Dell Pro 14 Essential

PV14250

Owners Manual

Regulatory Model: P185G
Regulatory Type: P185G001
November 2025
Rev. A01

DELL Technologies

Notes, cautions, and warnings

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

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

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

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Contents

Chapter 1: Views of Dell Pro 14 Essential PV14250 8
Right 8
Left 8
Top 9
Front 10
Bottom 11
Service Tag 12
Battery-status light 12

Chapter 2: Set up your Dell Pro 14 Essential PV14250 13

Chapter 3: Specifications of Dell Pro 14 Essential PV14250 15
Dimensions and weight 15
Processor 15
Chipset 16
Operating system 16
Memory 16
External ports and slots 17
Internal slots 17
Wireless module 17
Audio 18
Storage 18
Media-card reader 19
Keyboard 19
Keyboard shortcuts 19
Camera 21
Touchpad 21
Battery 21
Power requirements 22
Power adapter 23
Power adapter requirements of Dell Pro 14 Essential PV14250 24
Display 24
Fingerprint reader (optional) 25
Sensors 26
GPU—Integrated 26
External display support 26
Hardware security 26
Operating and storage environment 26
Dell support policy 27
Dell low blue light display 27
ComfortView Plus 27

Chapter 4: Working inside your computer 29
Safety instructions 29

Before working inside your computer....29
Safety precautions....30
Electrostatic discharge—ESD protection....30
ESD Field Service kit....31
Transporting sensitive components....32
After working inside your computer....32
BitLocker....32
Recommended tools....33
Screw list....33
Major components of Dell Pro 14 Essential PV14250....35
Customer Replaceable Units (CRUs) and Field Replaceable Units (FRUs) list....37

Chapter 5: Base cover....38
Removing the base cover for computers shipped with a plastic chassis....38
Installing the base cover for computers shipped with a plastic chassis....40
Removing the base cover for computers shipped with an aluminum chassis....42
Installing the base cover for computers shipped with an aluminum chassis....44

Chapter 6: Battery....47
Rechargeable Li-ion battery precautions....47
Removing the 41 W battery for computers shipped with a plastic chassis....47
Installing the 41 W battery for computers shipped with a plastic chassis....48
Removing the 54 W battery for computers shipped with a plastic chassis....49
Installing the 54 W battery for computers shipped with a plastic chassis....50
Removing the 54 W battery for computers shipped with an aluminum chassis....51
Installing the 54 W battery for computers shipped with an aluminum chassis....52
Disconnecting the battery cable....53
Connecting the battery cable....54

Chapter 7: Removing and installing Customer Replaceable Units (CRUs)....56
Memory module....56
Removing the memory module for computers shipped with a plastic chassis....56
Installing the memory module for computers shipped with a plastic chassis....57
Removing the memory module for computers shipped with an aluminum chassis....59
Installing the memory module for computers shipped with an aluminum chassis....60
Solid-state drive....61
Removing the M.2 2230 solid-state drive for computers shipped with a plastic chassis....61
Installing the M.2 2230 solid-state drive for computers shipped with a plastic chassis....62
Removing the M.2 2230 solid-state drive for computers shipped with an aluminum chassis....63
Installing the M.2 2230 solid-state drive for computers shipped with an aluminum chassis....64
Wireless card....65
Removing the wireless card for computers shipped with a plastic chassis....65
Installing the wireless card for computers shipped with a plastic chassis....66
Removing the wireless card for computers shipped with an aluminum chassis....68
Installing the wireless card for computers shipped with an aluminum chassis....69
System fan....70
Removing the system fan for computers shipped with a plastic chassis....70
Installing the system fan for computers shipped with a plastic chassis....71
Removing the system fan for computers shipped with an aluminum chassis....72

Installing the system fan for computers shipped with an aluminum chassis....73

Chapter 8: Removing and installing Field Replaceable Units (FRUs)....75

Heat sink....75
Removing the heat sink....75
Installing the heat sink....76
Power-adapter port....77
Removing the power-adapter port for computers shipped with a plastic chassis....77
Installing the power-adapter port for computers shipped with a plastic chassis....78
Removing the power-adapter port for computers shipped with an aluminum chassis....79
Installing the power-adapter port for computers shipped with an aluminum chassis....80
I/O board....81
Removing the I/O board for computers shipped with a plastic chassis....81
Installing the I/O board for computers shipped with a plastic chassis....82
Removing the I/O board for computers shipped with an aluminum chassis....83
Installing the I/O board for computers shipped with an aluminum chassis....84
Power button with fingerprint reader....85
Removing the power-button with fingerprint reader for computers shipped with a plastic chassis....85
Installing the power-button with fingerprint reader for computers shipped with a plastic chassis....86
Removing the power-button with fingerprint reader for computers shipped with an aluminum chassis....87
Installing the power-button with fingerprint reader for computers shipped with an aluminum chassis....88
Touchpad....90
Removing the touchpad for computers shipped with a plastic chassis....90
Installing the touchpad for computers shipped with a plastic chassis....91
Removing the touchpad for computers shipped with an aluminum chassis....93
Installing the touchpad for computers shipped with an aluminum chassis....94
Speakers....95
Removing the speakers for computers shipped with a plastic chassis....95
Installing the speakers for computers shipped with a plastic chassis....96
Removing the speakers for computers shipped with an aluminum chassis....98
Installing the speakers for computers shipped with an aluminum chassis....99
Display assembly....101
Removing the display assembly for computers shipped with a plastic chassis....101
Installing the display assembly for computers shipped with a plastic chassis....102
Removing the display assembly for computers shipped with an aluminum chassis....104
Installing the display assembly for computers shipped with an aluminum chassis....106
Display bezel....108
Removing the display bezel for computers shipped with a plastic chassis....108
Installing the display bezel for computers shipped with a plastic chassis....111
Display panel....113
Removing the display panel for computers shipped with a plastic chassis....113
Installing the display panel for computers shipped with a plastic chassis....116
Display cable....119
Removing the display cable for computers shipped with a plastic chassis....119
Installing the display cable for computers shipped with a plastic chassis....120
Camera....122
Removing the camera for computers shipped with a plastic chassis....122
Installing the camera for computers shipped with a plastic chassis....122

Display back-cover and antenna assembly....123
Removing the display back-cover and antenna assembly....123
Installing the display back-cover and antenna assembly....124
System board....125
Removing the system board for computers shipped with a plastic chassis....125
Installing the system board for computers shipped with a plastic chassis....129
Removing the system board for computers shipped with an aluminum chassis....132
Installing the system board for computers shipped with an aluminum chassis....136
Palm-rest and keyboard assembly....139
Removing the palm-rest and keyboard assembly for computers shipped with a plastic chassis....139
Installing the palm-rest and keyboard assembly for computers shipped with a plastic chassis....140
Removing the palm-rest and keyboard assembly for computers shipped with an aluminum chassis....141
Installing the palm-rest and keyboard assembly for computers shipped with an aluminum chassis....143

Chapter 9: Software....145
Operating system....145
Drivers and downloads....145

Chapter 10: BIOS Setup....146
Entering BIOS Setup program....146
Navigation keys....146
F12 One Time Boot menu....146
System setup options....147
Updating the BIOS....160
Updating the BIOS in Windows....160
Updating the BIOS using the USB drive in Windows....161
Updating the BIOS in Linux and Ubuntu....162
Updating the BIOS from the One-Time boot menu....162
System and setup password....162
Assigning a System Setup password....162
Deleting or changing an existing system password or setup password....163
Clearing system and setup passwords....163

Chapter 11: Troubleshooting....164
Handling swollen rechargeable Li-ion batteries....164
Dell SupportAssist Pre-boot System Performance Check diagnostics....164
Running the SupportAssist Pre-Boot System Performance Check....165
Built-in self-test (BIST)....165
Motherboard Built-In Self-Test (M-BIST)....165
Logic Built-in Self-test (L-BIST)....166
LCD Built-in Self-Test (LCD-BIST)....166
System-diagnostic lights....166
Recovering the operating system....167
Real-Time Clock (RTC Reset)....167
Backup media and recovery options....168
Network power cycle....168
Drain flea power (perform hard reset)....168

Chapter 12: Getting help and contacting Dell....170

Chapter 13: Revision history..... 171

1

Views of Dell Pro 14 Essential PV14250

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

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 2 (10 Gbps) Type-C with Power Delivery and DisplayPort**

   Supports DisplayPort 1.4, which 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.

Top

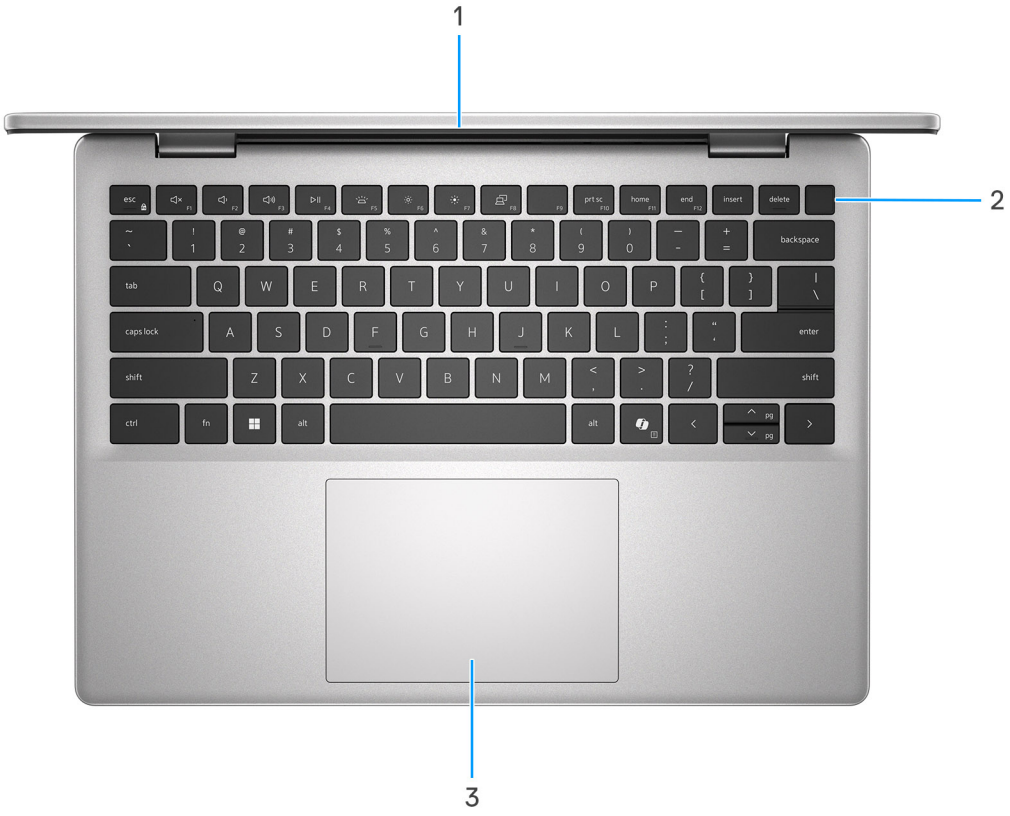


Figure 3. Top view

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.

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 4. Front view

1. **Left microphone**

   Provides digital sound input for audio recording and voice calls.

   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.

   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.

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

6. **Display**

   Displays the data, videos, and photos.

Bottom

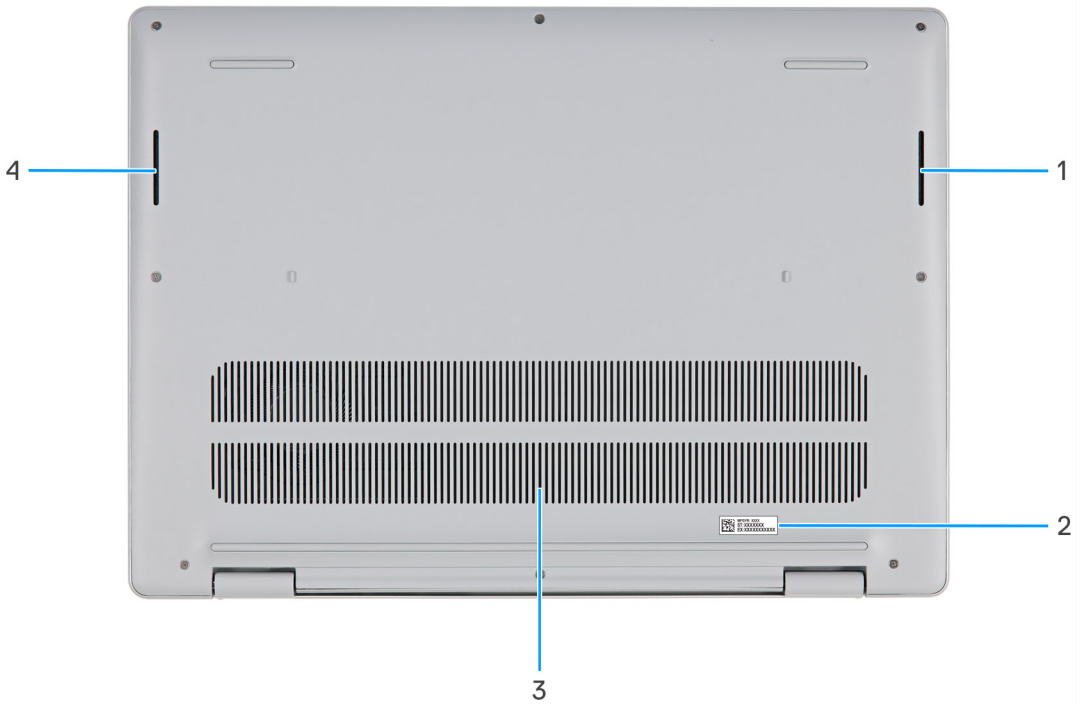


Figure 5. Bottom view

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 Dell Support Site.

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.

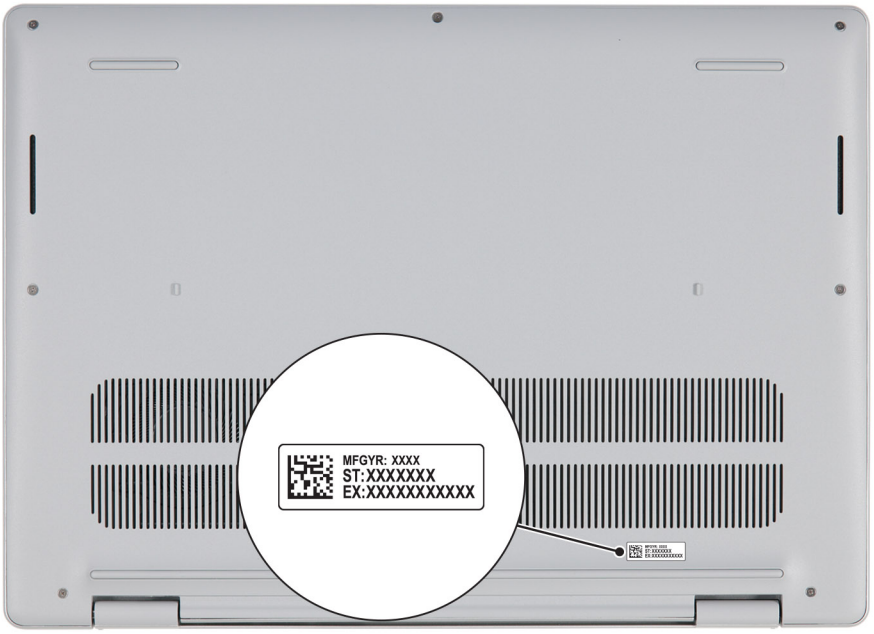


Figure 6. Service Tag location

Battery-status light

The following table lists the battery-status light of your Dell Pro 14 Essential PV14250.

Table 1. Battery-status light behavior

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

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

2

Set up your Dell Pro 14 Essential PV14250

About this task

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

Steps

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

Figure 7. Connect the power adapter and press the power button.

NOTE: The battery may go into storage 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. For more information about battery storage mode, see the knowledge base article at Dell Support Site.

2. Finish the operating system setup.

   For Ubuntu:

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

   For Windows:

   Follow the on-screen instructions to complete the setup. When setting up, 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

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

3

Specifications of Dell Pro 14 Essential PV14250

Dimensions and weight

The following table lists the height, width, depth, and weight of your Dell Pro 14 Essential PV14250.

Table 3. Dimensions and weight

Description		Aluminum chassis	Plastic chassis
Height:			
	Front height	0.62 in. (15.86 mm)	16.90 mm (0.67 in.)
	Rear height	0.68 in. (17.31 mm)	18.07 mm (0.71 in.)
Width		12.36 in. (314.00 mm)	314.00 mm (12.36 in.)
Depth		8.90 in. (226.15 mm)	226.15 mm (8.90 in.)
Weight **NOTE:** The weight of your computer depends on the configuration that you ordered.		Maximum: 3.64 lb (1.65 kg)	1.69 kg (3.73 lb)

Processor

The following table lists the details of the processors that are supported on your Dell Pro 14 Essential PV14250.

Table 4. Processor

Description	Option one	Option two	Option three	Option four
Type	13th Gen Intel Core 3-100U	13th Gen Intel Core 5-120U	13th Gen Intel Core 5-220U	13th Gen Intel Core 7-150U
Wattage	15 W	15 W	15 W	15 W
Core count	6	10	10	10
Thread count	8	12	12	12
Speed	Up to 4.70 GHz	Up to 5.00 GHz	Up to 5.00 GHz	Up to 5.4 GHz
Cache	10 MB	10 MB	10 MB	12 MB
Integrated graphics	Intel Iris Xe Graphics	Intel Iris Xe Graphics	Intel Iris Xe Graphics	Intel Iris Xe Graphics

Chipset

The following table lists the details of the chipset that is supported by your Dell Pro 14 Essential PV14250.

Table 5. Chipset

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

Operating system

Your Dell Pro 14 Essential PV14250 supports the following operating systems:

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

Memory

The following table lists the memory specifications that are supported by your Dell Pro 14 Essential PV14250.

Table 6. Memory specifications

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

External ports and slots

The following table lists the external ports and slots on your Dell Pro 14 Essential PV14250.

Table 7. External ports and slots

Description	Values
USB ports	• 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(s)	One HDMI 1.4 port **NOTE:** HDMI output supports up to 1920x1080 @ 60Hz, 24bpp. No 4K/2K output supported.
Media-card reader	One SD-card slot
Power-adapter port	4.5 mm barrel
Security-cable slot	One wedge-shaped lock slot

Internal slots

The following table lists the internal slots of your Dell Pro 14 Essential PV14250.

Table 8. 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 Dell Support Site.

Wireless module

The following table lists the Wireless Local Area Network (WLAN) module that is supported on your Dell Pro 14 Essential PV14250.

Table 9. Wireless module specifications

Description	Values
Model number	Realtek RTL8852BE
Transfer rate	Up to 1201 Mbps
Frequency bands supported	2.4 GHz/5 GHz
Wireless standards	• Wi-Fi 802.11 a/b/g • Wi-Fi 4 (WiFi 802.11n) • Wi-Fi 5 (WiFi 802.11ac) • Wi-Fi 6 (WiFi 802.11ax)

Table 9. Wireless module specifications (continued)

Description	Values
Encryption	• 64-bit/128-bit WEP • AES-CCMP • TKIP
Bluetooth wireless card **NOTE:** The functionality of the Bluetooth wireless card may vary based on the operating system.	Bluetooth 5.3

Audio

The following table lists the audio specifications of your Dell Pro 14 Essential PV14250.

Table 10. 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	2 W x 2 = 4 W
	Peak	2.5 W x 2 = 5 W
Microphone		• Plastic chassis: Single integrated microphone/Digital-array microphones • Aluminum chassis: Digital-array microphones

Storage

This section lists the storage options on your Dell Pro 14 Essential PV14250.

Your Dell Pro 14 Essential PV14250 supports the following storage configuration:

- One M.2 2230 solid state drive

The primary drive of your, Dell Pro 14 Essential PV14250 varies with the storage configuration. For computers with a M.2 drive, the M.2 drive is the primary drive

Table 11. 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 provides the specification of media cards that are supported by your Dell Pro 14 Essential PV14250.

Table 12. Media-card reader specifications

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

Keyboard

The following table lists the keyboard specifications of your Dell Pro 14 Essential PV14250.

Table 13. Keyboard specifications

Description	Values
Keyboard type	• Standard Copilot key backlit keyboard • Standard Copilot key 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
Key pitch	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 shortcuts

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

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

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

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

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

Table 14. Function key primary behavior

Function key	Primary behavior
F1	Mute or unmute audio
F2	Decrease volume
F3	Increase volume
F4	Microphone Mute
F5	KB Illumination/Backlight
F6	Decrease brightness
F7	Increase brightness
F8	Switch to external display
F9	Stealth mode
F10	Print screen
F11	Home
F12	End

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

Table 15. Secondary behavior

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

Camera

The following table lists the camera specifications of your Dell Pro 14 Essential PV14250.

Table 16. Camera specifications

Description		Values
Number of cameras		One
Camera type		FHD RGB
Camera location		Front
Camera sensor type		CMOS sensor technology
Camera resolution:		
	Still image	2.07 megapixel
	Video	1920 x 1080 (FHD) at 30 fps

Touchpad

The following table lists the touchpad specifications of your Dell Pro 14 Essential PV14250.

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 the touchpad gestures available on Windows, search Microsoft Support Site.

Battery

The following table lists the battery specifications of your Dell Pro 14 Essential PV14250.

Table 18. 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
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.)

Table 18. Battery specifications (continued)

Description		Option one	Option two	Option three
	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) **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 Dell Support Site.		3 hours (when the computer is off)	3 hours (when the computer is off)	3 hours (when the computer is off)
Coin-cell battery		CR2032	CR2032	CR2032
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 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.**				

Power requirements

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

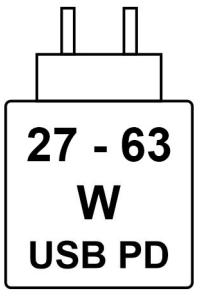


Figure 8. Power requirements for computers shipped with a 4-cell, 64 Wh battery

The power that is delivered by the charger must be between a minimum of 27 Watts that is required by the radio equipment, and a maximum of 63 Watts in order to achieve the maximum charging speed.

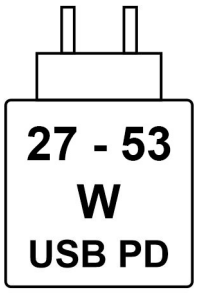


Figure 9. Power requirements for computers shipped with a 4-cell, 54 Wh battery

The power that is delivered by the charger must be between a minimum of 27 Watts that is required by the radio equipment, and a maximum of 53 Watts in order to achieve the maximum charging speed.

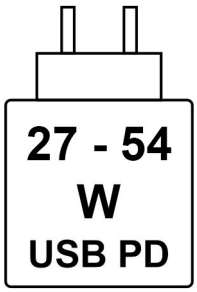


Figure 10. Power requirements for computers shipped with a 3-cell, 41 Wh battery

The power that is delivered by the charger must be between a minimum of 27 Watts that is required by the radio equipment, and a maximum of 54 Watts in order to achieve the maximum charging speed.

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

Power adapter

The following table lists the power adapter specifications of your Dell Pro 14 Essential PV14250.

Table 19. Power-adapter specifications

Description		Values
Type		65 W AC adapter, 4.5 mm barrel
Power-adapter dimensions:		
	Height	29.50 mm (1.16 in.)
	Width	47.00 mm (1.85 in.)
	Depth	108.00 mm (4.25 in.)
Input voltage		100 VAC–240 VAC
Input frequency		50 Hz-60 Hz
Input current (maximum)		1.60 A/1.70 A
Output current (continuous)		3.34 A

Table 19. Power-adapter specifications (continued)

Description		Values
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.		

Power adapter requirements of Dell Pro 14 Essential PV14250

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

The following table lists the power adapter requirements for your Dell Pro 14 Essential PV14250.

Table 20. Power adapter requirements

Description	Value
Power that is required from a power adapter to achieve optimal performance	65 W
Power that charges the computer at a slower speed **NOTE:** A warning message may appear informing you about the use of a lower-powered adapter and slower charging speed.	Less than 60 W
Minimum power that is required from a power adapter to operate the computer and charge the battery **NOTE:** A warning message appears informing you about the use of a lower-powered adapter and slower charging speed.	27 W
USB Power Delivery (PD) fast charging	Supported
ExpressCharge mode	Supported **NOTE:** Ensure that the computer is connected to a 65 W power adapter for this feature to be supported.

Display

The following table lists the display specifications of your Dell Pro 14 Essential PV14250.

Table 21. Display specifications

Description	Option one	Option two
Display type	Laptop 35.5 cm (14") Full High Definition Plus (FHD+), ComfortView	Laptop 35.5 cm (14") 2.5k, ComfortView
Touch options	Not supported	Not supported
Display-panel technology	In-Plane Switching (IPS) with Wide-viewing Angle (WVA)	In-Plane Switching (IPS) with Wide-viewing Angle (WVA)

Table 21. Display specifications (continued)

Description		Option one	Option two
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 in.)	355.65 mm (14 in.)
Display-panel native resolution		1920 x 1200	2560 x 1600
Luminance (typical)		300 nits	300 nits
Megapixels		2.3	4.09
Color gamut		45% NTSC	100% sRGB
Pixels Per Inch (PPI)		162	216
Contrast ratio (minimum)		800:1	800:1
Response time (maximum)		35 ms	35 ms
Refresh rate		48 Hz/60 Hz	48 Hz/120 Hz
Horizontal view angle		• Minimum: 80 +/- degrees • Typical: 85 +/- degrees	• Minimum: 80 +/- degrees • Typical: 85 +/- degrees
Vertical view angle		• Minimum: 80 +/- degrees • Typical: 85 +/- degrees	• Minimum: 80 +/- degrees • Typical: 85 +/- degrees
Pixel pitch		0.157 x 0.157 mm	0.1178 x 0.1178 mm
Power consumption (maximum)		3.68 W without touch @Mosaic	4.8 W @mosaic pattern 120 Hz
Anti-glare vs glossy finish		Anti-Glare	Anti-Glare

Fingerprint reader (optional)

The following table lists the specifications of the optional fingerprint-reader of your Dell Pro 14 Essential PV14250.

Table 22. Fingerprint reader specifications

Description	Values
Sensor technology	Capacitive
Sensor resolution	500 ppi
Sensor pixel size	108 x 88

Sensors

The following table lists the sensors of your Dell Pro 14 Essential PV14250.

Table 23. Sensor

Sensor support
Hall sensor

GPU—Integrated

The following table lists the specifications of the integrated Graphics Processing Unit (GPU) supported by your Dell Pro 14 Essential PV14250.

Table 24. GPU—Integrated

Controller	Memory size	Processor
• Intel UHD Graphics • Intel Iris Xe Graphics	• Shared system memory • Shared system memory	• 13th Generation Intel Core 3/5/7

External display support

The following table lists the external display support for your Dell Pro 14 Essential PV14250.

Table 25. External display support

Graphics card	Supported external displays with laptop display enabled	Supported external displays with laptop display disabled
iGPU only	3	4
NOTE: For more information about external display support, see the *External Display Connection Guide* on Dell Support Site.		

Hardware security

The following table lists the hardware security of your Dell Pro 14 Essential PV14250.

Table 26. Hardware security

Hardware security
Wedge-shaped lock slot
Trusted Platform Module (TPM) 2.0 security

Operating and storage environment

This table lists the operating and storage specifications of your Dell Pro 14 Essential PV14250.

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

Table 27. 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 applicable
Shock (maximum)	140 G†	Not applicable
Altitude range	Not applicable	Not applicable
CAUTION: Operating and storage temperature ranges may differ among components, so operating or storing the device outside these ranges may impact the performance of specific components.		

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

† Measured using a 2 ms half-sine pulse.

Dell support policy

For information about Dell support policy, search Dell Support Site.

Dell low blue light display

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

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

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

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

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

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

ComfortView Plus

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

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

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

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

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

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

4

Working inside your computer

Safety instructions

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

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

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

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

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

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

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

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

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

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

Before working inside your computer

About this task

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

Steps

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

   NOTE: If you are using a different operating system, see the documentation of your operating system for instructions.
3. Turn off all the attached peripherals.
4. Disconnect your computer from the electrical outlet.

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

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

8. Enter the Service Mode.

   Service Mode

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

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

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

   a. Press and hold the B key and the power button for 3 seconds, or until the Dell logo appears on the screen.
   b. If the **Owner Tag** is set, it is displayed on the screen. Press any key to continue.

      NOTE: If the **Owner Tag** information is not already set, the computer automatically skips this step and proceeds to enter Service Mode.

   c. If the power adapter is still connected, a message appears on the screen prompting you to disconnect it. Disconnect the power adapter, then press any key to continue.
   d. When the **System Ready For Service** message appears on the screen, press any key to proceed. The computer emits three short beeps and shuts down immediately.
      The computer shuts down and enters the Service Mode.

Safety precautions

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

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

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

Bonding

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

Electrostatic discharge—ESD protection

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

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

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

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

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

Perform the following steps to prevent ESD damage:

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

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

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

ESD Field Service kit

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

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

Working environment

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

ESD packaging

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

Components of an ESD Field Service kit

The components of an ESD Field Service kit are:

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

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

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

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

Transporting sensitive components

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

After working inside your computer

About this task

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

Steps

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

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

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

BitLocker

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

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

The installation of the following components triggers BitLocker:

- Hard disk drive or solid state drive
- System board

Recommended tools

The procedures in this document may require the following tools:

- Phillips screwdriver #0
- 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 depending on the configuration ordered.

Table 28. 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	

Table 28. Screw list (continued)

Component	Screw type	Quantity	Screw image
41 W battery	M2x3	3	
54 W battery	M2x3	5	
Power-button board	M2x3	1	
I/O board	M2.5x4	2	
	M2x3	2	
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	

Table 28. Screw list (continued)

Component	Screw type	Quantity	Screw image
Touchpad for computers that are shipped with an aluminum chassis.	M2x2	4	
	M2x2.5	1	

Major components of Dell Pro 14 Essential PV14250

The following image shows the major components of Dell Pro 14 Essential PV14250.

Figure 11. Major components

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.

Customer Replaceable Units (CRUs) and Field Replaceable Units (FRUs) list

The replaceable components in your Dell Pro 14 Essential PV14250 are either Customer Replaceable Units (CRUs) or Field Replaceable Units (FRUs).

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

Table 29. CRU and FRU list

Customer Replaceable Unit (CRU)	Field Replaceable Unit (FRU)
Base Cover	I/O board
Battery	Heat sink
Battery cable	Speakers
Memory	Power button with fingerprint reader
Solid-state drive	Power-adapter port
Wireless card	Display assembly
System fan	Display bezel for computers that are shipped with a plastic chassis.
	Display panel for computers that are shipped with a plastic chassis.
	Display cable for computers that are shipped with a plastic chassis.
	Camera and microphone module for computers that are shipped with a plastic chassis.
	Display back cover
	USB Type-C bracket
	System board
	Touchpad
	Palm-rest and keyboard assembly

5

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.

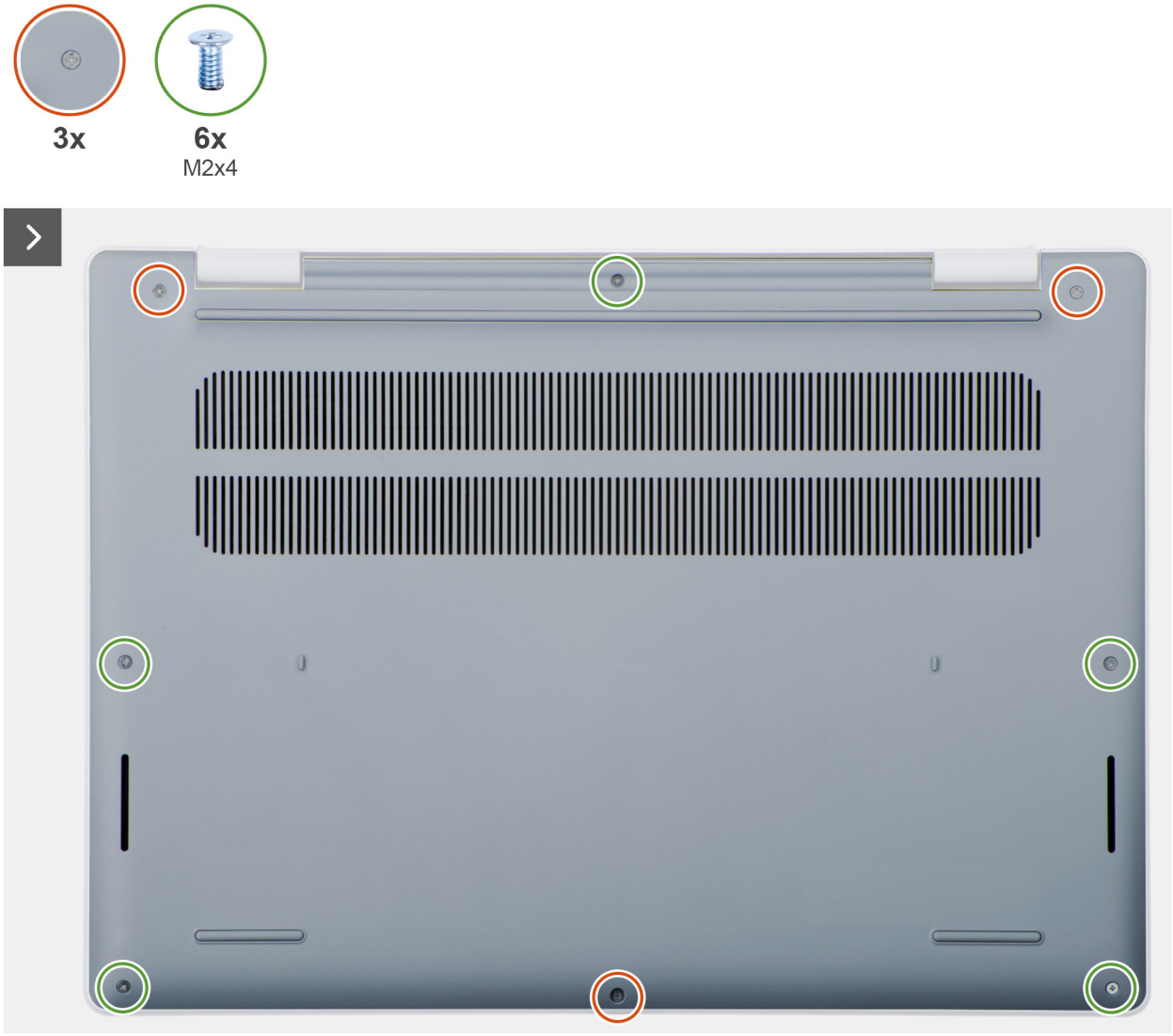


Figure 12. Removing the base cover

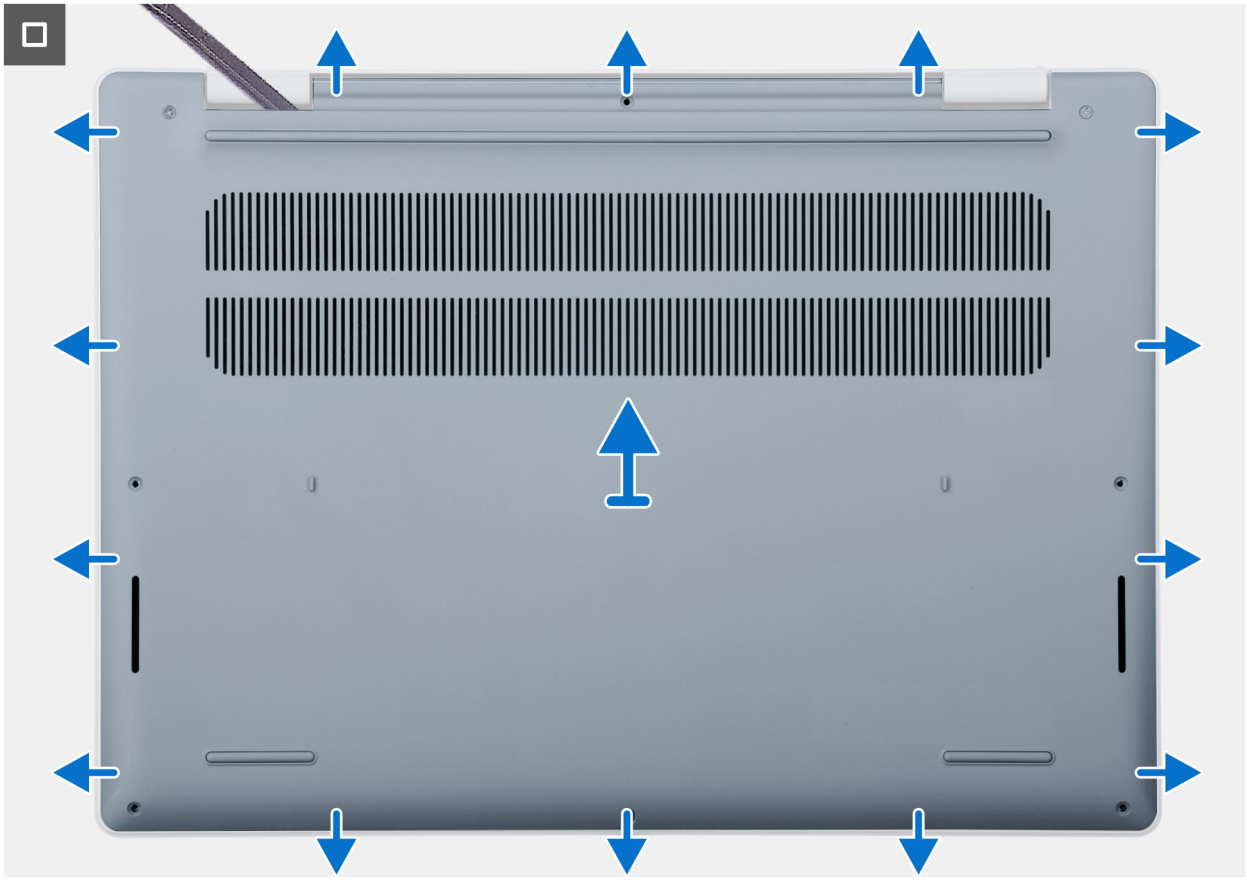


Figure 13. Removing the base cover

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.

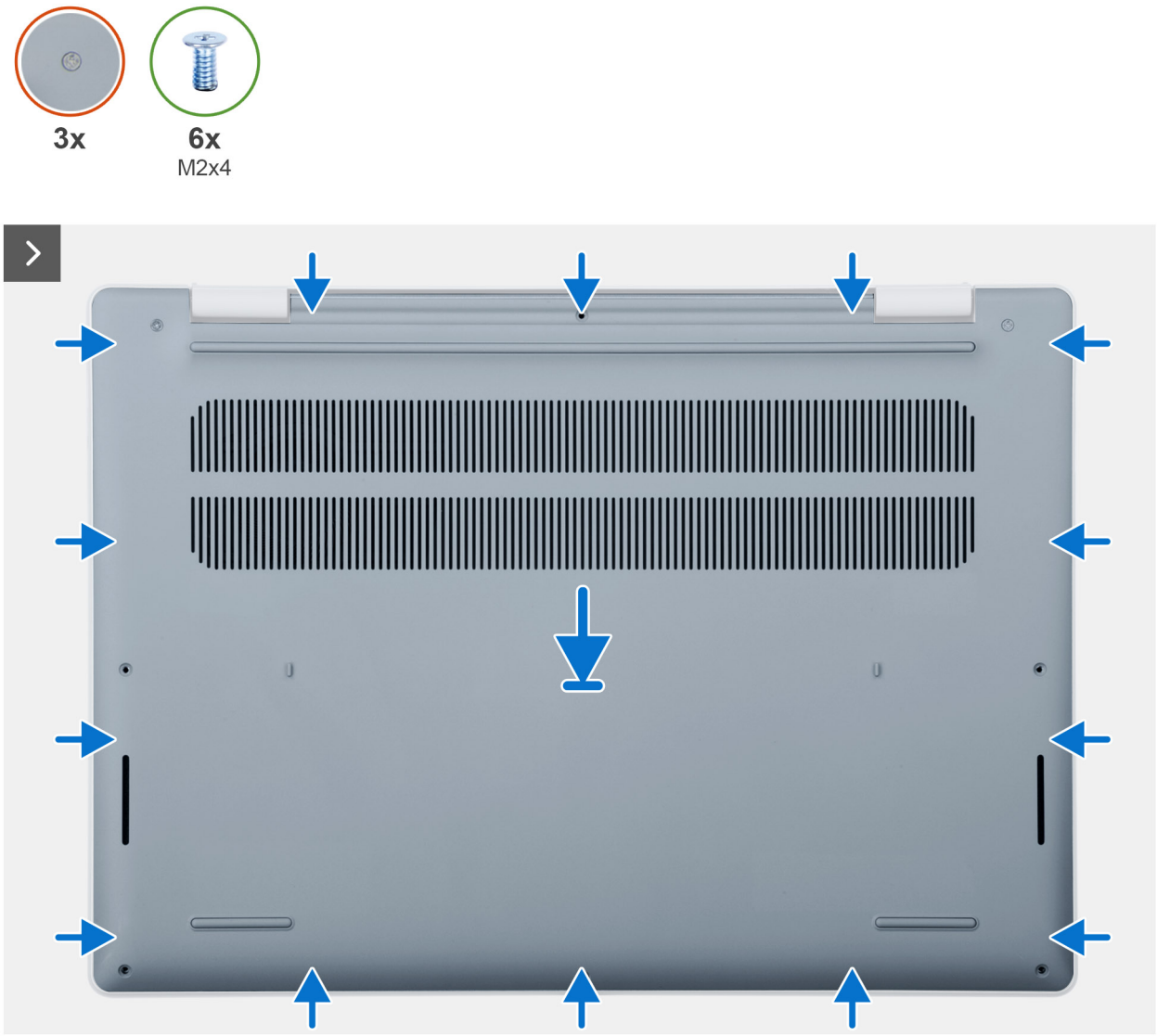


Figure 14. Installing base cover

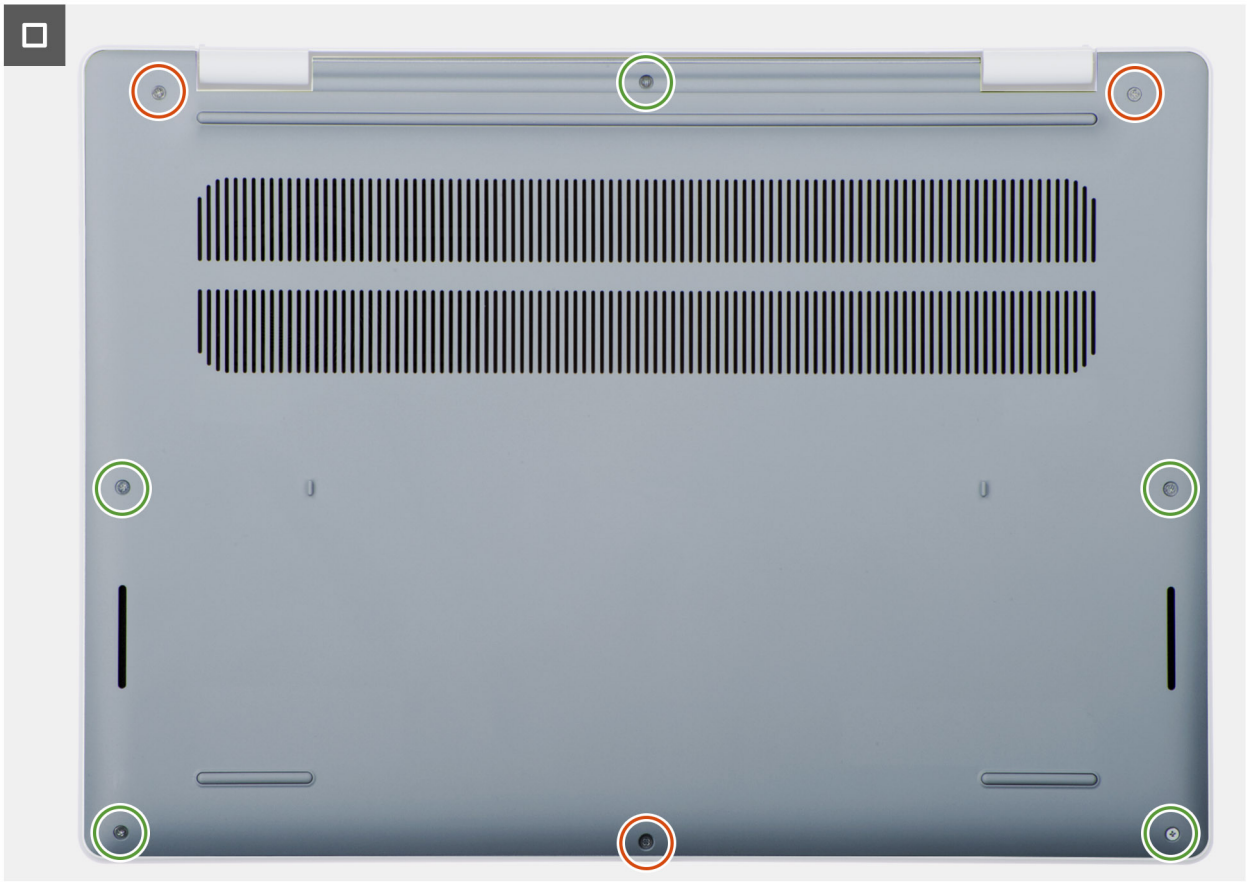


Figure 15. Installing the base cover

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.

