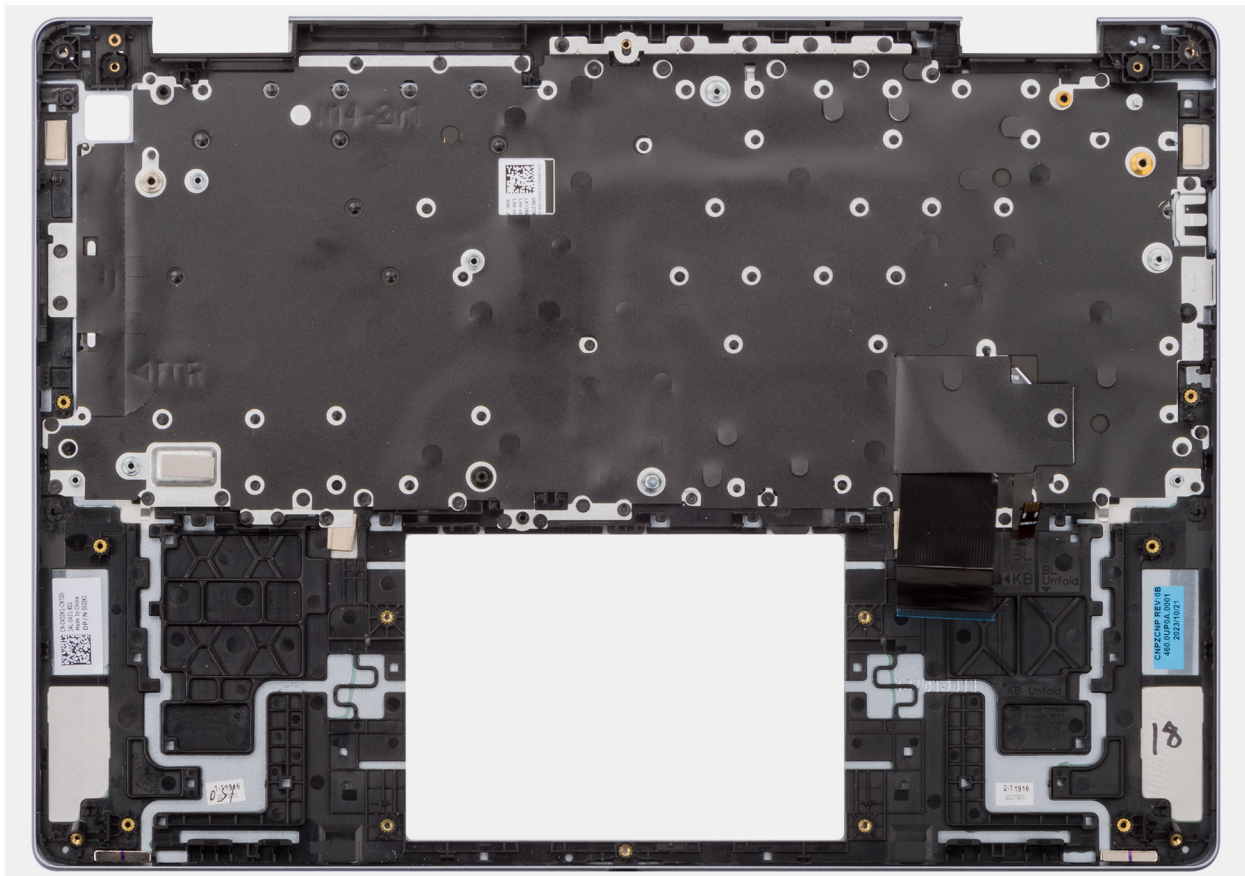


Figure 109. Installing the palm-rest and keyboard assembly

Steps

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

Next steps

1. Install the [system board for computers shipped with an aluminum chassis](#).
2. Install the [display assembly for computers shipped with an aluminum chassis](#).
3. Install the [touchpad for computers shipped with an aluminum chassis](#).
4. Install the [power button with fingerprint reader for computers shipped with an aluminum chassis](#).
5. Install the [heatsink for computers shipped with an aluminum chassis](#).
6. Install the [fan for computers shipped with an aluminum chassis](#).
7. Install the [speakers for computers shipped with an aluminum chassis](#).
8. Install the [I/O board for computers shipped with an aluminum chassis](#).
9. Install the [M.2 2230 solid-state drive for computers shipped with an aluminum chassis](#).

