



Surface Laptop Studio 2 Service Guide



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

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Document Part Number: M1288945



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Introduction

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

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

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

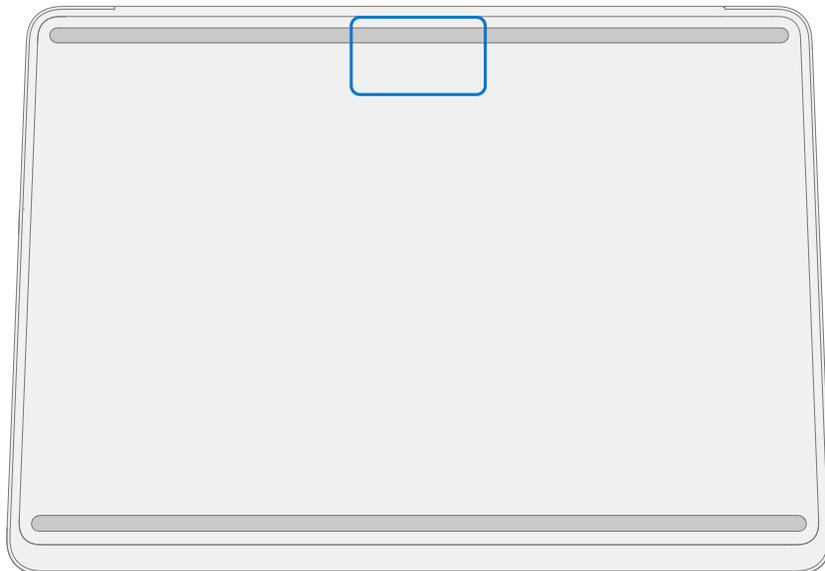
Device Identity Information

Surface Laptop Models

2029 – Surface Laptop Studio 2

Surface Support - Laptop with link: <https://support.microsoft.com/surface-laptop>.

The model and serial number for Surface Laptops are on the top center of the chassis.



Glossary of Terms

The following terms are used throughout this guide.

- **ASP** – Authorized Service Provider. Companies that have received clearance to repair or maintain a product that is still under warranty by Microsoft.
- **Back cover** or **chassis** – Device bottom case
- **BMR** – Bare Metal Recovery, refers to the process of installing a clean image.
- **Class B Fire Extinguisher** - A extinguisher designed to extinguish fires involving flammable liquids (Class B Fires.)
- **CRU** – Customer Replaceable Units are sub-system components such as the PCBA, and rSSD.
- **ESD** – Electro-Static Discharge
- **Feet** or **foot** – Non-Skid Foot Pads
- **FPC** – Flexible Printed Circuit Connections
- **FW** – Firmware
- **IPA** – Isopropyl Alcohol, should be used to clean adhesive from the device as detailed within process steps. Use 70% IPA in all cases.
- **Keyboard** – Keyboard/Trackpad Assembly.
- **LDI** – Liquid Damage Indicators, indicates if moisture has made its way into the device.
- **OS** – Operating System
- **PCBA** – Printed Circuit Board Assembly, usually refers to the motherboard.
- **PSA** – Pressure Sensitive Adhesive
- **PSU** – Power Supply Unit
- **rSSD** – Removable Solid-State Drive
- **SDT** – Surface Diagnostic Toolkit
- **SoC** – System-on-a-Chip, a microchip with several electronic circuits and parts in a single integrated circuit.
- **THM** – Thermal Module is an assembly which manages thermal regulation for the system.
- **TIM** – Thermal interface material used between the THM and PCBA



General Information, Precautions, Warnings

⚠ This symbol identifies important safety and health information in this manual.

📄 This symbol identifies important information in this manual.

Service Tools and Jigs

Microsoft Recommended Service Jigs

- ESD-safe Surface Battery Cover (M1214771-001)

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: [iFixit Opening Picks](#)
- Plastic Opening tool: [iFixit Plastic Opening Tool](#)
- Torx-Plus drivers IP3, IP6
- Metric plastic thickness gauges
- Non-metallic ruler
- Isopropyl alcohol dispenser bottle (use 70% IPA)
- 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 electronic device can present a risk of electric shock, fire, serious personal injury, death, damage to the device or other property, and/or other hazards. Exercise caution when undertaking the repair activities described in this Guide. The repair activities identified in this Guide should only be undertaken by technically inclined individuals with the knowledge, experience, and specialized tools required to repair Microsoft devices.
- Improper use or handling of devices or their batteries may result in fire or explosion. Only open the enclosure on a device as outlined in this Guide.
- Do not heat, puncture, mutilate, or dispose of devices or their batteries in fire. Do not leave or charge devices in direct sunlight or expose devices or their batteries to temperatures outside the recommended operating range of 0°C to 60°C/32°F to 140°F for an extended period. Doing so can result in battery failure, electric shock, fire, serious personal injury, death, and/or damage to the device or other property.
- We recommend wearing protective eyewear and gloves when disassembling/re-assembling a device.
- Clean your work surface regularly to remove debris and abrasive particles.
- While working on devices, avoid the use of clothing accessories such as bracelets or watches that can cause electrical shorts and/or damage the battery.
- As you remove each subassembly from the device, place the subassembly (and all accompanying screws) away from the work area to prevent damage to the device or to the subassembly.
- If battery damage (e.g., leaking, expansion, folds or other) is discovered during device repair or if the battery is impacted or damaged during replacement, **DO NOT** proceed. Refer to [Actions To Take In Thermal Event](#) under Handling Used, Damaged or Defective Lithium-Ion Batteries in this Guidebook or contact Microsoft directly for proper device disposition.

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



Repair-Specific Precautions and Warnings

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

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

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

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

⚠ WARNING: During all activities (excluding feet-only replacement) check to ensure that no loose articles are on the back cover or remain inside the device before reassembling it.

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

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

- Review the [Electro-Static Discharge \(ESD\) Prevention](#) and [Battery Safety](#) Sections of this Guide before beginning work.

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



Battery Safety

- This device contains a built-in, lithium-ion rechargeable battery. Battery safety is a significant concern when repairing a device.
- For optimum compatibility, performance, and product safety, we recommend using genuine Microsoft replacement parts. Use of non-Microsoft (non-genuine), incompatible, reused, or modified batteries; improper battery installation; improper handling or storage of batteries; and/or failure to follow the instructions in this Guide could cause battery overheating, expansion, venting, leaking, or a thermal event which could result in fire, serious personal injury, death, data loss, or damage to the device or other property damage.
- Before beginning device repair, ensure your workspace is free of flammable debris or materials, has adequate ventilation, and that you have a fire suppressant device (example: fire blanket, container of sand, Class B fire extinguisher) within easy reach or you are within 20 feet of a fireproof enclosure. Fireproof enclosures should be kept free of combustible or flammable materials.

⚠ WARNING: It is recommended that an ESD-safe battery cover be placed across the device to protect the battery from any physical contact or accidental damage whenever display is removed for internal repairs. Ensure corners of cover are always aligned with the corners of the device while battery is exposed. If battery cover is misaligned during activities in any way, re-align before continuing work.

- Use personal protective equipment (PPE) when handling damaged, venting, or hot battery packs.
- Use the following best practices when handling batteries:
 - Always fully discharge batteries by running an application such as video playback with the device unplugged. If the device does not function while unplugged, you may leave out this step.
 - Do not puncture, impact, strike, bend, or crush the battery or a device containing a battery.
 - Keep your workspace clear of debris, extra tools, and sharp objects.
 - Exercise caution when using sharp tools near the battery to avoid impacting or poking the battery.
 - Don't leave loose screws or small parts inside the device.
 - Avoid using tools that conduct electricity.
 - Do not drop or throw a lithium-ion battery.
 - Do not expose the battery to excessive heat, sunlight, or temperatures outside the battery's normal operating range (0°C to 60°C) / (32°F to 140°F)
 - Ensure you handle, recycle, and/or dispose of used or damaged batteries in accordance with local laws and regulations. Follow Handling Used, Damaged or Defective Li-ion Batteries below.
- If device repair cannot be completed immediately and the device needs to be stored temporarily before restarting the repair
 - Select a storage location and process that follows the battery safety precautions in this Guide.
 - Avoid exposing the device to environmental conditions and objects that could damage the battery pack.
 - Reinspect the battery pack as outlined in this Guide prior to restarting repair and installing the new battery pack.



Battery Warning Label

⚠ 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>

Lithium-Ion Battery Inspection

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

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

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



Handling Used, Damaged, or Defective Lithium-Ion Batteries

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

⚠ WARNING: DO NOT SHIP DAMAGED OR DEFECTIVE BATTERIES ALONE OR INSIDE DEVICES.

Damaged or defective batteries and devices containing damaged or defective batteries require special packaging and handling.

Prior to transport:

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

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

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

Actions To Take In Thermal Event

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

⚠ WARNING: DO NOT SHIP DAMAGED OR DEFECTIVE BATTERIES ALONE OR INSIDE DEVICES.

Damaged batteries and devices containing damaged batteries require special packaging and handling. See Handling Used, Damaged, or Defective Lithium-Ion Batteries ([page 13](#)) for additional information.