Figure 16. Removing the base cover

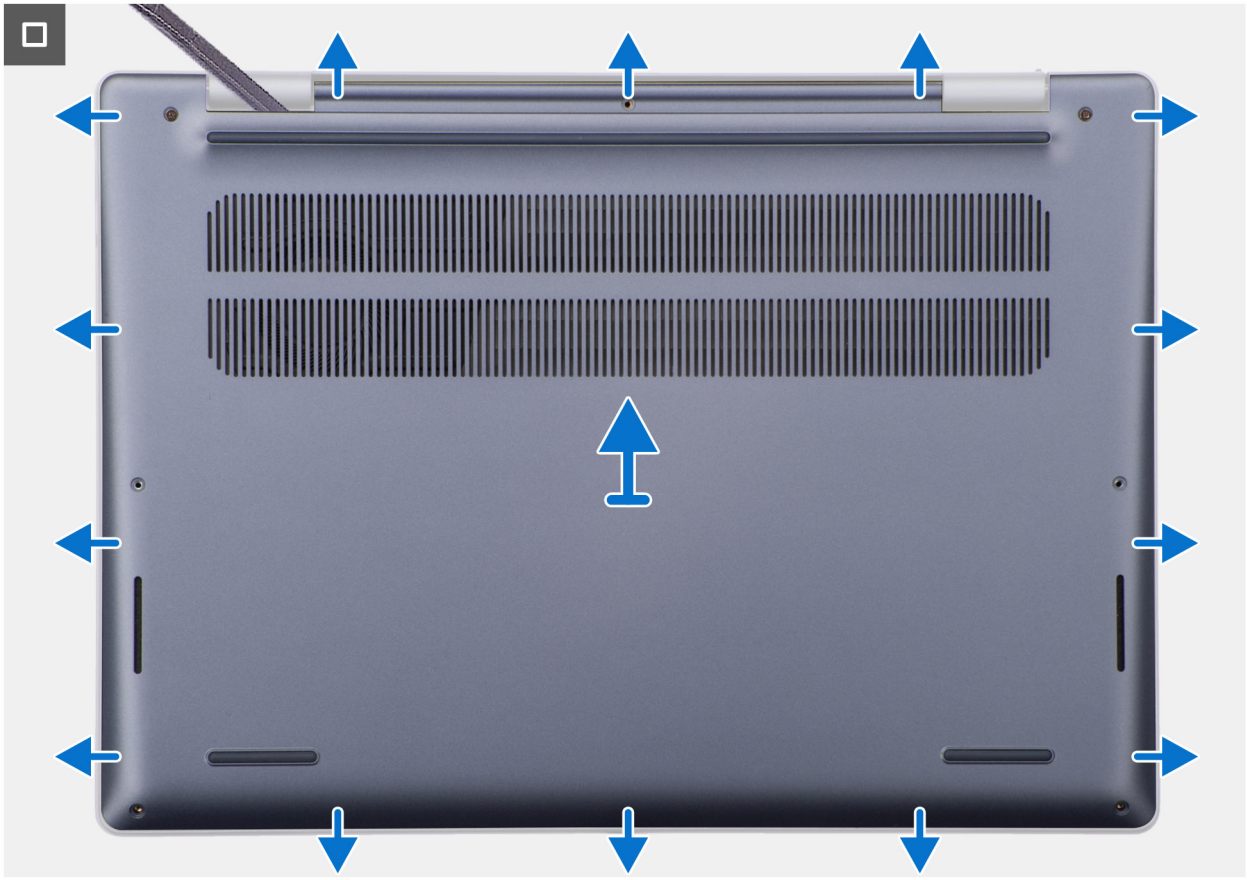


Figure 17. Removing the base cover

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.

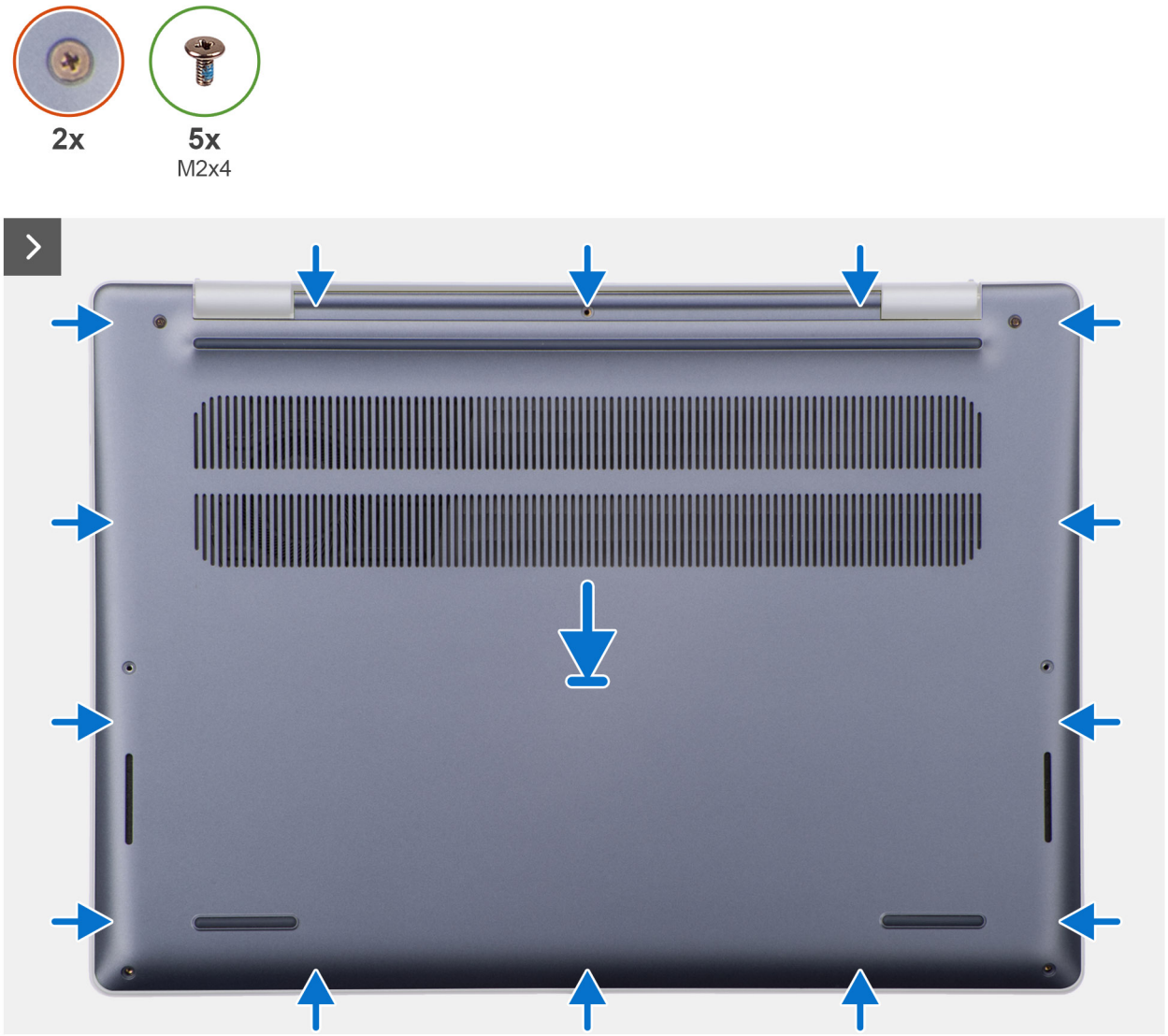


Figure 18. Installing the base cover

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.

6

Battery

Rechargeable Li-ion battery precautions

WARNING:

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

Removing the 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.

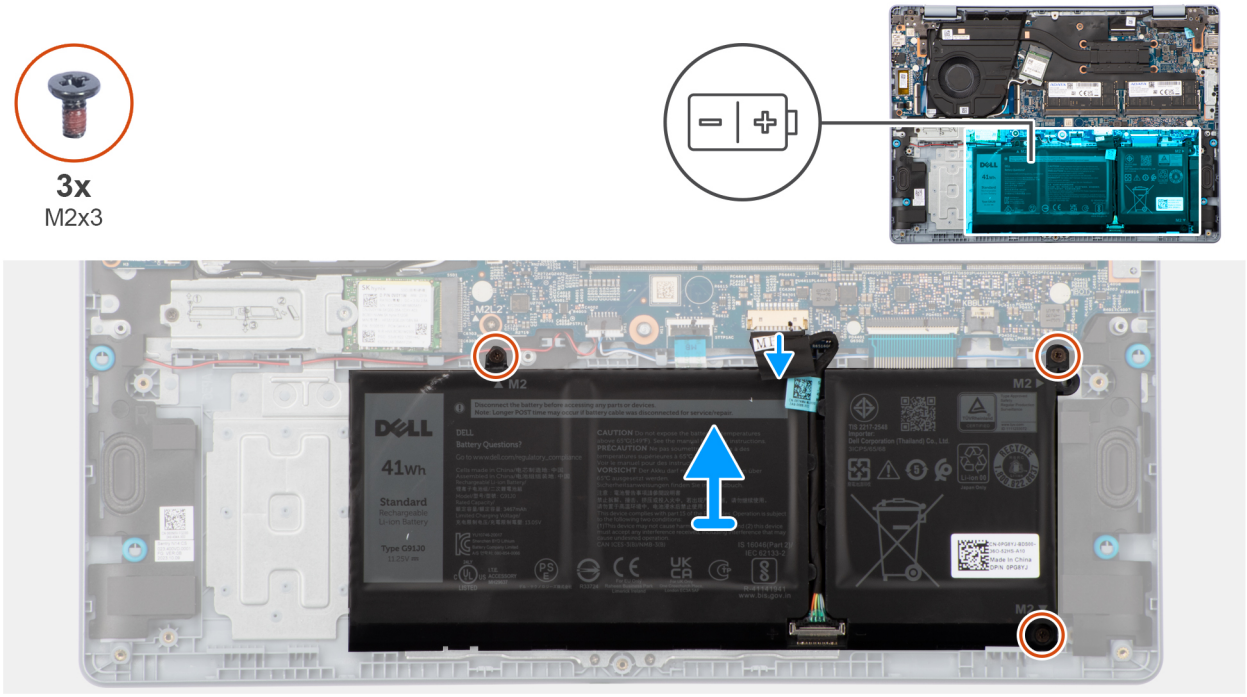


Figure 20. Removing the battery

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.

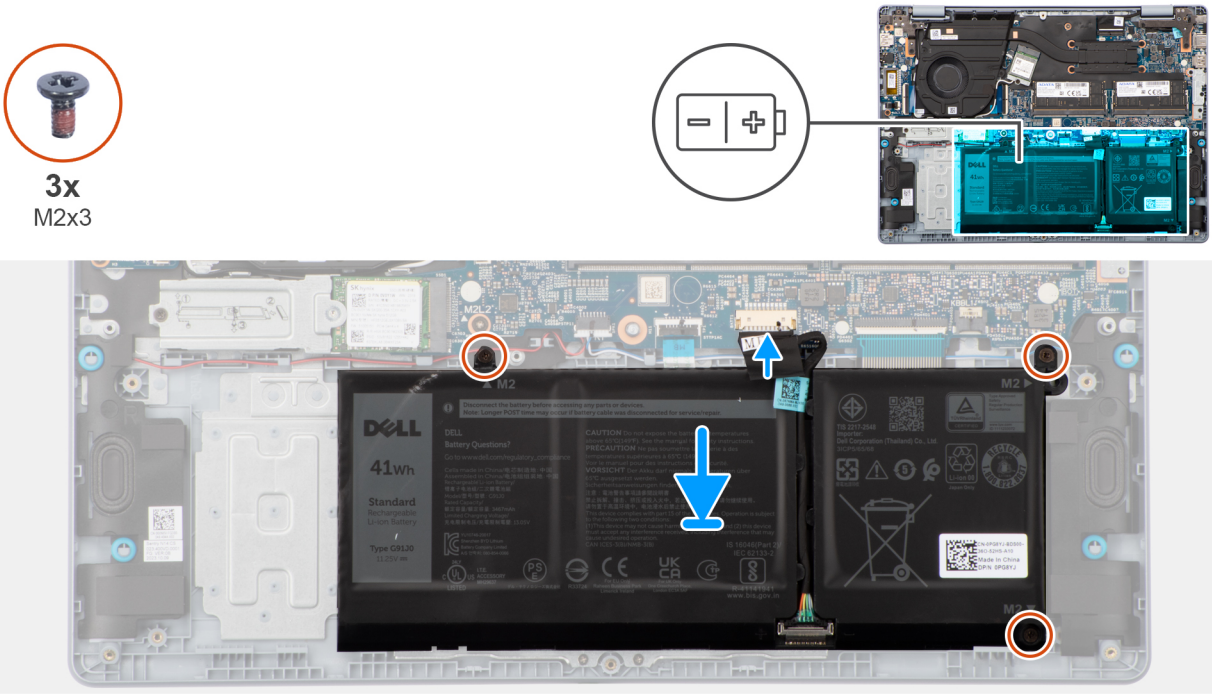
Prerequisites

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 21. 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 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.

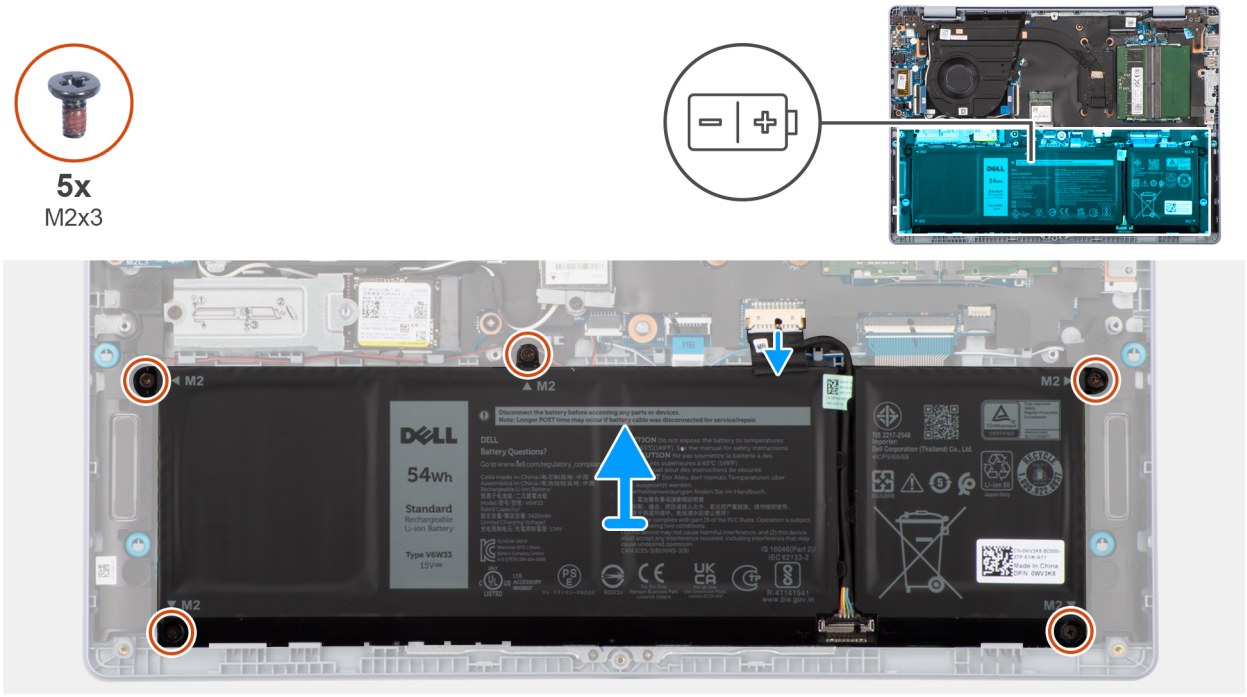


Figure 22. Removing the battery

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.

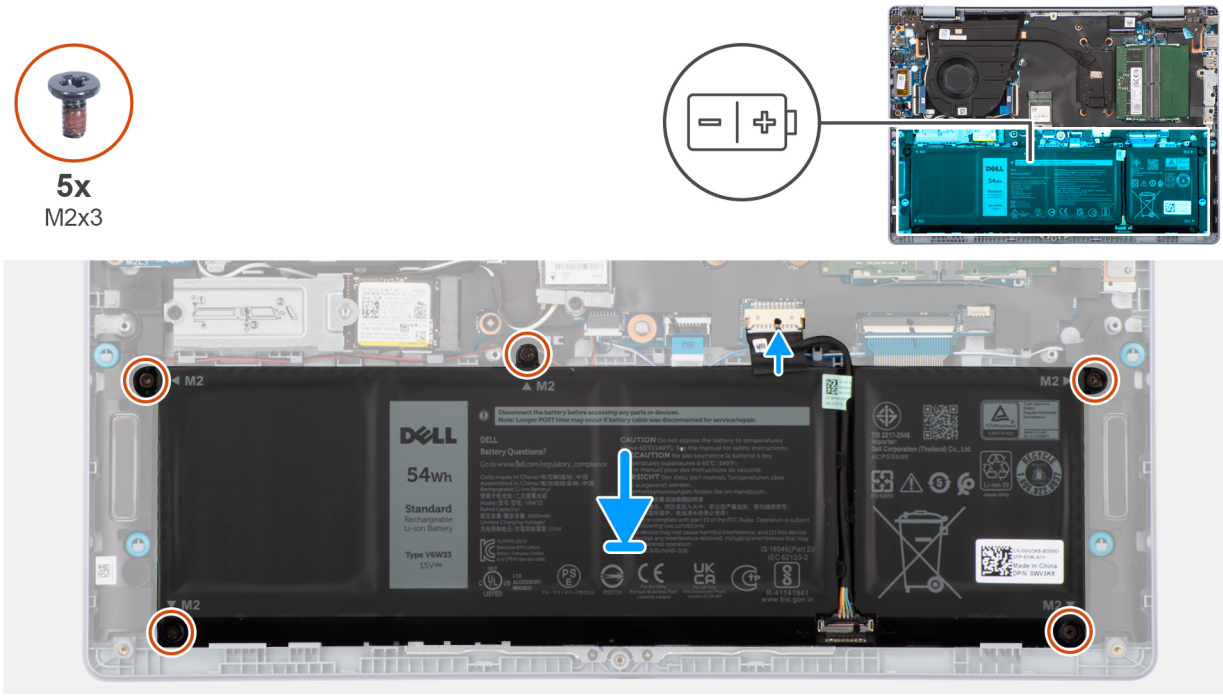
Prerequisites

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 23. 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 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.

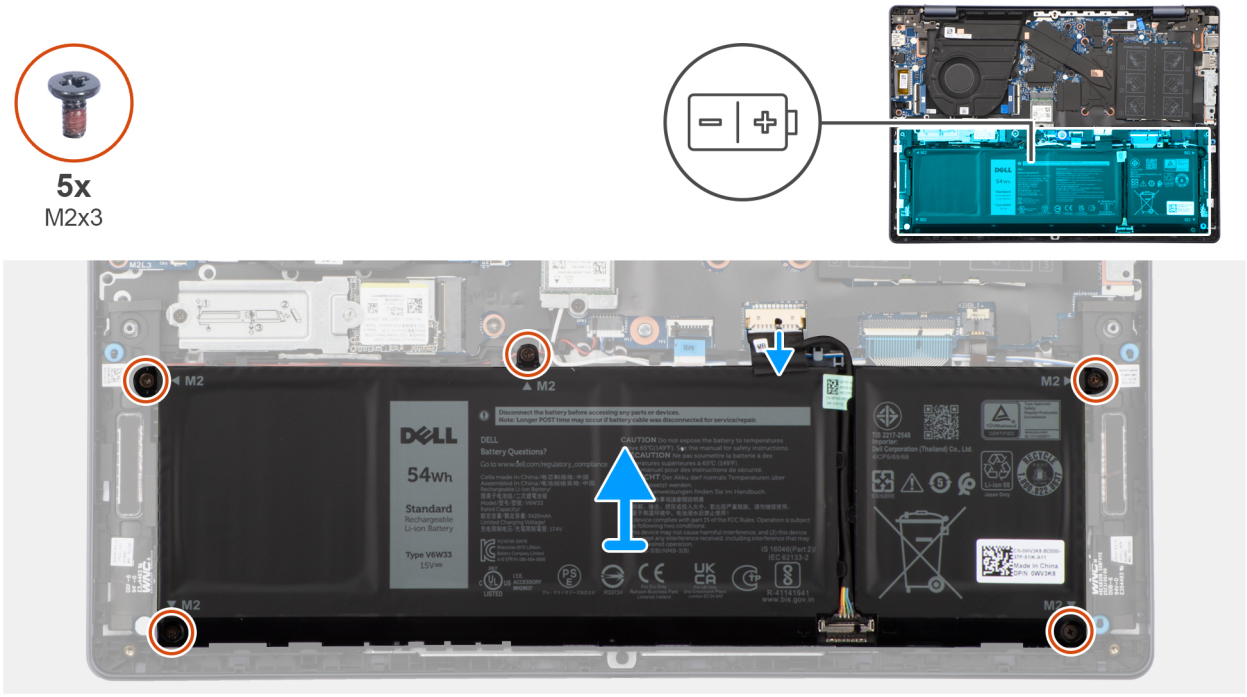


Figure 24. Removing the battery

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.

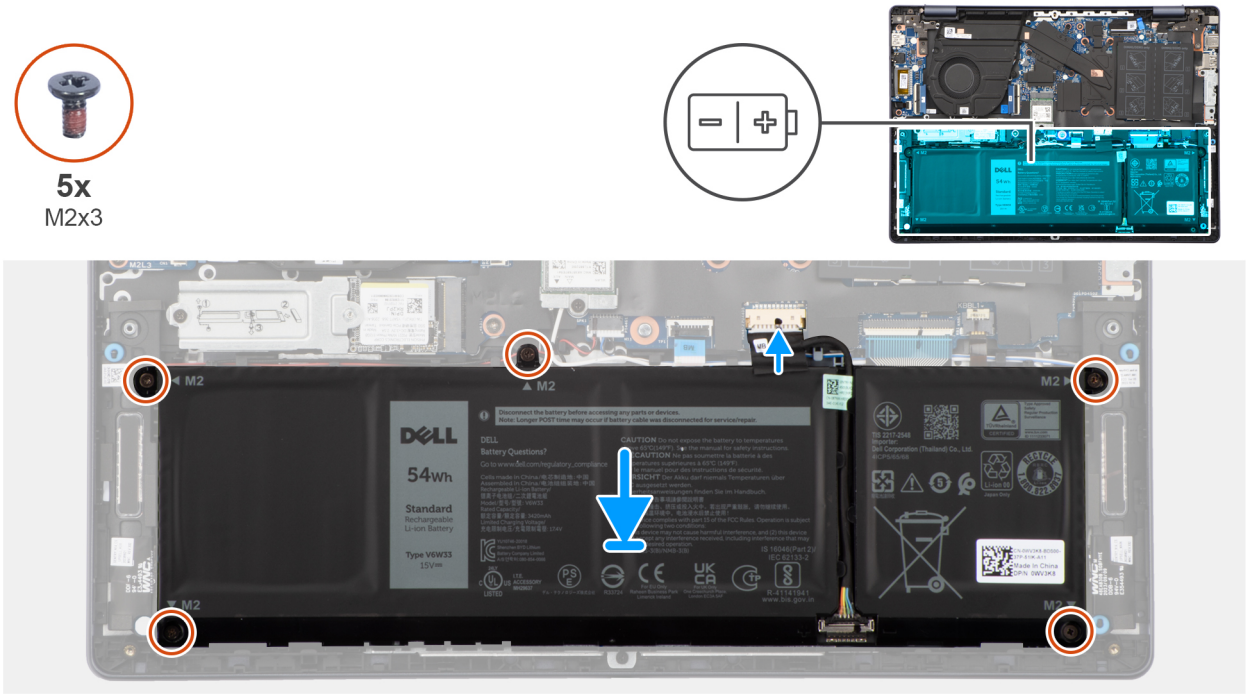


Figure 25. Installing the battery

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.

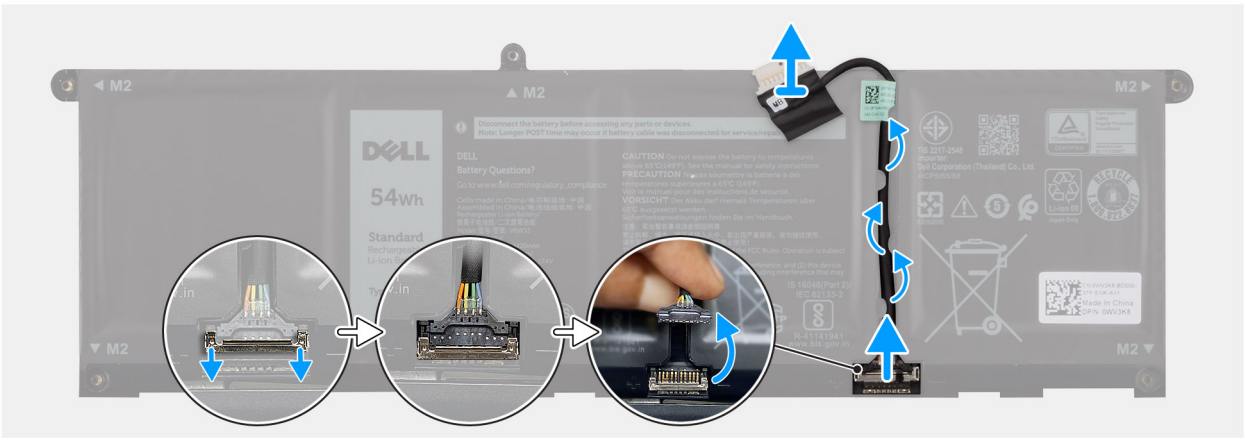


Figure 26. Disconnecting the battery cable

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.

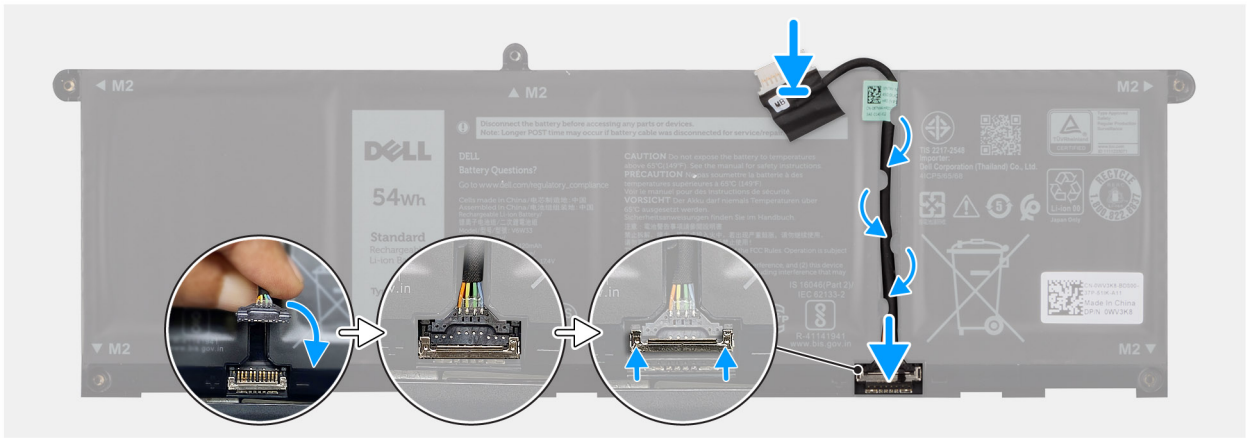


Figure 27. Connecting the battery cable

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.

7

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.

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.

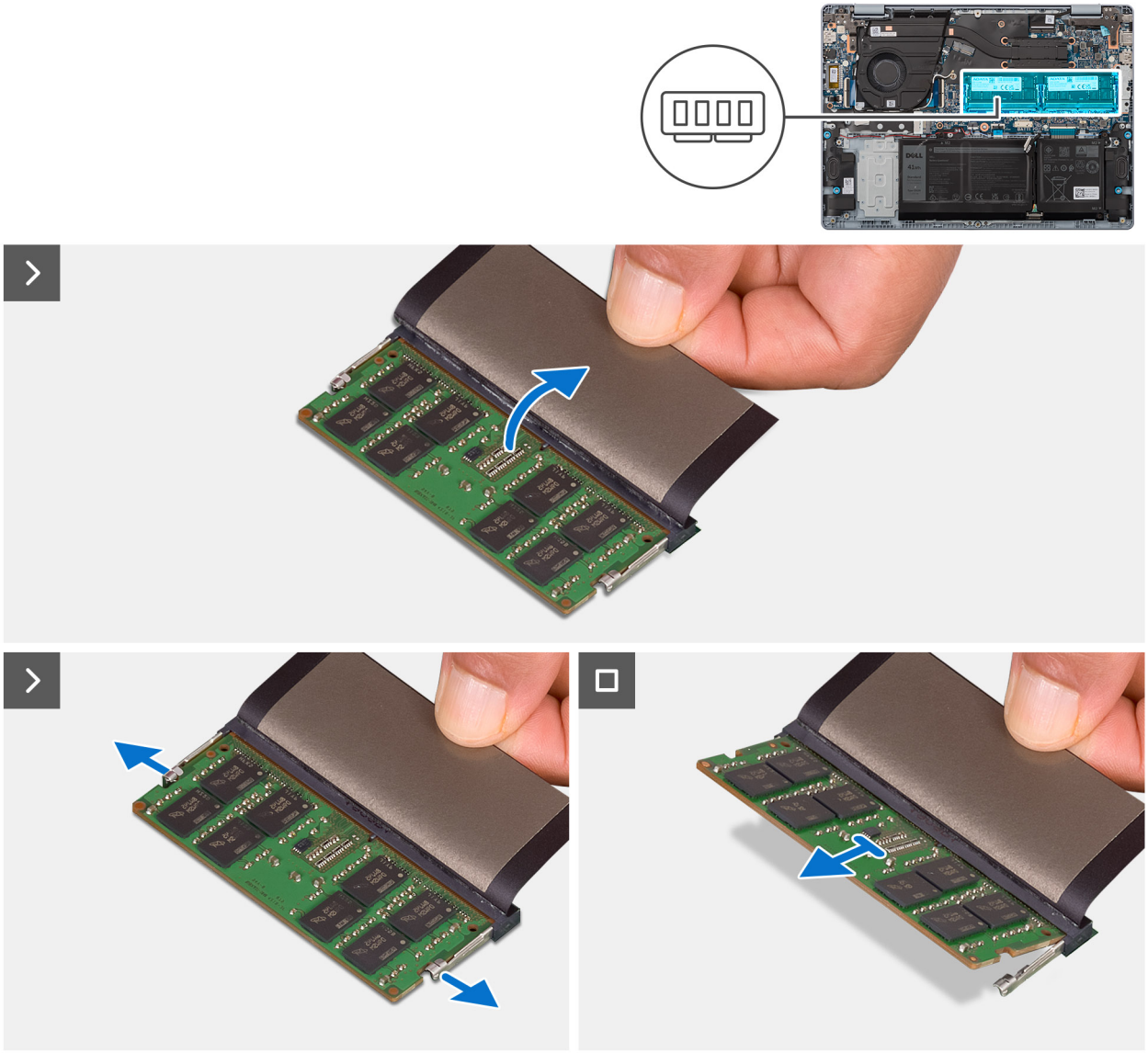


Figure 28. Removing the memory module

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.

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

3. Slide and 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.

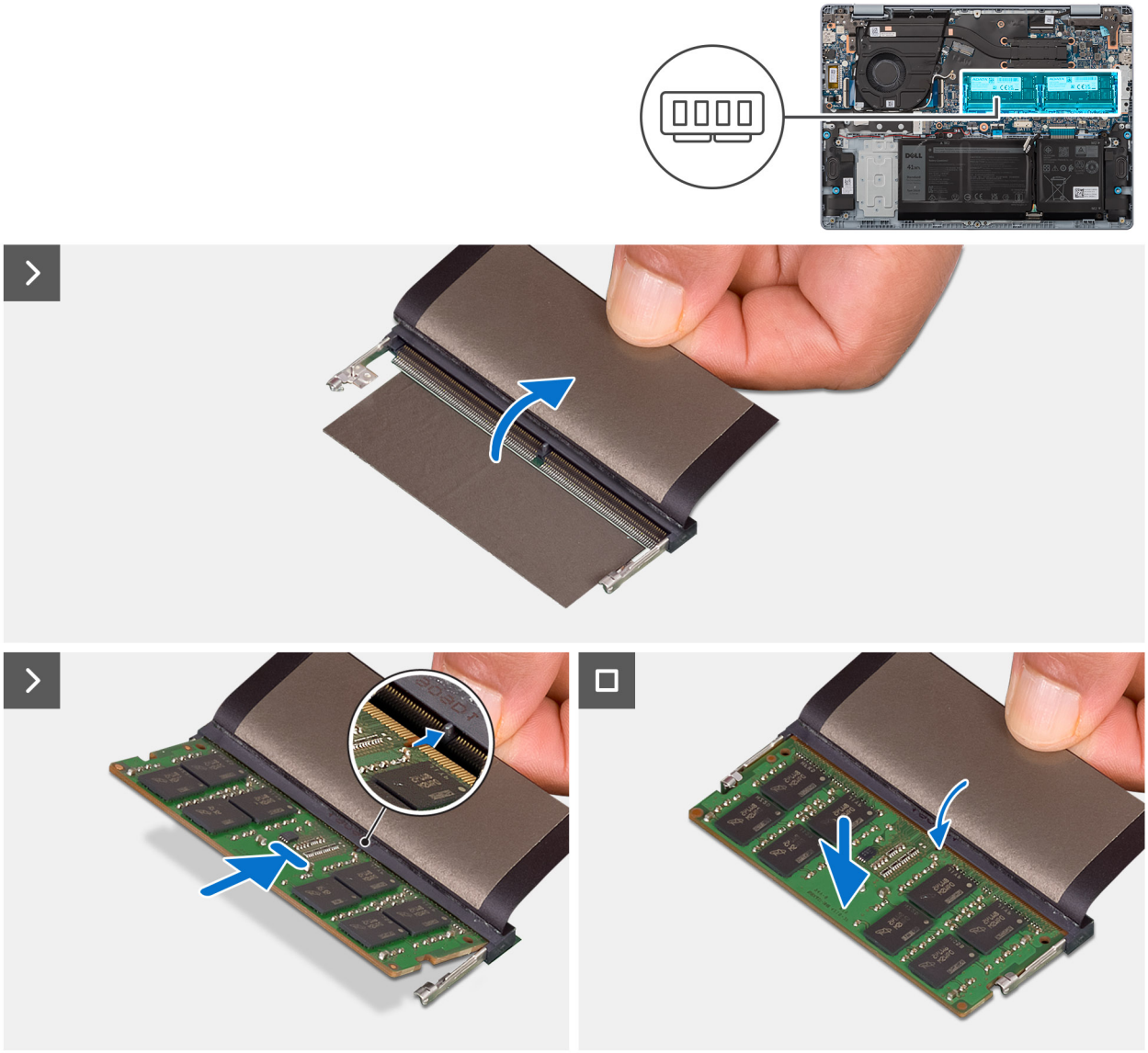


Figure 29. Installing the memory module

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.

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

4. 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.

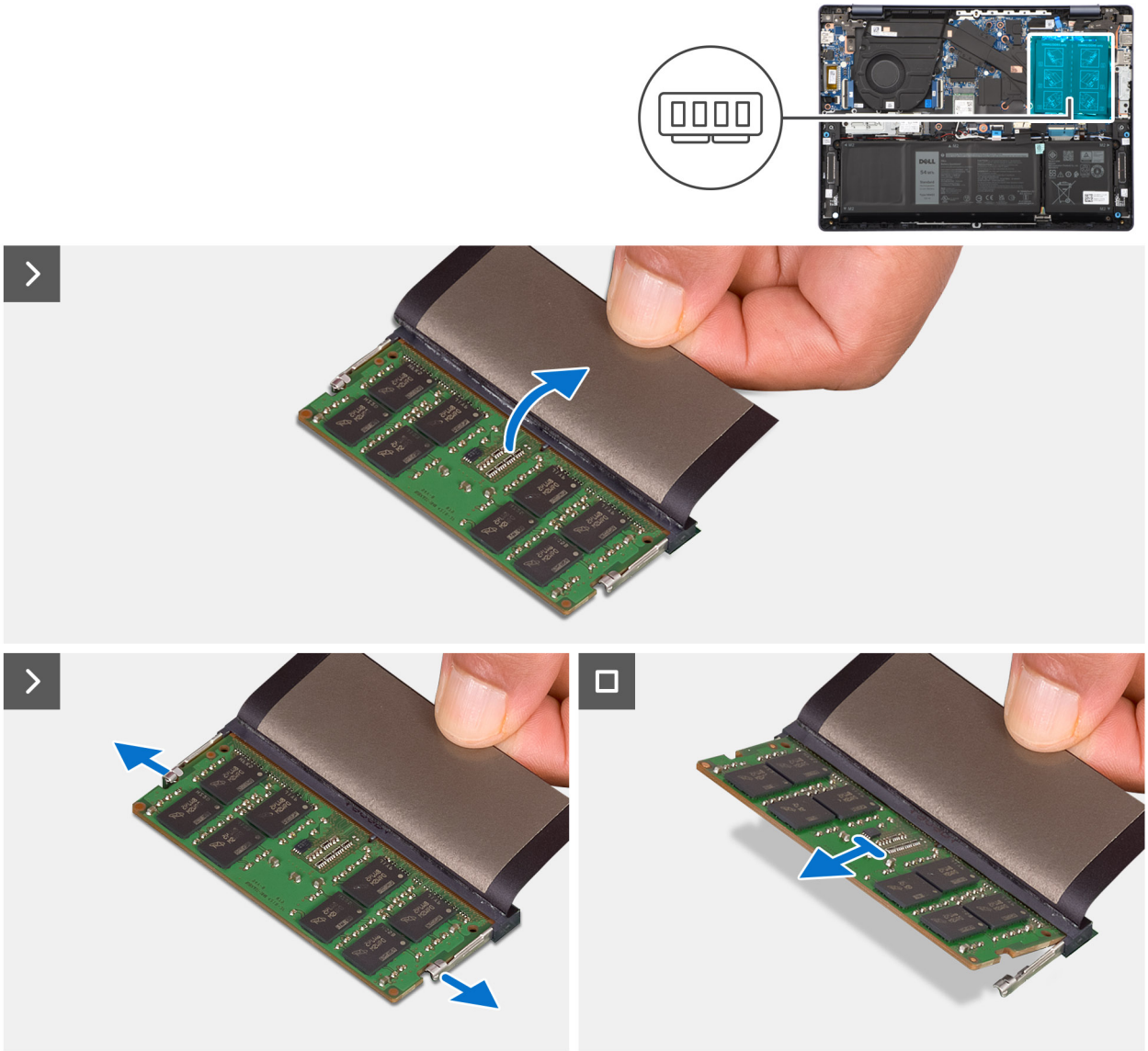


Figure 30. Removing the memory module

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.

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

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.

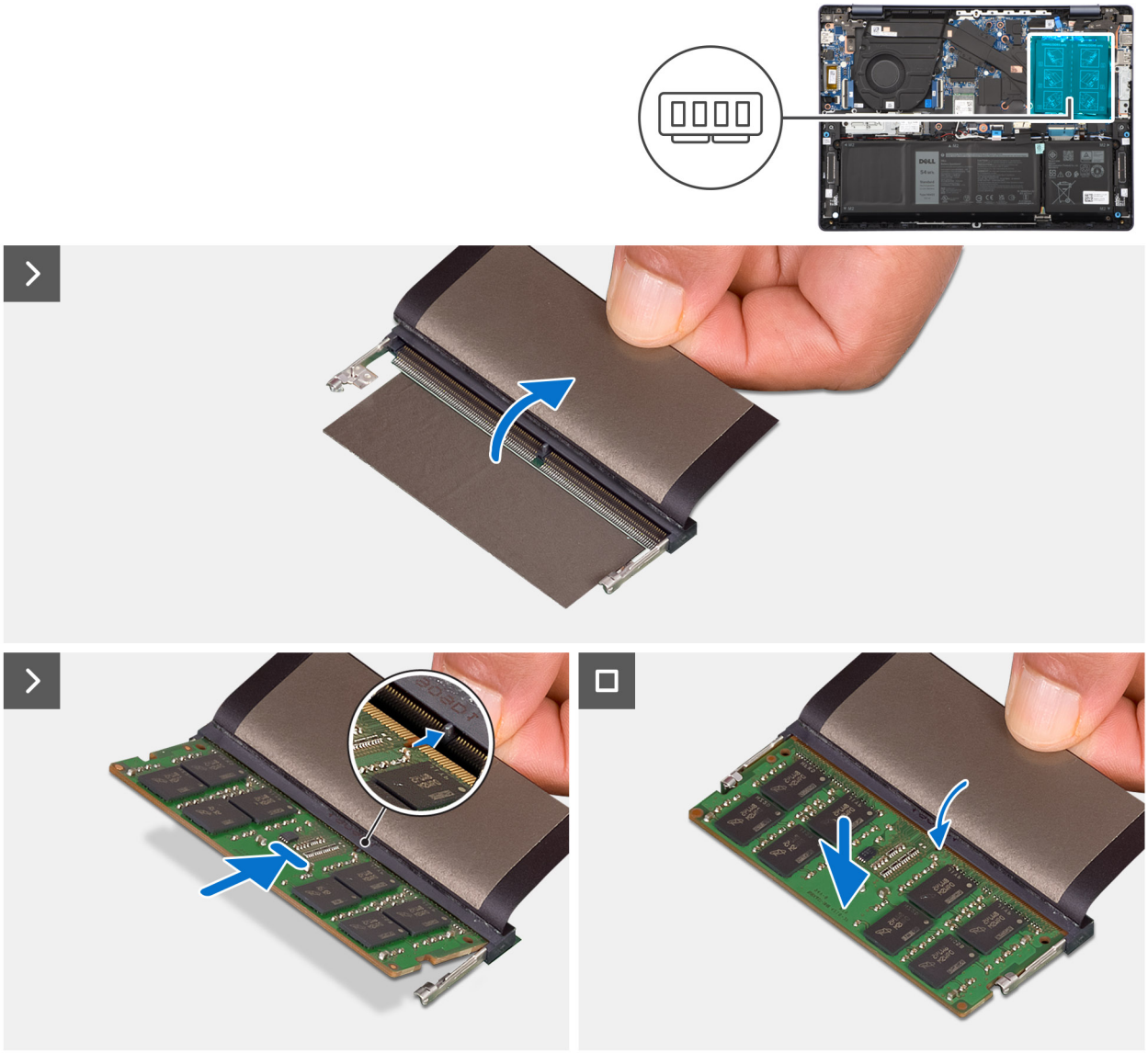


Figure 31. Installing the memory module

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.