10. Install the [wireless card](#) for computers shipped with an aluminum chassis.
11. Install the [54W battery](#) for computers shipped with an aluminum chassis.
12. Install the [base cover](#) for computer shipped with an aluminum chassis.
13. 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 14 5440 supports the following operating systems:

- Windows 11 Home
- Windows 11 Home (S-mode)
- Windows 11 Pro
- Windows 11 Pro National Academic
- Ubuntu Linux 22.04 LTS, 64-bit

Drivers and downloads

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

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 hard drive.
- Change the system configuration information.
- Set or change a user-selectable option, such as the user password, type of hard drive installed, and enabling or disabling base devices.

Entering BIOS setup program

About this task

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

Navigation keys

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

Table 29. Navigation keys

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

F12 One Time Boot menu

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

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

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

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

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

System setup options

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

Table 30. System setup options—Overview menu

Overview	
Inspiron 14 5440	
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 on your computer. By default, the Signed Firmware Update option is enabled.
Battery	
Primary	Displays the primary battery of the computer.
Battery Level	Displays the battery level of the computer.
Battery State	Displays the battery state of the computer.
Health	Displays the battery health of the computer.
AC Adapter	Displays whether an AC adapter is connected. If connected, displays the type of AC adapter that is connected.
Processor	
Processor Type	Displays the processor type.
Maximum Clock Speed	Displays the maximum processor clock speed.
Minimum Clock Speed	Displays the minimum processor clock speed.
Current Clock Speed	Displays the current processor clock speed.
Core Count	Displays the number of cores on the processor.
Processor ID	Displays the processor identification code.
Processor L2 Cache	Displays the processor L2 Cache size.
Processor L3 Cache	Displays the processor L3 Cache size.

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

Overview	
Microcode Version	Displays the microcode version.
Intel Hyper-Threading Capable	Displays whether the processor is Hyper-Threading (HT) capable.
64-Bit Technology	Displays whether 64-bit technology is used.
Memory	
Memory Installed	Displays the total computer memory installed.
Memory Available	Displays the total computer memory available.
Memory Speed	Displays the memory speed.
Memory Channel Mode	Displays single or dual channel mode.
Memory Technology	Displays the technology that is used for the memory.
DIMM_SLOT1	Displays the memory installed and memory type in DIMM SLOT1.
DIMM_SLOT2	Displays the memory installed and memory type in DIMM SLOT2.
Devices	
Panel Type	Displays the Panel Type of the computer.
Video Controller	Displays the video controller type of the computer.
Video Memory	Displays the video memory information of the computer.
Wi-Fi Device	Displays the wireless device information of the computer.
Native Resolution	Displays the native resolution of the computer.
Video BIOS Version	Displays the video BIOS version of the computer.
Audio Controller	Displays the audio controller information of the computer.
Bluetooth Device	Displays the Bluetooth device information of the computer.
LOM MAC Address	Displays the MAC address of the computer.

Table 31. System setup options—Boot Configuration menu

Boot Configuration	
Boot Sequence	
Boot Mode: UEFI only	Displays the boot mode of the computer.
Boot Sequence	Displays the boot sequence.
Enable PXE Boot Priority	Enables adding new PXE boot options to the top of the Boot Sequence. By default, the Enable PXE Boot Priority option is disabled.
Secure Digital (SD) Card Boot	Enables or disables read-only boot from Secure Digital (SD) card. By default, the Secure Digital (SD) Card Boot option is disabled.
Secure Boot	Secure Boot is a method of guaranteeing the integrity of the boot path by performing additional validation of the operating system and PCI add-in cards. The computer stops booting to the operating system when a component is not authenticated during the boot process. Secure Boot can be enabled in BIOS setup or using management interfaces like Dell Command Configure, but can only be disabled from BIOS setup.
Enable Secure Boot	Enables the computer to boot using only validated boot software. By default, the Enable Secure Boot option is enabled.