Report Battery Thermal Events to Microsoft

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

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

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

Stop Repair and Contact Microsoft

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

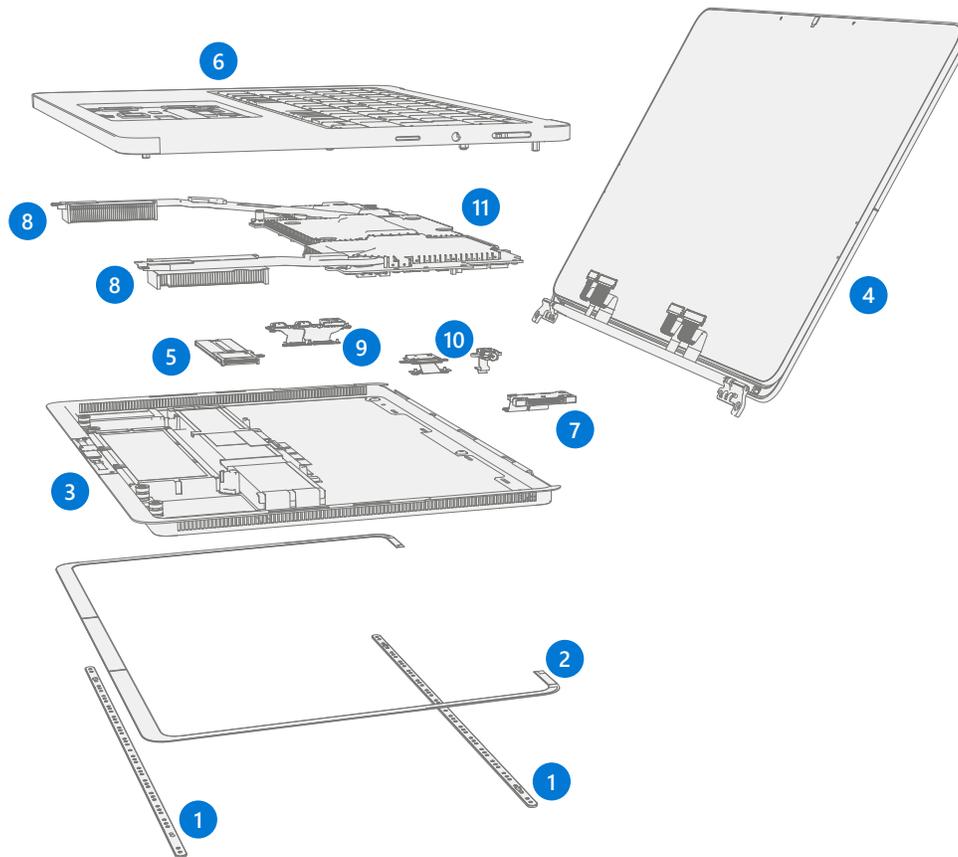
- Any burned or melted components, traces, or plastic parts on the outside of the device, or which otherwise exhibits heat damage, including charring seen in charging and other ports.
- Any burned or melted components, traces, or plastic parts on the inside of the device, or which otherwise exhibits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

Electro-Static Discharge (ESD) Prevention

- Review and follow the general guidelines and ESD Prevention steps in this Guide prior to beginning work.
- Ensure your work surface is level/flat and covered with ESD-safe, soft, non-marring material.
- Before opening a device, always wear an anti-static wrist strap and confirm your work area is properly grounded to protect vulnerable electronics from electrostatic discharge (ESD).
- Parts removed from a device during the repair process should be stored in ESD-safe bags and packaged for return or recycling in the same packaging that the new replacement part came in.



Illustrated Service Parts List



Item	Component	Part No.	Models	
			dGPU	iGPU
(1)	Non-Skid Feet			
	Platinum	Z6F-00001	X	X
(2)	Cosmetic Plate			
	Platinum	Z6H-00001	X	X
(3)	Chassis + Battery			
	Platinum	ZNL-00002	X	X
(4)	Display Assembly			
	Platinum	Z6B-00001	X	X
(5)	Removable Solid-State Drive (NOTE: rSSD size must be same as original)			
	rSSD 512GB	Z7N-00001	X	X
	rSSD 1TB	Z8F-00001	X	X
	rSSD 2TB	Z8H-00001	X	X



Models

Item	Component	Part No.	dGPU	iGPU
(6) Keyboard Assembly				
	Eng/Brit	Z6J-00019	X	X
	Arabic	Z6J-00020	X	X
	International Euro	Z6J-00021	X	X
	Thailand	Z6J-00022	X	X
	Taiwan	Z6J-00023	X	X
	English	Z6J-00024	X	X
	Nordic	Z6J-00025	X	X
	French (Belgium / Netherlands)	Z6J-00026	X	X
	Canada	Z6J-00027	X	X
	French (France)	Z6J-00028	X	X
	German (Austria / Germany)	Z6J-00029	X	X
	Italian	Z6J-00030	X	X
	Portuguese	Z6J-00031	X	X
	Spanish (Spain)	Z6J-00032	X	X
	Spanish (Latin America)	Z6J-00033	X	X
	International (BE / LU / CH)	Z6J-00034	X	X
	Korean	Z6J-00035	X	X
	Japanese	Z6J-00036	X	X
(7) Surflink Port				
	Platinum	Z7D-00001	X	X
(8) Audio Jack				
	Platinum	Z6S-00001	X	X
(9) USB Ports				
	USB-C Port	ZNM-00001	X	X
	USB-A + USB-C Port	ZNM-00002	X	X
(10) Micro SD Reader				
	Platinum	ZNJ-00001	X	X
(11) Motherboard (PCBA)				
	i7, 64GB, RTX4060, FTPM	ZCJ-00001	X	
	i7, 64GB, RTX4060, Nuvoton	ZCJ-00002	X	
	i7, 64GB, RTX2000ADA, Nuvoton	ZCL-00002	X	



Models

Item	Component	Part No.	dGPU	iGPU
	i7, 16GB, RTX4050, FTPM	ZML-00001	X	
	i7, 16GB, RTX4050, Nuvoton	ZML-00002	X	
	i7, 32GB, RTX4050, FTPM	ZMM-00001	X	
	i7, 32GB, RTX4050, Nuvoton	ZMM-00002	X	
	i7, 32GB, RTX2000ADA, FTPM	ZMN-00001	X	
	i7, 32GB, RTX2000ADA, Nuvoton	ZMN-00002	X	
	i7, 16GB, iGPU, FTPM	ZTP-00001		X
	i7, 16GB, iGPU, Nuvoton	ZTP-00002		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
International Euro	Belgium, Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Netherlands, Poland, Romania, Slovakia, Slovenia, South Africa
English	Australia, Canada, China, Hong Kong, India, Malaysia, New Zealand, Singapore, United States
Nordic	Denmark, Finland, Norway, Sweden
French (Belgium / Netherlands)	Belgium, Netherlands
German	Austria, Germany
Portuguese	Portugal, Spain
Spanish	Portugal, Spain
Switz/Lux	Belgium, Luxembourg, Netherlands, Switzerland
Eng/Brit	Cyprus, Ireland, Malta, United Kingdom



Service Diagnostics/Troubleshooting Overview

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

Software Tools

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

Hardware Troubleshooting Approach

 **IMPORTANT:** Be sure that devices meet all pre-repair qualifications related to safety and policy prior to repair. See ASP Guidebook for details.

The following approach should be taken when troubleshooting Surface devices:

1. Update device to latest OS/FW versions using windows update.

 **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 CRU 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 CRU was replaced to further verify that problem was resolved by the repair action taken.



Component Removal and Replacement Procedures

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

- All tools required for repair are listed under Service Tools and Jigs ([page 8](#))
- All parts required for this repair will be provided in the CRU kit being purchased. CRU kits are listed on the Illustrated Parts List ([page 15](#)).

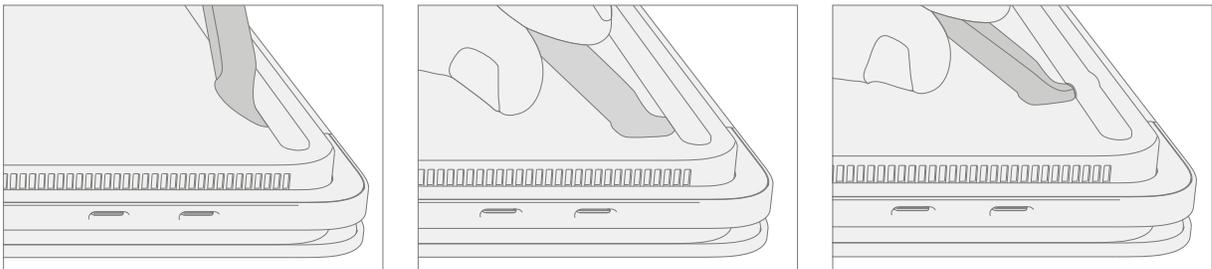
 **IMPORTANT:** Feet replacements must be ordered for each repair.

Prerequisite Steps

- **Power Off Device** – Ensure device is powered off by fully discharging the battery. Refer to Repair-Specific Precautions and Warnings section ([page 10](#)) for details. Ensure device is disconnected from a power supply and all cables and drives are removed.
- **ESD Prevention** – Check to make sure that general guidelines and ESD Prevention steps are followed prior to opening device. Refer to ESD Prevention section ([page 14](#)) 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.