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

4. 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.

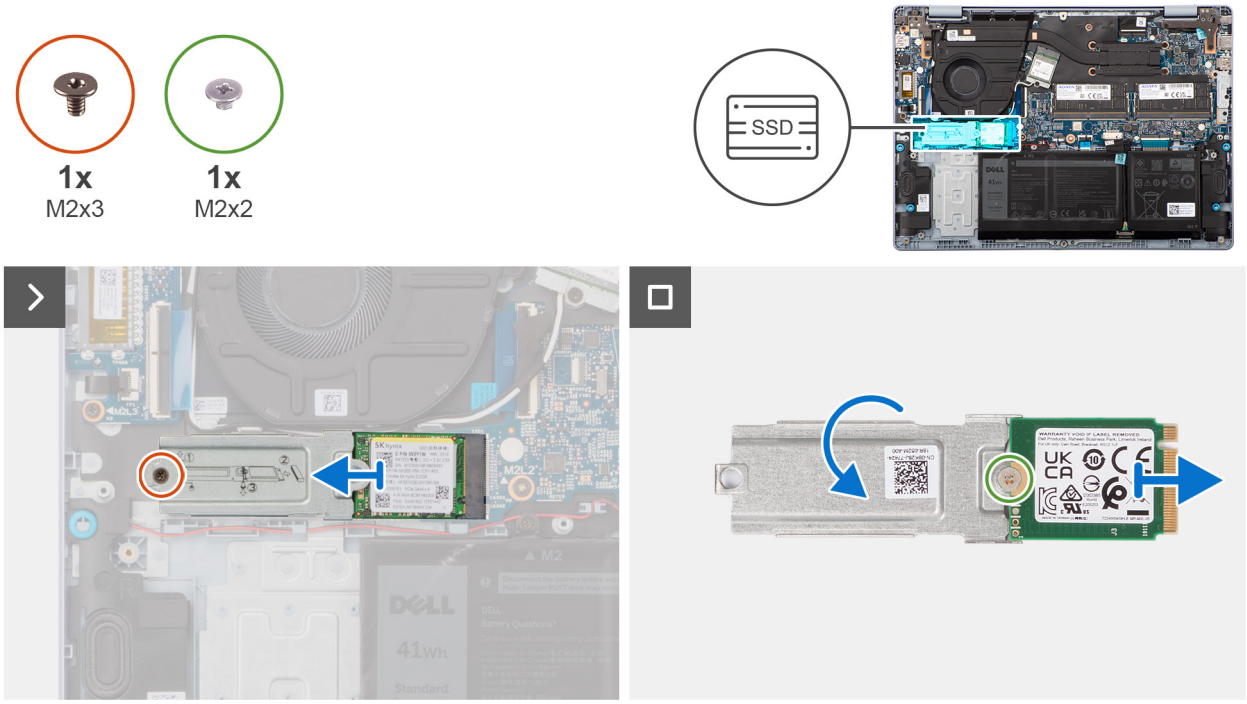


Figure 32. Removing the solid-state drive

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.

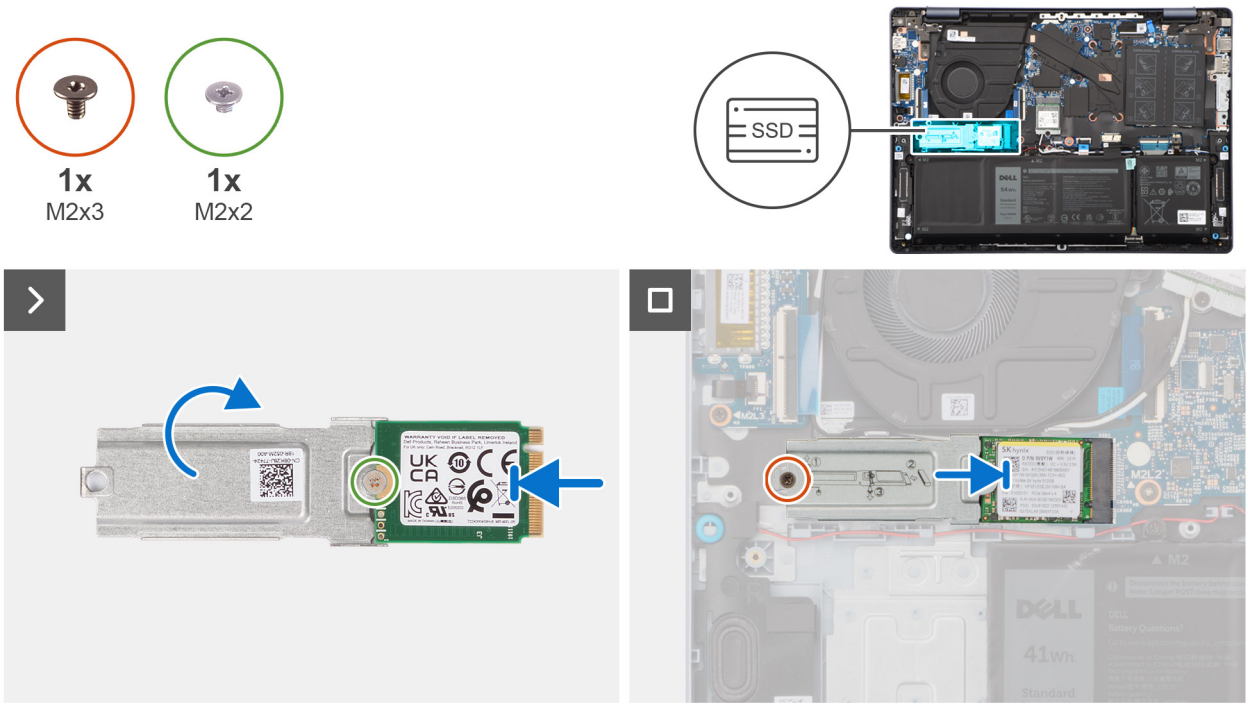


Figure 33. Installing the solid-state drive

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.

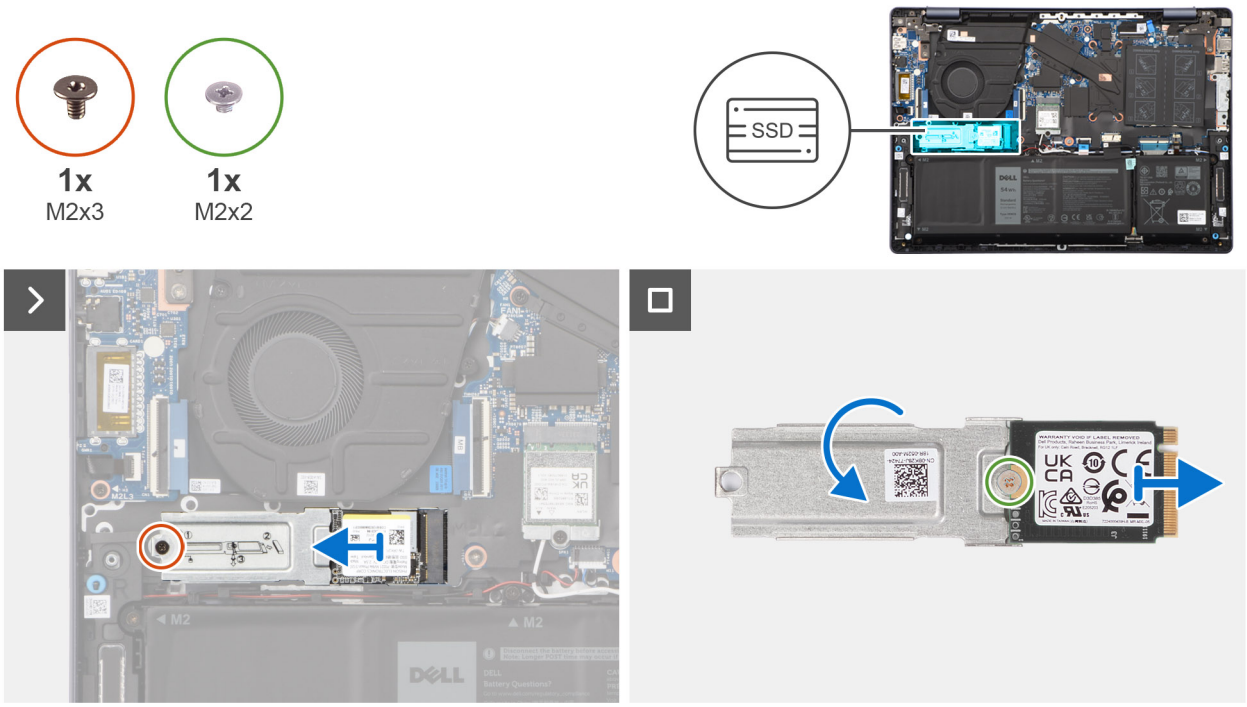


Figure 34. Removing the solid-state drive

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.

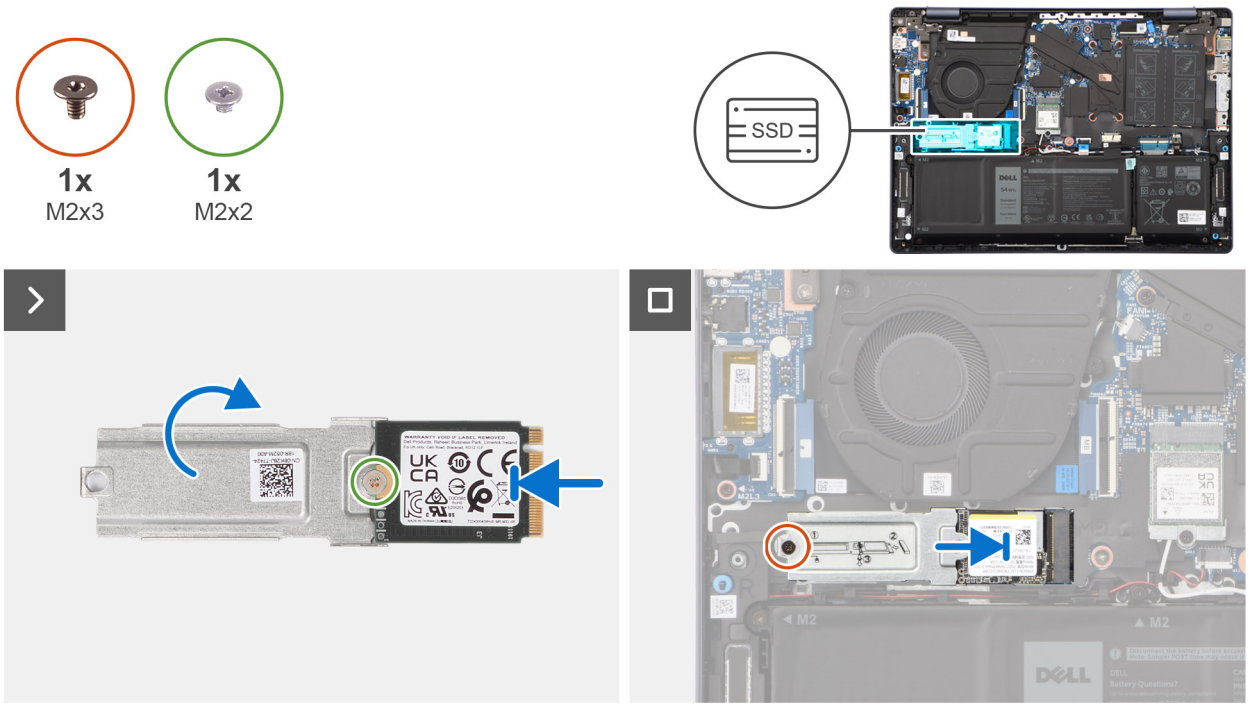


Figure 35. Installing the solid-state drive

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 an aluminum chassis.
2. 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.

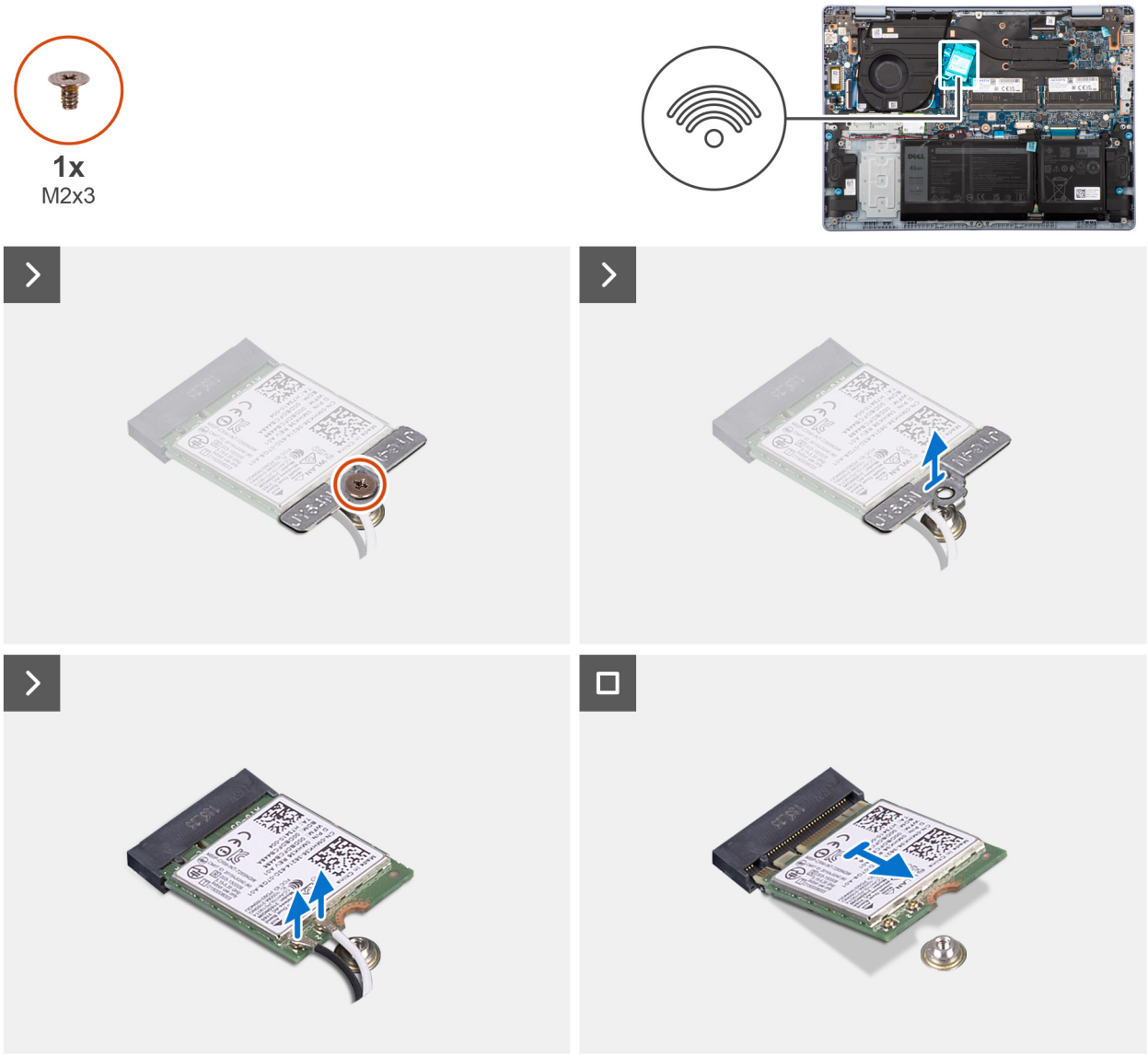


Figure 36. Removing the wireless card

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.

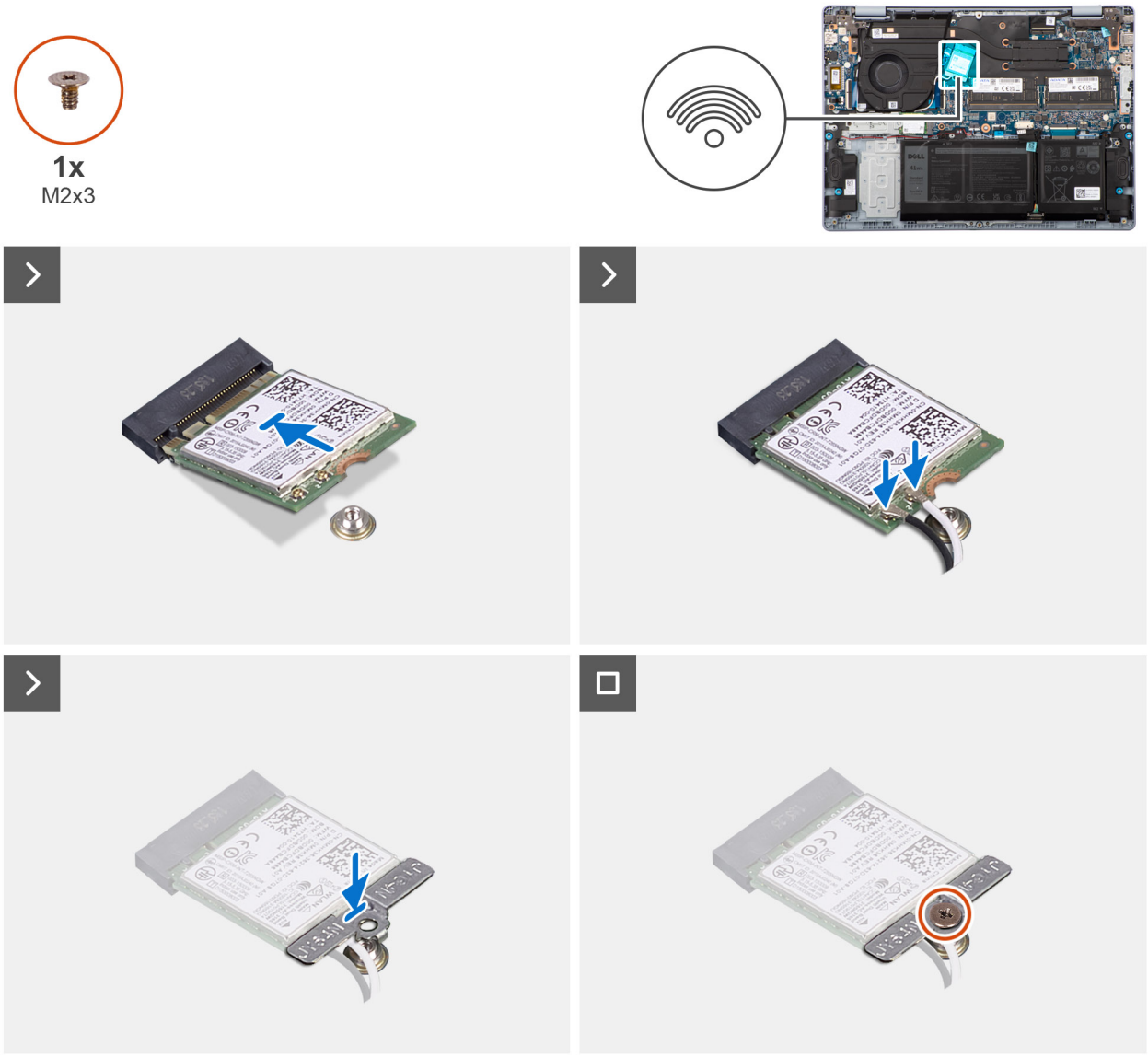


Figure 37. Installing the wireless card

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 30. 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.

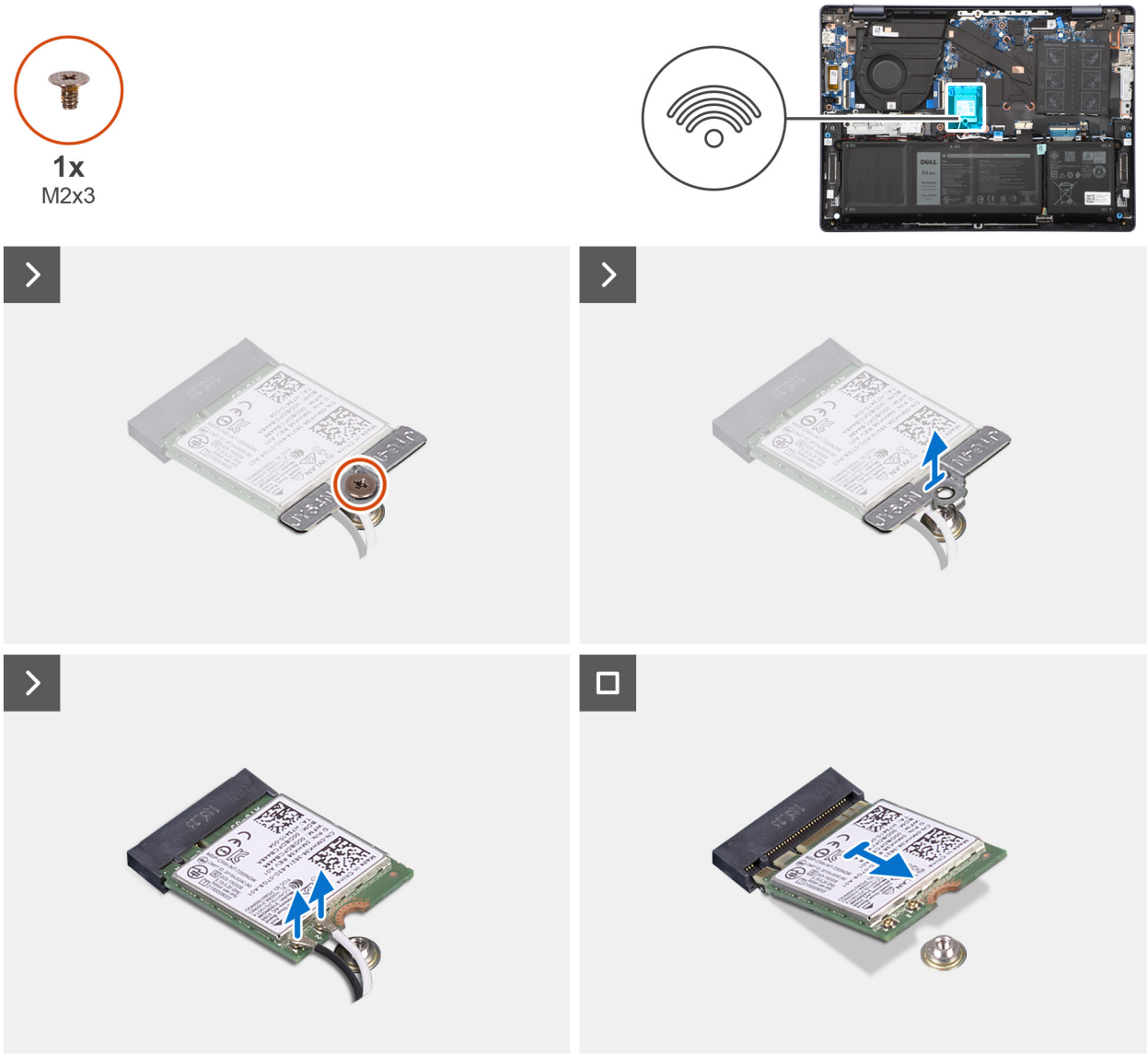


Figure 38. Removing the wireless card

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.

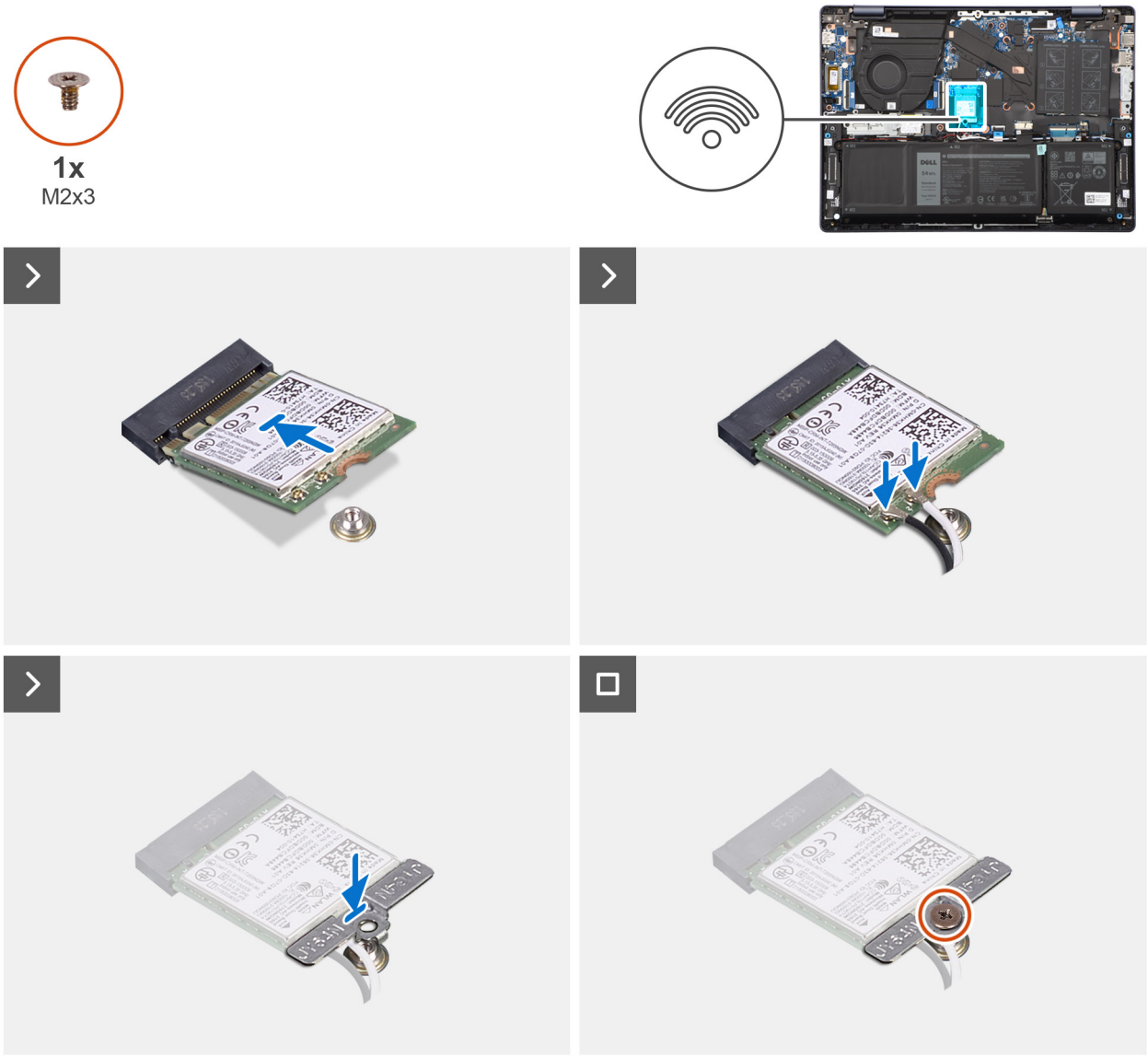


Figure 39. Installing the wireless card

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 31. 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.

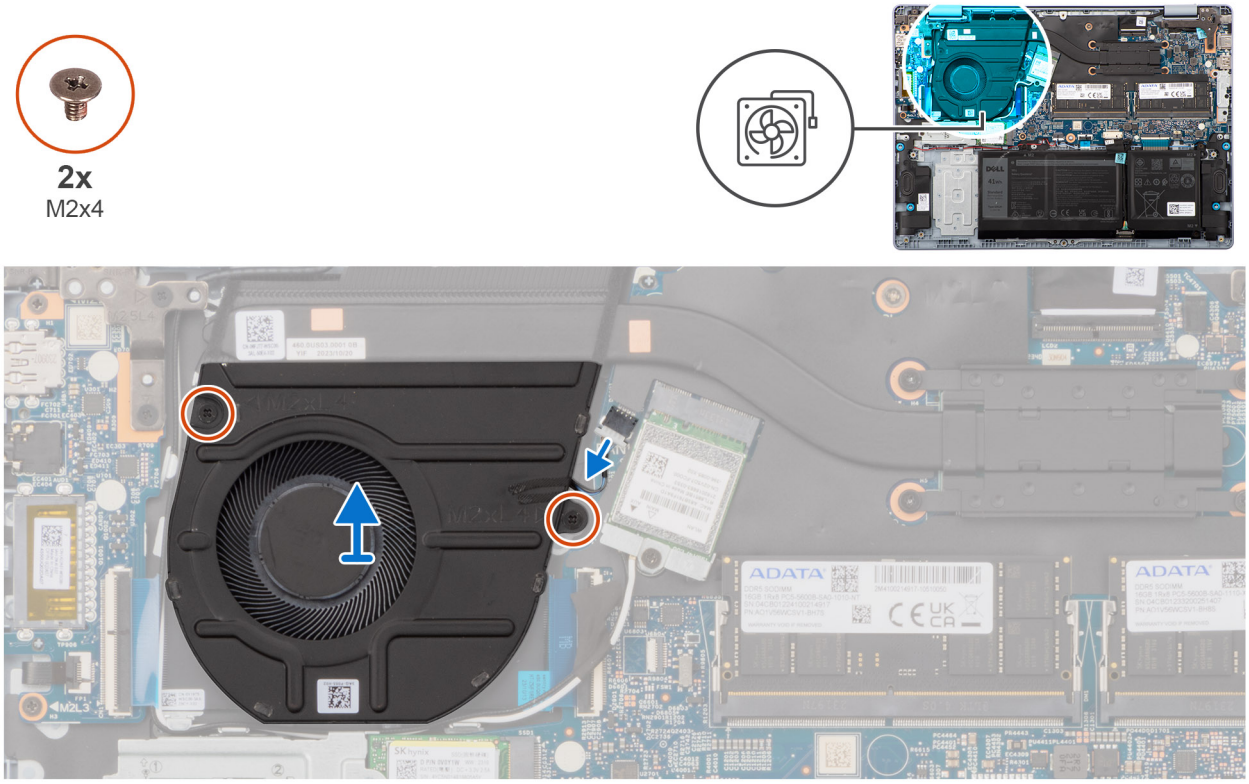


Figure 40. Removing the fan

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.

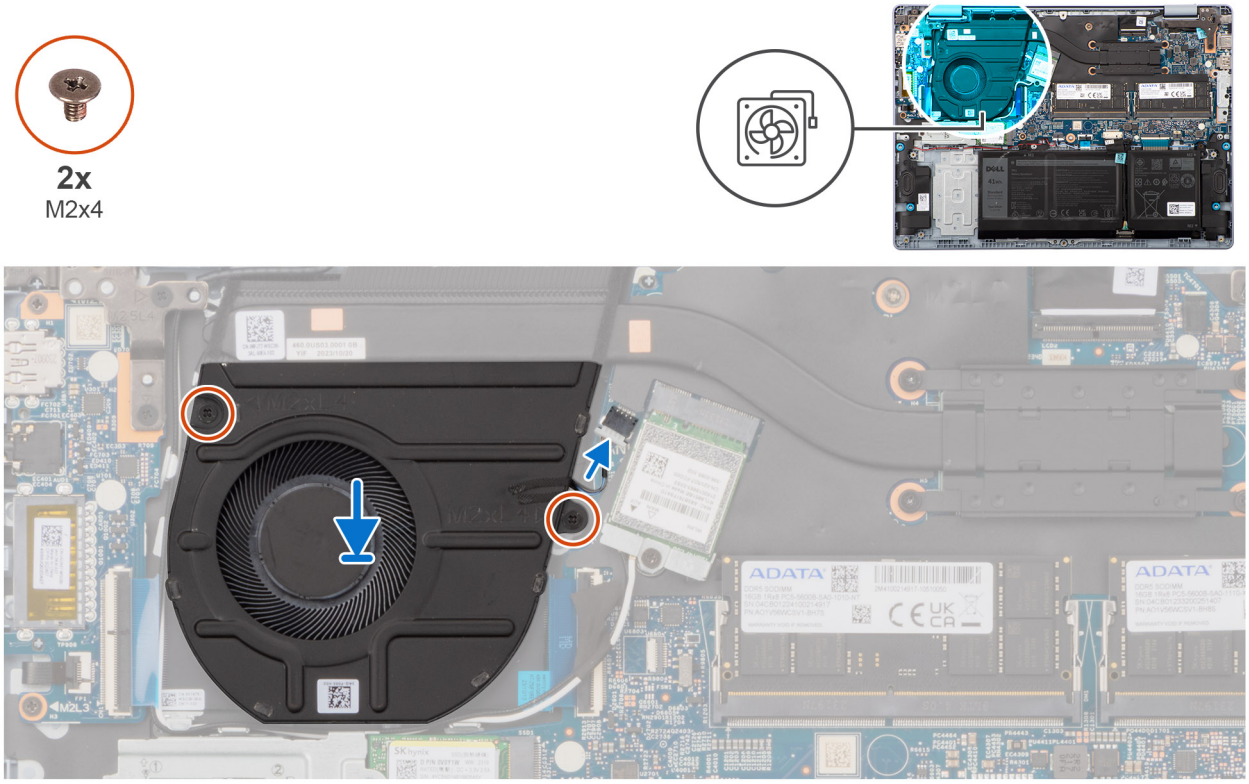


Figure 41. Installing the fan

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.

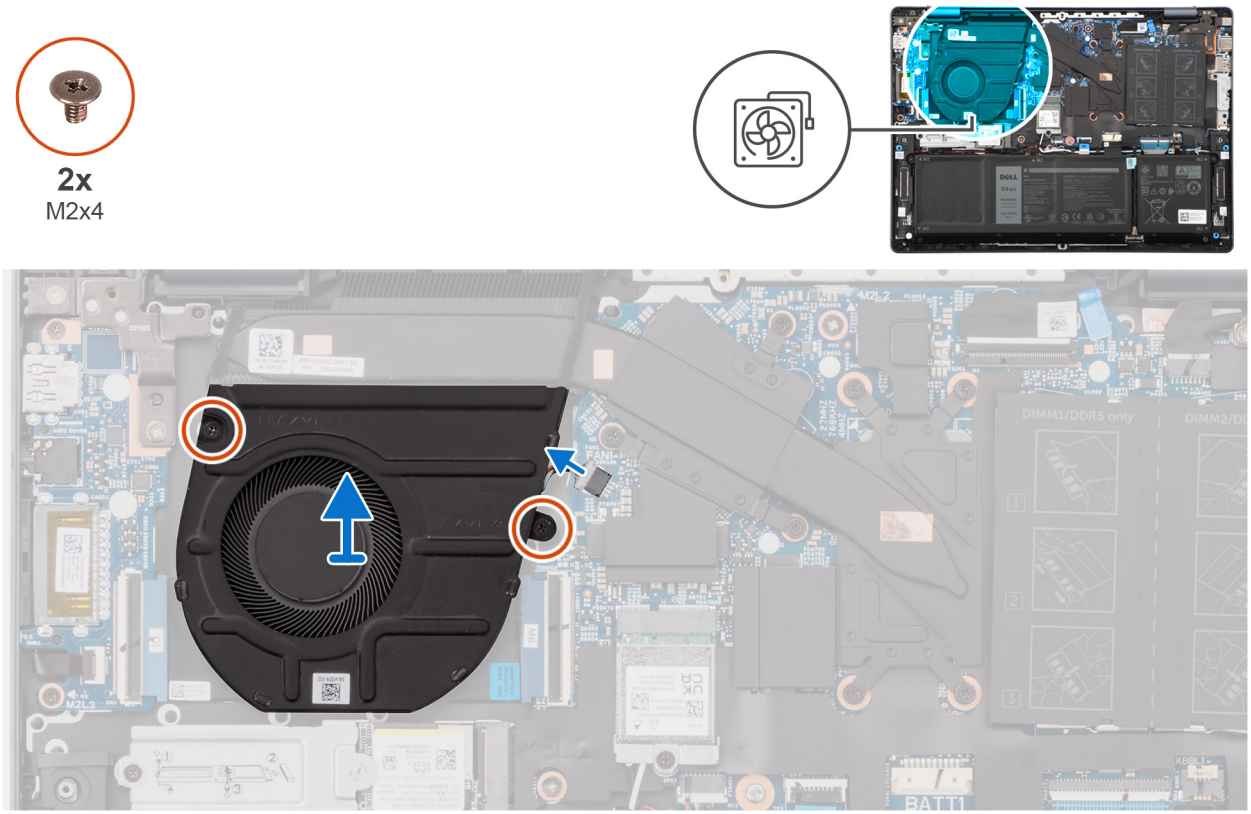


Figure 42. Removing the fan

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.

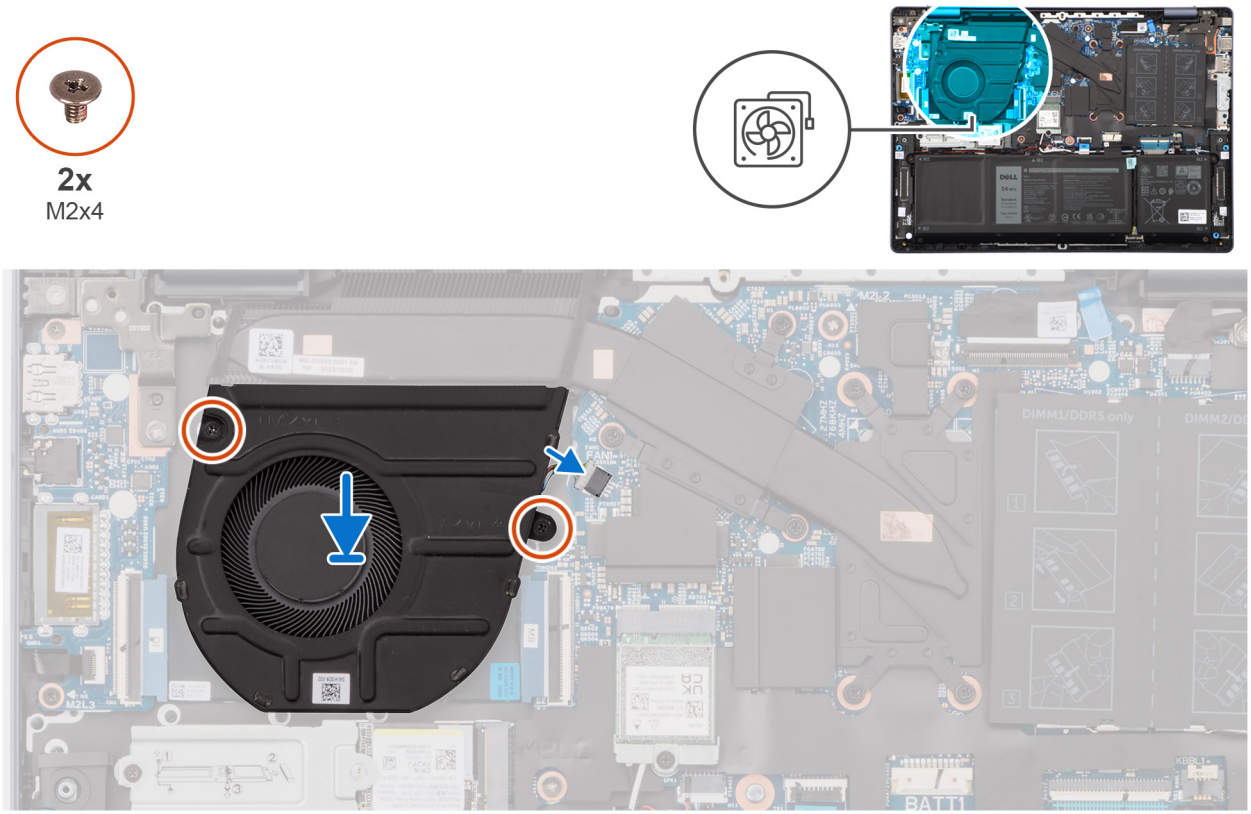


Figure 43. Installing the fan

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.

8

Removing and installing Field Replaceable Units (FRUs)

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

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

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

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

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

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

Heat sink

Removing the heat sink

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 or base cover for computers shipped with an aluminum chassis.

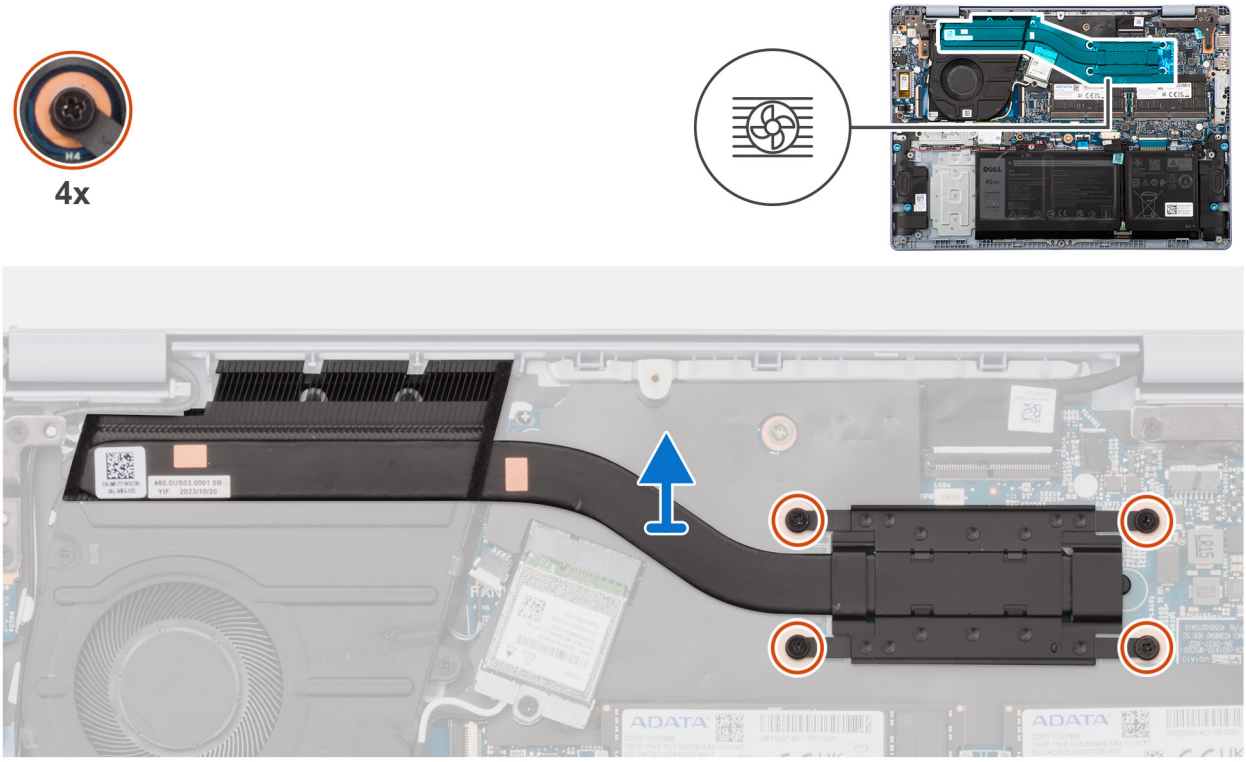
About this task

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 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

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

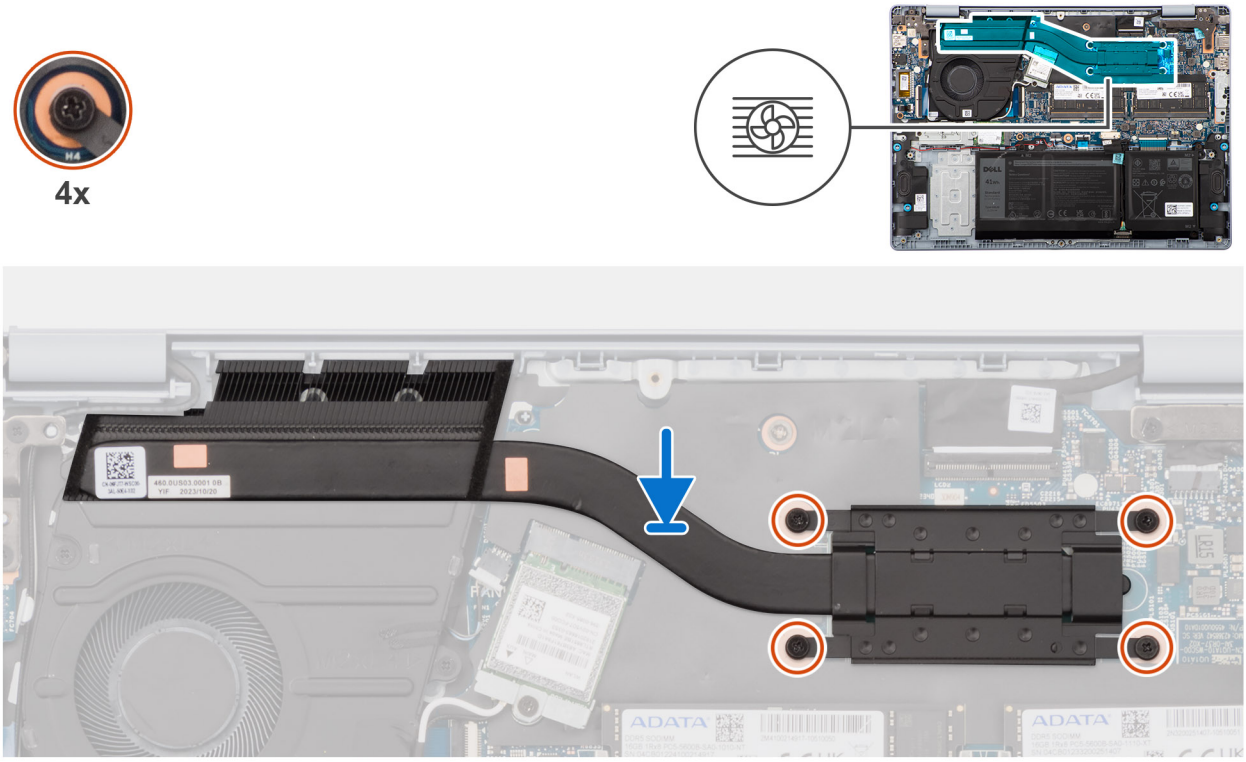
Prerequisites

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



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 or base cover for computer 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.

