



Surface Laptop Studio Service Guide



Disclaimer of Warranties and Limitation of Damages

All information, content, materials, and products made available in or in conjunction with this Guide are provided by Microsoft on "as-is" and "as available" basis, unless otherwise specified by Microsoft in writing. Microsoft makes no representations or warranties of any kind, express or implied, as to the information, content, materials and products included or otherwise made available to you or accompanying this Guide unless specified in writing. You expressly agree that your use of the information, content, materials, and product in or accompanying this Guide is at your sole risk.

To the fullest extent permissible by law, Microsoft disclaims all warranties, express or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose. To the fullest extent permissible by law, Microsoft shall not be liable for damages of any kind arising from the use of information, content, materials, or product made available in or in conjunction with this Guide, including but not limited to direct, indirect, incidental, consequential, and/or punitive damages unless otherwise specified in writing.

Notice

Microsoft and its suppliers may have patents, patent applications, trademarks, copyrights, trade secrets and/or other intellectual property rights covering subject matter in this document. Microsoft's furnishing of this document to recipient does not grant or imply any license to any patents, trademarks, copyrights, trade secrets or other intellectual property rights, and recipient's permitted use of any such intellectual property rights, if any, is solely governed by the Agreements.

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.

©2022 Microsoft Corporation. All rights reserved.

Document Part Number: M1196222



Table of Contents

| | |
|---|-----------|
| DEVICE IDENTITY INFORMATION..... | 5 |
| • SURFACE LAPTOP MODELS | 5 |
| • GLOSSARY OF TERMS | 5 |
| GENERAL INFORMATION, PRECAUTIONS, WARNINGS | 6 |
| • SERVICE TOOLS AND JIGS | 6 |
| • GENERAL SAFETY PRECAUTIONS | 7 |
| • REPAIR-SPECIFIC PRECAUTIONS AND WARNINGS | 8 |
| • REPAIR- CROSS-REFERENCE DOCUMENTS | 8 |
| • SAFETY POLICIES/PROCEDURES | 9 |
| ILLUSTRATED SERVICE PARTS LIST | 10 |
| SERVICE DIAGNOSTICS/TROUBLESHOOTING OVERVIEW | 12 |
| • SOFTWARE TOOLS | 12 |
| • HARDWARE TROUBLESHOOTING APPROACH | 12 |
| COMPONENT REMOVAL AND REPLACEMENT PROCEDURES..... | 13 |
| • PRIOR TO DEVICE DISASSEMBLY | 13 |
| • BATTERY WARNING..... | 13 |
| • NON-SKID FEET REPLACEMENT PROCESS..... | 14 |
| 1. PROCEDURE – REMOVAL FEET..... | 14 |
| 2. PROCEDURE – INSTALLATION FEET | 15 |
| • COSMETIC PLATE REPLACEMENT PROCESS | 16 |
| 1. PROCEDURE – REMOVAL COSMETIC PLATE..... | 17 |
| 2. PROCEDURE – INSTALLATION COSMETIC PLATE | 18 |
| • D-BUCKET & BATTERY PROCESS | 20 |
| 1. PROCEDURE – REMOVAL D-BUCKET + BATTERY..... | 21 |
| 2. PROCEDURE – INSTALLATION D-BUCKET + BATTERY..... | 24 |
| • rSSD PROCESS..... | 28 |
| 1. PROCEDURE – REMOVAL rSSD | 29 |
| 2. PROCEDURE – INSTALLATION rSSD..... | 30 |
| • AB-COVER DISPLAY MODULE PROCESS..... | 31 |
| 1. PROCEDURE – REMOVAL AB-COVER | 32 |
| 2. PROCEDURE – INSTALLATION AB-COVER..... | 35 |



| | |
|---|-----------|
| • SURFLINK PORT PROCESS | 40 |
| 1. PROCEDURE – REMOVAL SURFLINK PORT | 41 |
| 2. PROCEDURE – INSTALLATION SURFLINK PORT | 42 |
| • AUDIO JACK PROCESS | 45 |
| 1. PROCEDURE – REMOVAL AUDIO JACK | 46 |
| 2. PROCEDURE – INSTALLATION AUDIO JACK | 47 |
| • USB-C PROCESS | 50 |
| 1. PROCEDURE – REMOVAL USB-C | 51 |
| 2. PROCEDURE – INSTALLATION USB-C | 58 |
| • C-COVER KEYBOARD ASSEMBLY PROCESS | 66 |
| 1. PROCEDURE – REMOVAL C-COVER KEYBOARD ASSEMBLY | 68 |
| 2. PROCEDURE – INSTALLATION C-COVER KEYBOARD ASSEMBLY | 69 |
| ENVIRONMENTAL COMPLIANCE REQUIREMENTS | 70 |



Device Identity Information

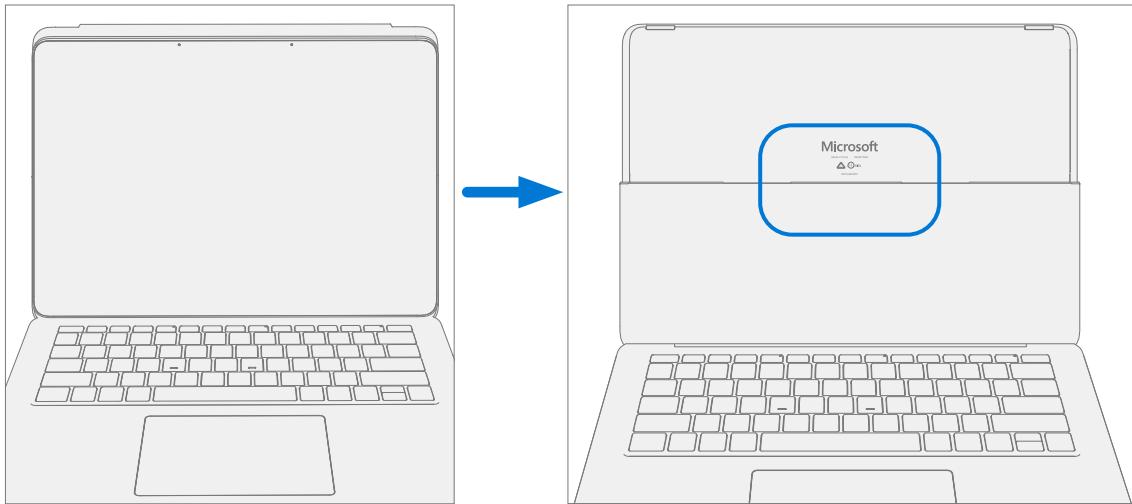
Surface Laptop Models

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 Precautions

 Always observe the following, general safety precautions:

- Opening and/or repairing any device can present electric shock, device damage, fire, and/or personal injury risks and other hazards. Exercise caution when undertaking these activities as described in this guide. Only skilled IT technicians to whom Microsoft has provided this guide should attempt CRU repair activities. Only Microsoft-authorized service providers should undertake FRU repair activities.
- Always select and use the appropriate AC power supply for a device. We recommend you use genuine Microsoft power supply units and AC power cords. A genuine Microsoft power supply unit is provided with every device.
- Use only AC power provided by a standard (mains) wall outlet. Do not use non-standard power sources, such as generators or inverters, even if the voltage and frequency appear acceptable.
- Improper use of device 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 exposed to other extreme sources of heat for an extended period of time. Doing so may cause damage or melt the batteries.

For additional product safety information, including information about

- Hearing conservation
- Heat related concerns
- Choking hazard/small parts
- Interference with medical devices
- Broken glass
- Photosensitive seizures
- Musculoskeletal disorders

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

- Prior to opening device, ensure device is powered off and disconnected from a power supply.
- We recommend wearing protective eyewear as a safety precaution when disassembling/re-assembling a device.
- Before opening device, always check that an anti-static wrist strap is worn, and work area is properly grounded to ensure electrostatic discharge (ESD) safe environment.

⚠ WARNING: Ensure the back cover with the battery is set aside in a safe location during repairs of internal components.

- 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 13](#)) for details.
- If battery damage (e.g., leaking, expansion, folds or other) is discovered during the back cover removal process or if the battery is impacted or damaged during the removal process, activities should cease. Refer to Microsoft Operational guidelines 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 and to the subassembly.
- During all activities (excluding feet-only replacement) check to ensure that no loose articles are on the back cover or within the internals of the device when reassembling the unit.

☒ IMPORTANT: Ensure battery remains disconnected whenever the D-Bucket is removed from device for safety purposes. Refer to D-Bucket + Battery removal on ([page 21](#)) for details.

Repair- Cross-reference Documents

- M1153910 In Device Battery Inspection process. Devices exhibiting battery issues as outlined in the Battery Inspection Process require whole unit replacement.



Safety Policies/Procedures

Microsoft's field product safety program team is referred to as the Rapid Response Team (RRT). All device issues that may be safety related should be managed per the following instructions.

As a quick guide, any Microsoft Surface device that visually exhibits any of the following symptoms shall be immediately removed from the repair process and delivered to your Variance Manager or IT Support Professional for notification to Microsoft RRT:

- 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 customer abuse (e.g., impact damage from dropping, evidence of tampering, separation caused by a malfunctioning battery).
- Any other finding that may constitute a safety hazard to the user, such as sharp edges on plastics.

The Variance Manager or IT Support Professional must send an email to Microsoft RRT with pictures showing the damage within 24 hours of device receipt. Refer to the ASP Guidebook for the Microsoft RRT email address. Non-ASP's are to contact Microsoft Surface Support Services.

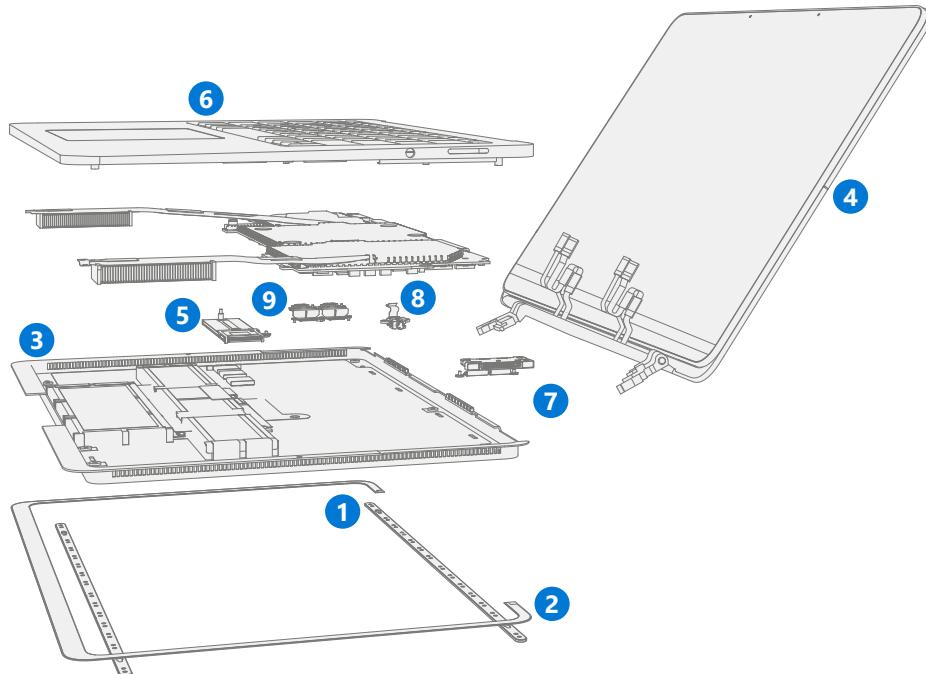
Your email should include:

- The model and serial number of the affected Microsoft Surface device and/or accessory(ies).
- The Service Request (SR) Number or alternative service tracking work order that the device was received under (Note as N/A if no SR exists).
- A brief description of the damage found.
- Clear photographs depicting the symptoms observed.

The Variance Manager or IT Support Specialist must await instructions from Microsoft Product Safety RRT for the affected unit before continuing with activities or returning the device to the end user.



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 |
|------------|---|-----------------------|-----------------|-------------|
| (1) | Non-Skid Feet | | | 1964 |
| | 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 |
|--------------------------------------|----------------------------|-------------------------------|-------------------------|--------------|
| (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-Accuracy

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:

- Before opening the device, always ensure device is powered off and disconnected from a power supply.
- Always ensure that the work surface is covered with an ESD-safe, soft, non-marring material.
- Work surfaces should be cleaned regularly to ensure debris/abrasive particles are not present.
- Check to make sure that general guidelines and ESD compliance steps are followed prior to opening device.
- Parts removed from a device under repair during the repair process should be stored in ESD-safe bags and packaged for return in the same packaging and order that the new replacement part came in.

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

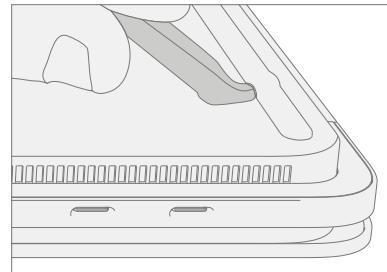
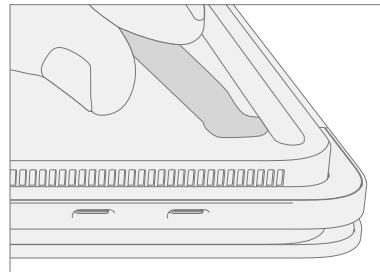
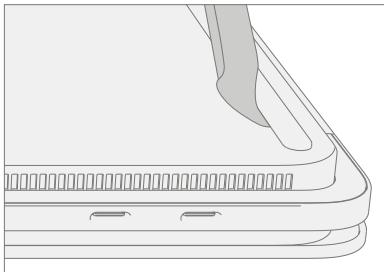
- **Tools:**
 - Plastic tweezers / spudger
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Cleaning swabs
 - Non-metallic ruler ([Amazon Example](#))
 - Soft ESD-safe mat
 - Microfiber cloth
- **Components:**
 - Feet (Refer to [Illustrated Service Parts List](#))

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 13](#)) 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.



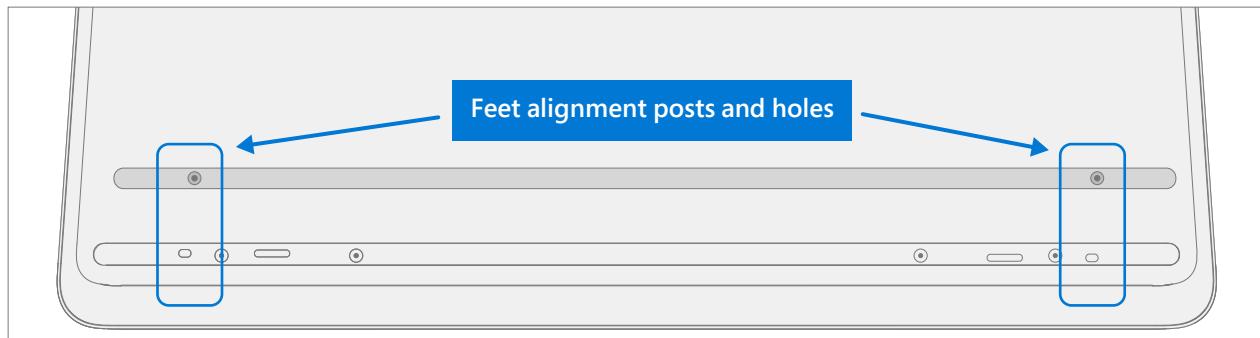
2. **Cleaning** – Remove any adhesive tape remnants from the D-Bucket and clean off any glue residue with 70% or greater Isopropyl Alcohol.



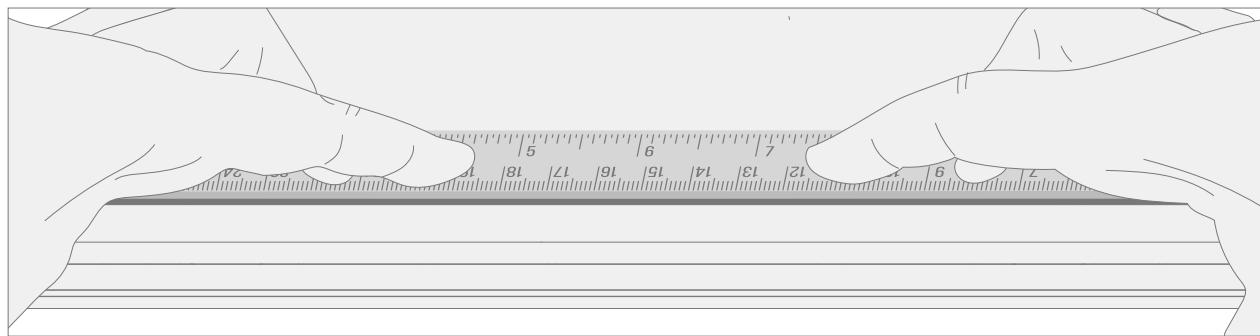
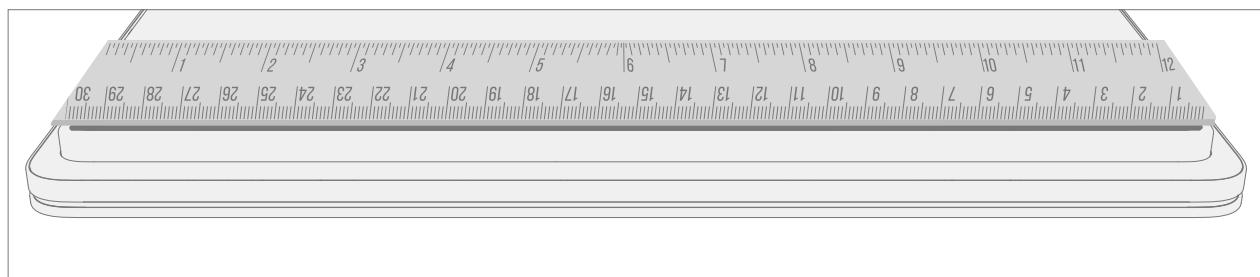
Procedure – Installation Feet

 **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:

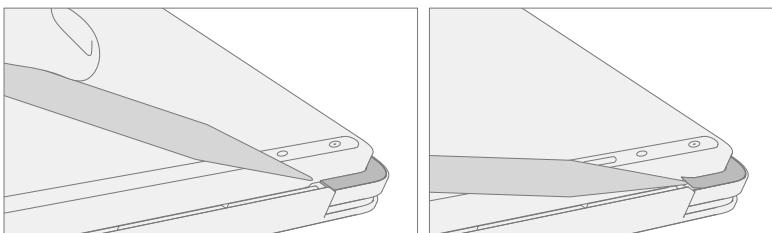
- **Power off device** – Ensure device is powered off and disconnected from a power supply.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 13](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.



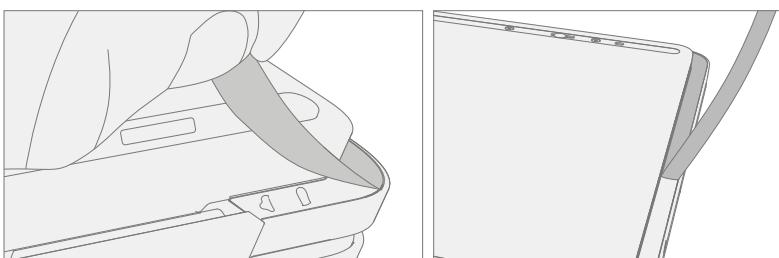
Procedure – Removal Cosmetic Plate

1. Remove Cosmetic Plate

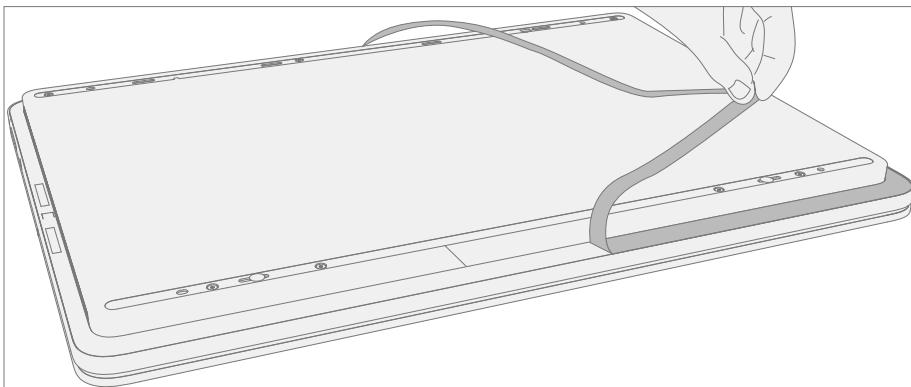
- Starting at the rear hinge use a spudger or plastic tweezers to lift up the end of the cosmetic plate.