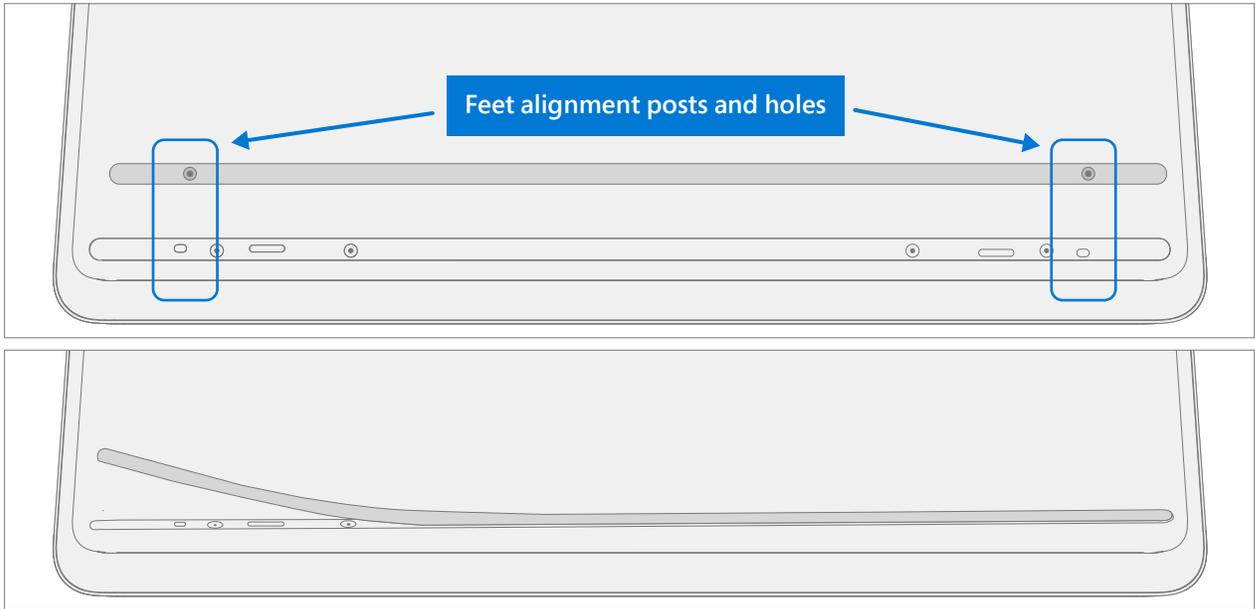
2. **Cleaning** – Remove any adhesive tape remnants from the chassis and clean off any glue residue with 70% or greater Isopropyl Alcohol.



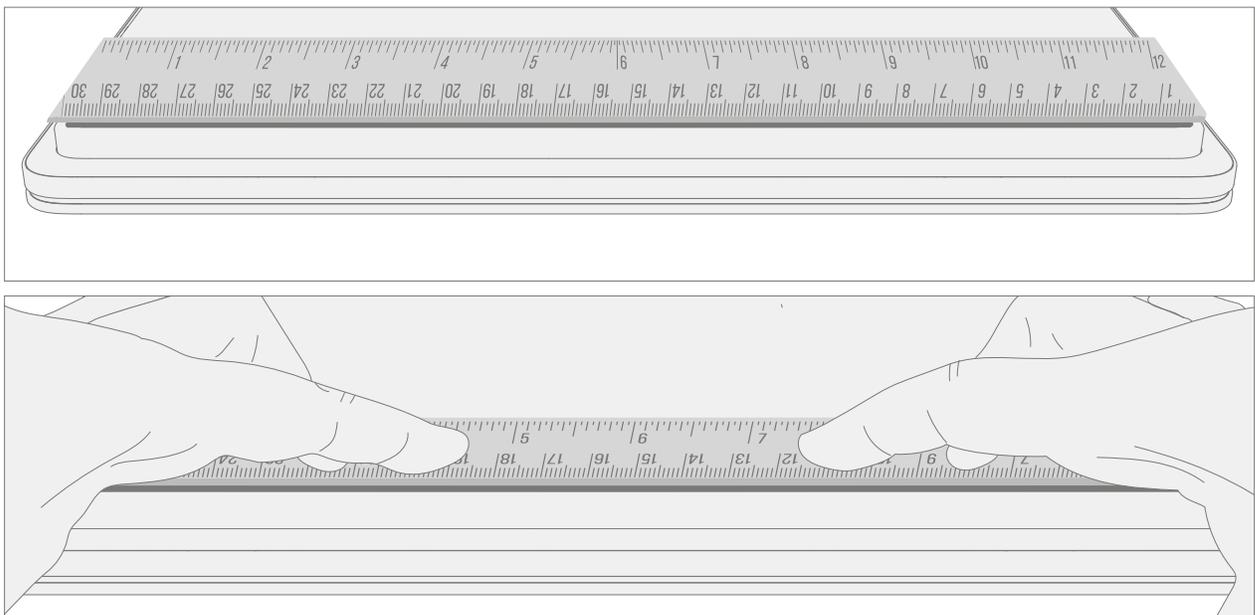
Procedure – Installation (Feet)

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

1. **Device Orientation** – Place device onto a clean surface that has been wiped down with an ESD Safe cleaner and is 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 chassis hole. Loosely place the rest of the foot down making sure that the left alignment post fits in the corresponding chassis 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.



Chassis & Battery Replacement Process

Preliminary Requirements

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

Required Tools and Components

- All tools required for repair are listed under Service Tools and Jigs ([page 8](#))
- All parts required for this repair will be provided in the CRU kit being purchased. CRU kits are listed on the Illustrated Parts List ([page 15](#)).

 **IMPORTANT:** Feet replacements must be ordered for each repair.

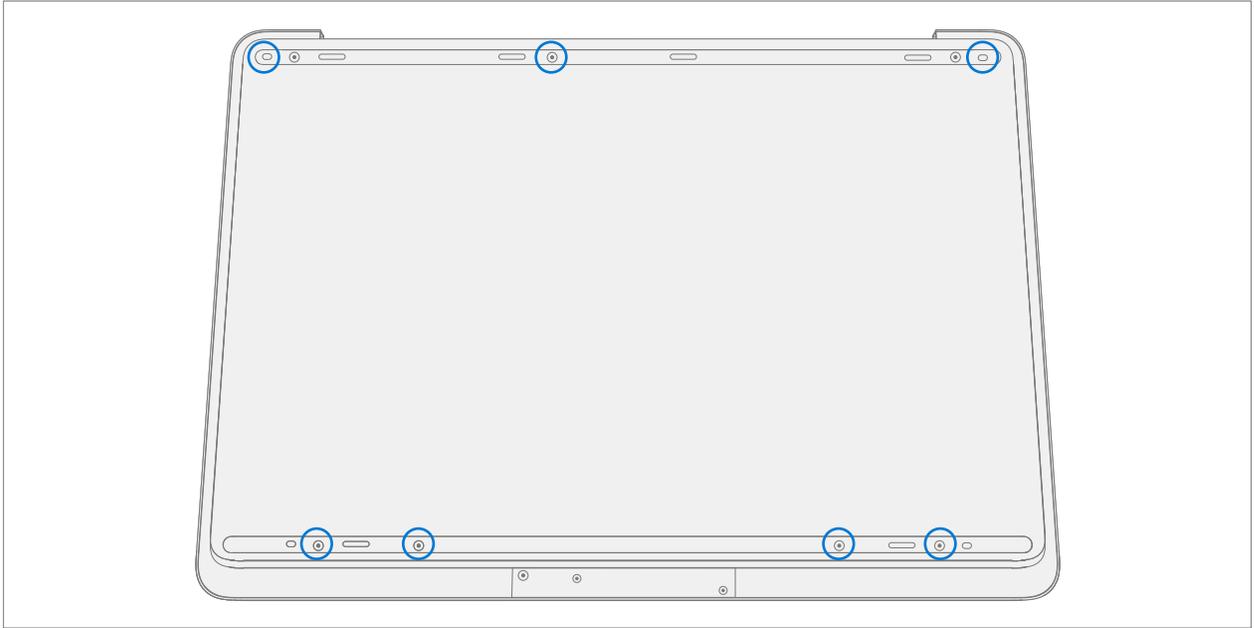
Prerequisite Steps

- **Power off device** – Ensure device is powered off by fully discharging the battery. Refer to Repair-Specific Precautions and Warnings section ([page 10](#)) for details. Ensure device is disconnected from a power supply and all cables and drives are removed.
- **ESD Prevention** – Check to make sure that general guidelines and ESD Prevention steps are followed prior to opening device. Refer to ESD Prevention section ([page 14](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Procedure – Removal (Feet) on ([page 19](#)).
- **Note device serial number** – The serial number for this device model is located on its original cover, refer to Device Identity Information ([page 6](#)). To keep track of the device's serial number, please record it using waterproof ink on a sticker or label and apply the sticker or label to an easily accessible area on the device exterior. The serial number cannot be added permanently to a replacement part. Microsoft may have provided a label for this use in the replacement part's packaging.