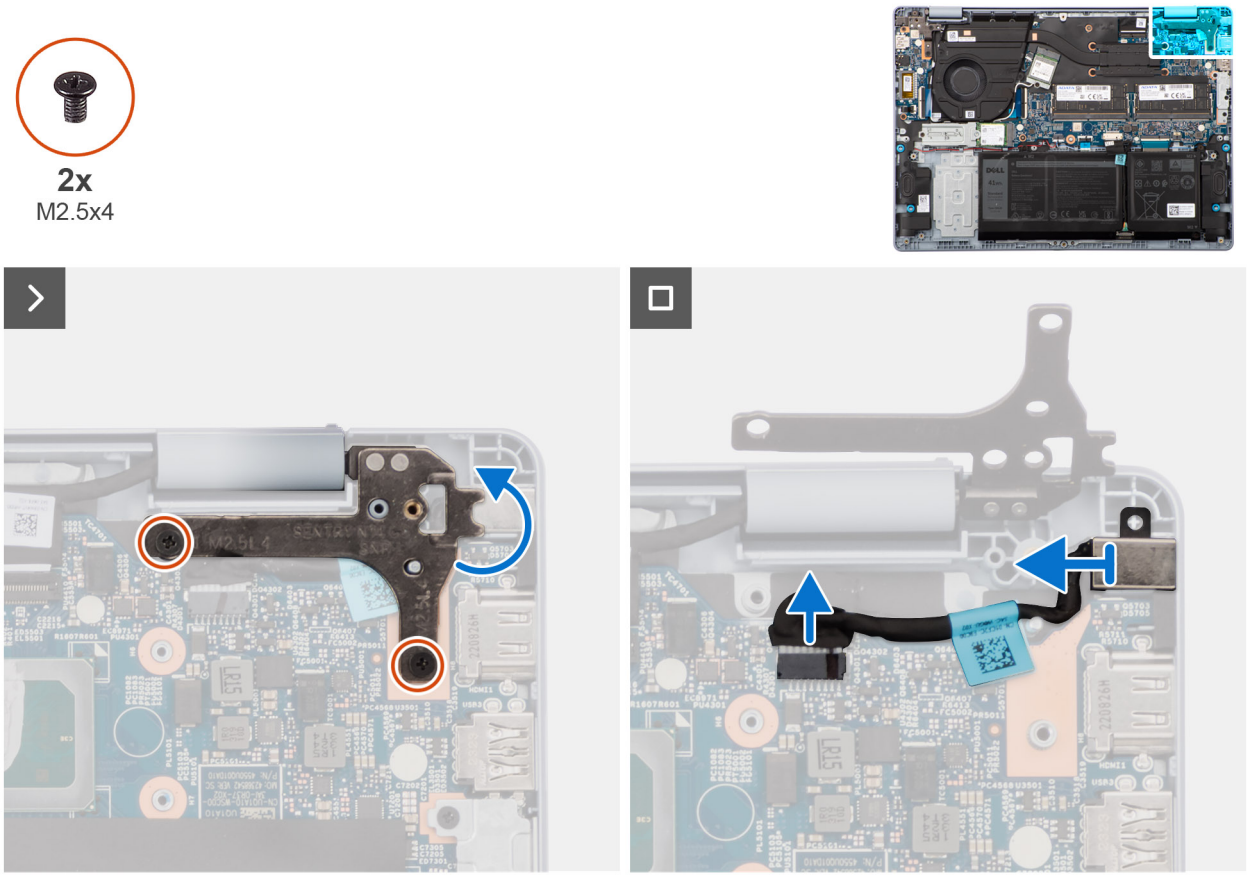


Figure 46. Removing the power adapter port

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.

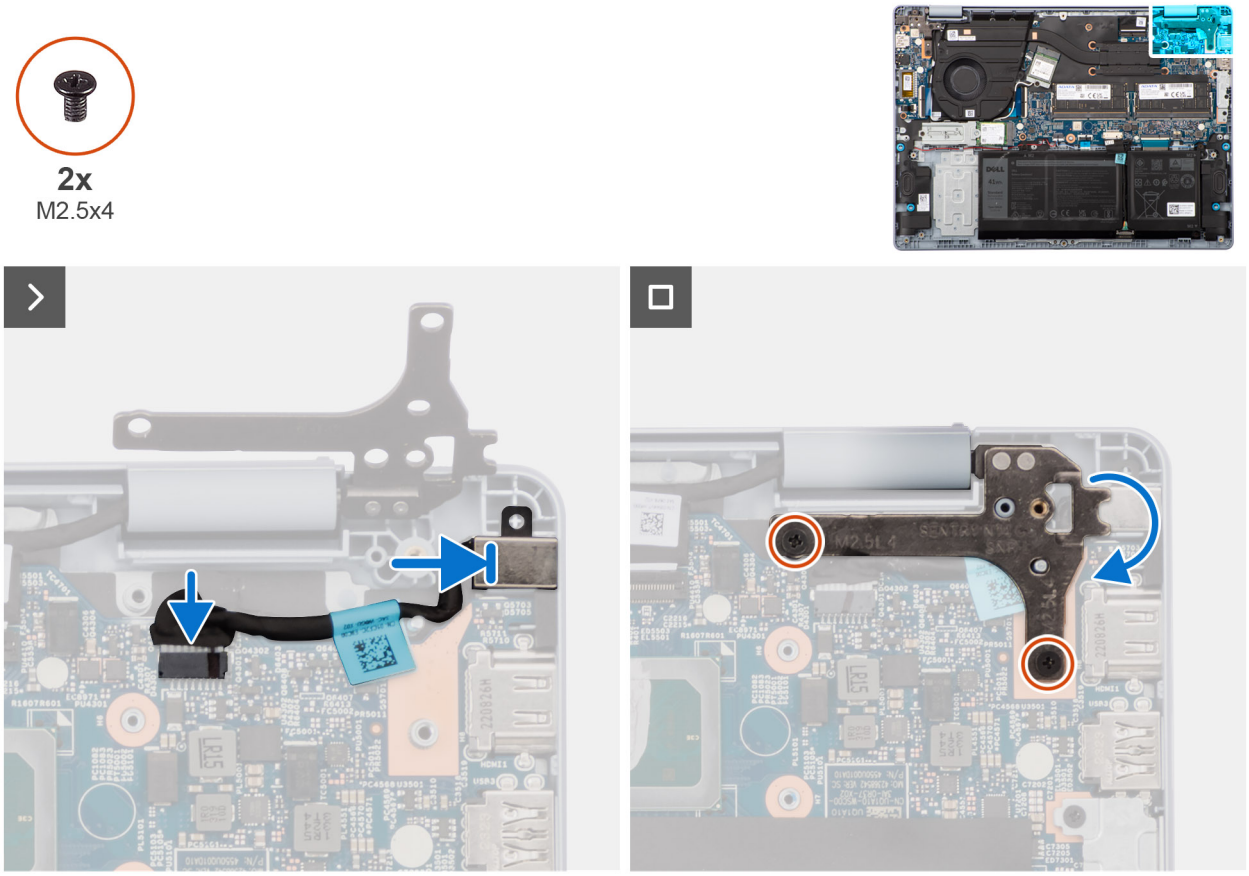


Figure 47. Installing the power adapter port

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-adapter port and provides a visual representation of the removal procedure.

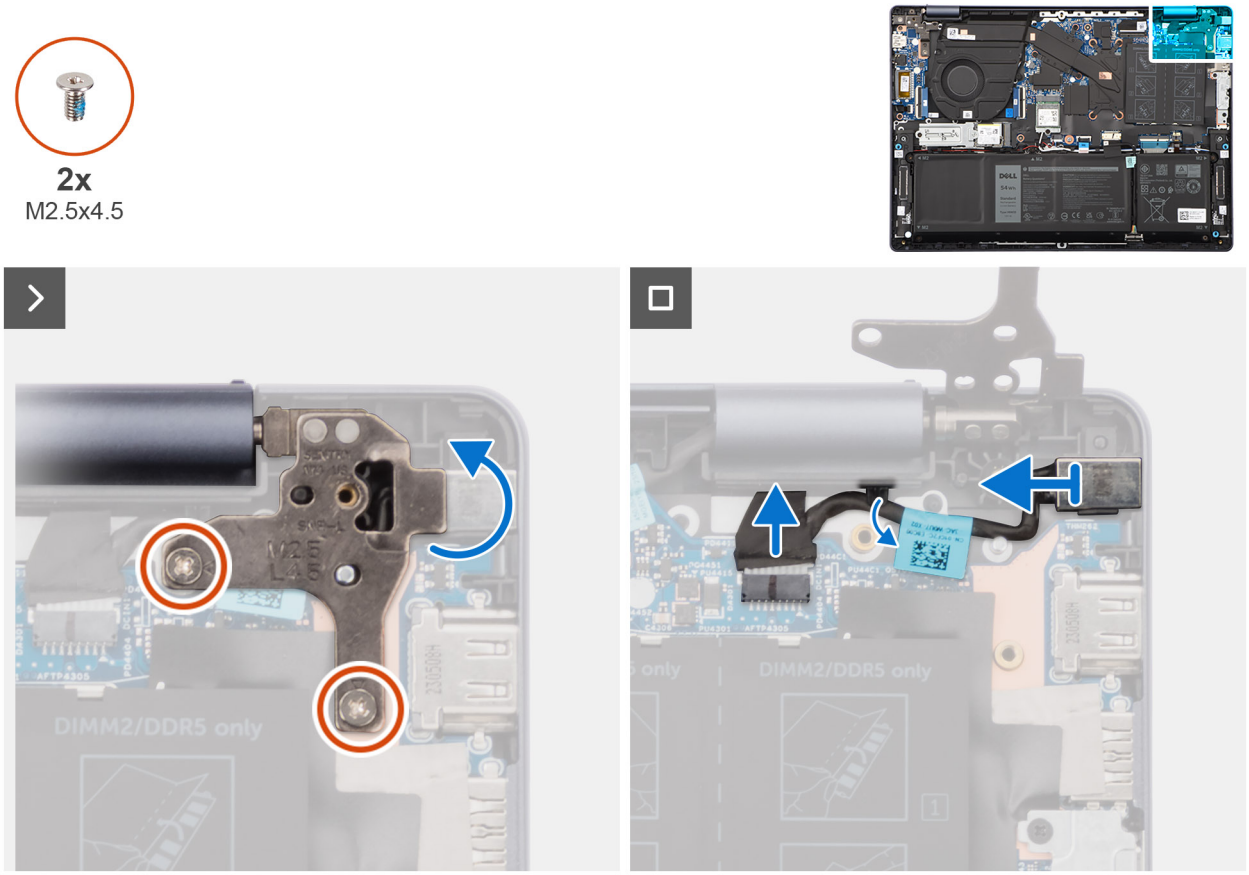


Figure 48. Removing the power adapter port

Steps

1. Remove the two screws (M2.5x4.5) 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-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 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-adapter port and provides a visual representation of the installation procedure.

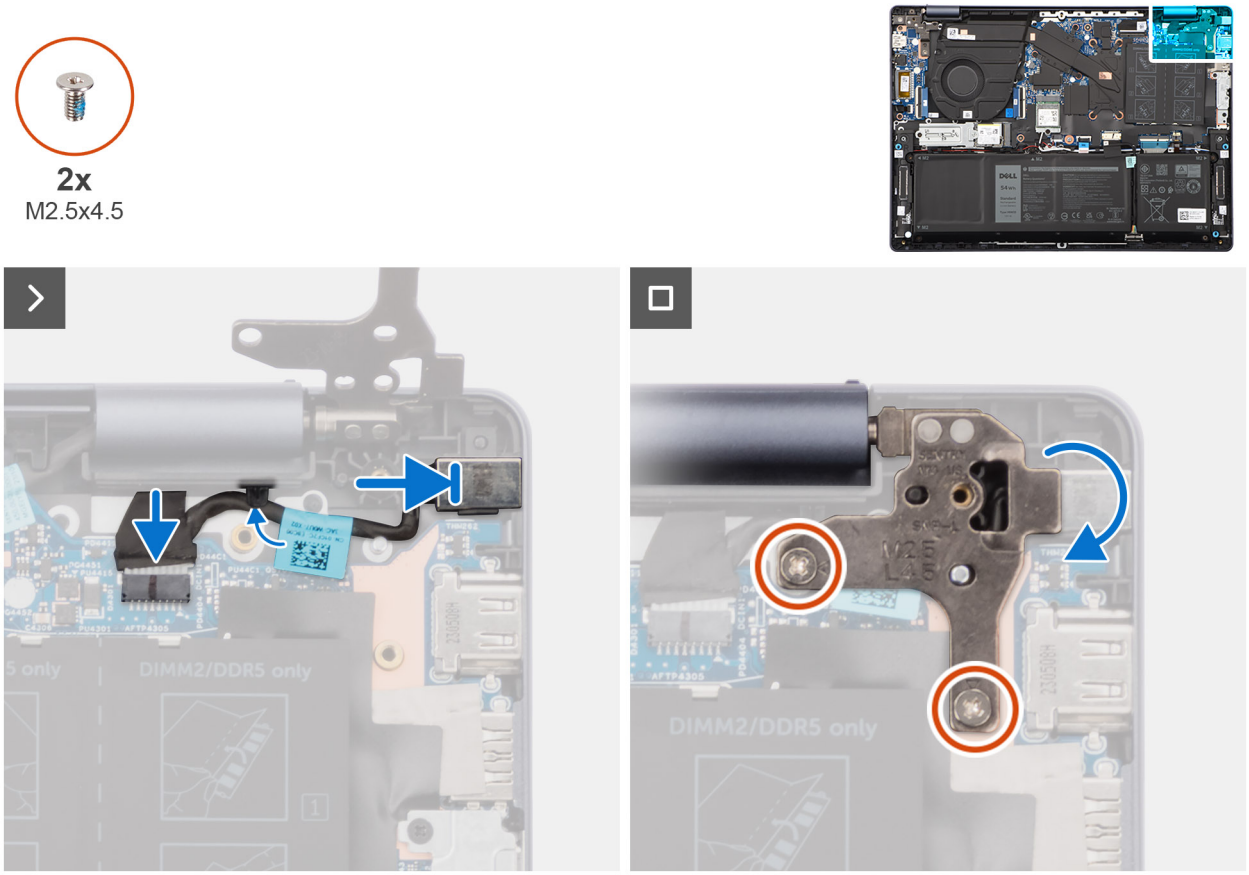


Figure 49. Installing the power adapter port

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. 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.

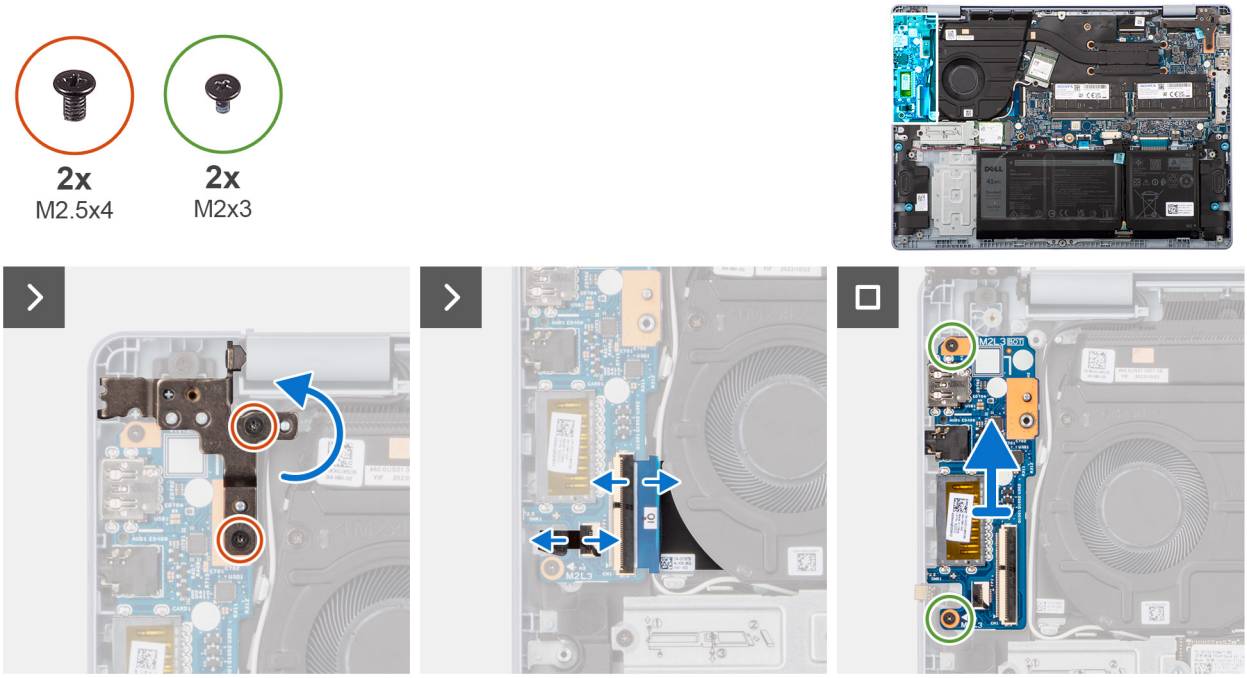
NOTE: Ensure that your computer is in Service Mode. For more information see, Before working inside your computer.

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 50. 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. Open 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 two screws (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.

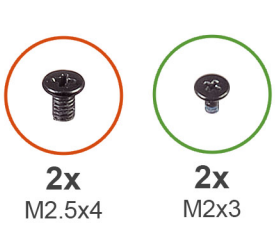
Prerequisites

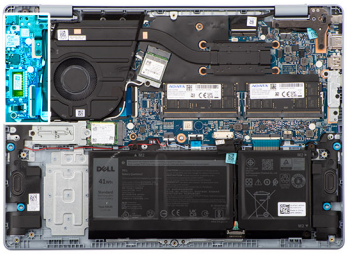
If you are replacing a component, remove the existing component before performing the installation process.

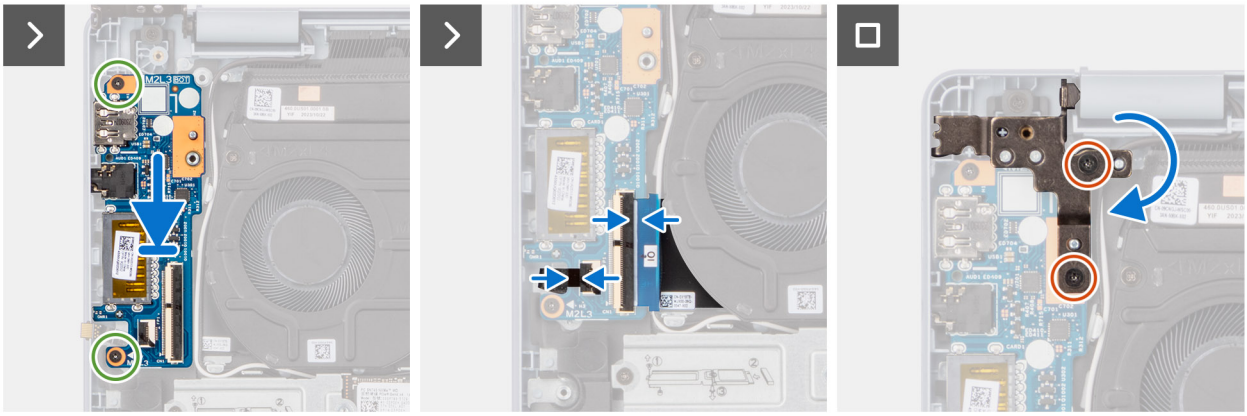
About this task

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

Figure 51. 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 two screws (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.

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

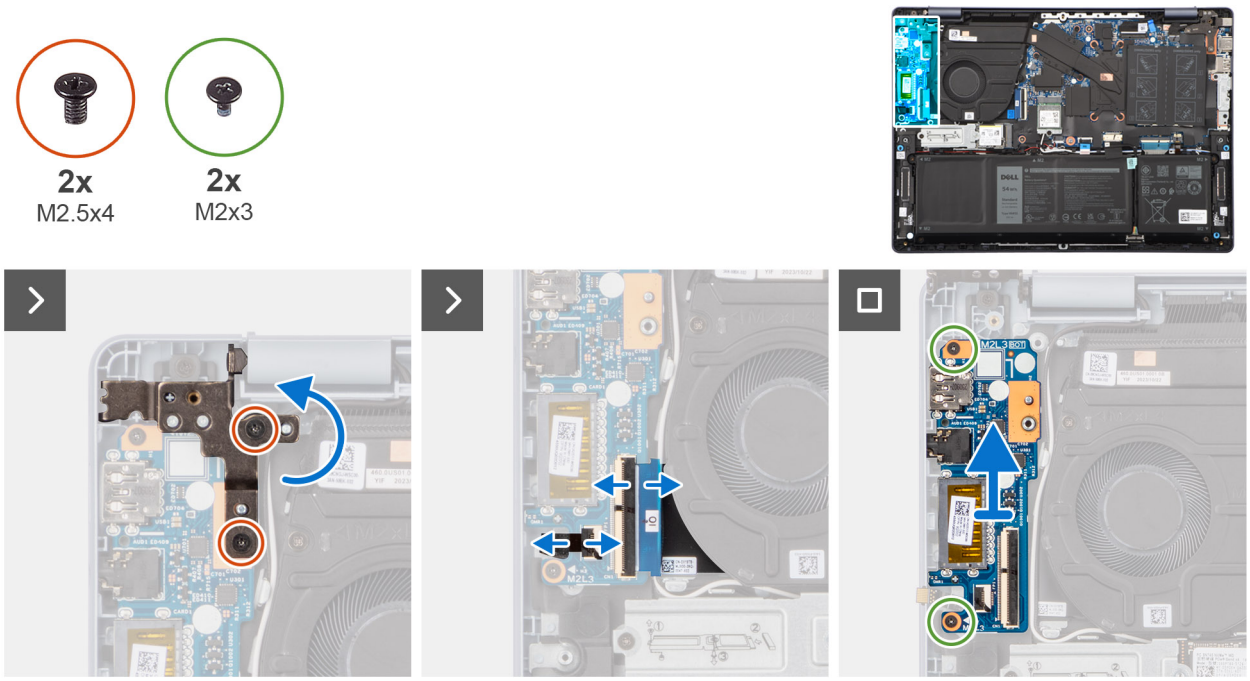


Figure 52. Removing the I/O board

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 two screws (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.

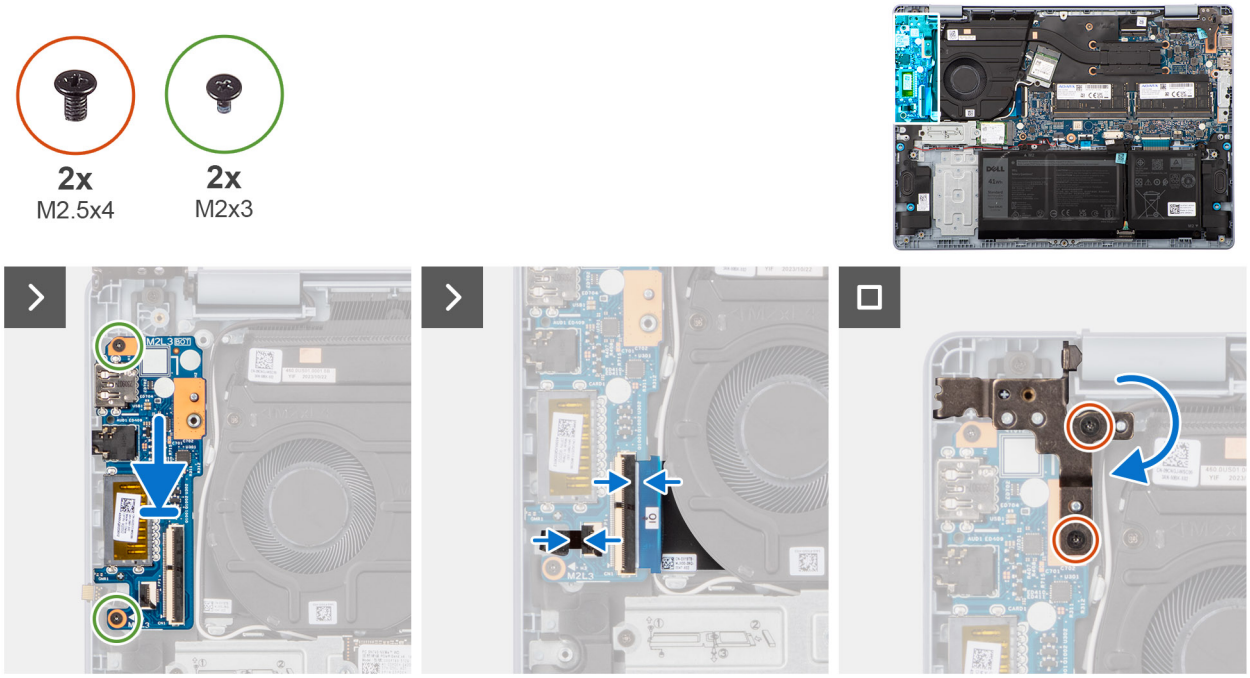


Figure 53. Installing the I/O board

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 two screws (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 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.

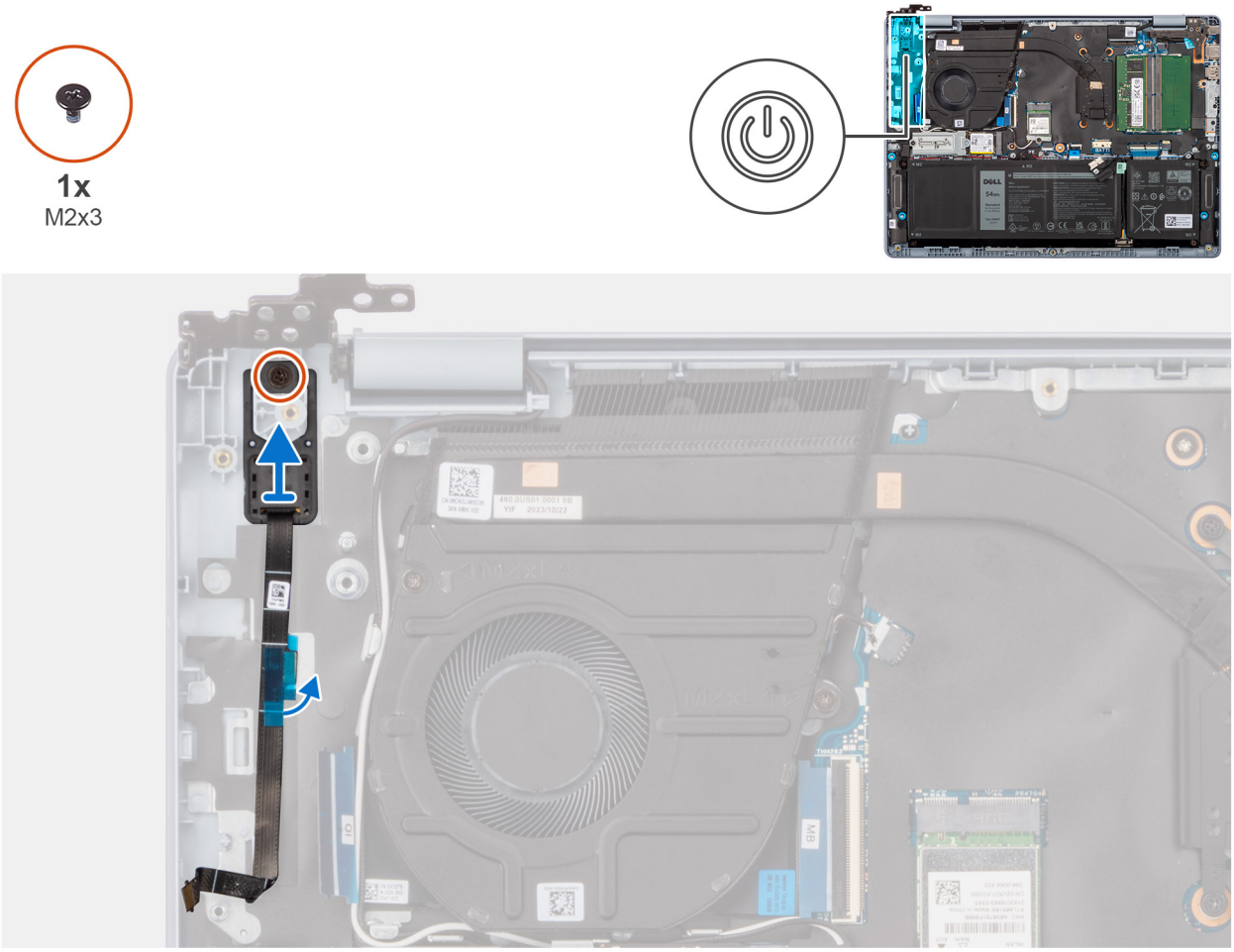
3. Remove the I/O board for computers shipped with a plastic chassis.

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 54. 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

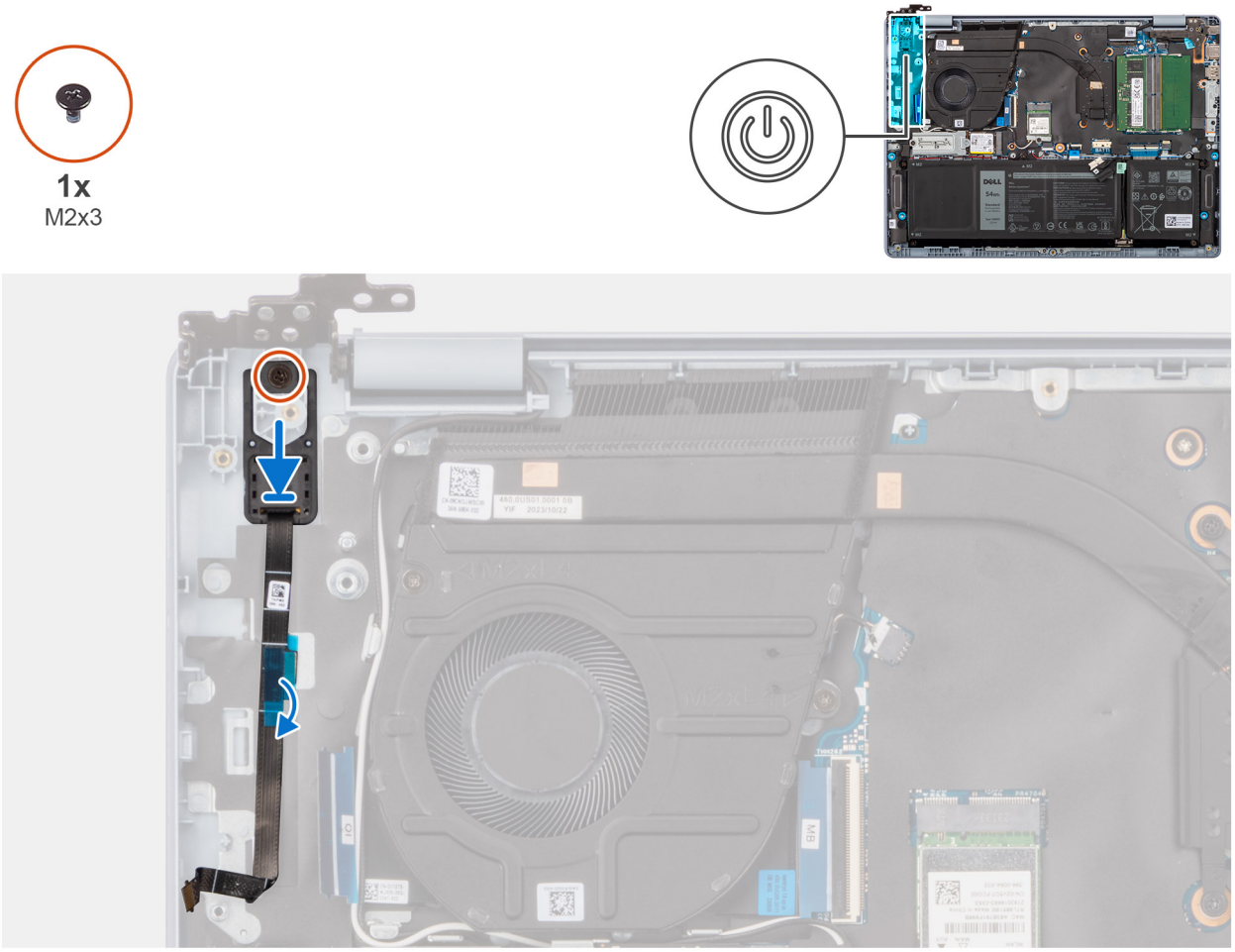
If you are replacing a component, remove the existing component before performing the installation procedure.

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 55. 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.

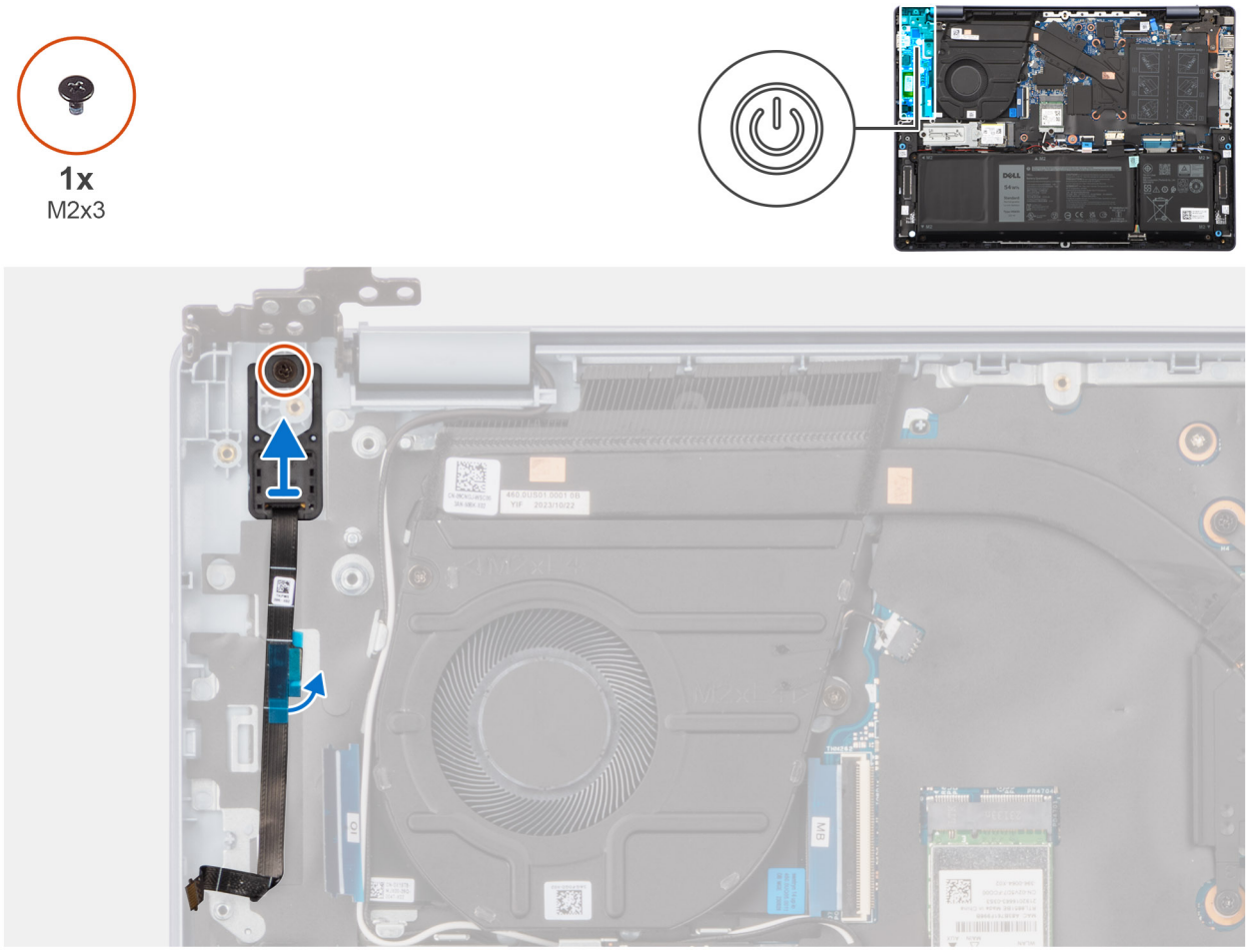


Figure 56. Removing the power-button with fingerprint reader

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.

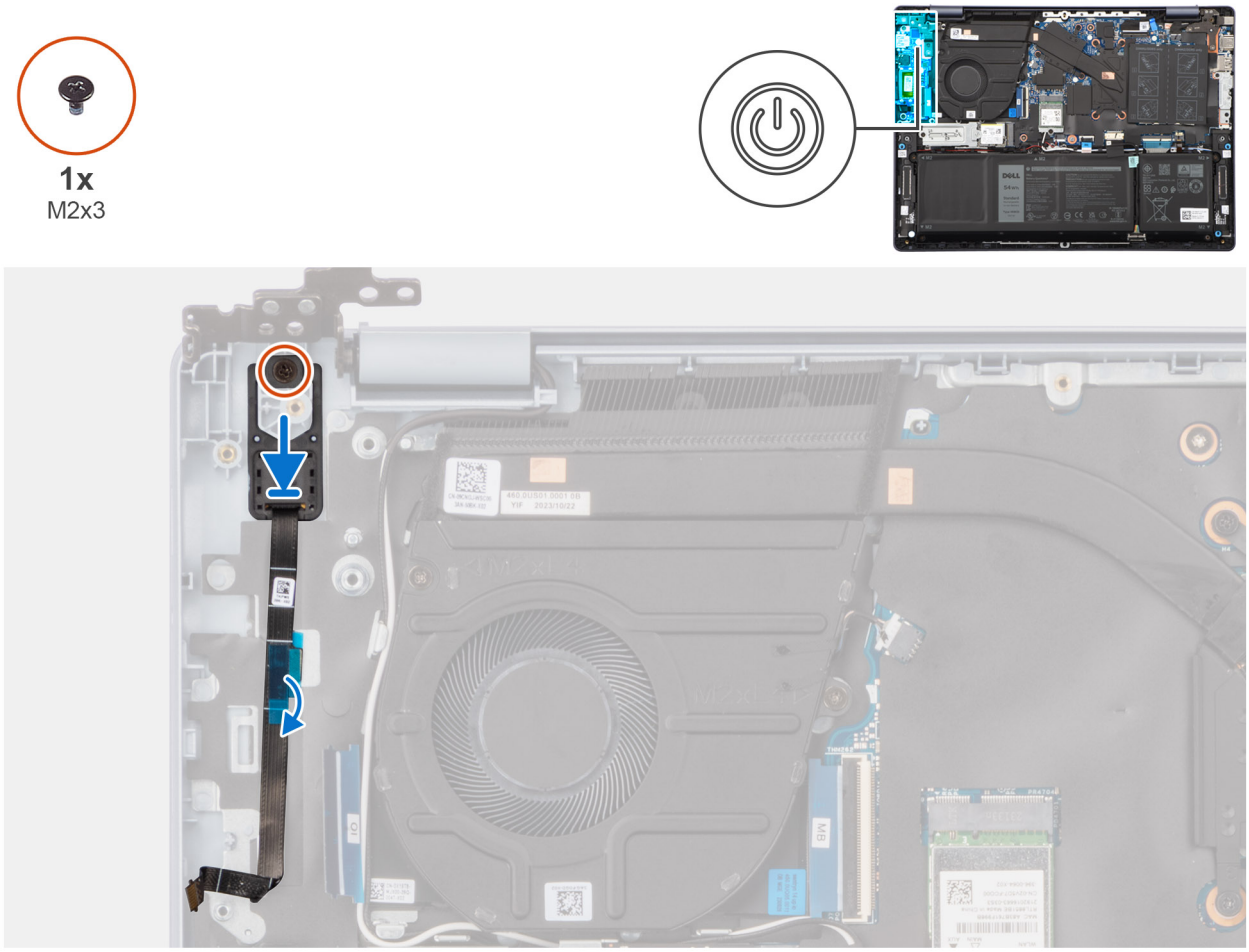


Figure 57. Installing the power-button with fingerprint reader

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 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.