- 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 –

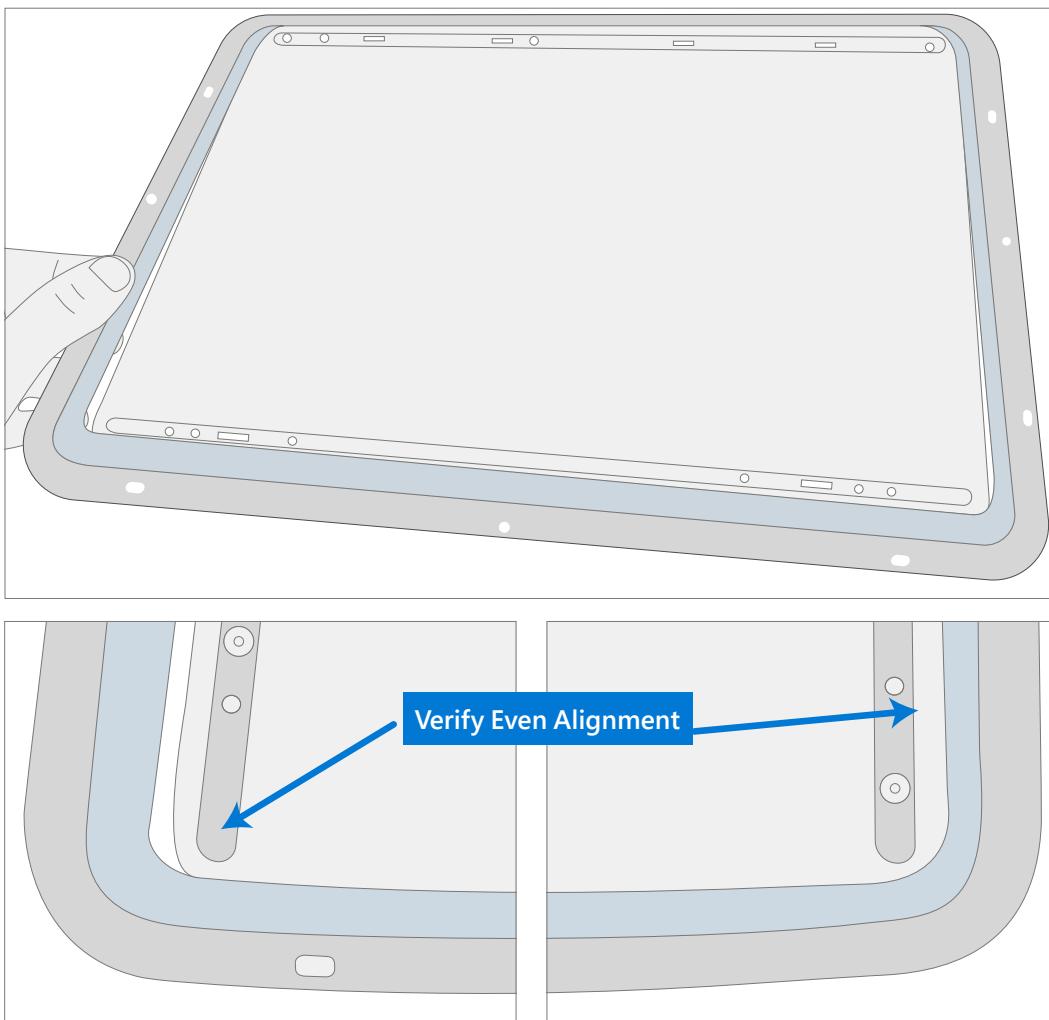
- Remove any adhesive tape remnants from the D-Bucket.
- Clean the bonding surfaces of the pen charger cover, the hinges on the C-Cover, and the D-Bucket with 70% Isopropyl Alcohol.
 - As needed for adhesive not responding to IPA.
 - Apply Citrus IPA cleaner (example Goo Gone) to the cosmetic plate residue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

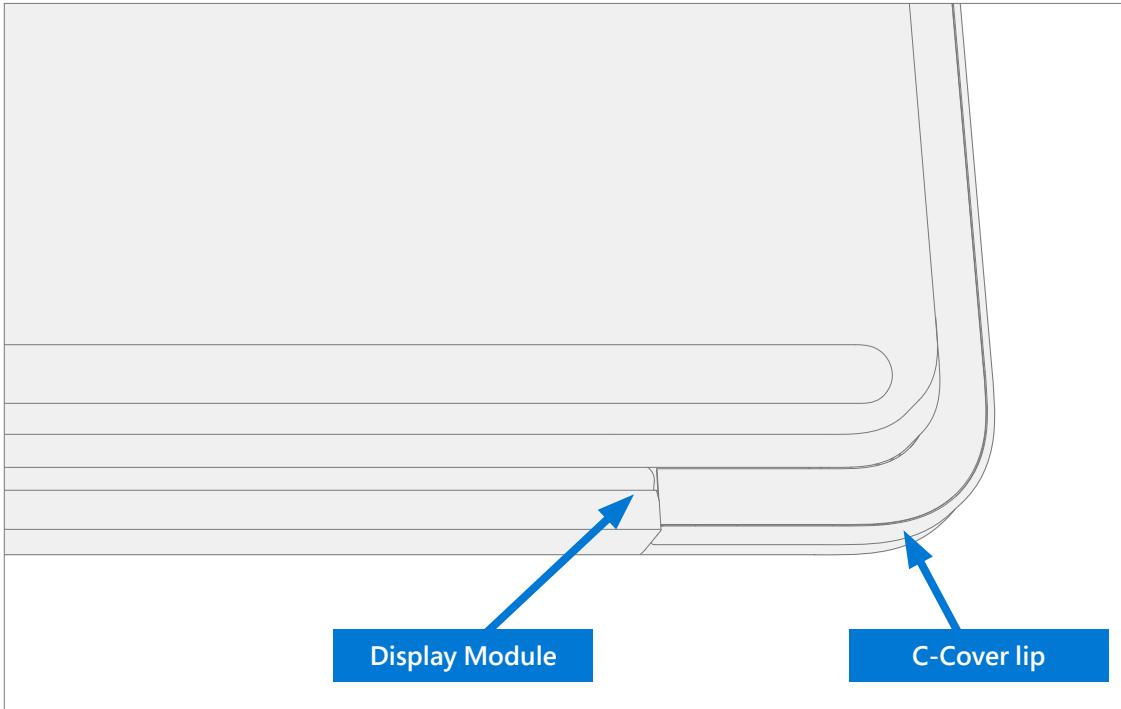
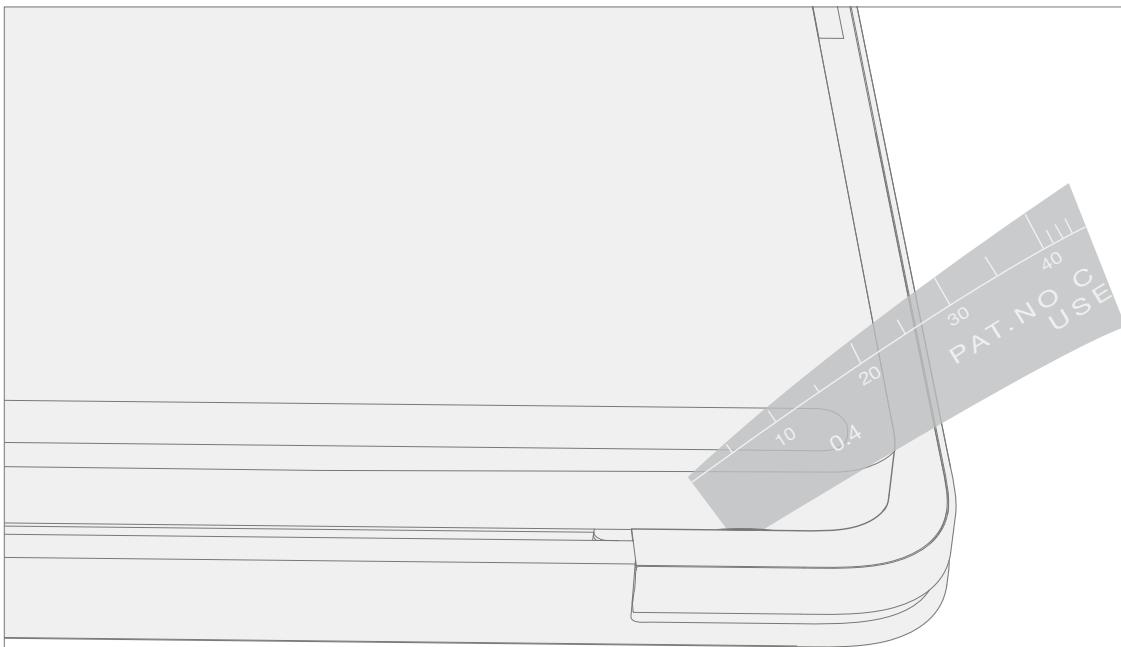
- e. Press lightly ensuring the entire cosmetic plate is fully down on the device.
- f. Firmly press the cosmetic plate with your finger, going all the way around.
- g. Remove the blue liner and run your finger over the cosmetic plate again to make sure that it is securely adhered.



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](#))

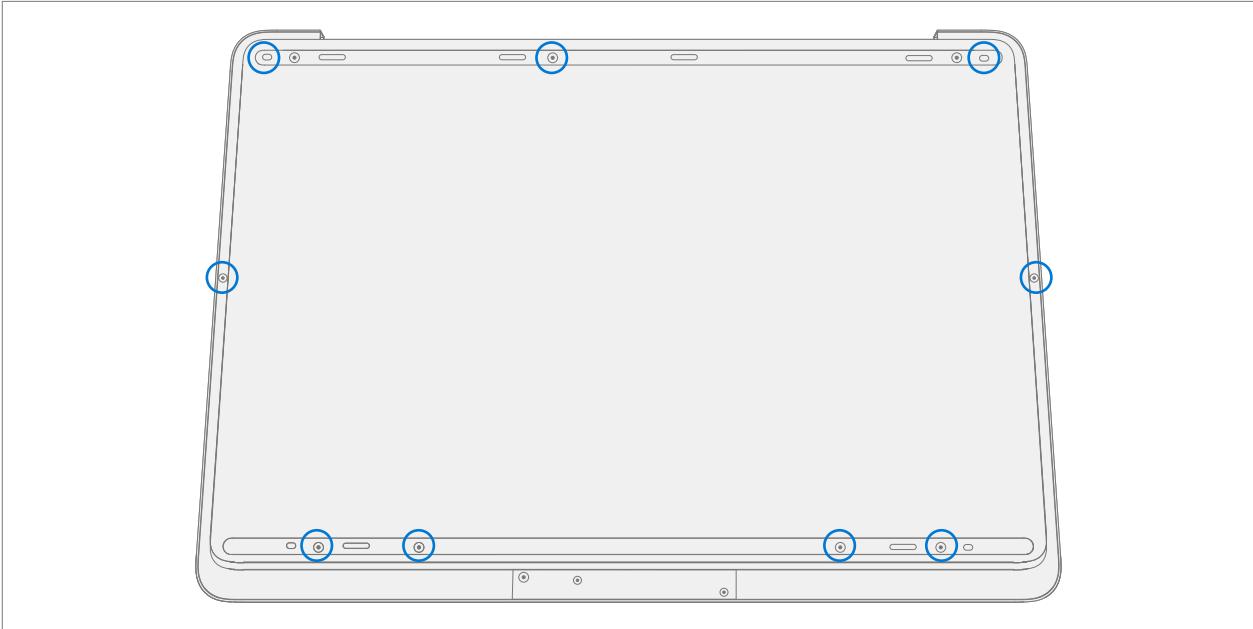
Prerequisite Steps:

- **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 13](#)) 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 14](#)) for details.
- **Remove Cosmetic Plate** – Refer to Cosmetic Plate removal on ([page 17](#)) for details.



Procedure – Removal D-Bucket + Battery

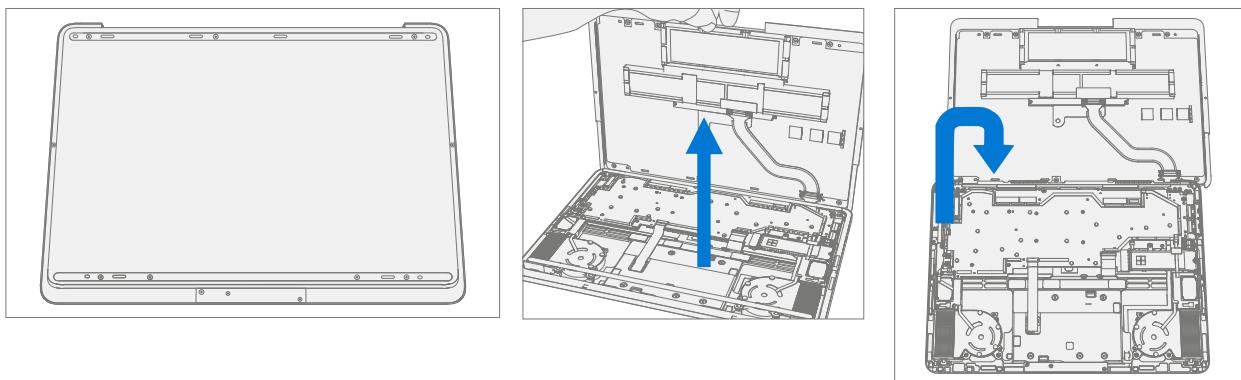
1. **Remove D-Bucket screws** – Using a 3IP (Torx-Plus) driver remove the 7 screws from the foot wells, and the 2 screws from the sides of the D-Bucket.



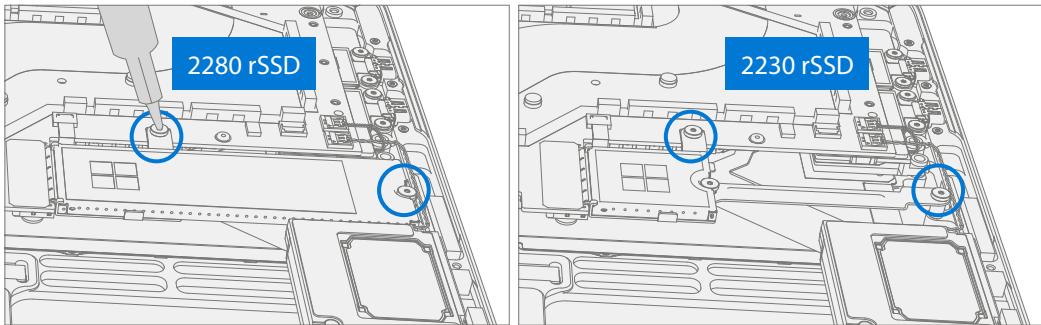
! CAUTION: All 9 screws must be removed before starting D-Bucket removal.

2. **Separate D-Bucket from device**

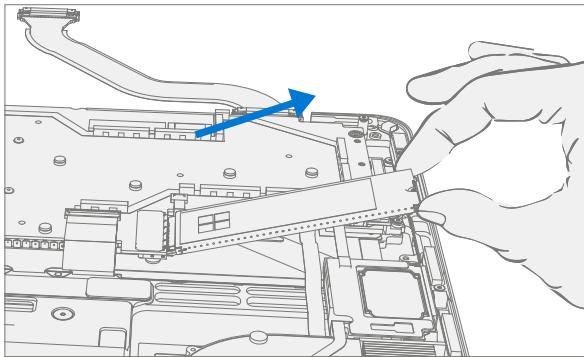
- a. Lift the D-Bucket off of and place it above the device, rotating about the hinge so the battery cable isn't pulled tight. The battery will be facing up.



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.



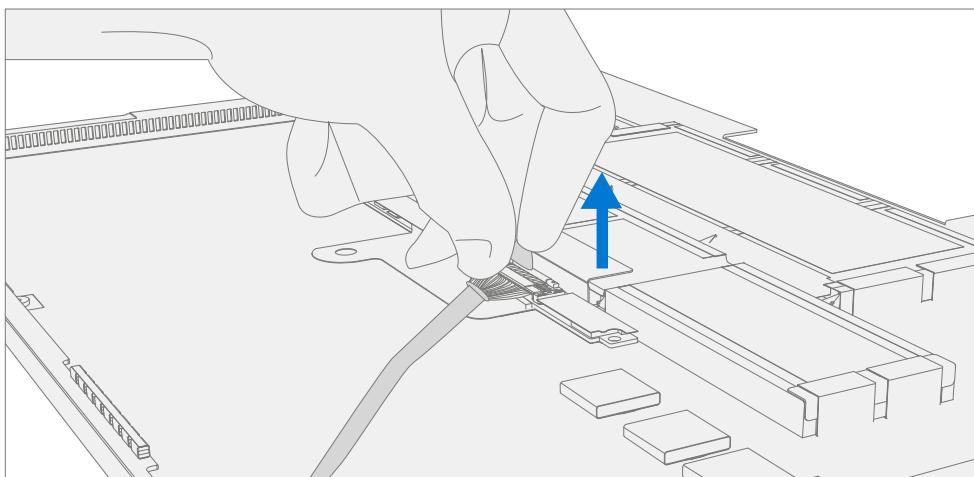
- b. Pull the rSSD out of the connector.



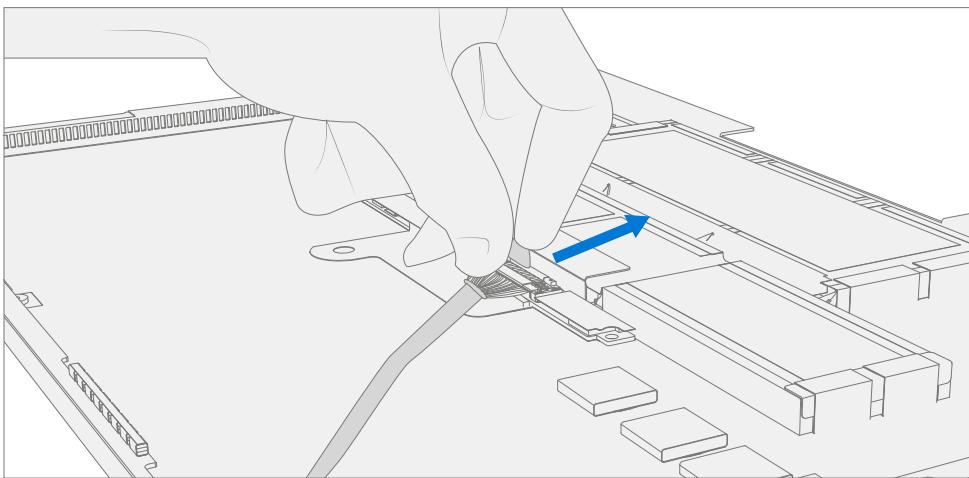
4. **Disconnect Battery Cable** –

! 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).



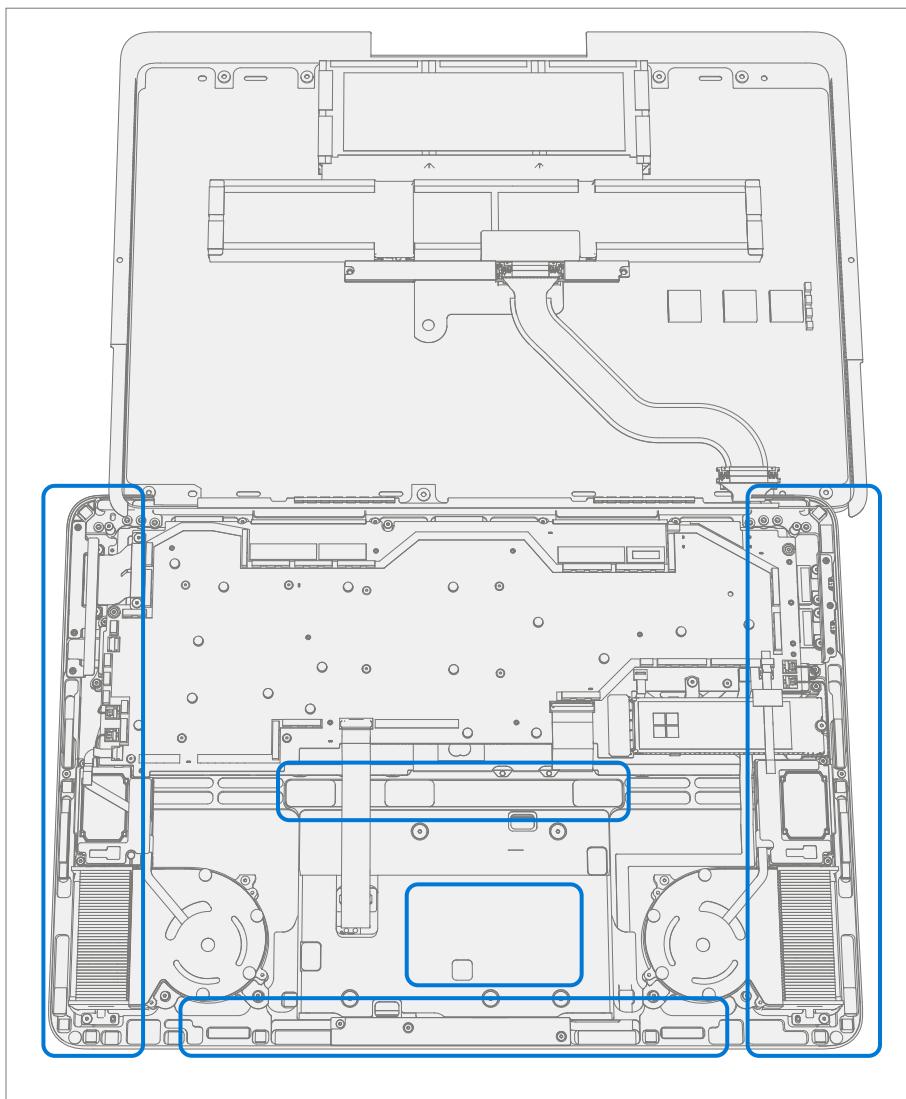
- b. Using the "Pull" tab, slide the connector carefully towards the battery to release the latches and remove the cable.



- 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.