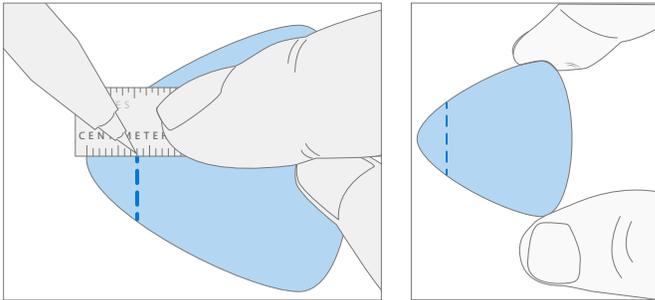
Procedure – Removal (Chassis + Battery)

1. **Remove Chassis screws** – Using a 3IP (Torx-Plus) driver remove the 7 screws from the foot wells.



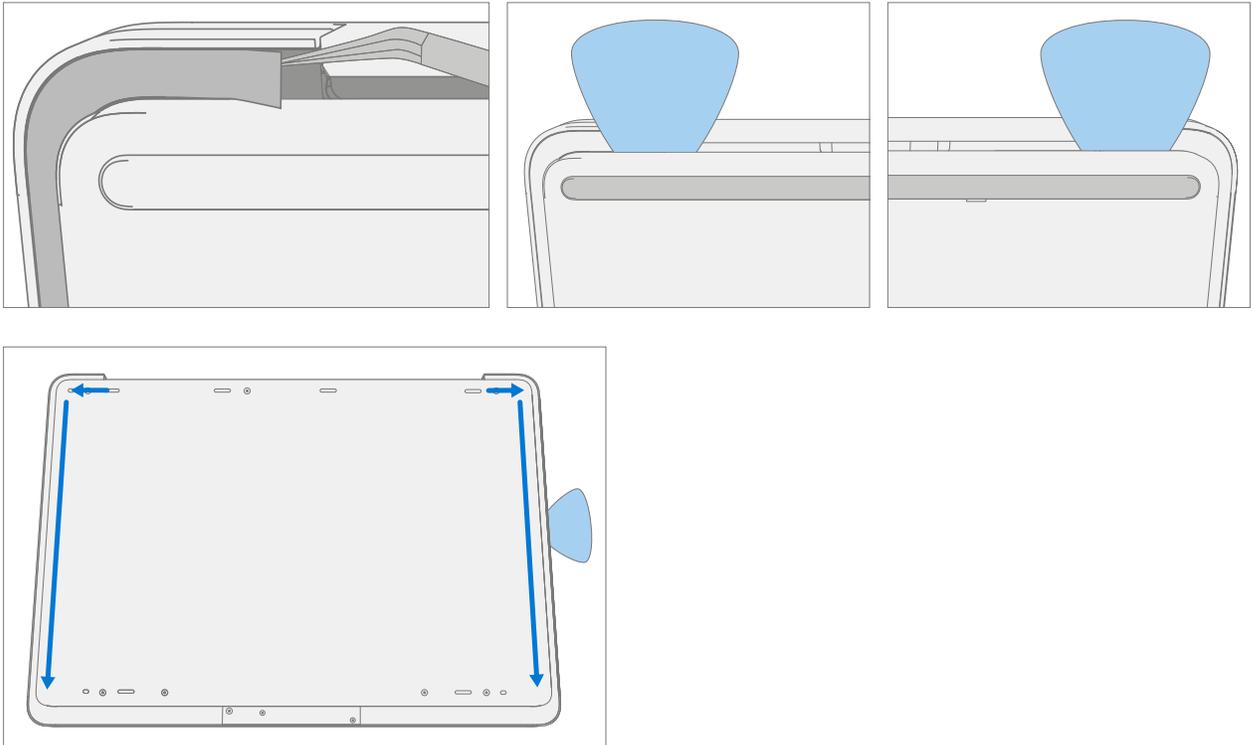
2. **Mark Tool Pick Depth** – To prevent damage to internal components use a metric ruler to draw a 13 mm mark on two plastic picks.

⚠ WARNING: Do not insert picks beyond the 13 mm mark. Failure to do so can lead to picks contacting the battery and causing damage.



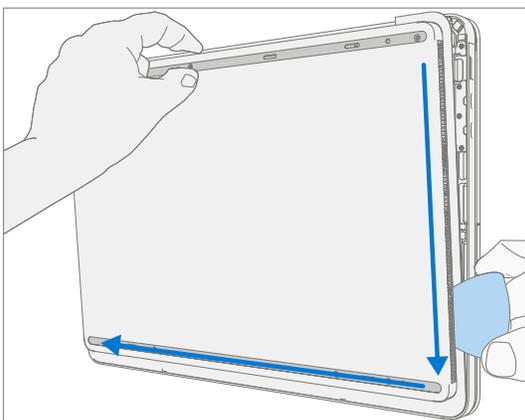
3. **Separate Cosmetic Plate Sides** – Lift corner of cosmetic plate with a pry tool, then insert a plastic opening pick and work around the outer edge of the chassis until you reach the front of the device. Leave left opening pick in place and repeat process on the right side of the cosmetic plate.

 **IMPORTANT:** If replacing the Chassis + Battery, the old cosmetic plate may not be reused. A new Cosmetic Plate must be used. Refer to Cosmetic Plate Replacement Process on (page 90) for additional details.



4. **Separate Cosmetic Plate Front** – Lift back of chassis slightly from the rest of the device. Work an opening pick along the front edge of the device to fully separate the chassis from the Keyboard Assembly.

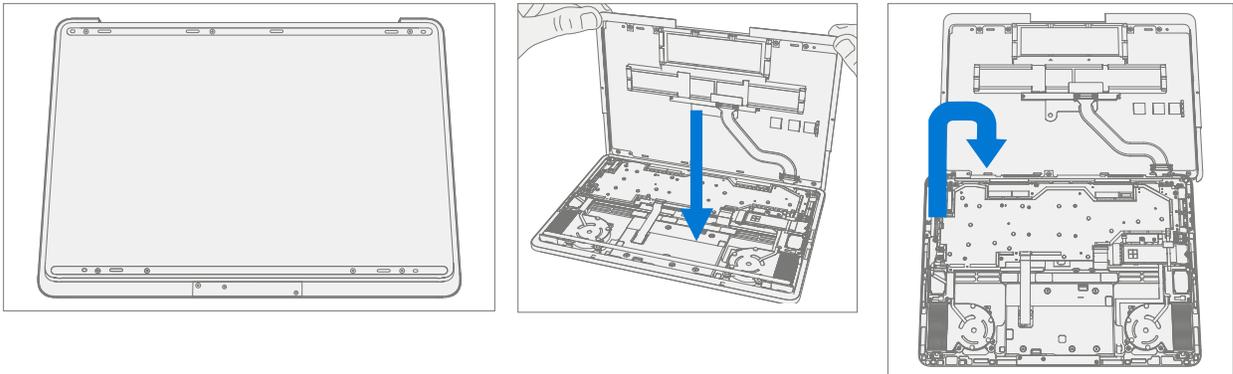
 **IMPORTANT:** Make sure to keep the opening pick horizontal to chassis, failure to do so may damage the pen charger shim under the cosmetic plate. Damage to the shim requires its replacement.



5. **Separate Chassis from device** – Lift the Chassis off and place it above the device, rotating about the hinge so the battery cable isn't pulled tight. The battery will be facing up.

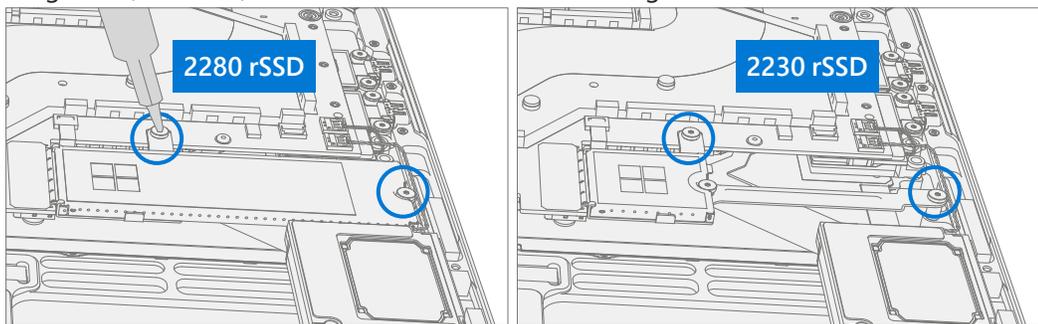
 **IMPORTANT:** Do not attempt to open with sharp objects, this may result in severe personal injury or property damage.

 **IMPORTANT:** Only handle Chassis + Battery assembly by the metal of the chassis. Bending, twisting, or impacting battery may damage the battery, damage the device, and/or result in severe personal injury or property damage. Always use two hands when handling the Chassis + Battery assembly.