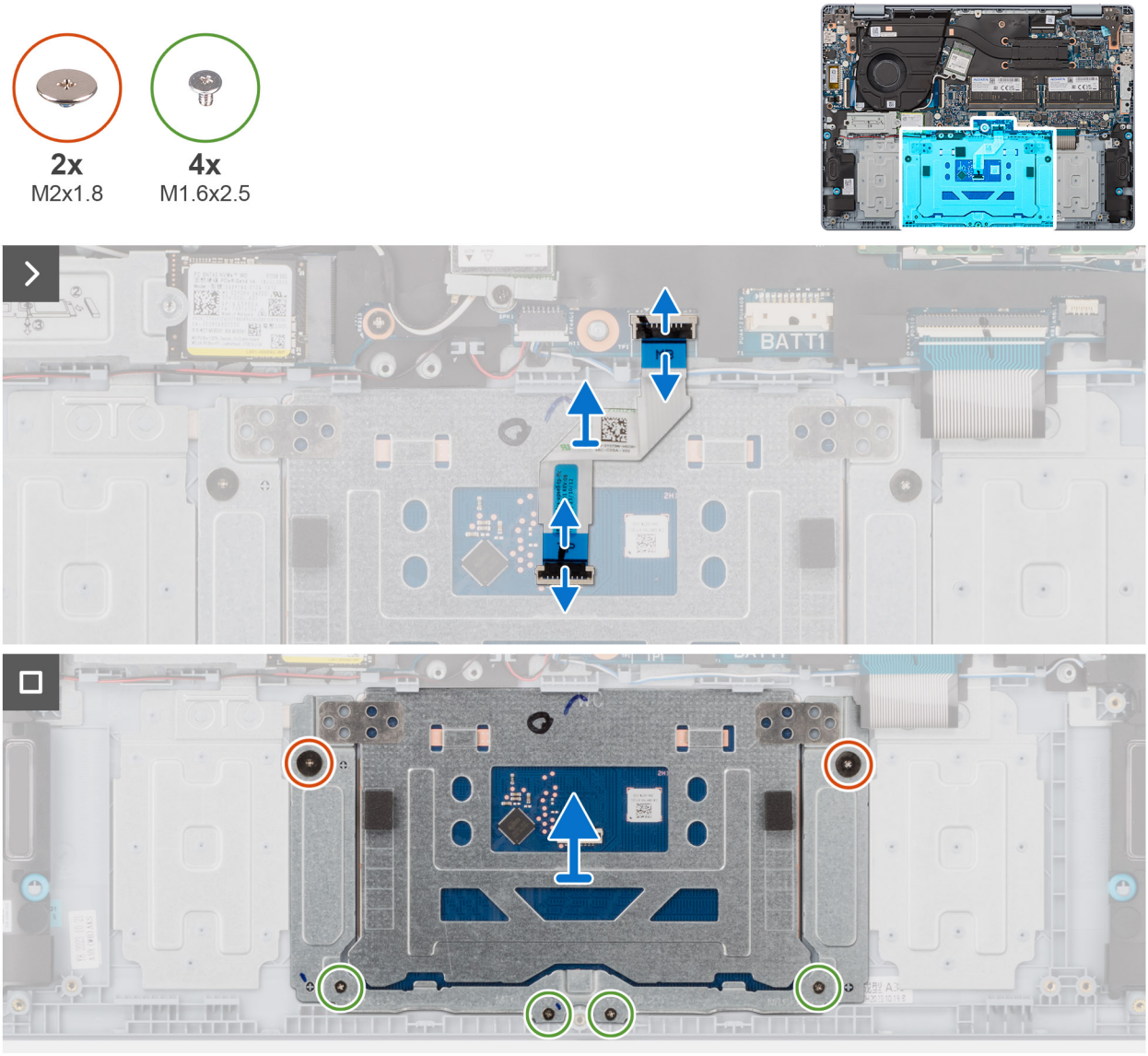
   NOTE: Ensure that your computer is in Service Mode. For more information see, Before working inside your computer.

2. Remove the base cover for computers shipped with a plastic chassis.
3. Remove the 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 touchpad and provides a visual representation of the removal procedure.

Figure 58. Removing the touchpad



Steps

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

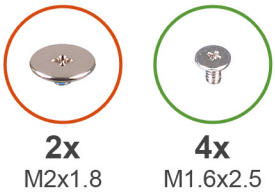
Prerequisites

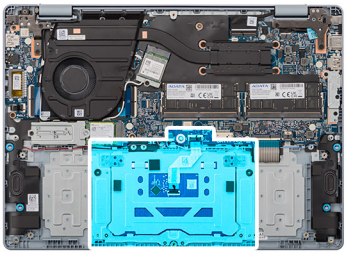
If you are replacing a component, remove the existing component before performing the installation process.

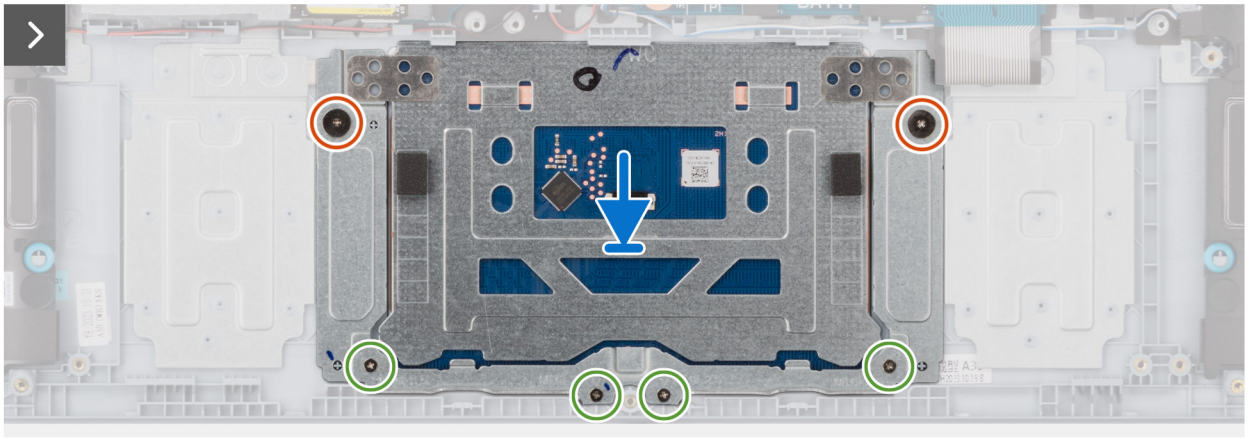
About this task

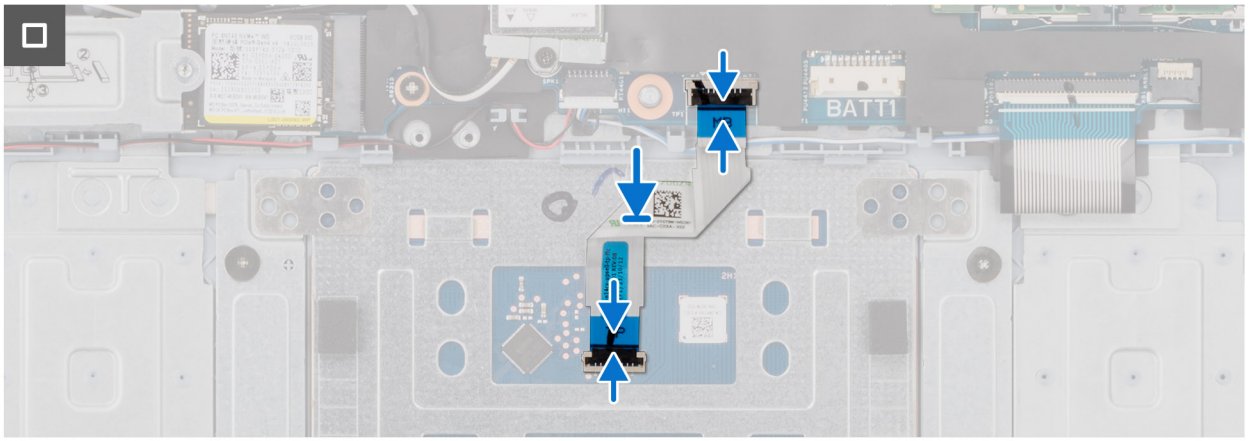
The following image indicates the location of the touchpad and provides a visual representation of the installation procedure.

Figure 59. 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.

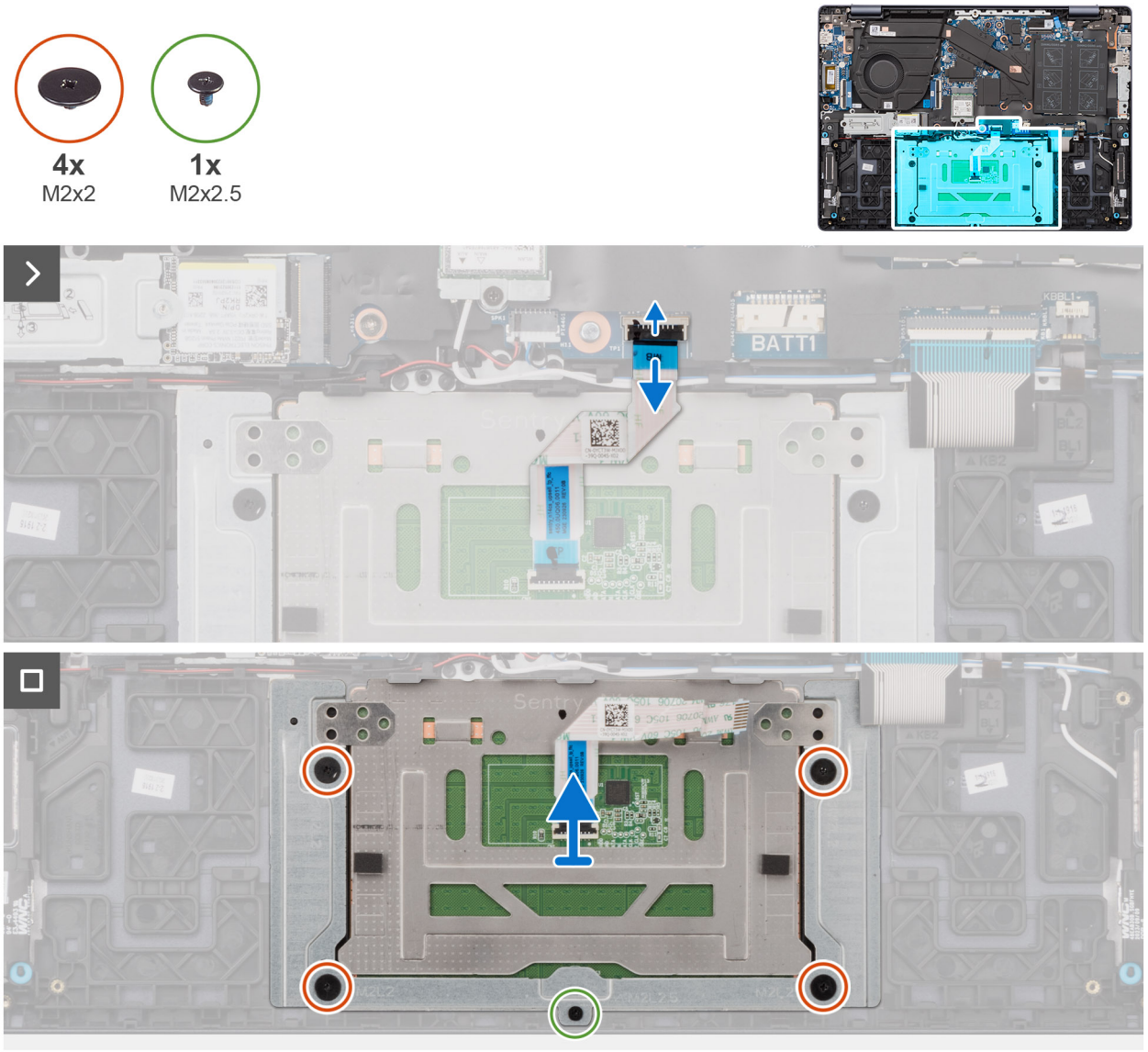


Figure 60. Removing the touchpad

Steps

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

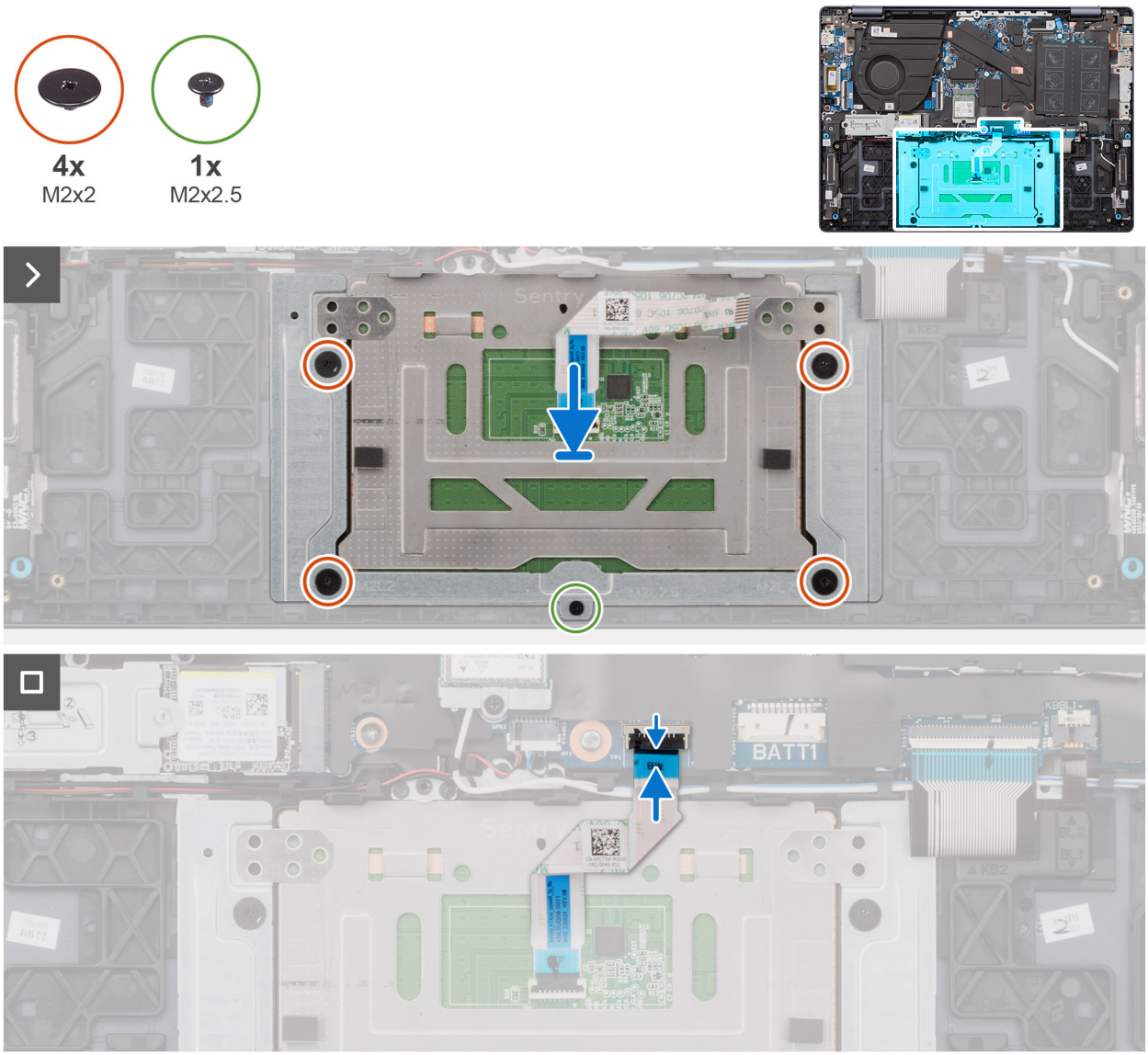


Figure 61. Installing the touchpad

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 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.

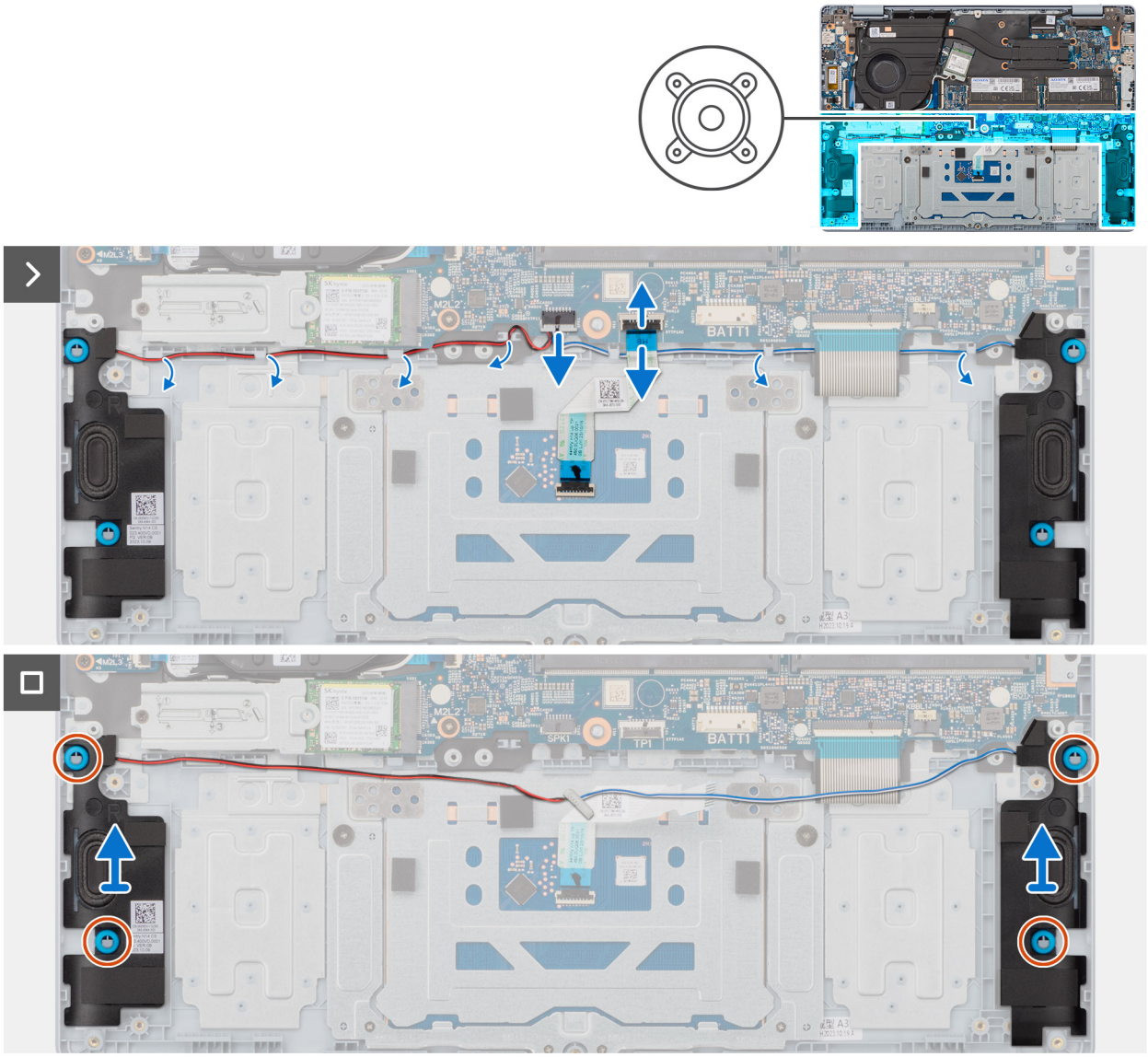


Figure 62. Removing the speakers

Steps

1. Open the latch and disconnect the keyboard-backlight cable from the connector (KBBL1) on the system board.
2. Open the latch and disconnect the keyboard cable from the connector (KB1) on the system board.
3. Open 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.

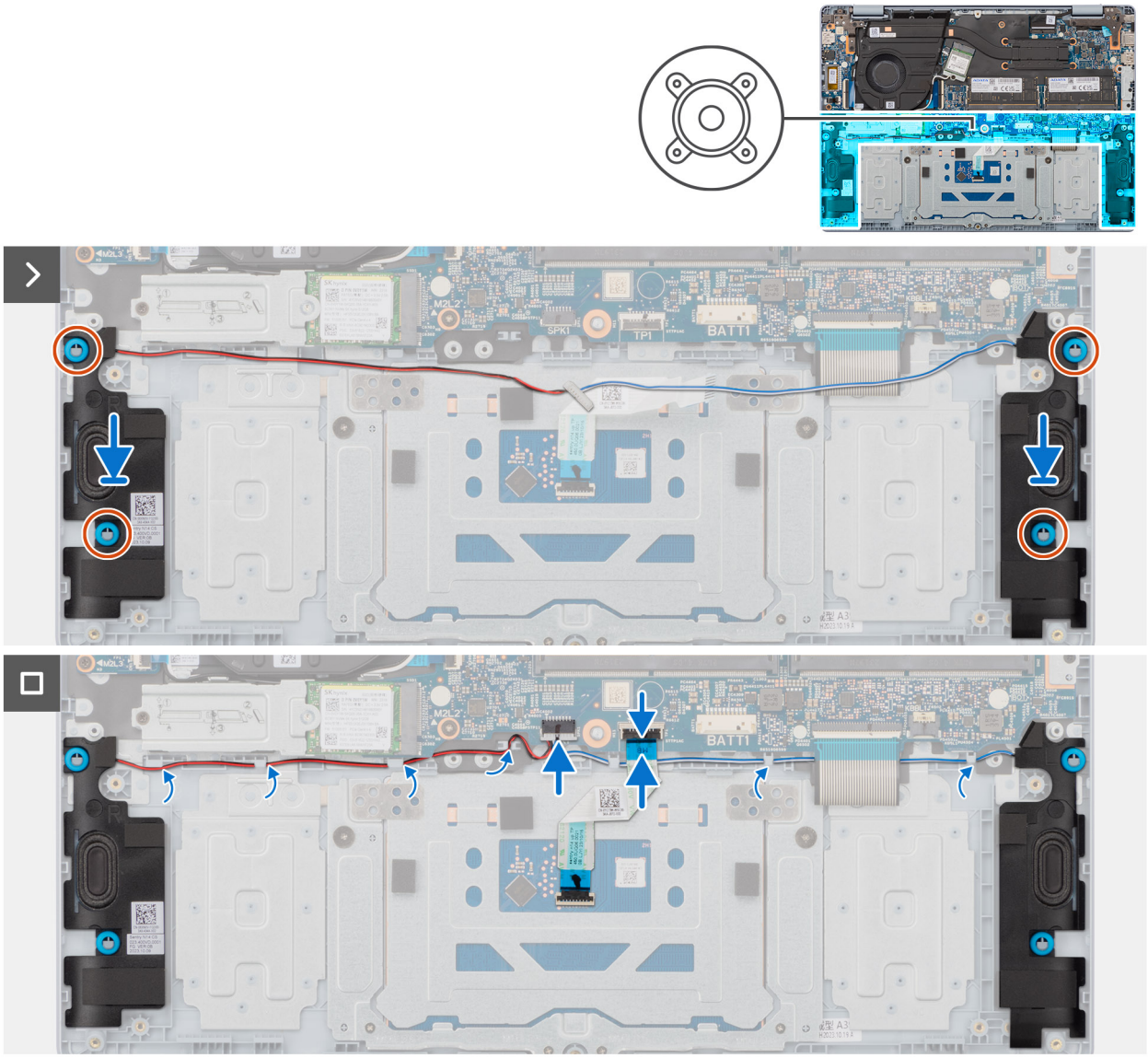


Figure 63. Installing the speakers

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)r 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.

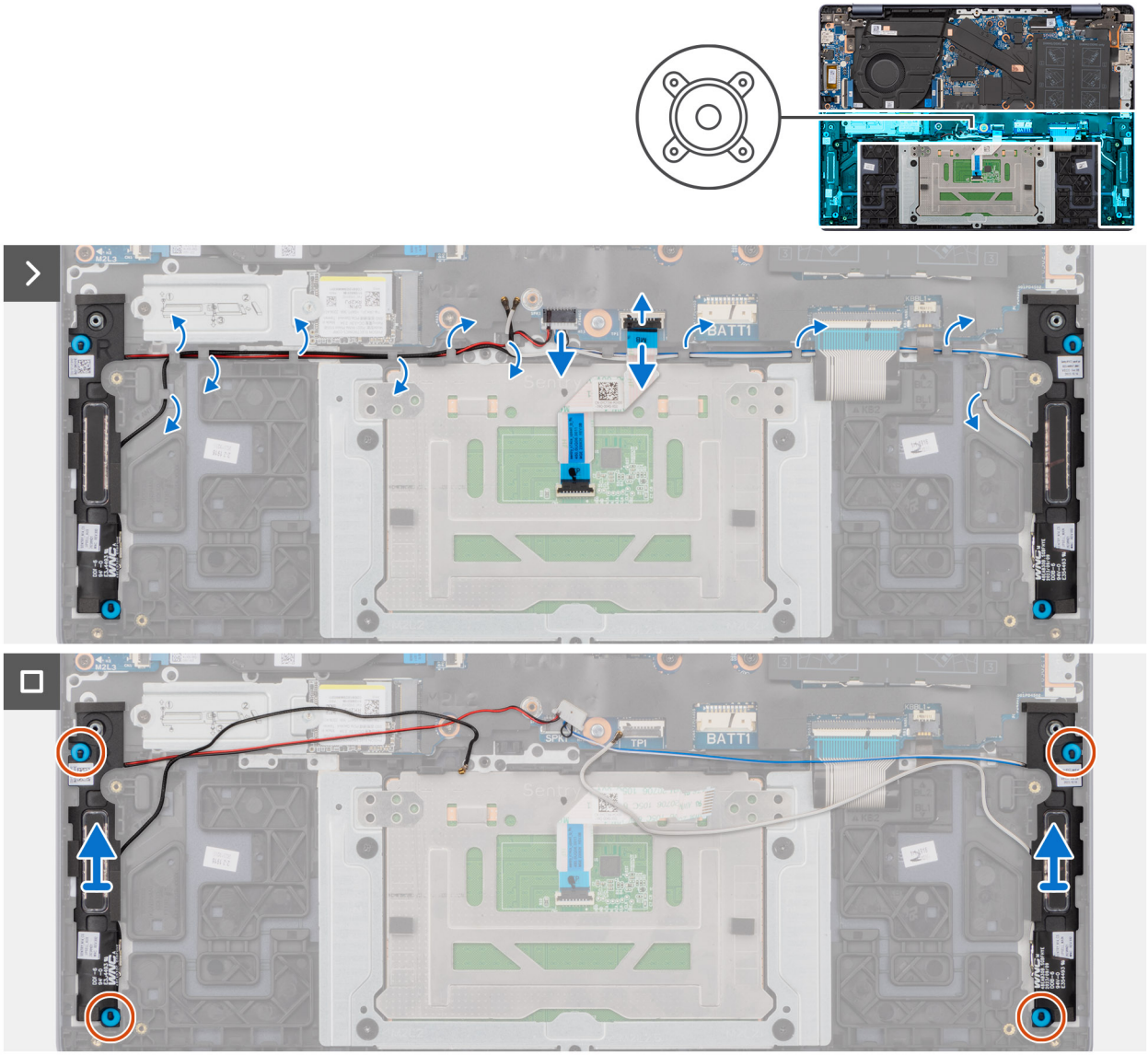
   NOTE: Ensure that your computer is in Service Mode. For more information see, Before working inside your computer.

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 64. Removing the speakers



Steps

1. Open the latch and disconnect the keyboard-backlight cable from the connector (KBBL1) on the system board.
2. Open the latch and disconnect the keyboard cable from the connector (KB1) on the system board.
3. Open 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.

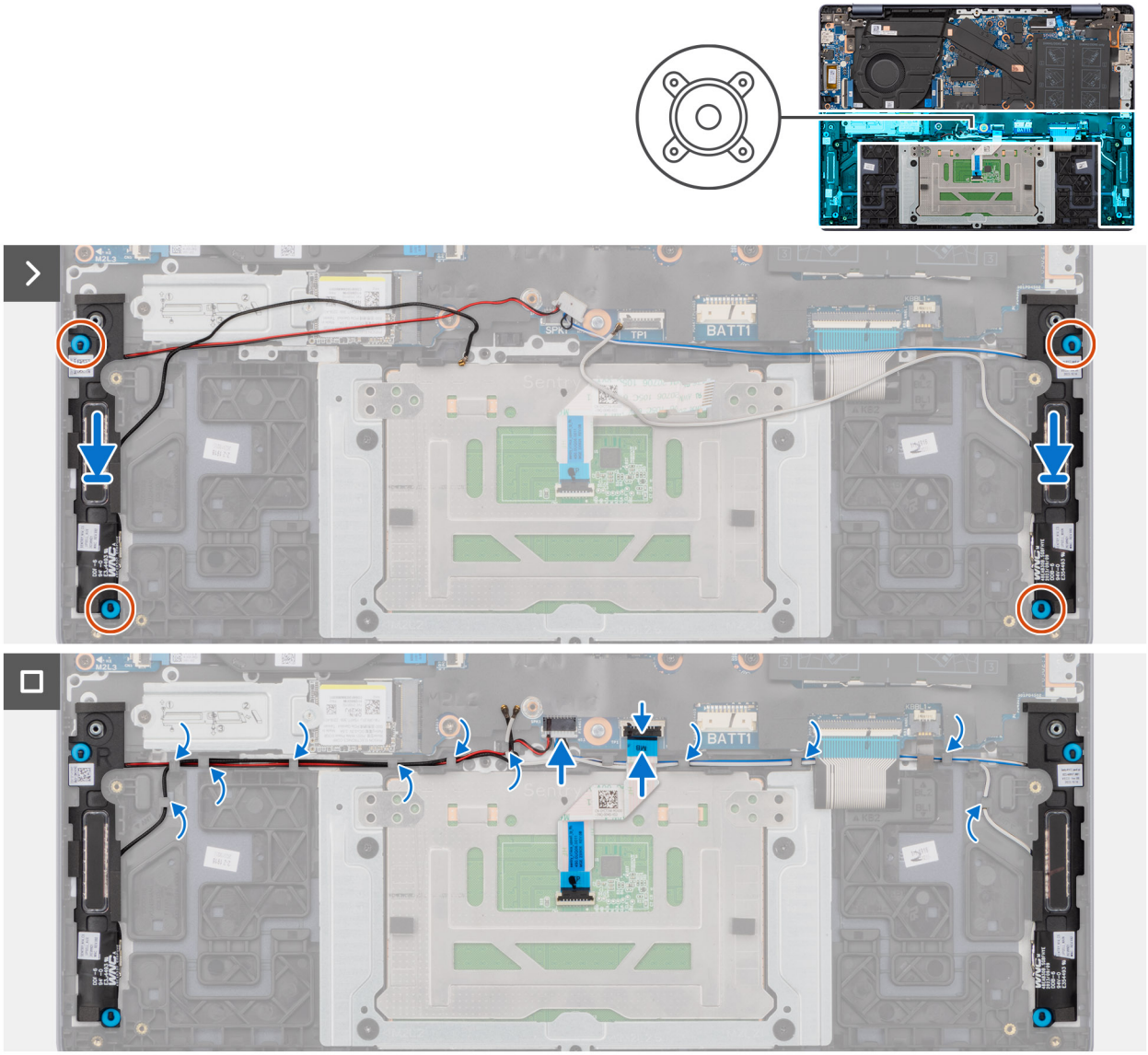
Prerequisites

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 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 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.

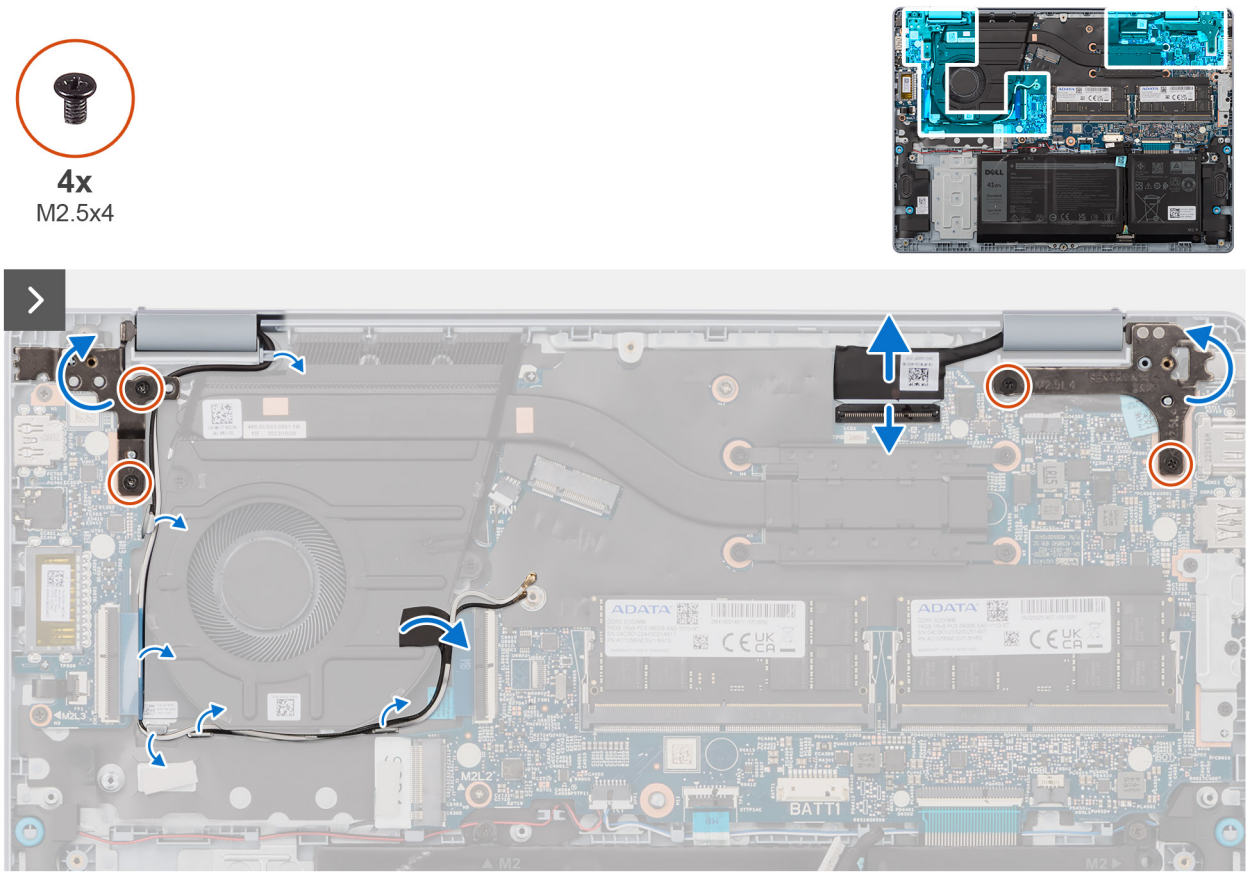


Figure 66. Removing the screws

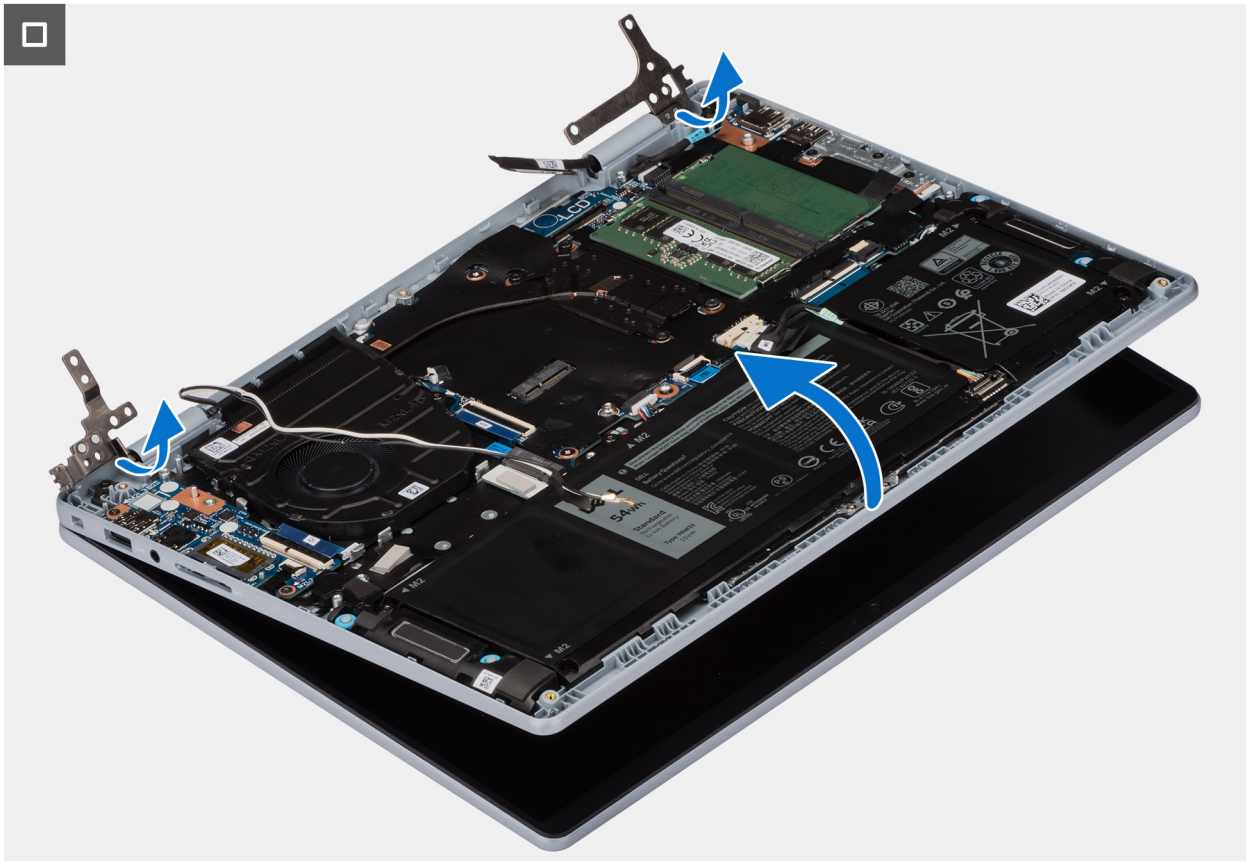


Figure 67. Removing the display assembly

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. Open the hinges to a 90-degree angle and place the computer on the edge of a flat surface.
4. Peel the tape that secures the display-cable connector latch to the system board.
5. Open the latch and disconnect the display cable from the connector on the system board.
6. Peel the tape that secures the wireless antenna cables to the system board.
7. Unroute the wireless antenna cables from the routing guides of the palm-rest and keyboard assembly.
8. 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.

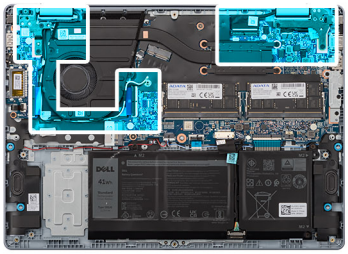
Prerequisites

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



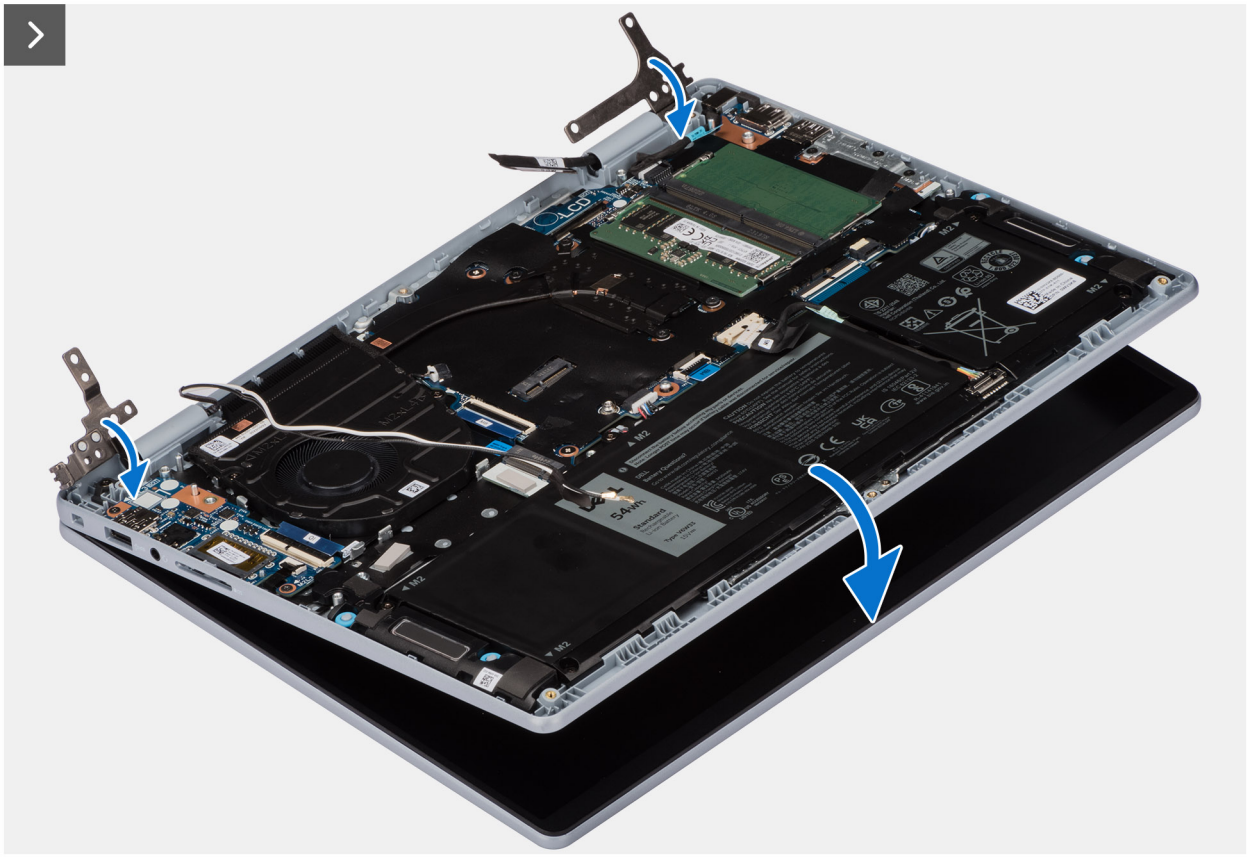
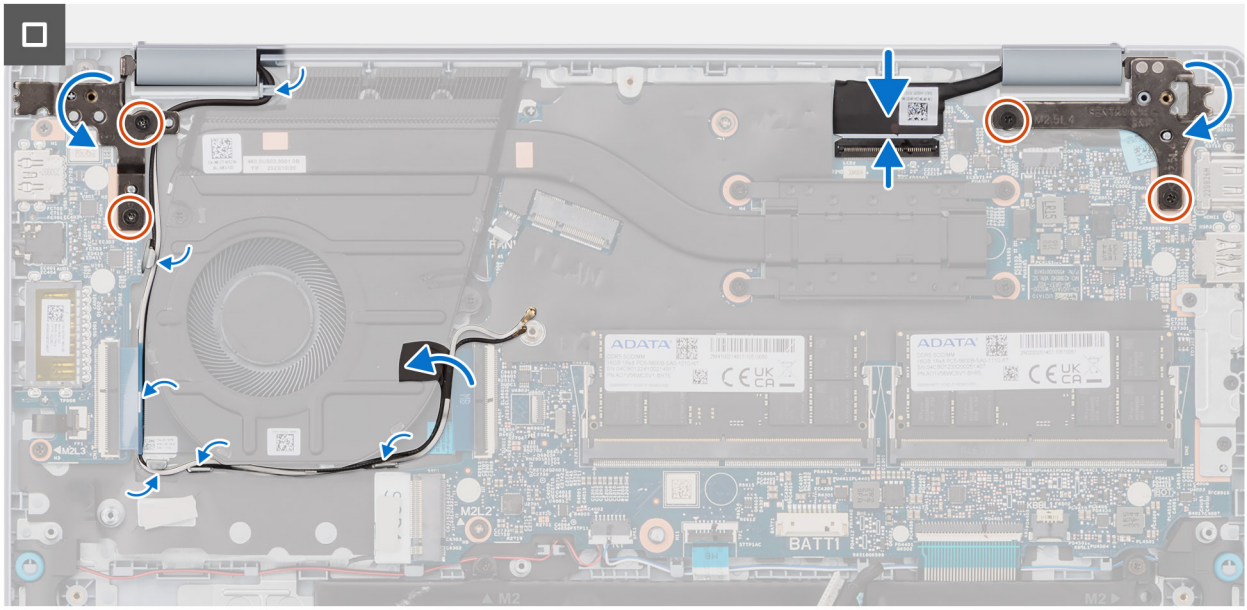


Figure 68. Installing the display assembly

Figure 69. 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.