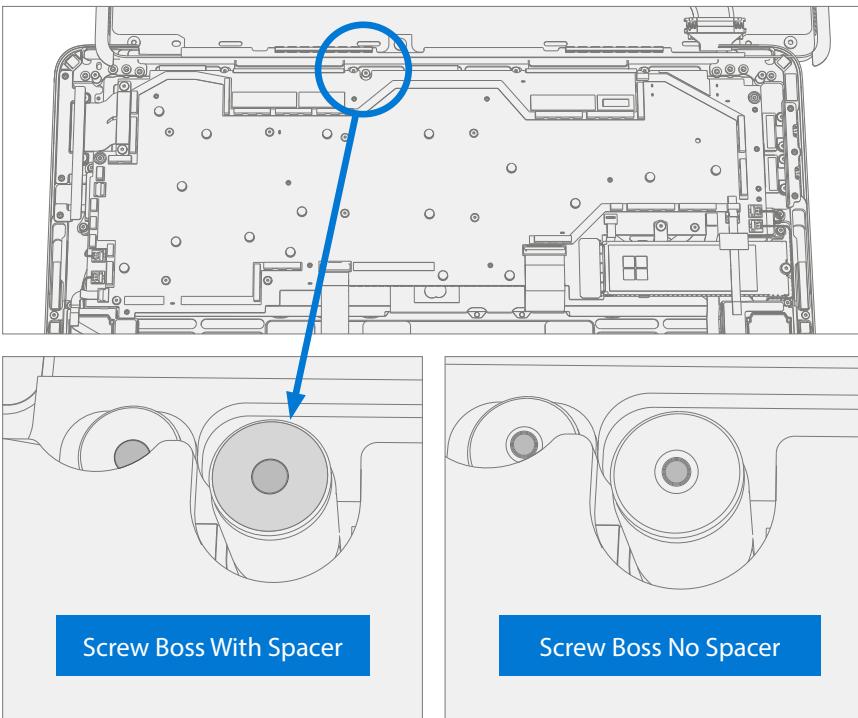
Procedure – Installation D-Bucket + Battery

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.

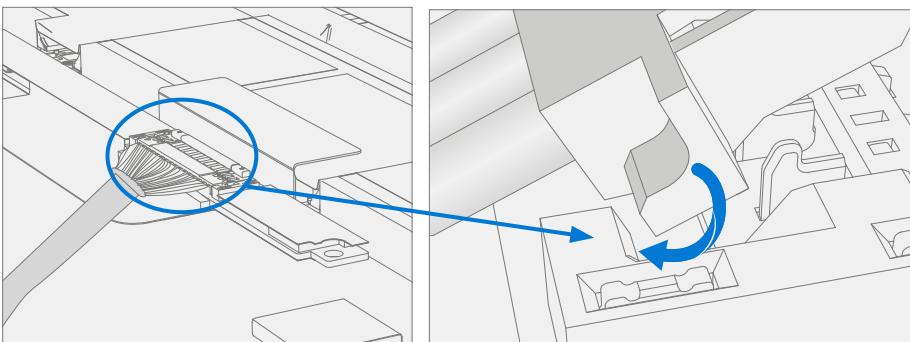


3. **D-Bucket Spacer** – Verify D-Bucket spacer M1207384-001 is installed on the C-Cover screw boss next to the left display cables. If missing install a new D-Bucket spacer M1207384-001. A new spacer is provided with the replacement FRUs, CRUs. Remove backing from the PSA on the spacer. Install the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

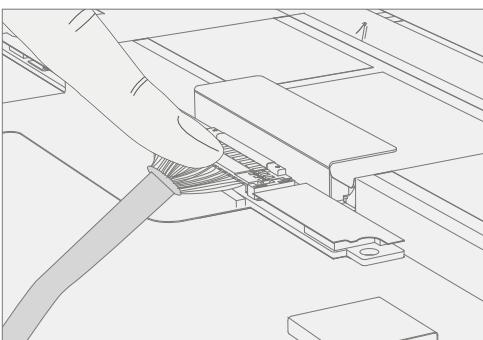
4. **Connect Battery Cable**



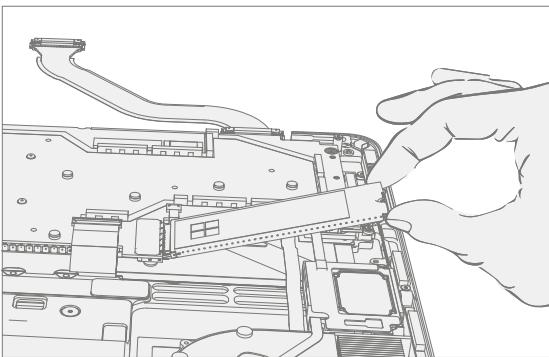
- a. Angle the tip of the connector up and vertically insert the cable side of the connector into the receptacle on the battery. Slightly pull back on the connector to make sure that the hook is engaged as shown below.



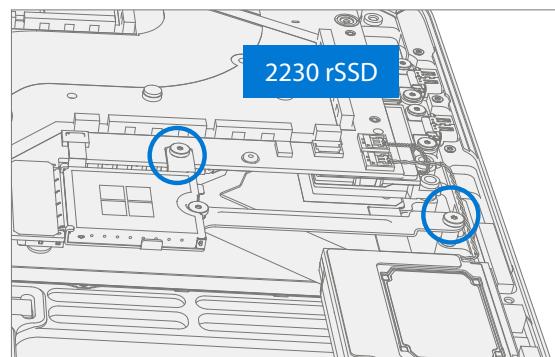
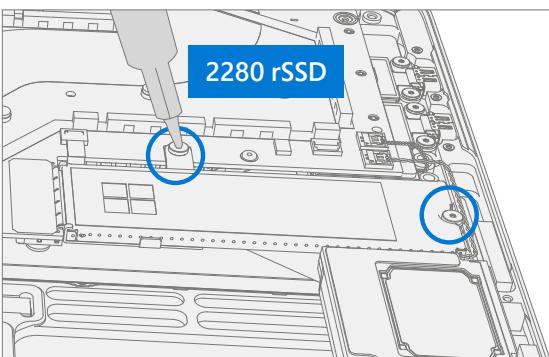
- b. Press down on the tip of the connector on left and right sides. A click should be heard and felt on each side



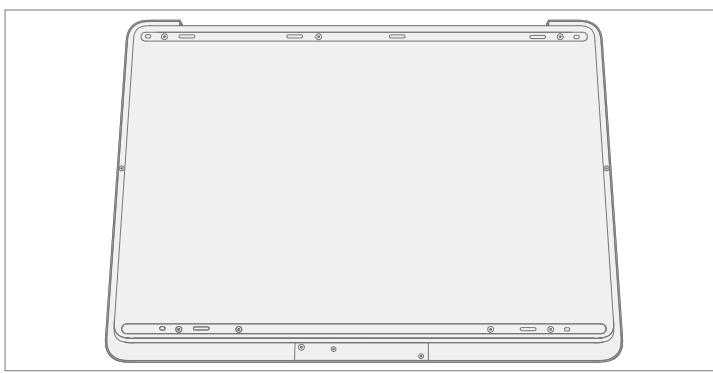
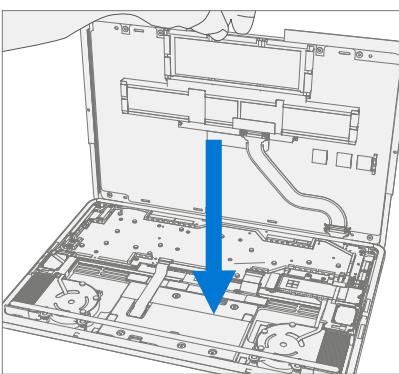
5. **Install rSSD** – Insert the connector end of the rSSD into the rSSD connector on the motherboard at ~15-degree angle.



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 18](#)) for details.
13. **Install New Feet** – Refer to Feet installation on ([page 15](#)) 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 MΩm 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 13](#)) 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 14](#)) for details.
- **Remove Cosmetic Plate** – Refer to Cosmetic Plate removal on ([page 17](#)) for details.
- **Remove D-Bucket** – Refer to D-Bucket + Battery removal on ([page 21](#)) for details.

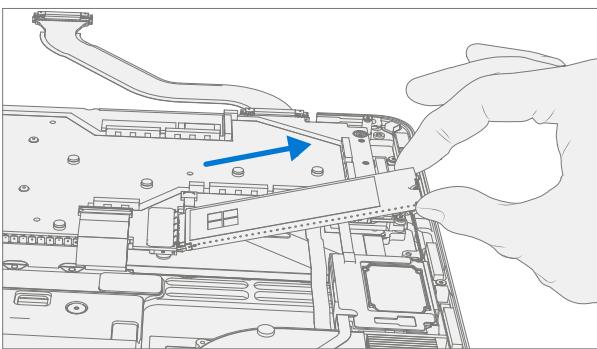


Procedure – Removal rSSD

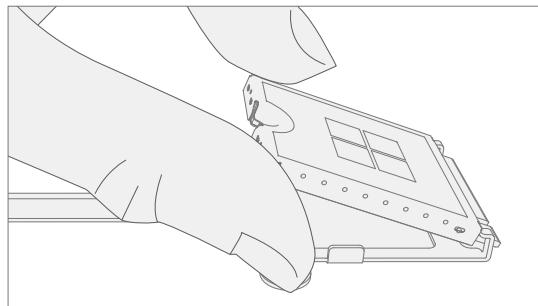
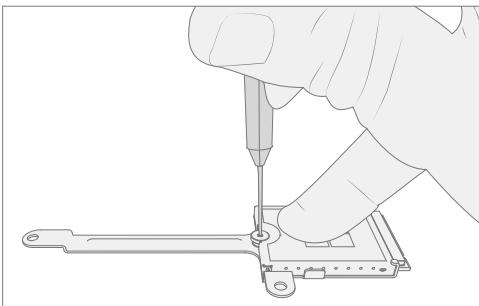
1. **Remove rSSD** – rSSD removal **safely powers down** the device. There are two sizes of rSSD. The longer 2280 and the shorter 2230 on a bracket.
 - a. Using a 3IP (Torx-Plus) driver remove the 2 screws securing the rSSD.



- 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.

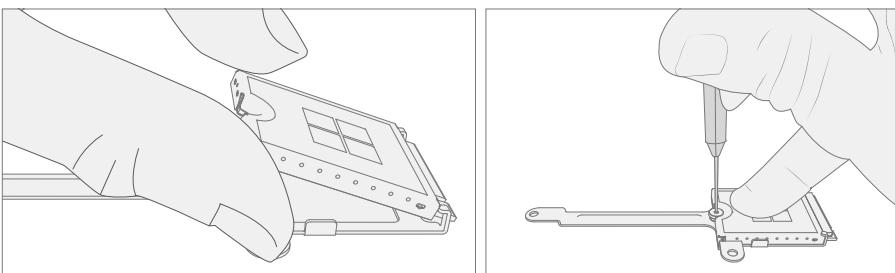


IMPORTANT: The 2230 rSSD bracket is reused when installing a new 2230 rSSD.

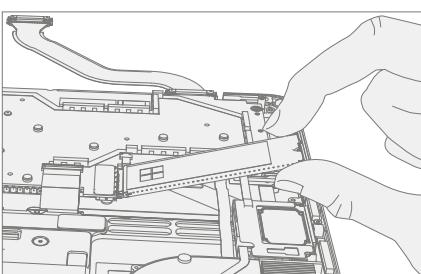


Procedure – Installation rSSD

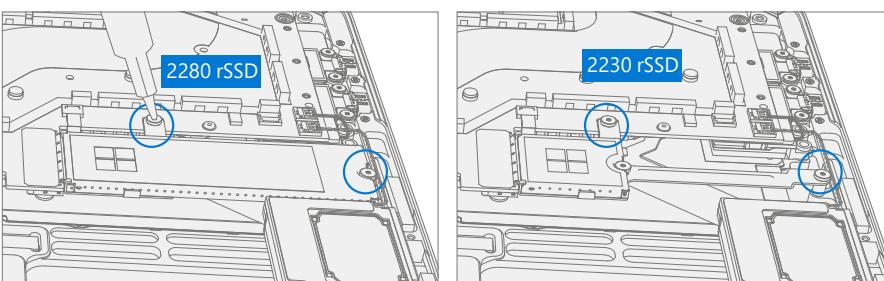
1. **Install new 2230 rSSD to bracket** – Using a 3IP (Torx-Plus) driver install a new 2230 rSSD to the bracket with a new M1167371 screw. Turn the screw until just snug and seated, and then turn another 45 degrees (1/8 turn) or until it is fully fastened.



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 [\(page 24\)](#).

 **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 [\(page 24\)](#).

9. **Install New Cosmetic Plate** – If no further repairs are required install the Cosmetic Plate as detailed on [\(page 18\)](#).

10. **Install New Feet** – Refer to Feet installation on [\(page 15\)](#) 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:

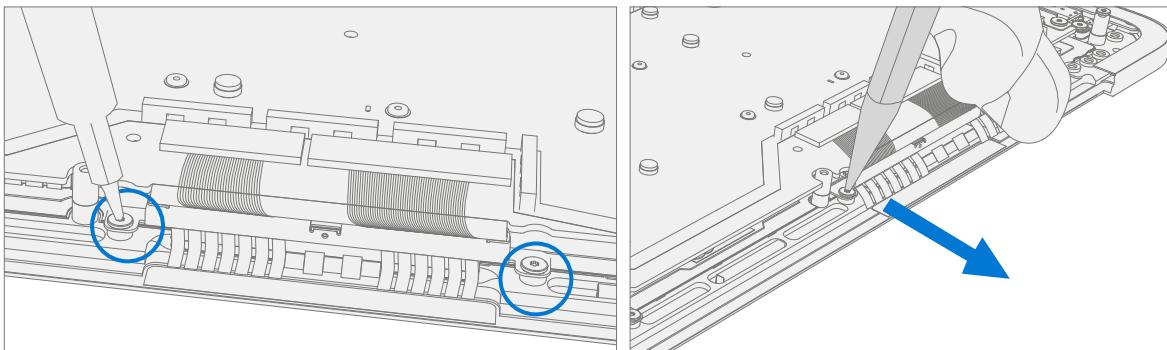
- **Device Serial Number Notation** – The Surface device serial number for this model is located on the AB-cover (Display) portion of the device. When the AB-cover is replaced during service/repair, the device serial number becomes physically disconnected from the customer's device. To ensure the customer has the best experience if any future Microsoft support is required, it is recommended to create a notation of the device serial number and provide it to the customer upon completion of the repair.
- **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.

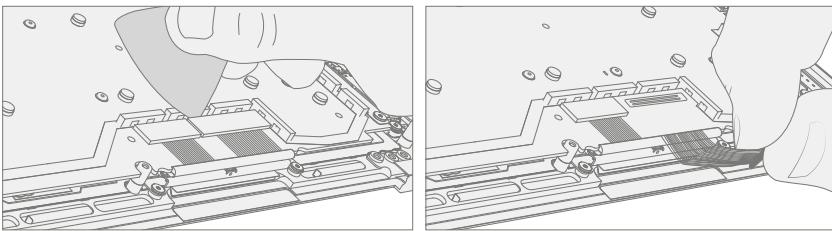
- **Power off device** – Ensure device is powered off and disconnected from a power supply. Remove all attached cables and drives.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 13](#)) 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 14](#)) for details.
- **Remove Cosmetic Plate** – Refer to Cosmetic Plate removal on ([page 17](#)) for details.
- **Remove D-Bucket** – Refer to D-Bucket + Battery removal on ([page 21](#)) 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.

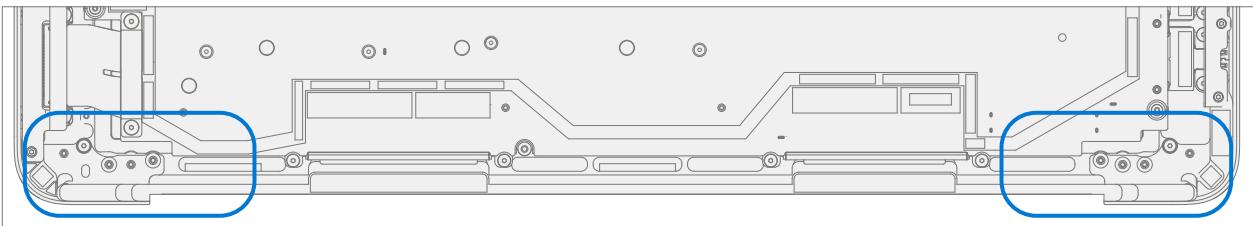


2. **Disconnect 4 Display Cables** – Use plastic tool to unlatch the connectors on the 4 display cables and carefully remove the cables from the PCBA connectors.

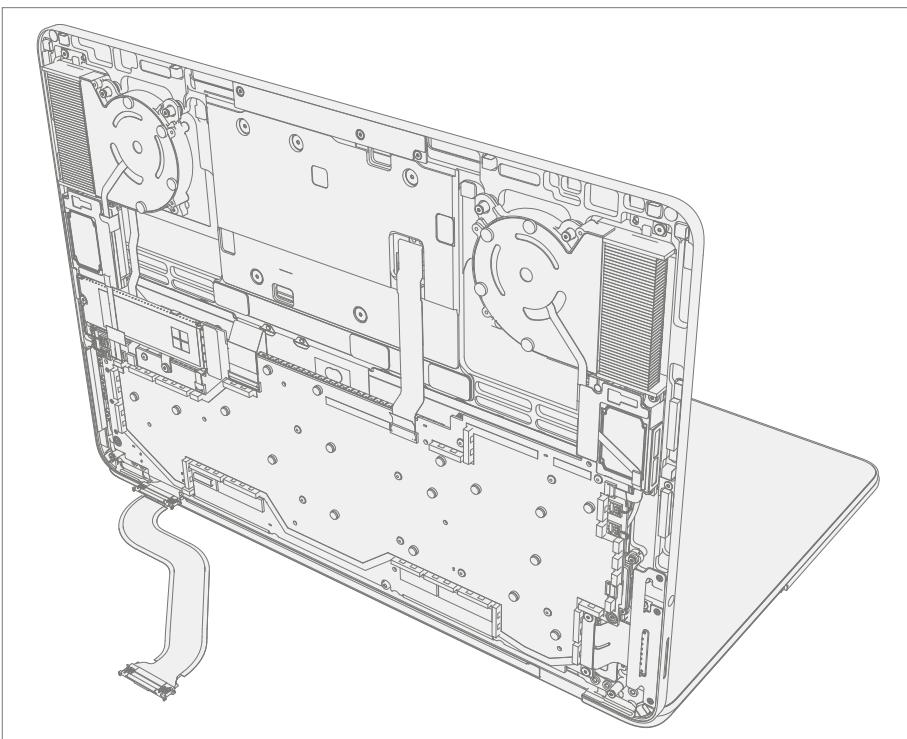


! **CAUTION:** The nearby foams are very delicate. Take care to not damage or remove them.

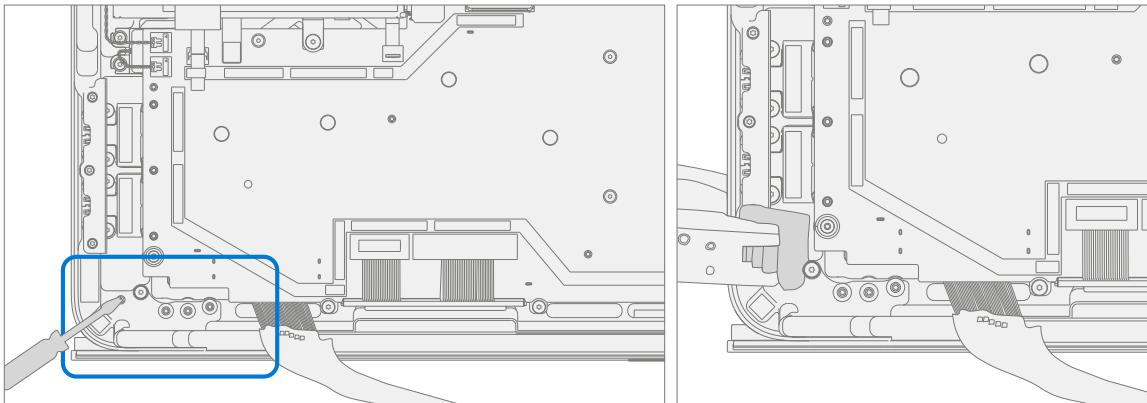
3. **Loosen AB-Cover hinge screws** – Using a 6IP (Torx-Plus) driver loosen the 8 hinge screws by (1/8 turn) of a turn.



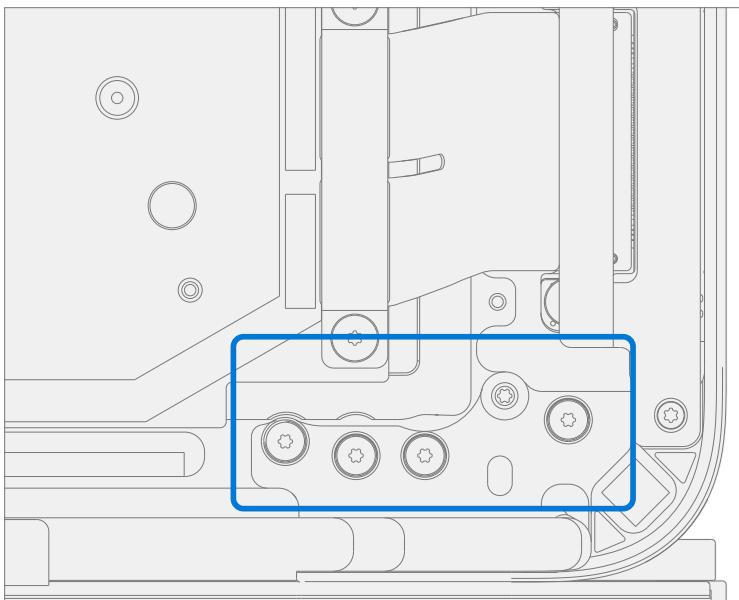
4. **Position AB-Cover** – Open the AB-Cover to 90 degrees. Place the backside of the display module on the ESD safe workbench with the C-Cover facing up.