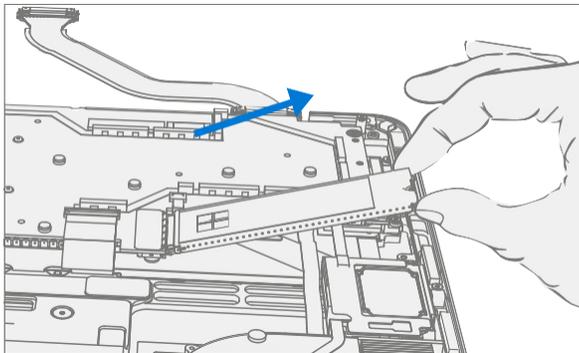


6. **Remove rSSD** – Removing the rSSD disconnects the battery from the rest of the electronic components in the unit. There are two sizes of rSSD. The longer 2280 and the shorter 2230 on a bracket.

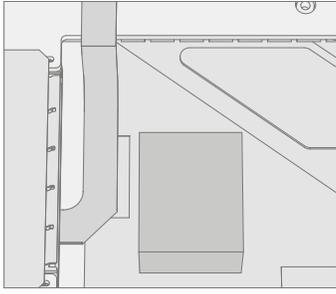
- a. Using a 3IP (Torx-Plus) driver remove the 2 screws securing the rSSD.



- b. Pull the rSSD out of the connector.



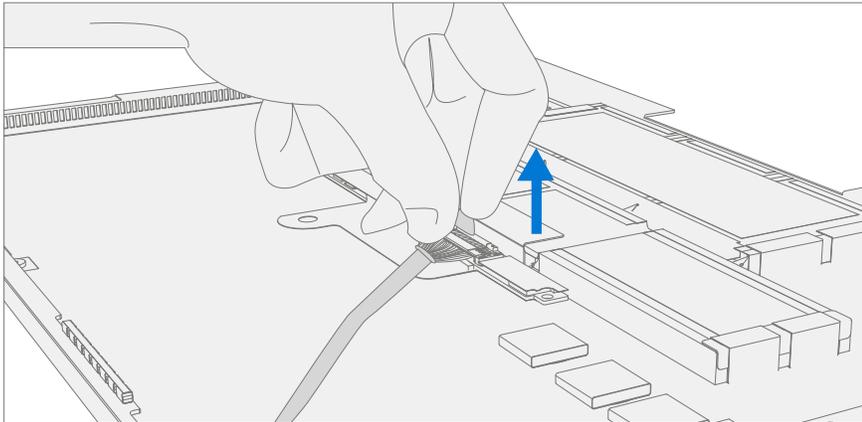
- c. **Remove Thermal Pad** – Remove old rSSD thermal pad and clean residue with IPA.



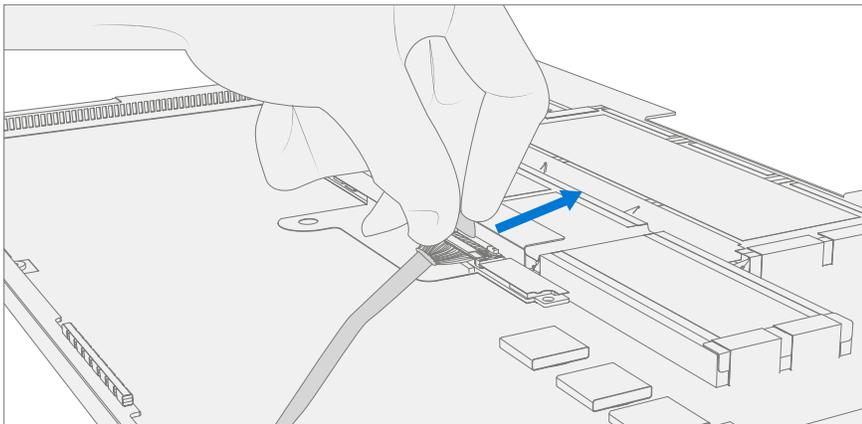
7. Disconnect Battery Cable

 **IMPORTANT:** 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. Avoid impacting or poking the battery during this process.



 **IMPORTANT:** Place the Chassis somewhere where the battery cannot accidentally be contacted or damaged. The Chassis is preferably stored vertically to prevent anything from being placed on top of the battery.

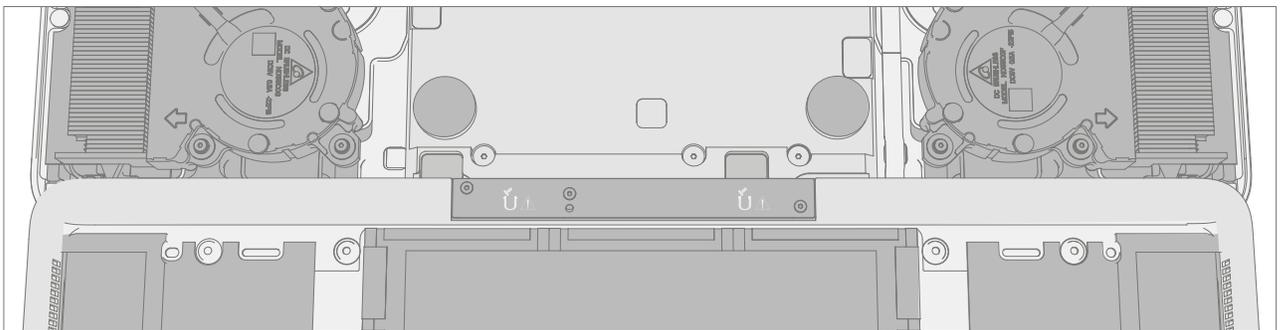
 **IMPORTANT:** When replacing the battery dispose of the old battery according to local laws.



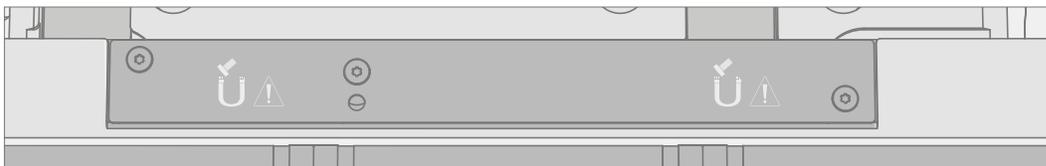
8. Clean PSA Residue From Cosmetic Plate

- a. Place the top lip of chassis over the edge of the Keyboard Assembly.
- b. Remove any adhesive tape remnants from the cosmetic plate.
- c. Clean the bonding surfaces of the pen charger cover, the hinges on the keyboard, and the chassis with 70% Isopropyl Alcohol.
 - i. Apply Citrus IPA cleaner (example Goo Gone) to the cosmetic plate residue and let it sit for 5 minutes.
 - ii. Scrub the surface to remove as much of the PSA residue as possible.
 - iii. Clean off any oil and glue residue with 70% Isopropyl Alcohol.
 - iv. Repeat steps '1' through '3' as necessary until there is no residue remaining.
 - v. Clean remaining oil from all surrounding areas with 70% Isopropyl Alcohol.

IMPORTANT: Be careful not to apply too much force when cleaning the PSA residue. Excessive force can damage and/or warp the cosmetic plate. If necessary, rotate the edges of the chassis to rest on the keyboard lip.



9. **Remove Pen Shim (Optional)** – If pen shim was damaged during the removal of the cosmetic plate it must be replaced. On the Keyboard Assembly place the pointed end of a spudger underneath the right side of the shim to pry it up and remove it. Clean any residual PSA with IPA.



10. **Device Serial Number Notation** – If Chassis + Battery is being replaced, the serial number of the device must be noted on the new device. The serial number for this device model is located on its original cover, refer to Device Identity Information ([page 6](#)). To keep track of the device's serial number, please record it using waterproof ink on a sticker or label and apply the sticker or label to an easily accessible area on the device exterior. The serial number cannot be added permanently to a replacement part. Microsoft may have provided a label for this use in the replacement part's packaging.

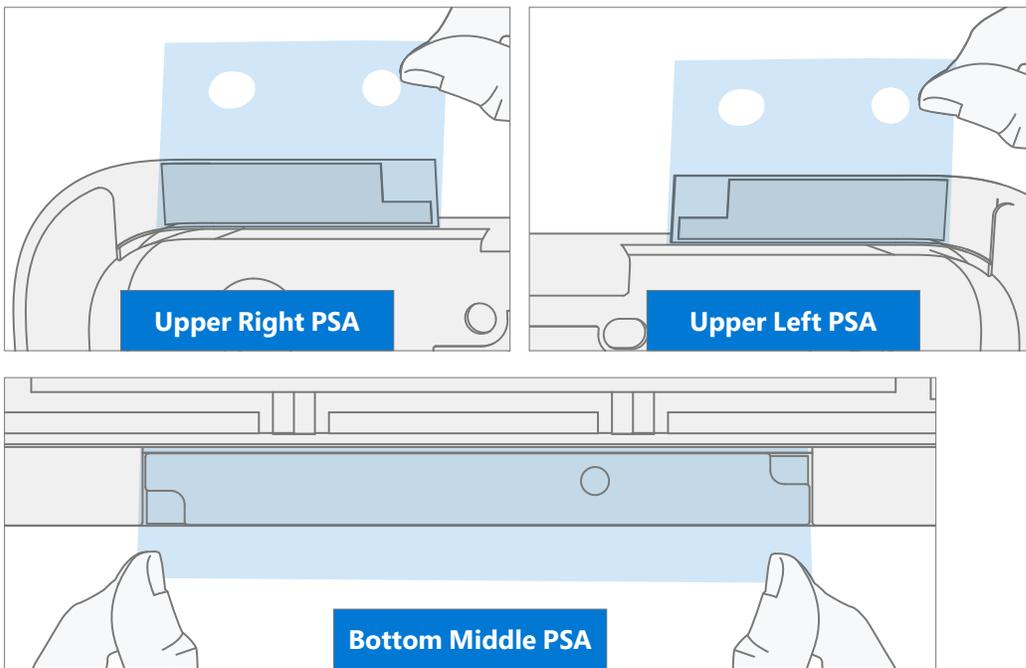


Procedure – Installation (Chassis + Battery)

1. **Pre-installation Device Inspection** – Check Chassis (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. **Apply PSA to Cosmetic Plate** – Apply PSA to the cosmetic plate in the locations shown. After PSA is applied, pinch the PSA and the cosmetic plate together to ensure proper adhesion.