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

Boot Configuration	
	For additional security, Dell Technologies recommends keeping the Secure Boot option enabled to ensure that the UEFI firmware validates the operating system during the boot process. i NOTE: For Secure Boot to be enabled, the computer is required to be in UEFI boot mode and the Enable Legacy Option ROMs option is required to be turned off.
Enable Microsoft UEFI CA	When disabled, the UEFI CA is removed from the BIOS UEFI Secure Boot database. i NOTE: When disabled, the Microsoft UEFI CA could render your computer unable to boot, computer graphics may not function, some devices may not function properly, and the computer could become unrecoverable. By default, the Enable Microsoft UEFI CA option is enabled. For additional security, Dell Technologies recommends keeping the Microsoft UEFI CA option enabled to ensure the broadest compatibility with devices and operating systems.
Secure Boot Mode	Enables or disables the Secure Boot operation mode. By default, the Deployed Mode is selected. i NOTE: Deployed Mode should be selected for normal operation of Secure Boot.
Expert Key Management	
Enable Custom Mode	Enables or disables the keys in the PK, KEK, db, and dbx security key databases to be modified. By default, the Enable Custom Mode option is disabled.
Custom Mode Key Management	Selects the custom values for expert key management. By default, the PK option is selected.

Table 32. System setup options—Integrated Devices menu

Integrated Devices	
Date/Time	
Date	Sets the computer date in MM/DD/YYYY format. Changes to the date format take effect immediately.
Time	Sets the computer time in HH/MM/SS 24-hour format. You can switch between a 12-hour and 24-hour clock. Changes to the time format take effect immediately.
Camera	
Enable Camera	Enables the camera. By default, the Enable Camera option is enabled. i NOTE: Depending on the configuration ordered, the camera setup option may not be available.
Audio	
Enable Audio	Enables all integrated audio controller. By default, all the options are enabled.
Enable Microphone	Enables the microphone. By default, the Enable Microphone option is enabled.

Table 32. System setup options—Integrated Devices menu (continued)

Integrated Devices	
	 NOTE: Depending on the configuration ordered, the microphone setup option may not be available.
Enable Internal Speaker	Enables the internal speaker. By default, the Enable Internal Speaker option is enabled.
USB Configuration	
Enable External USB Ports	Enables the external USB ports. By default, the Enable External USB Ports option is enabled.
Enable USB Boot Support	Enables booting from USB mass storage devices that are connected to external USB ports. By default, the Enable USB Boot Support option is enabled.
Miscellaneous Devices	
Enable Fingerprint Reader Device	Enables the Fingerprint Reader Device option. By default, the Enable Fingerprint Reader Device option is enabled.

Table 33. System setup options—Storage menu

Storage	
SATA/NVMe Operation	
SATA/NVMe Operation	Sets the operating mode of the integrated SATA hard drive controller. By default, the RAID On option is selected. The storage device is configured to support RAID functions with VMD controller.
Storage Interface	
Port Enablement	Enables or disables the M.2 PCIe SSD option. By default, the M.2 PCIe SSD option is enabled.
SMART Reporting	
Enable SMART Reporting	Enables SMART (Self-Monitoring, Analysis, and Reporting Technology) Reporting. When enabled, the BIOS can receive analytical information from integrated drives and send notifications during startup about possible future failure of the hard drive. By default, the Enable SMART Reporting option is disabled.
Drive Information	
Enable MediaCard	
Secure Digital (SD) Card	Enables or disables the SD card. By default, the Secure Digital (SD) Card option is enabled.

Table 34. System setup options—Display menu

Display	
Display Brightness	
Brightness on battery power	Enables to set the screen brightness when the computer is running on battery power. By default, the screen brightness is set to 50 when the computer is running on battery power.

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

Display	
Brightness on AC power	Enables to set the screen brightness when the computer is running on AC power. By default, the screen brightness is set to 100 when the computer is running on AC power.
Full Screen Logo	Enables or disables the computer to display a full-screen logo, if the image matches screen resolution. By default, the Full Screen Logo option is disabled.

Table 35. System setup options—Connection menu

Connection	
Network Controller Configuration	
Integrated NIC	Enables or disables the on-board LAN Controller. By default, the Enabled with PXE option is selected.
Wireless Device Enable	
WLAN	Enables or disables the internal WLAN device. By default, the WLAN option is enabled.
Bluetooth	Enables or disables the internal Bluetooth device. By default, the Bluetooth option is enabled.
Enable UEFI Network Stack	Enables or disables the UEFI Network Stack and controls the onboard LAN Controller. By default, the Auto Enabled option is selected.
HTTP(s) Boot Feature	
HTTP(s) Boot	Displays if the computer has HTTP(s) Boot capabilities or not. By default, the HTTP(s) Boot option is enabled.
HTTP(s) Boot Modes	Allows you to set the HTTP(s) Boot Mode for the computer. By default, the Auto Mode option is selected. HTTP(s) Boot automatically extracts Boot URL from Dynamic Host Configuration Protocol (DHCP).