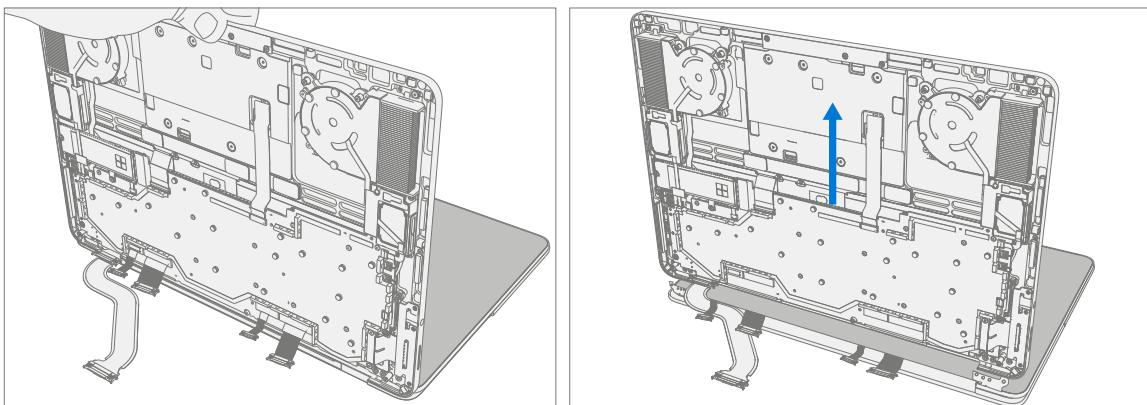
5. **Remove Left Hinge Screws** – Using a 6IP (Torx-Plus) driver remove the 4 screws on the left hinge. Apply a 1 inch light duty spring clamp to the left hinge to hold it in place against the C-Cover.



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

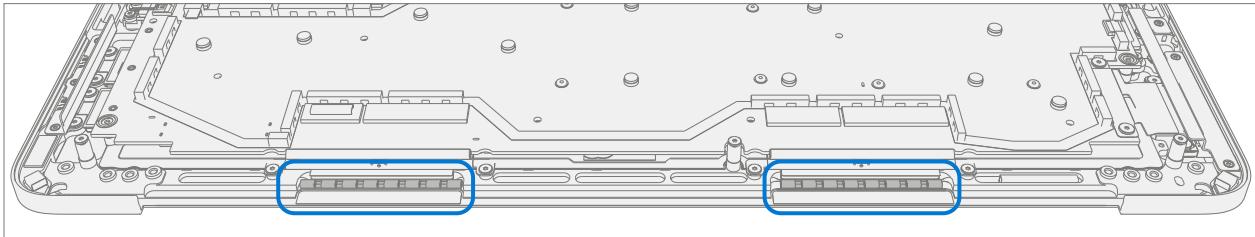


7. **Remove display module from C-Cover** – While holding the C-Cover with one hand remove the 1-inch light duty spring clamp from the left hinge. Carefully lift the C-Cover from the display assembly.

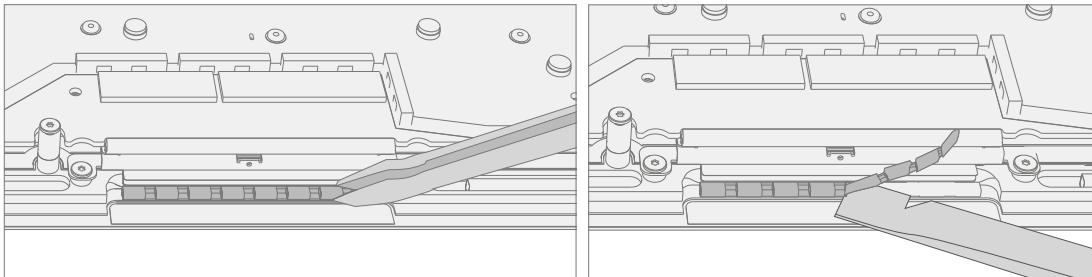


Procedure – Installation AB-Cover

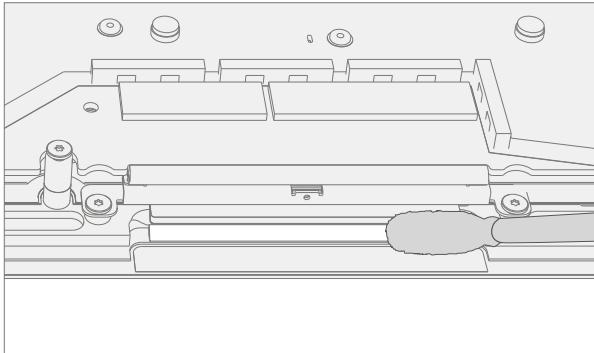
1. **Install New Display Cable Foam** – Display cable foam strips on the C-Cover are replaced prior to installation of the AB-Cover.



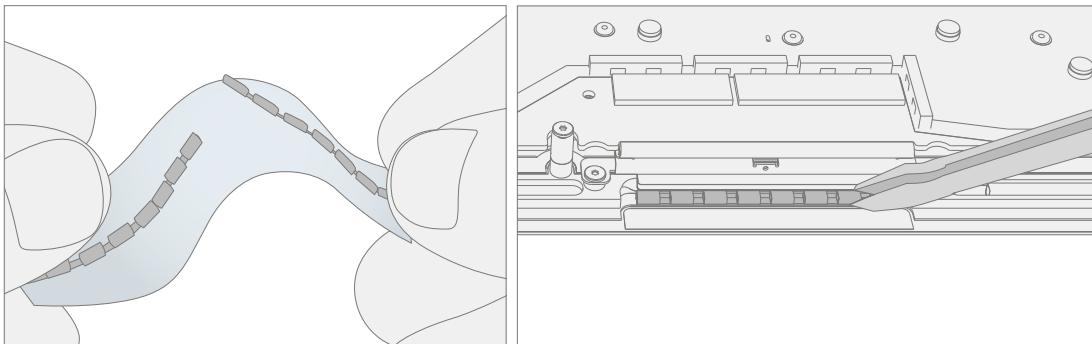
- a. **Remove left and right foam** – Using a plastic tool remove the display cable foam from the left and right sides of the C-cover.



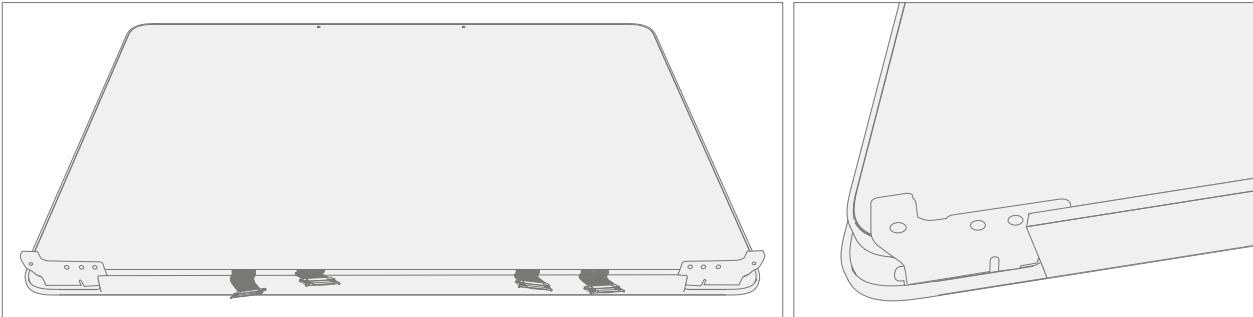
- b. **Cleaning** – Remove any adhesive tape remnants from the C-Cover and clean off any glue residue with 70% or greater Isopropyl Alcohol.



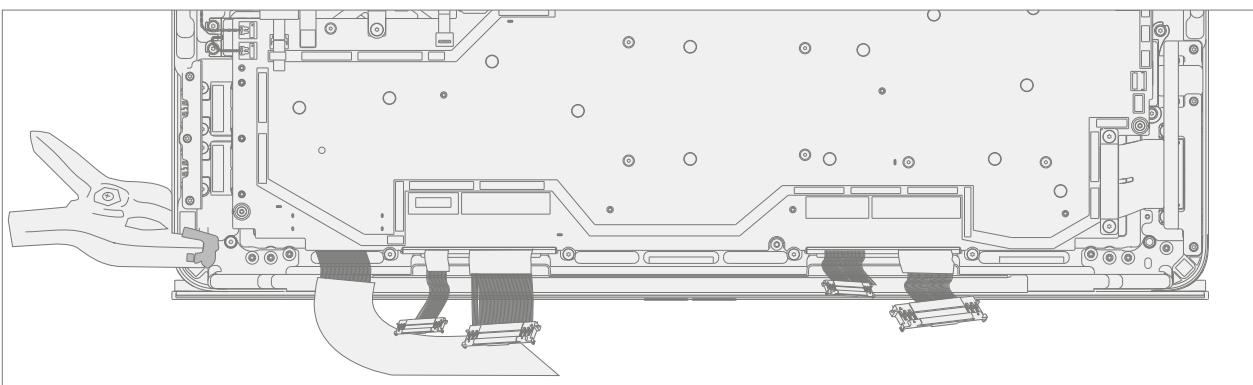
- c. **Install New Display Cable Foam** – Remove the liner from the display cable foam. Align the display cable foam adhesive side down onto the C-Cover over the silver surface. Press down on the foam for 30 seconds. Repeat this for each side of the C-Cover.



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

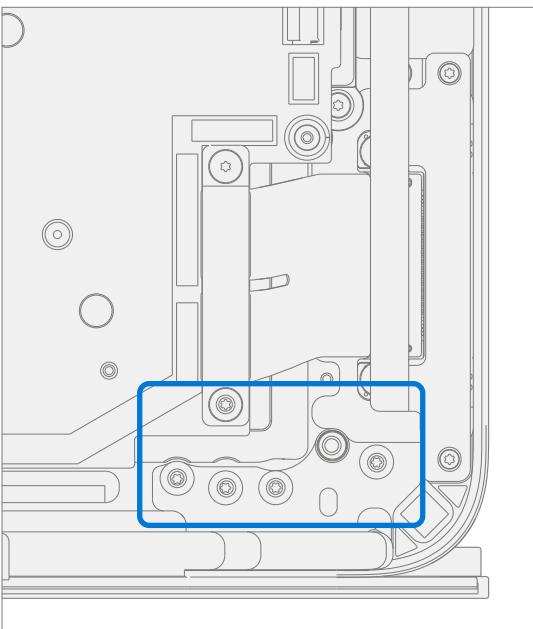


3. **Install display module onto C-Cover** – While holding the C-Cover with one hand. Carefully align the hinges into the pockets on the C-Cover. Apply a 1-inch light duty spring clamp to the left hinge.

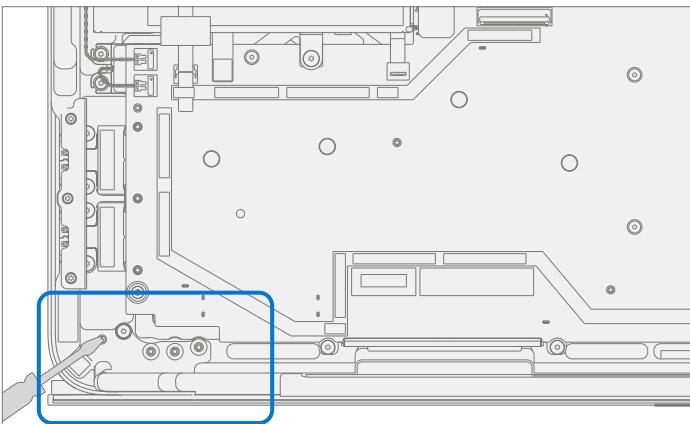


! CAUTION: Ensure the C-Cover does not impact the display.

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

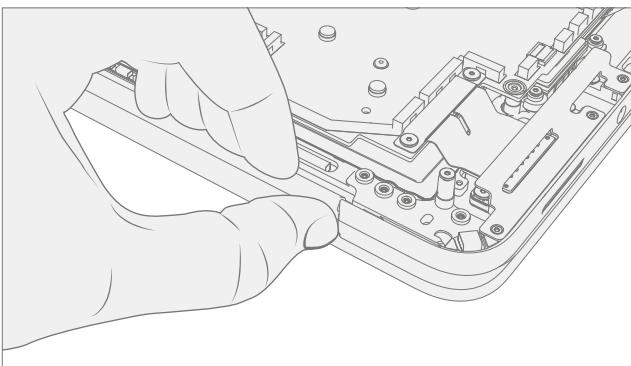


5. **Pre-fasten left hinge screws** – Remove the 1-inch light duty clamp from the left hinge. Assemble 4 new M1150078 screws in the left side hinge and tighten until just snug.

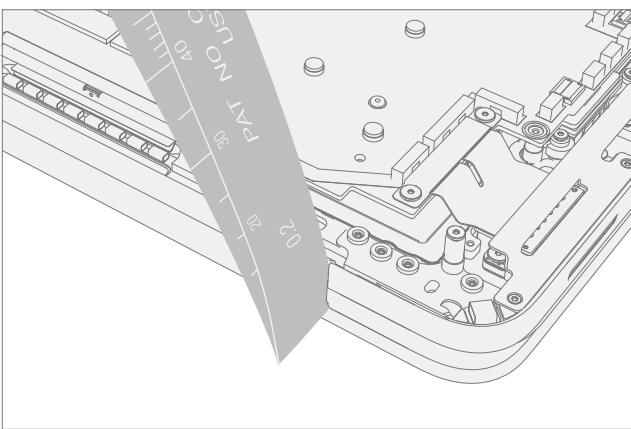


6. **Hinge alignment** –

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



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

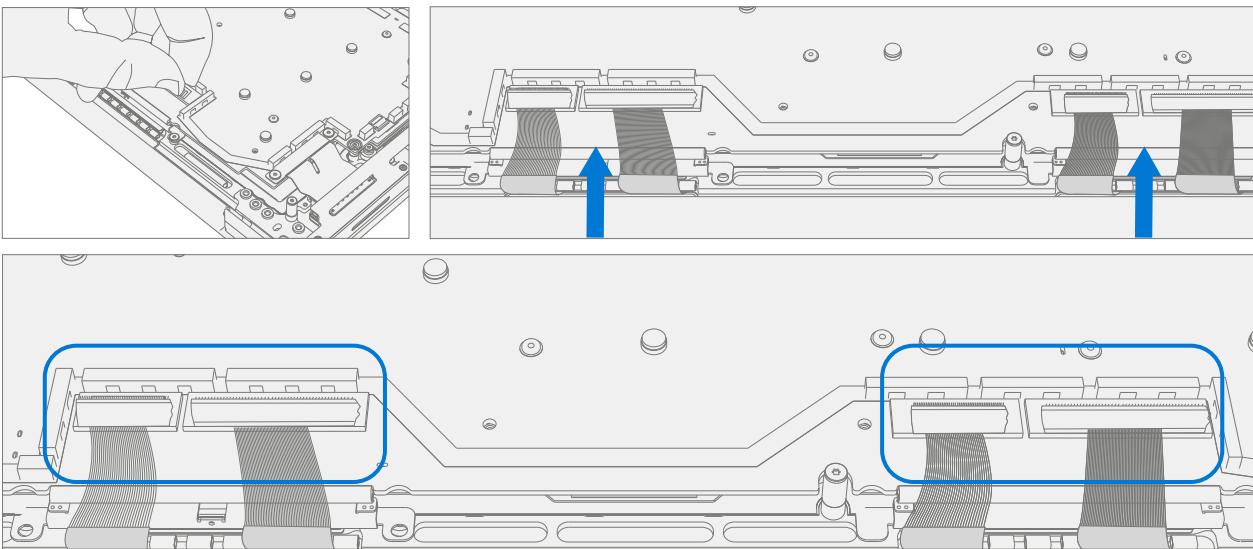


- Tighten 1 screw on each hinge until snug then an additional 90 degrees and recheck alignment and 0.2mm gaps.
- Repeat steps d and e on each of the 8 hinge screws.

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.

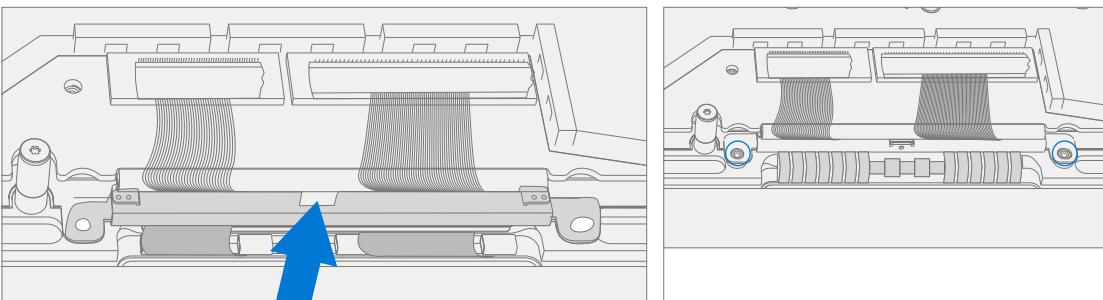


7. **Connect 4 Display Cables** – Carefully connect the 4 display cables into the PCBA connectors. Ensure the connections are fully seated and the locking buckles are engaged.

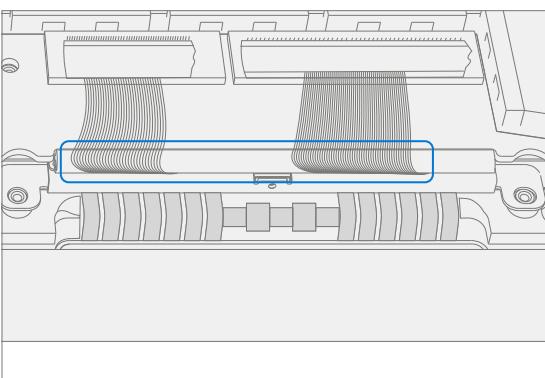


8. **Install 2 Cable Tensioners** –

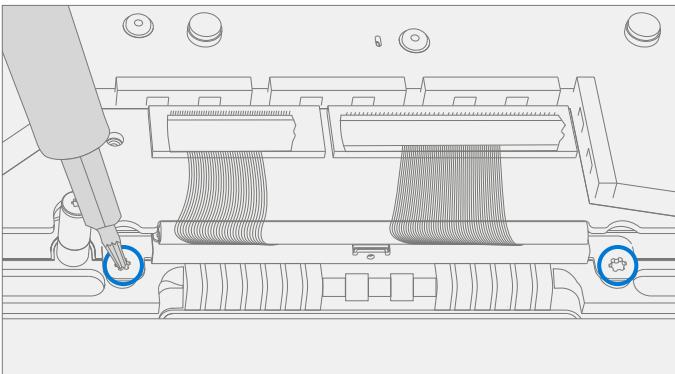
- Use the cable tensioners to gently push all 4 display cables so that they loop under the MB. Slide the cable tensioners horizontally until the holes fit over the posts with the screw holes.



- 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 24](#)).

 **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.
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 24](#)).
14. **Install New Cosmetic Plate** – If no further repairs are required install the Cosmetic Plate as detailed on ([page 18](#)).
15. **Install New Feet** – Refer to Feet installation on ([page 15](#)) 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](#))

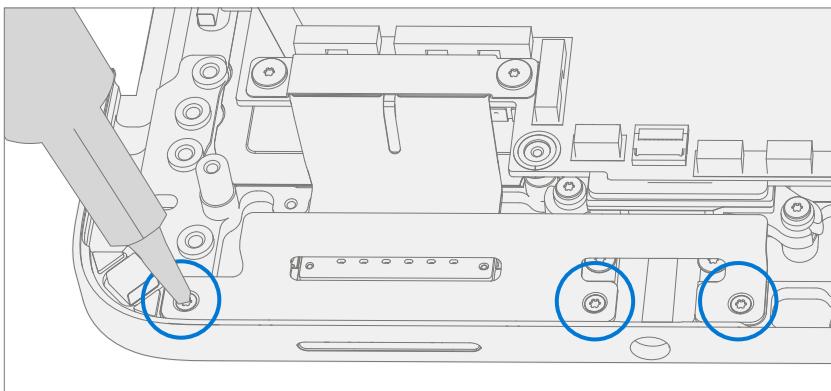
Prerequisite Steps:

- **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 13](#)) 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 14](#)) for details.
- **Remove Cosmetic Plate** – Refer to Cosmetic Plate removal on ([page 17](#)) for details.
- **Remove D-Bucket** – Refer to D-Bucket + Battery removal on ([page 21](#)) for details.

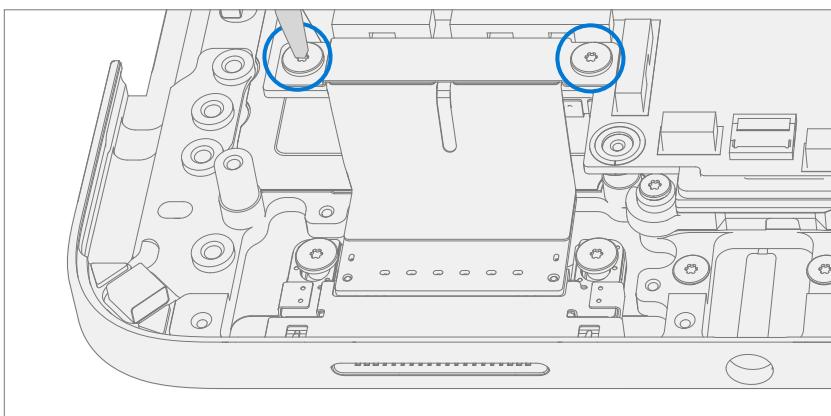


Procedure – Removal Surflink Port

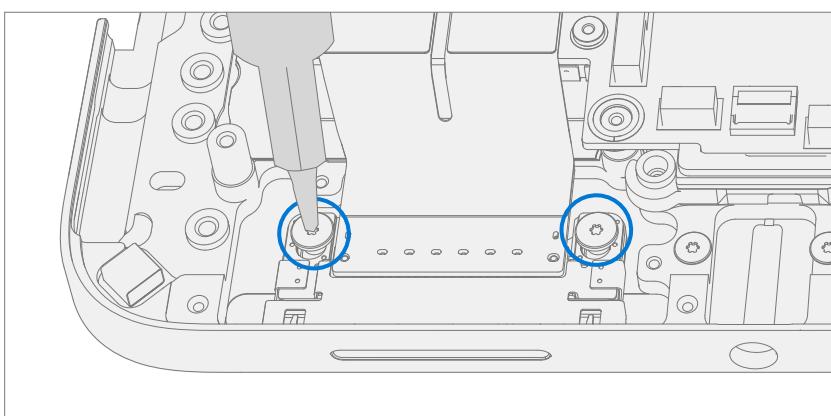
1. **Remove Left I/O Bracket** – Using a 3IP (Torx-Plus) driver remove the 3 screws securing the left I/O Bracket to the C-Cover. Remove the Left I/O Bracket.



