



Surface Laptop Studio Service Guide



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This document and the information it contains are subject to change without notice. You can find the latest information on Surface device servicing and repair at <https://aka.ms/surfaceservicing>. Always consult the most up-to-date information available before performing device servicing or repair.

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Introduction

This Service Guide (Guide) provides instructions for repairing Microsoft Surface devices using genuine Microsoft parts. It is intended for technically inclined individuals with the knowledge, experience, and specialized tools required to repair Microsoft devices.

 **IMPORTANT:** Read this Guide in its entirety before starting any repairs. If at any point you are unsure or uncomfortable about performing the repairs, as detailed in this Guide, **DO NOT** proceed. Contact [Microsoft](#) for additional support options.

 **WARNING:** Failure to follow the instructions in this Guide; use of non-Microsoft (non-genuine), incompatible, or modified replacement parts; and/or failure to use proper tools could result in serious personal injury, death, and/or damage to the product or other property.

Device Identity Information

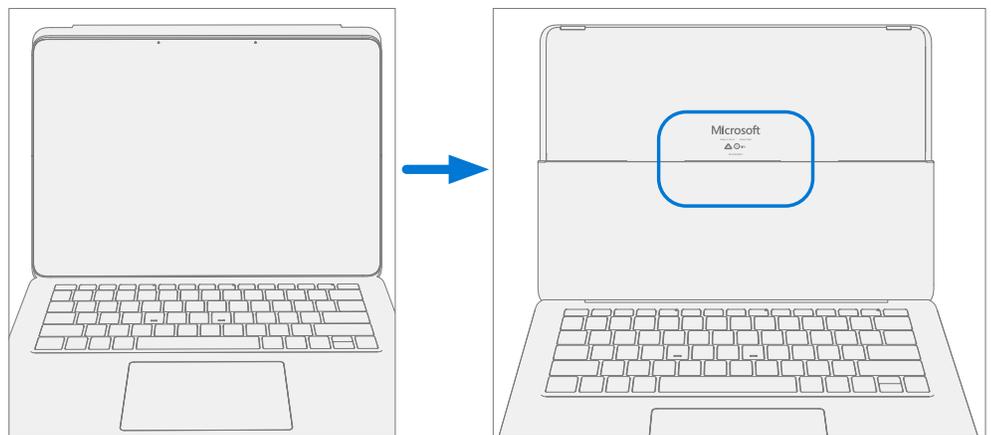
Surface Laptop Models

1964 – Surface Laptop Studio

Surface Support – Laptop: [Link](#)

Surface Laptop Technical Specifications: [Surface Laptop Studio](#)

The model and serial number for Surface Laptop Studio is on the underside of the display middle hinge point. In Laptop mode push the top side of the display and rotate it back.



Glossary of Terms

The following terms are used throughout this guide.

- **feet** or **foot** – Non-Skid Foot Pads
- **C-Cover** – Keyboard Trackpad Assembly
- **rSSD** – Removable Solid-State Drive
- **PCBA** – Primary circuit board assembly
- **AB-Cover** – Display Assembly or AB-Cover Display Assembly
- **BMR** – Bare Metal Recovery refers to the clean imaging process.
- **Back cover** or **chassis** or **D-Chassis** or **D-Bucket** – Device bottom case
- **SDT** – Surface Diagnostic Toolkit
- **ESD** – Electro-Static Discharge
- **FPC** – Flexible Printed Circuits connections.
- **FRU** – Field Replaceable Units are sub-system components such as the C-cover, AB-cover, and rSSD.
- **Commercial Spares/CRU** – Customer Replaceable Units available to commercial customers for repair by a skilled-technician.
- **IPA** – Isopropyl alcohol which should be used to clean adhesive from device as detailed within process steps. Use 70% IPA in all cases.



General Information, Precautions, Warnings

 This symbol identifies important safety and health information in this guide.

 This symbol identifies important information in this guide.

 This symbol identifies important cautions in this guide.

Service Tools

Microsoft Provided Software Tools / References:

- Surface Power Supply
- How To: [Update Surface device firmware and OS](#)
- How To: [Surface Tools Video](#)
- Download: [Surface drivers and firmware](#)
- Download: [Surface Diagnostic Toolkit \(SDT\)](#)
- Download: [Surface Data Eraser](#)
- Download: [Surface Imaging Tools](#)

Standard Service Tools:

- Anti-static wrist strap (1 MOhm resistance)
- ESD-safe benchtop
- Spudger tool
- Plastic Opening Pick (example iFixit Opening Picks)
- Plastic Opening tool (example iFixit Plastic Opening tool)
- Plastic Card tool (example iFixit Plastic Card tool)
- Metric plastic thickness gauges
- Non-metallic ruler
- Isopropyl alcohol dispenser bottle (use 70% IPA)
- Citrus IPA cleaner (example Goo Gone)
- Cleaning swabs
- ESD-safe tweezers
- Lint free cleaning cloths

The tools identified on this list can be purchased from many different commercial sources, including but not limited to Amazon.com; iFixit; Chemdex, and other vendors. Refer to the ASP Guidebook for Microsoft tools.



General Safety Precaution

 Always observe the following, general safety precautions:

- Opening and/or repairing any electronic device can present a risk of electric shock, fire, serious personal injury, death, damage to the device or other property, and/or other hazards. Exercise caution when undertaking the repair activities described in this Guide. The repair activities identified in this Guide should only be undertaken by technically inclined individuals with the knowledge, experience, and specialized tools required to repair Microsoft devices.
- Improper use or handling of devices or their batteries may result in fire or explosion. Only open the enclosure on a device as outlined in this Guide.
- Do not heat, puncture, mutilate, or dispose of devices or their batteries in fire. Do not leave or charge devices in direct sunlight or expose devices or their batteries to temperatures outside the recommended operating range of 0°C to 60°C/32°F to 140°F for an extended period. Doing so can result in battery failure, electric shock, fire, serious personal injury, death, and/or damage to the device or other property.
- We recommend wearing protective eyewear and gloves when disassembling/re-assembling a device.

For additional product safety information relevant to Microsoft Surface devices, see aka.ms/surface-safety or the Surface app. To open the Surface app, select the Start button, enter Surface into the search box, then select the Surface app.



Repair-Specific Precautions and Warnings

- For Autopilot managed Surface Products refer to the following guidelines posted [here](#).

 **WARNING:** Before opening a device, ensure it is powered off and disconnected from its power source. Disconnect the device charger or power cord from mains power.

- For devices with rechargeable lithium-ion batteries that power on, fully discharge the battery before beginning repair. To expedite the battery discharge process:
 - Disconnect the charger from the device.
 - Increase display brightness to the highest level.
 - Turn on wi-fi and Bluetooth.
 - Open the Camera app in Windows.
 - Play music or video files from a local drive or streaming service.

Operate the device in this mode until the battery is fully discharged and the device powers off.

 **WARNING:** For Surface devices where the battery is affixed to the back cover, place the back cover with the battery in a location where it will be protected from possible punctures, impacts, crushing, or drops during the repair process. Refer to the [Battery Safety](#) section in this guide for more information.

- Ensure your work surface is level/flat and covered with ESD-safe, soft, non-marring material.
- We recommend wearing protective eyewear as a safety precaution when disassembling/re-assembling a device.
- Clean your work surface regularly to remove debris and abrasive particles.
- Review and follow the general guidelines and ESD compliance steps in this Guide prior to beginning work. Refer to the [Prior to Device Disassembly](#) section in this Guide for more information.
- Before opening a device, always wear an anti-static wrist strap and confirm your work area is properly grounded to protect vulnerable electronics from electrostatic discharge (ESD).
- Parts removed from a device during the repair process should be stored in ESD-safe bags and packaged for return or recycling in the same packaging that the new replacement part came in.
- If battery damage (e.g., leaking, expansion, folds or other) is discovered during device repair or if the battery is impacted or damaged during replacement, DO NOT proceed. Refer to the ASP Guidebook or contact Microsoft directly for proper device disposition.
- As you remove each subassembly from the device, place the subassembly (and all accompanying screws) away from the work area to prevent damage to the device or to the subassembly.
- During all activities (excluding feet-only replacement) check to ensure that no loose articles are on the back cover or remain inside the device before reassembling it.

 **IMPORTANT:** Remove rSSD (removable Solid-State Drive) whenever C-cover is removed from device. rSSD removal disconnects the battery from all device logical components for safety purposes. Refer to [Procedure-Removal \(rSSD\)](#) section for details.

 **IMPORTANT:** Whenever the rSSD has been removed, powering on the device requires that the rSSD and C-cover are installed. Refer to [Procedure - Installation \(rSSD\)](#) section for details.

- Review the [General Safety Precautions](#) and [Battery Safety](#) Sections of this Guide before beginning work. Refer to the “Prior to Device Disassembly” section of the Guide for additional details.
- Check to make sure that general guidelines and ESD compliance steps are followed prior to starting activities. Refer to [Prior to Device Disassembly](#) section on [\(page 15\)](#) for details.



 **IMPORTANT:** The serial number for this device model is located on its original cover. To keep track of the device's serial number, please record it using waterproof ink (Location Link) on a sticker or label and apply the sticker or label to an easily accessible area on the device exterior. The serial number cannot be added permanently to a replacement part. Microsoft may have provided a label for this use in the replacement part's packaging.

Battery Safety

- This device contains a built-in, lithium-ion rechargeable battery. Battery safety is a significant concern when repairing a device.
- For optimum compatibility, performance, and product safety, we recommend using genuine Microsoft replacement parts. Use of non-Microsoft (non-genuine), incompatible, reused, or modified batteries; improper battery installation; improper handling or storage of batteries; and/or failure to follow the instructions in this Guide could cause battery overheating, expansion, venting, leaking, or a thermal event which could result in fire, serious personal injury, death, data loss, or damage to the device or other property damage.
- Before beginning device repair, ensure your workspace is free of flammable debris or materials, has adequate ventilation, and that you have a fire suppressant device (example: fire blanket, container of sand, Class B fire extinguisher) within easy reach or you are within 20 feet of a fireproof enclosure. Fireproof enclosures should be kept free of combustible or flammable materials.
- Use personal protective equipment (PPE) when handling damaged, venting, or hot battery packs.
- Use the following best practices when handling batteries:
 - Always fully discharge batteries by running an application such as video playback with the device unplugged. If the device does not function while unplugged, you may leave out this step.
 - Do not puncture, impact, strike, bend, or crush the battery or a device containing a battery.
 - Keep your workspace clear of debris, extra tools, and sharp objects.
 - Exercise caution when using sharp tools near the battery to avoid impacting or poking the battery.
 - Don't leave loose screws or small parts inside the device.
 - Avoid using tools that conduct electricity.
 - Do not drop or throw a lithium-ion battery.
 - Do not expose the battery to excessive heat, sunlight, or temperatures outside the battery's normal operating range (0°C to 60°C)/(32°F to 140°F).
 - Ensure you handle, recycle, and/or dispose of used or damaged batteries in accordance with local laws and regulations. Follow Handling Used, Damaged or Defective Li-ion Batteries below.
- If device repair cannot be completed immediately and the device needs to be stored temporarily before restarting the repair:
 - Select a storage location and process that follows the battery safety precautions in this Guide.
 - Avoid exposing the device to environmental conditions and objects that could damage the battery pack.
 - Reinspect the battery pack as outlined in this Guide prior to restarting repair and installing the new battery pack.



Lithium-Ion Battery Inspection

Upon device opening, we recommend that you visually inspect the battery for signs of damage. Factors to consider when inspecting the battery include, but are not limited to:

- Evidence of leaking or venting
- Visible signs of physical or mechanical damage, such as:
 - Expansion or swelling. In expanded or swollen batteries, the soft pouch encasing the cell pulls away from the inner material and appears baggy, loose, or puffy.
 - Discoloration of the battery casing.
 - Odor, smell, or visible corrosion. Leaked battery electrolyte smells like nail polish remover (acetone).
 - Dents along the battery cell edges or on the top surface.
 - Surface scratches that have exposed the aluminum beneath the black coating layer on the battery.
 - Loose or damaged wires.
 - Known misuse or abuse.

Any battery exhibiting the signs listed above must be replaced. Consult the [Battery Replacement](#) section of this document for battery replacement instructions.

Handling Used, Damaged, or Defective Lithium-Ion Batteries:

- DO NOT dispose of used lithium-ion batteries, whether damaged or not, in household or commercial garbage or recycling bins.

 **WARNING:** DO NOT SHIP DAMAGED OR DEFECTIVE BATTERIES ALONE OR INSIDE DEVICES. Damaged or defective batteries and devices containing damaged or defective batteries require special packaging and handling. Prior to transport:

- Follow all instructions provided by your local e-waste recycling or household hazardous waste collection provider.
 - Place the device or battery in an individual, non-metallic inner packaging, such as a zip-to-close plastic bag, that completely encloses the device or battery.
 - Surround the inner packaging with non-combustible, electrically non-conductive, absorbent cushioning material.
 - Each damaged battery or device containing a damaged battery should be packed individually in its own carton and that carton should be clearly marked as containing a damaged battery.
-

For more information on industry practices concerning damaged, defective, or recalled batteries, please see [PHMSA Lithium-Battery-Recycling-Safety-Advisory](#).

Undamaged, used lithium batteries can be sent to e-waste recycling or household hazardous waste collection points for processing. Please see <https://www.microsoft.com/en-us/legal/compliance/recycling> for more information.



Report Battery Thermal Events to Microsoft

A thermal event is a rapid chemical chain reaction that can occur inside a battery cell. During a thermal event, the energy stored inside the battery is released suddenly, resulting in heating and/or smoke and, in some instances, fire or flame. A battery thermal event can be triggered by physical damage to the battery (including during replacement/repair), improper storage, or exposure to temperatures outside of the battery's operating range.

Act immediately if you see any of the following symptoms of a battery thermal event:

- Smoke, soot, sparks, or flame emitted by the battery or from a device containing a battery.
- The battery pouch suddenly expands in size.
- A popping or hissing noise from the battery or a device containing a battery.

Actions to take:

- **DO NOT use water. Immediately smother** the battery or device with clean, dry sand, a fire blanket, or an appropriate (Class B) fire extinguisher. If using sand, dump the sand all at once until the device is completely covered.
- **Contact** local fire authorities if further assistance is needed.
- **Exit** the work area and ventilate it until it is clear of smoke.
- **Wait** at least 2 hours before attempting to touch the device.
- **Dispose** of the damaged battery or device in accordance with local environmental or e-waste laws and guidelines.

 **WARNING:** DO NOT SHIP DAMAGED OR DEFECTIVE BATTERIES ALONE OR INSIDE DEVICES. Damaged batteries and devices containing damaged batteries require special packaging and handling. See [Handling Used, Damaged, or Defective Lithium-Ion Batteries](#) in this Guide for additional information.

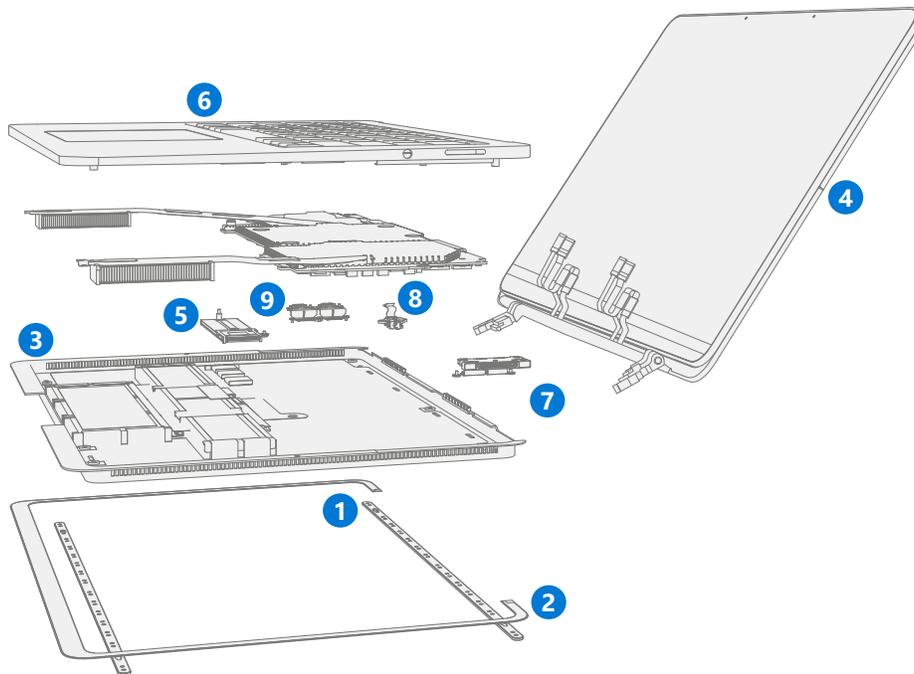
Stop Repair and Contact Microsoft

If any Microsoft device visually exhibits any of the following symptoms, cease all further repair efforts and contact Microsoft Surface Customer Support to report and obtain next steps:

- Any burned or melted components, traces, or plastic parts on the outside of the device, or which otherwise exhibits heat damage, including charring seen in charging and other ports.
- Any burned or melted components, traces, or plastic parts on the inside of the device, or which otherwise exhibits heat damage.
- Any accessories exhibiting melting or heat damage that are included with the Microsoft device, such as power supplies, keyboards, mice, cables, charging connectors, etc.
- Any devices that exhibit a case that has separated apart or opened for reasons other than impact damage from dropping, evidence of tampering, or separation caused by a malfunctioning battery.
- Any other finding that may constitute a safety hazard to the user, such as sharp edges on plastics. Microsoft Surface Customer Support will ask you to provide the following information:
 - o The model and serial number of the affected Microsoft Surface device and/or accessory(ies).
 - o A brief description of the damage found.
 - o Clear photographs depicting the symptoms observed.



Illustrated Service Parts List



IMPORTANT: Device service part availability is segmented into two groups. FRUs are parts available for repair activity through an Authorized Service Provider under specific contract with Microsoft. CRUs/Spares are parts available for repair activity by a skilled technician.

Item	Component	ASP / FRU Part No.	CRU Part No.	Model 1964
(1)	Non-Skid Feet			
	Feet Platinum	CJI-00001	CK1-00001	X
(2)	Cosmetic Plate			
	Cosmetic Plate Platinum	CIZ-00001	I8I-00001	X
(3)	D-Bucket + Battery			
	D-Bucket + Battery ROW	CJ1-00001	I8I-00001	X
	D-Bucket + Battery AMER	CJ1-00002	I8K-00002	X
(4)	AB-cover Display Assembly			
	AB Cover Platinum	CIT-00001	I85-00001	X
(5)	Removable Solid-State Drive (NOTE: rSSD size must be same as original)			
	rSSD 256GB	RPZ-00011	8LV-00007	X
	rSSD 512GB	RQG-00008	8LX-00007	X
	rSSD 1TB	RPY-00005	8LU-00003	X
	rSSD 2TB	CIV-00001	I89-00001	X



Item	Component	ASP / FRU Part No.	CRU Part No.	Model 1964
(6)	C-cover Keyboard Assembly			
	C Cvr Platinum Arabic	CIU-00002	I87-00001	X
	C Cvr Platinum Intl Euro	CIU-00003	I87-00002	X
	C Cvr Platinum Thailand	CIU-00004	I87-00003	X
	C Cvr Platinum Taiwan	CIU-00005	I87-00004	X
	C Cvr Platinum English WW	CIU-00006	I87-00005	X
	C Cvr Platinum Nordic WW	CIU-00007	I87-00006	X
	C Cvr Platinum French Blgm	CIU-00008	I87-00007	X
	C Cvr Platinum Canada	CIU-00009	I87-00008	X
	C Cvr Platinum French	CIU-00010	I87-00009	X
	C Cvr Platinum German	CIU-00011	I87-00010	X
	C Cvr Platinum Italy	CIU-00012	I87-00011	X
	C Cvr Platinum Portuguese	CIU-00013	I87-00012	X
	C Cvr Platinum Spanish	CIU-00014	I87-00013	X
	C Cvr Platinum Mexico	CIU-00015	I87-00014	X
	C Cvr Platinum Switz/Lux	CIU-00016	I87-00015	X
	C Cvr Platinum EngBrit WW	CIU-00001	I87-00016	X
	C Cvr Platinum Korea	CIU-00017	I87-00017	X
	C Cvr Platinum Japan	CIU-00018	I87-00018	X
(7)	Surflink Port			
	Surflink Port Platinum	CIY-00001	I8G-00001	X
(8)	Audio Jack			
	Audio Jack Platinum	CIX-00001	I8D-00001	X
(9)	USB-C			
	USB-C Platinum	CIW-00001	I8B-00001	X

Component Localization Codes

Code	Country
ROW	Worldwide except Canada and United States of America
Arabic	Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates
Intl Euro	Belgium, Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Netherlands, Poland, Romania, Slovakia, Slovenia, South Africa
English WW	Australia, Canada, China, Hong Kong, India, Malaysia, New Zealand, Singapore, United States
Nordic WW	Denmark, Finland, Norway, Sweden
French Blgm	Belgium, Netherlands
German	Austria, Germany
Portuguese	Portugal, Spain
Spanish	Portugal, Spain
Switz/Lux	Belgium, Luxembourg, Netherlands, Switzerland
EngBrit WW	Cyprus, Ireland, Malta, United Kingdom



Service Diagnostics/Troubleshooting Overview

- For general Surface support, visit www.support.microsoft.com
- To troubleshoot device feature/function problems or learn more about Surface Laptops visit aka.ms/SurfaceLaptopHelp
- If you'd like to learn more about Windows, visit aka.ms/WindowsHelp
- To learn more about the accessibility features of the Surface Laptop, go to the online user guide at aka.ms/Windows-Accessibility

Software Tools:

- How To: [Update Surface device firmware and OS](#)
- How To: [Surface Tools Video](#)
- Download: [Surface drivers and firmware](#)
- Download: [Surface Diagnostic Toolkit \(SDT\)](#)
- Download: [Surface Data Eraser](#)
- Download: [Surface Imaging Tools](#)

Hardware Troubleshooting Approach

The following approach should be taken when troubleshooting Surface devices:

1. Update device to latest OS/FW versions using the SDT tool – Refer to Software Tools section above for details on SDT.

 **IMPORTANT:** Device updates are required as a prerequisite to all hardware repairs.

2. Verify any suspected hardware failures by setting the device in a known OS/FW version state and running SDT to verify fault:
 - a. Replace the device's internal rSSD with a BMR imaged rSSD containing latest OS and FW updates (not supplied – must be created as a fault verification jig/tool) – Refer to Software Tools section above for details on imaging.
 - b. Run SDT and verify if condition persists or if resolved with use of BMR imaged drive – Refer to Software Tools section above for details on SDT.
 - i. If problem is resolved, then re-image original rSSD or replace original rSSD and image.
 - ii. If problem persists then replace suspected hardware FRU related to the problem by following the detailed replacement procedures covered within this service guide.
3. SDT must be run following all hardware repairs where a FRU was replaced to further verify that problem was resolved by the repair action taken.



Component Removal and Replacement Procedures

Prior to Device Disassembly:

- Read this Guide in its entirety before starting any repairs. Pay special attention to the [Repair-Specific Precautions and Warnings](#) and the [Battery Safety](#) sections of the Guide.

Battery Warning

 **WARNING:** Please note that the battery bears the following warning label. Please heed the information provided on the label.



Battery cannot be easily replaced by user

- Risk of fire or burning – contact Microsoft for assistance
- Do not separate or remove battery from backplate cover
- Do not modify battery, its wiring, or connectors
- Do not replace, short circuit, bend, crush, or puncture battery
- Do not dispose of battery in fire or expose to high temperatures (+140°F/60°C)
- For more information: <http://aka.ms/surface-security>



Non-Skid Feet Replacement Process

Preliminary Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

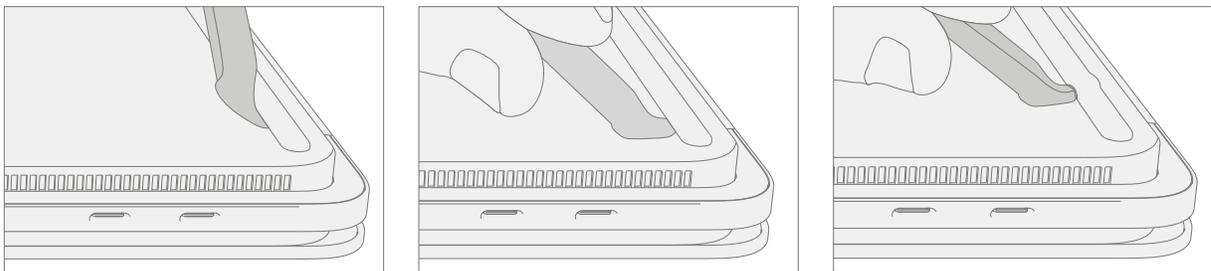
- **Tools:**
 - Plastic tweezers / spudger
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Cleaning swabs
 - Non-metallic ruler ([Amazon Example](#))
 - Soft ESD-safe mat
 - Microfiber cloth
- **Components:**
 - Feet (Refer to [Illustrated Service Parts List](#))

Prerequisite Steps:

- **Power off device** – Ensure device is powered off and disconnected from a power supply.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 15](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.

Procedure – Removal Feet

1. **Remove Feet** – Use a plastic tool to pry up the foot from one end and then peel to remove. Repeat for the other foot.