Table 36. System setup options—Power menu

Power	
Battery Configuration	Enables or disables the computer to run on battery during peak power usage hours. Use the table Custom Charge Start and Custom Charge Stop , to prevent AC power usage between certain times of each day. By default, the Adaptive option is selected. Battery settings are adaptively optimized based on your typical battery usage pattern.
Advanced Configuration	
Enable Advanced Battery Charge Configuration	Enables Advanced Battery Charge Configuration from the beginning of the day to a specified work period. When enabled, Advanced Battery Charged maximizes battery health while still supporting heavy use during the work day. By default, the Enable Advanced Battery Charge Configuration option is disabled.
Thermal Management	Enables or disables cooling of fan and manages processor heat to adjust the computer performance, noise, and temperature.

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

Power	
	By default, the Optimized option is selected. Standard setting for balanced performance, noise, and temperature.
USB Wake Support	
Wake on Dell USB-C Dock	When enabled, connecting a Dell USB-C Dock wakes the computer from Standby, Hibernate, and Power Off. By default, the Wake on Dell USB-C Dock option is enabled.
Block Sleep	Enables or disables the computer from entering Sleep (S3) mode in the operating system. By default, the Block Sleep option is disabled. i NOTE: When enabled, the computer does not go to Sleep, Intel Rapid Start is disabled automatically, and the operating system power option is blank if it was set to Sleep.
Intel Speed Shift Technology	Enables or disables the Intel Speed Shift Technology support. When enabled, the operating system selects the appropriate processor performance automatically. By default, the Intel Speed Shift Technology option is enabled.

Table 37. System setup options—Security menu

Security	
Trusted Platform Module (TPM) 2.0 Security	The Trusted Platform Module (TPM) provides various cryptographic services which serve as the cornerstone for many platform security technologies. Trusted Platform Module (TPM) is a security device that stores computer-generated keys for encryption and features such as BitLocker, Virtual Secure Mode, remote Attestation. By default, the Trusted Platform Module (TPM) option is enabled. For additional security, Dell Technologies recommends keeping Trusted Platform Module (TPM) enabled to allow these security technologies to fully function. i NOTE: The options that are listed apply to computers with a discrete Trusted Platform Module (TPM) chip.
TPM 2.0 Security On	Allows you to select whether or not the TPM is visible to the operating system. By default, the TPM 2.0 Security On option is enabled. For additional security, Dell Technologies recommends keeping TPM 2.0 Security On enabled to allow these security technologies to fully function.
Attestation Enable	The Attestation Enable option controls the endorsement hierarchy of TPM. Disabling the Attestation Enable option prevents TPM from being used to digitally sign certificates. By default, the Attestation Enable option is enabled. For additional security, Dell Technologies recommends keeping the Attestation Enable option enabled. i NOTE: When disabled, this feature may cause compatibility issues or loss of functionality in some operating systems.
Key Storage Enable	The Key Storage Enable option controls the storage hierarchy of TPM, which is used to store digital keys. Disabling the Key Storage Enable option restricts the ability of TPM to store owner's data. By default, the Key Storage Enable option is enabled.

Table 37. System setup options—Security menu (continued)

Security	
	For additional security, Dell Technologies recommends keeping the Key Storage Enable option enabled.  NOTE: When disabled, this feature may cause compatibility issues or loss of functionality in some operating systems.
SHA-256	Allows you to control the hashing algorithm that is used by the TPM. When enabled, the TPM uses the SHA-256 hashing algorithm. When disabled, the TPM uses the SHA-1 hash algorithm. By default, the SHA-256 option is enabled. For additional security, Dell Technologies recommends keeping the SHA-256 option enabled.
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.
Physical Presence Interface (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.
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. By default, the Enable Absolute option is selected.

Table 37. System setup options—Security menu (continued)

Security	
	For additional security, Dell Technologies recommends selecting the Enable Absolute option.  NOTE: When the Absolute features are activated, the Absolute integration cannot be disabled from the BIOS setup screen.
UEFI Boot Path Security	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. By default, the Always Except Internal HDD option is enabled.