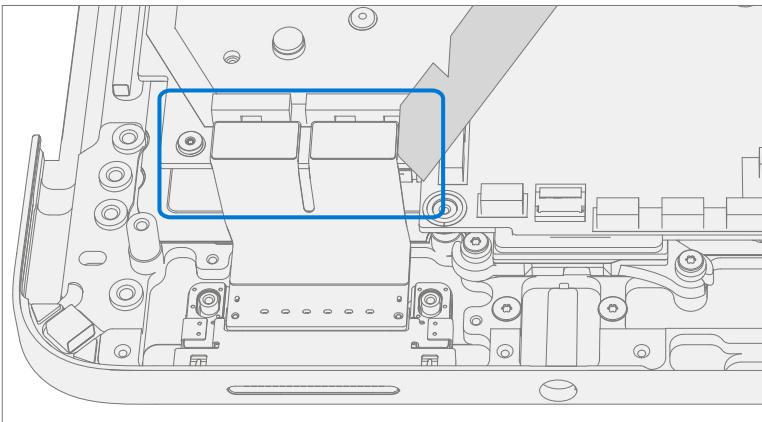
2. **Remove Surflink FPC Retainer** – Using a 3IP (Torx-Plus) driver remove the 2 screws securing the Surflink FPC retainer to the PCBA. Remove the cable retainer.



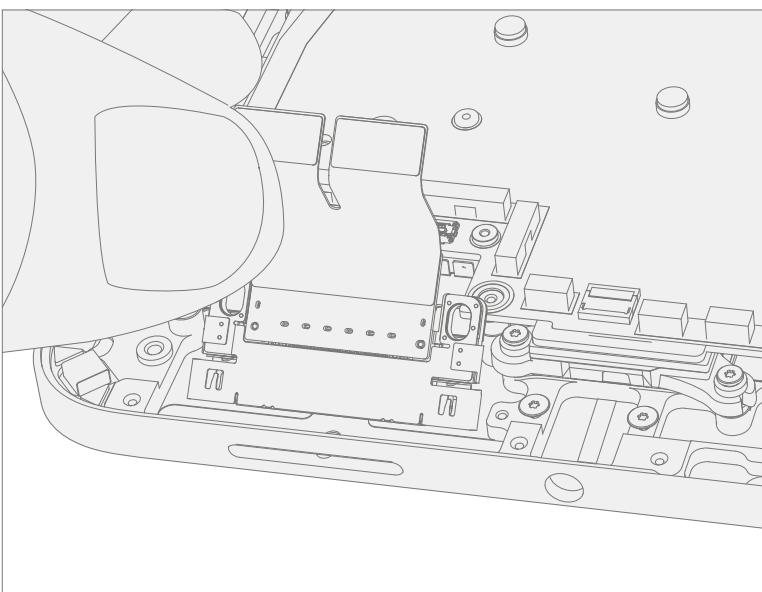
3. **Remove Surflink Port Screws** – Using a 3IP (Torx-Plus) driver remove the 2 screws securing the Surflink Port to the C-Cover.



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

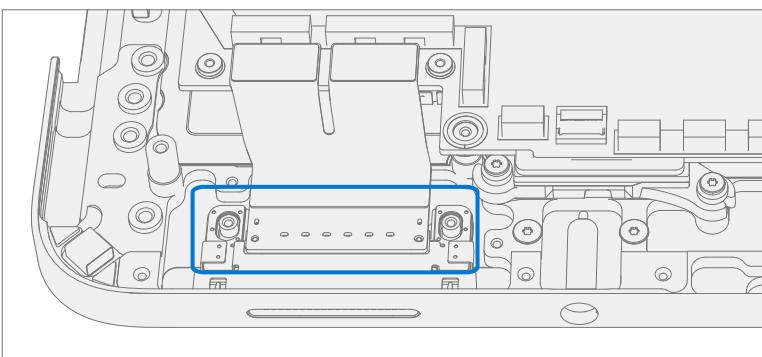


5. **Remove Surflink Port** – Remove the Surflink Port from the C-Cover.

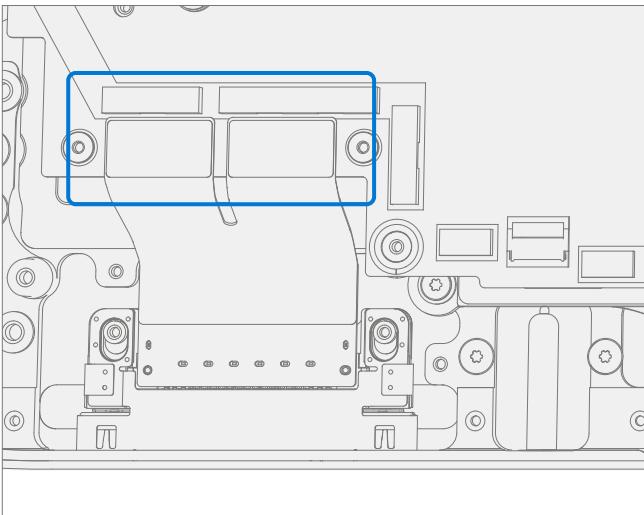


Procedure – Installation Surflink Port

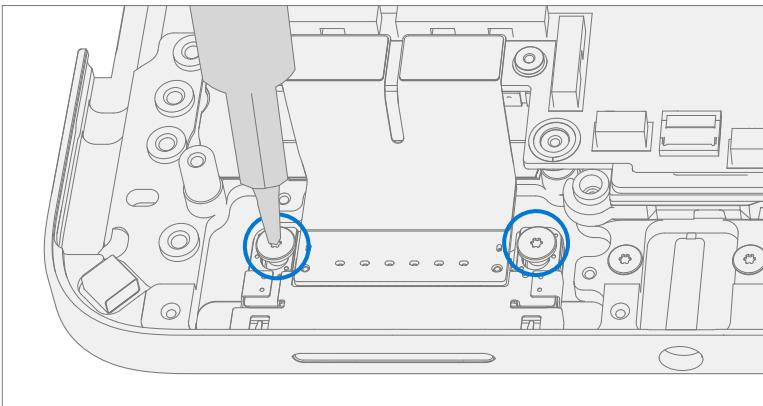
1. **Install Surflink Port** – Place the Surflink Port into the C-Cover. Ensure the C-Cover posts nest into the Surflink Port slots.



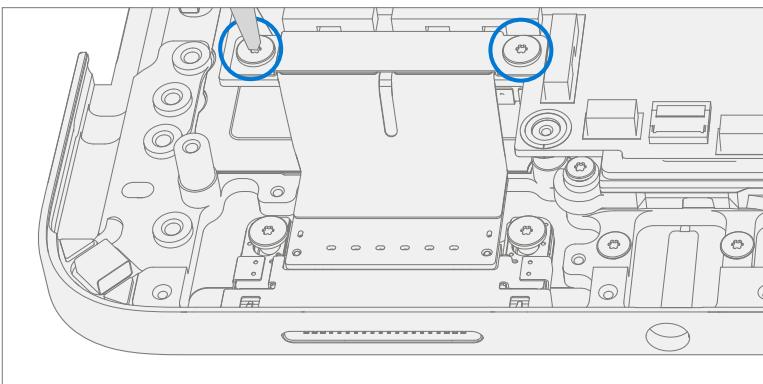
2. **Connect Surflink FPCs** – Align the FPC's connectors to the PCBA and press down.



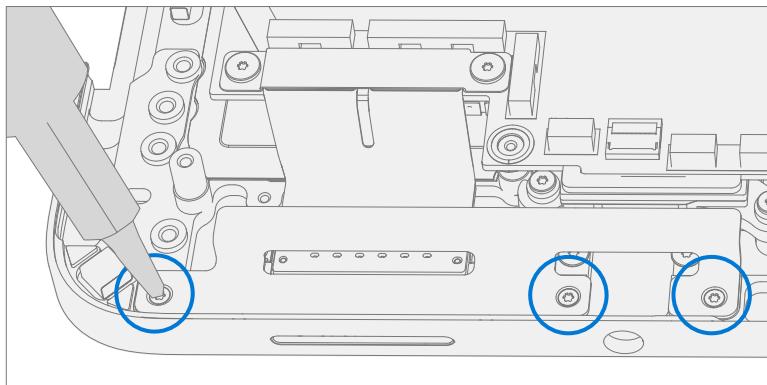
3. **Install new Surflink Port screws** – Using a 3IP (Torx-Plus) driver install 2 new M1149393 screws. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



4. **Install Surflink FPC Retainer** – Place the FPC retainer over the Surflink 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 24](#)).

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 24](#)).
10. **Install New Cosmetic Plate** – If no further repairs are required install the Cosmetic Plate as detailed on ([page 18](#)).
11. **Install Feet** – Refer to Feet installation on ([page 15](#)) 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](#))

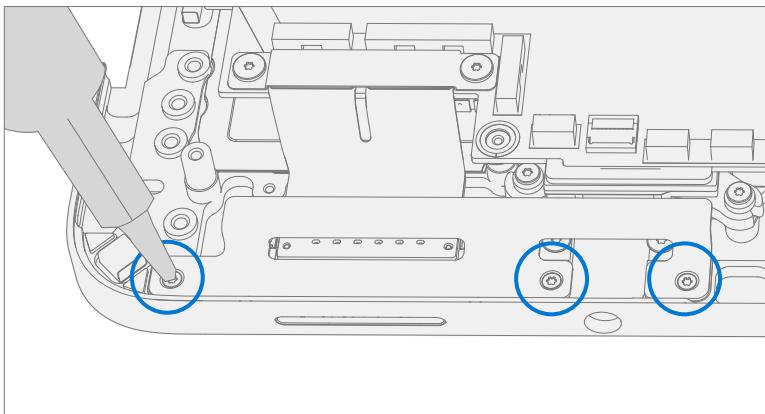
Prerequisite Steps:

- **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 13](#)) 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 14](#)) for details.
- **Remove Cosmetic Plate** – Refer to Cosmetic Plate removal on ([page 17](#)) for details.
- **Remove D-Bucket** – Refer to D-Bucket + Battery removal on ([page 21](#)) for details.

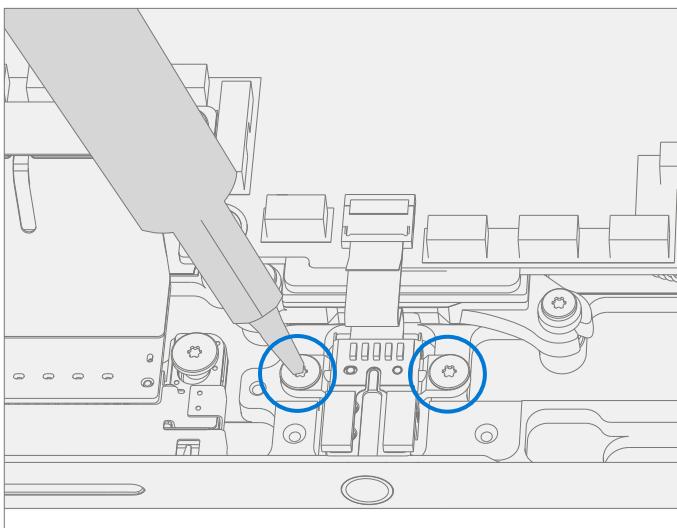


Procedure – Removal Audio Jack

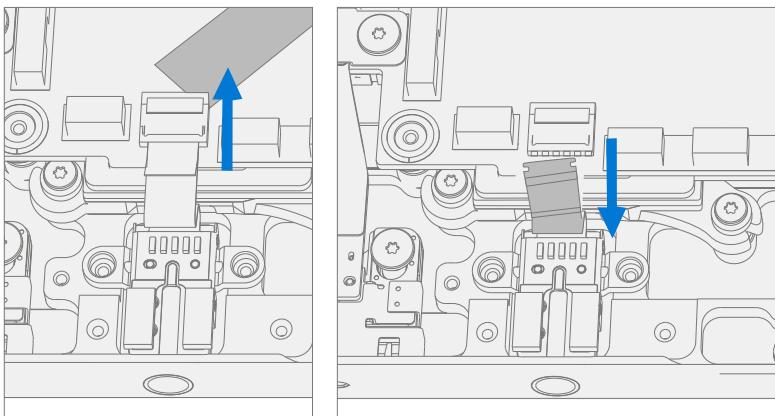
1. **Remove Left I/O Bracket** – Using a 3IP (Torx-Plus) driver remove the 3 screws securing the left I/O Bracket to the C-Cover. Remove the Left I/O Bracket.



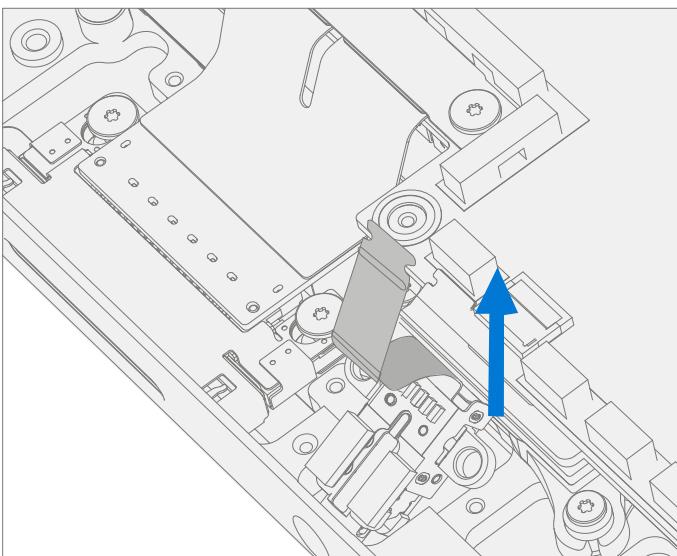
2. **Remove Audio Jack Screws** – Using a 3IP (Torx-Plus) driver remove the 2 screws securing the audio jack to the C-Cover.



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

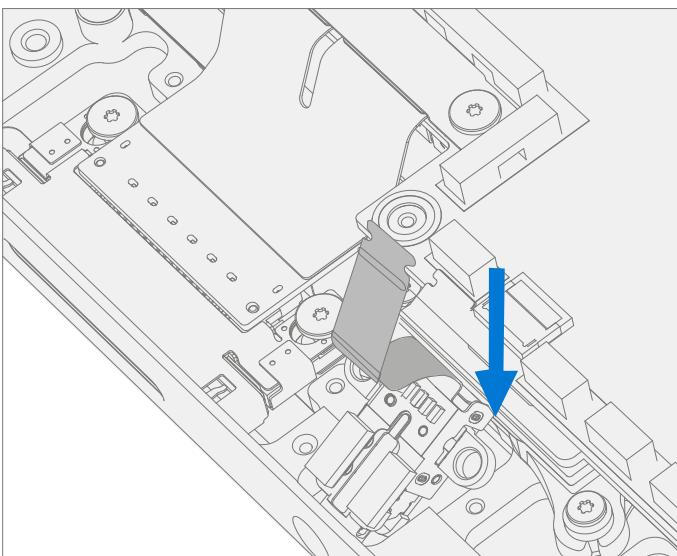


4. **Remove Audio Jack** – Remove the audio jack from the C-Cover by pulling up on the side with the FPC. Carefully move the Audio Jack from side to side during removal.

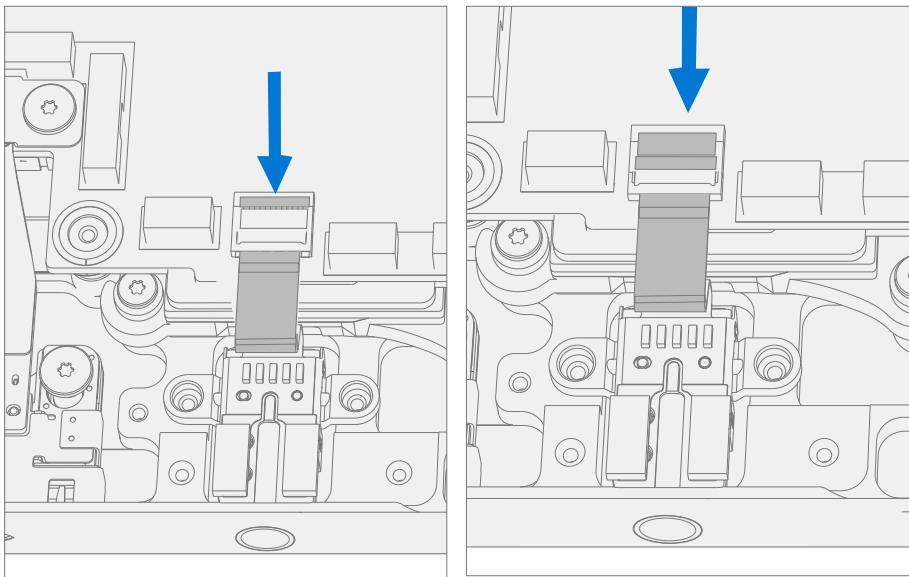


Procedure – Installation Audio Jack

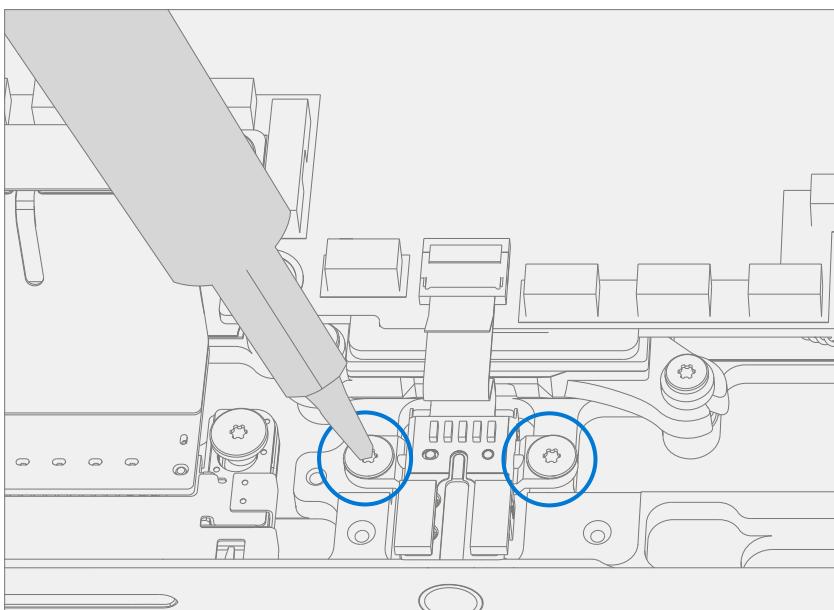
1. **Install Audio Jack** – Place the open end of the audio jack into the hole in the C-Cover. Carefully move the Audio Jack from side to side during installation.



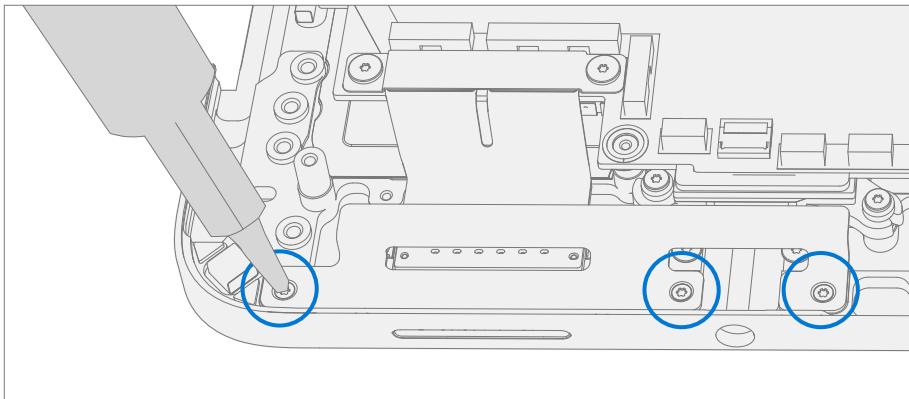
2. **Connect Audio Jack FPC** – Ensure the lock is released on the Audio Jack FPC connector. Install the Audio Jack FPC into the PCBA connector. Secure the connector lock.



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 [\(page 24\)](#).

 **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 [\(page 24\)](#).
9. **Install New Cosmetic Plate** – If no further repairs are required install the Cosmetic Plate as detailed on [\(page 18\)](#).
10. **Install Feet** – Refer to Feet installation on [\(page 15\)](#) 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](#))

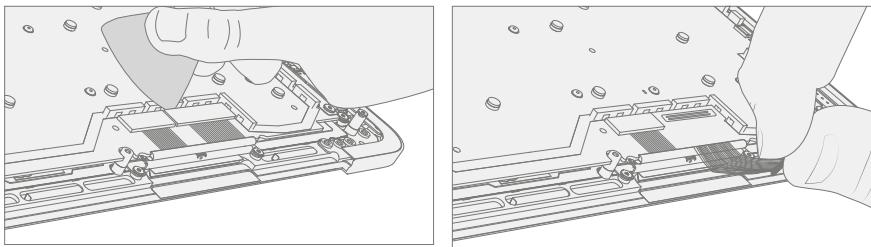
Prerequisite Steps:

- **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 13](#)) 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 14](#)) for details.
- **Remove Cosmetic Plate** – Refer to Cosmetic Plate removal on ([page 17](#)) for details.
- **Remove D-Bucket** – Refer to D-Bucket + Battery removal on ([page 21](#)) for details.