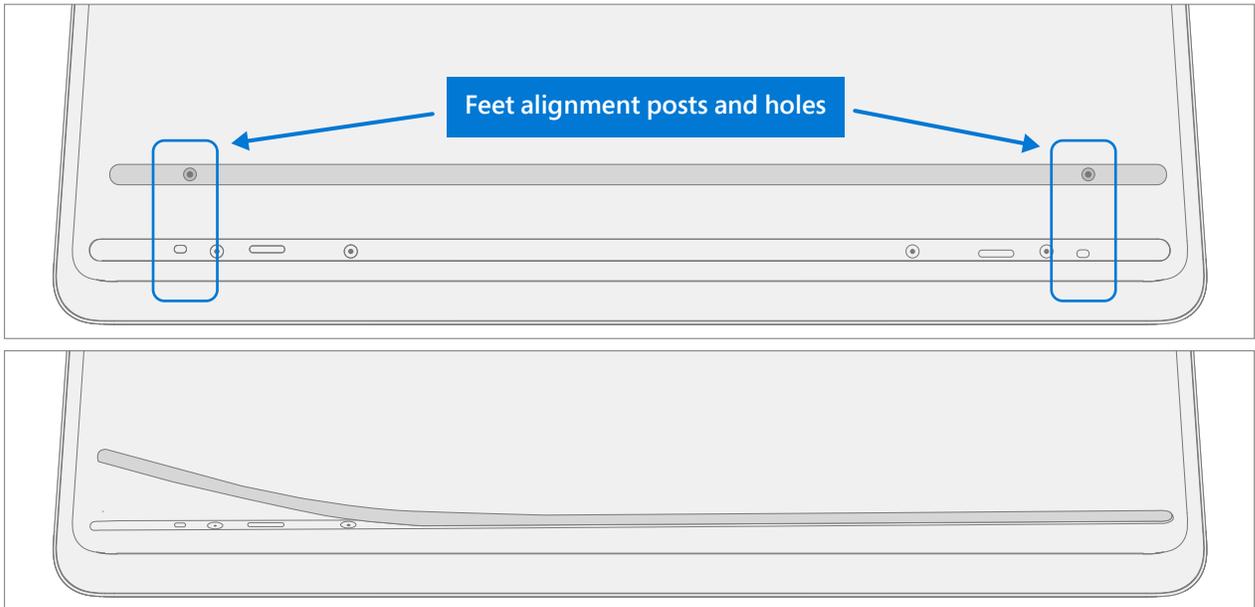
2. **Cleaning** – Remove any adhesive tape remnants from the D-Bucket and clean off any glue residue with 70% or greater Isopropyl Alcohol.



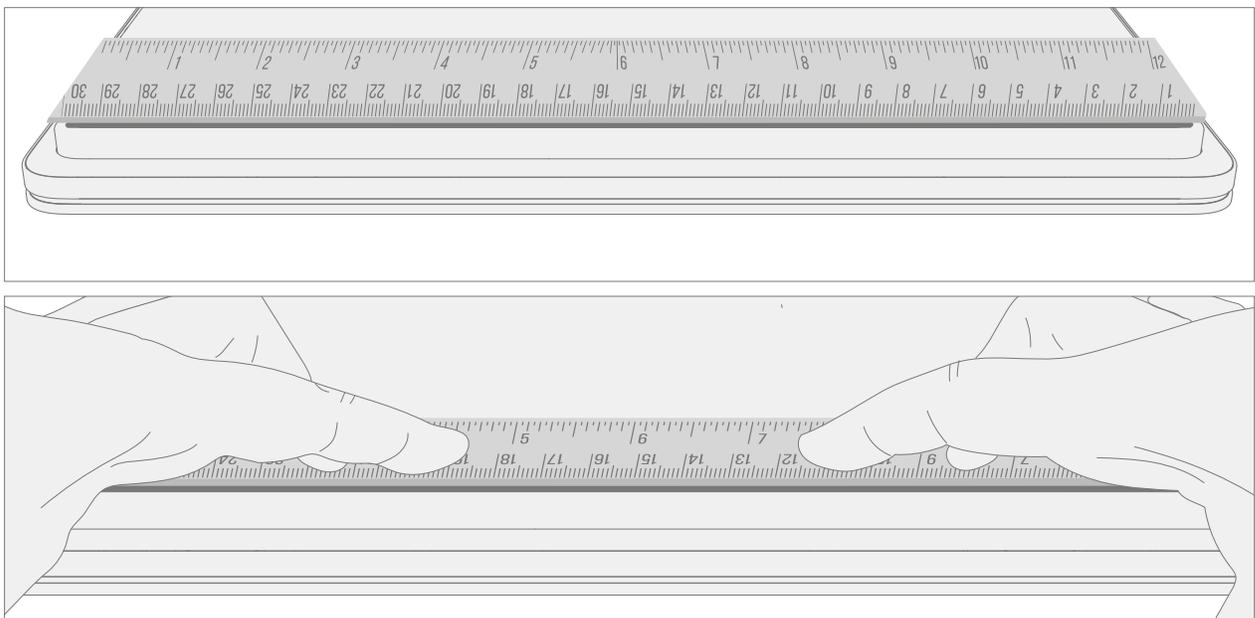
Procedure – Installation Feet

 **IMPORTANT:** Once removed, the feet must be replaced with new ones.

1. **Device Orientation** – Place device onto a clean surface free of debris with the bottom facing up.
2. **Applying New Feet** – Remove the liners to the adhesive strip and place the right side of the foot into the groove ensuring that the alignment post fits into the D-Bucket hole. Loosely place the rest of the foot down making sure that the left alignment post fits in the corresponding D-Bucket hole. Repeat the same steps for the remaining foot.



3. **Securing New Feet** - Place a ruler over one of the feet. Press down on the ruler with several fingers spaced along the length of the ruler for about 30 seconds to secure the foot. Repeat the same steps for the remaining foot.



Cosmetic Plate Replacement Process

Preliminary Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

- **Tools:**
 - Plastic tweezers / spudger
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Citrus IPA cleaner (example Goo Gone)
 - Cleaning swabs
 - Metric plastic thickness gauges
 - Soft ESD-safe mat
 - Microfiber cloth
- **Components:**
 - Cosmetic Plate (Refer to [Illustrated Service Parts List](#))

Prerequisite Steps:

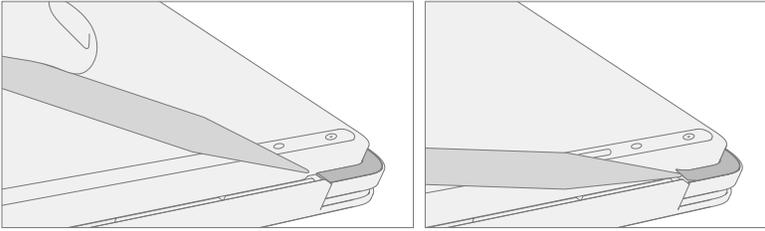
- **Power off device** – Ensure device is powered off and disconnected from a power supply.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 15](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.



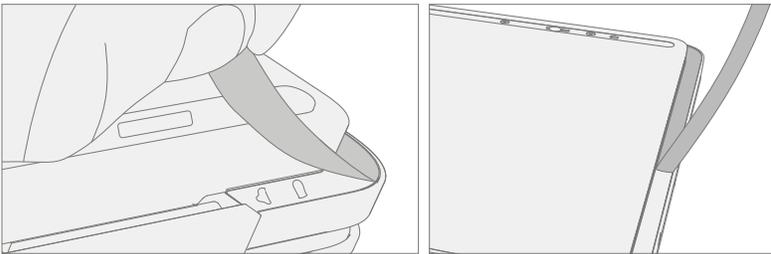
Procedure – Removal Cosmetic Plate

1. Remove Cosmetic Plate

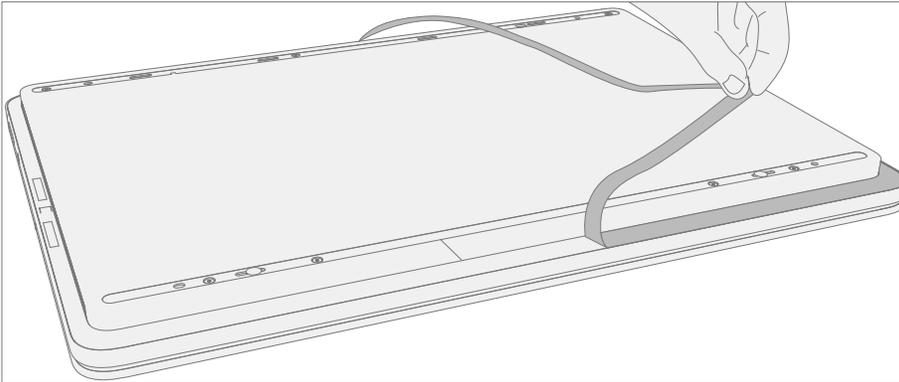
- a. Starting at the rear hinge use a spudger or plastic tweezers to lift up the end of the cosmetic plate.



- b. Peel off the cosmetic plate.



-
-  **IMPORTANT:** Pull the cosmetic plate away from the device at an angle to prevent scratching the D-Bucket.
-



-
-  **IMPORTANT:** Along the front edge pull the cosmetic plate in a tight 'U' shape to prevent the black spacer from lifting up with the cosmetic plate. A replacement black spacer is included with the new Cosmetic Plate in situations where it is removed.
-

2. Cleaning –

- a. Remove any adhesive tape remnants from the D-Bucket.
- b. Clean the bonding surfaces of the pen charger cover, the hinges on the C-Cover, and the D-Bucket with 70% Isopropyl Alcohol.
 - i. As needed for adhesive not responding to IPA.
 1. Apply Citrus IPA cleaner (example Goo Gone) to the cosmetic plate residue and let sit for 5 minutes.
 2. Scrub the surface to remove as much of the PSA residue as possible.
 3. Clean off any oil and glue residue with 70% Isopropyl Alcohol.
 4. Repeat '1.' and '3' as necessary until there is no residue remaining.
 5. Clean remaining oil from all surrounding areas with 70% Isopropyl Alcohol.

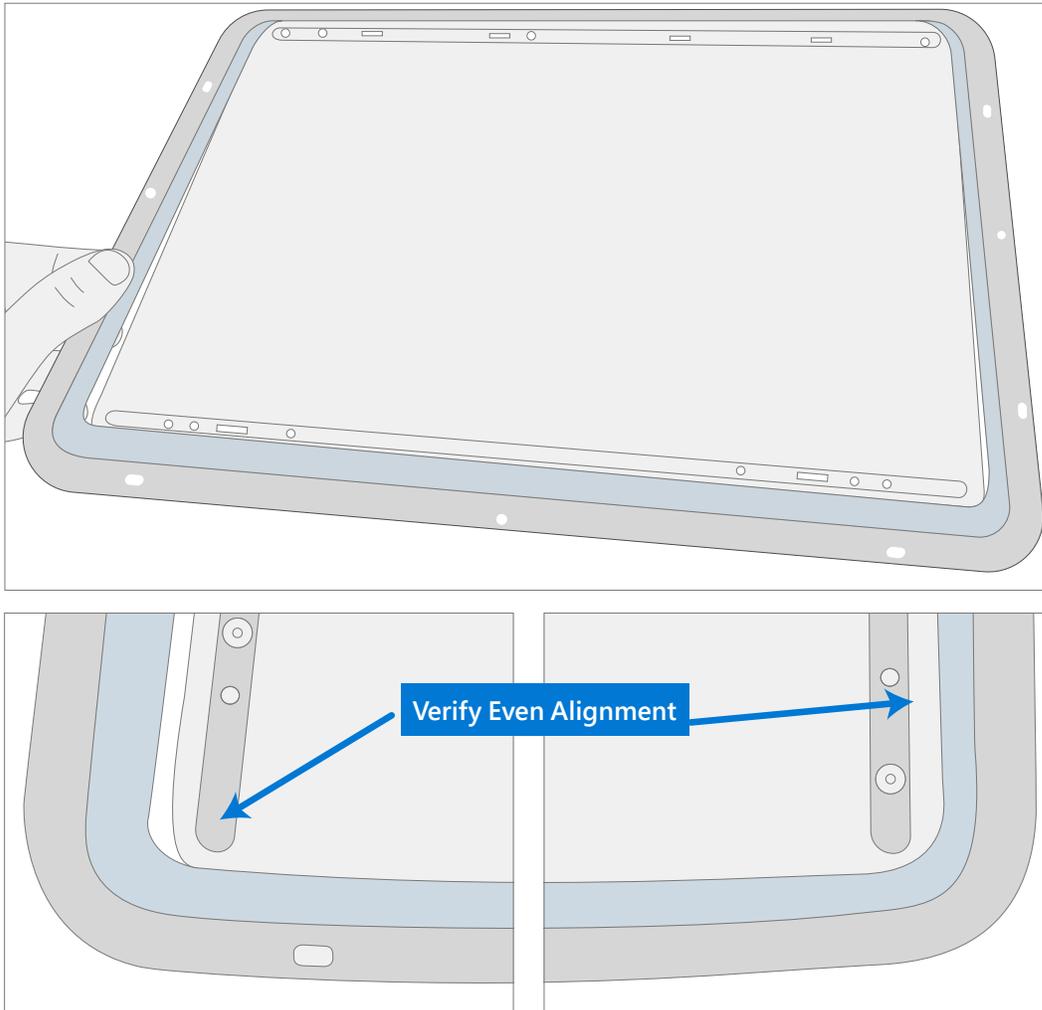


Procedure – Installation Cosmetic Plate

 **IMPORTANT:** Once removed, the cosmetic plate must be replaced with new a one.

1. Install New Cosmetic Plate –

- a. Place device onto a clean surface free of debris with the bottom facing up.
- b. Remove the clear plastic adhesive sheet.
- c. Remove the 3 **clear** liners on the cosmetic plate adhesive.
- d. Place the cosmetic plate adhesive-side down so the open side of the 'C' shape matches up with the display module hinge.



 **IMPORTANT:** Look through the blue liner and adjust the cosmetic plate where necessary to ensure that gaps on the sides of the cosmetic plate are even and consistent.

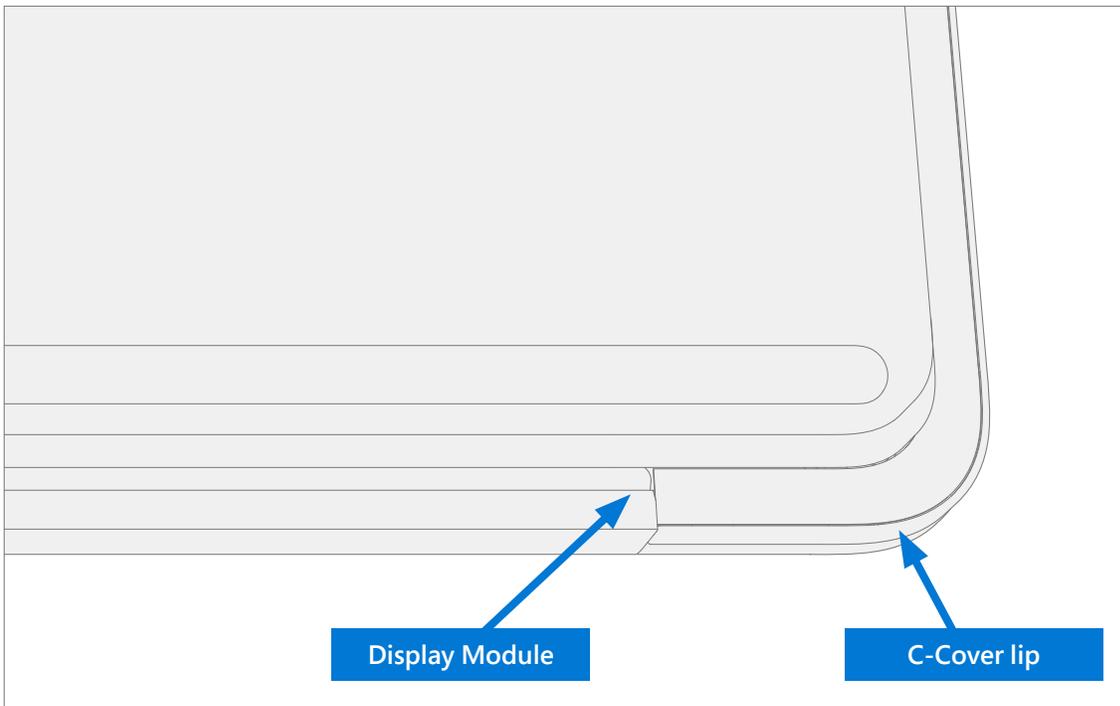
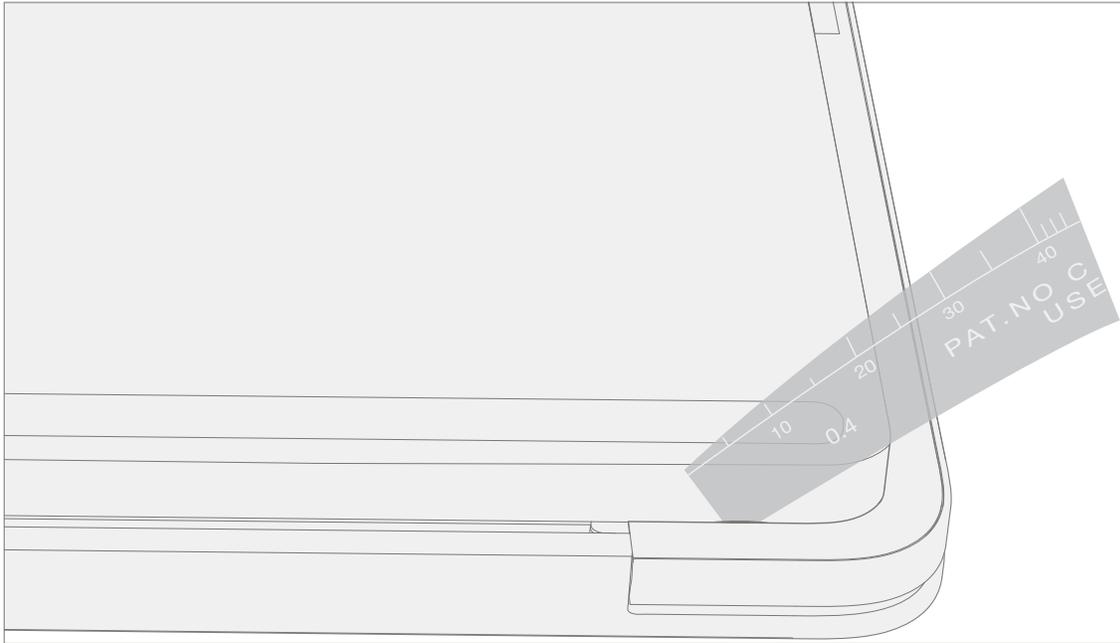
- e. Press lightly ensuring the entire cosmetic plate is fully down on the device.
- f. Firmly press the cosmetic plate with your finger, going all the way around.
- g. Remove the blue liner and run your finger over the cosmetic plate again to make sure that it is securely adhered.



2. **Verify alignment –**

- a. Use a 0.4 mm thickness gauge to check all edges of the cosmetic plate. The gauge should not easily fit in any gaps between the cosmetic plate and device.
- b. Verify the cosmetic plate does not overlap the C-Cover lip or display module and has equal gap concentricity around the corners.

 **IMPORTANT:** Any alignment failures require installation of a new cosmetic plate.



D-Bucket & Battery Process

Preliminary Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

- **Tools:**
 - Plastic tweezers / spudger
 - Anti-static wrist strap (1 MOhm resistance)
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Citrus IPA cleaner (example Goo Gone)
 - Cleaning swabs
 - Metric plastic thickness gauges
 - Non-Metalic ruler ([Amazon Example](#))
 - 3IP (Torx-Plus) driver
 - USB Thumb drive with SDT
 - Surface Power Supply
 - Soft ESD-safe mat
 - Microfiber cloth
- **Components:**
 - M1207384-001 D-Bucket spacer
 - M1167779 Screws qty=7 (under feet)
 - M1179289 Screws qty=2 (under cosmetic plate)
 - M1167371 Screws qty=2 (rSSD)
 - D-Bucket + Battery (Refer to [Illustrated Service Parts List](#)) if replacing
 - Feet (Refer to [Illustrated Service Parts List](#))
 - Cosmetic Plate (Refer to [Illustrated Service Parts List](#))

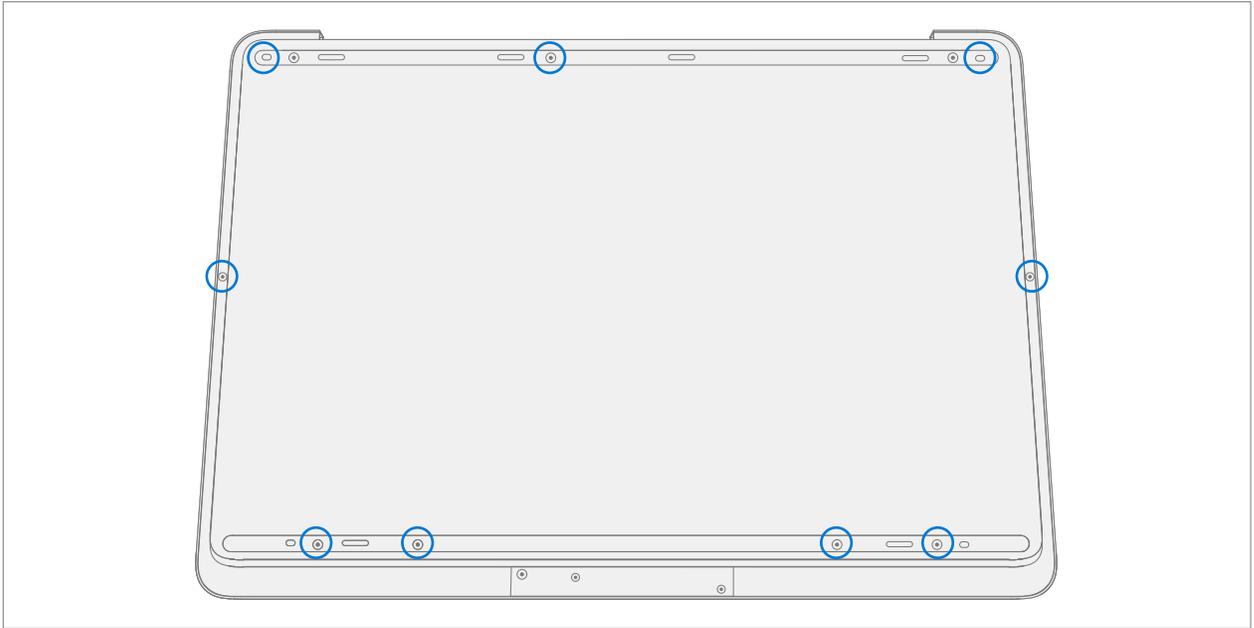
Prerequisite Steps:

- **Battery Status Check** – Connect power supply, boot device, connect the USB Thumb drive with SDT, and run SDT Battery tests. It is recommended batteries showing any of the following should be replaced:
 - a. PF Status of Non Functional
 - b. Wear value of 70% or less
 - c. Cycle Count equal to or greater than a 1000
 - d. Delta Voltage at or above 100 mV with state of charge 50% or greater
- **Power off device** – Ensure device is powered off and disconnected from a power supply.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 15](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Feet removal on ([page 16](#)) for details.
- **Remove Cosmetic Plate** – Refer to Cosmetic Plate removal on ([page 19](#)) for details.



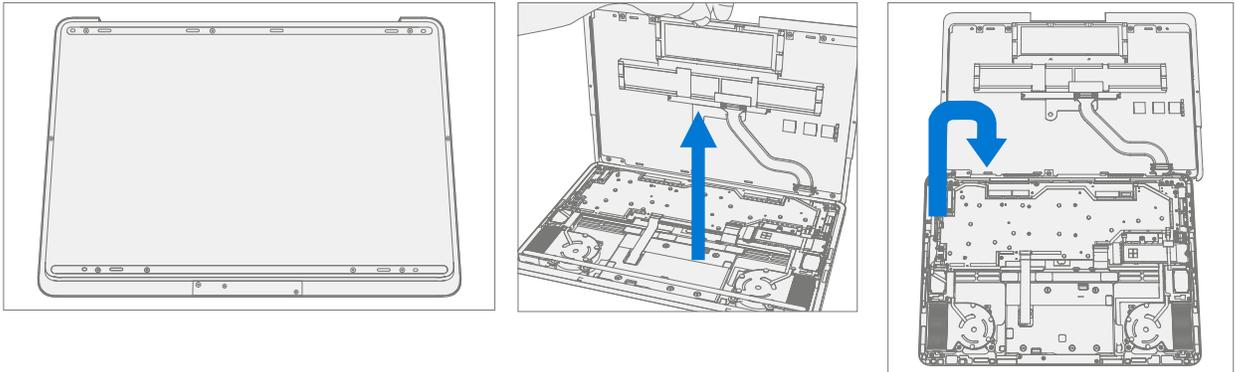
Procedure – Removal D-Bucket + Battery

1. **Remove D-Bucket screws** – Using a 3IP (Torx-Plus) driver remove the 7 screws from the foot wells, and the 2 screws from the sides of the D-Bucket.

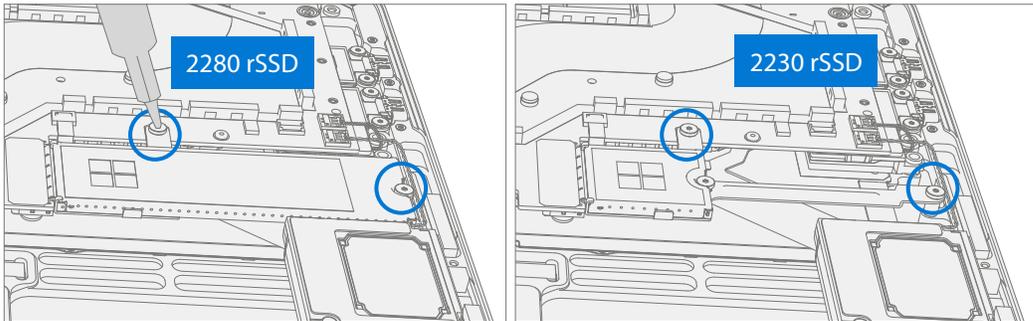


! **CAUTION:** All 9 screws must be removed before starting D-Bucket removal.

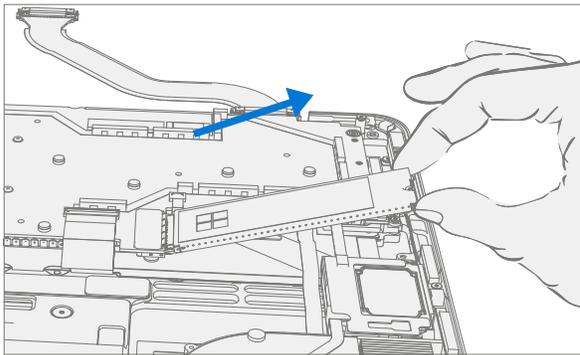
2. **Separate D-Bucket from device**
 - a. Lift the D-Bucket off of and place it above the device, rotating about the hinge so the battery cable isn't pulled tight. The battery will be facing up.