Table 38. System setup options—Passwords menu

Passwords	
Admin Password	The Admin Password prevents unauthorized access to the BIOS Setup options. Once the administrator password is set, the BIOS setup options can only be modified after providing the correct password. The following rules and dependencies apply to the Admin Password - • The admin password cannot be set if computer and/or internal hard drive passwords are previously set. • The admin password can be used in place of the computer and/or internal hard drive passwords. • When set, the admin password must be provided during a firmware update. • Clearing the admin password also clears the computer password (if set). Dell Technologies recommends using an administrator password to prevent unauthorized changes to BIOS setup options.
System Password	The System Password prevents the computer from booting to an operating system without entering the correct password. The following rules and dependencies apply when the System Password is used - • The computer shuts down when idle for approximately 10 minutes at the computer password prompt. • The computer shuts down after three incorrect attempts to enter the computer password. • The computer shuts down when the Esc key is pressed at the System Password prompt. • The computer password is not prompted when the computer resumes from standby mode. Dell Technologies recommends using the computer password in situations where it is likely that a computer may be lost or stolen.
M.2 PCIe SSD-0	The M.2 PCIe SSD-0 Password can be set to prevent unauthorized access of the data stored on the solid-state drive. The computer prompts for the solid-state drive password during boot in order to unlock the drive. A password-secured solid-state drive stays locked even when removed from the computer or placed into another computer. It prevents an attacker from accessing data on the drive without authorization. The following rules and dependencies apply when the M.2 PCIe SSD-0 Password is used - • The solid-state drive password option cannot be accessed when a hard drive is disabled in the BIOS setup. • The computer shuts down when idle for approximately 10 minutes at the solid-state drive password prompt. • The computer shuts down after three incorrect attempts to enter the solid-state drive password and treats the hard drive as not available.

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

Passwords	
	• The solid-state drive does not accept password unlock attempts after five incorrect attempts to enter the solid-state drive password from the BIOS Setup. The solid-state drive password must be reset for the new password unlock attempts. • The computer treats the solid-state drive as not available when the Esc key is pressed at the solid-state drive password prompt. • The solid-state drive password is not prompted when the computer resumes from standby mode. When the solid-state drive is unlocked by the user before the computer goes into standby mode, it remains unlocked after the computer resumes from standby mode. • If the computer and solid-state drive passwords are set to the same value, the solid-state drive unlocks after the correct computer password is entered. Dell Technologies recommends using a solid-state drive password to protect unauthorized data access.
Password Configuration	The Password configuration page includes several options for changing the requirements of BIOS passwords. You can modify the minimum and maximum length of the passwords and require passwords to contain certain character classes (upper case, lower case, digit, special character). Dell Technologies recommends setting the minimum password length to at least eight characters.
Upper Case Letter	The Upper Case Letter field enforces stricter rules for administrator and system passwords. When enabled, the password is required to include at least one upper case letter. By default, the Upper Case Letter option is disabled.
Lower Case Letter	The Lower Case Letter field enforces stricter rules for administrator and system passwords. When enabled, the password is required to include at least one lower case letter. By default, the Lower Case Letter option is disabled.
Digit	The Digit field enforces stricter rules for administrator and system passwords. When enabled, the password is required to include at least one digit number. By default, the Digit option is disabled.
Special Character	The Special Character field enforces stricter rules for administrator and system passwords. When enabled, the password is required to include at least one special character. By default, the Special Character option is disabled.
Minimum Characters	The Minimum Characters field enforces stricter rules for administrator and system passwords. It allows you to set the minimum number of characters allowed for password. By default, the Minimum Characters option is set to 04.
Password Bypass	The Password Bypass option allows the computer to reboot from the operating system without entering the computer or hard drive password. If the computer has already booted to the operating system, it is presumed that the user has already entered the correct computer or hard drive password.  NOTE: This option does not remove the requirement to enter the password after shutting down. By default, the Password Bypass option is disabled.