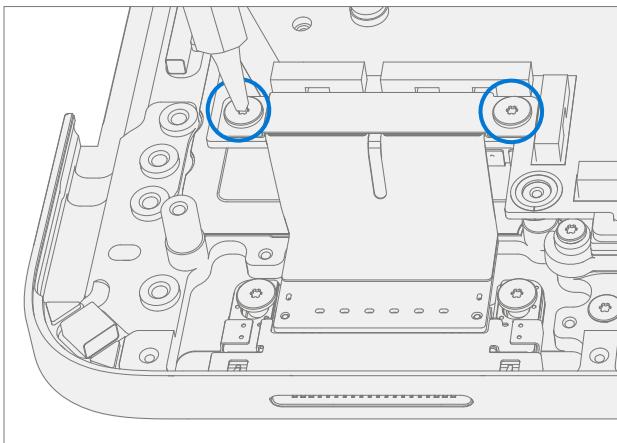
Procedure – Removal USB-C

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.

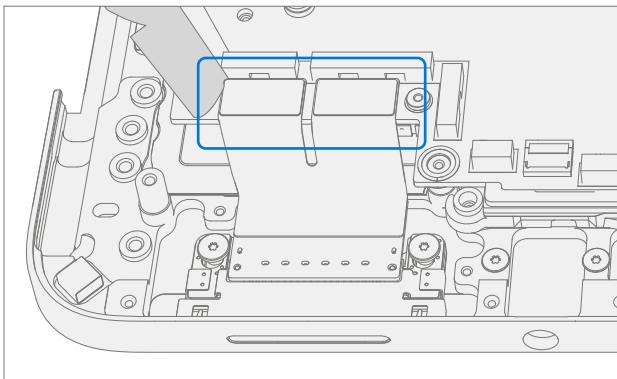


! CAUTION: The nearby foams are very delicate. Take care to not damage or remove them.

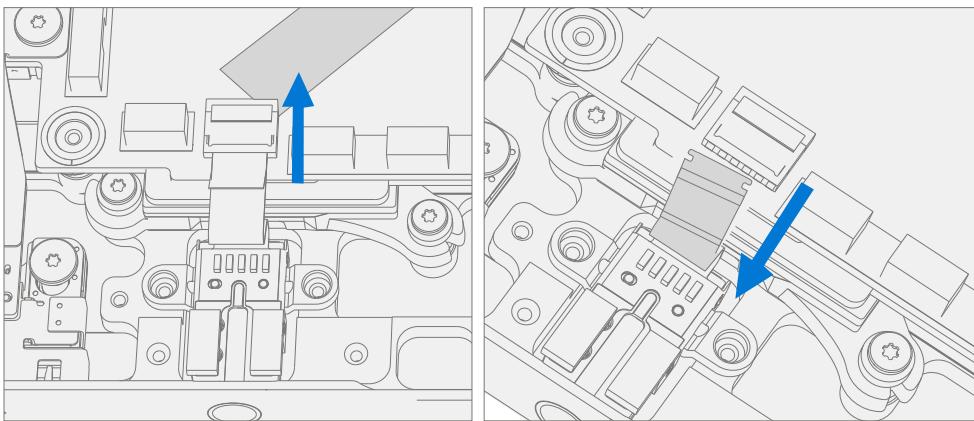
2. **Remove Surflink FPC Retainer** – Using a 3IP (Torx-Plus) driver remove the 2 screws securing the Surflink FPC retainer to the PCBA. Remove the FPC retainer.



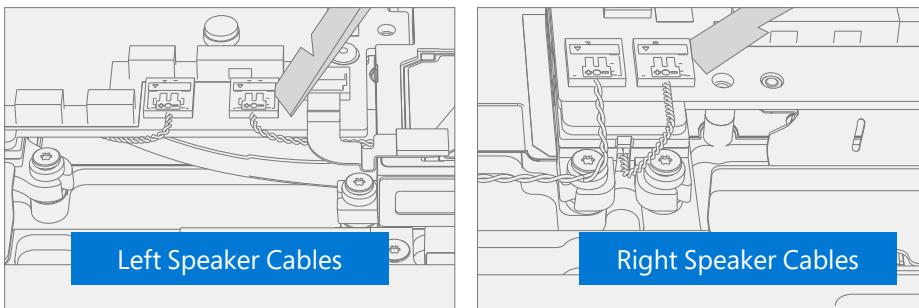
3. **Disconnect Surflink FPCs** – Using a plastic tool disconnect the Surflink FPCs from the PCBA.



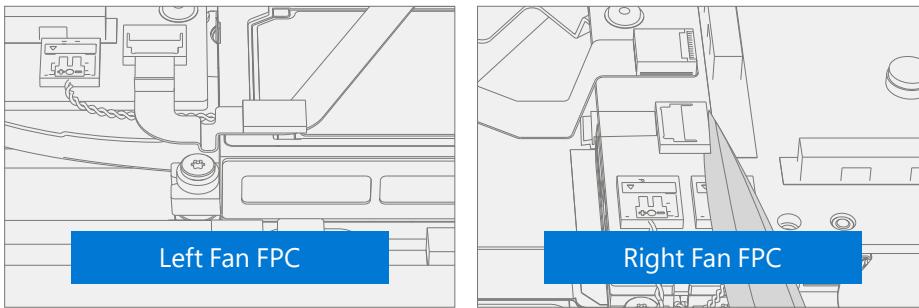
4. **Disconnect Audio Jack FPC** – Release the lock on the Audio Jack FPC connector. Remove the Audio Jack FPC from the PCBA connector.



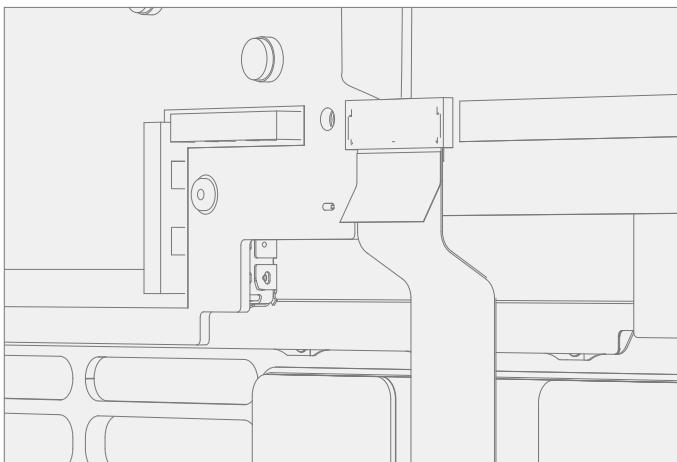
5. **Disconnect 4 Speaker Cables** – Using a plastic tool carefully release the 4 speaker connectors from the PCBA.



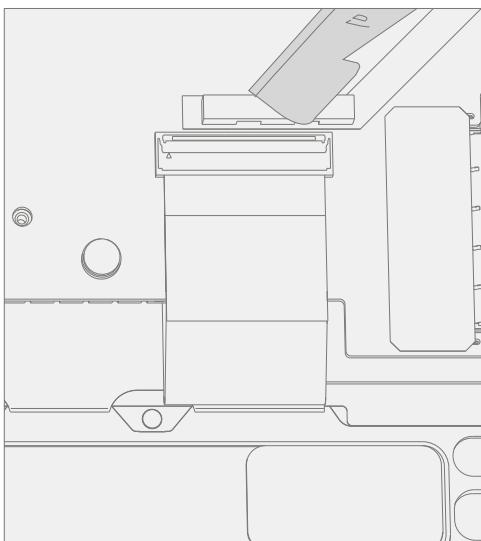
6. **Disconnect Fan FPCs** – Release the locks on the left and right Fan FPC connectors. Remove the left and right Fan FPCs from the PCBA connectors.



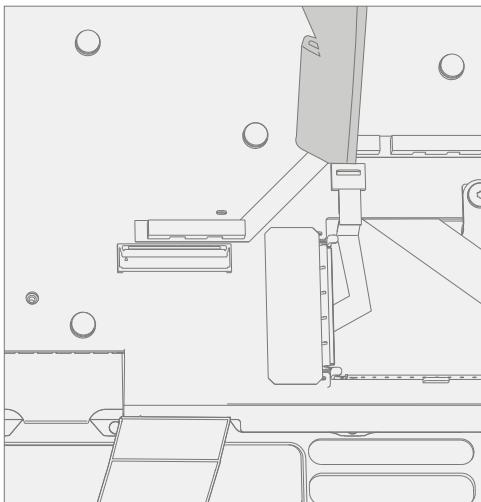
7. **Disconnect Trackpad FPC** – Release the lock on the Trackpad FPC connector. Remove the Trackpad FPC from the PCBA connector.



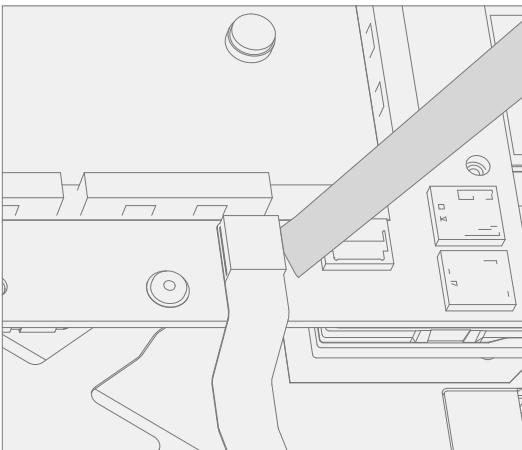
8. **Disconnect Keyset FPC** – Release the lock on the Keyset FPC connector. Remove the Keyset FPC from the PCBA connector.



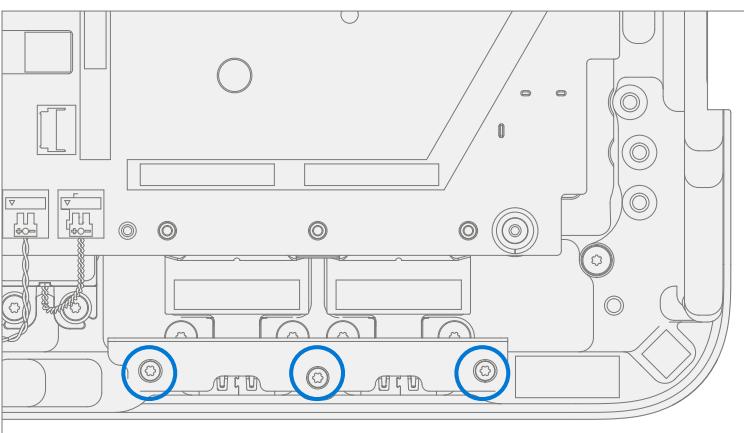
9. **Disconnect Keyset Backlight FPC** – Release the lock on the Keyset Backlight FPC connector. Remove the Keyset Backlight FPC from the PCBA connector.



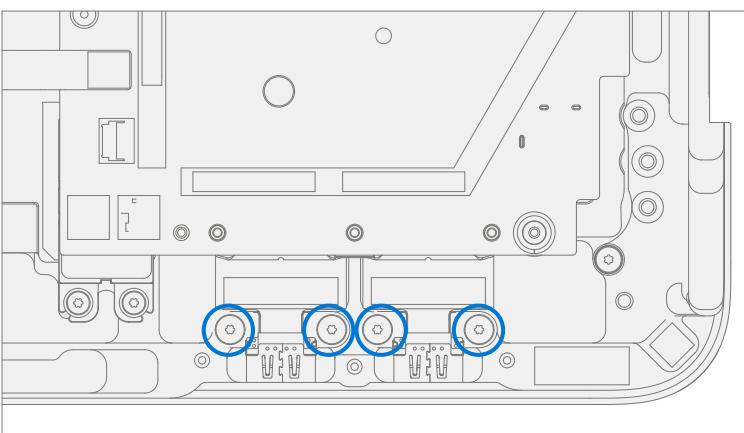
10. **Disconnect Wireless Pen Charger FPC** – Using a plastic tool carefully release the Wireless Pen Charger from the PCBA connector.



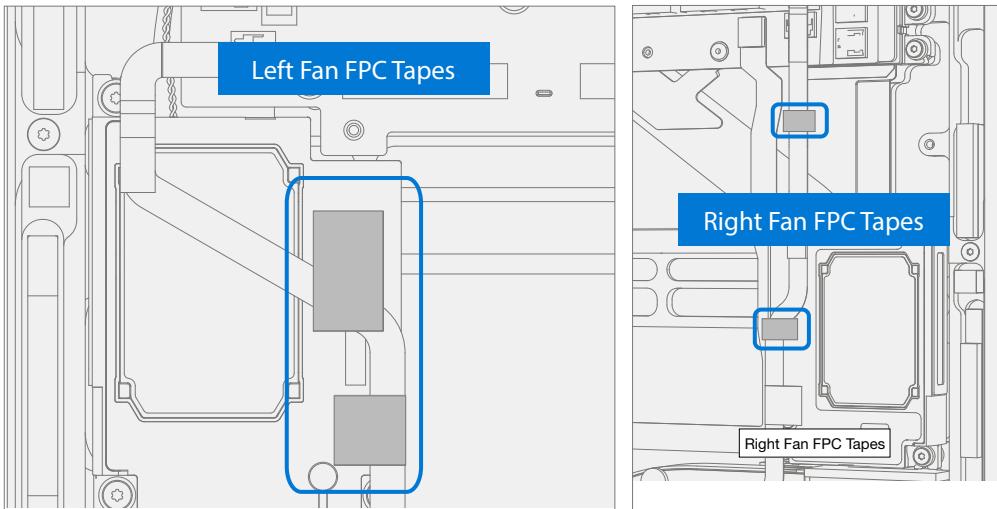
11. **Remove Right I/O Bracket** – Using a 3IP (Torx-Plus) driver remove the 3 screws securing the Right I/O Bracket to the C-Cover. Remove the Right I/O Bracket.



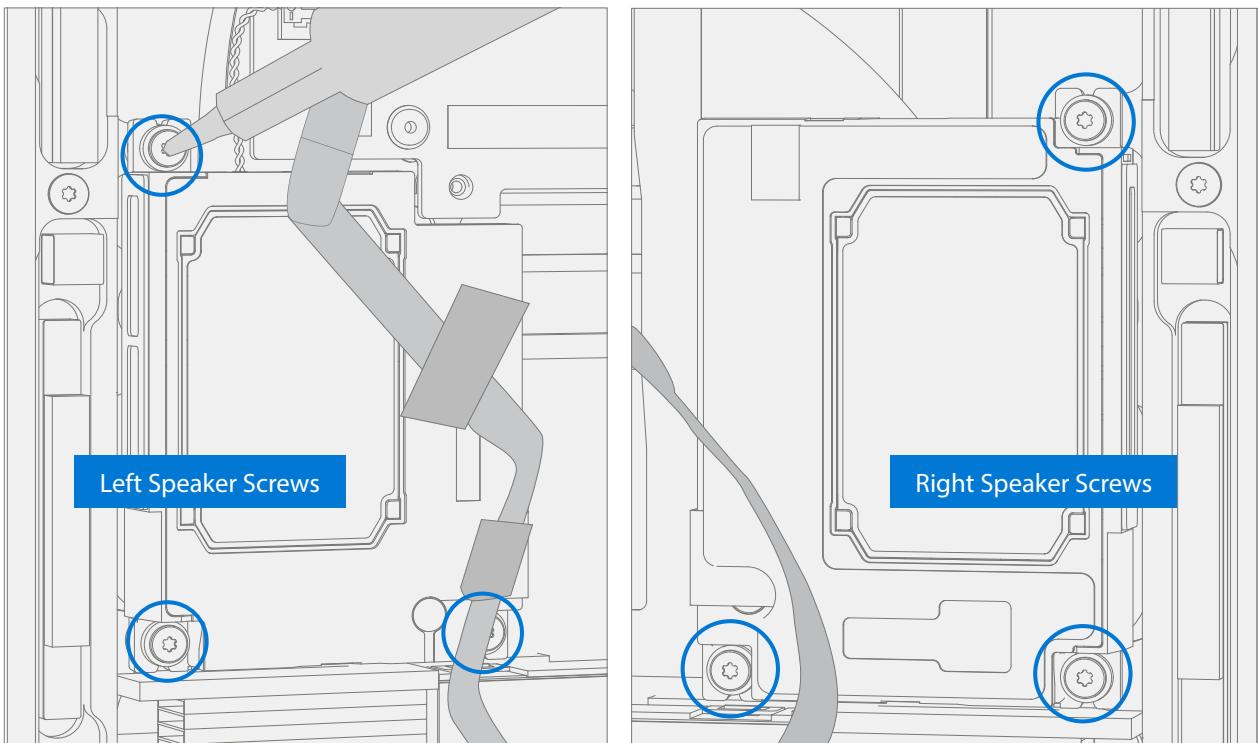
12. **Remove USB-C Screws** – Using a 3IP (Torx-Plus) driver remove the 4 screws securing the USB-C connectors to the C-Cover.



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

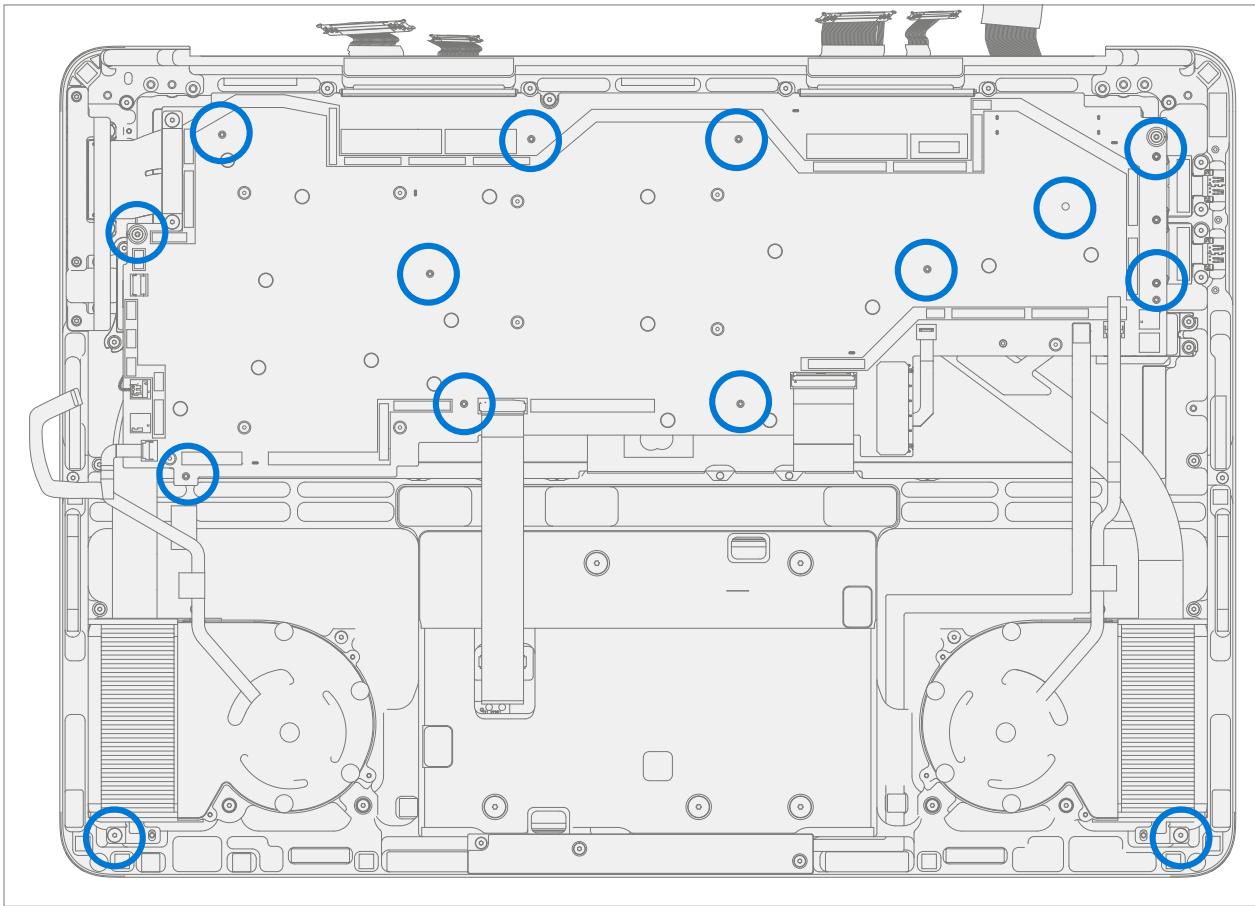


14. **Remove Left and Right Speakers** – Using a 3IP (Torx-Plus) driver remove the 3 screws securing the left speaker, and 3 screws securing the right speaker to the C-Cover. Remove the speakers.