Figure 70. Removing the screws

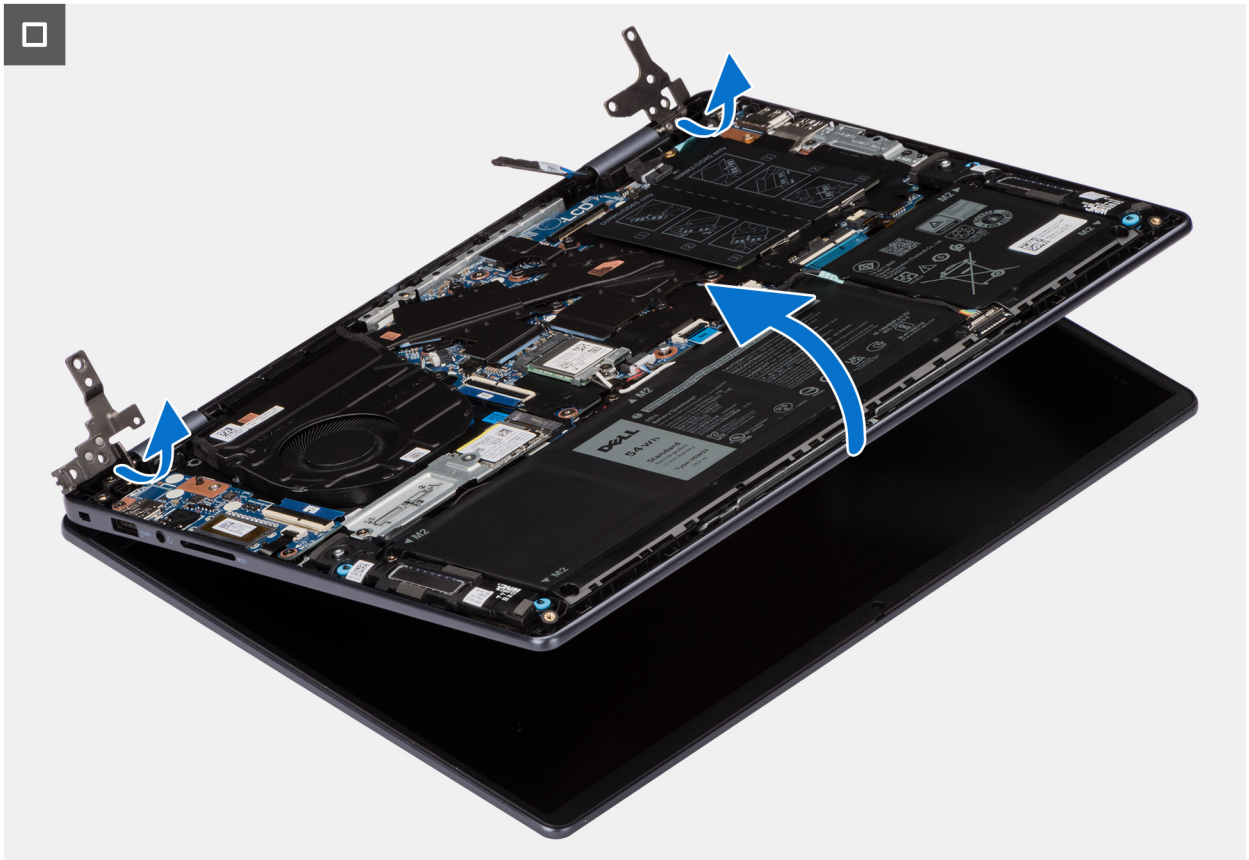


Figure 71. Removing the display assembly

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. Open the hinges to a 90-degree and place the computer on the edge of a flat surface..

   NOTE: The display assembly is a Hinge-Up Design (HUD) assembly and cannot be further disassembled. If any components in the display assembly malfunction and requires replacement, the entire display assembly has to be replaced.

4. Peel the tape that secures the display-cable connector latch to the system board.
5. Open the latch and disconnect the display cable from the connector on the system board.
6. Peel the tape that secures the wireless antenna cables to the system board.
7. Unroute the wireless antenna cables from the routing guides of the palm-rest and keyboard assembly.
8. Gently lift the palm-rest and keyboard assembly off the 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.

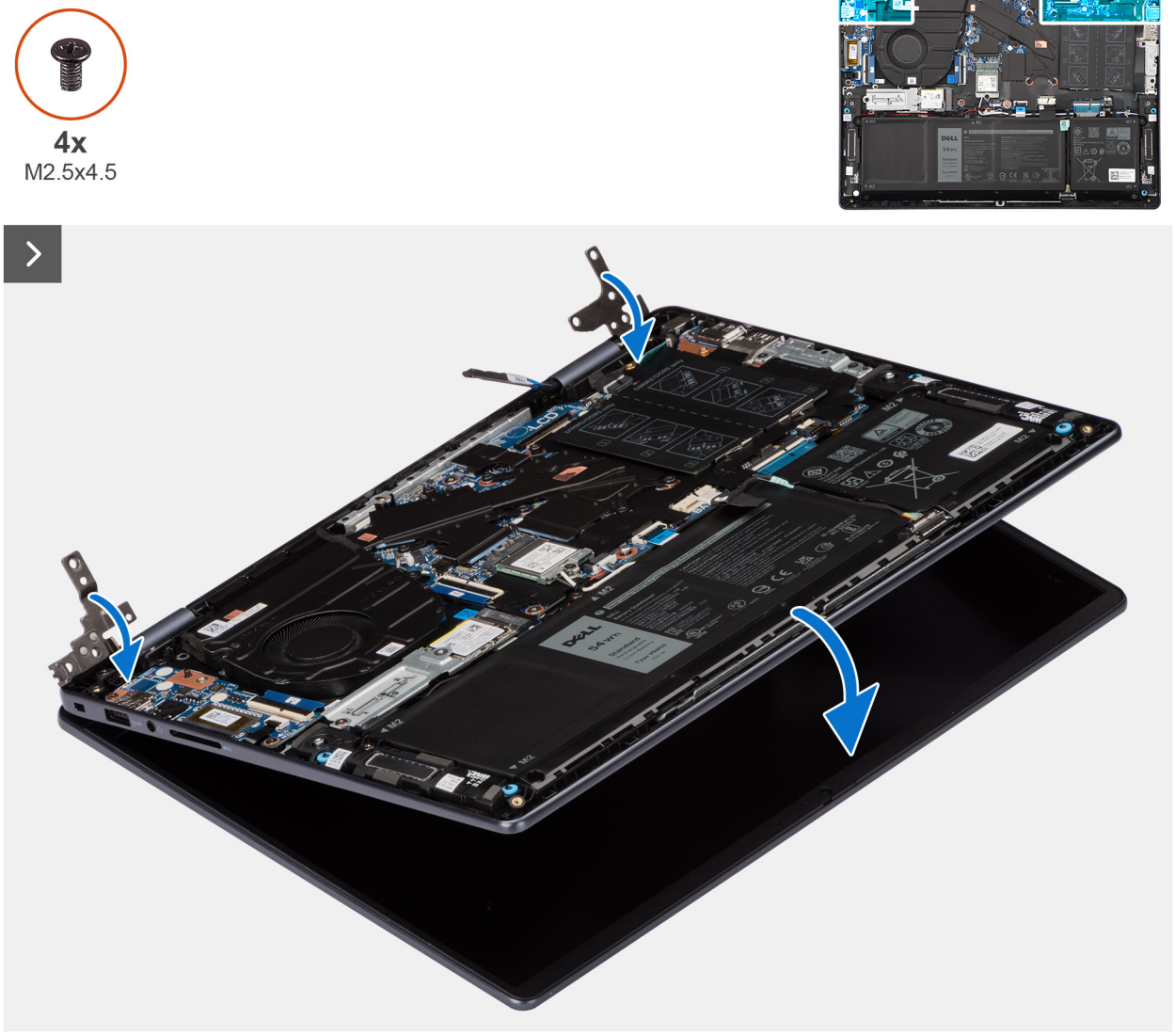


Figure 72. Installing the display assembly

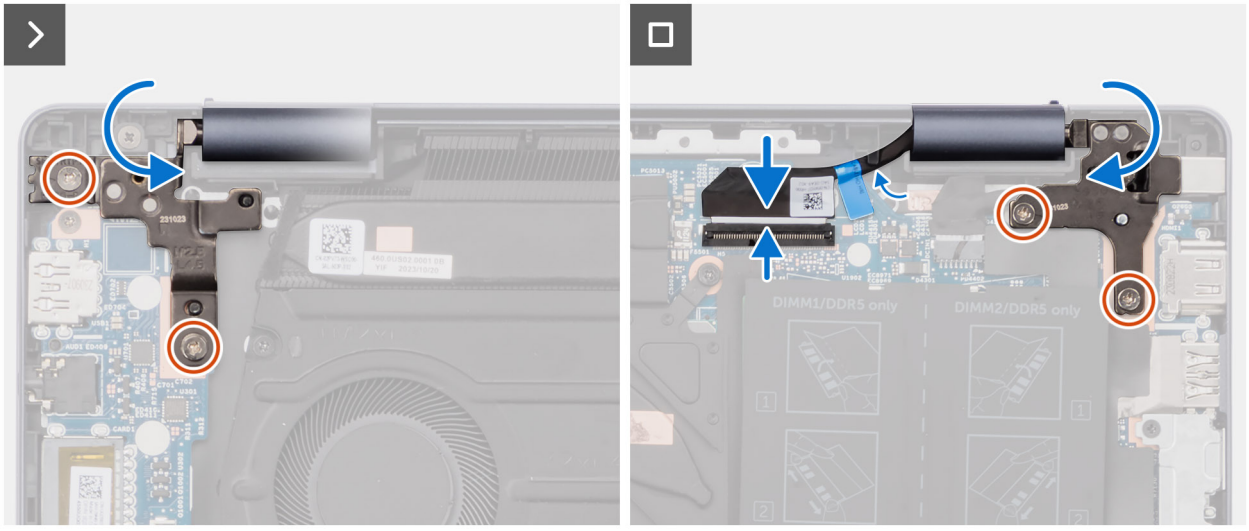


Figure 73. Replacing the screws

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.

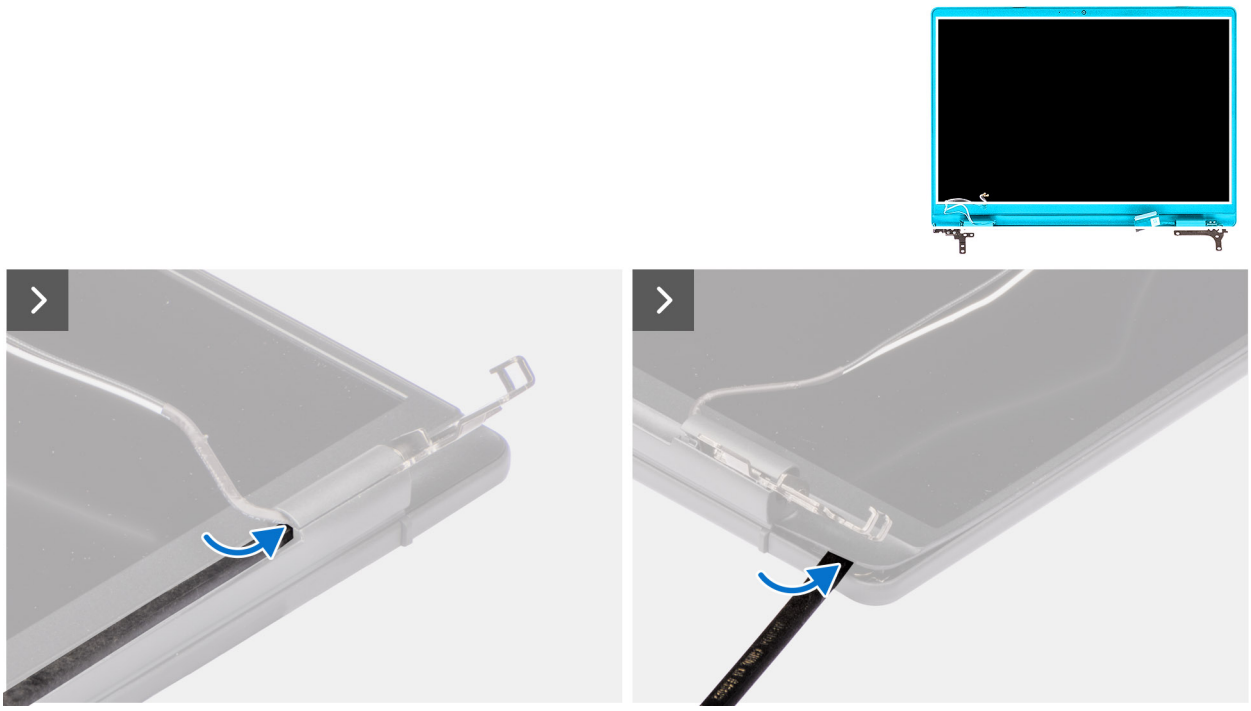
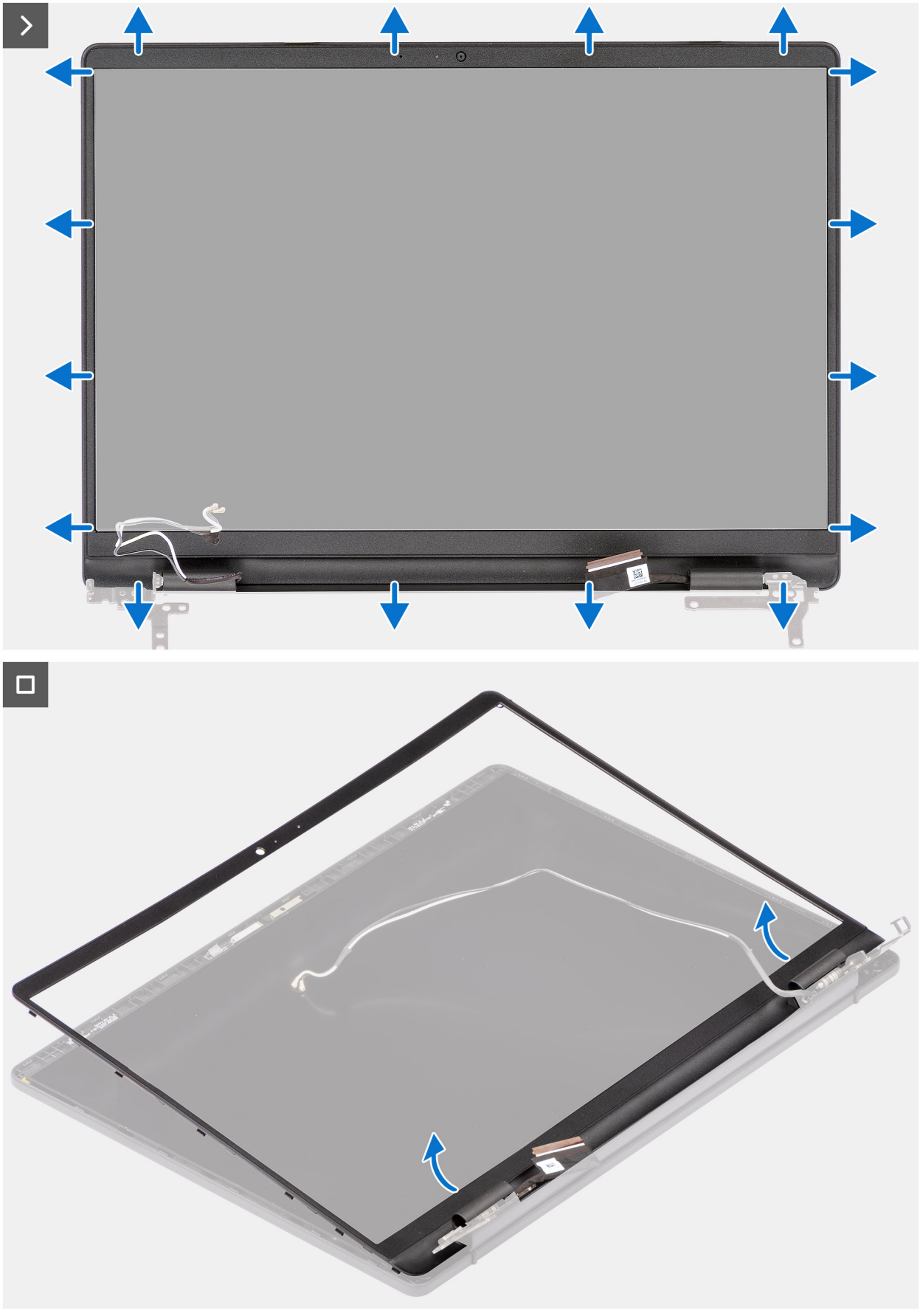


Figure 74. Removing the display bezel

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.

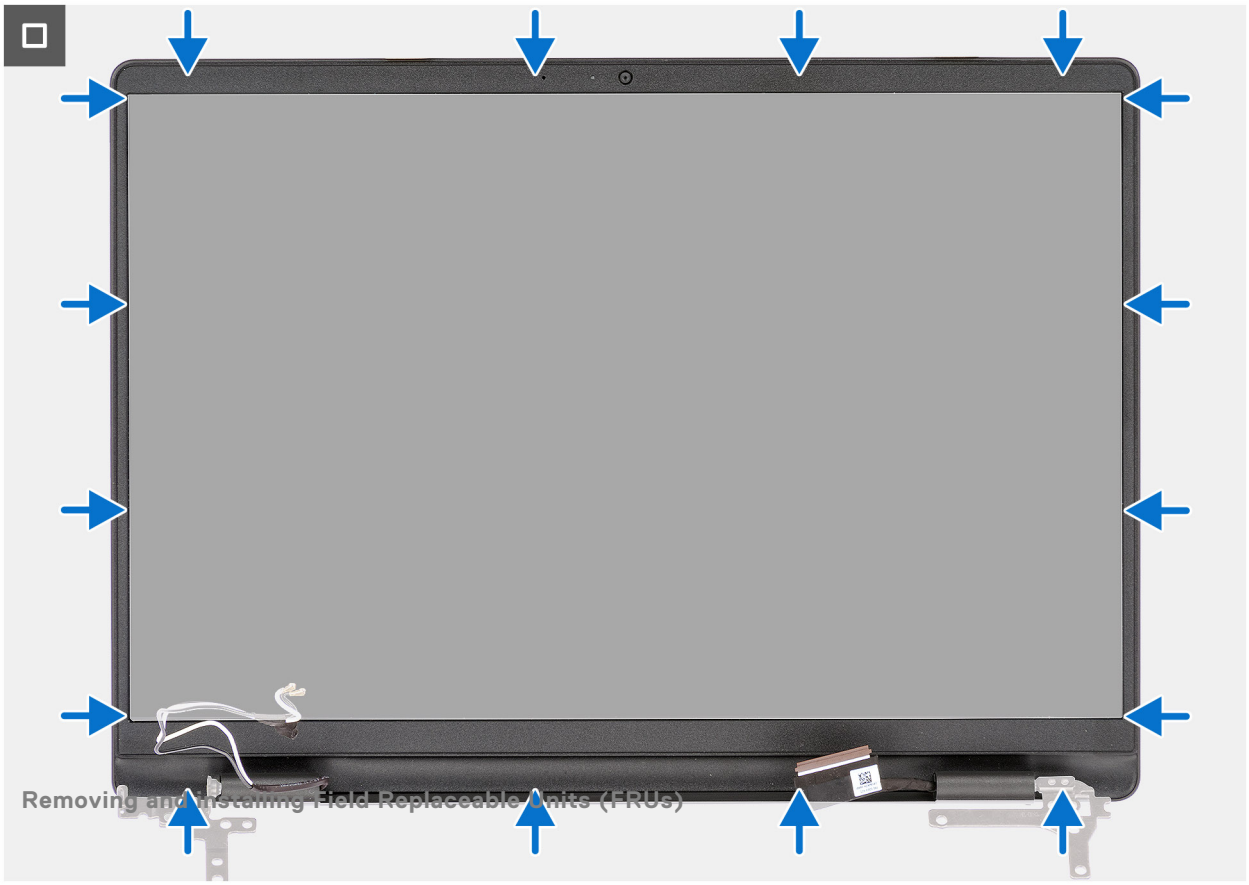
Prerequisites

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.



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 computers 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.

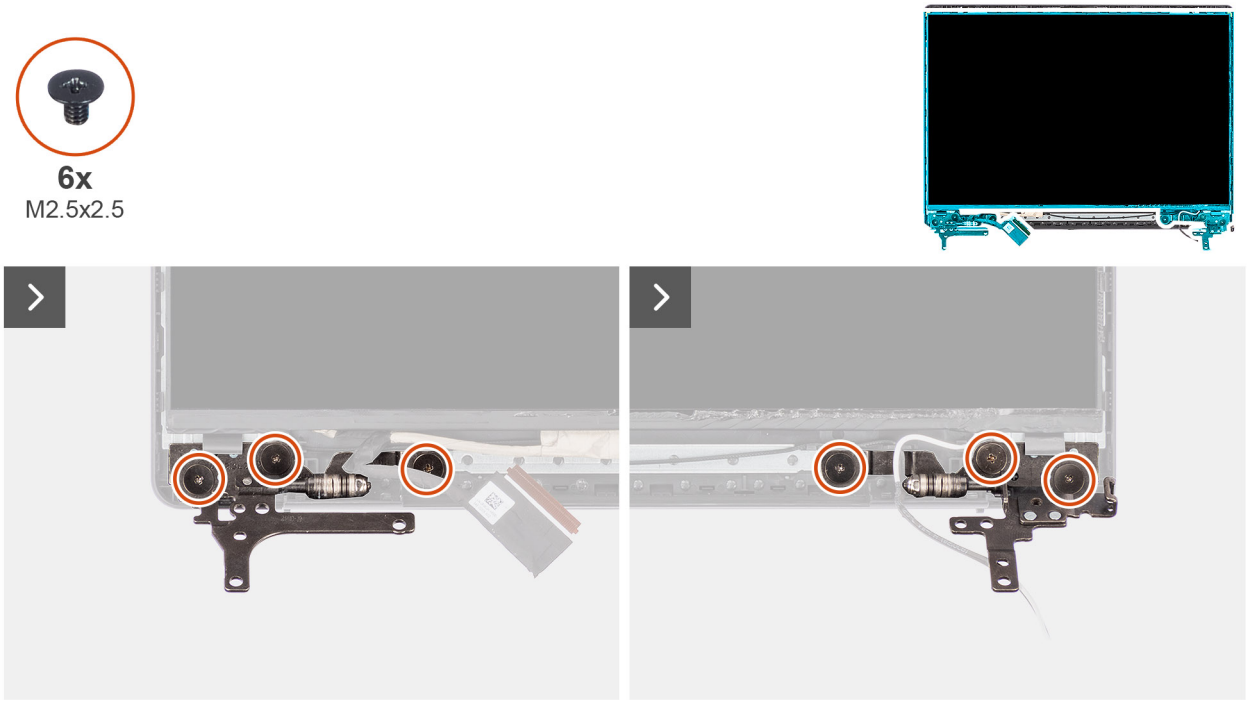


Figure 76. Removing the display panel screws

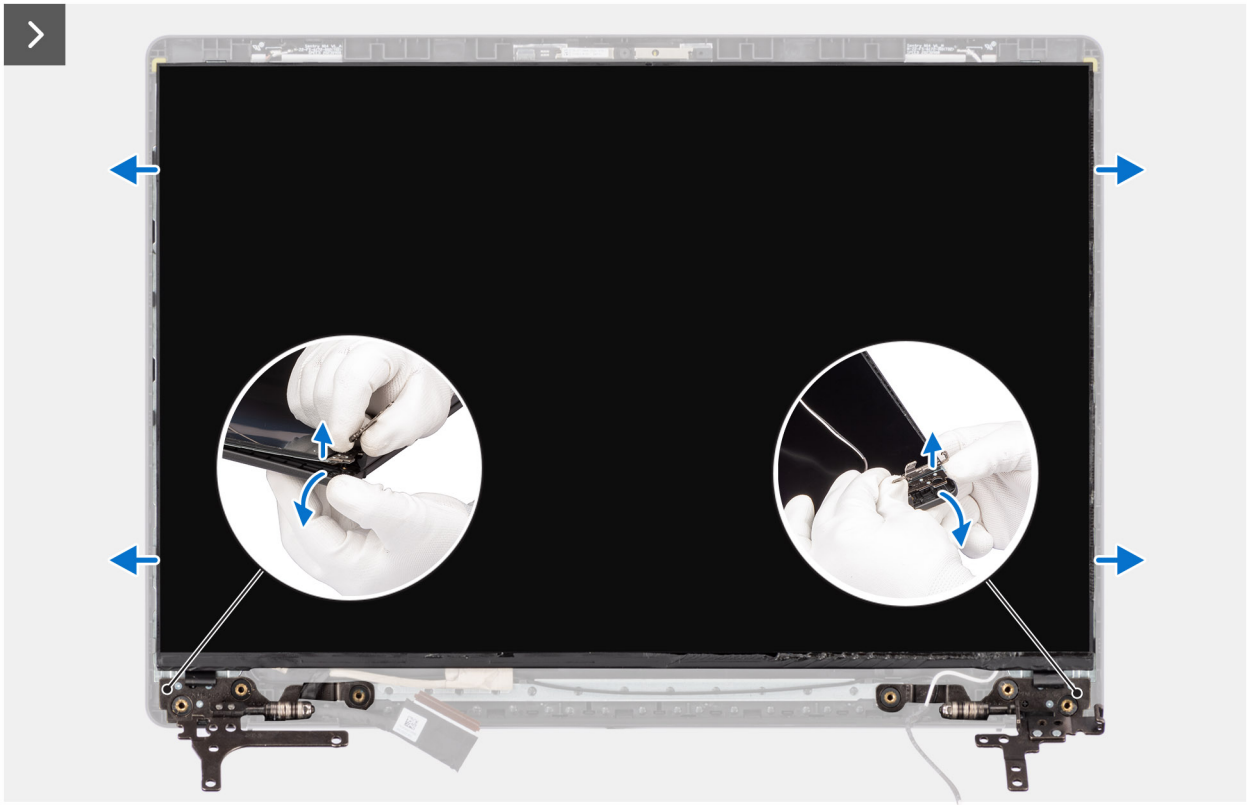


Figure 77. Removing the display panel

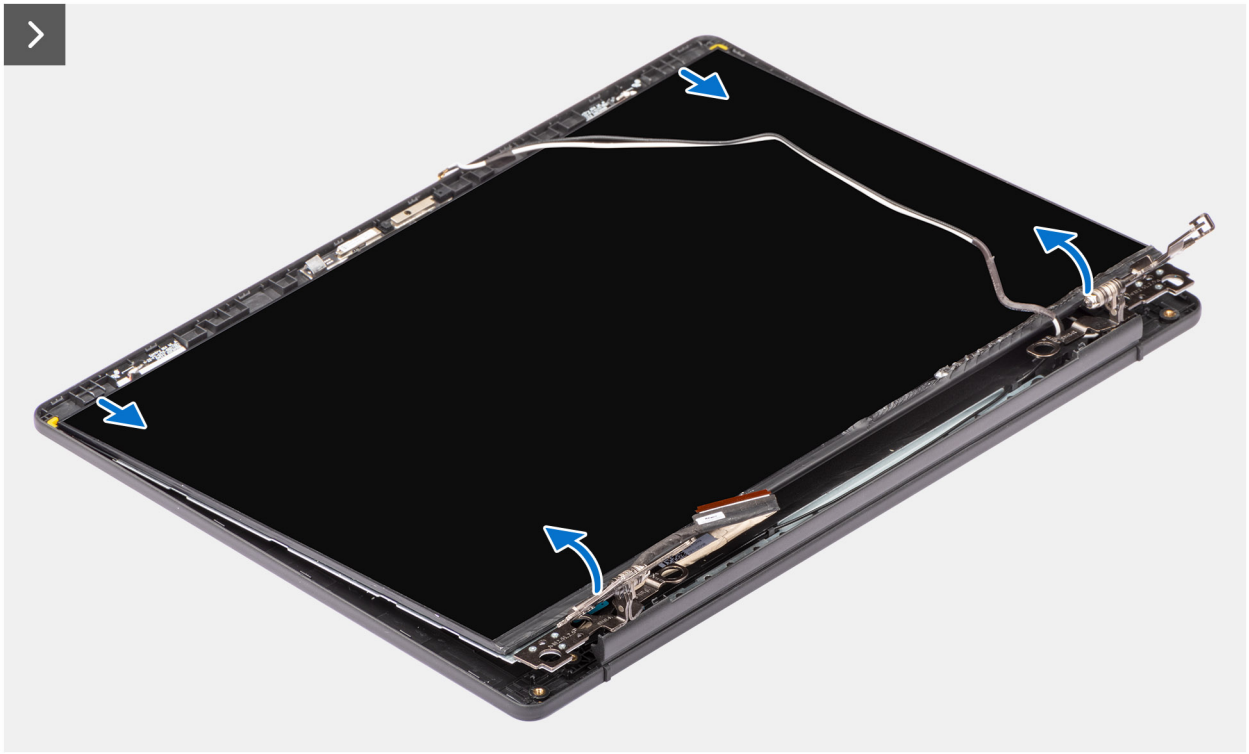


Figure 78. Removing the display panel

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 display hinge.
4. Repeat step 3 to release the left display hinge from the display back-cover and antenna assembly.
5. 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.
6. 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.

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

   WARNING: 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.

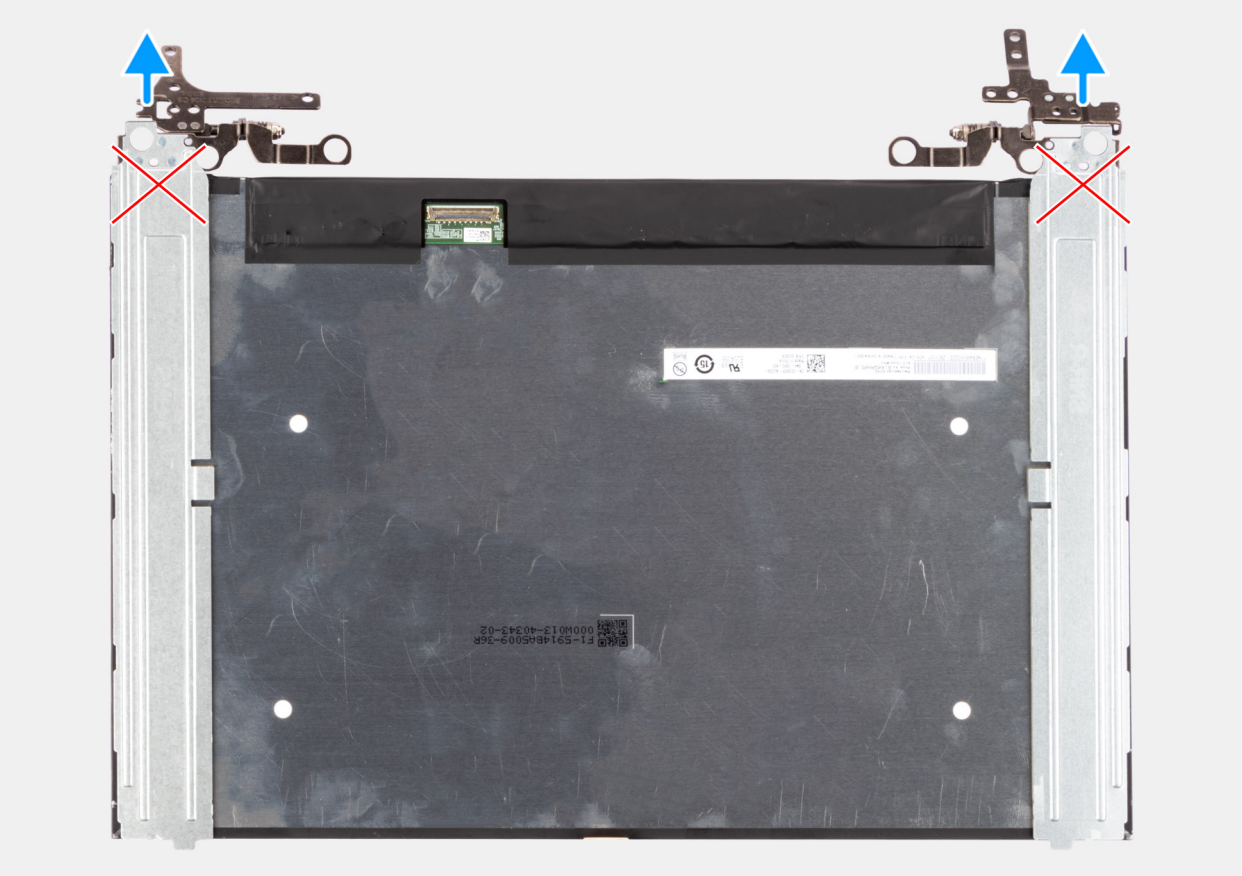


Figure 80. Removing the display panel

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.

Figure 81. Installing the display panel

Figure 82. Installing the screws

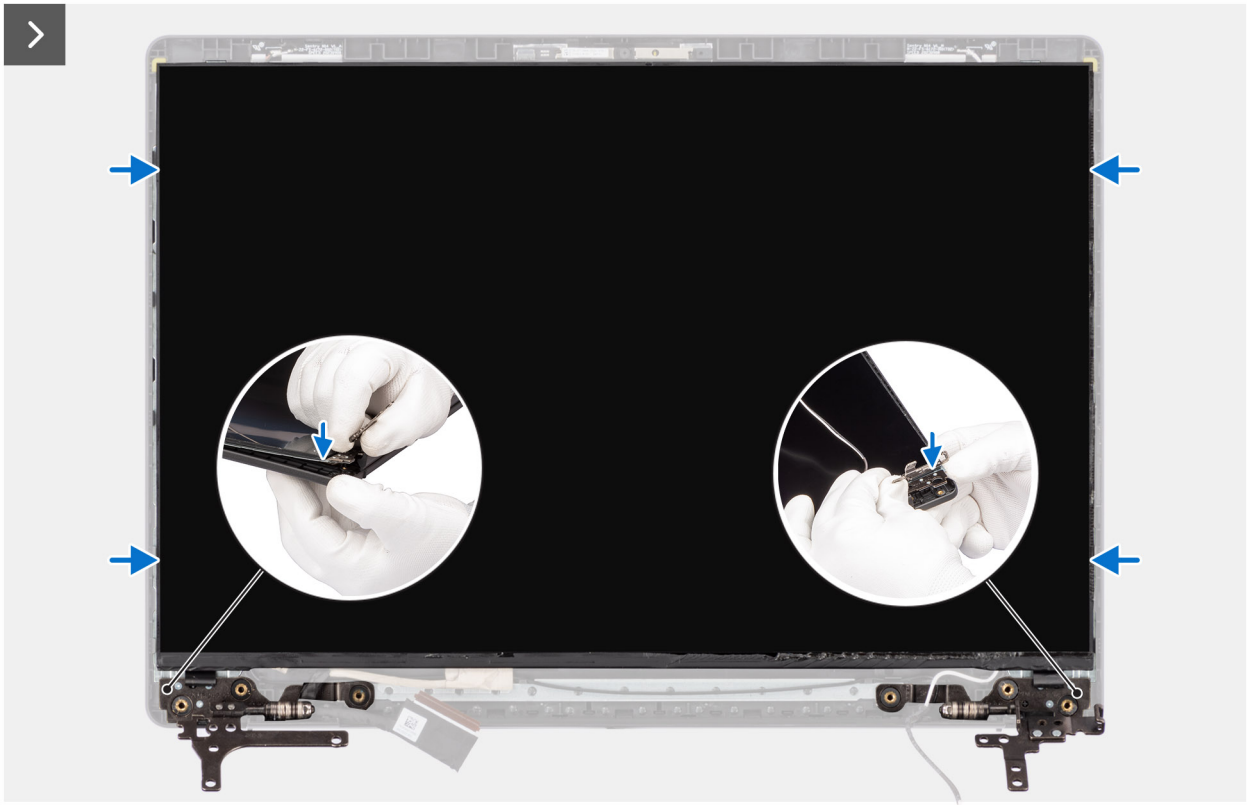


Figure 83. Installing the display panel

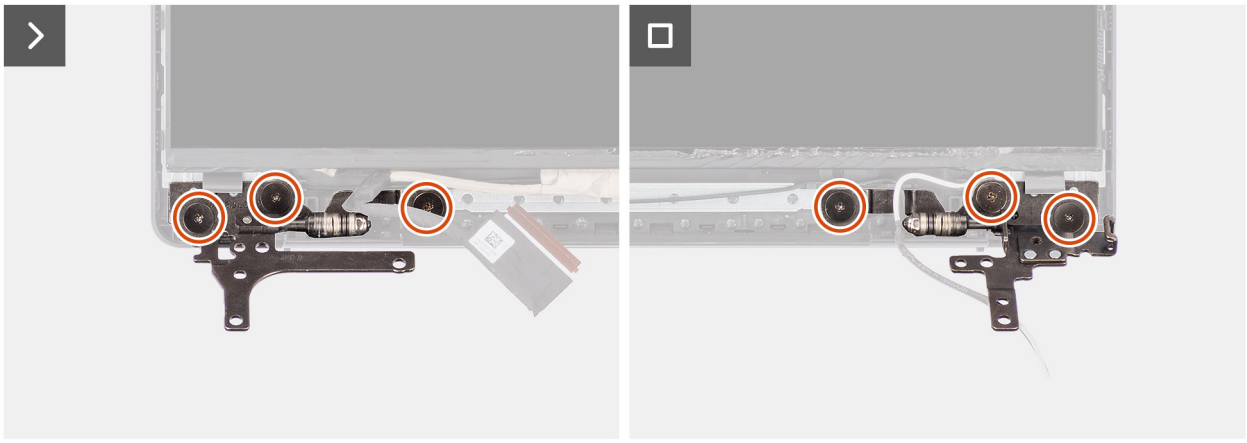


Figure 84. Installing the display panel

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. Gently bend the bottom corners 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 computers 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.

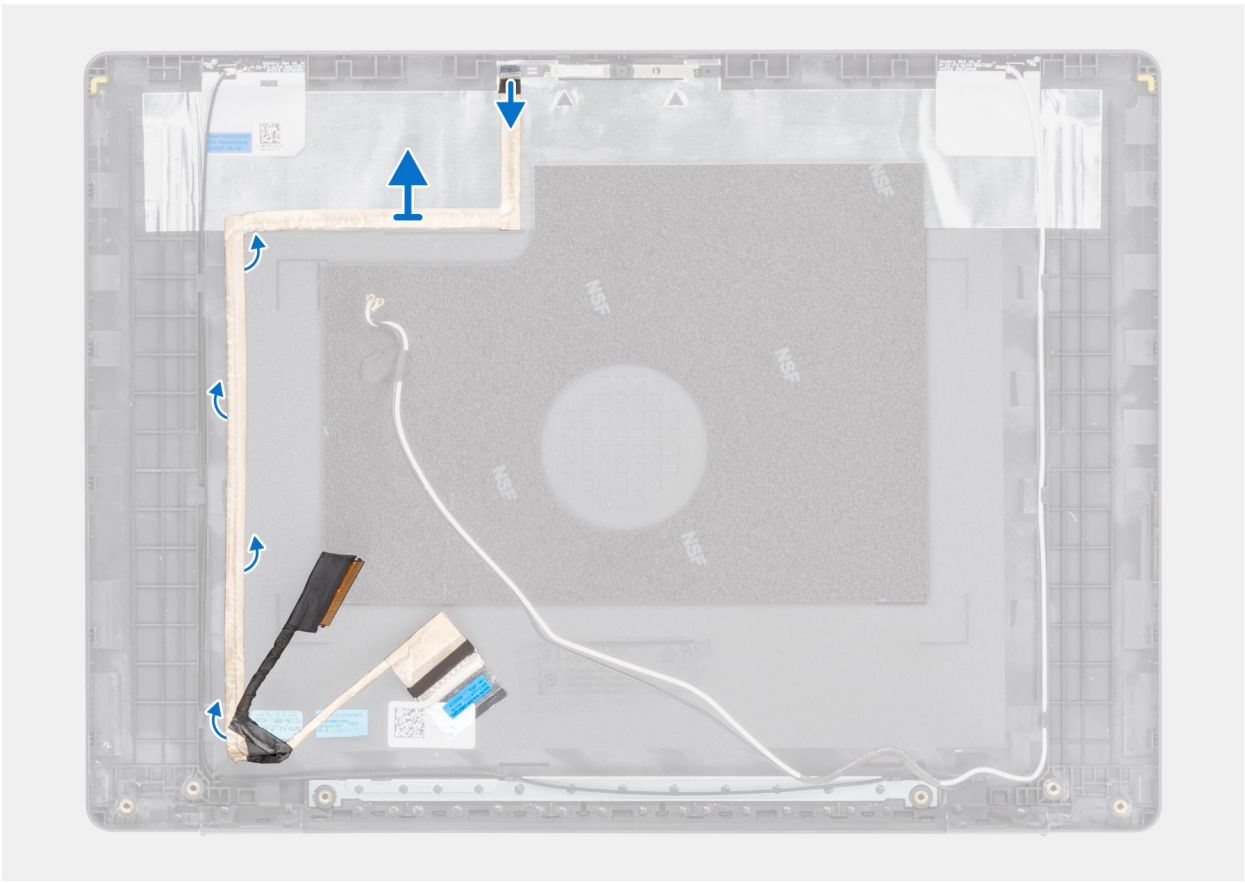


Figure 85. Removing the display cable

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.

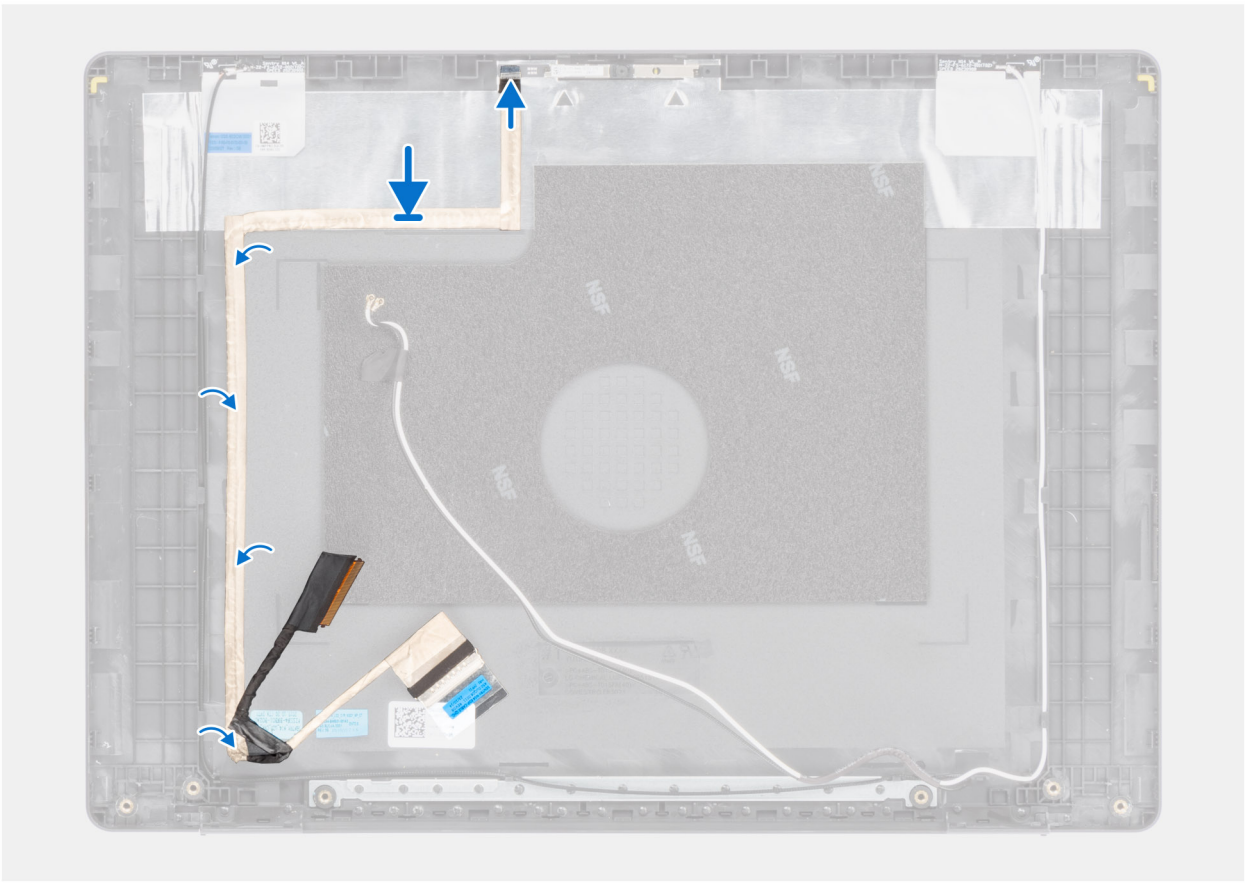


Figure 86. Installing the display cable

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.