3. **Remove rSSD** – rSSD removal is necessary to **safely power down** the device before disconnecting the battery. There are two sizes of rSSD. The longer 2280 and the shorter 2230 on a bracket.
 - a. Using a 3IP (Torx-Plus) driver remove the 2 screws securing the rSSD.



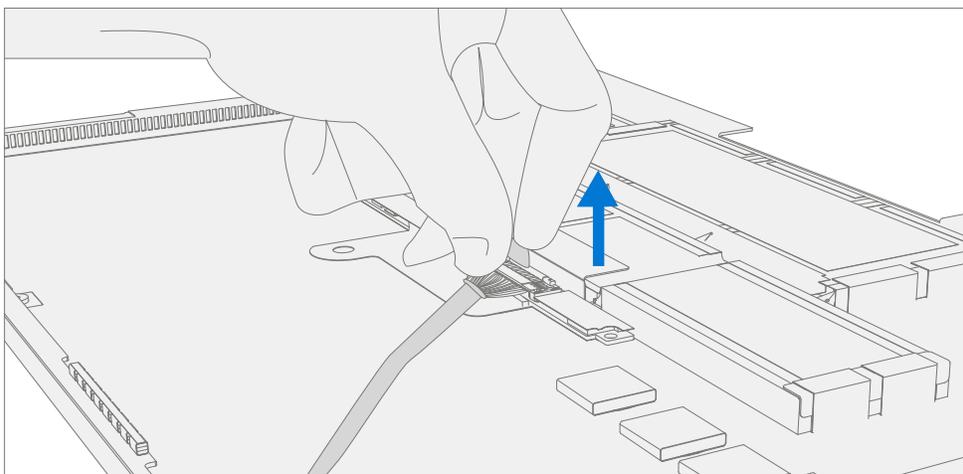
- b. Pull the rSSD out of the connector.



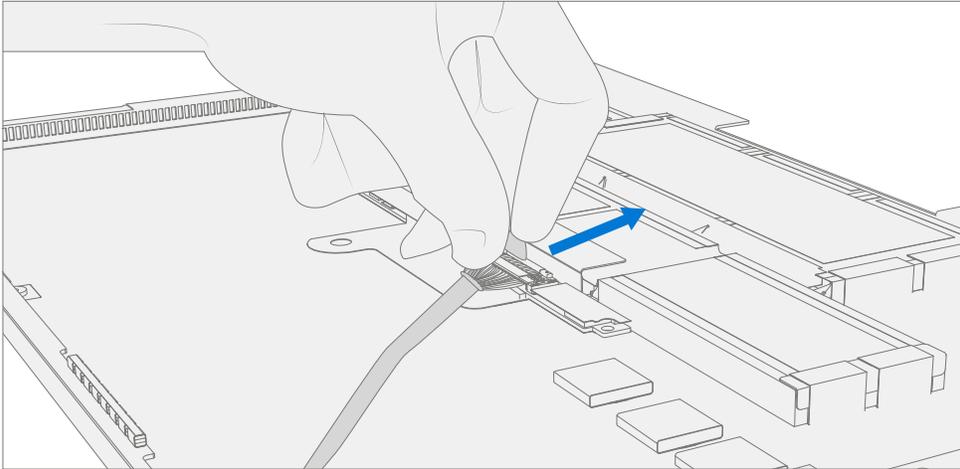
4. **Disconnect Battery Cable –**

! **CAUTION:** The battery cable connector does **not** detach in one single motion. Do not keep pulling vertically after the first “click”. Do not touch or press on the battery during connector removal.

- a. Pull vertically on the battery cable labeled “Pull” until the snaps on both sides of the connector are released (the connector will still be retained in the plug).



- b. Using the "Pull" tab, slide the connector carefully towards the battery to release the latches and remove the cable.

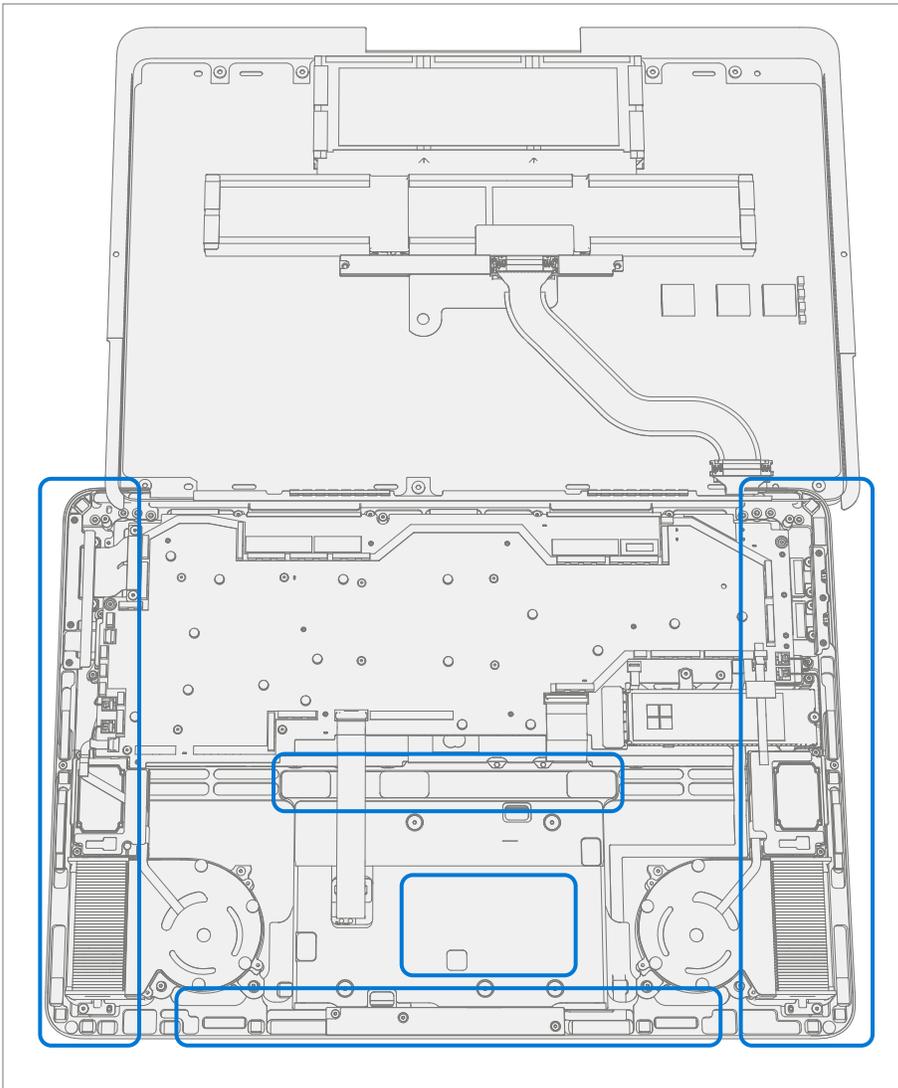


-
- ✎ **IMPORTANT:** Place the D-Bucket somewhere where the battery cannot accidentally be contacted or damaged. The D-Bucket is preferably stored vertically so as to prevent anything from being placed on top of the battery.
 - ✎ **IMPORTANT:** When replacing the battery dispose of the old battery according to local laws.
-

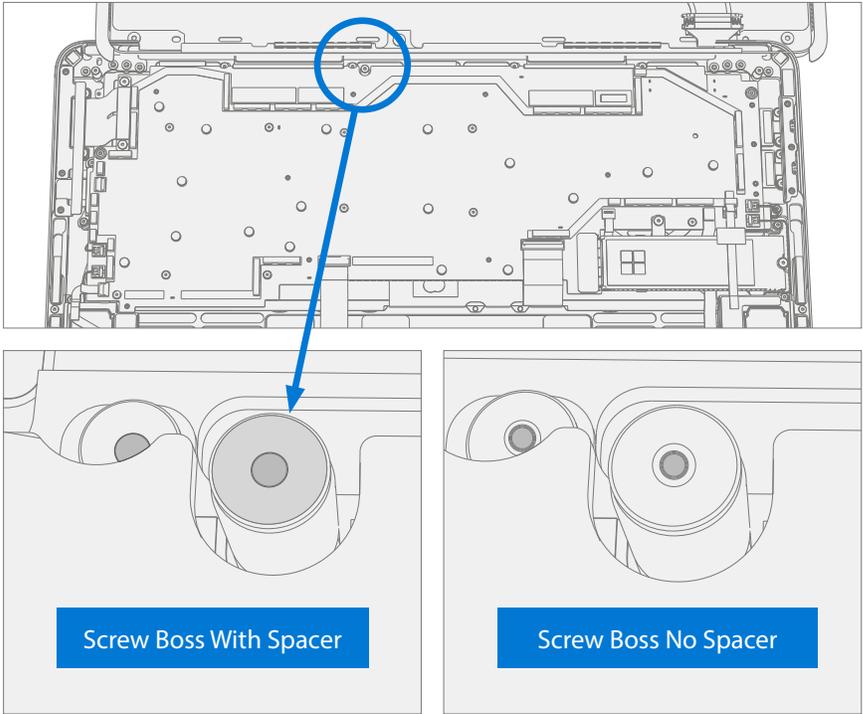


Procedure – Installation D-Bucket + Battery

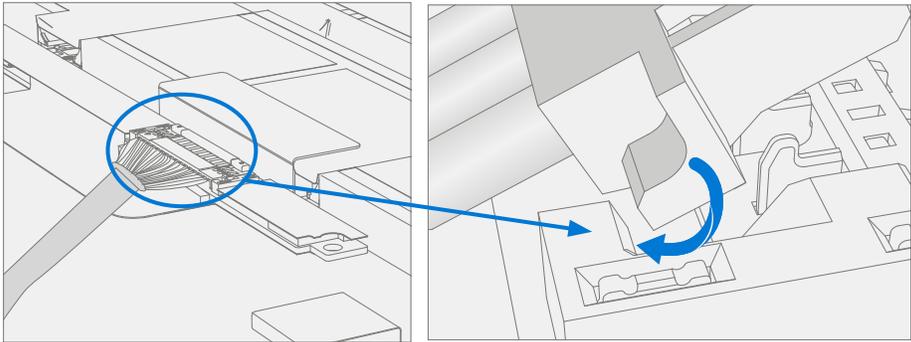
1. **Pre-installation Device Inspection** – Check D-Bucket (both sides) and device enclosure for any loose articles that may be present.
 - a. Check and remove any foreign objects that the magnets may have attracted. Refer to the circled Magnetized areas pictured below.
 - b. Pay special attention to the magnetized area around the bottom of the trackpad.
 - c. Verify all removed screws are accounted for and have not been misplaced in the device.
 - d. Loose screws should never be stored on the magnetic areas of the C cover.
2. **Position the D-Bucket** – Place the D-Bucket above the device as pictured below. The bottom of the D-Bucket should be on the table with the battery facing up.



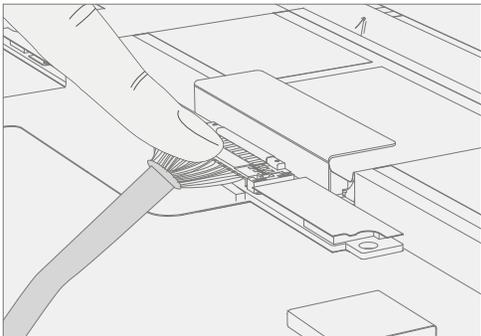
3. **D-Bucket Spacer** – Verify D-Bucket spacer M1207384-001 is installed on the C-Cover screw boss next to the left display cables. If missing install a new D-Bucket spacer M1207384-001. A new spacer is provided with the replacement FRUs, CRUs. Remove backing from the PSA on the spacer. Install the spacer on the screw boss as pictured below.
4. **Connect Battery Cable**



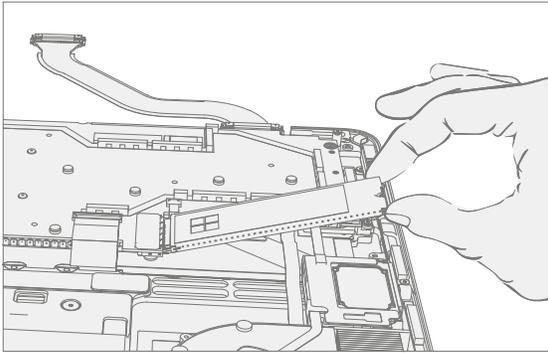
- a. Angle the tip of the connector up and vertically insert the cable side of the connector into the receptacle on the battery. Slightly pull back on the connector to make sure that the hook is engaged as shown below.



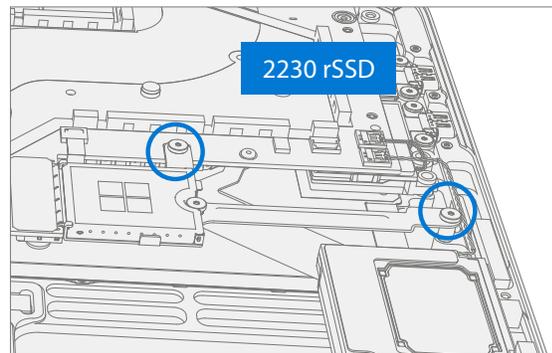
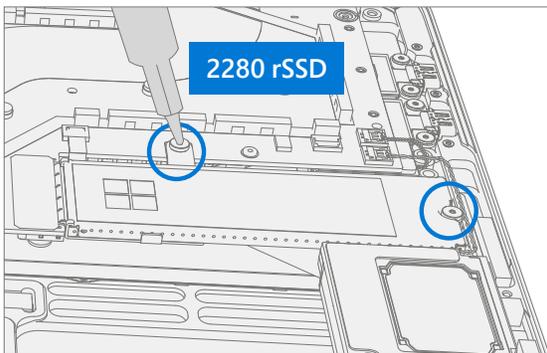
- b. Press down on the tip of the connector on left and right sides. A click should be heard and felt on each side



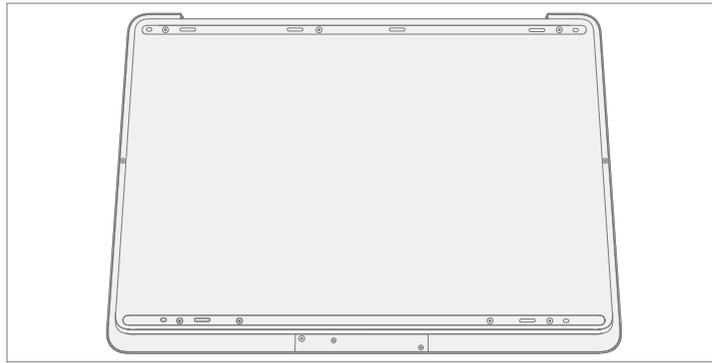
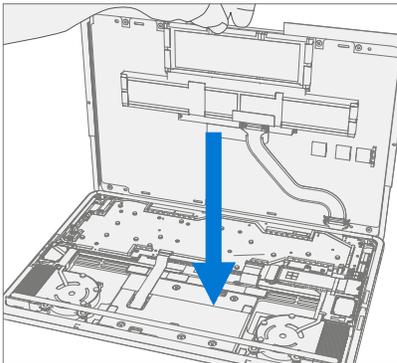
5. **Install rSSD** – Insert the connector end of the rSSD into the rSSD connector on the motherboard at ~15-degree angle.



6. **Install new rSSD screws** – Using a 3IP (Torx-Plus) driver install 2 new M1167371 rSSD screws. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



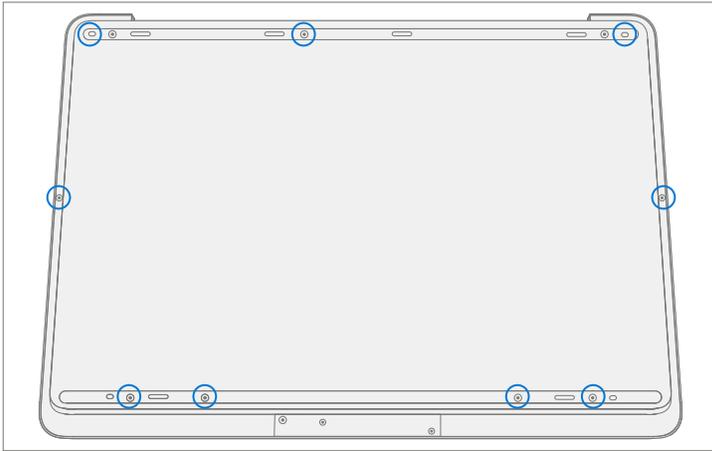
7. **Rotate the D-Bucket** – Visually inspect the magnetized and C-Cover areas as noted in step 1. Rotate the D-Bucket about the hinge to prevent the battery cable from pulling on the battery connector. Set the D-Bucket down on the device.



8. **New Battery Charging** – New batteries are shipped and stored at low states of charge in compliance with shipping regulations. They should be charged to at least 50%. This step will take between 20 minutes and 1 hour and is needed to validate full functionality of the new battery. Carefully place device right-side up. Open device, connect the power supply, and power it on.



9. **New Battery Authentication** – New batteries require authentication. After charging the new battery to at least 50%. Connect the SDT USB drive. Run the SDT battery repair validation to ensure all features and functions operate as expected. Power off at completion of tests. Remove SDT USB drive and power supply. If no further repairs are required proceed to final steps.
10. **Original Battery Verify Device Functions** – Carefully place device right-side up. Open device and connect the SDT USB drive, and power supply. Power on device then Run SDT to ensure all features and functions operate as expected. Power off at completion of tests. Remove SDT USB drive and power supply. If no further repairs are required proceed to final steps.
11. **Install New D-Bucket Screws** – Close device and carefully place it bottom-side up. Using a 3IP (Torx-Plus) driver install 7 new M1167779 screws in the foot wells, and 2 new M1179289 screws in the sides of the D-Bucket. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



12. **Install New Cosmetic Plate** – Refer to Cosmetic Plate installation on [\(page 20\)](#) for details.
13. **Install New Feet** – Refer to Feet installation on [\(page 17\)](#) for details.



rSSD Process

Preliminary Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

- **Tools:**
 - Plastic tweezers / spudger
 - Anti-static wrist strap (1 MOhm resistance)
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Citrus IPA cleaner (example Goo Gone)
 - Cleaning swabs
 - Metric plastic thickness gauges
 - Non-Metalic ruler ([Amazon Example](#))
 - 3IP (Torx-Plus) driver
 - USB Thumb drive with SDT
 - Surface Power Supply
 - Soft ESD-safe mat
 - Microfiber cloth
- **Components:**
 - rSSD (Refer to [Illustrated Service Parts List](#)) if replacing
 - M1167779 Screws qty=7 (under feet)
 - M1179289 Screws qty=2 (under cosmetic plate)
 - M1167371 Screws qty=2 (rSSD)
 - Feet (Refer to [Illustrated Service Parts List](#))
 - Cosmetic Plate (Refer to [Illustrated Service Parts List](#))

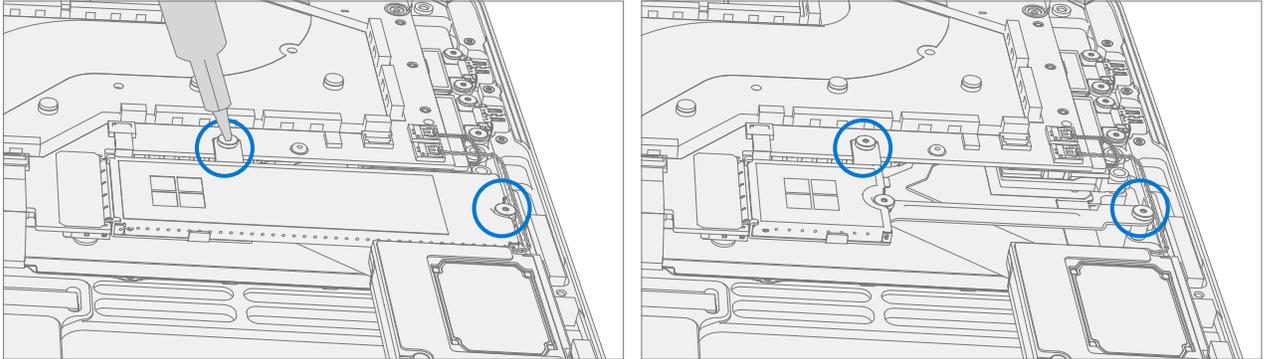
Prerequisite Steps:

- **Power off device** – Ensure device is powered off and disconnected from a power supply.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 15](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Feet removal on ([page 16](#)) for details.
- **Remove Cosmetic Plate** – Refer to Cosmetic Plate removal on ([page 19](#)) for details.
- **Remove D-Bucket** – Refer to D-Bucket + Battery removal on ([page 23](#)) for details.

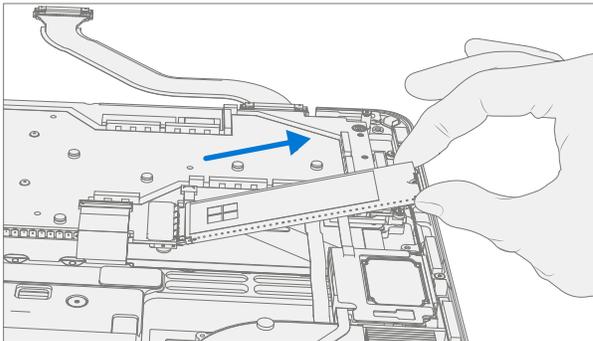


Procedure – Removal rSSD

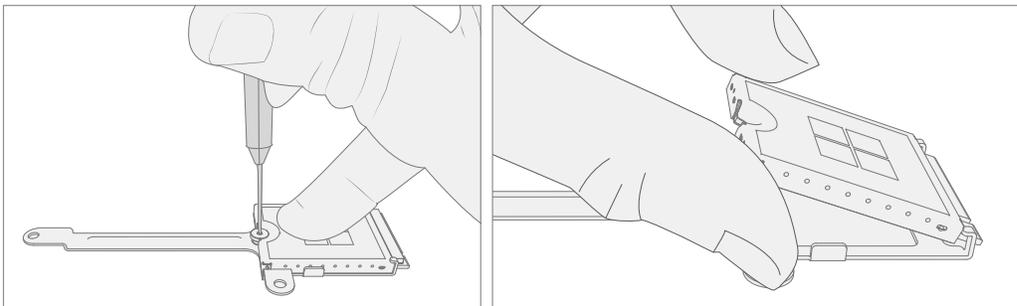
1. **Remove rSSD** – rSSD removal **safely powers down** the device. There are two sizes of rSSD. The longer 2280 and the shorter 2230 on a bracket.
 - a. Using a 3IP (Torx-Plus) driver remove the 2 screws securing the rSSD.



- b. Pull the rSSD out of the connector



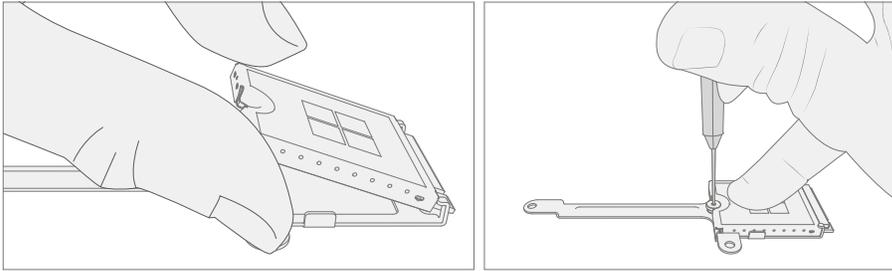
2. **Remove 2230 rSSD from bracket** – Using a 3IP (Torx-Plus) driver remove the screw securing the 2230 rSSD to the bracket and then remove the rSSD.



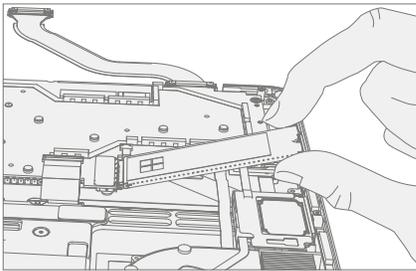
 **IMPORTANT:** The 2230 rSSD bracket is reused when installing a new 2230 rSSD.

Procedure – Installation rSSD

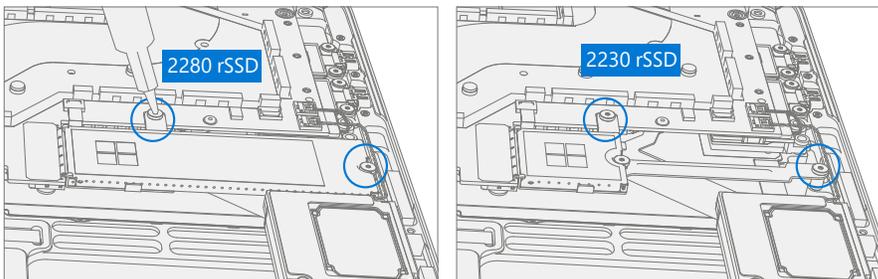
1. **Install new 2230 rSSD to bracket** – Using a 3IP (Torx-Plus) driver install a new 2230 rSSD to the bracket with a new M1167371 screw. Turn the screw until just snug and seated, and then turn another 45 degrees (1/8 turn) or until it is fully fastened.



2. **Insert rSSD** - Insert the connector end of the rSSD into the receptacle on the motherboard at ~15-degree angle from horizontal.



3. **Install new rSSD screws** - Using a 3IP (Torx-Plus) driver install 2 new M1167371 rSSD screws. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



4. **Battery Installation** – Follow steps for D-Bucket reassembly on [\(page 26\)](#).

 **IMPORTANT:** During this installation only install rSSD and D-Bucket. Do not install D-Bucket screws and Cosmetic Plate.