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

Passwords	
	For additional security, Dell Technologies recommends keeping the Password Bypass option disabled.
Password Changes	
Allow Non-Admin Password Changes	The Allow Non-Admin Password Changes option in BIOS setup allows an end user to set or change the computer or hard drive passwords without entering the administrator password. This gives an administrator control over the BIOS settings but enables an end user to provide their own password. By default, the Allow Non-Admin Password Changes option is enabled. For additional security, Dell Technologies recommends keeping the Allow Non-Admin Password Changes option enabled.
Admin Setup Lockout	
	The Admin Setup Lockout option prevents an end user from even viewing the BIOS setup configuration without first entering the administrator password (if set). By default, the Admin Setup Lockout option is disabled. For additional security, Dell Technologies recommends keeping the Admin Setup Lockout option disabled.
Master Password Lockout	
Enable Master Password Lockout	The Master Password Lockout setting allows you to disable the Recovery Password feature. If the computer, administrator, or hard drive password is forgotten, the computer becomes unusable. NOTE: When an internal solid-state drive password is set, it must first be cleared before Master Password Lockout can be changed. By default, the Enable Master Password Lockout option is disabled. Dell Technologies does not recommend enabling the Master Password Lockout unless you have implemented your own password recovery computer.
Allow Non-Admin PSID Revert	
Enable Allow Non-Admin PSID Revert	Allows you to control access to the Physical Security ID (PSID) revert of NVMe hard-drives from the Dell Security Manager prompt. When enabled, PSID revert is allowed to proceed without providing the BIOS Admin password. By default, the Enable Allow Non-Admin PSID Revert option is disabled.

Table 39. System setup options—Update, Recovery menu

Update, Recovery	
UEFI Capsule Firmware Updates	
Enable UEFI Capsule Firmware Updates	Enables or disables BIOS updates through UEFI capsule update packages. NOTE: Disabling this option blocks the BIOS updates from services such as Microsoft Windows Update and Linux Vendor Firmware Service (LVFS). By default, the Enable UEFI Capsule Firmware Updates option is enabled.
BIOS Recovery from Hard Drive	
	Enables or disables the user to recover from certain corrupted BIOS conditions from a recovery file on the user primary hard drive or an external USB key. By default, the BIOS Recovery from Hard Drive option is enabled. NOTE: BIOS Recovery from Hard Drive is not available for self-encrypting drives (SED). NOTE: BIOS recovery is designed to fix the main BIOS block and cannot work if the Boot Block is damaged. In addition, this feature cannot work in the

Table 39. System setup options—Update, Recovery menu (continued)

Update, Recovery	
	event of EC corruption, ME corruption, or a hardware issue. The recovery image must exist on an unencrypted partition on the drive.
BIOS Downgrade	
Allow BIOS Downgrade	Controls flashing of the computer firmware to previous revisions. By default, the Allow BIOS Downgrade option is enabled.
SupportAssist OS Recovery	Enables or disables the boot flow for SupportAssist OS Recovery tool in the event of certain computer errors. By default, the SupportAssist OS Recovery option is enabled.
BIOSConnect	Enables or disables cloud Service operating system recovery if the main operating system fails to boot with the number of failures equal to or greater than the value specified by the Auto operating system Recovery Threshold setup option and local Service operating system does not boot or is not installed. By default, the BIOSConnect option is enabled.
Dell Auto OS Recovery Threshold	Allows you to control the automatic boot flow for SupportAssist System Resolution Console and for Dell operating system Recovery Tool. By default, the Dell Auto OS Recovery Threshold value is set to 2.

Table 40. System setup options—System Management menu

System Management	
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Creates a computer Asset Tag that can be used by an IT administrator to uniquely identify a particular computer.  NOTE: Once set in BIOS, the Asset Tag cannot be changed.
AC Behavior	
Wake on AC	Enables or disables the computer to turn on and go to boot when AC power is supplied to the computer. By default, the Wake on AC option is disabled.
Auto On Time	Enable to set the computer to turn on automatically every day or on a preselected date and time. This option can be configured only if the Auto On Time is set to Everyday, Weekdays, or Selected Days. By default, the Auto On Time option is disabled.
Diagnostics	
OS Agent Requests	Enables or disables the computer to turn on by a special LAN signal. By default, the OS Agent Requests option is enabled.
Power-on-Self-Test Automatic Recovery	Enables or disables the computer to turn on by a special LAN signal. By default, the Power-on-Self-Test Automatic Recovery option is enabled.

Table 41. System setup options—Keyboard menu

Keyboard	
Fn Lock Options	Enables or disables the Fn Lock option. By default, the Fn Lock option is enabled.

Table 41. System setup options—Keyboard menu (continued)

Keyboard	
Lock Mode	By default, the Lock Mode Secondary option is enabled. With this option, the F1-F12 keys scan the code for their secondary functions.
Keyboard Illumination	Configures the operating mode of the keyboard illumination feature. By default, the Bright option is selected. Enables the keyboard illumination feature at 100% brightness level.
Keyboard Backlight Timeout on AC	Sets the timeout value for the keyboard backlight when an AC adapter is connected to the computer. By default, the 1 minute option is selected.
Keyboard Backlight Timeout on Battery	Sets the timeout value for the keyboard backlight when the computer is running only on the battery power. The keyboard backlight timeout value is only effective when the backlight is enabled. By default, the 1 minute option is selected.