 **IMPORTANT:** Note that the notches on the upper PSA's face towards each other.

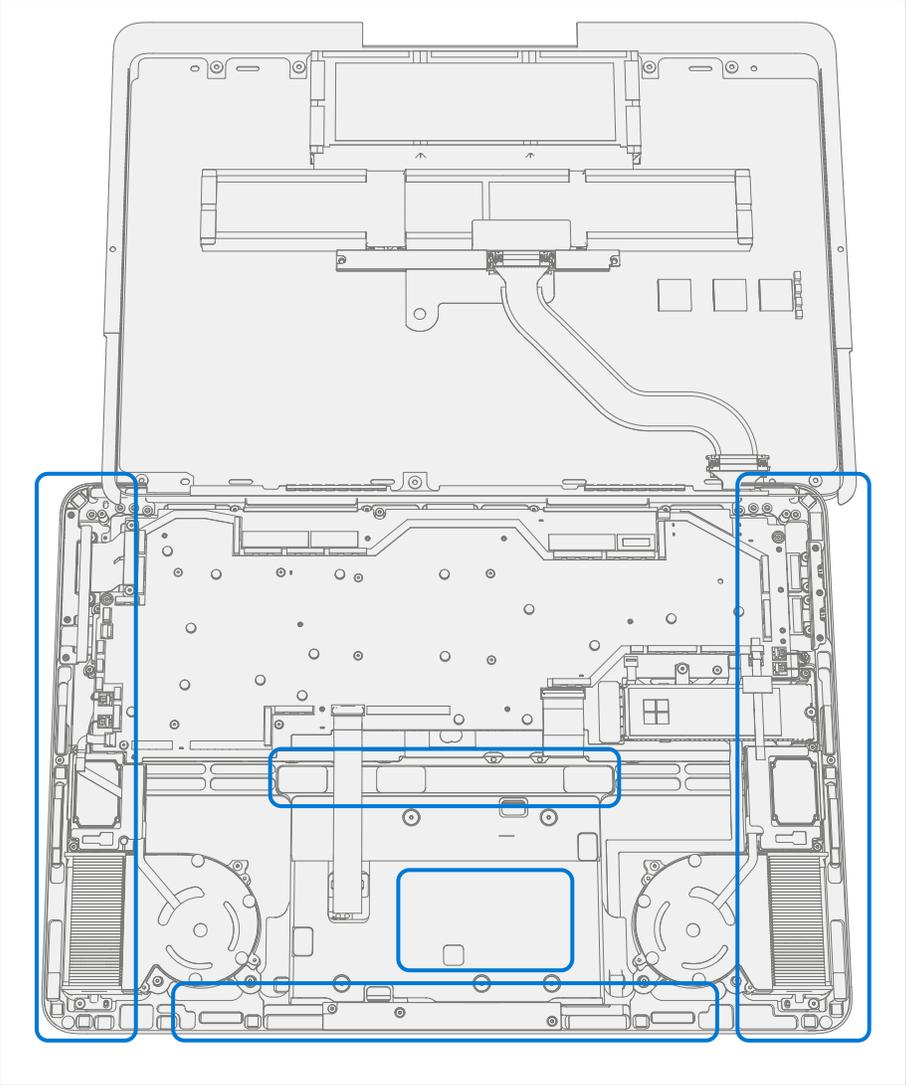
 **IMPORTANT:** Do not remove liners from PSA strips.



3. **Install Pen Shim (Optional)** – If pen shim was damaged during the removal of the cosmetic plate or separated from the pen charging board underneath, place the new pen shim in Keyboard Assembly, being sure to align holes in the shim with the screws and ensuring shim does not overlap the lip of the Keyboard Assembly.

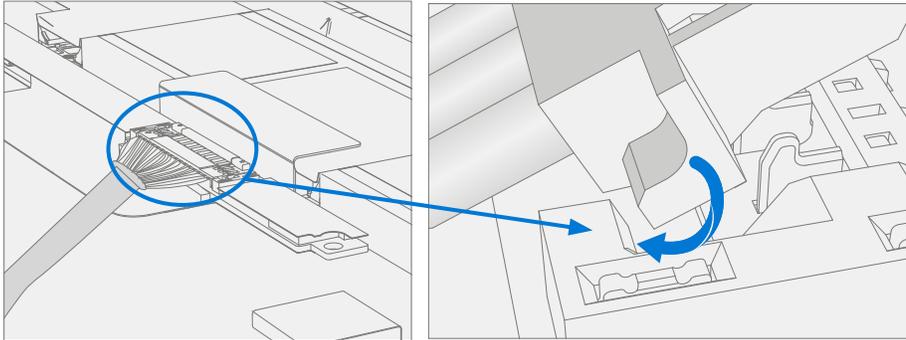


- 4. **Position the Chassis** – Place the Chassis above the device as pictured below. The bottom of the Chassis should be on the table with the battery facing up.

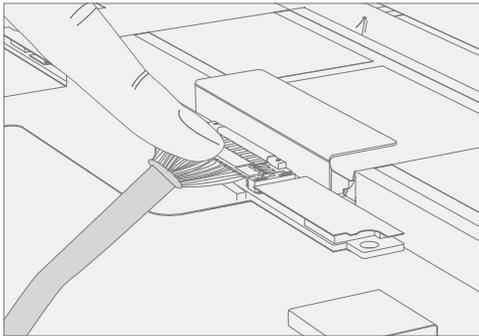


5. Connect Battery Cable

- 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.

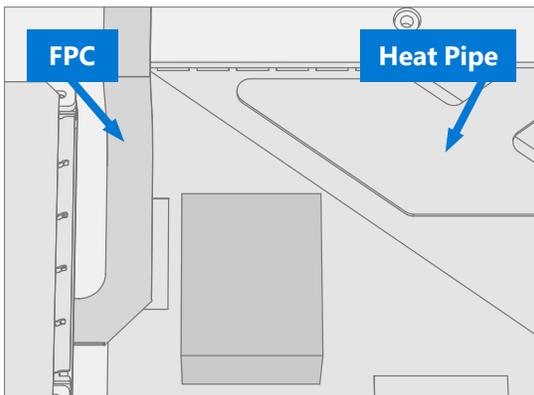


- b. Press down on the tip of the connector on left and right sides. A click should be heard and felt on each side

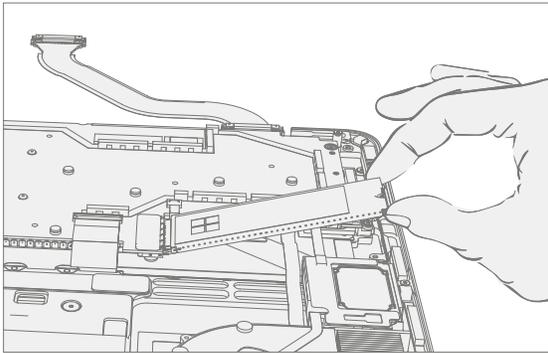


6. Replace Thermal Pad – Place new rSSD thermal pad in same approximate location.

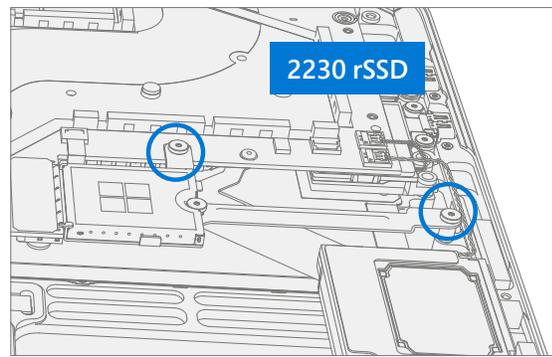
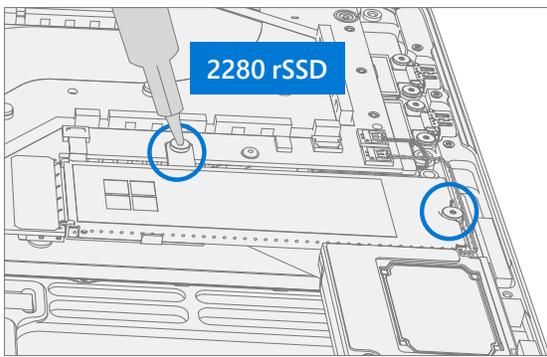
-  **IMPORTANT:** Thermal pad should not touch FPC to the left or heat pipe to the right.