5. **Power On Device** – Carefully place device top side up. Connect device to power supply, open display, and power on.
6. **Imaging** – Image the new rSSD by using a BMR Imaging USB drive specific to the device model.

 **IMPORTANT:** Refer to Surface imaging process - Surface Imaging Tools

7. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.
8. **Install New D-Bucket Screws** – Install new D-Bucket screws as detailed on [\(page 29\)](#).
9. **Install New Cosmetic Plate** – If no further repairs are required install the Cosmetic Plate as detailed on [\(page 20\)](#).
10. **Install New Feet** – Refer to Feet installation on [\(page 17\)](#) for details.



AB-Cover Display Module Process

Preliminary Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

- **Tools:**
 - Plastic tweezers / spudger
 - Plastic card tool example [iFixit Plastic Card](#)
 - Anti-static wrist strap (1 MOhm resistance)
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Citrus IPA cleaner (example Goo Gone)
 - Cleaning swabs
 - Metric plastic thickness gauges
 - Non-Metalic ruler ([Amazon Example](#))
 - 3IP (Torx-Plus) driver
 - 6IP (Torx-Plus) driver
 - USB Thumb drive with SDT
 - Surface Power Supply
 - Soft ESD-safe mat
 - Microfiber cloth

- **Components:**
 - AB Display Module (Refer to [Illustrated Service Parts List](#)) if replacing
 - M1167779 Screws qty=7 (under feet)
 - M1179289 Screws qty=2 (under cosmetic plate)
 - M1167371 Screws qty=2 (rSSD)
 - M1150078 Screws qty=8 (Hinge x C-Cover)
 - M1177566 Screws qty=4 (Cable Tensioners x C-Cover)
 - Feet (Refer to [Illustrated Service Parts List](#))
 - Cosmetic Plate (Refer to [Illustrated Service Parts List](#))



Prerequisite Steps:

 **IMPORTANT:** The serial number for this device model is located on its original cover. To keep track of the device's serial number, please record it using waterproof ink (Location Link) on a sticker or label and apply the sticker or label to an easily accessible area on the device exterior. The serial number cannot be added permanently to a replacement part. Microsoft may have provided a label for this use in the replacement part's packaging.

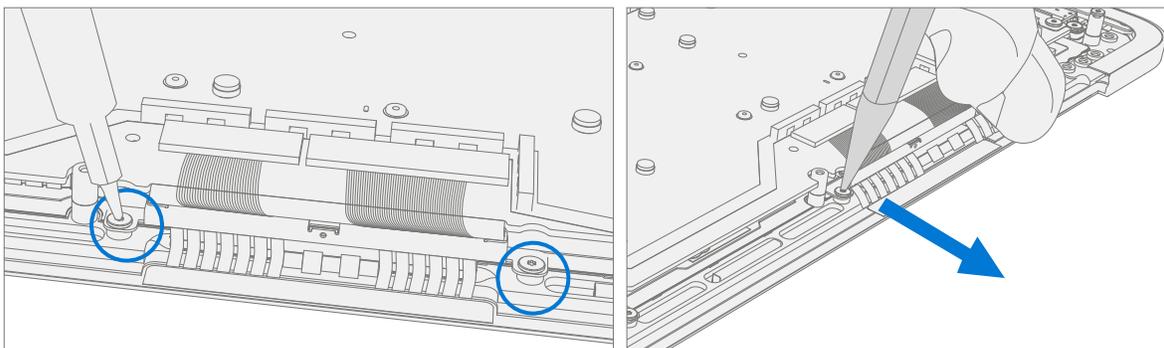
- **Prep Device** – Device must be set in **TDM Replacement Mode** prior to removing a **faulty** AB-Cover. This is not required if the original AB-Cover will be reinstalled.
 - a. **Connect software tools USB drive** with SDT to USB connector on device under repair.
 - b. **Connect power supply** to device.
 - c. **Power on device** – Depress the power button on the side of the device.
 - d. **Run software tool** – At the device OS, use Windows Explorer, navigate to USB drive and run: **SDT** – Select Repair setup and validation. Run the Touch Display Setup. At the end of the tool process device will power down.

 **WARNING:** This step must be carried out on the device successfully **before** removal of a **faulty** AB-Cover.

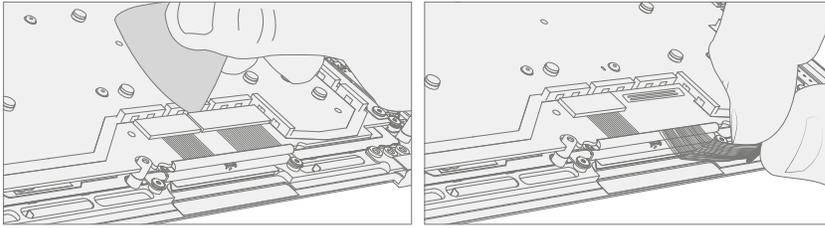
- **Power off device** – Ensure device is powered off and disconnected from a power supply. Remove all attached cables and drives.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on (page 15) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Feet removal on (page 16) for details.
- **Remove Cosmetic Plate** – Refer to Cosmetic Plate removal on (page 19) for details.
- **Remove D-Bucket** – Refer to D-Bucket + Battery removal on (page 23) for details.

Procedure – Removal AB-Cover

1. **Remove 2 Cable Tensioners** –
 - a. Using a 3IP (Torx-Plus) driver remove the 2 screws from each of the cable tensioners.
 - b. Carefully lift the edge of the cable tensioners to remove them from the screw posts. Slide the cable tensioners out.

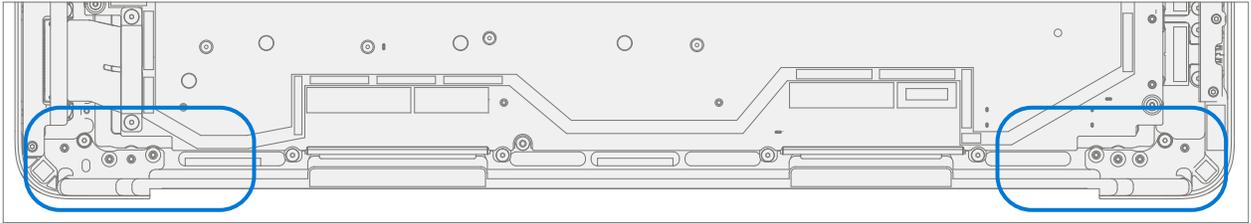


2. **Disconnect 4 Display Cables** – Use plastic tool to unlatch the connectors on the 4 display cables and carefully remove the cables from the PCBA connectors.

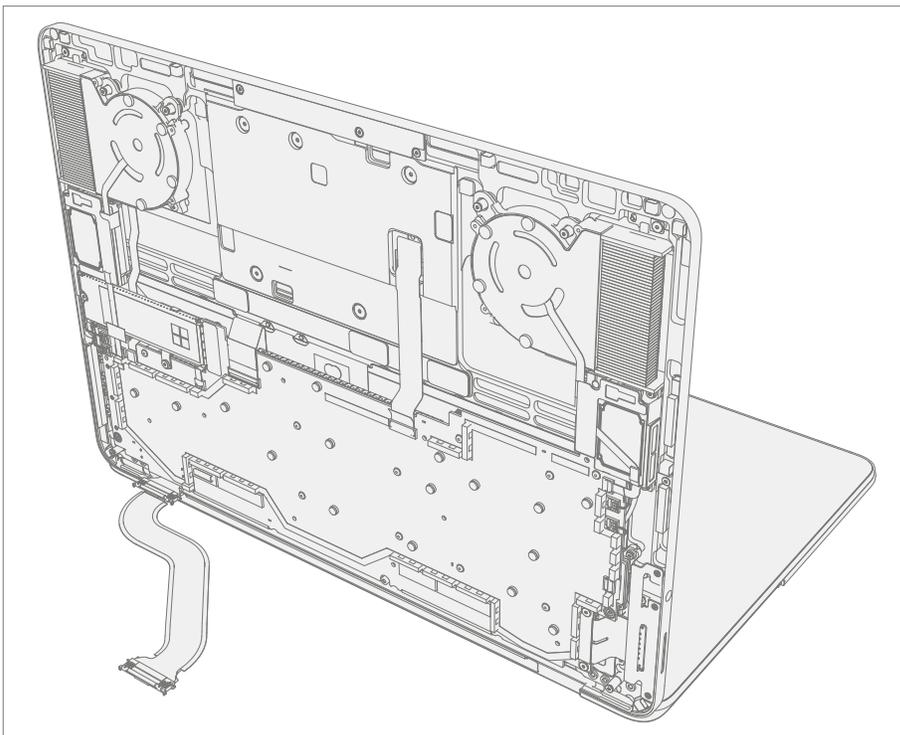


! **CAUTION:** The nearby foams are very delicate. Take care to not damage or remove them.

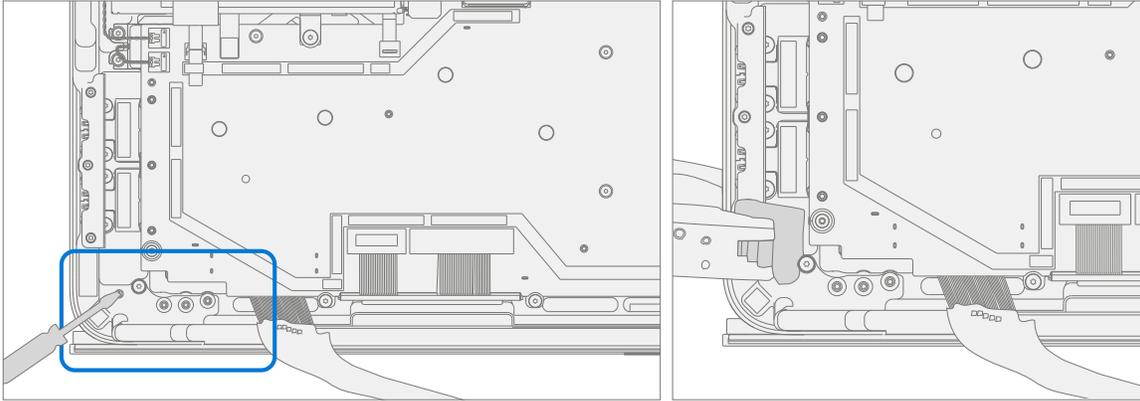
3. **Loosen AB-Cover hinge screws** – Using a 6IP (Torx-Plus) driver loosen the 8 hinge screws by (1/8 turn) of a turn.



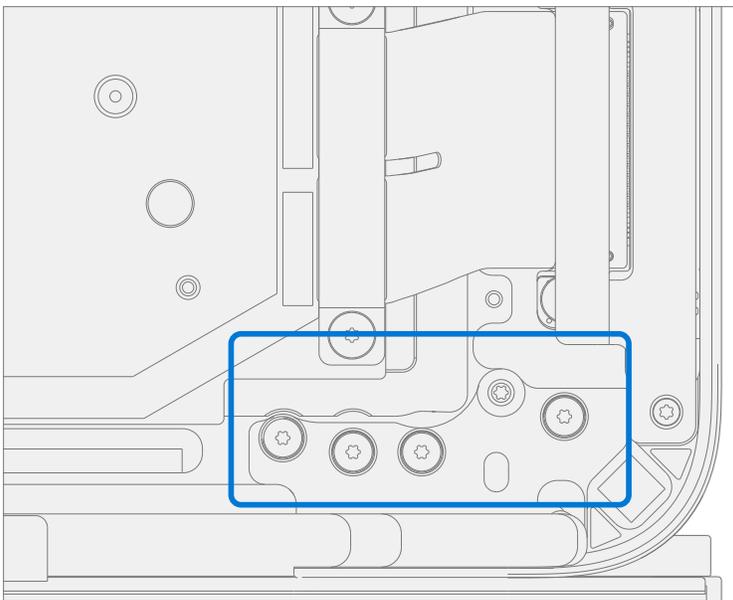
4. **Position AB-Cover** – Open the AB-Cover to 90 degrees. Place the backside of the display module on the ESD safe workbench with the C-Cover facing up.



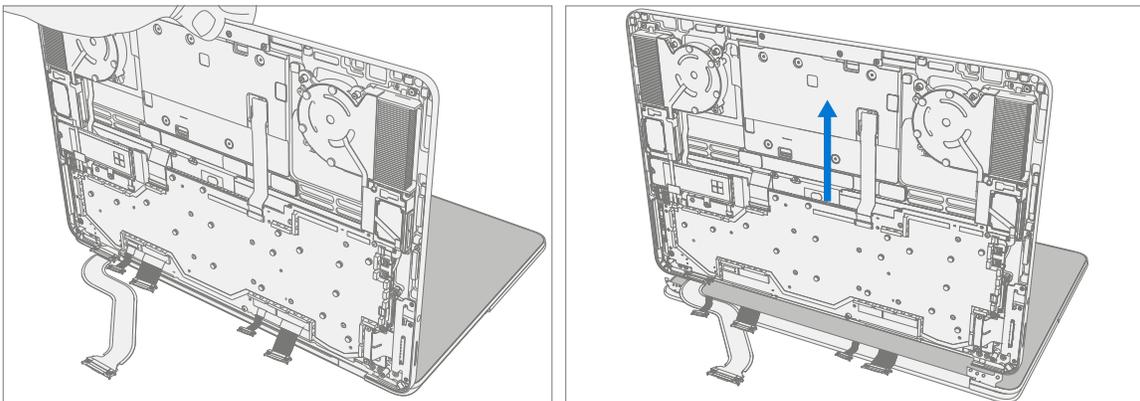
5. **Remove Left Hinge Screws** – Using a 6IP (Torx-Plus) driver remove the 4 screws on the left hinge. Apply a 1 inch light duty spring clamp to the left hinge to hold it in place against the C-Cover.



6. **Remove Right Hinge Screws** – Using a 6IP (Torx-Plus) driver remove the 4 screws on the right hinge.

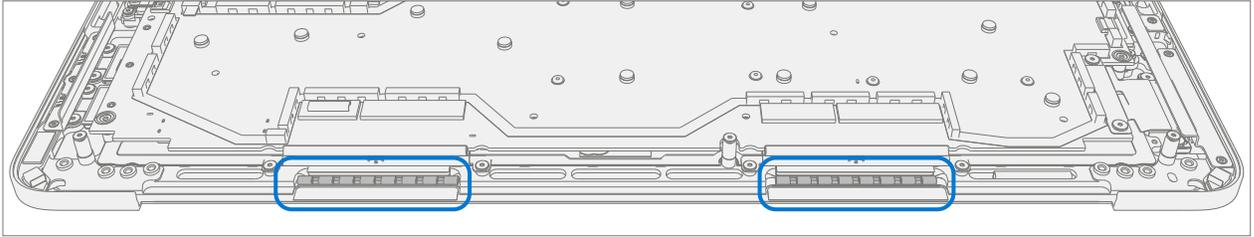


7. **Remove display module from C-Cover** – While holding the C-Cover with one hand remove the 1-inch light duty spring clamp from the left hinge. Carefully lift the C-Cover from the display assembly.

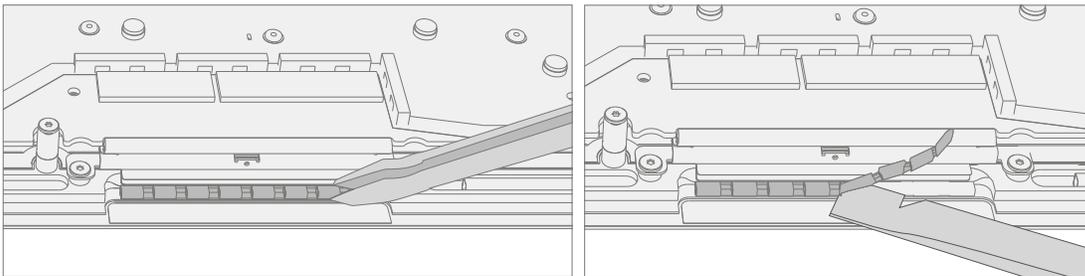


Procedure – Installation AB-Cover

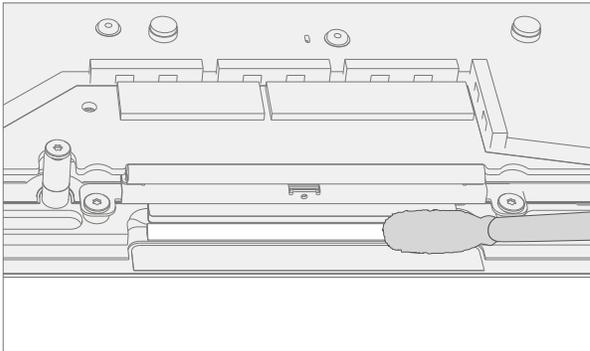
1. **Install New Display Cable Foam** – Display cable foam strips on the C-Cover are replaced prior to installation of the AB-Cover.



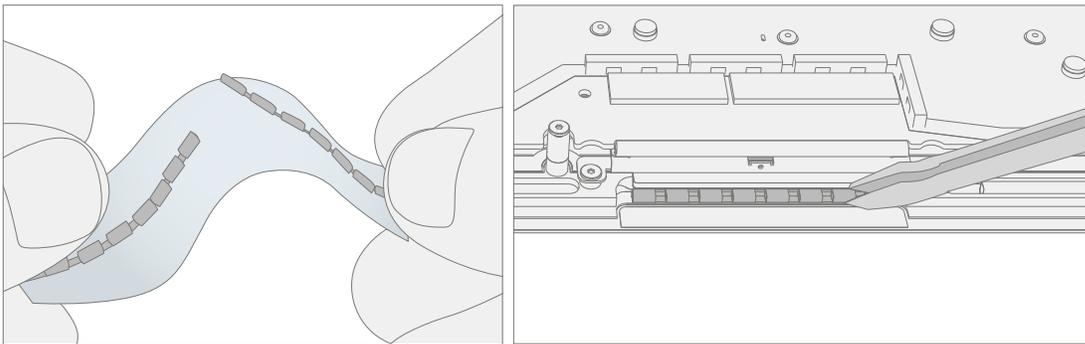
- a. **Remove left and right foam** – Using a plastic tool remove the display cable foam from the left and right sides of the C-cover.



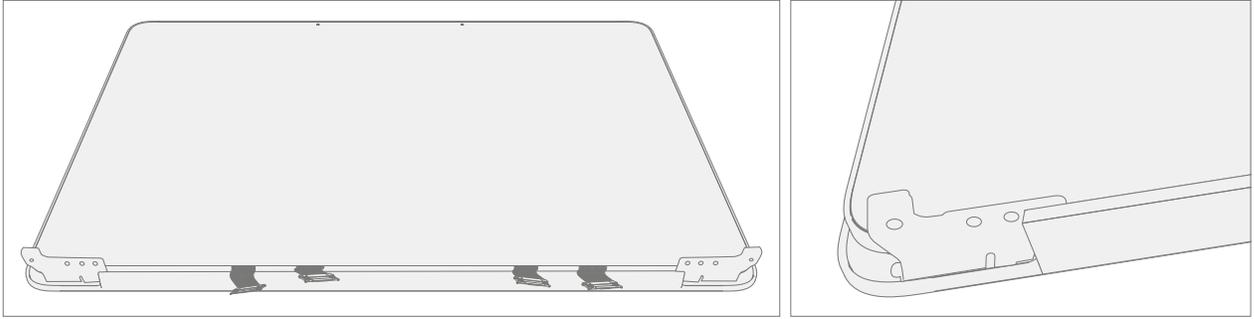
- b. **Cleaning** – Remove any adhesive tape remnants from the C-Cover and clean off any glue residue with 70% or greater Isopropyl Alcohol.



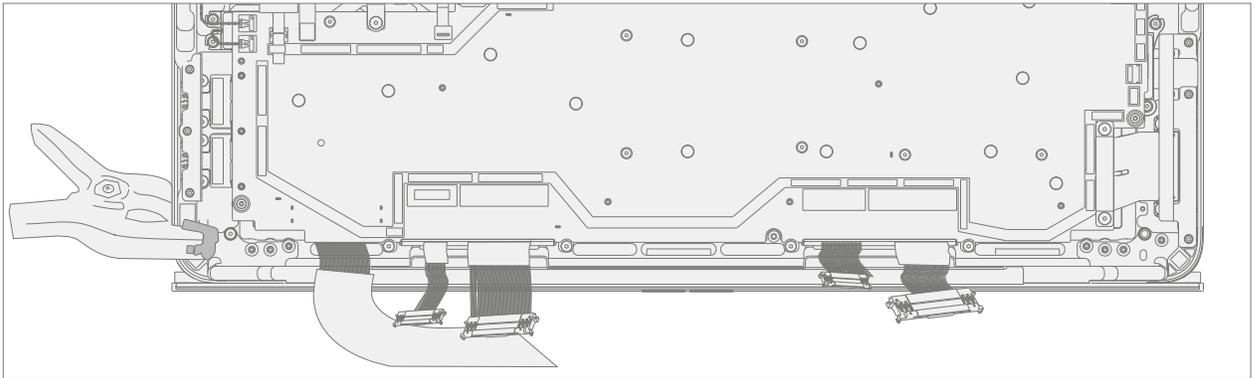
- c. **Install New Display Cable Foam** – Remove the liner from the display cable foam. Align the display cable foam adhesive side down onto the C-Cover over the silver surface. Press down on the foam for 30 seconds. Repeat this for each side of the C-Cover.



2. **Position AB-Cover** – Place the backside of the display module on the ESD safe workbench with the hinges set at 90 degrees.

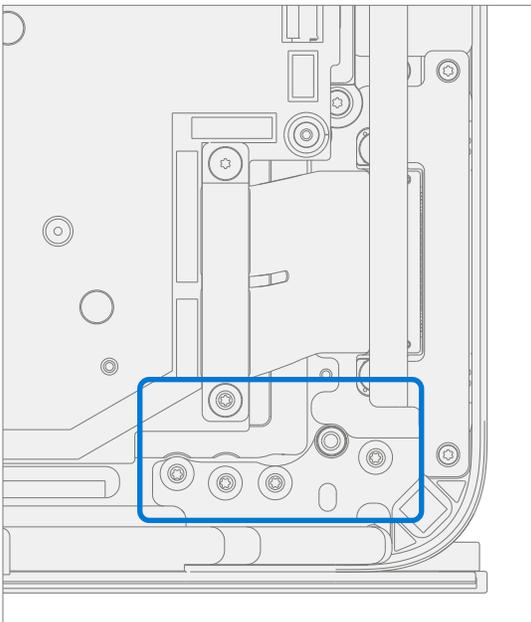


3. **Install display module onto C-Cover** – While holding the C-Cover with one hand. Carefully align the hinges into the pockets on the C-Cover. Apply a 1-inch light duty spring clamp to the left hinge.

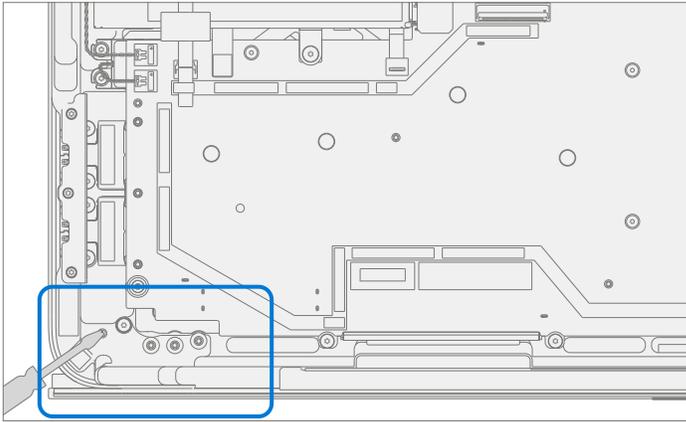


! **CAUTION:** Ensure the C-Cover does not impact the display.

4. **Pre-fasten right hinge screws** – Assemble 4 new M1150078 screws in the right side hinge and tighten until just snug.

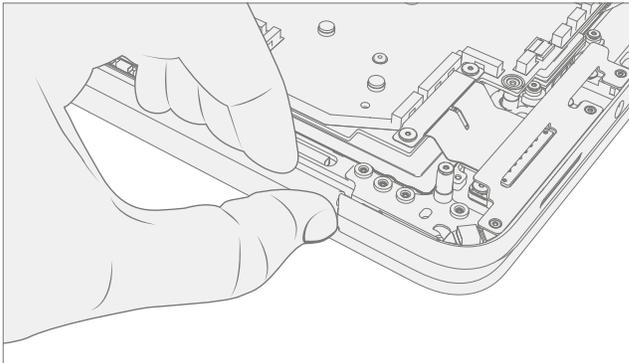


5. **Pre-fasten left hinge screws** – Remove the 1-inch light duty clamp from the left hinge. Assemble 4 new M1150078 screws in the left side hinge and tighten until just snug.

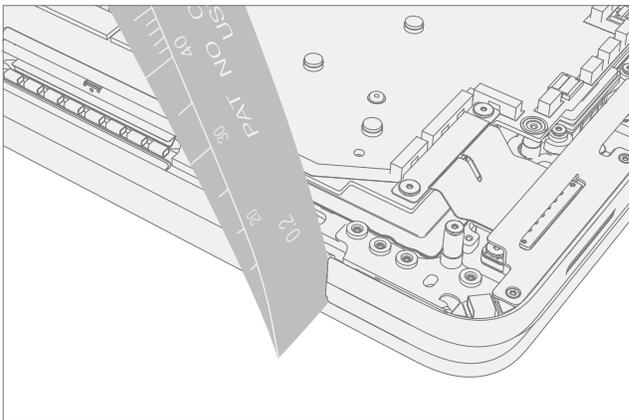


6. **Hinge alignment** –

- a. Close the device.
- b. Loosen all 8 hinge screws 90 degrees ($\frac{1}{4}$ turn).
- c. Adjust the alignment until the back edge is flush across the hinge and C-Cover surfaces.



- d. Verify a 0.2 mm plastic thickness gauge can slide easily in the hinge gap.