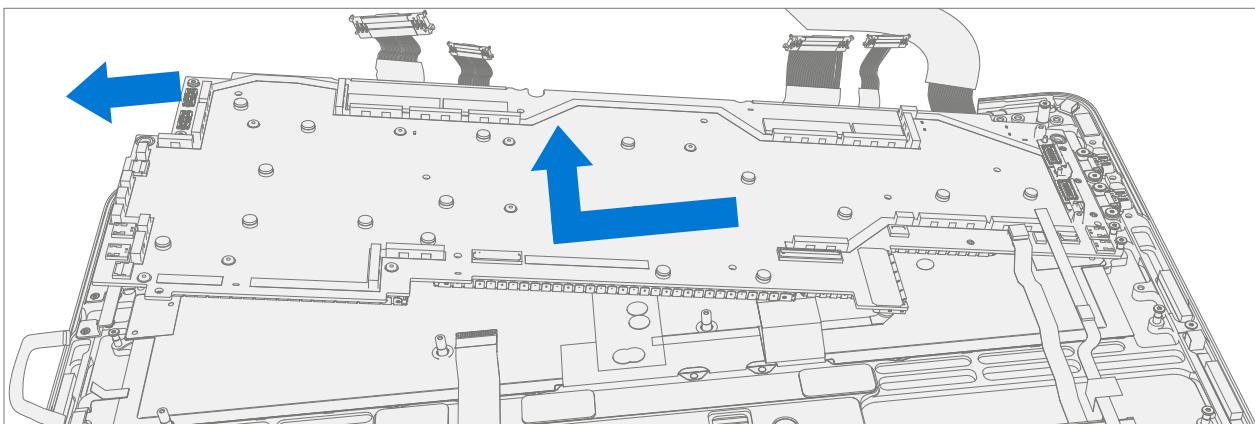


15. Remove PCBA Screws –

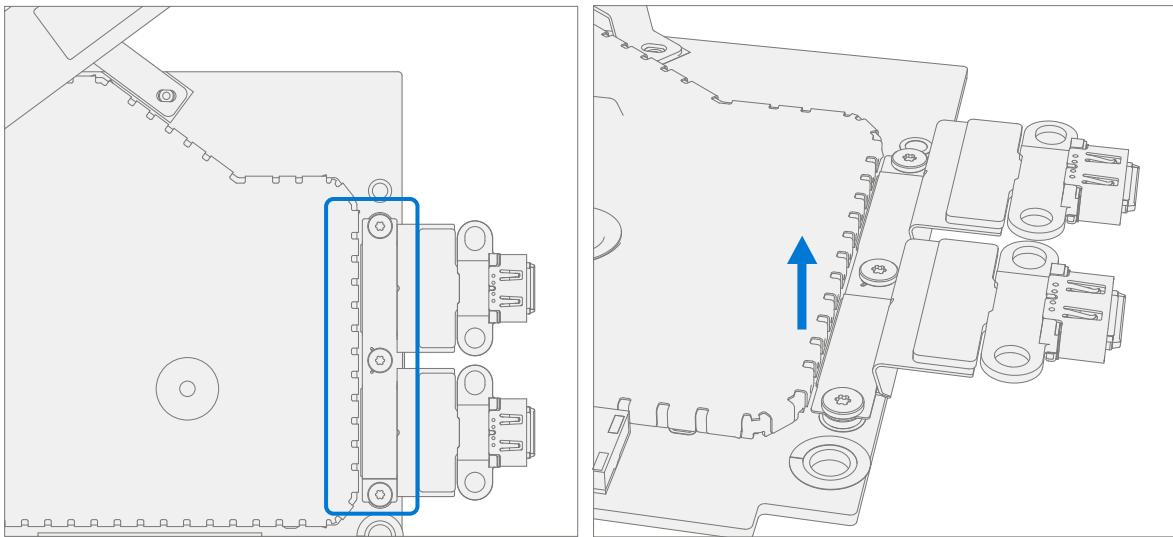
- a. Using a 3IP (Torx-Plus) driver remove the 2 screws securing the thermal module to the C-Cover.
- b. Using a 3IP (Torx-Plus) driver remove the 12 screws securing the PCBA to the C-Cover.



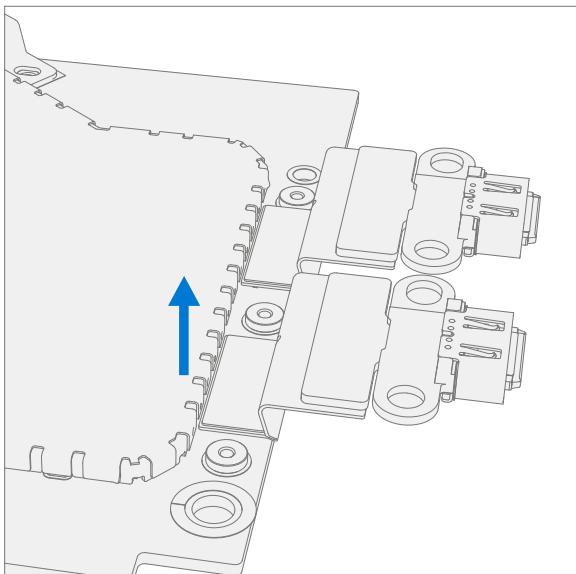
16. Remove PCBA – Start by holding the SL connector cable out of the way and slightly pick up the left side of the PCBA. Rotate the PCBA up and out. Ensure the USB-C connectors separate from the C-Cover.



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.

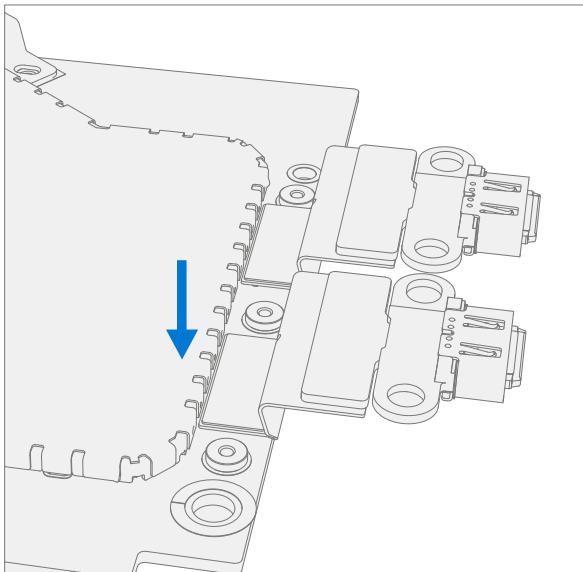


18. **Disconnect USB-C FPCs** – Using a plastic tool disconnect each USB-C FPC from the PCBA.

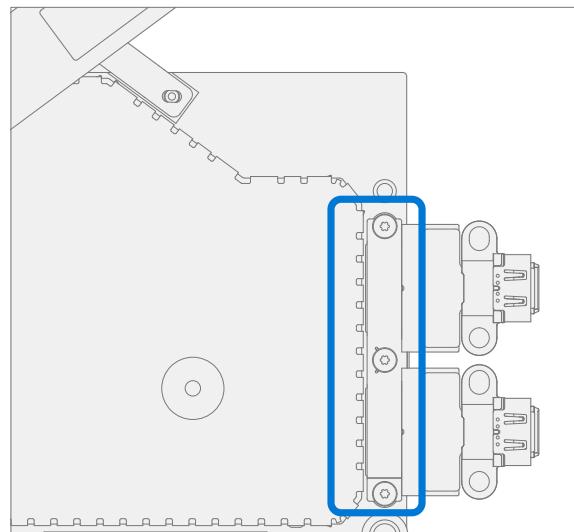
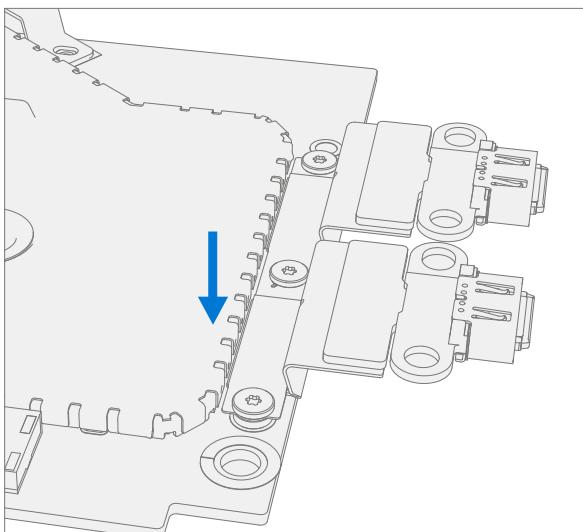


Procedure – Installation USB-C

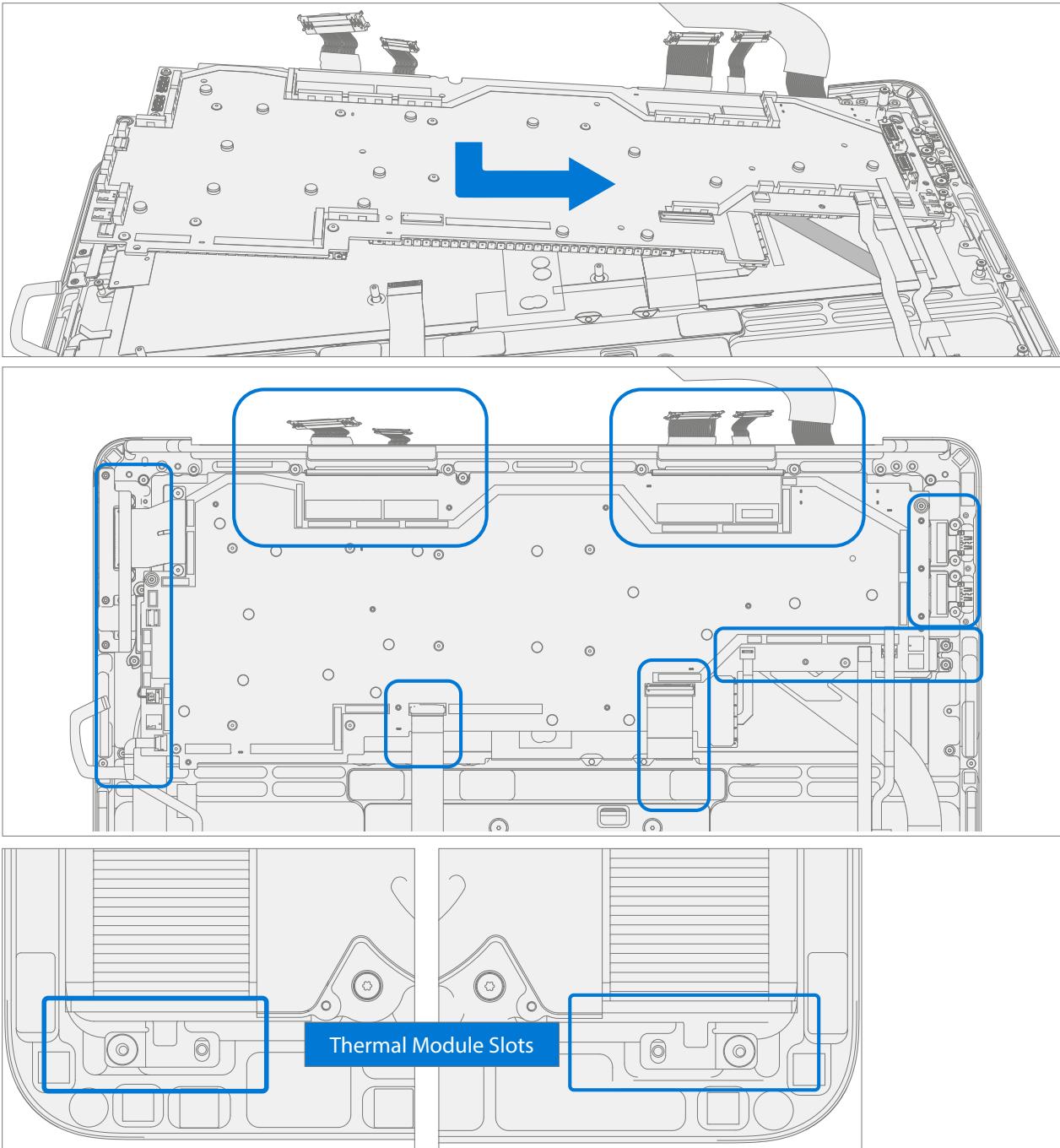
1. **Connect new USB-C FPC** – Align the FPC's connectors to the PCBA and press down.



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.



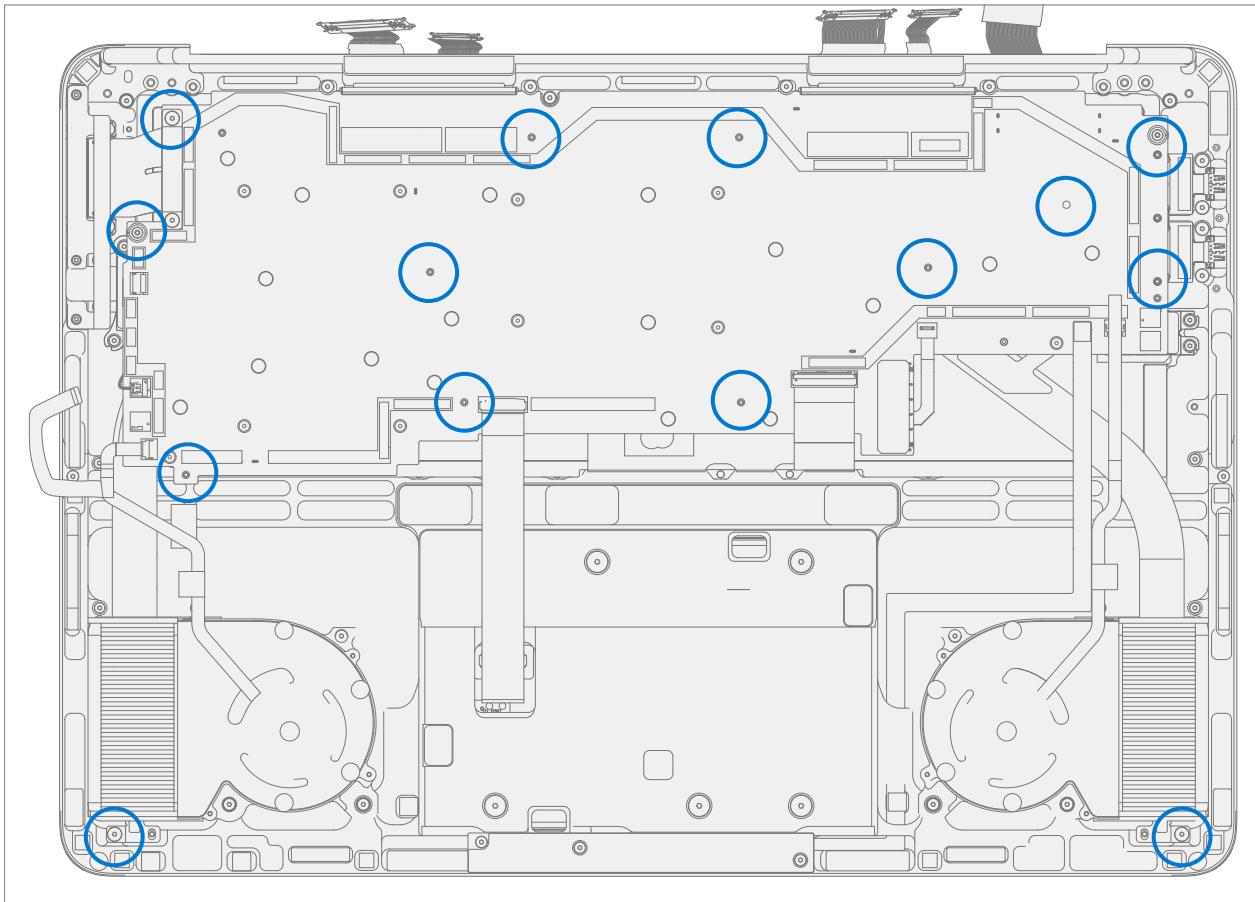
3. **Install PCBA** – Install the right side of the PCBA down and into the C-Cover. Ensure the USB-C connectors are aligned into the C-Cover. Lower the left side of the PCBA into the C-Cover while holding the Surflink FPC out of the way.



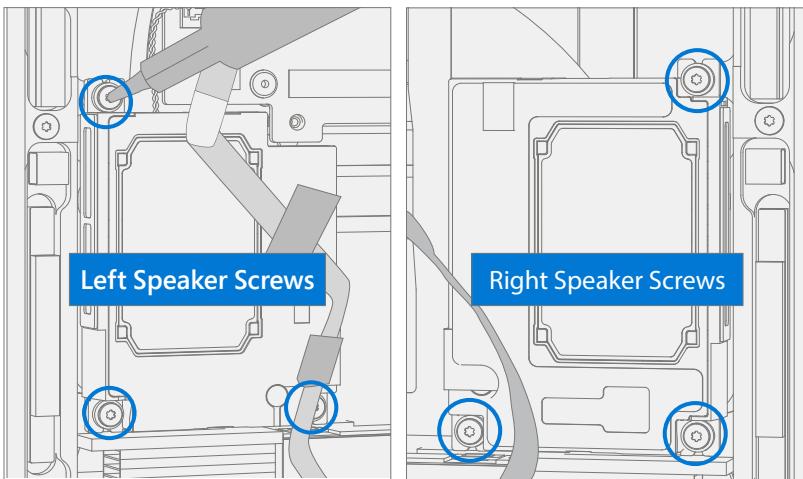
! **CAUTION:** Verify the 15 cables and FPC's are not captured under the PCBA. The Fan and Wireless Pen Charger FPCs route over the thermal heat pipe. Ensure the thermal module slots align over the posts in the C-Cover.



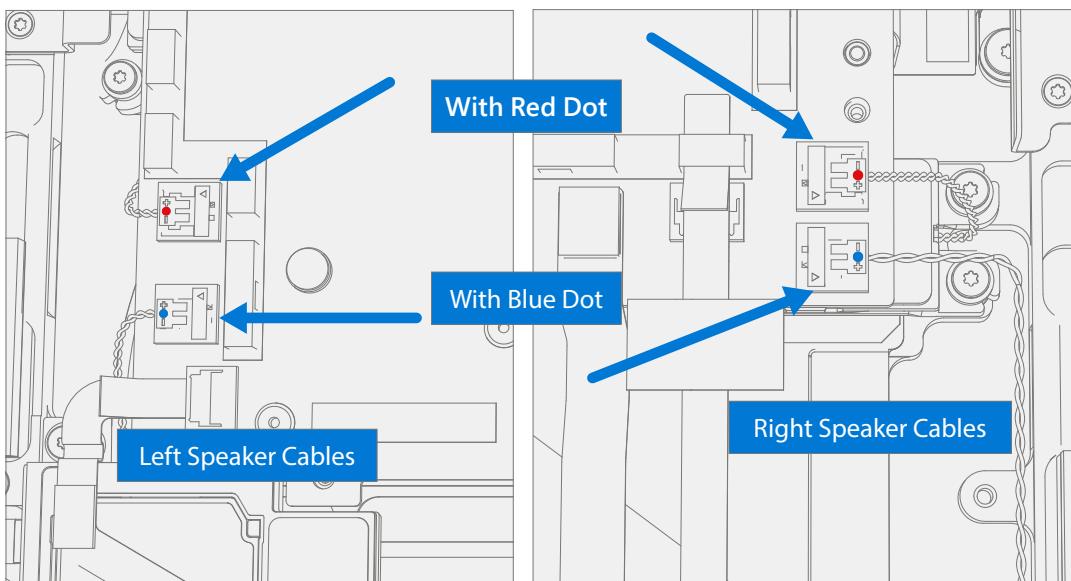
4. **Install PCBA Screws** – Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.
 - a. Using a 3IP (Torx-Plus) driver install 2 new M1149393 screws in the thermal module.
 - b. Using a 3IP (Torx-Plus) driver install 12 new M1184901 screws in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



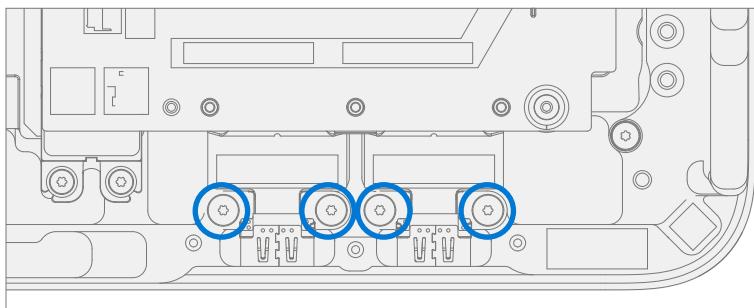
5. **Install Left and Right Speakers** – Place the left and right speakers into the C-Cover. Using a 3IP (Torx-Plus) driver install 3 new M1202147 screws in the left speaker, and 3 new M1202147 screws in the right speaker. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8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



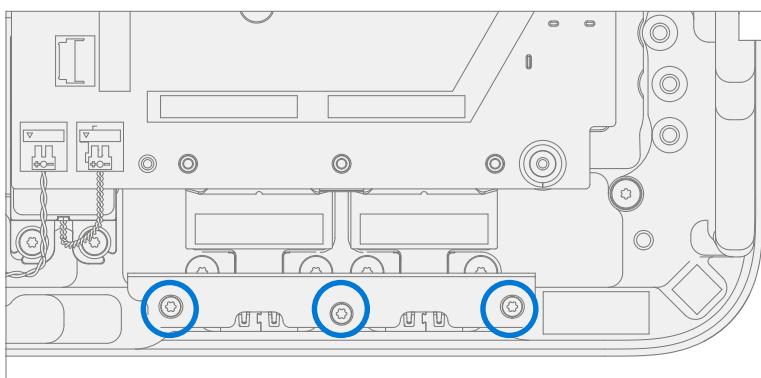
6. **Connect 4 Speaker Cables** – Align the left and right Speaker Cable connectors to the PCBA and press down. Ensure the cables do not overlap and are routed as pictured below.