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

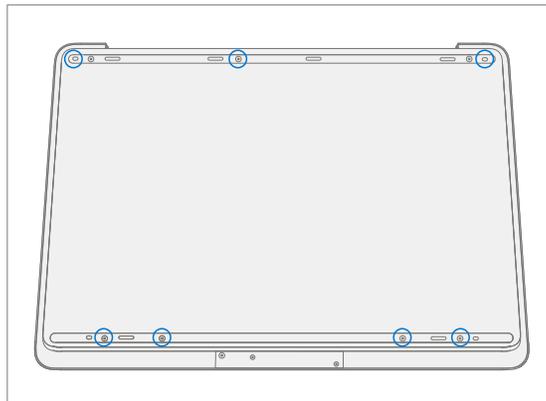
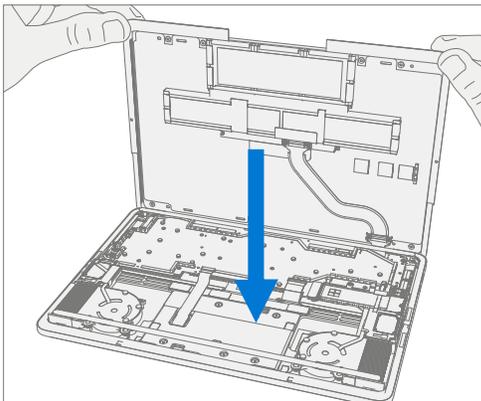


8. **Install new rSSD screws** – Using a 3IP (Torx-Plus) driver install 2 new rSSD Screws (M1167371). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



9. **Rotate the Chassis** – Visually inspect the magnetized and Keyboard areas as noted in step 1. Rotate the Chassis about the hinge to prevent the battery cable from pulling on the battery connector. Set the Chassis down on the device.

⚠ WARNING: Check to ensure that no loose articles are on the back cover or remain inside the device before reassembling it.



10. **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.

11. **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.

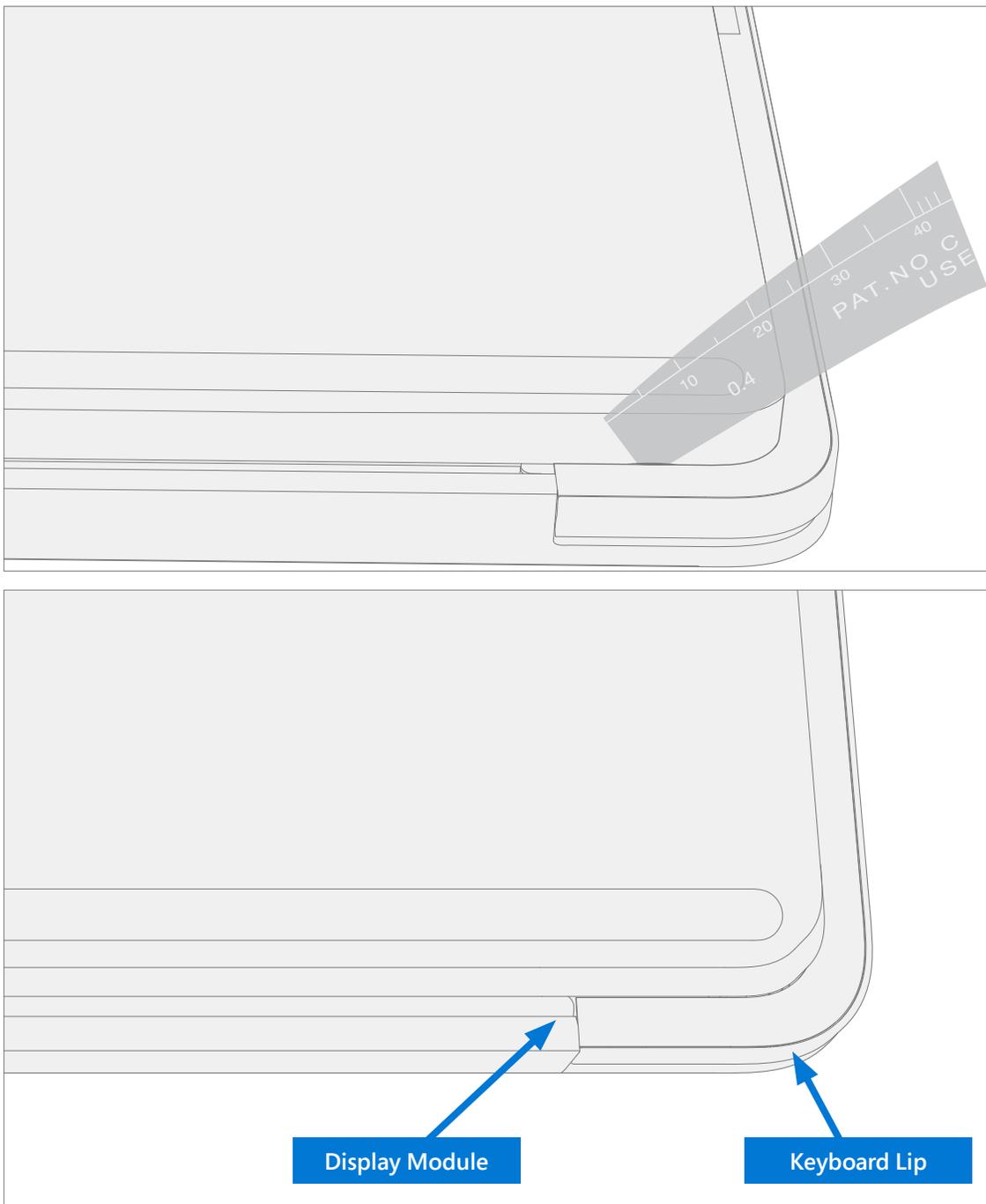
12. **Original Battery Verify Device Functions** – Carefully place device right-side up. Open device and connect the SDT USB drive, and power supply. Power on device then Run SDT to ensure all features and functions operate as expected. Power off at completion of tests. Remove SDT USB drive and power supply. If no further repairs are required proceed to final steps.



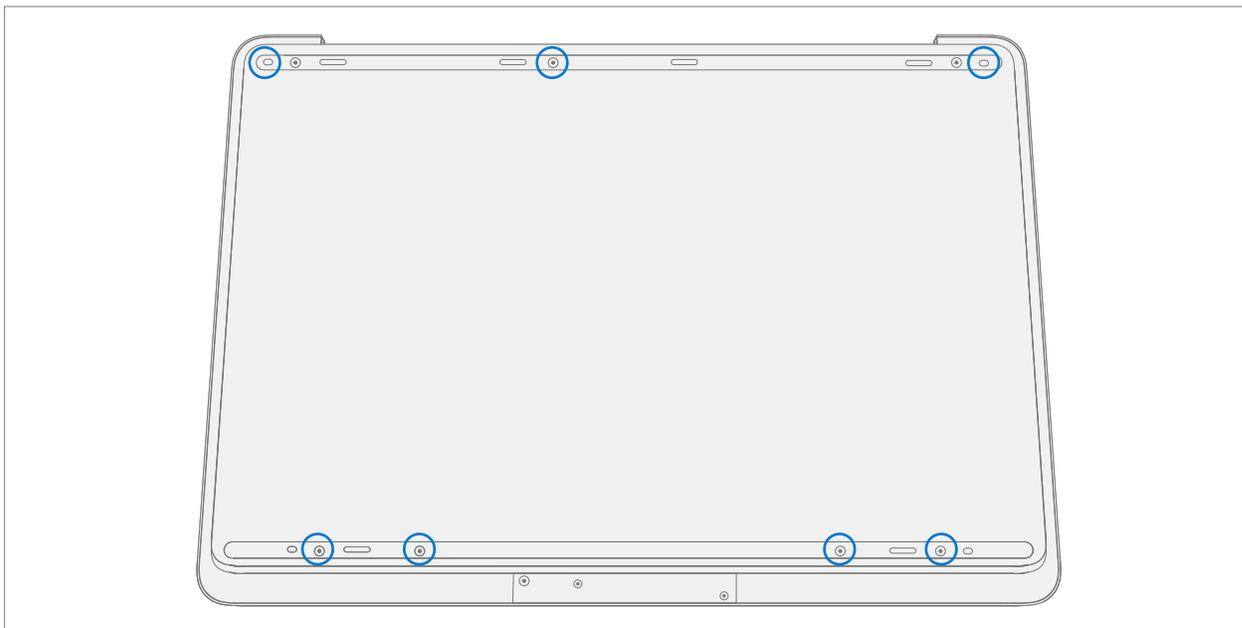
13. Install Chassis

- a. Remove the 3 **clear** liners on the cosmetic plate adhesive applied in step 2.
- b. Place the chassis on the Keyboard Assembly, ensuring that the cosmetic plate has an even lip around the circumference of the chassis and does not overhang the Keyboard Assembly.
Verify the cosmetic plate does not overlap the Keyboard lip or display module and has equal gap concentricity around the corners.
- c. 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.