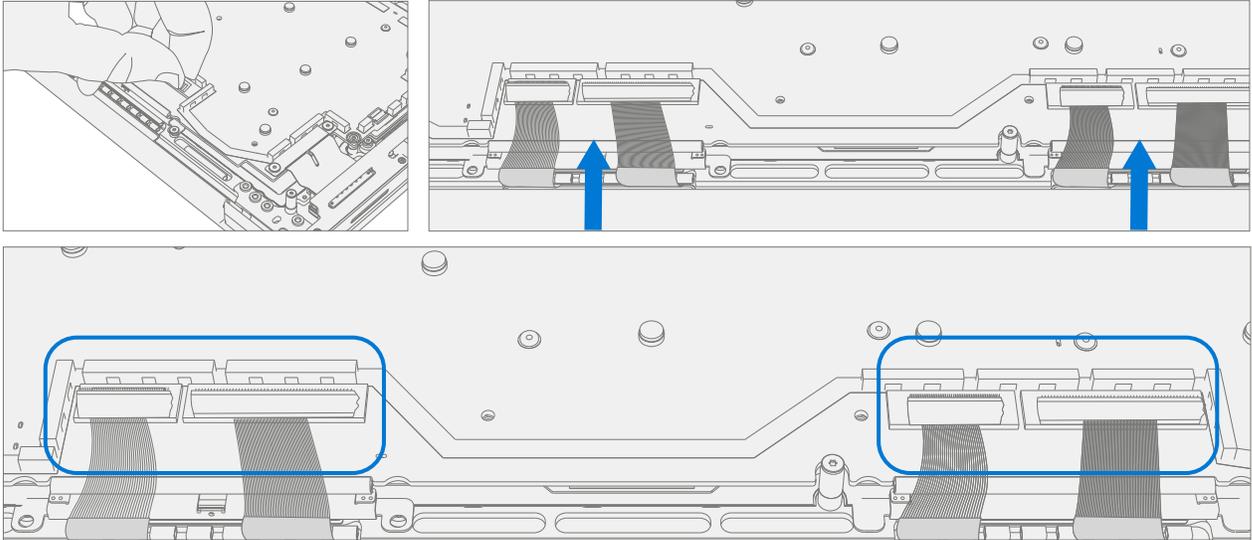


- e. Tighten 1 screw on each hinge until snug then an additional 90 degrees and recheck alignment and 0.2mm gaps.
- f. Repeat steps d and e on each of the 8 hinge screws.

 **NOTE:** Placing a 0.25 mm plastic thickness gauge in the smaller of the 2 hinge gaps during step “e.” will aid in achieving a 0.2 mm gap after tightening.

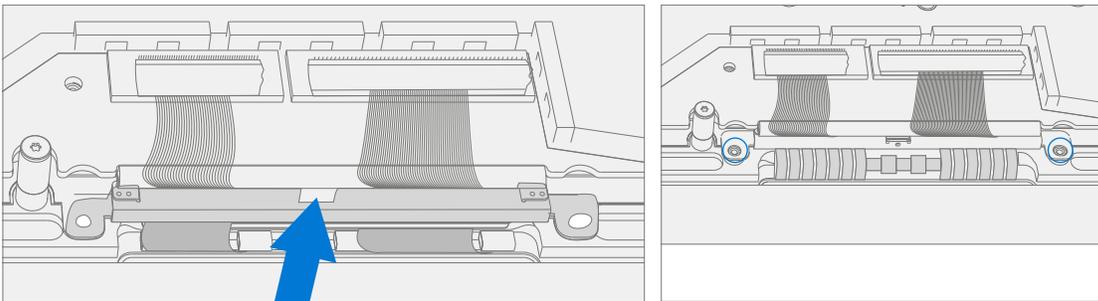


7. **Connect 4 Display Cables** – Carefully connect the 4 display cables into the PCBA connectors. Ensure the connections are fully seated and the locking buckles are engaged.

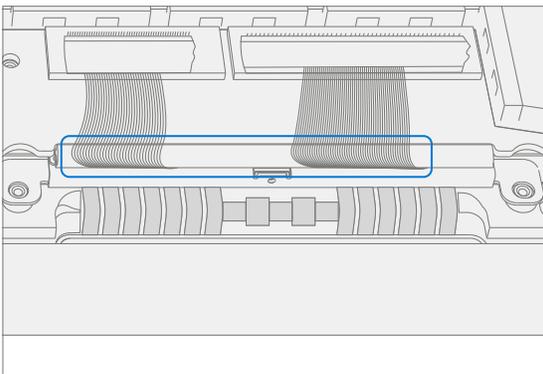


8. **Install 2 Cable Tensioners** –

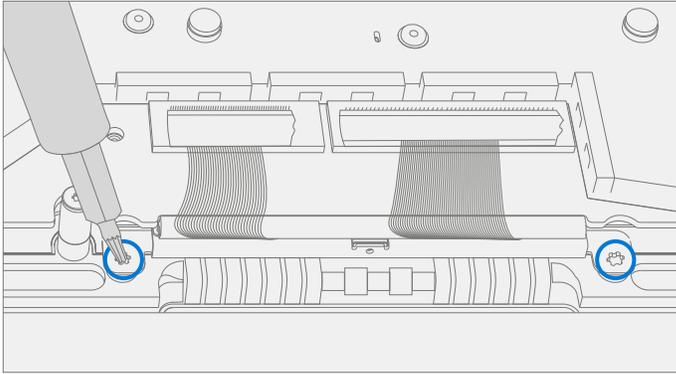
- a. Use the cable tensioners to gently push all 4 display cables so that they loop under the MB. Slide the cable tensioners in horizontally until the holes fit over the posts with the screw holes.



- b. Ensure that the cables route over the plastic guide along the edge of the MB.



- c. Using a 3IP (Torx-Plus) driver install the 2 new M1177566 screws in each cable tensioner. Turn each screw until just snug and seated, and then turn another 45 degrees (1/8 turn) or until screws are fully fastened.



9. **Battery Installation** – Follow steps for D-Bucket reassembly on [\(page 26\)](#).

 **IMPORTANT:** During this installation only install rSSD and D-Bucket. Do not install D-Bucket screws and Cosmetic Plate.

10. **Power On Device** – Carefully place device top side up. Connect device to power supply, open display, and power on.
11. **New AB-Cover TDM Calibration** – On installation of a **new AB-Cover TDM** device final calibration relies on the successful completion of the TDM Replacement Mode. TDM calibration is not required when installing the originally removed AB-Cover.
 - a. **Connect software tools USB drive** with SDT to USB connector on device under repair.
 - b. **Run software tool** – At the device OS, use Windows Explorer, navigate to USB drive and run:
SDT – Select Repair setup and validation. Run the Touch Display Calibration. Accept the restart prompt at the end of the tool process.

 **IMPORTANT:** This step must be carried out on the device successfully on installation of a **new AB-Cover**.

12. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.
13. **Install New D-Bucket Screws** – Install new D-Bucket screws as detailed on [\(page 29\)](#).
14. **Install New Cosmetic Plate** – If no further repairs are required install the Cosmetic Plate as detailed on [\(page 20\)](#).
15. **Install New Feet** – Refer to Feet installation on [\(page 17\)](#) for details.

Surflink Port Process

Preliminary Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

- **Tools:**
 - Plastic tweezers / spudger
 - Anti-static wrist strap (1 MOhm resistance)
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Citrus IPA cleaner (example Goo Gone)
 - Cleaning swabs
 - Metric plastic thickness gauges
 - Non-Metalic ruler ([Amazon Example](#))
 - 3IP (Torx-Plus) driver
 - USB Thumb drive with SDT
 - Surface Power Supply
 - Soft ESD-safe mat
 - Microfiber cloth
- **Components:**
 - Surflink Port (Refer to [Illustrated Service Parts List](#))
 - M1167779 Screws qty=7 (under feet)
 - M1179289 Screws qty=2 (under cosmetic plate)
 - M1167371 Screws qty=2 (rSSD)
 - M1109237 Screws qty=3 (Left I/O Bracket x C-Cover)
 - M1149393 Screws qty=4 (SL Connector x C-Cover x PCBA)
 - Feet (Refer to [Illustrated Service Parts List](#))
 - Cosmetic Plate (Refer to [Illustrated Service Parts List](#))

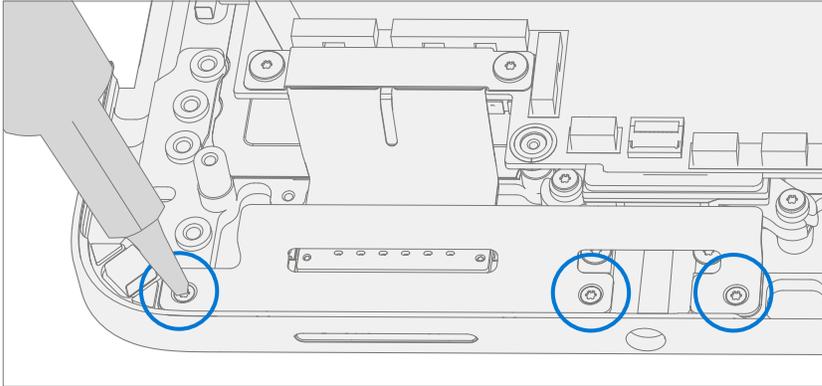
Prerequisite Steps:

- **Power off device** – Ensure device is powered off and disconnected from a power supply. Remove all attached cables and drives.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 15](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Feet removal on ([page 16](#)) for details.
- **Remove Cosmetic Plate** – Refer to Cosmetic Plate removal on ([page 19](#)) for details.
- **Remove D-Bucket** – Refer to D-Bucket + Battery removal on ([page 23](#)) for details.

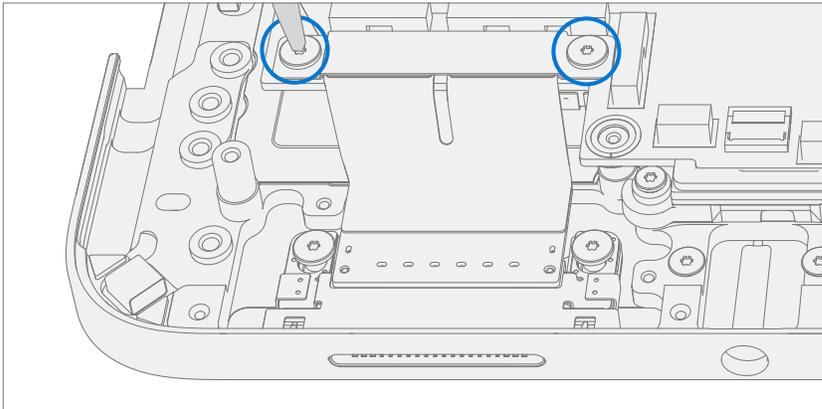


Procedure – Removal Surflink Port

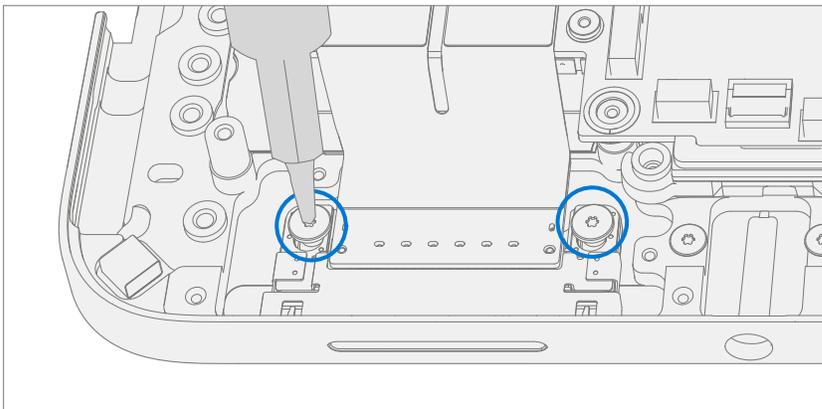
1. **Remove Left I/O Bracket** – Using a 3IP (Torx-Plus) driver remove the 3 screws securing the left I/O Bracket to the C-Cover. Remove the Left I/O Bracket.



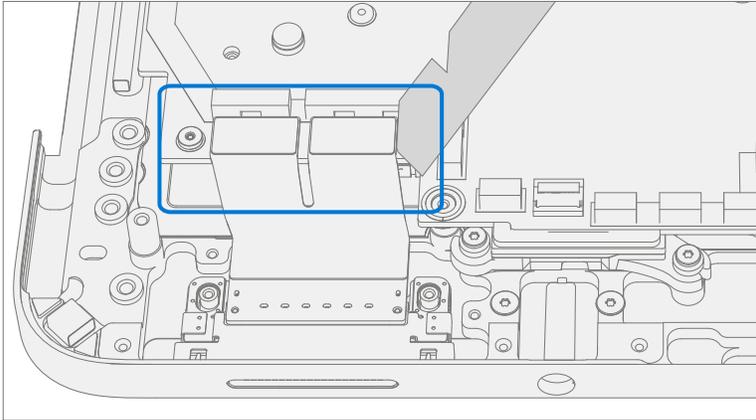
2. **Remove Surflink FPC Retainer** – Using a 3IP (Torx-Plus) driver remove the 2 screws securing the Surflink FPC retainer to the PCBA. Remove the cable retainer.



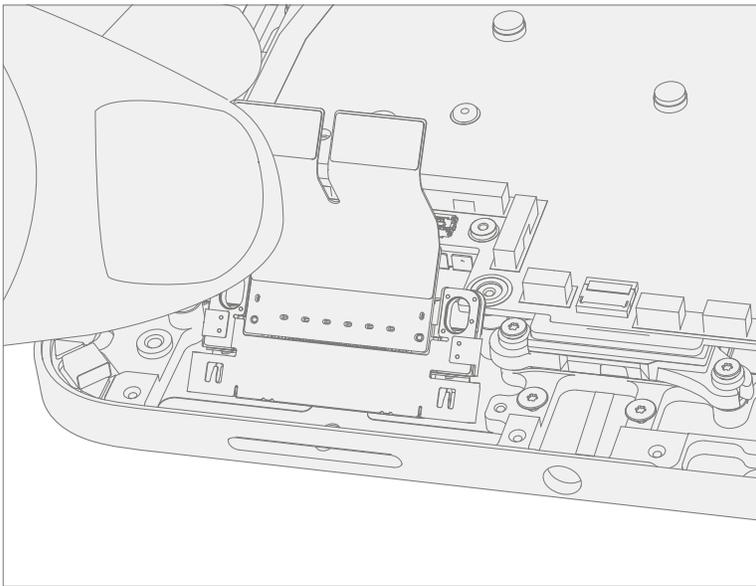
3. **Remove Surflink Port Screws** – Using a 3IP (Torx-Plus) driver remove the 2 screws securing the Surflink Port to the C-Cover.



4. **Disconnect Surfink FPCs** – Using a plastic tool disconnect the Surfink FPCs from the PCBA.

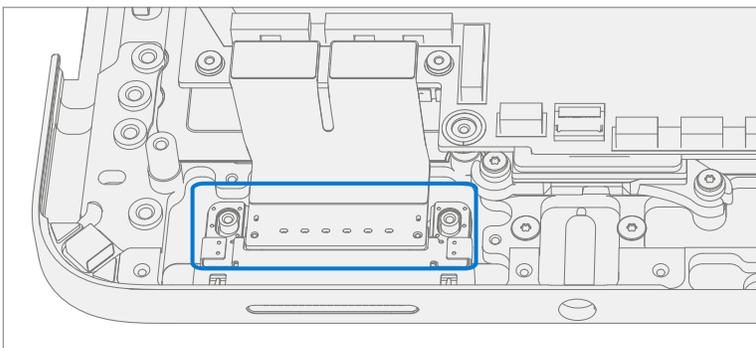


5. **Remove Surfink Port** – Remove the Surfink Port from the C-Cover.

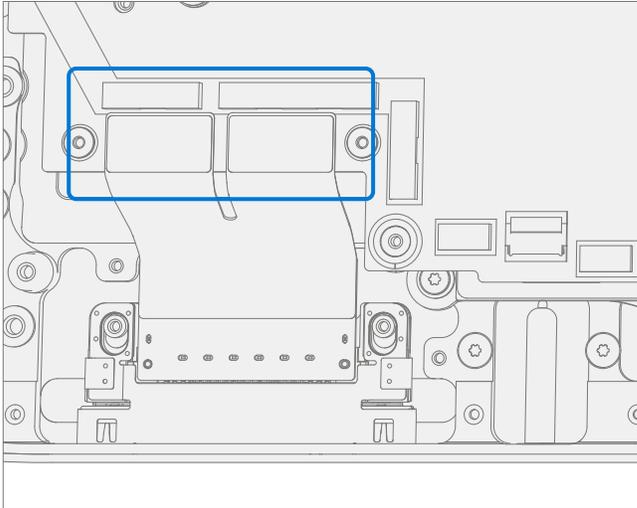


Procedure – Installation Surfink Port

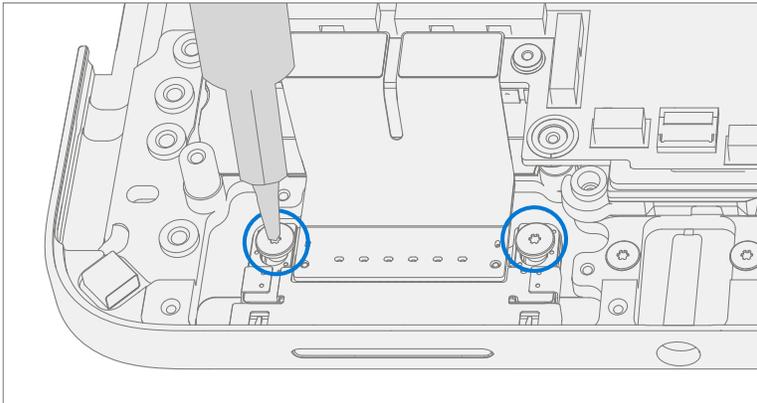
1. **Install Surfink Port** – Place the Surfink Port into the C-Cover. Ensure the C-Cover posts nest into the Surfink Port slots.



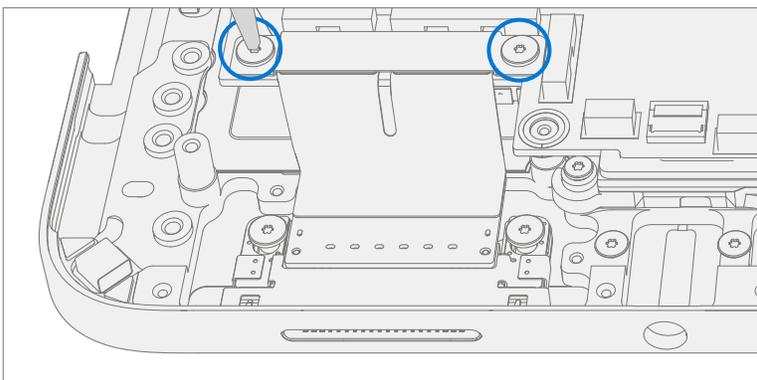
2. **Connect Surfink FPCs** – Align the FPC's connectors to the PCBA and press down.



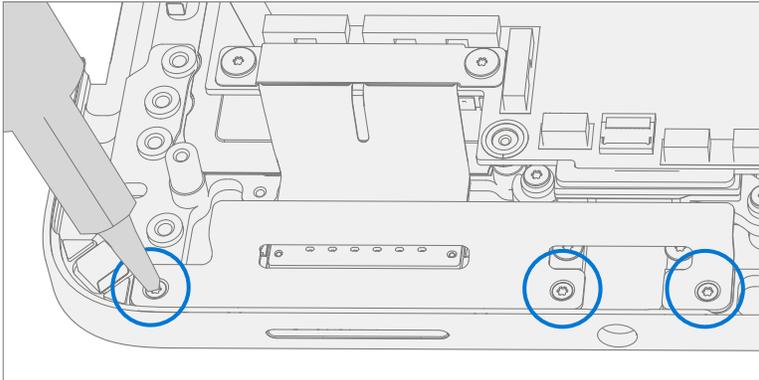
3. **Install new Surfink Port screws** – Using a 3IP (Torx-Plus) driver install 2 new M1149393 screws. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



4. **Install Surfink FPC Retainer** – Place the FPC retainer over the Surfink FPCs. Using a 3IP (Torx-Plus) driver install 2 new M1149393 screws. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



5. **Install Left I/O Bracket** – Place the left I/O bracket onto the C-Cover. Using a 3IP (Torx-Plus) driver install 3 new M1109237 screws. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



6. **Battery Installation** – Follow steps for D-Bucket reassembly on [\(page 26\)](#).

 **IMPORTANT:** During this installation only install rSSD and D-Bucket. Do not install D-Bucket screws and Cosmetic Plate.

7. **Power On Device** – Carefully place device top side up. Connect device to power supply, open display, and power on.
8. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.
9. **Install New D-Bucket Screws** – Install new D-Bucket screws as detailed on [\(page 29\)](#).
10. **Install New Cosmetic Plate** – If no further repairs are required install the Cosmetic Plate as detailed on [\(page 20\)](#).
11. **Install Feet** – Refer to Feet installation on [\(page 17\)](#) for details.



Audio Jack Process

Preliminary Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

- **Tools:**
 - Plastic tweezers / spudger
 - Anti-static wrist strap (1 MOhm resistance)
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Citrus IPA cleaner (example Goo Gone)
 - Cleaning swabs
 - Metric plastic thickness gauges
 - Non-Metalic ruler ([Amazon Example](#))
 - 3IP (Torx-Plus) driver
 - USB Thumb drive with SDT
 - Surface Power Supply
 - Soft ESD-safe mat
 - Microfiber cloth
- **Components:**
 - Audio Jack (Refer to [Illustrated Service Parts List](#))
 - M1167779 Screws qty=7 (under feet)
 - M1179289 Screws qty=2 (under cosmetic plate)
 - M1167371 Screws qty=2 (rSSD)
 - M1109237 Screws qty=3 (Left I/O Bracket x C-Cover)
 - M1168360 Screws qty=2 (Audio Jack x C-Cover)
 - Feet (Refer to [Illustrated Service Parts List](#))
 - Cosmetic Plate (Refer to [Illustrated Service Parts List](#))

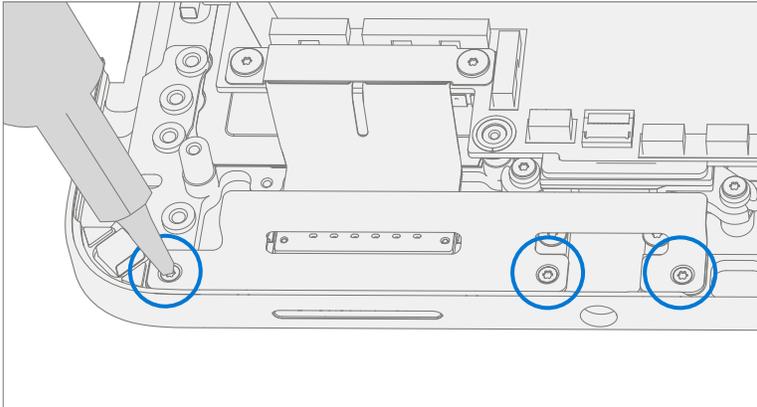
Prerequisite Steps:

- **Power off device** – Ensure device is powered off and disconnected from a power supply. Remove all attached cables and drives.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 15](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Feet removal on ([page 16](#)) for details.
- **Remove Cosmetic Plate** – Refer to Cosmetic Plate removal on ([page 19](#)) for details.
- **Remove D-Bucket** – Refer to D-Bucket + Battery removal on ([page 23](#)) for details.

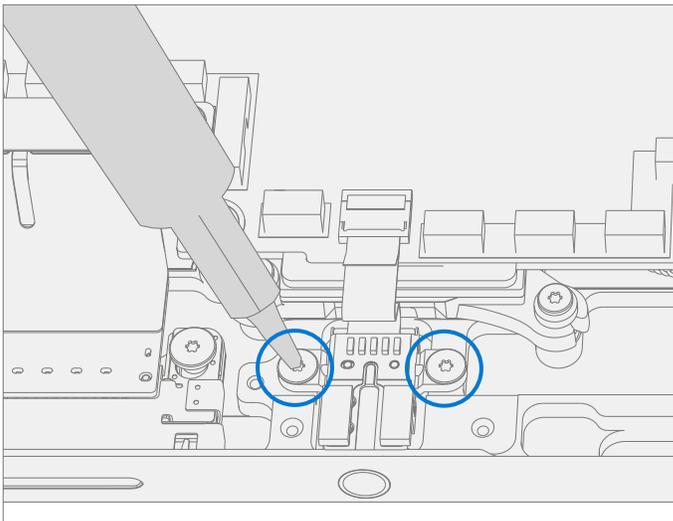


Procedure – Removal Audio Jack

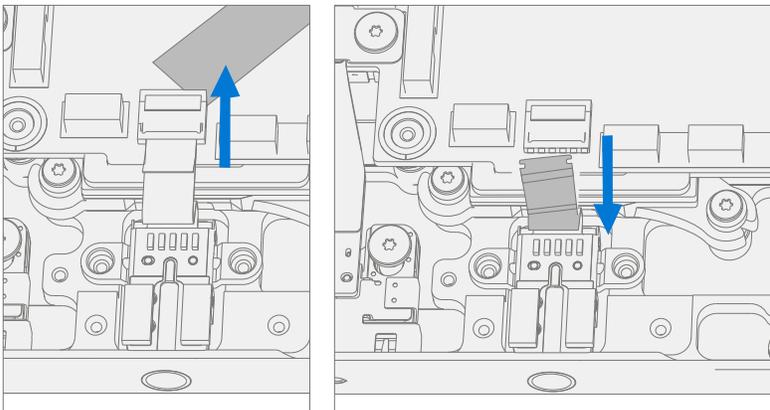
1. **Remove Left I/O Bracket** – Using a 3IP (Torx-Plus) driver remove the 3 screws securing the left I/O Bracket to the C-Cover. Remove the Left I/O Bracket.