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

Preboot Behavior	
Adapter Warnings	
Enable Adapter Warnings	Enables the warning messages during boot when the adapters with less power capacity are detected. By default, the Enable Adapter Warnings option is enabled.
Warnings and Errors	Enables or disables the action to be taken when a warning or error is encountered. By default, the Prompt on Warnings and Errors option is selected. Stop, prompt, and wait for user input when warnings or errors are detected.  NOTE: Errors deemed critical to the operation of the computer hardware stop the functioning of the computer.
USB-C Warnings	
Enable Dock Warning Messages	Enables the warning messages during boot when the USB-C adapters with less power capacity are detected. By default, the Enable Dock Warning Messages option is enabled.
Extend BIOS POST Time	Sets the BIOS POST (Power-On Self-Test) load time. By default, the 0 seconds option is selected.
Sign of Life	
Early Keyboard Backlight	Keyboard Backlight Sign of Life. By default, the Early Keyboard Backlight option is enabled.

Table 43. System setup options—Virtualization menu

Virtualization Support	
Intel Virtualization Technology	
Enable Intel Virtualization Technology (VT)	When enabled, the computer can run a Virtual Machine Monitor (VMM). By default, the Enable Intel Virtualization Technology (VT) option is enabled.
VT for Direct I/O	

Table 43. System setup options—Virtualization menu (continued)

Virtualization Support	
Enable Intel VT for Direct I/O	When enabled, the computer can perform Virtualization Technology for Direct I/O (VT-d). VT-d is an Intel method that provides virtualization for memory map I/O. By default, the Enable Intel VT for Direct I/O option is enabled.
DMA Protection	
Enable Pre-Boot DMA Support	Allows you to control the Pre-Boot DMA protection for both internal and external ports. This option does not directly enable DMA protection in the operating system.  NOTE: This option is not available when the virtualization setting for IOMMU is disabled (VT-d/AMD Vi). By default, the Enable Pre-Boot DMA Support option is enabled. For additional security, Dell Technologies recommends keeping the Enable Pre-Boot DMA Support option enabled.  NOTE: This option is provided only for compatibility purposes, since some older hardware is not DMA capable.
Enable OS Kernel DMA Support	Allows you to control the Kernel DMA protection for both internal and external ports. This option does not directly enable DMA protection in the operating system. For operating systems that support DMA protection, this setting indicates to the operating system that the BIOS supports the feature.  NOTE: This option is not available when the virtualization setting for IOMMU is disabled (VT-d/AMD Vi). By default, the Enable OS Kernel DMA Support option is enabled.  NOTE: This option is provided only for compatibility purposes, since some older hardware is not DMA capable.

Table 44. System setup options—Performance menu

Performance	
Multi-Core Support	
Multiple Atom Cores	Enables to change the number of Atom cores available to the operating system. The default value is set to the maximum number of cores. By default, the All Cores option is selected.
Intel SpeedStep	
Enable Intel SpeedStep Technology	Enables the computer to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production. By default, the Enable Intel SpeedStep Technology option is enabled.
C-State Control	
Enable C-State Control	Enables or disables the ability of the CPU to enter and exit low-power state. When disabled, it disables all C-states. When enabled, it enables all C-states that the chipset or platform allows. By default, the Enable C-State Control option is enabled.
Enable adaptive C-States for Discrete Graphics	Enables or disables the system to dynamically detect and allow high usage of a discrete graphics and adjust system parameters for higher performance during that time period. This feature requires AC adapter due to higher energy consumption and will no dynamically activate higher performance without an appropriate AC adapter powering the system. Other settings made to conserve power may block this feature from activating.

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

Performance	
	By default, the Enable adaptive C-States for Discrete Graphics option is enabled.
Intel Turbo Boost Technology	
Enable Intel Turbo Boost Technology	Enables the Intel TurboBoost mode of the processor. When enabled, the Intel TurboBoost driver increases the performance of the CPU or graphics processor. By default, the Enable Intel Turbo Boost Technology option is enabled.
Intel Hyper-Threading Technology	
Enable Intel Hyper-Threading Technology	Enables the Intel Hyper-Threading mode of the processor. When enabled, the Intel Hyper-Threading increases the efficiency of the processor resources when multiple threads run on each core. By default, the Intel Hyper-Threading Technology option is enabled.