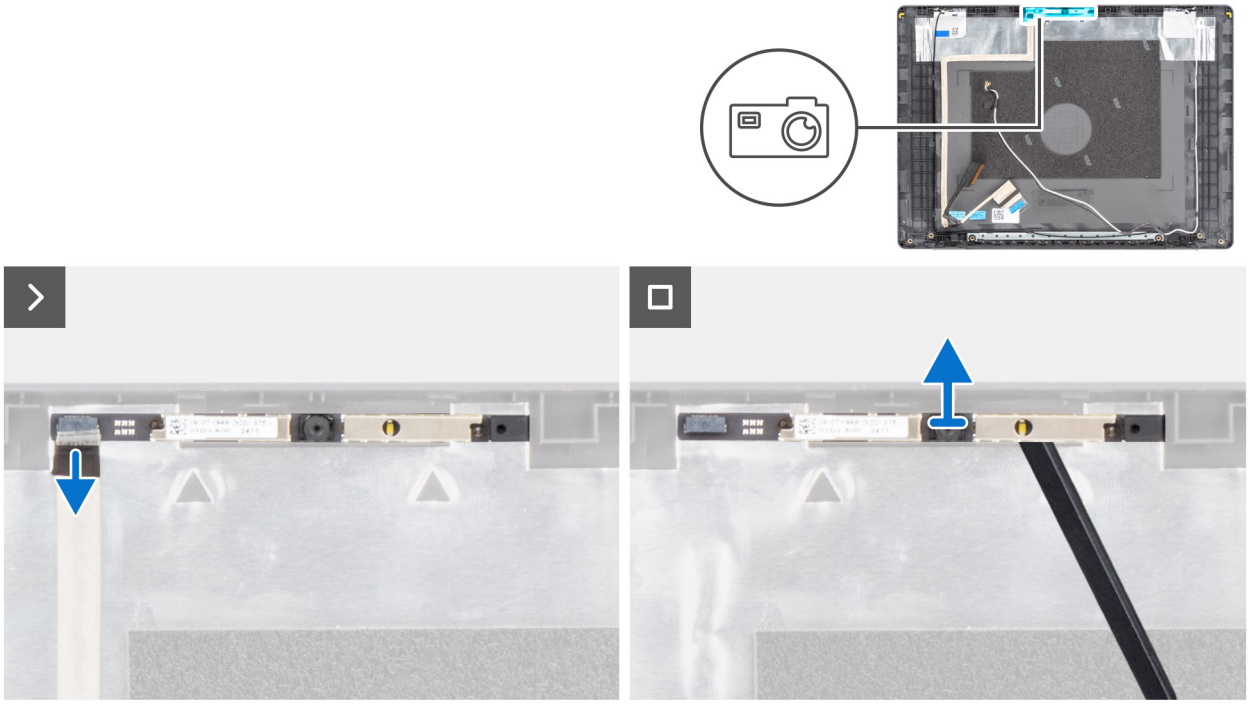


Figure 87. Removing the camera

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.

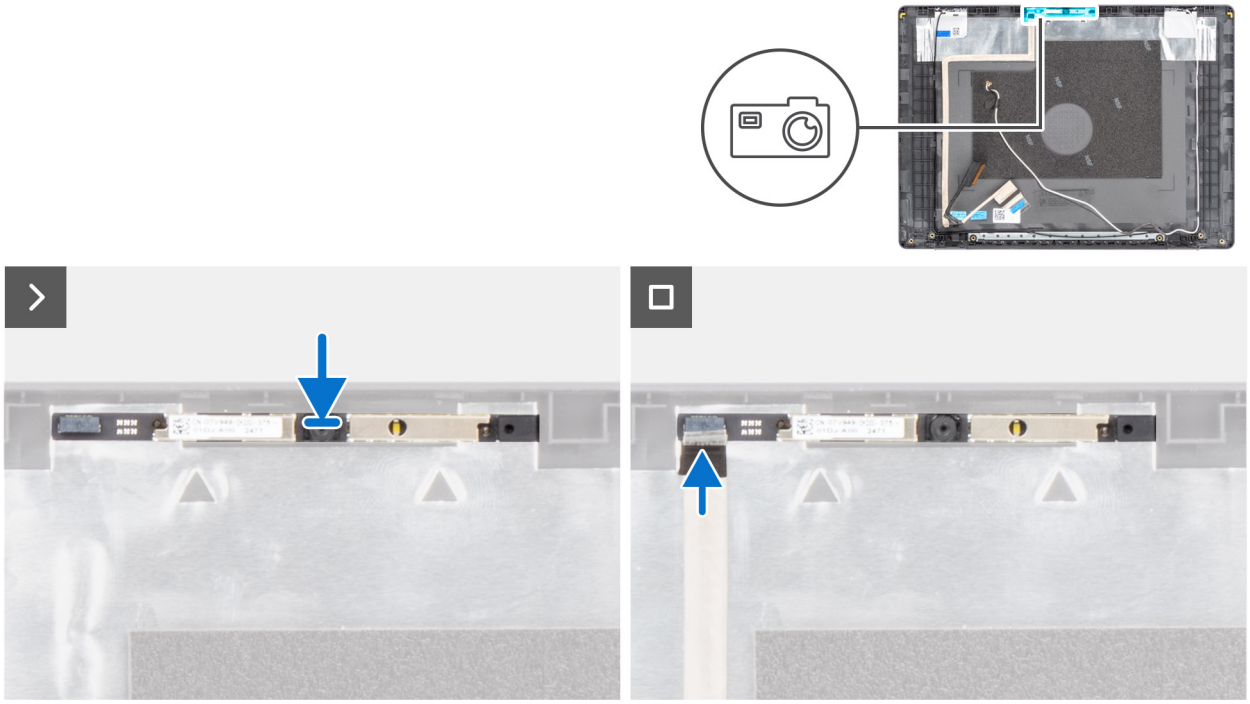


Figure 88. Installing the camera

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 89. 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.

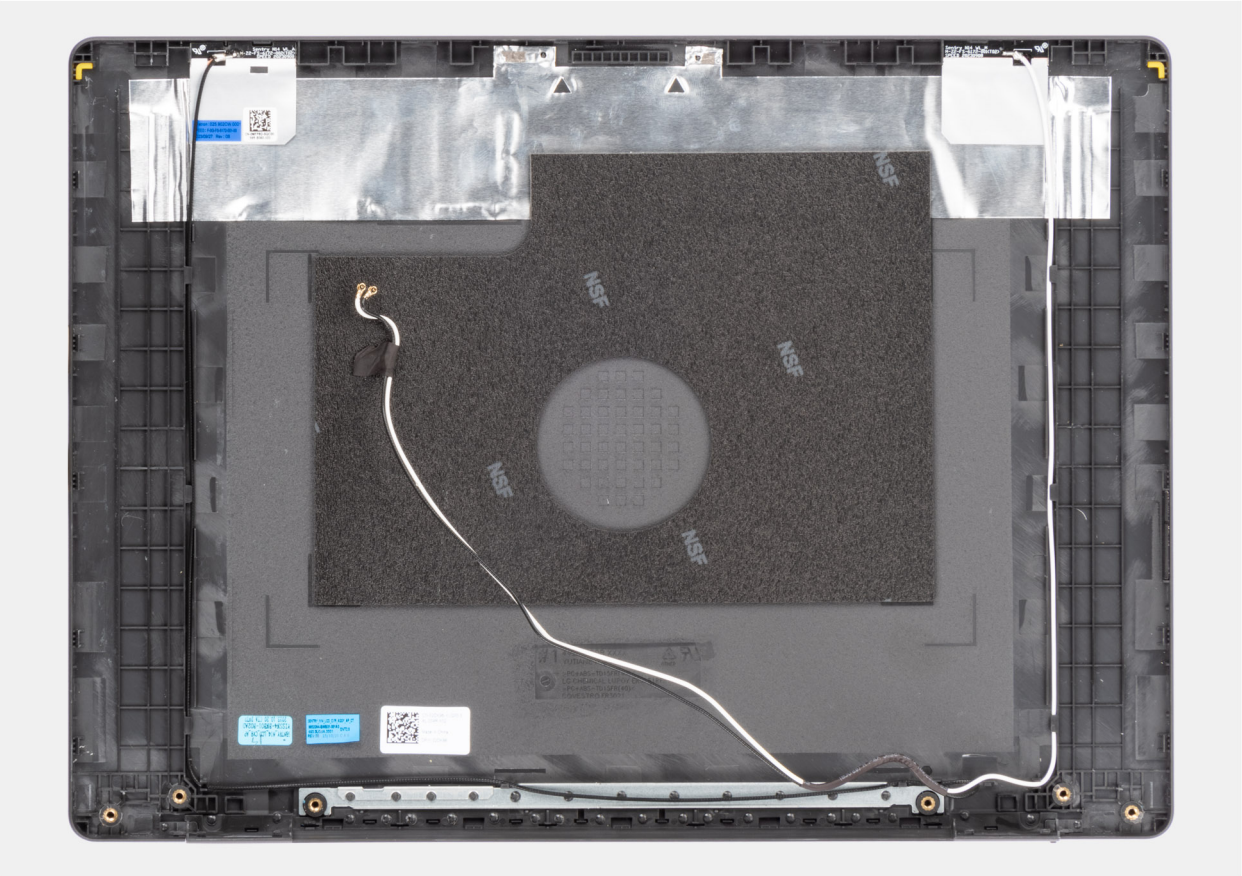


Figure 90. Display back-cover and antenna assembly

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.

   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.

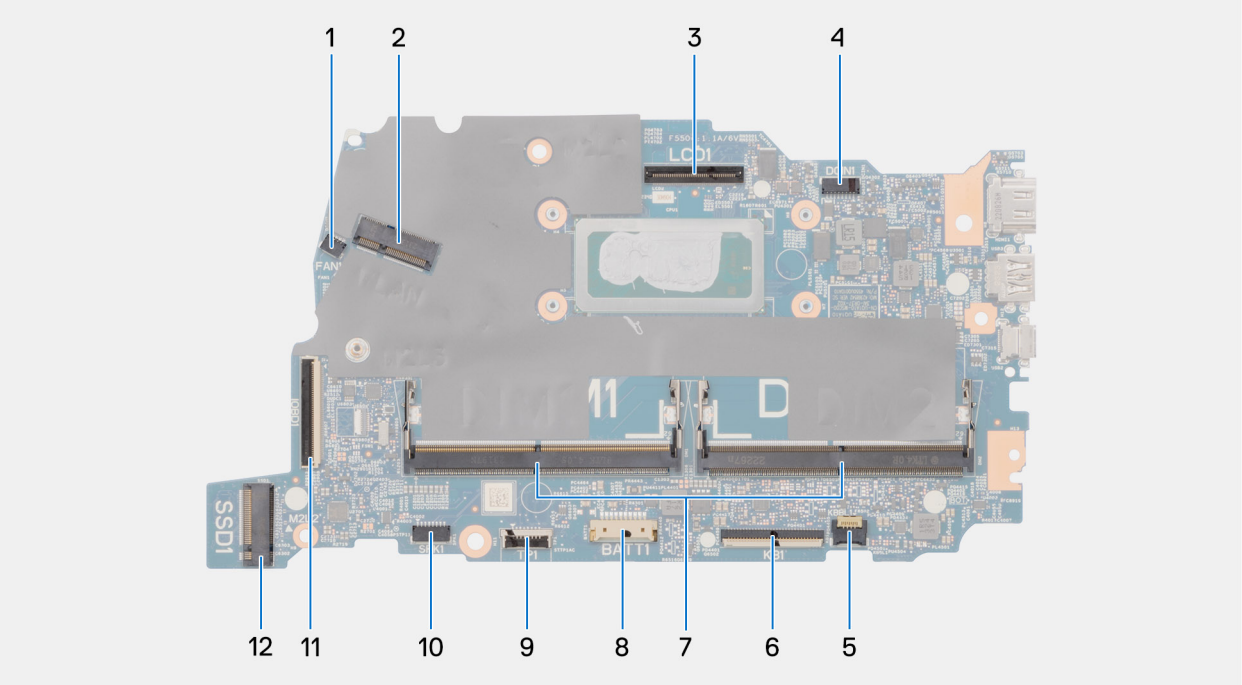


Figure 91. Connectors on the system board

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.

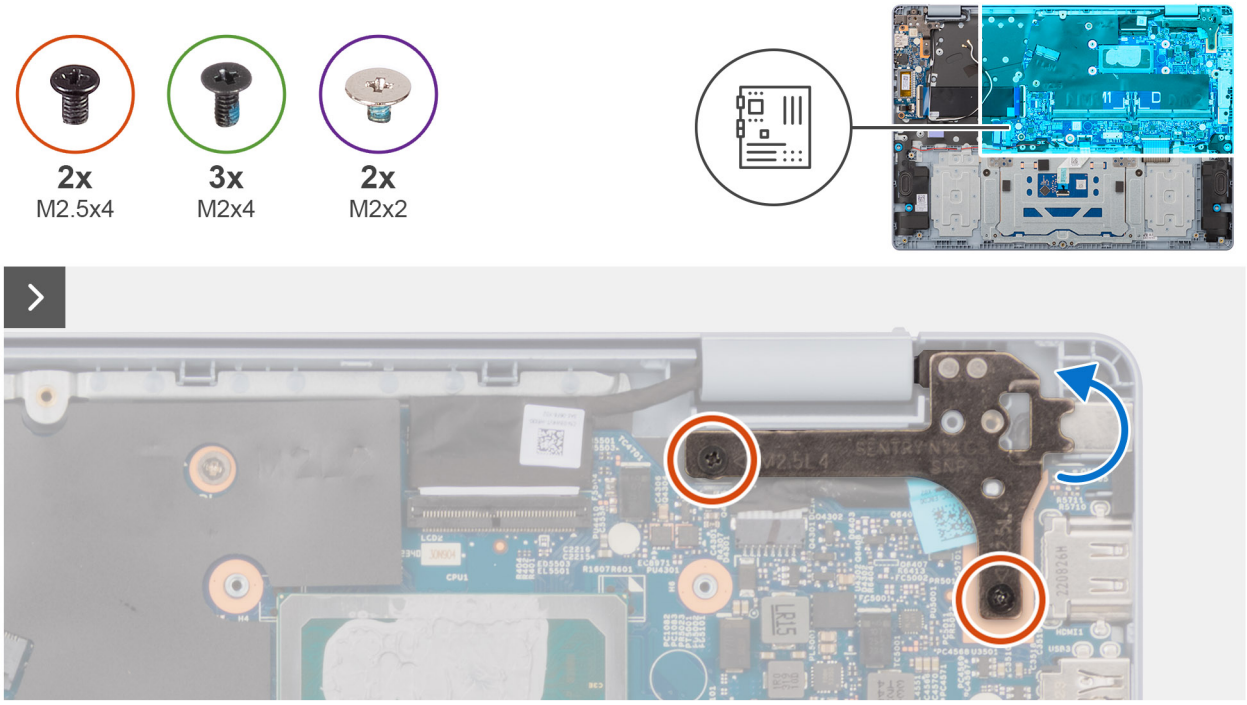


Figure 92. Removing the screws

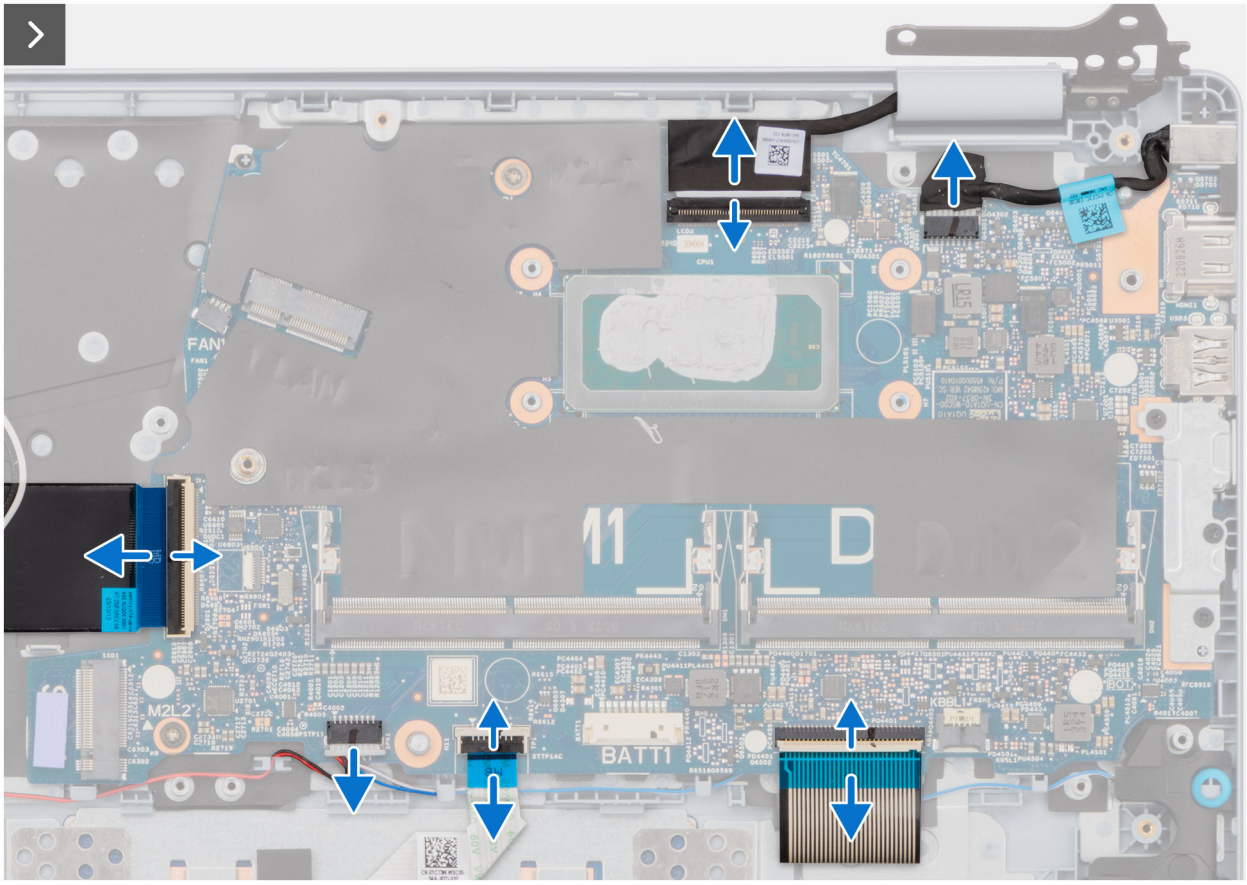


Figure 93. Removing the cable connectors

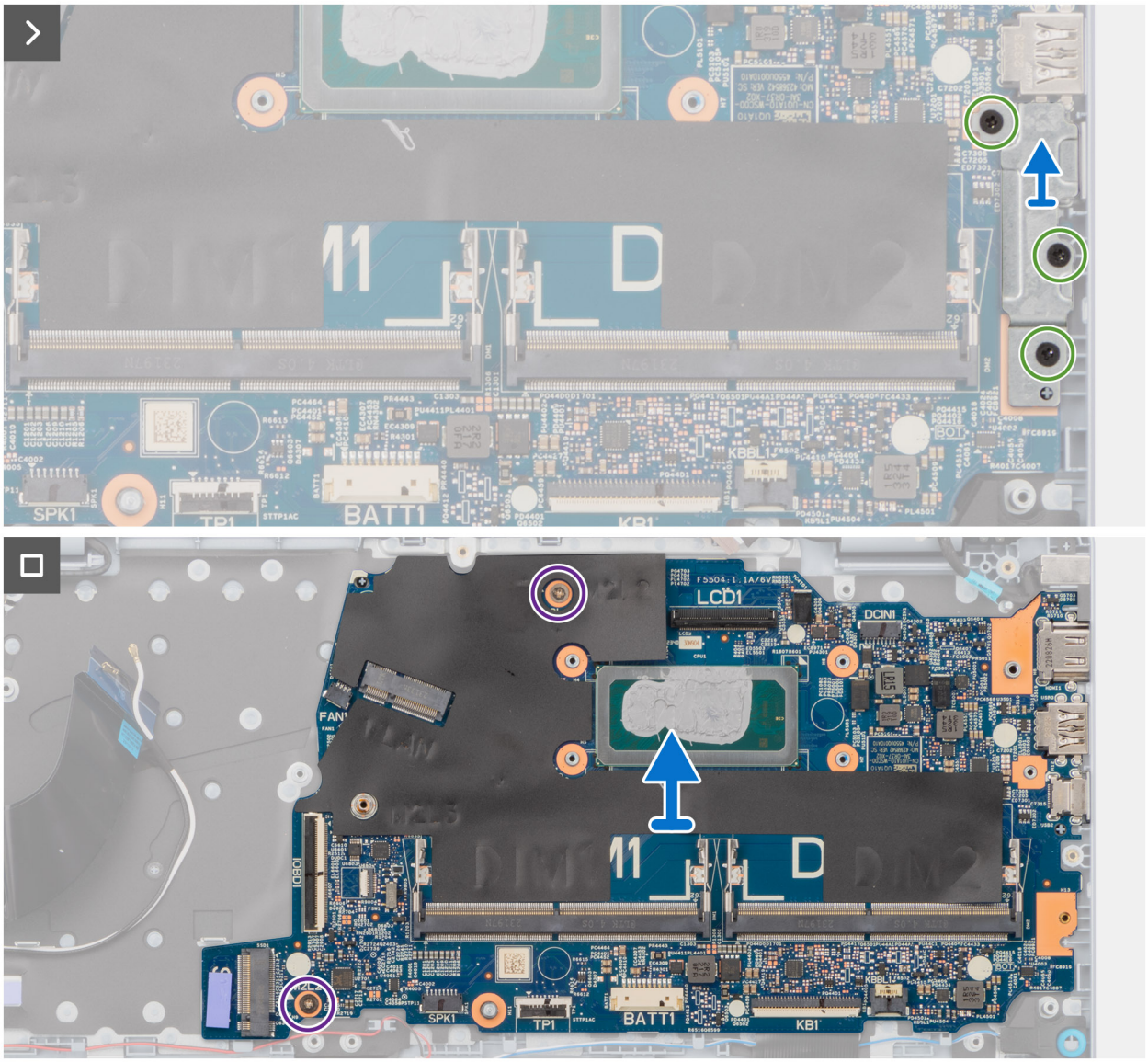


Figure 94. Removing the system board

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. Open 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. Open the latch and disconnect the touchpad cable from the connector (TP1) on the system board.
7. Open the latch and disconnect the keyboard cable from the connector (KB1) on the system board.
8. Open 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.

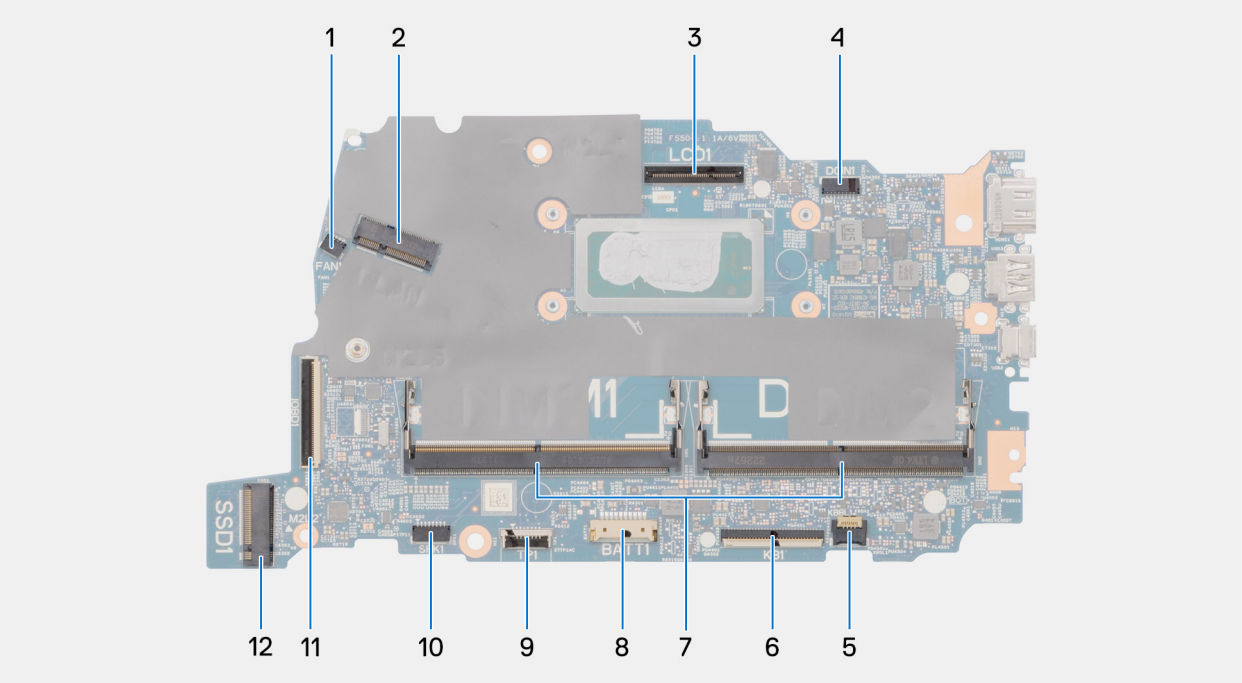


Figure 95. Connectors on the system board

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.

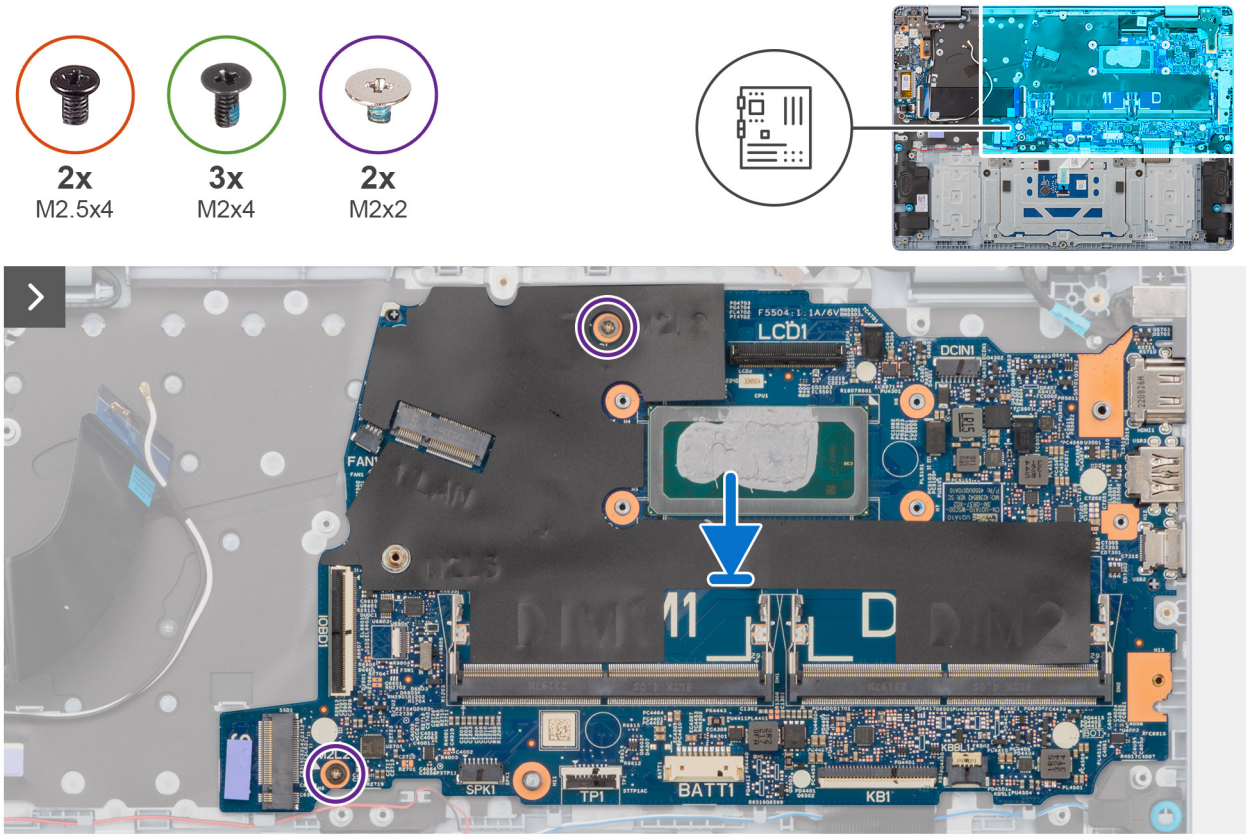


Figure 96. Installing the system board

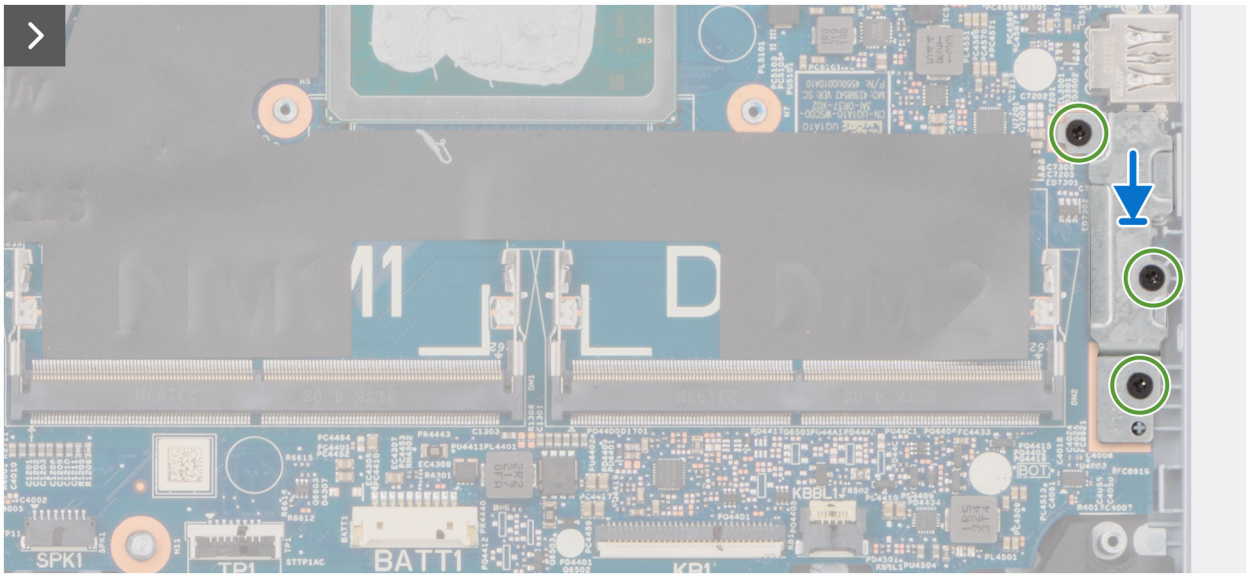


Figure 97. Replacing the USB Type-C bracket

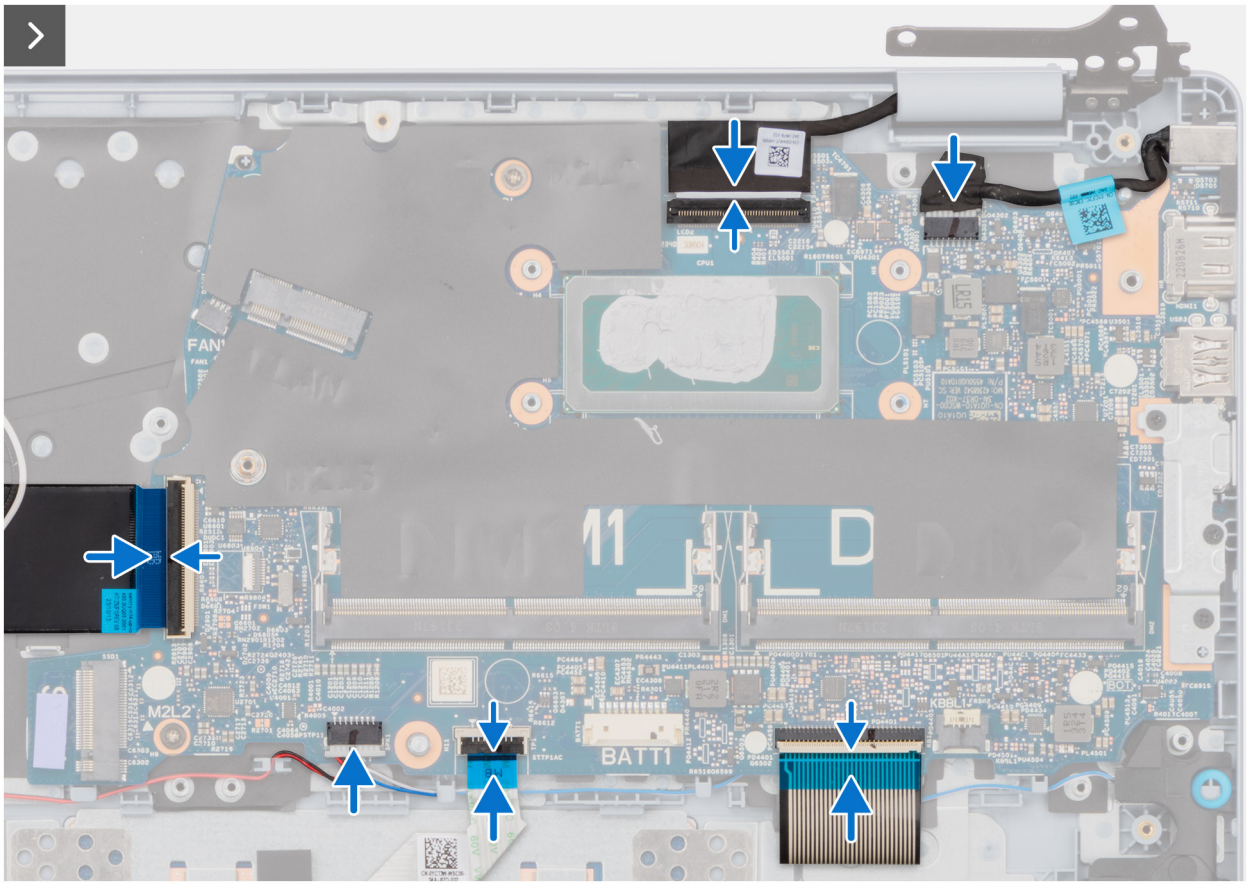


Figure 98. Replacing the cable connectors

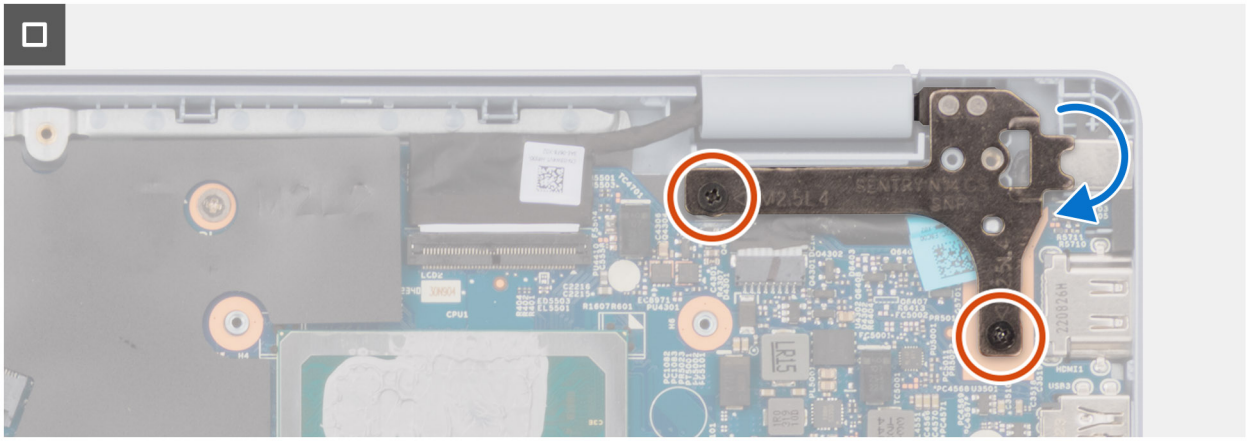


Figure 99. Replacing the hinge screws

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 .

> **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.

> **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.

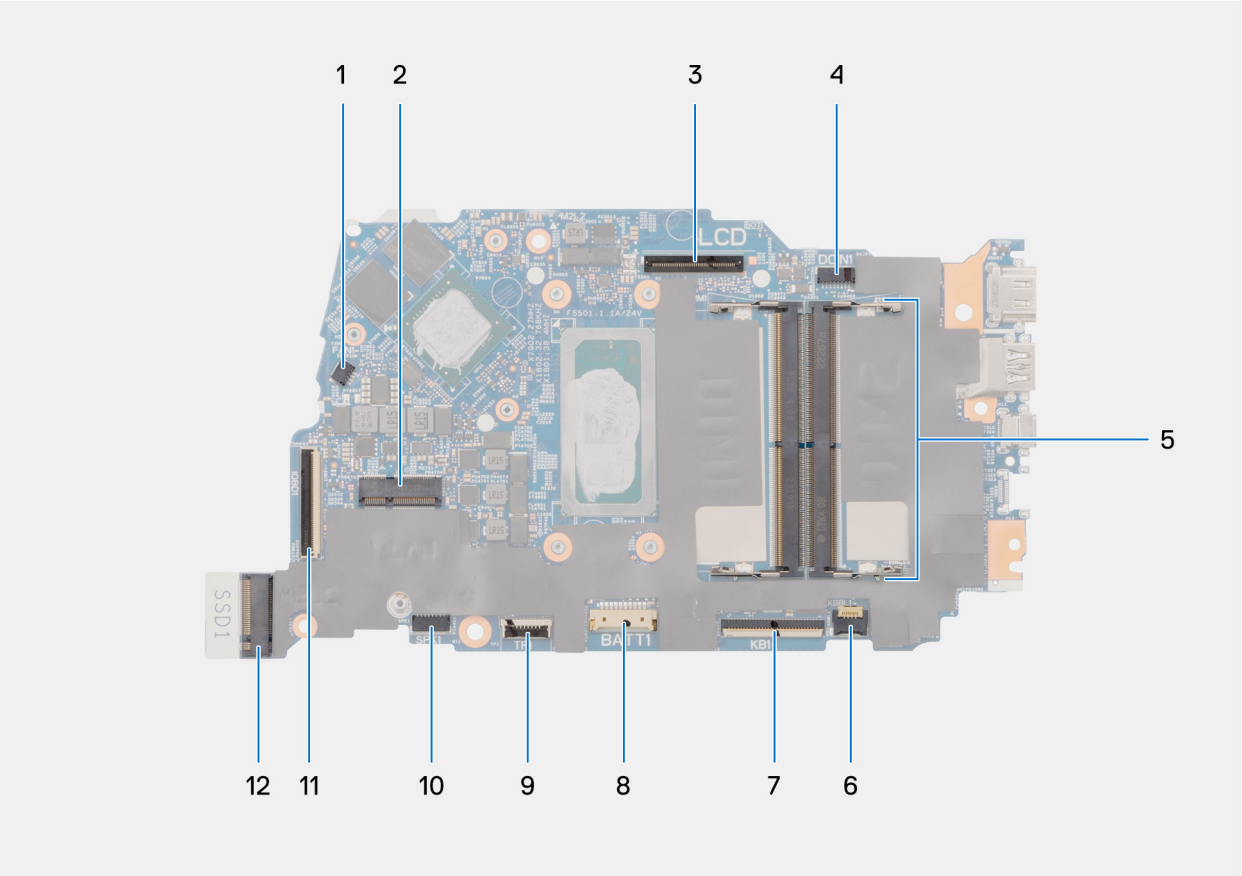


Figure 100. Connectors on the system board

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.