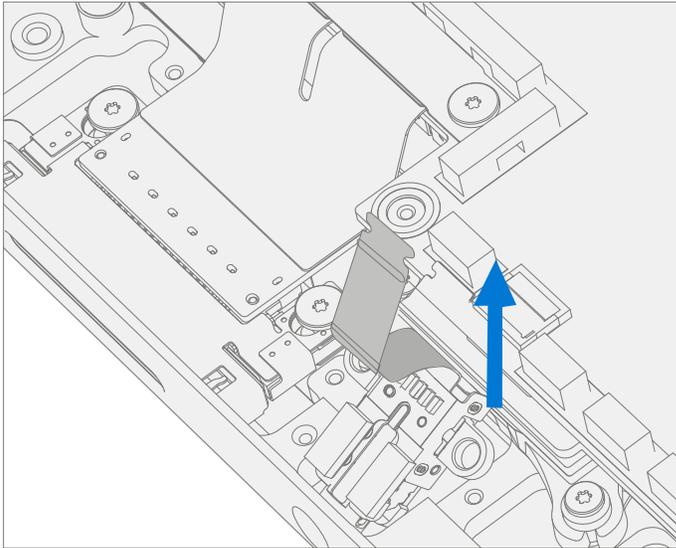
2. **Remove Audio Jack Screws** – Using a 3IP (Torx-Plus) driver remove the 2 screws securing the audio jack to the C-Cover.



3. **Disconnect Audio Jack FPC** – Release the lock on the Audio Jack FPC connector. Remove the Audio Jack FPC from the PCBA connector.

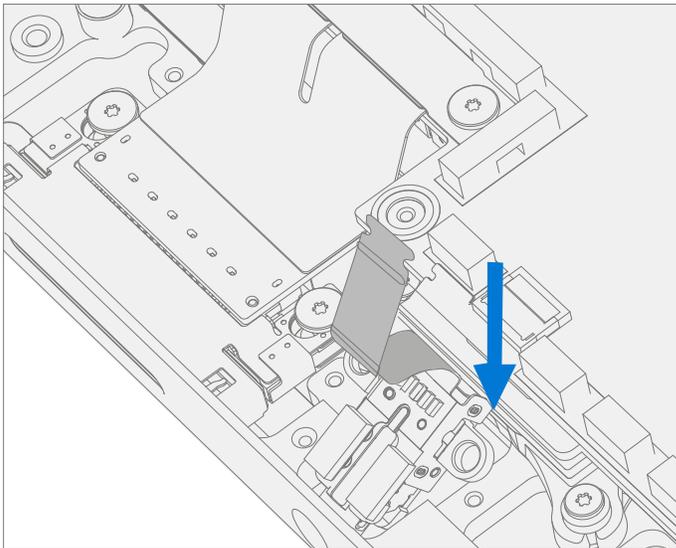


4. **Remove Audio Jack** – Remove the audio jack from the C-Cover by pulling up on the side with the FPC. Carefully move the Audio Jack from side to side during removal.

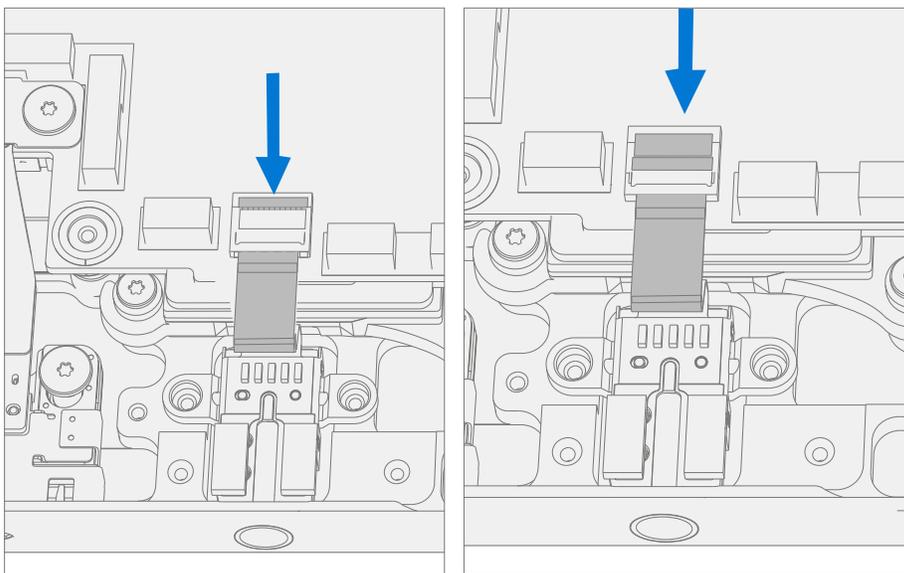


Procedure – Installation Audio Jack

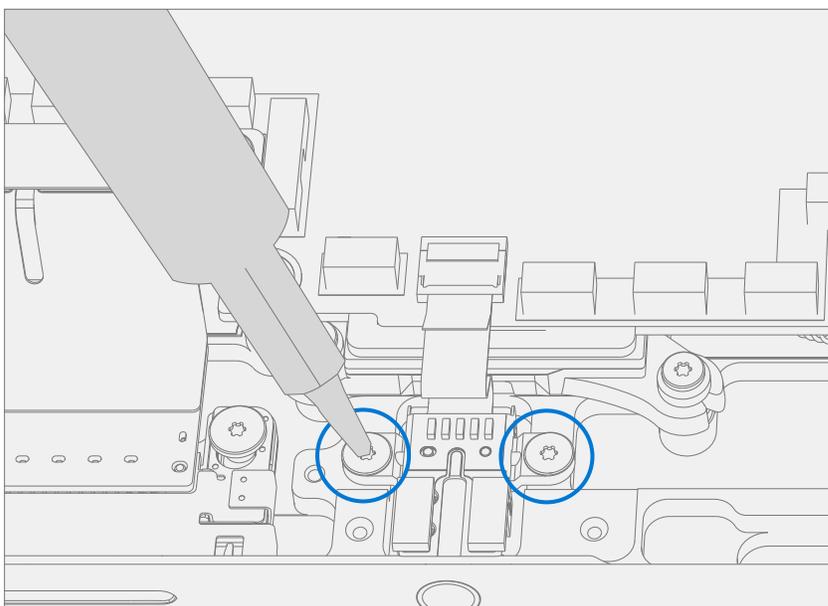
1. **Install Audio Jack** – Place the open end of the audio jack into the hole in the C-Cover. Carefully move the Audio Jack from side to side during installation.



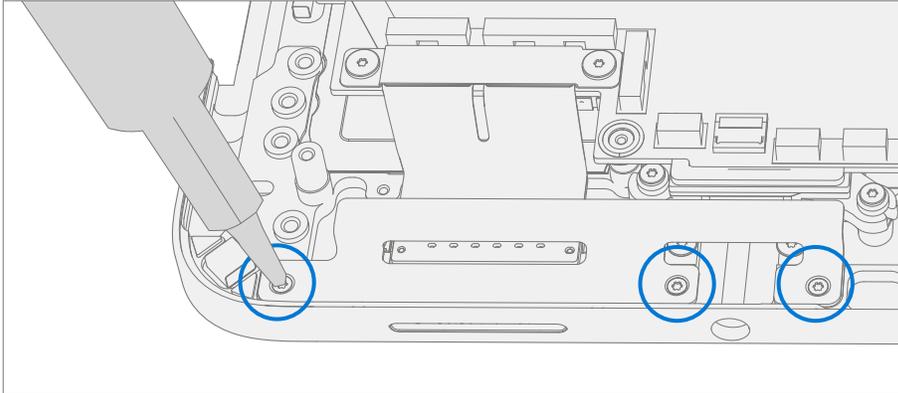
2. **Connect Audio Jack FPC** – Ensure the lock is released on the Audio Jack FPC connector. Install the Audio Jack FPC into the PCBA connector. Secure the connector lock.



3. **Install New Audio Jack Screws** – Using a 3IP (Torx-Plus) driver install 2 new M1168360 screws. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



4. **Install Left I/O Bracket** – Place the left I/O bracket onto the C-Cover. Using a 3IP (Torx-Plus) driver install 3 new M1109237 screws. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



5. **Battery Installation** – Follow steps for D-Bucket reassembly on [\(page 26\)](#).

 **IMPORTANT:** During this installation only install rSSD and D-Bucket. Do not install D-Bucket screws and Cosmetic Plate.

6. **Power On Device** – Carefully place device top side up. Connect device to power supply, open display, and power on.
7. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.
8. **Install New D-Bucket Screws** – Install new D-Bucket screws as detailed on [\(page 29\)](#).
9. **Install New Cosmetic Plate** – If no further repairs are required install the Cosmetic Plate as detailed on [\(page 20\)](#).
10. **Install Feet** – Refer to Feet installation on [\(page 17\)](#) for details.



USB-C Process

Preliminary Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

- **Tools:**
 - Plastic tweezers / spudger
 - Anti-static wrist strap (1 MOhm resistance)
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Citrus IPA cleaner (example Goo Gone)
 - Cleaning swabs
 - Metric plastic thickness gauges
 - Non-Metalic ruler ([Amazon Example](#))
 - 3IP (Torx-Plus) driver
 - USB Thumb drive with SDT
 - Surface Power Supply
 - Soft ESD-safe mat
 - Microfiber cloth

- **Components:**
 - USB-C (Refer to [Illustrated Service Parts List](#))
 - M1167779 Screws qty=7 (under feet)
 - M1179289 Screws qty=2 (under cosmetic plate)
 - M1167371 Screws qty=2 (rSSD)
 - M1109237 Screws qty=3 (Right I/O Bracket)
 - M1167780 Screws qty=3 (USB-C)
 - M1156309 Screws qty=4 (USB-C Connector x C-Cover)
 - M1149393 Screws qty=4 (Thermal Module x C-Cover & SL Connector)
 - M1202147 Screws qty=6 (Speakers)
 - M1184901 Screws qty=12 (MB x C-Cover)
 - M1167842 Tape qty=4 (Fan FPC Tape)
 - Feet (Refer to [Illustrated Service Parts List](#))
 - Cosmetic Plate (Refer to [Illustrated Service Parts List](#))

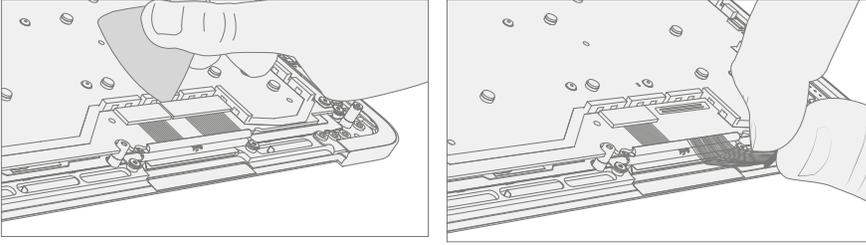
Prerequisite Steps:

- **Power off device** – Ensure device is powered off and disconnected from a power supply. Remove all attached cables and drives.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 15](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Feet removal on ([page 16](#)) for details.
- **Remove Cosmetic Plate** – Refer to Cosmetic Plate removal on ([page 19](#)) for details.
- **Remove D-Bucket** – Refer to D-Bucket + Battery removal on ([page 23](#)) for details.



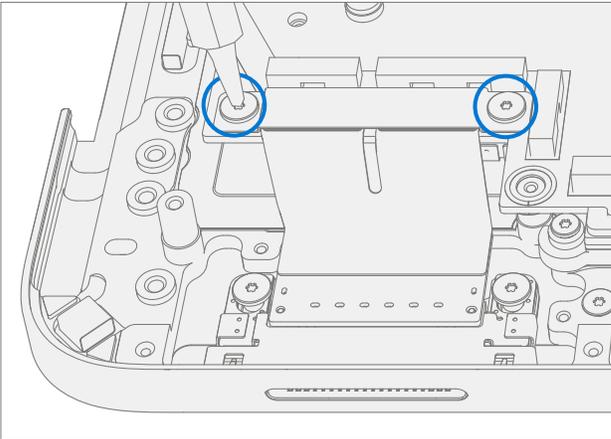
Procedure – Removal USB-C

1. **Disconnect 4 Display Cables** – Use plastic tool to unlatch the connectors on the 4 display cables and carefully remove the cables from the PCBA connectors.

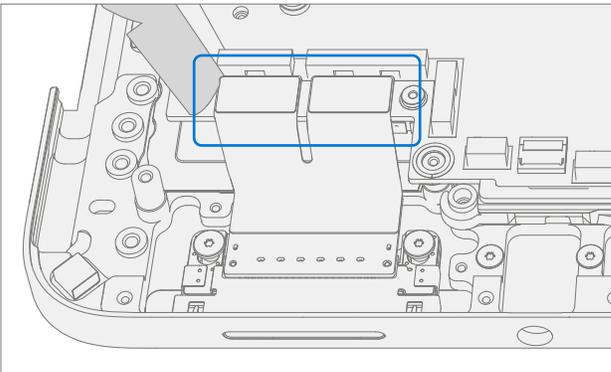


! **CAUTION:** The nearby foams are very delicate. Take care to not damage or remove them.

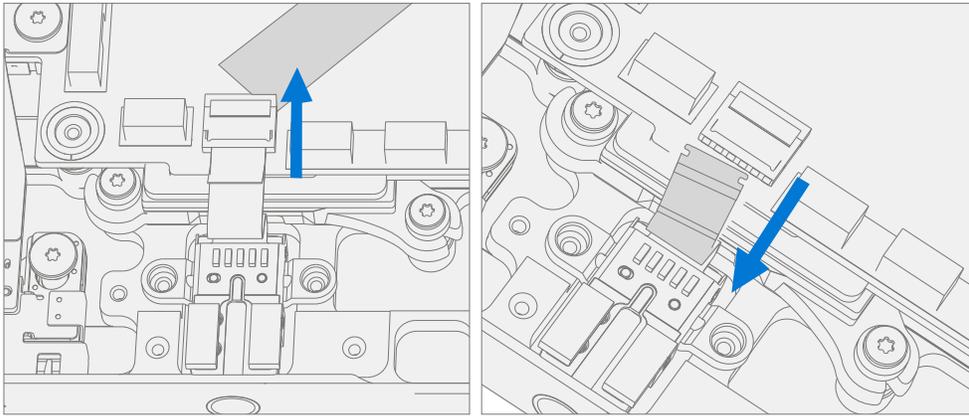
2. **Remove Surflink FPC Retainer** – Using a 3IP (Torx-Plus) driver remove the 2 screws securing the Surflink FPC retainer to the PCBA. Remove the FPC retainer.



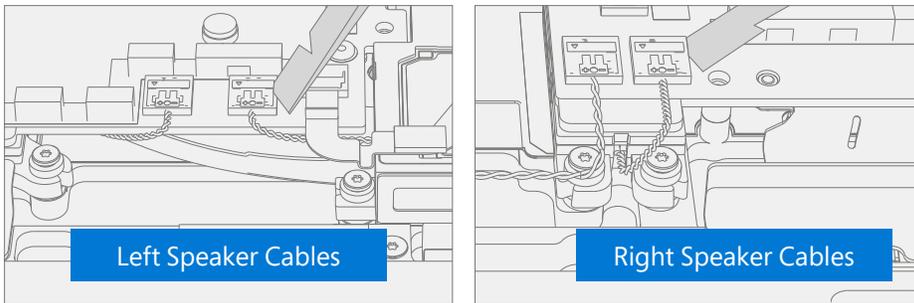
3. **Disconnect Surflink FPCs** – Using a plastic tool disconnect the Surflink FPCs from the PCBA.



4. **Disconnect Audio Jack FPC** – Release the lock on the Audio Jack FPC connector. Remove the Audio Jack FPC from the PCBA connector.



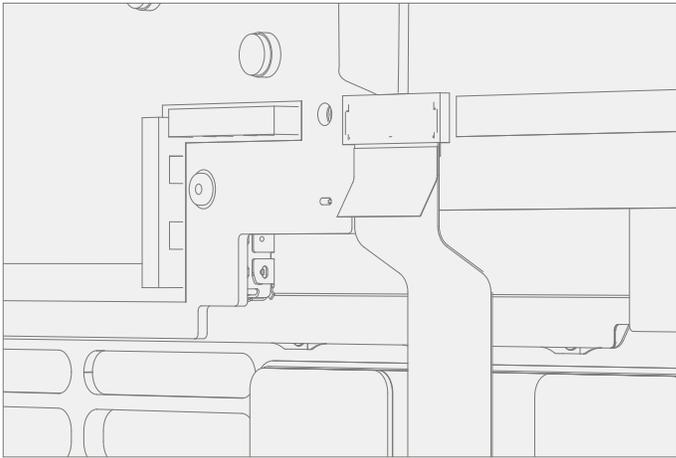
5. **Disconnect 4 Speaker Cables** – Using a plastic tool carefully release the 4 speaker connectors from the PCBA.



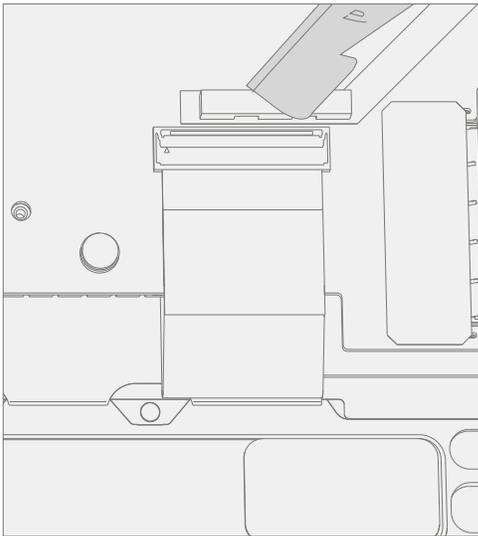
6. **Disconnect Fan FPCs** – Release the locks on the left and right Fan FPC connectors. Remove the left and right Fan FPCs from the PCBA connectors.



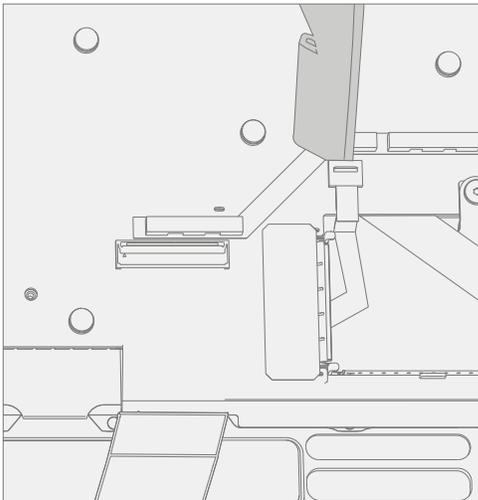
7. **Disconnect Trackpad FPC** – Release the lock on the Trackpad FPC connector. Remove the Trackpad FPC from the PCBA connector.



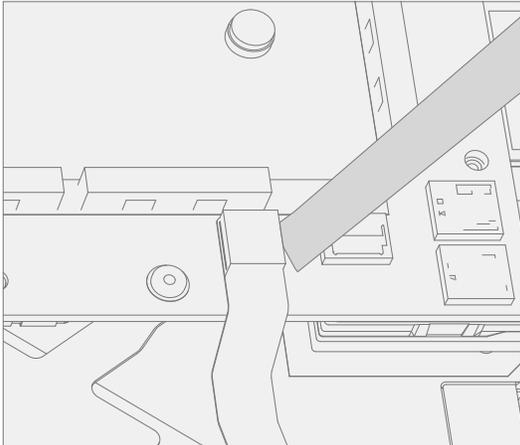
8. **Disconnect Keypad FPC** – Release the lock on the Keypad FPC connector. Remove the Keypad FPC from the PCBA connector.



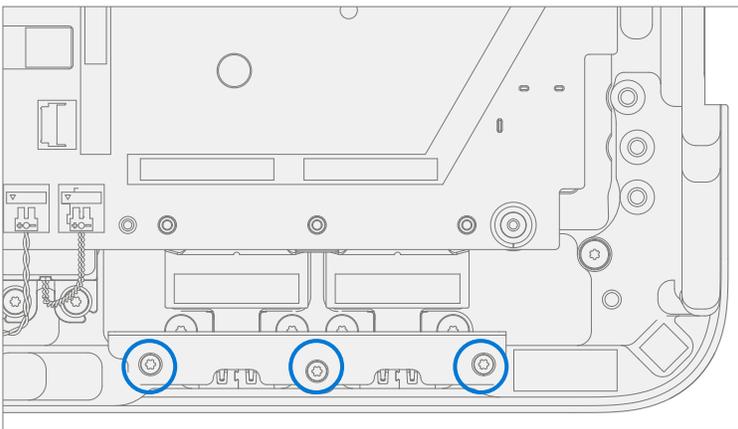
9. **Disconnect Keypad Backlight FPC** – Release the lock on the Keypad Backlight FPC connector. Remove the Keypad Backlight FPC from the PCBA connector.



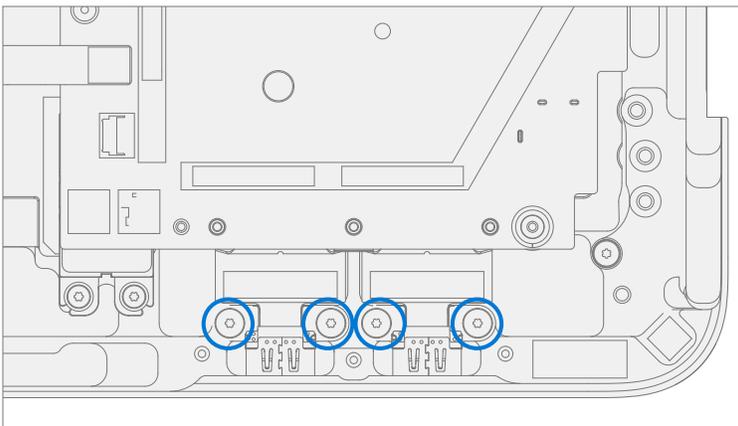
10. **Disconnect Wireless Pen Charger FPC** – Using a plastic tool carefully release the Wireless Pen Charger from the PCBA connector.



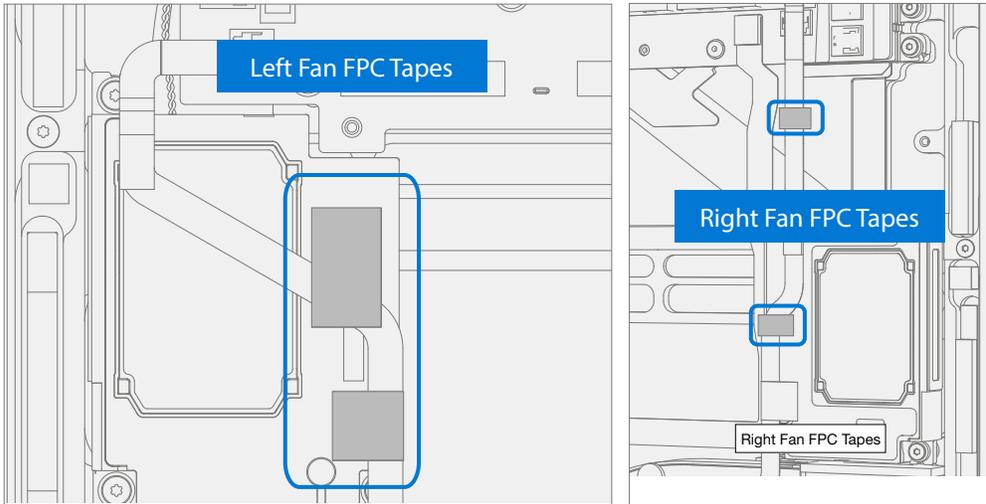
11. **Remove Right I/O Bracket** – Using a 3IP (Torx-Plus) driver remove the 3 screws securing the Right I/O Bracket to the C-Cover. Remove the Right I/O Bracket.



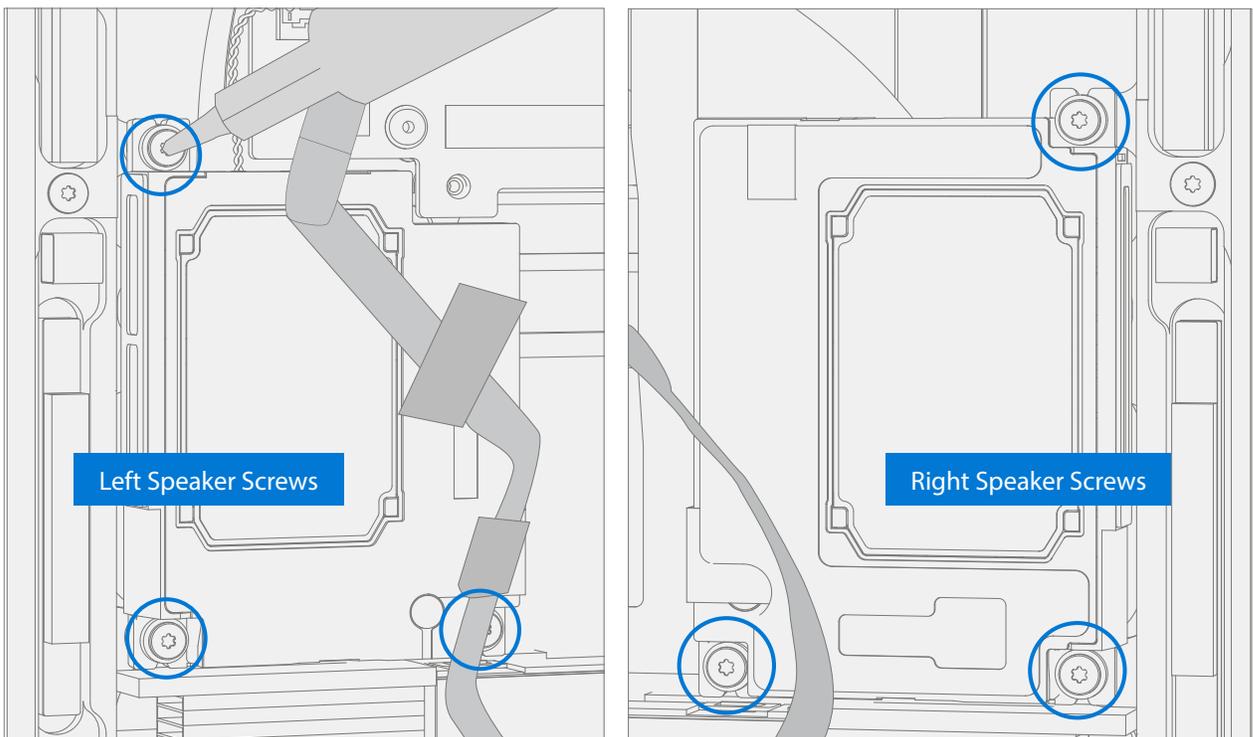
12. **Remove USB-C Screws** – Using a 3IP (Torx-Plus) driver remove the 4 screws securing the USB-C connectors to the C-Cover.