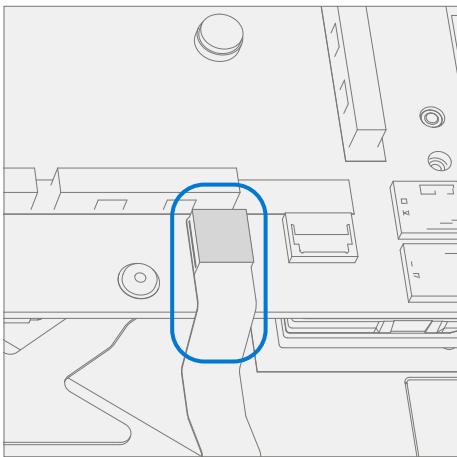
7. **Install USB-C Screws** – Using a 3IP (Torx-Plus) driver install 4 new M1156309 screws securing the USB-C connectors to the C-Cover. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



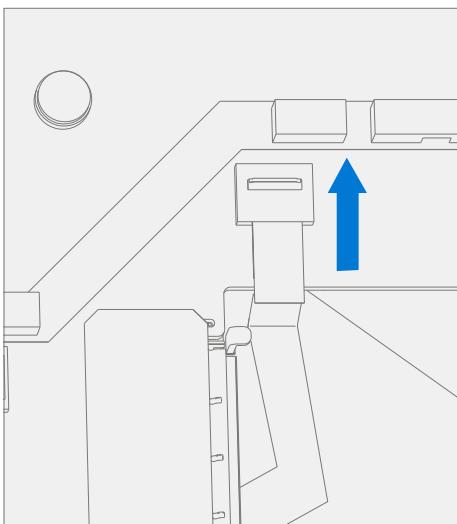
8. **Install Right I/O Bracket** – Place the Right I/O bracket onto the C-Cover. Using a 3IP (Torx-Plus) driver install 3 new M1109237 screws. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



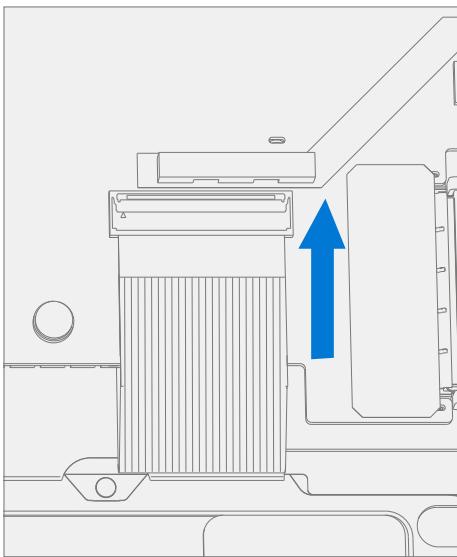
9. **Connect Wireless Pen Charger FPC** – Align the FPC's connector to the PCBA and press down.



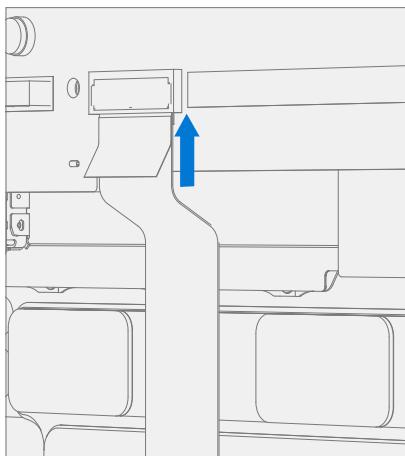
10. **Connect Keyset Backlight FPC** – Ensure the lock is released on the Keyset Backlight FPC connector. Install the Keyset Backlight FPC into the PCBA connector. Secure the connector lock.



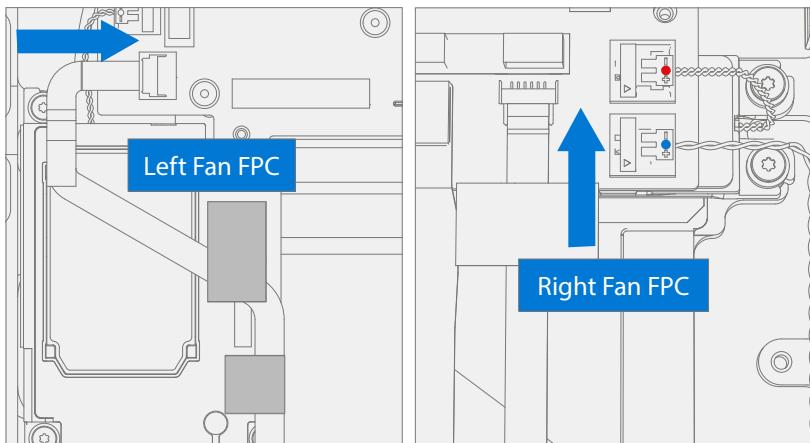
11. **Connect Keyset FPC** – Ensure the lock is released on the Keyset FPC connector. Install the Keyset FPC into the PCBA connector. Secure the connector lock.



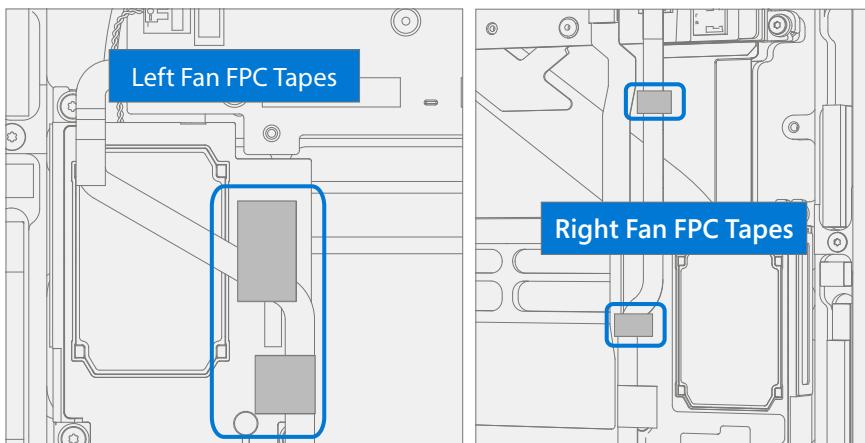
12. **Connect Trackpad FPC** – Ensure the lock is released on the Trackpad FPC connector. Install the Trackpad FPC into the PCBA connector. Secure the connector lock.



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.



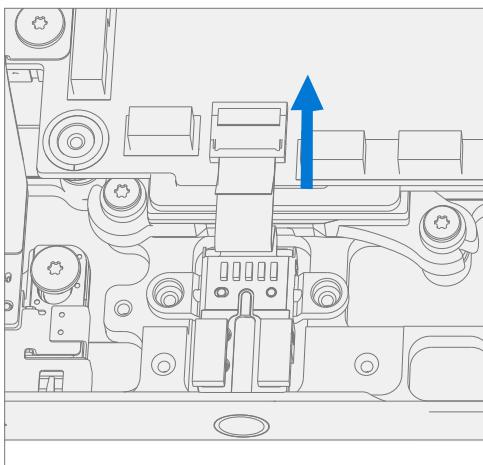
14. **Install New Fan FPC Tapes** – Refer to the picture below for tape locations. Apply 2 black tapes to the left Fan FPC securing it to the left speaker. Apply 1 black tape on the right Fan FPC securing it to the right speaker. Apply 1 black tape on the right Fan FPC securing it to the C-Cover.



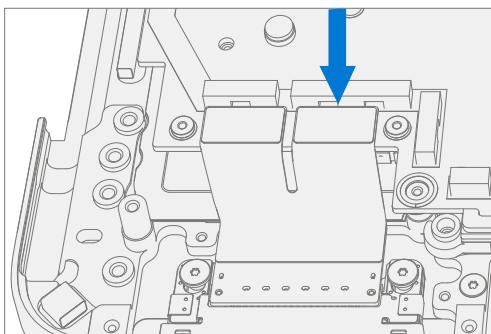
! CAUTION: Do not place tapes on the silver metallic areas of the speaker housings.



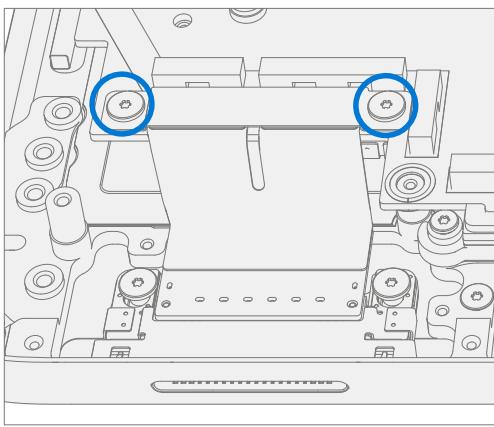
15. **Connect Audio Jack FPC** – Ensure the lock is released on the Audio Jack FPC connector. Install the Audio Jack FPC into the PCBA connector. Secure the connector lock.



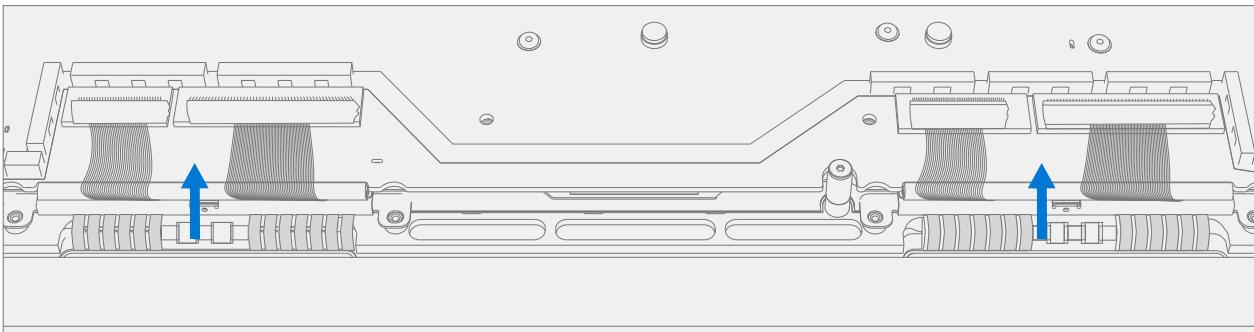
16. **Connect Surflink FPCs** – Align the FPC's connectors to the PCBA and press down.



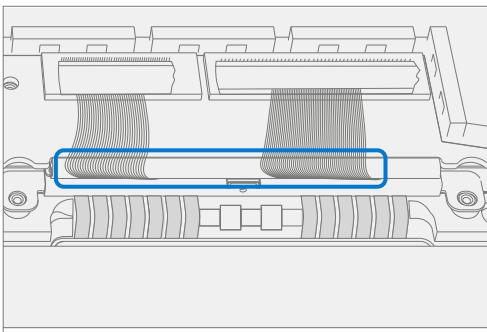
17. **Install Surflink FPC Retainer** – Place the FPC retainer over the Surflink FPCs. Using a 3IP (Torx-Plus) driver install 2 new M1149393 screws. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



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 24](#)).

 **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 24](#)).
22. **Install New Cosmetic Plate** – If no further repairs are required install the Cosmetic Plate as detailed on ([page 18](#)).
23. **Install Feet** – Refer to Feet installation on ([page 15](#)) 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 13](#)) 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 14](#)) for details.
- **Remove Cosmetic Plate** – Refer to Cosmetic Plate removal on ([page 17](#)) for details.
- **Remove D-Bucket** – Refer to D-Bucket + Battery removal on ([page 21](#)) for details.
- **Remove AB-Cover** – Refer to AB-Cover removal on ([page 32](#)) for details.

 **IMPORTANT:** The use of SDT TDM Replacement Mode is only required during AB-Cover replacements.

- **Remove Surflink Port** – Refer to Surflink Port removal on ([page 41](#)) for details.
- **Remove Audio Jack** – Refer to Audio Jack removal on ([page 46](#)) for details.

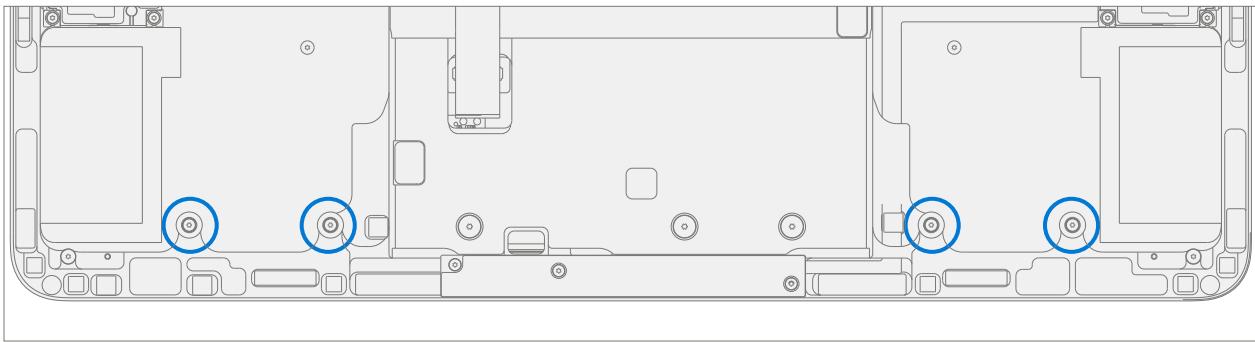
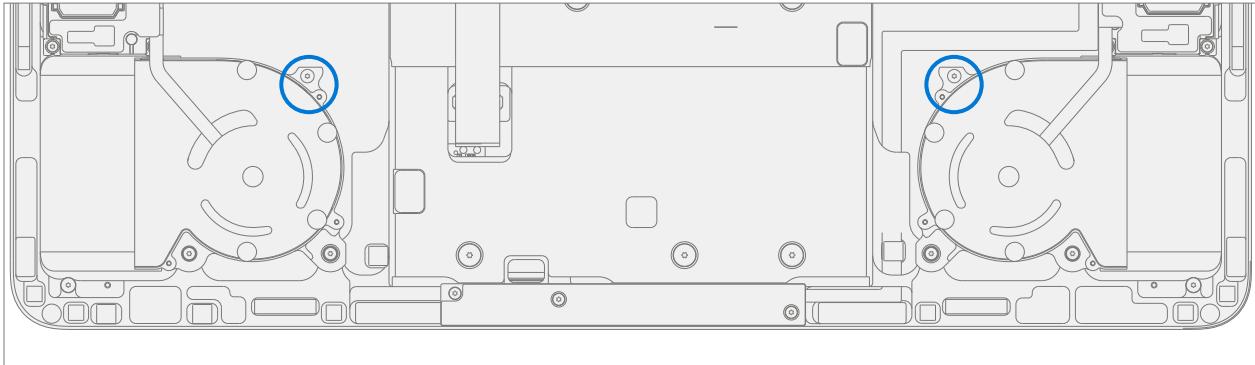


Procedure – Removal C-Cover Keyboard Assembly

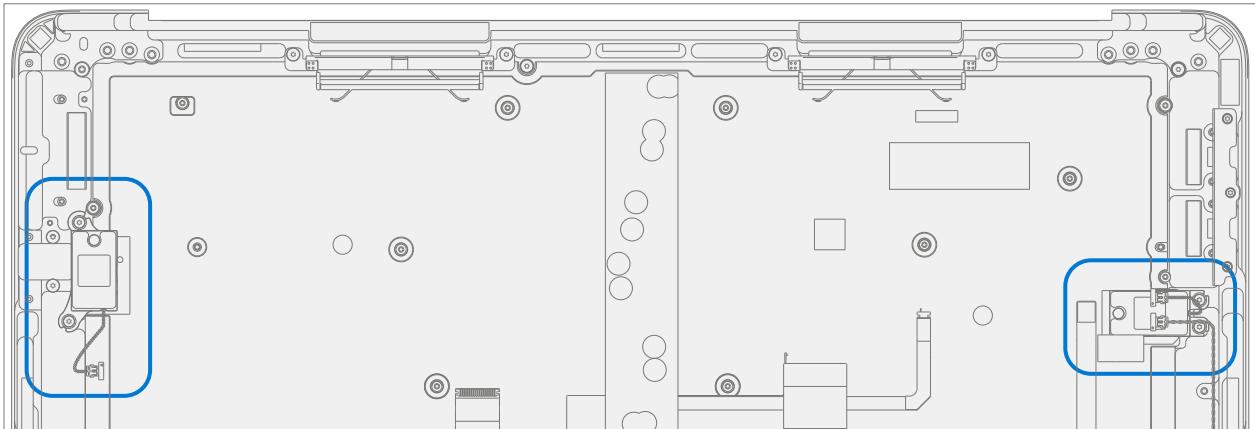
1. **Remove USB-C** – Refer to USB-C removal on ([page 51](#)) for details.

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.

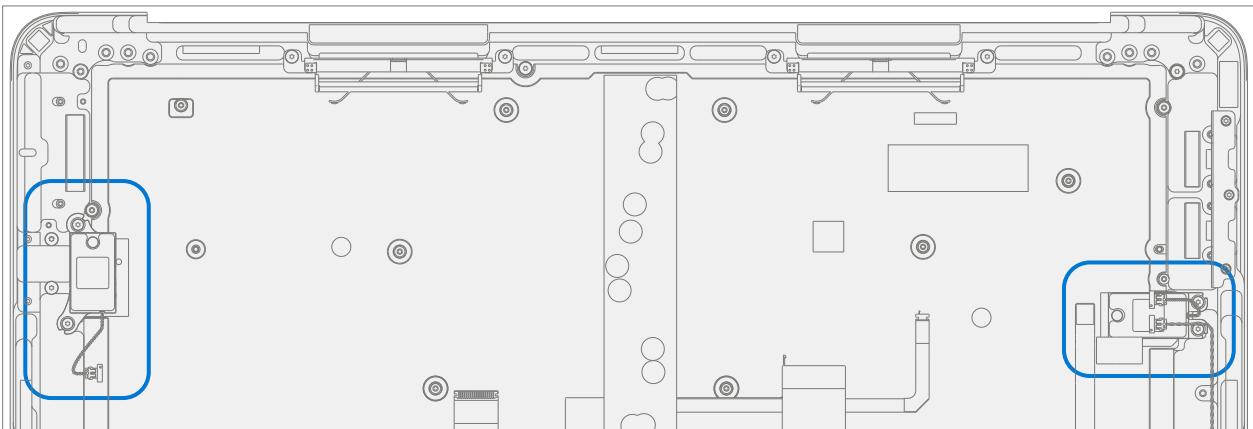


3. **Remove Tweeters** – Use 3IP screwdriver to remove the screws from the left and right tweeters. Remove the tweeters.

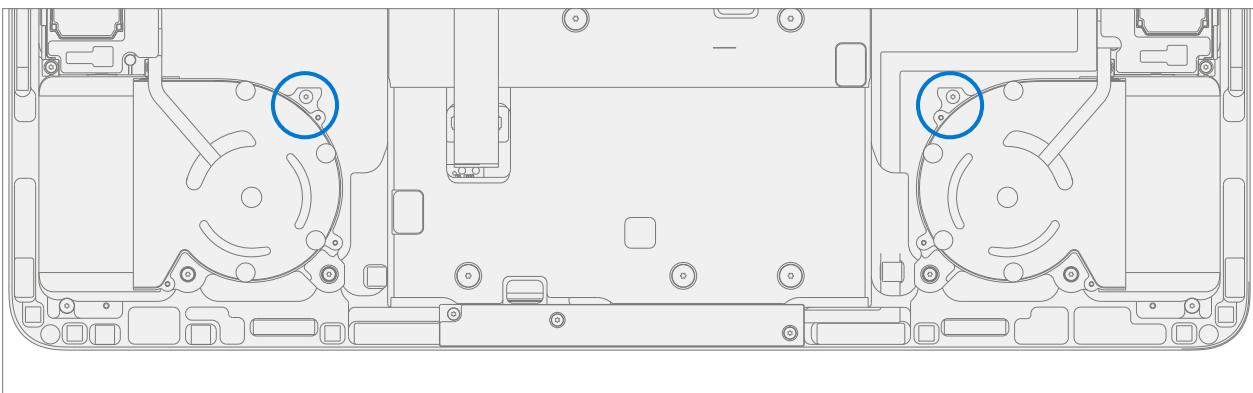
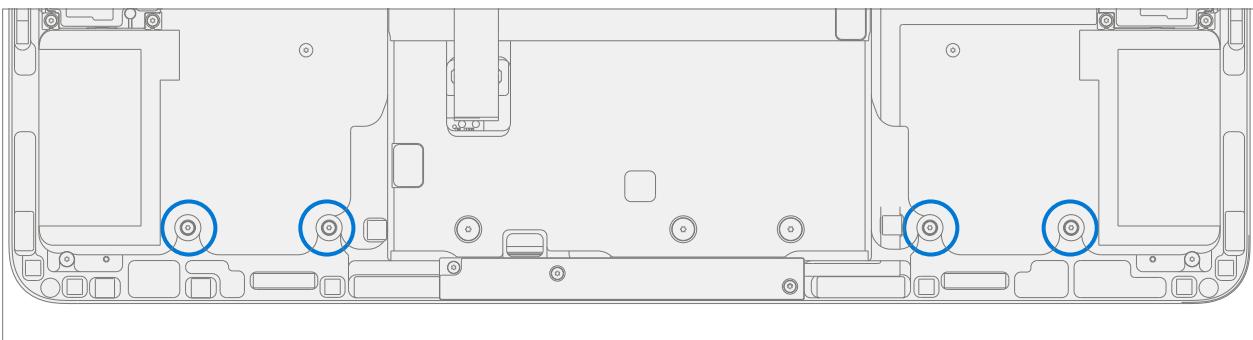


Procedure – Installation C-Cover Keyboard Assembly

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 58](#)) for details.
4. **Install Audio Jack** – Refer to Audio Jack installation on ([page 47](#)) for details.
5. **Install Surflink Port** – Refer to Surflink Port installation on ([page 42](#)) for details.



6. **Install AB-Cover** – Refer to AB-Cover installation on ([page 35](#)) for details.
 7. **Battery Installation** – Follow steps for D-Bucket reassembly on ([page 24](#)).
-
-  **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 24](#)).
 11. **Install New Cosmetic Plate** – If no further repairs are required install the Cosmetic Plate as detailed on ([page 18](#)).
 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