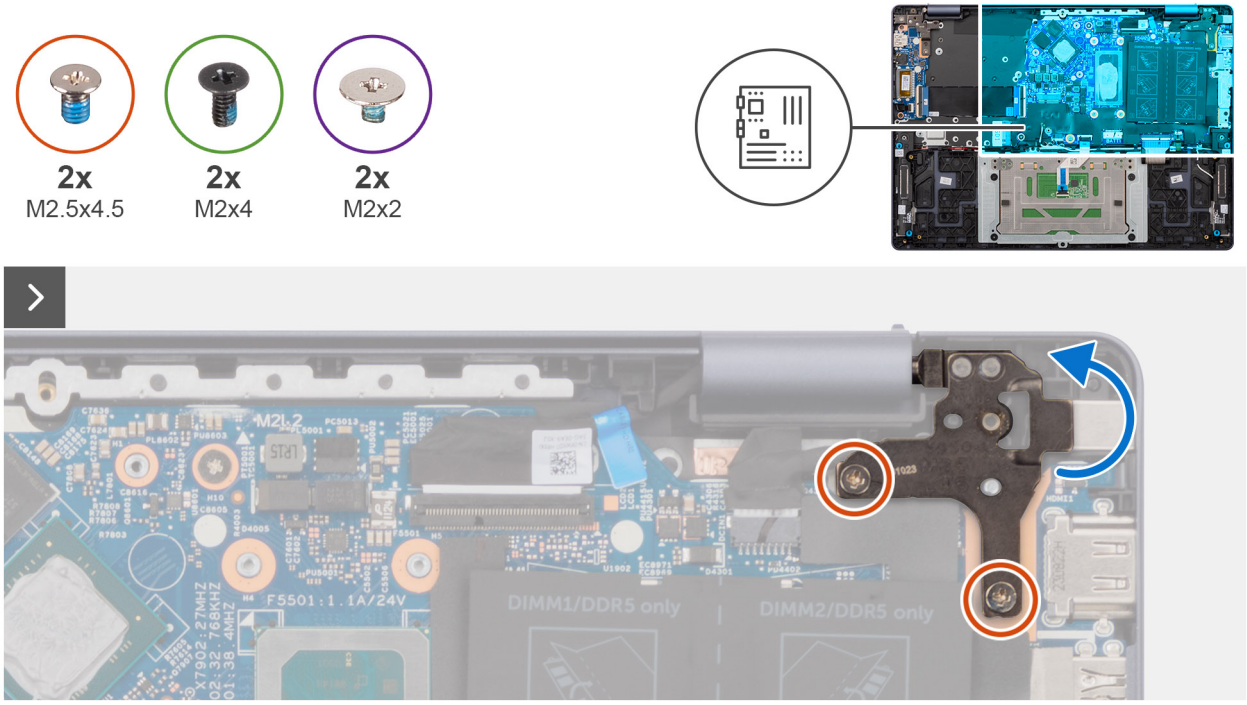


Figure 101. Removing the hinge screws

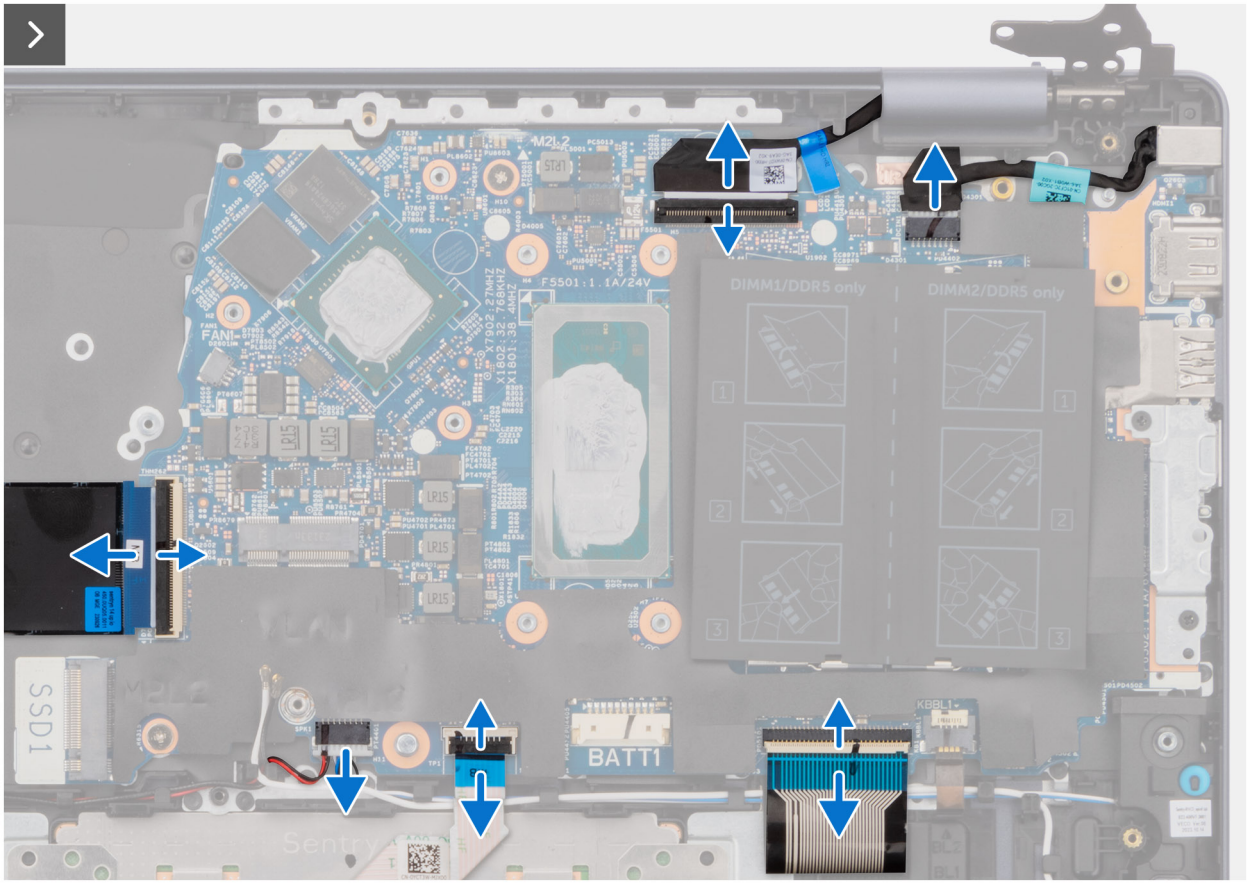


Figure 102. Removing the cable connectors

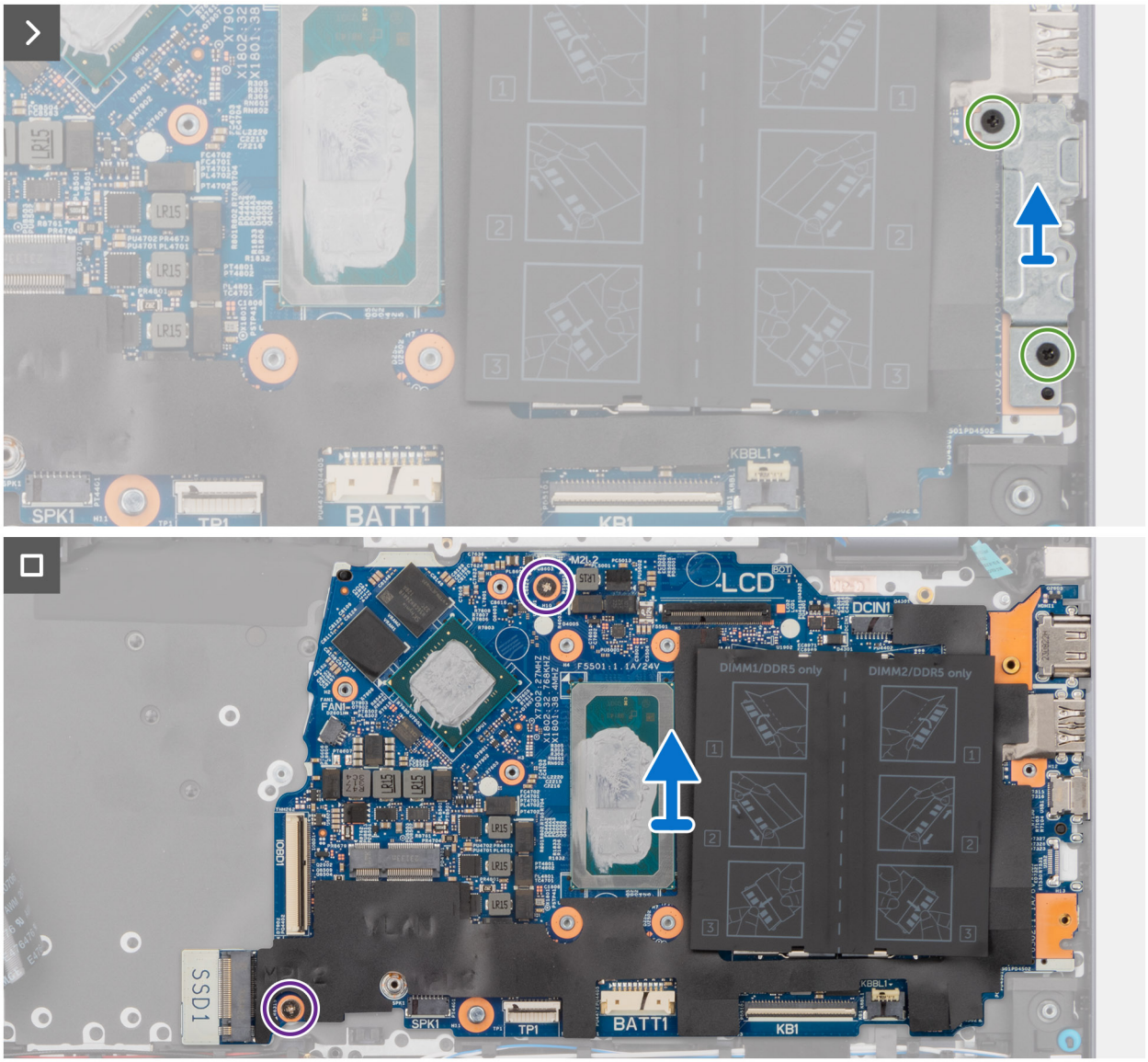


Figure 103. Removing the system board

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.

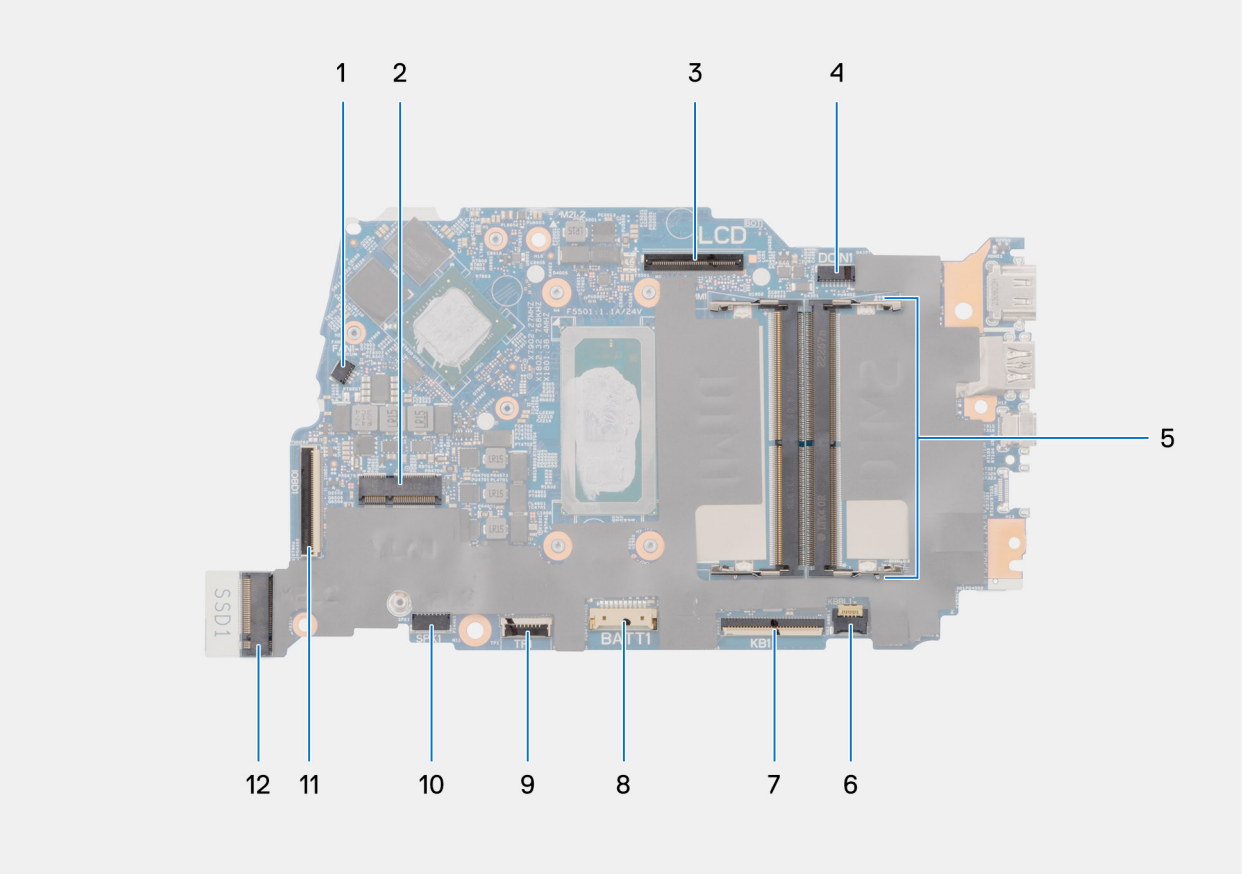


Figure 104. Connectors on the system board

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.

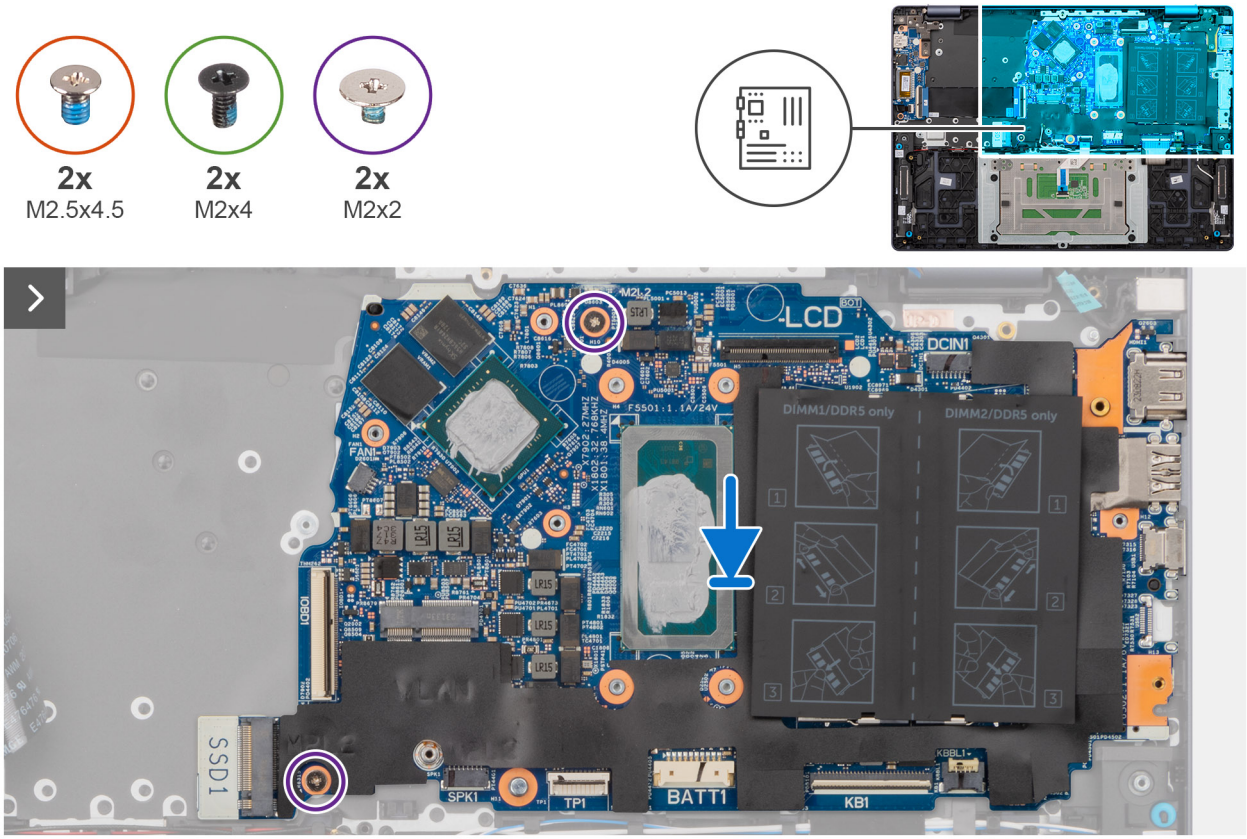


Figure 105. Installing the system board

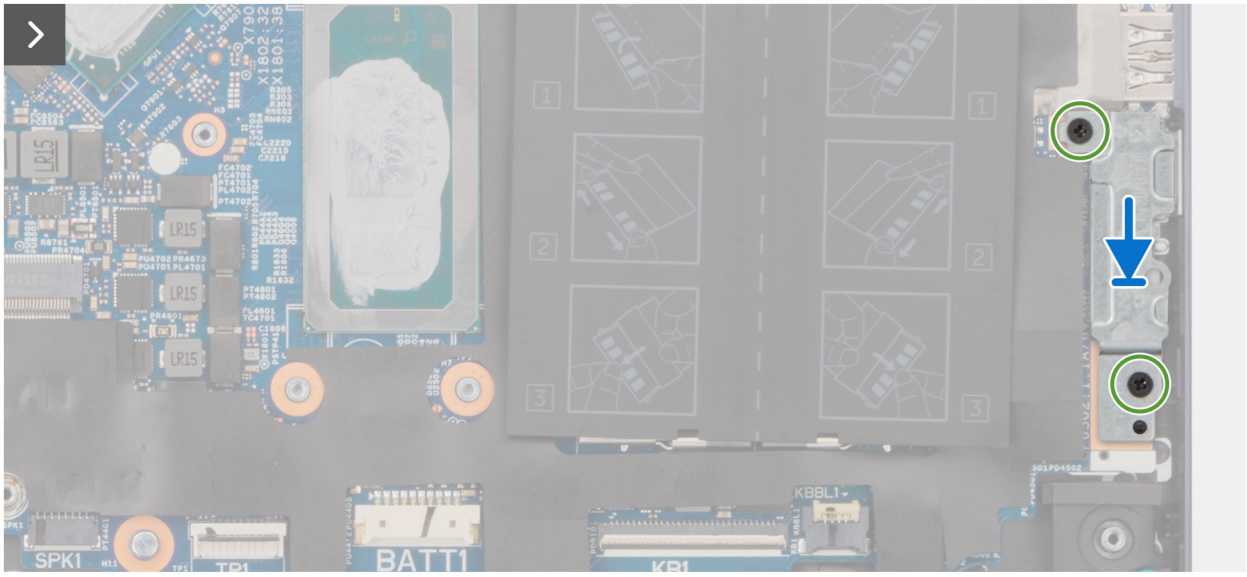


Figure 106. Replacing the USB Type-C bracket

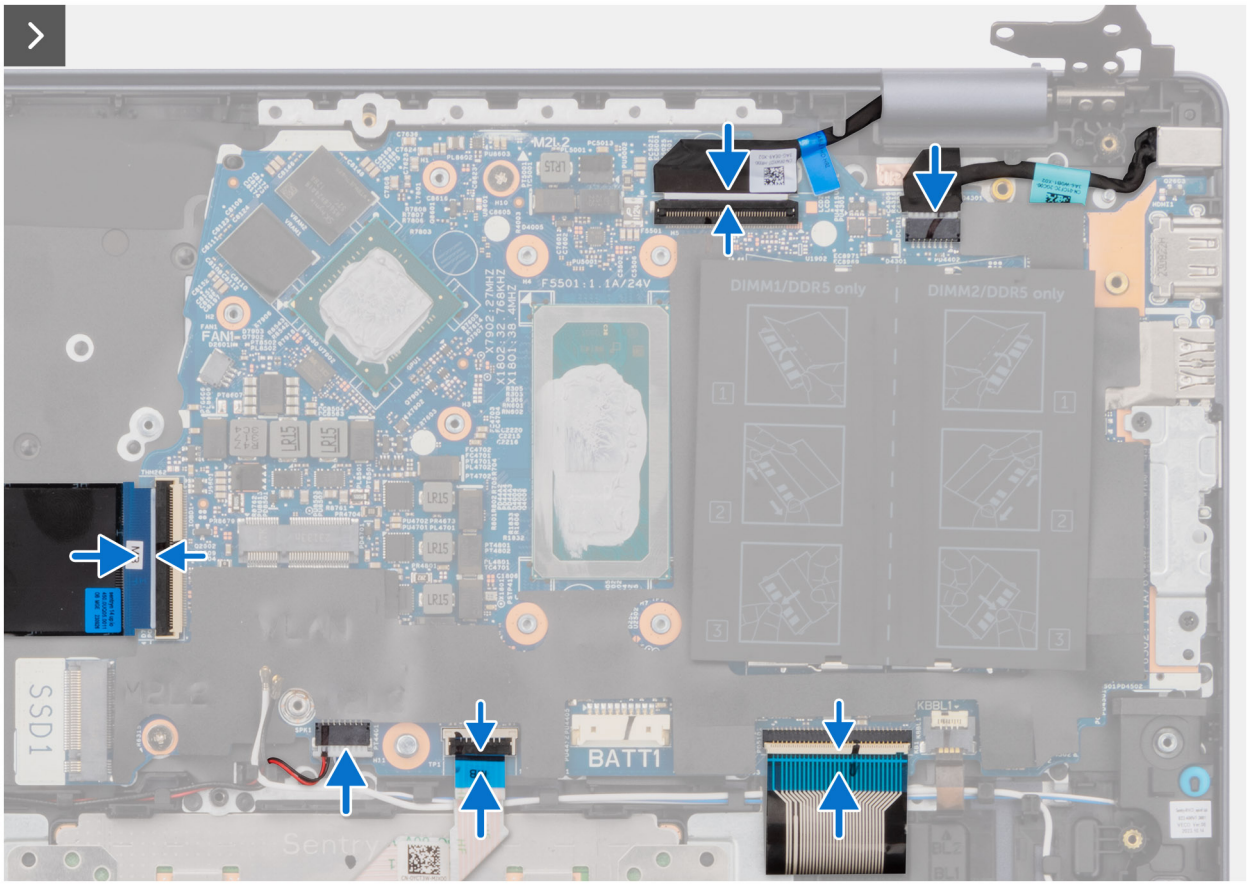


Figure 107. Replacing the cable connectors

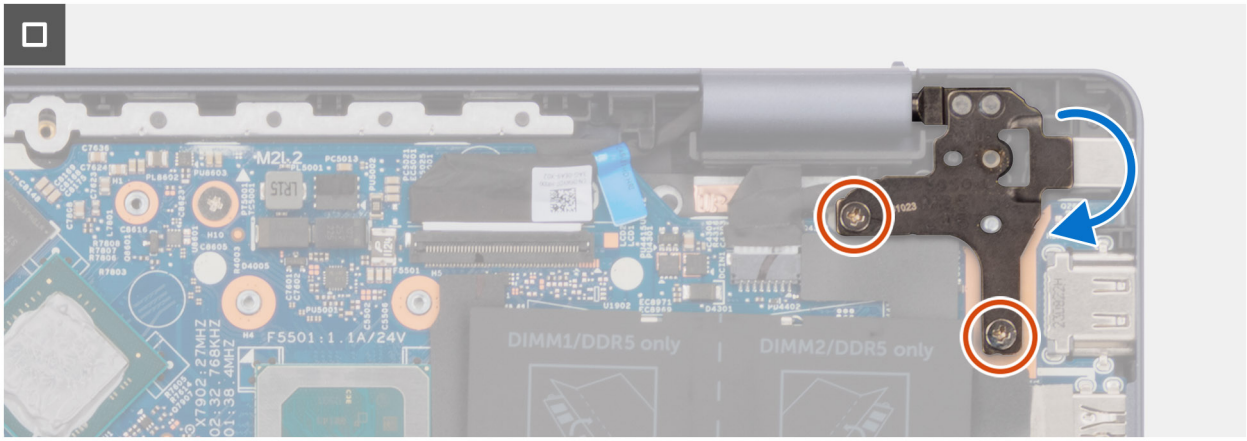


Figure 108. Replacing the hinge screws

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.

   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.

   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.

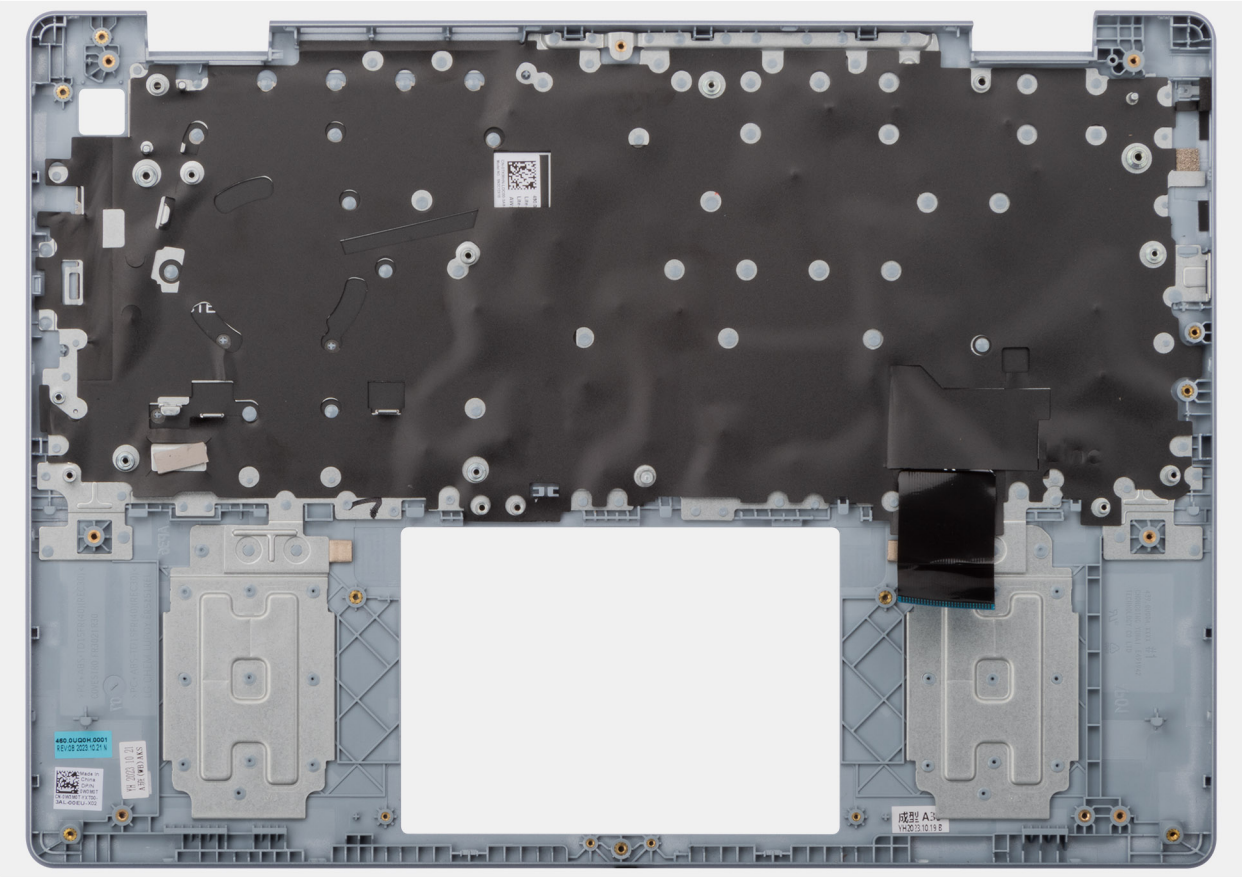


Figure 109. Removing the palm-rest and keyboard assembly

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.

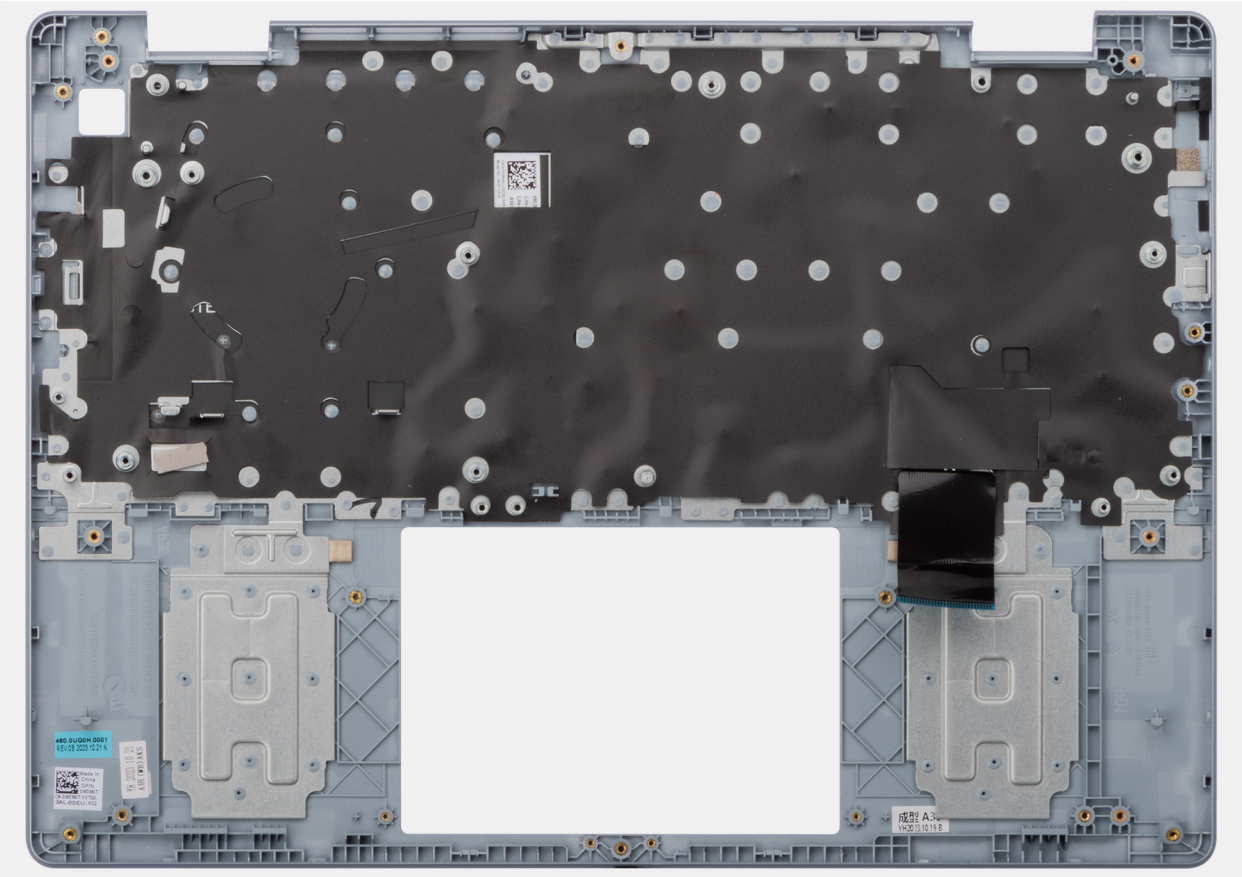


Figure 110. Installing the palm-rest and keyboard assembly

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.
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 ffor computers shipped with a plastic chassis.
13. Follow the procedure in After working inside your computer.

Removing 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

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.

   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.

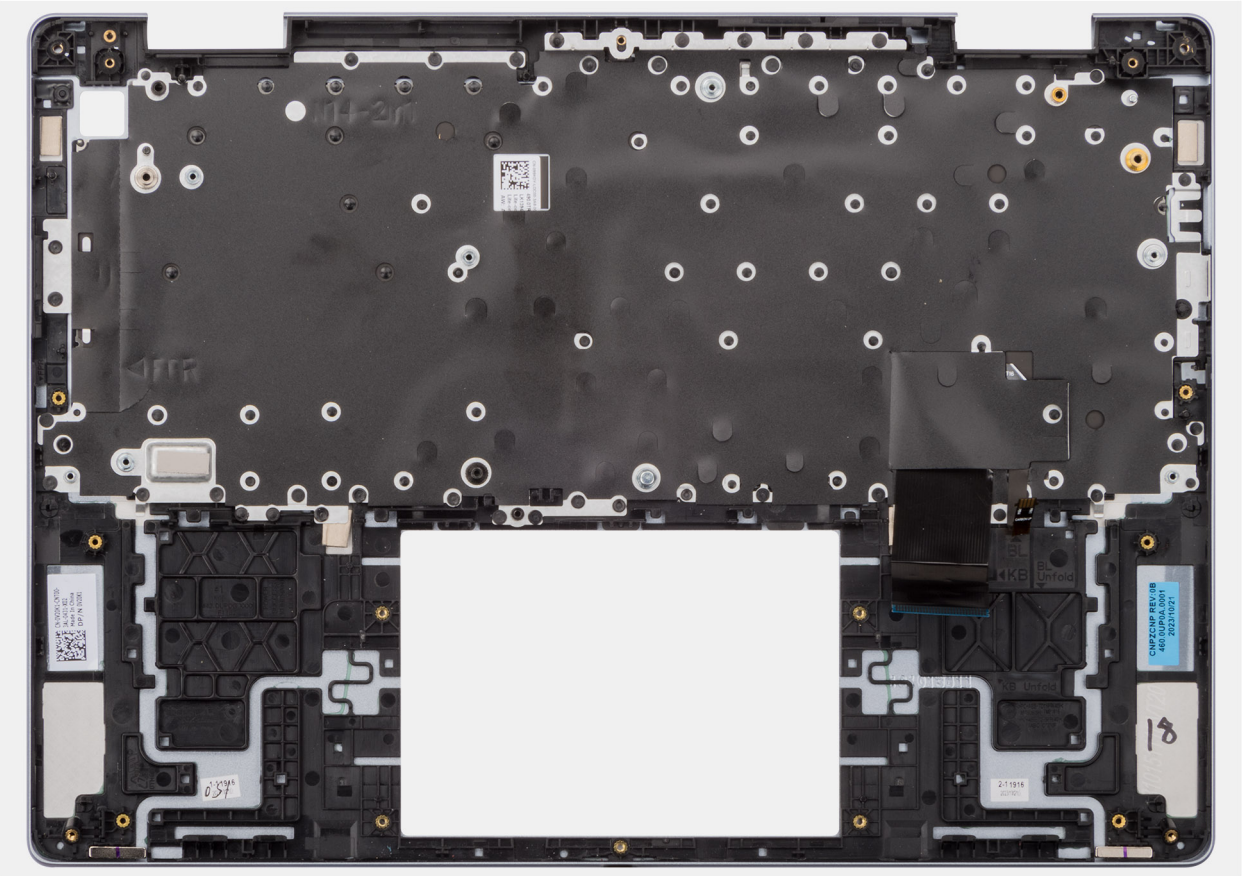


Figure 111. Removing the palm-rest and keyboard assembly

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.

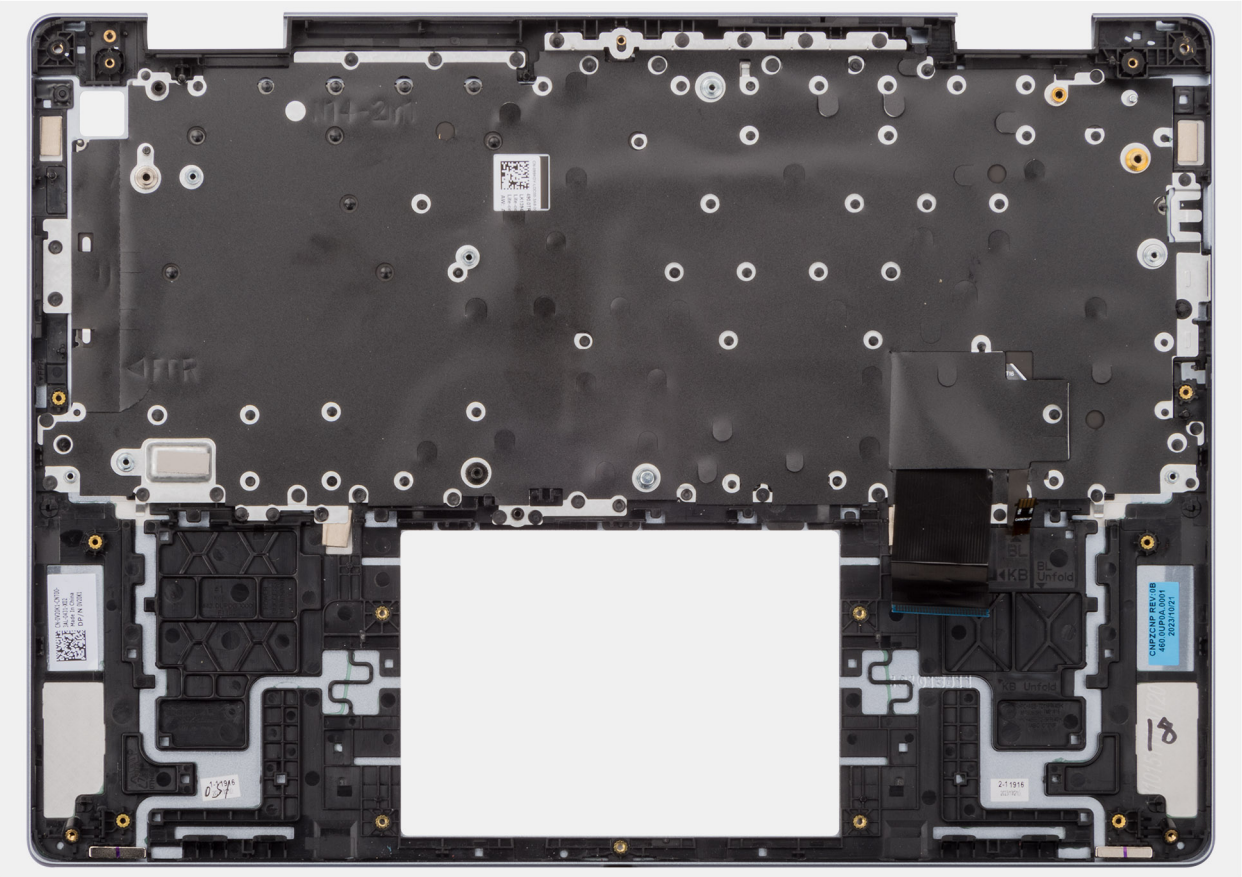


Figure 112. Installing the palm-rest and keyboard assembly

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 .

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.

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 54 W 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.

9

Software

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

Operating system

Your Dell Pro 14 Essential PV14250 supports the following operating systems:

- Windows 11 Home
- 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.

10

BIOS Setup

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

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

Use BIOS Setup for the following purposes:

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

Entering BIOS Setup program

Turn on or restart your computer and press F2 immediately.

Navigation keys

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

Table 32. Navigation keys

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

F12 One Time Boot menu

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

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

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

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

NOTE: XXX denotes the SATA drive number.

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

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

System setup options

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

Table 33. System setup options—Overview menu

Overview	
Dell Pro 14 Essential PV14250	
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.
Microcode Version	Displays the microcode version.
Intel Hyper-Threading Capable	Displays whether the processor is Hyper-Threading (HT) capable.

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

Overview	
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 34. 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. 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.

Table 34. System setup options—Boot Configuration menu (continued)

Boot Configuration	
	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 ('db' variable). **CAUTION: If you disable Microsoft UEFI CA, the computer may not boot, computer graphics may not function, some devices may not function properly, and the computer could become unrecoverable.** Microsoft HLK requirements for DeviceGuard require the UEFI 3rd Party CA removal from the UEFI SecureBoot database (db). Setting this option to Allow Pre-Boot Modules Only, will allow the UEFI 3rd party CA to be used to validate pre-boot option ROMs, but will not allow a bootloader signed with the UEFI 3rd party CA to be loaded. For additional security, Dell Technologies recommends setting the Microsoft UEFI CA option to **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. **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 35. System setup options—Integrated Devices menu

Integrated Devices	
Date/Time	
Date	Sets the computer date in MM/DD/YYYY format. Changes to the date format take effect immediately.
Time	Sets the computer time in HH/MM/SS 24-hour format. You can switch between a 12-hour and 24-hour clock. Changes to the time format take effect immediately.
Camera	
Enable Camera	Enables the camera. By default, the **Enable Camera** option is enabled. **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.

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

Integrated Devices	
	By default, the **Enable Microphone** option is enabled. **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 Intenal 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 36. 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	Displays the information of various onboard drives.
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	Displays the information of onboard drives.
Enable MediaCard	
Secure Digital (SD) Card	Enables or disables the SD card. By default, the **Secure Digital (SD) Card** option is enabled.

Table 37. 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.

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

Display	
	By default, the screen brightness is set to 50 when the computer is running on battery power.
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 38. 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 39. 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.

Table 39. System setup options—Power menu (continued)

Power	
Thermal Management	Enables or disables cooling of fan and manages processor heat to adjust the computer performance, noise, and temperature. 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. **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 40. 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. **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. **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.

Table 40. System setup options—Security menu (continued)

Security	
	By default, the **Key Storage Enable** option is enabled. 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 40. 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 41. 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 41. 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 41. 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 42. 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 42. 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 43. 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 44. 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 44. 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 45. 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 46. 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 46. 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.
Internal Port DMA Compatibility Mode	Allows you to control the boot compatibility for integrated PCIe peripherals by disabling PCIe DMA protection on internal PCIe ports. When enabled, BIOS will notify the operating system that the internal ports are not DMA capable. This option is to help with devices that have operating system DMA compatibility issues. 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 **Internal Port DMA Compatibility Mode** option is disabled. **NOTE:** This option is provided only for compatibility purposes, as certain older hardware may not be DMA compliant.

Table 47. 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.

Table 47. System setup options—Performance menu (continued)

Performance	
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. 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 48. 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

About this task

CAUTION: If BitLocker is not suspended before updating the BIOS, the BitLocker key is not recognized the next time you reboot the computer. You will then be prompted to enter the recovery key to proceed, and the

computer displays a prompt for the recovery key on each reboot. Failure to provide the recovery key can result in data loss or an operating system reinstall. For more information, see the Knowledge Base Resource Updating the BIOS on Dell systems with BitLocker enabled.

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

Steps

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

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

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

Updating the BIOS using the USB drive in Windows

About this task

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

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

Steps

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

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

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

The **BIOS Update Utility** appears.

13. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS in Linux and Ubuntu

To update the system BIOS on a computer that is installed with Linux or Ubuntu, see How to Update the Dell BIOS in the Ubuntu or Linux Environment at Dell Support Site.

Updating the BIOS from the One-Time boot menu

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

System and setup password

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

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

Table 49. System and setup password

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

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

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

Assigning a System Setup password

Prerequisites

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

Steps

1. To enter the **System Setup**, press **F2** immediately after a power-on or reboot.
2. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
   The **Security** screen is displayed.
3. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to create the system password:
   - Password can be up to 32 characters.
   - Password must contain at least one special character: "(! " # $ % & ' * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | })"
   - The password can contain numbers from 0 to 9.
   - The password can contain alphabets A to Z and a to z.
4. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
5. Press Y to save the changes.
   The computer restarts.

Deleting or changing an existing system password or setup password

Prerequisites

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

Steps

1. To enter the **System Setup**, press **F2** immediately after a power-on or reboot.
2. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
   The **System Security** screen is displayed.
3. In the **System Security** screen, verify that the **Password Status** is Unlocked.
4. Select **System Password**. Update or delete the existing system password, and press Enter or Tab.
5. Select **Setup Password**. Update or delete the existing setup password, and press Enter or Tab.

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

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

Clearing system and setup passwords

About this task

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

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

11

Troubleshooting

Handling swollen rechargeable Li-ion batteries

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

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

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

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

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

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

Dell SupportAssist Pre-boot System Performance Check diagnostics

About this task

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

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

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

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

For more information, see How to Run Dell Preboot Diagnostics and Hardware Tests on Your Dell Computer.

Running the SupportAssist Pre-Boot System Performance Check

Steps

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

Built-in self-test (BIST)

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

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

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

How to run M-BIST

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

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

Table 50. LED error codes

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

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

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

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

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

How to invoke the L-BIST

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

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

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

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

How to invoke the LCD-BIST

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

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

System-diagnostic lights

This section lists the system-diagnostic lights of your Dell Pro 14 Essential PV14250.

Table 51. System-diagnostic lights

Blinking pattern		Problem description
Amber	**White**	
1	1	TPM detection failure
1	2	Unrecoverable SPI Flash Failure
1	5	EC unable to program i-Fuse
1	6	Generic catch-all for ungraceful EC code flow errors

Table 51. System-diagnostic lights (continued)

Blinking pattern		Problem description
Amber	**White**	
2	1	CPU failure
2	2	System board failure (included BIOS corruption or ROM error)
2	3	No memory or RAM detected
2	4	Memory or RAM failure
2	5	Invalid memory installed
2	6	System board or Chipset Error
2	7	LCD failure (SBIOS message)
2	8	LCD failure (EC detection of power rail failure)
3	1	CMOS battery failure
3	2	PCI or Video card or chip failure
3	3	BIOS Recovery image not found
3	4	BIOS Recovery image found but invalid
3	5	Power rail failure
3	6	Flash corruption is detected by SBIOS.
3	7	Timeout waiting on ME to reply to HECI message.

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 on Dell computers running the Windows operating system. It consists of tools to diagnose and troubleshoot issues that may occur before your computer boots to the operating system. It enables you to diagnose hardware issues, repair your computer, back up your files, and restore your computer to its factory state.

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

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

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

Real-Time Clock (RTC Reset)

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

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

Backup media and recovery options

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

Network power cycle

About this task

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

Steps

1. Turn off the computer.
2. Turn off the modem.

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

Drain flea power (perform hard reset)

About this task

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

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

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

Perform the following steps to drain the flea power:

Steps

1. Turn off the computer.
2. Disconnect the power adapter from the computer.
3. Remove the base cover.
4. Remove the battery.

   CAUTION: The battery is a Field Replaceable Unit (FRU) and the removal and installation procedures are intended for authorized service technicians only.
5. Press and hold the power button for 20 seconds to drain the flea power.
6. Install the battery.
7. Install the base cover.
8. Connect the power adapter to the computer.
9. Turn on the computer.

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

12

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 52. Self-help resources

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

Contacting Dell

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

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

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

13

Revision history

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

Table 53. Revision history

Revision	Date	Description
A00	08-29-2025	Original publish date.
A01	11-21-2025	Battery moved to CRU components.