13. **Remove Fan FPC Tapes** – Carefully remove the 4 black tapes securing the fan FPCs.

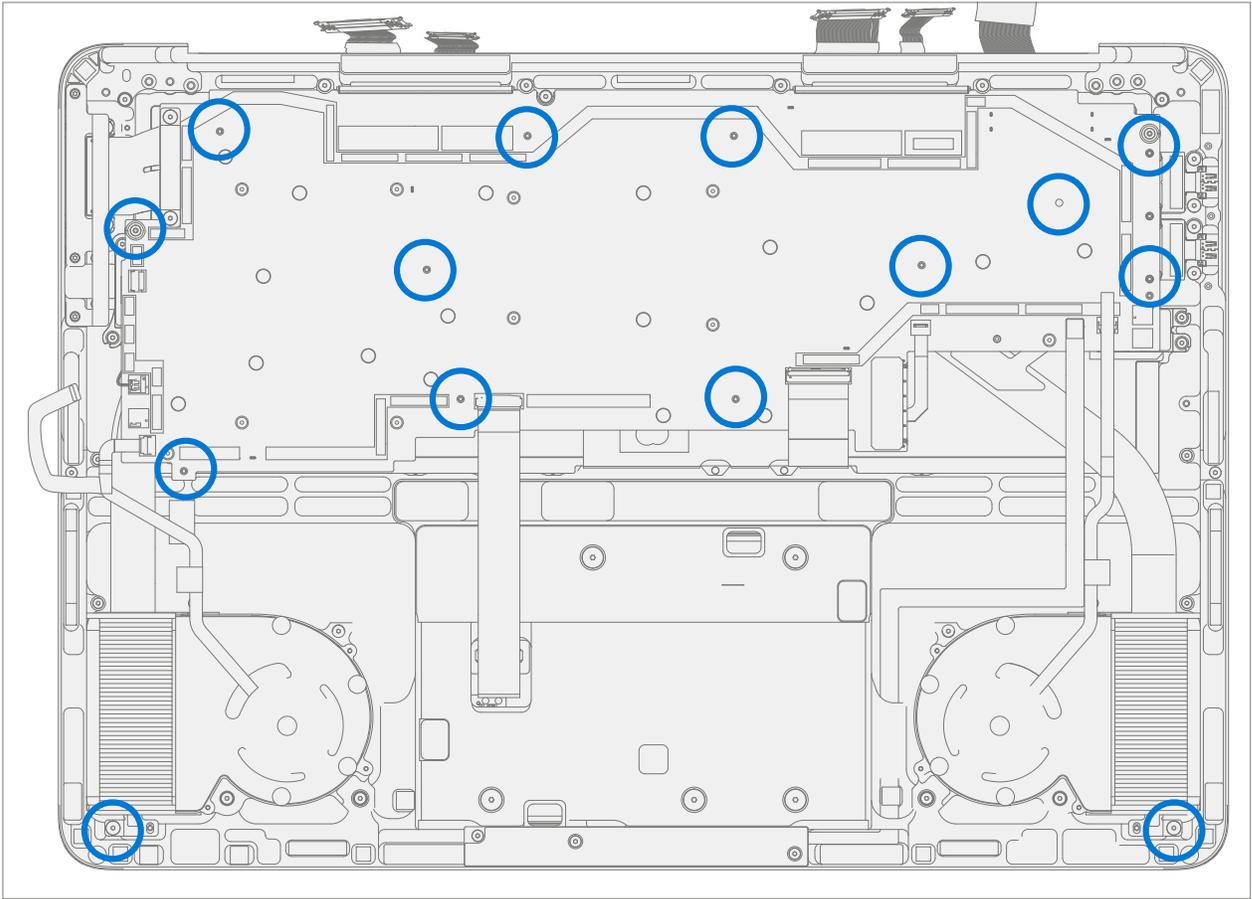


14. **Remove Left and Right Speakers** – Using a 3IP (Torx-Plus) driver remove the 3 screws securing the left speaker, and 3 screws securing the right speaker to the C-Cover. Remove the speakers.

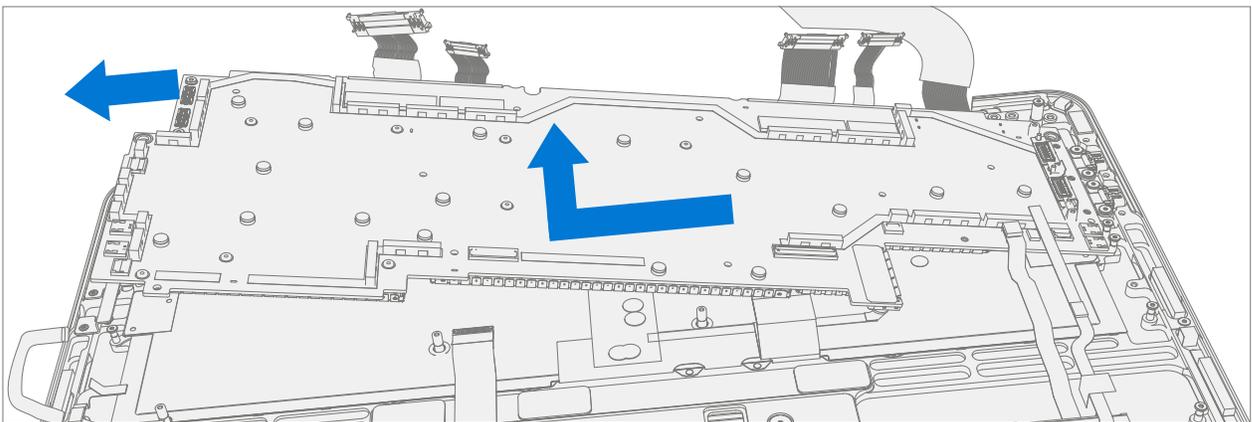


15. **Remove PCBA Screws –**

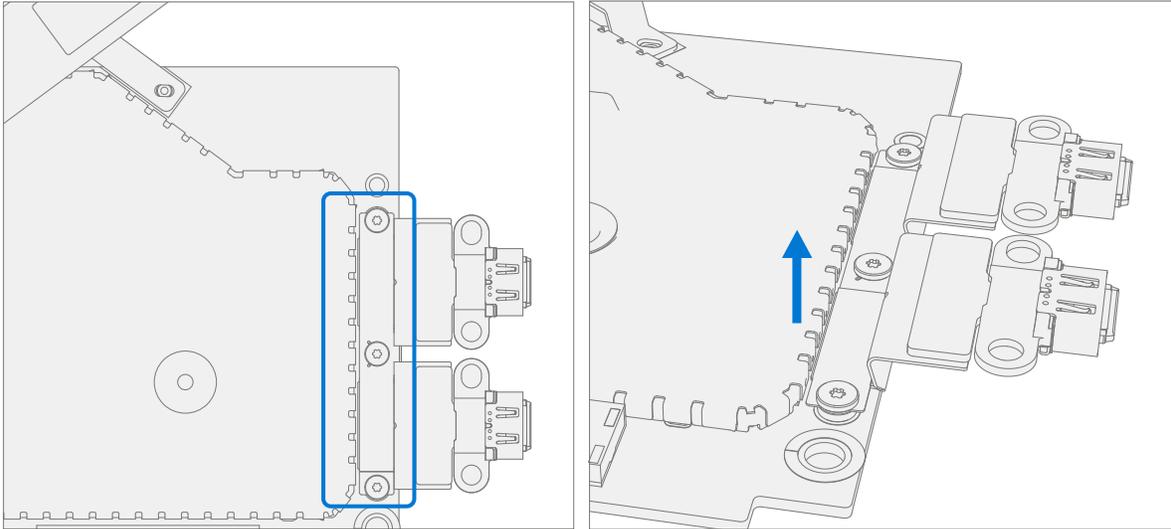
- a. Using a 3IP (Torx-Plus) driver remove the 2 screws securing the thermal module to the C-Cover.
- b. Using a 3IP (Torx-Plus) driver remove the 12 screws securing the PCBA to the C-Cover.



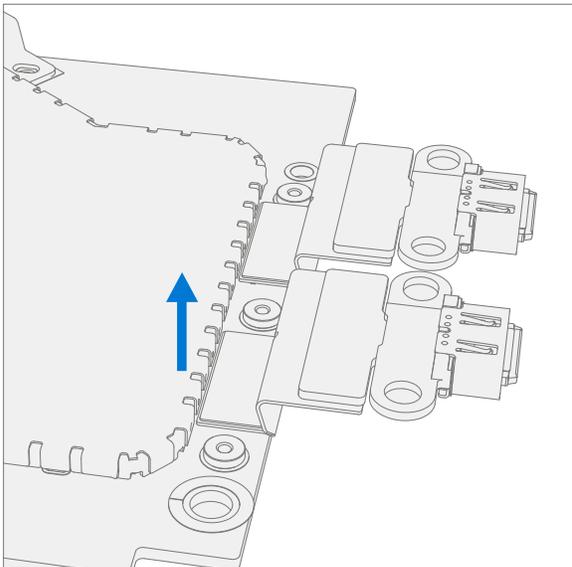
16. **Remove PCBA –** Start by holding the SL connector cable out of the way and slightly pick up the left side of the PCBA. Rotate the PCBA up and out. Ensure the USB-C connectors separate from the C-Cover.



17. **Remove USB-C FPC Retainer** – Carefully set PCBA on ESD workbench with thermal module facing up. Using a 3IP (Torx-Plus) driver remove the 3 screws securing the USB-C FPC retainer to the PCBA. Remove the FPC retainer.

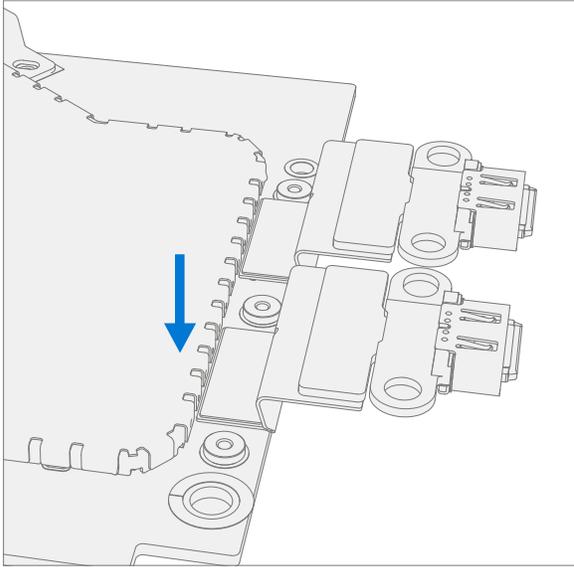


18. **Disconnect USB-C FPCs** – Using a plastic tool disconnect each USB-C FPC from the PCBA.

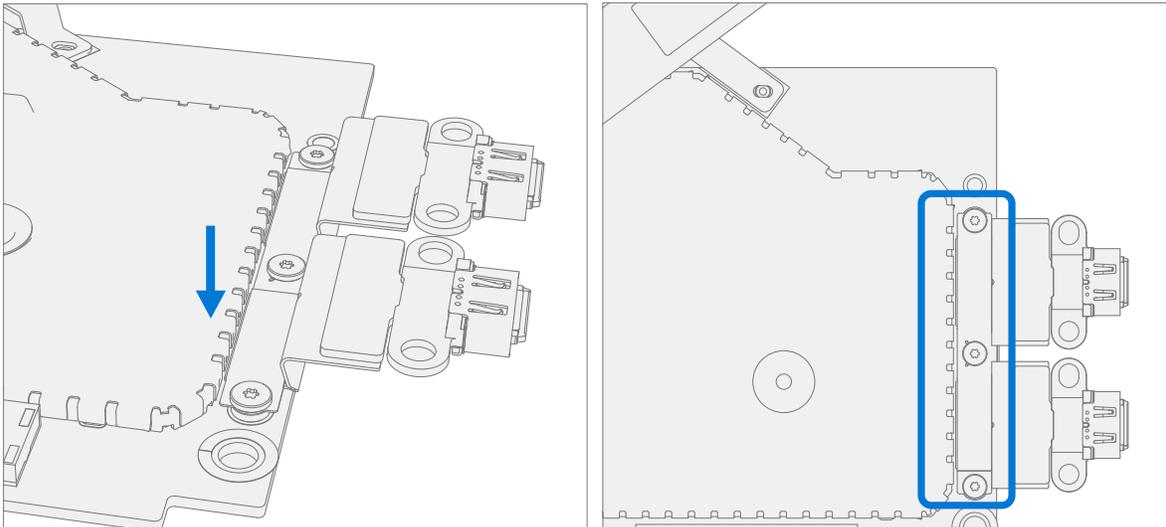


Procedure – Installation USB-C

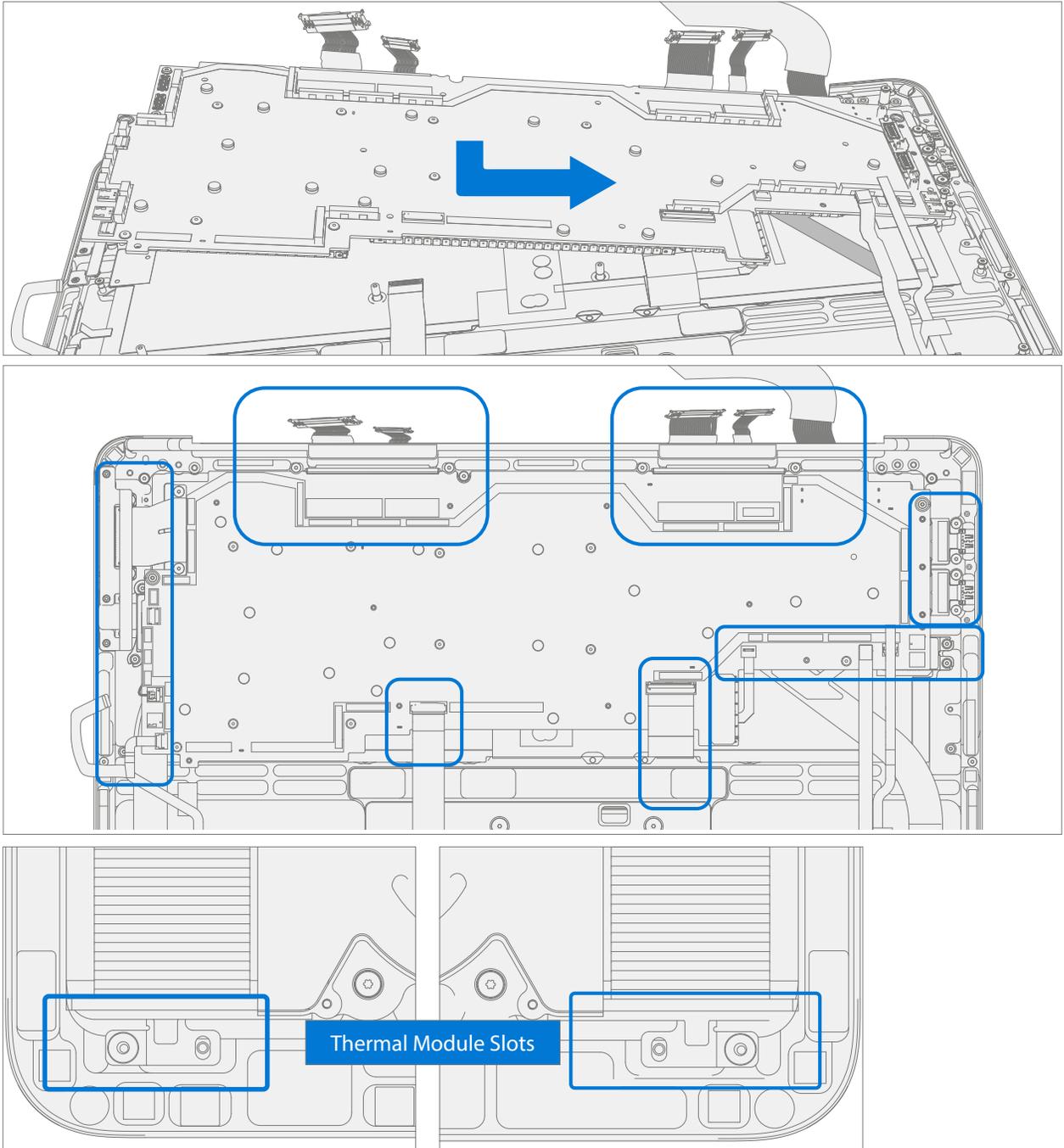
1. **Connect new USB-C FPC** – Align the FPC's connectors to the PCBA and press down.



2. **Install USB-C FPC Retainer** – Place the FPC retainer over the USB-C FPCs. Using a 3IP (Torx-Plus) driver install 3 new M1167780 screws securing the Surflink FPC retainer to the PCBA. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.

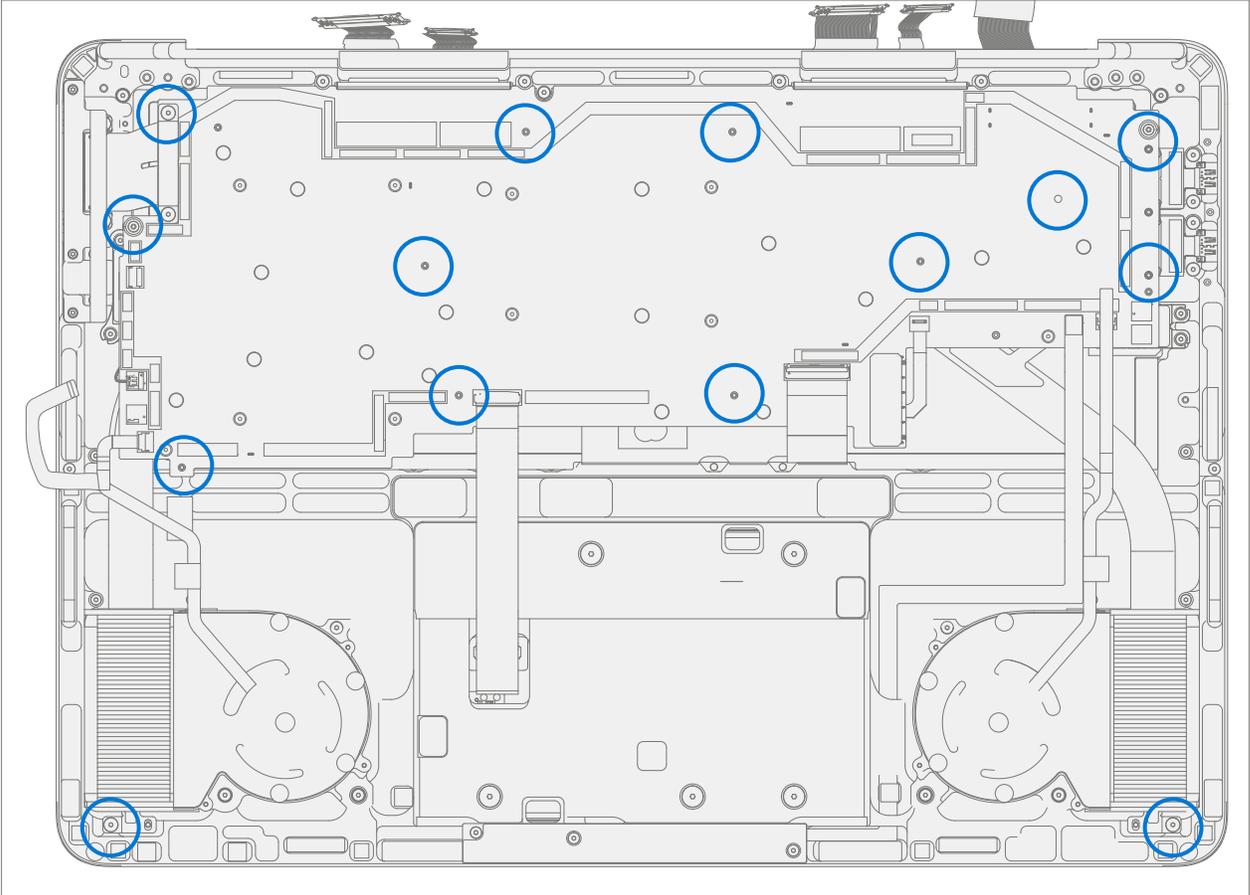


3. **Install PCBA** – Install the right side of the PCBA down and into the C-Cover. Ensure the USB-C connectors are aligned into the C-Cover. Lower the left side of the PCBA into the C-Cover while holding the Surflink FPC out of the way.

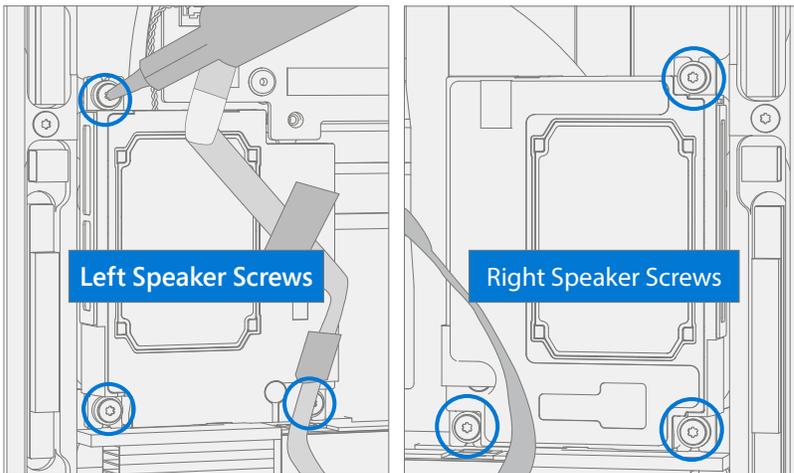


! **CAUTION:** Verify the 15 cables and FPC's are not captured under the PCBA. The Fan and Wireless Pen Charger FPCs route over the thermal heat pipe. Ensure the thermal module slots align over the posts in the C-Cover.

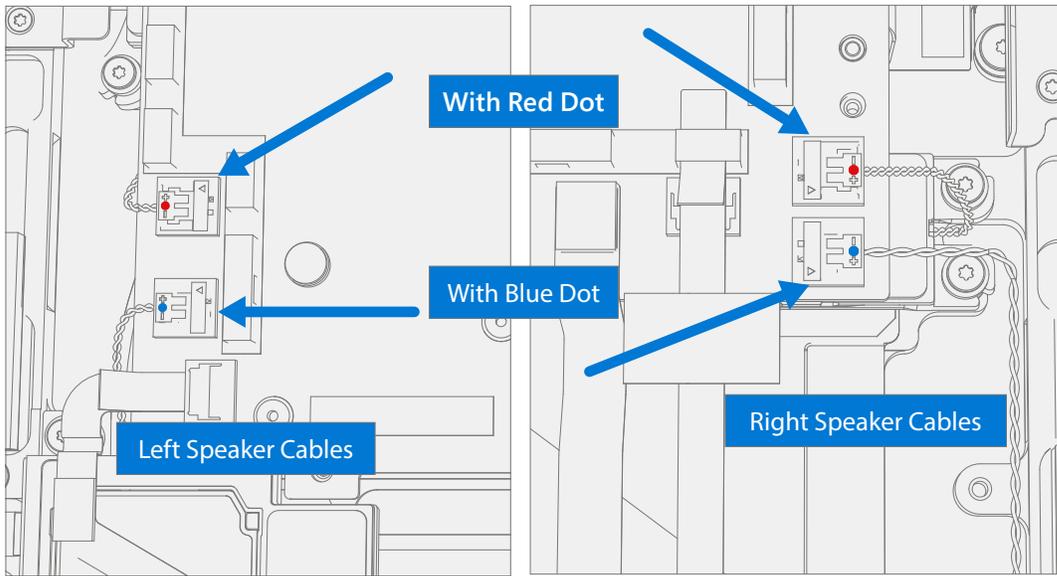
4. **Install PCBA Screws** – Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.
- a. Using a 3IP (Torx-Plus) driver install 2 new M1149393 screws in the thermal module.
 - b. Using a 3IP (Torx-Plus) driver install 12 new M1184901 screws in the PCBA.



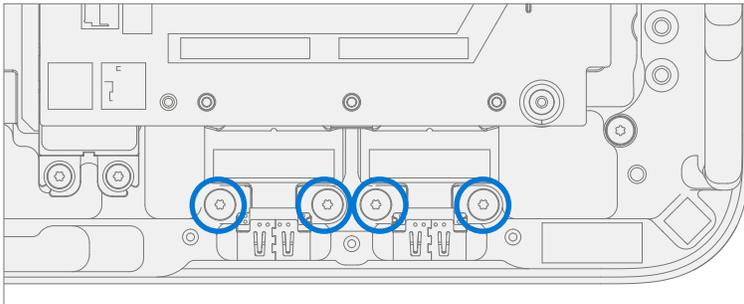
5. **Install Left and Right Speakers** – Place the left and right speakers into the C-Cover. Using a 3IP (Torx-Plus) driver install 3 new M1202147 screws in the left speaker, and 3 new M1202147 screws in the right speaker. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



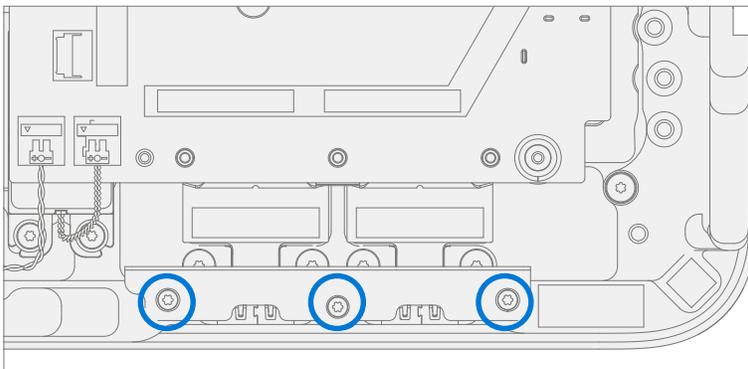
6. **Connect 4 Speaker Cables** – Align the left and right Speaker Cable connectors to the PCBA and press down. Ensure the cables do not overlap and are routed as pictured below.