Table 45. System setup options—System Logs menu

System Logs	
BIOS Event Log	
Clear BIOS Event Log	Allows you to select option to keep or clear BIOS events logs. By default, the Keep Log option is selected.
Thermal Event Log	
Clear Thermal Event Log	Allows you to select option to keep or clear Thermal events logs. By default, the Keep Log option is selected.
Power Event Log	
Clear Power Event Log	Allows you to select option to keep or clear Power events logs. By default, the Keep Log option is selected.

Updating the BIOS

Updating the BIOS in Windows

Steps

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



NOTE: If you do not have the Service Tag, use the SupportAssist feature to automatically identify your computer. You can also use the product ID or manually browse for your computer model.
3. Click **Drivers & Downloads**. Expand **Find drivers**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, browse the folder where you saved the BIOS update file.
8. Double-click the BIOS update file icon and follow the on-screen instructions.
 For more information about how to update the system BIOS, search in the Knowledge Base Resource at www.dell.com/support.

Updating the BIOS using the USB drive in Windows

Steps

1. Follow the procedure from step 1 to step 6 in [Updating the BIOS in Windows](#) to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information, search the Knowledge Base Resource at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12**.
6. Select the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
The **BIOS Update Utility** appears.
8. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS in Linux and Ubuntu

To update the system BIOS on a computer that is installed with Linux or Ubuntu, see the knowledge base article [000131486](#) at www.dell.com/support.

Updating the BIOS from the F12 One Time Boot menu

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

About this task

BIOS Update

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

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

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

Updating from the One Time Boot menu

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

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

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

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

Steps

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

7. The computer will restart after the BIOS update is completed.

System and setup password

Table 46. System and setup password

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

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

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

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

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

Assigning a System Setup password

Prerequisites

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

About this task

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

Steps

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

Deleting or changing an existing system setup password

Prerequisites

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

About this task

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

Steps

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

Clearing 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.

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

Table 47. LED error codes

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

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

LCD Power rail test (L-BIST)

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

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

How to invoke the L-BIST Test:

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

LCD Built-in Self-Test (BIST)

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

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

How to invoke the LCD BIST Test

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

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

System-diagnostic lights

This section lists the system-diagnostic lights of your Inspiron 14 5440.

Table 48. 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 power source (AC, battery, coin cell) and drain flea power by pressing and holding down the power button for 3~5 seconds.
2	1	CPU failure	- Run the Dell SupportAssist or Dell Diagnostics tool. - If the problem persists, replace the system board.
2	2	System board failure (included BIOS corruption or ROM error)	- Flash latest BIOS version - If the problem persists, replace the system board.
2	3	No memory or RAM detected	- Confirm that the memory module is installed properly. - If the problem persists, replace the memory module.
2	4	Memory or RAM failure	- Reset and swap memory modules among the slots. - If the problem persists, replace the memory module.
2	5	Invalid memory installed	- Reset and swap memory modules among the slots. - If the problem persists, replace the memory module.
2	6	System board or 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	- Reset the main battery connection. - If the problem persists, replace the main battery.
3	2	PCI or Video card or chip failure	Replace the system board.

Table 48. System-diagnostic lights (continued)

Blinking pattern		Problem description	Suggested resolution
Amber	White		
3	3	BIOS Recovery image not found	- Flash latest BIOS version - If the problem persists, replace the system board.
3	4	BIOS Recovery image found but invalid	- Flash latest BIOS version - If the problem persists, replace the system board.
3	5	Power rail failure	Replace the system board.
3	6	Flash corruption is detected by SBIOS.	- Press the power button for over 25 seconds to do RTC reset. If the problem persists, replace the system board. - Disconnect all power source (AC, battery, coin cell) and drain flea power by pressing and holding down the power button 3~5 seconds to ensure all power are 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.

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

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 twenty (20) seconds. The computer RTC Reset occurs after you release the power button.

Backup media and recovery options

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

Wi-Fi power cycle

About this task

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

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

Steps

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

Drain residual flea power (perform hard reset)

About this task

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

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

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

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

Steps

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

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

Getting help and contacting Dell

Self-help resources

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

Table 49. Self-help resources

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

Contacting Dell

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

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

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