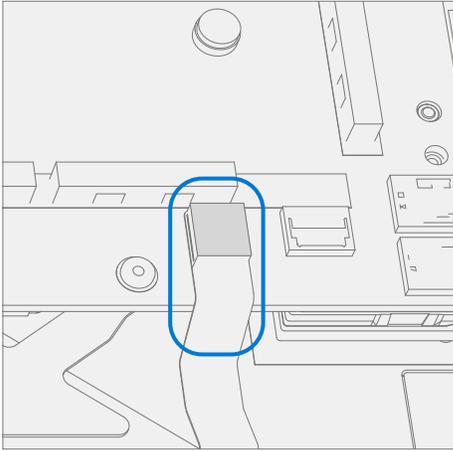
7. **Install USB-C Screws** – Using a 3IP (Torx-Plus) driver install 4 new M1156309 screws securing the USB-C connectors to the C-Cover. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



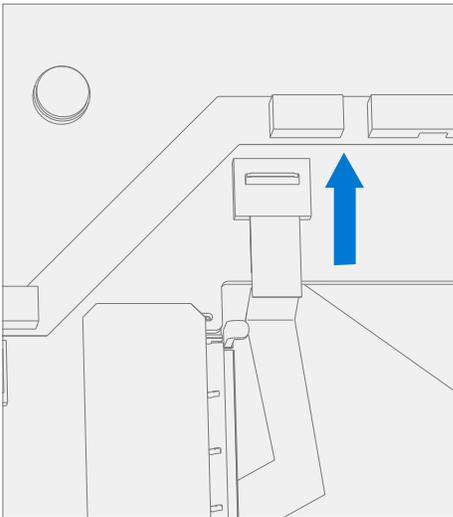
8. **Install Right I/O Bracket** – Place the Right I/O bracket onto the C-Cover. Using a 3IP (Torx-Plus) driver install 3 new M1109237 screws. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



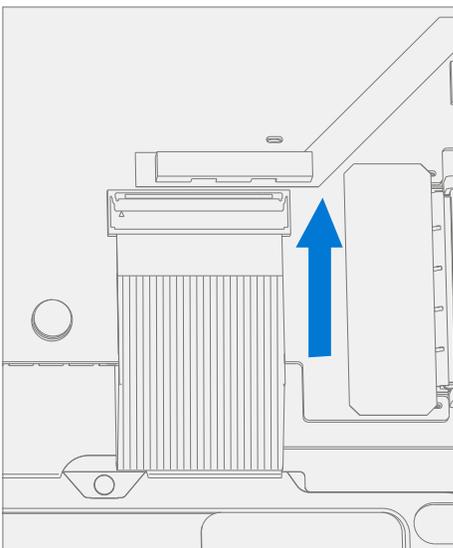
9. **Connect Wireless Pen Charger FPC** – Align the FPC's connector to the PCBA and press down.



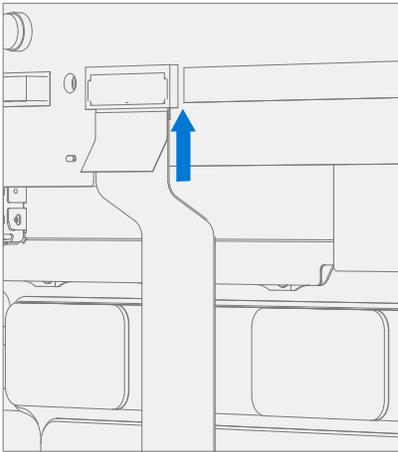
10. **Connect Keyset Backlight FPC** – Ensure the lock is released on the Keyset Backlight FPC connector. Install the Keyset Backlight FPC into the PCBA connector. Secure the connector lock.



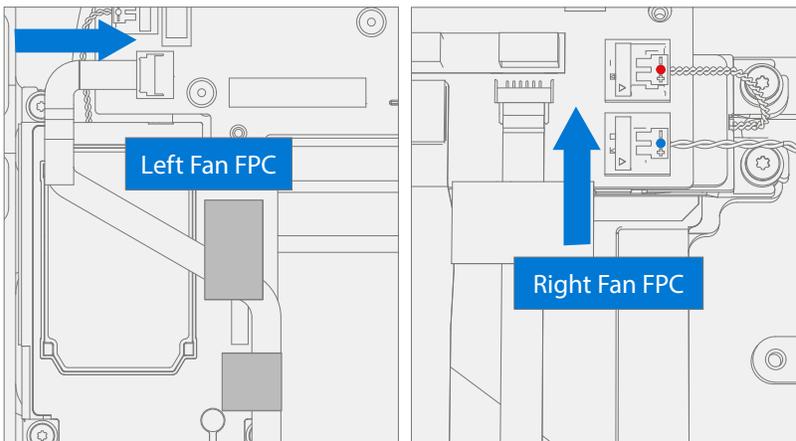
11. **Connect Keyset FPC** – Ensure the lock is released on the Keyset FPC connector. Install the Keyset FPC into the PCBA connector. Secure the connector lock.



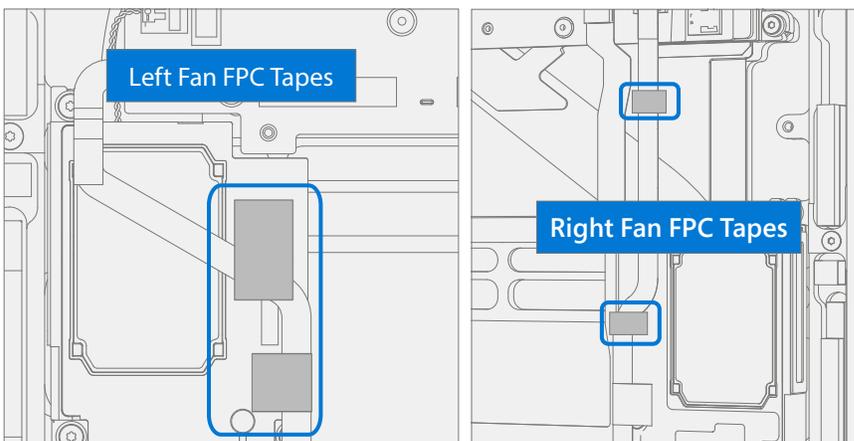
12. **Connect Trackpad FPC** – Ensure the lock is released on the Trackpad FPC connector. Install the Trackpad FPC into the PCBA connector. Secure the connector lock.



13. **Connect Fan FPCs** – Ensure the locks are released on the left and right Fan FPC connectors. Install the left and right Fan FPCs into the PCBA connectors. Secure the connector locks.



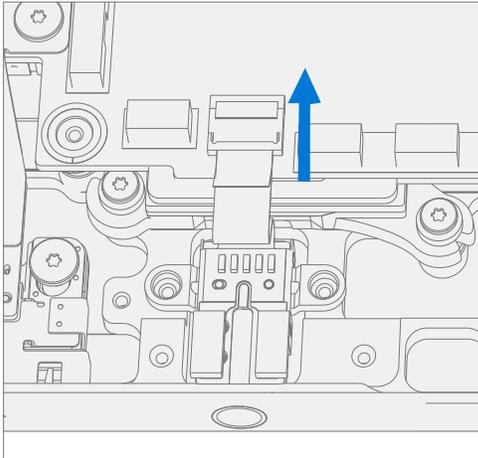
14. **Install New Fan FPC Tapes** – Refer to the picture below for tape locations. Apply 2 black tapes to the left Fan FPC securing it to the left speaker. Apply 1 black tape on the right Fan FPC securing it to the right speaker. Apply 1 black tape on the right Fan FPC securing it to the C-Cover.



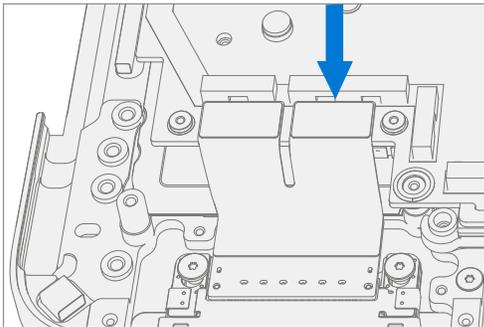
! **CAUTION:** Do not place tapes on the silver metallic areas of the speaker housings.



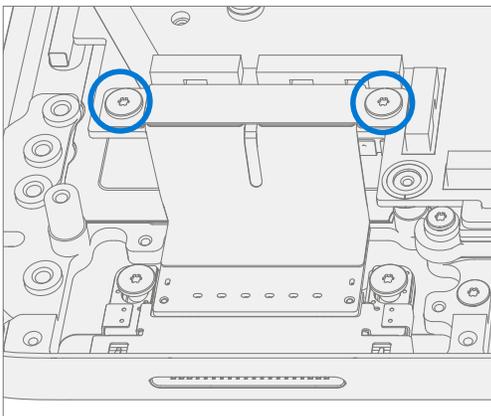
15. **Connect Audio Jack FPC** – Ensure the lock is released on the Audio Jack FPC connector. Install the Audio Jack FPC into the PCBA connector. Secure the connector lock.



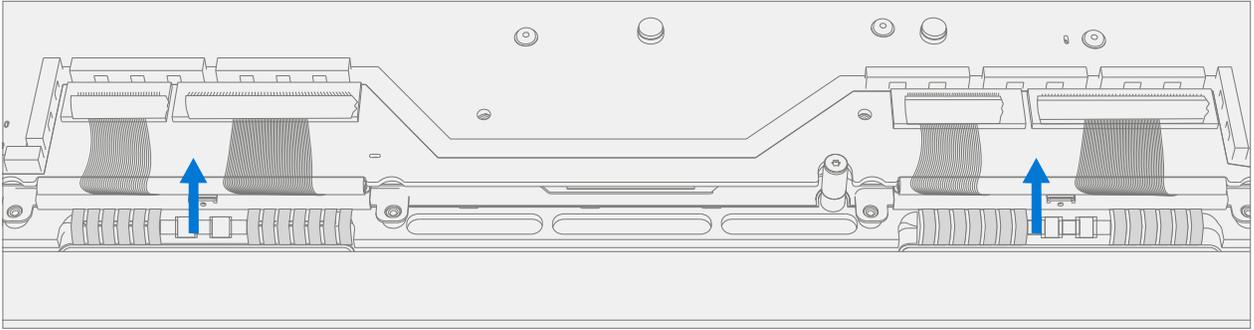
16. **Connect Surfink FPCs** – Align the FPC's connectors to the PCBA and press down.



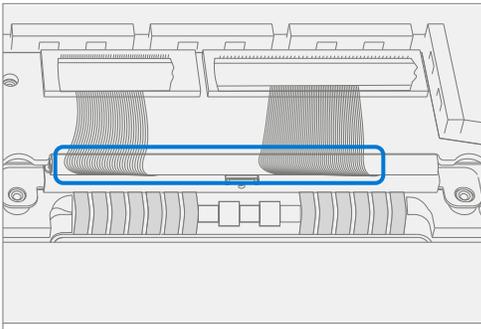
17. **Install Surfink FPC Retainer** – Place the FPC retainer over the Surfink FPCs. Using a 3IP (Torx-Plus) driver install 2 new M1149393 screws. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



18. **Connect 4 Display Cables** – Carefully connect the 4 display cables into the PCBA connectors. Ensure the connections are fully seated and the locking buckles are engaged.



- a. Ensure that the cables route over the plastic guide along the edge of the MB



Battery Installation – Follow steps for D-Bucket reassembly on [\(page 26\)](#).

 **IMPORTANT:** During this installation only install rSSD and D-Bucket. Do not install D-Bucket screws and Cosmetic Plate.

19. **Power On Device** – Carefully place device top side up. Connect device to power supply, open display, and power on.
20. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.
21. **Install New D-Bucket Screws** – Install new D-Bucket screws as detailed on [\(page 29\)](#).
22. **Install New Cosmetic Plate** – If no further repairs are required install the Cosmetic Plate as detailed on [\(page 20\)](#).
23. **Install Feet** – Refer to Feet installation on [\(page 17\)](#) for details.

C-Cover Keyboard Assembly Process

Preliminary Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

- **Tools:**

- Plastic tweezers / spudger
- Plastic card tool example [iFixit Plastic Card](#)
- Anti-static wrist strap (1 MOhm resistance)
- Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
- Citrus IPA cleaner (example Goo Gone)
- Cleaning swabs
- Metric plastic thickness gauges
- Non-Metalic ruler ([Amazon Example](#))
- 3IP (Torx-Plus) driver
- 6IP (Torx-Plus) driver
- USB Thumb drive with SDT
- Surface Power Supply
- Soft ESD-safe mat
- Microfiber cloth

- **Components:**

- C-cover Keyboard Assembly (Refer to [Illustrated Service Parts List](#))
- M1167779 Screws qty=7 (under feet)
- M1179289 Screws qty=2 (under cosmetic plate)
- M1167371 Screws qty=2 (rSSD)
- M1109237 Screws qty=6 (Left & Right I/O Bracket)
- M1167780 Screws qty=3 (USB-C)
- M1156309 Screws qty=4 (USB-C Connector x C-Cover)
- M1149393 Screws qty=6 (Thermal Module & SL Connector x C-Cover)
- M1202147 Screws qty=10 (Speakers& Tweeters)
- M1149390 Screws qty=4 (Cable tensioners x C-Cover)
- M1150078 Screws qty=8 (Hinge x C-Cover)
- M1184901 Screws qty=12 (MB x C-Cover)
- M1167842 Tape qty=4 (Fan FPC Tape)
- M1168360 Screws qty=2 (Audio Jack)
- M1007493 Screws qty=2 (Fans)
- Feet (Refer to [Illustrated Service Parts List](#))
- Cosmetic Plate (Refer to [Illustrated Service Parts List](#))



Prerequisite Steps:

- **Power off device** – Ensure device is powered off and disconnected from a power supply. Remove all attached cables and drives.
 - **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on (page 15) for details.
 - **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
 - **Remove Feet** – Refer to Feet removal on (page 16) for details.
 - **Remove Cosmetic Plate** – Refer to Cosmetic Plate removal on (page 19) for details.
 - **Remove D-Bucket** – Refer to D-Bucket + Battery removal on (page 23) for details.
 - **Remove AB-Cover** – Refer to AB-Cover removal on (page 34) for details.
-
-  **IMPORTANT:** The use of SDT TDM Replacement Mode is only required during AB-Cover replacements.
- **Remove Surfink Port** – Refer to Surfink Port removal on (page 43) for details.
 - **Remove Audio Jack** – Refer to Audio Jack removal on (page 48) for details.

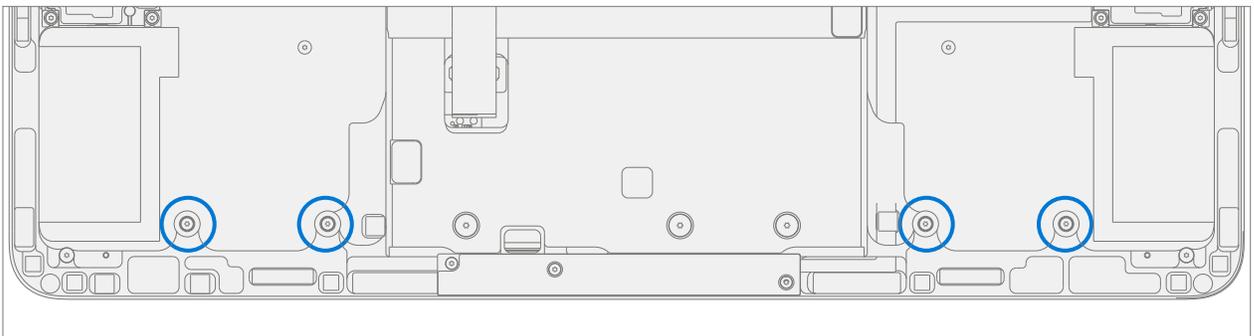
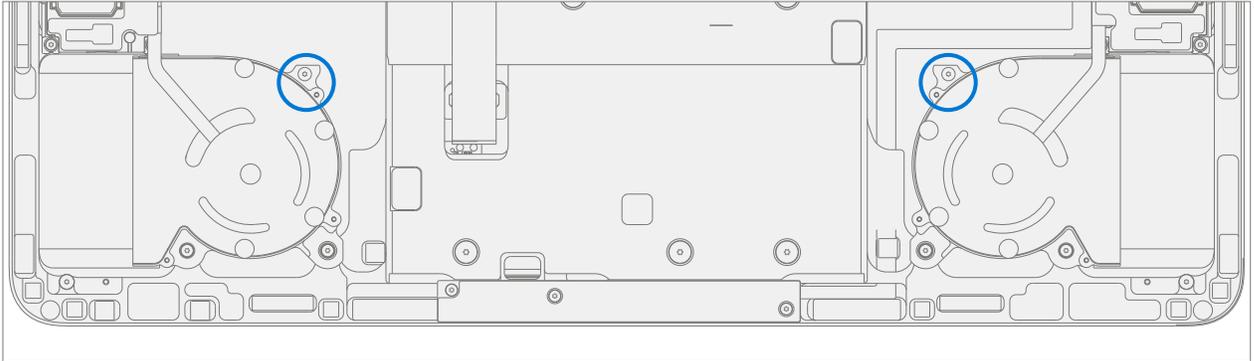


Procedure – Removal C-Cover Keyboard Assembly

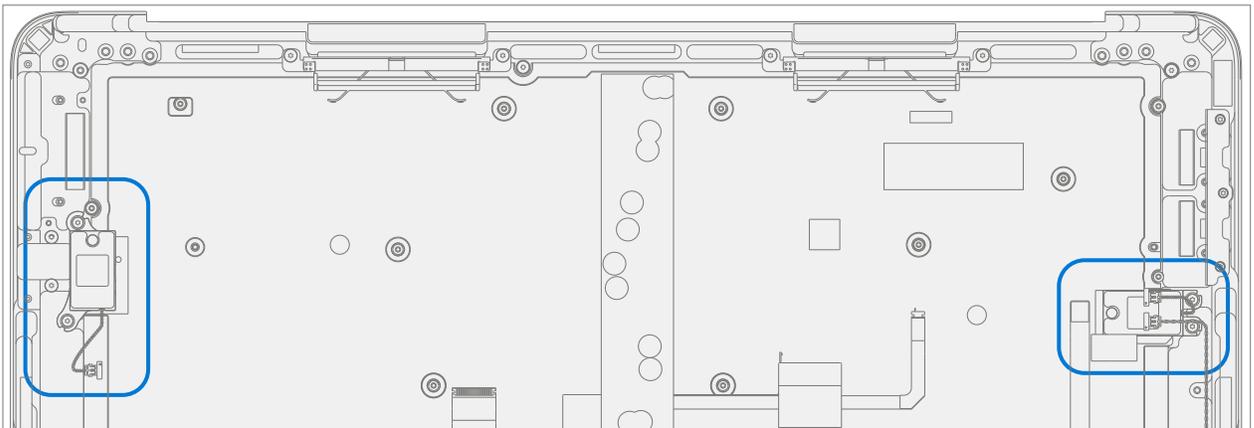
1. **Remove USB-C** – Refer to USB-C removal on (page 53) for details.

 **IMPORTANT:** The USB-C connections on the PCBA can remain connected unless they are in need of replacement.

2. **Remove Fans** – Using a 3IP screwdriver remove the 1 screw from the left and right fans. Remove the left and right fans. Remove 4 foam grommets for reuse.

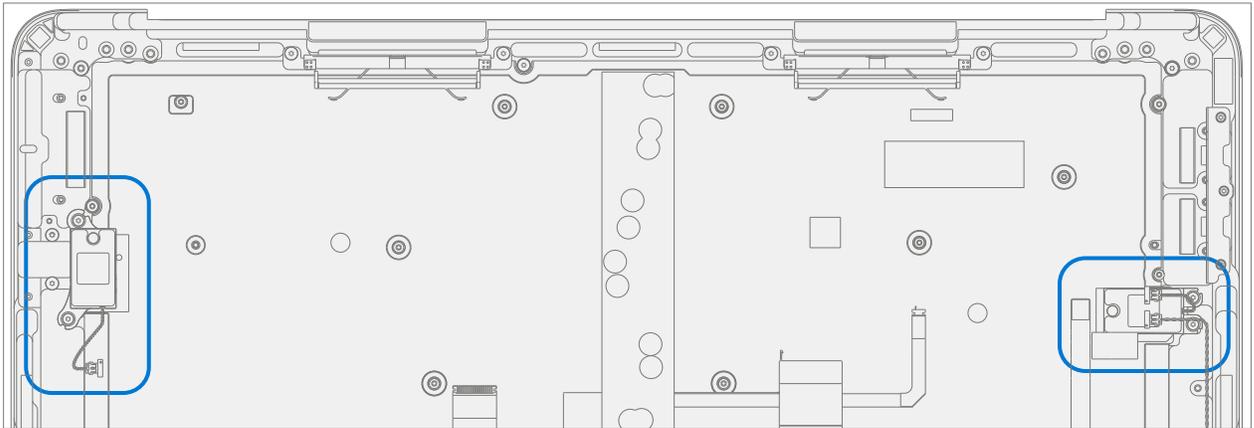


3. **Remove Tweeters** – Use 3IP screwdriver to remove the screws from the left and right tweeters. Remove the tweeters.

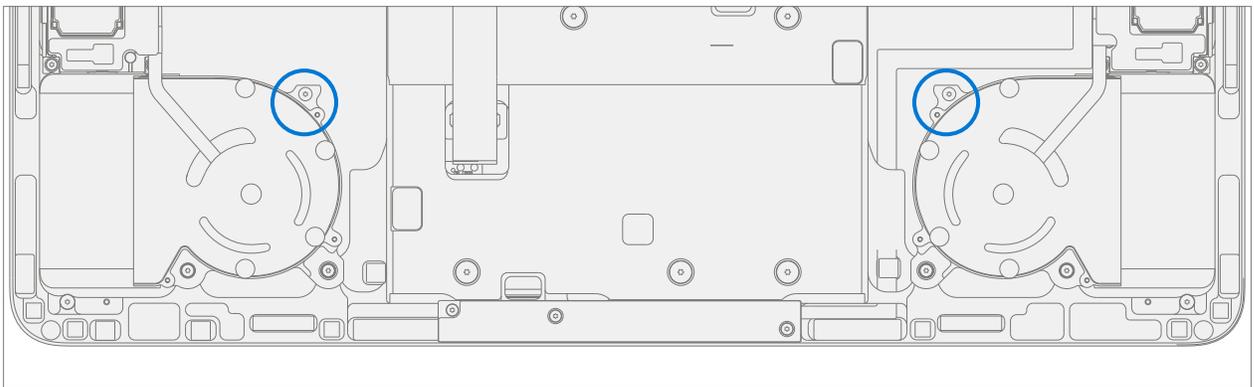
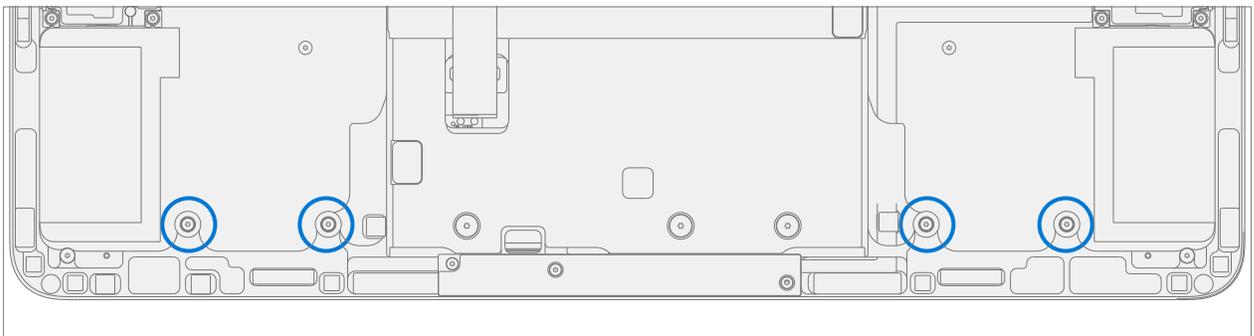


Procedure – Installation C-Cover Keyboard Assembly

1. **Install Tweeters** – Install the previously removed right and left tweeters onto the new C-Cover. Using 3IP install 2 new M1202147 screws in each tweeter. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



2. **Install Fans** – Install 4 foam grommets on the new C-Cover. Install the previously removed left and right fans onto the C-Cover. Using a 3IP screwdriver install 1 new M1007493 screw in each fan. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



3. **Install USB-C** – Refer to USB-C installation on [\(page 60\)](#) for details.
4. **Install Audio Jack** – Refer to Audio Jack installation on [\(page 49\)](#) for details.
5. **Install SurfLink Port** – Refer to SurfLink Port installation on [\(page 44\)](#) for details.

6. **Install AB-Cover** – Refer to AB-Cover installation on (page 37) for details.
7. **Battery Installation** – Follow steps for D-Bucket reassembly on (page 26).

 **IMPORTANT:** During this installation only install rSSD and D-Bucket. Do not install D-Bucket screws and Cosmetic Plate.

8. **Power On Device** – Carefully place device top side up. Connect device to power supply, open display, and power on.
9. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.
10. **Install New D-Bucket Screws** – Install new D-Bucket screws as detailed on (page 29).
11. **Install New Cosmetic Plate** – If no further repairs are required install the Cosmetic Plate as detailed on (page 20).
12. **Install Feet** – Refer to Feet installation on (page 15) for details.

Environmental Compliance Requirements

All waste electrical and electronic equipment (WEEE), waste electronic components, waste batteries, and electronic waste residuals must be managed according to applicable laws and regulations. and H09117, "Conformance Standards for Environmentally Sound Management of Waste Electrical and Electronic Equipment (WEEE)," which is available at this link: <https://www.microsoft.com/en-pk/download/details.aspx?id=11691> In case of questions, please contact AskECT@microsoft.com