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



- 14. Install New Chassis Screws** – Close device and carefully place it bottom-side up. Using a 3IP (Torx-Plus) driver install 7 new Chassis Screws (M1167779) in the foot wells. Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



- 15. Replace Cosmetic Plate (Optional)** – If cosmetic plate was damaged during repair it must be replaced. Follow steps for Procedure – Installation (Cosmetic Plate) on [page 93](#).
- 16. Install Feet** – Follow steps for Procedure – Installation (Feet) on [page 20](#).



rSSD Replacement Process

Preliminary Requirements

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

Required Tools and Components

- All tools required for repair are listed under Service Tools and Jigs ([page 8](#))
- All parts required for this repair will be provided in the CRU kit being purchased. CRU kits are listed on the Illustrated Parts List ([page 15](#)).

 **IMPORTANT:** Feet replacements must be ordered for each repair.

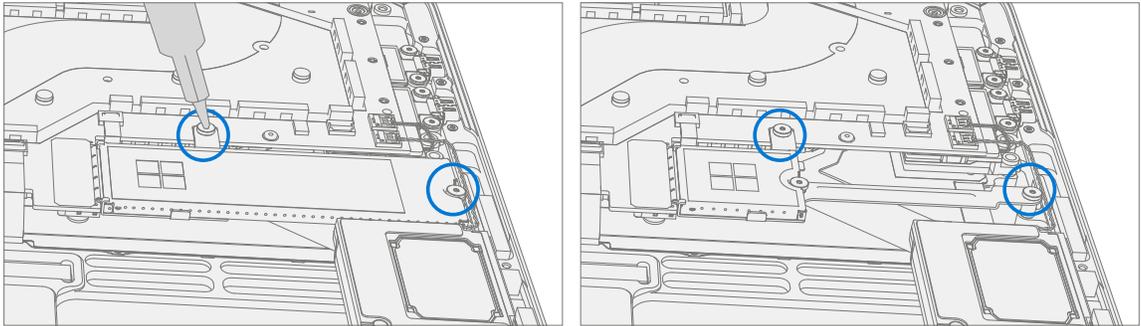
Prerequisite Steps

- **Power off device** – Ensure device is powered off by fully discharging the battery. Refer to Repair-Specific Precautions and Warnings section ([page 10](#)) for details. Ensure device is disconnected from a power supply and all cables and drives are removed.
- **ESD Prevention** – Check to make sure that general guidelines and ESD Prevention steps are followed prior to opening device. Refer to ESD Prevention section ([page 14](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Procedure – Removal (Feet) on ([page 19](#)).
- **Remove Chassis + Battery** – Refer to Procedure – Removal (Chassis + Battery) on ([page 22](#)).

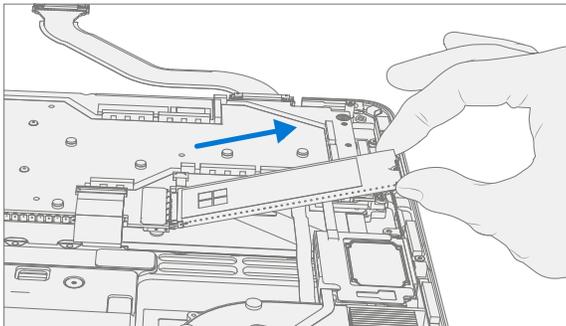


Procedure – Removal (rSSD)

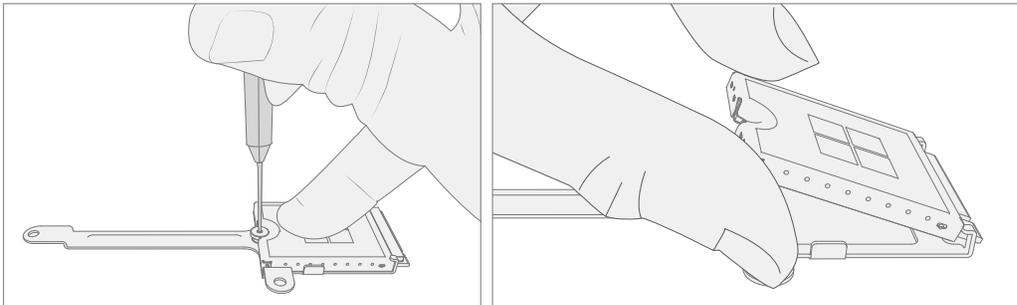
1. **Remove rSSD** – rSSD removal disconnects the battery from the device. There are two sizes of rSSD. The longer 2280 and the shorter 2230 on a bracket.
 - a. Using a 3IP (Torx-Plus) driver remove the 2 screws securing the rSSD.



- b. Pull the rSSD out of the motherboard connector.

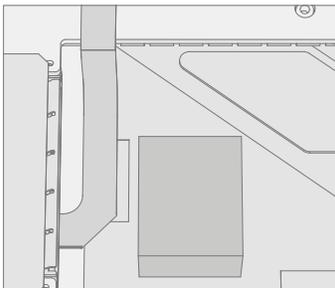


2. **Remove 2230 rSSD from bracket** – Using a 3IP (Torx-Plus) driver remove the screw securing the 2230 rSSD to the bracket and then remove the rSSD.



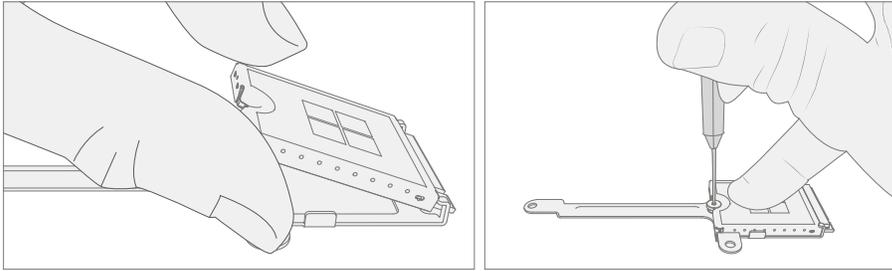
 **IMPORTANT:** The 2230 rSSD bracket is reused when installing a new 2230 rSSD.

3. **Remove Thermal Pad** – Remove old rSSD thermal pad and clean residue with IPA.



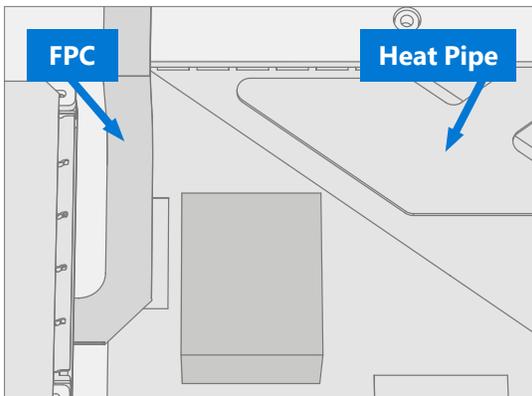
Procedure – Installation (rSSD)

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

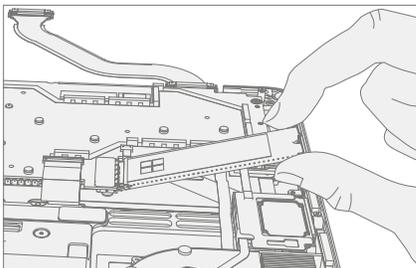


2. **Replace Thermal Pad** – Place new rSSD thermal pad in same approximate location.

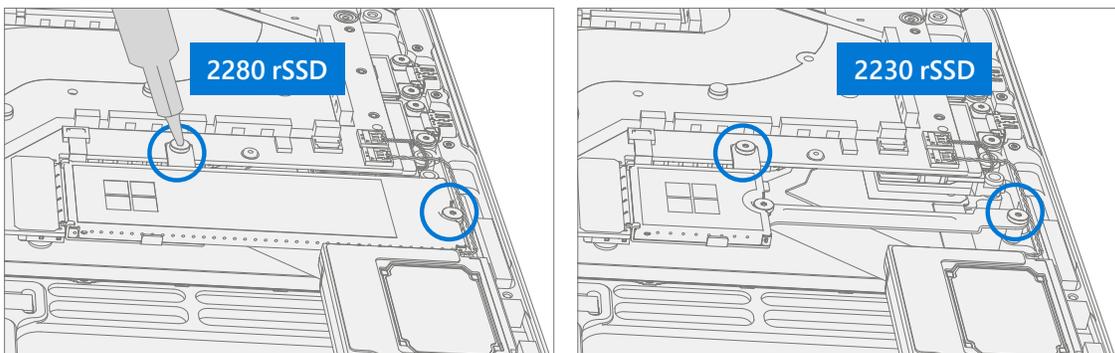
 **IMPORTANT:** Thermal pad should not touch FPC to the left or heat pipe to the right.



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



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



5. **Install Battery** – Follow steps for Procedure – Installation (Chassis + Battery) steps 4 through 8 on (page 27).

 **IMPORTANT:** During this installation only install rSSD and Chassis. Do not install Chassis 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. **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

8. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.
9. **Install Chassis** – Follow steps for Procedure – Installation (Chassis + Battery) on (page 27).
10. **Install Cosmetic Plate (Optional)** – If cosmetic plate was damaged during repair it must be replaced. Follow steps for Procedure – Installation (Cosmetic Plate) on (page 93).
11. **Install Feet** – Follow steps for Procedure – Installation (Feet) on (page 20).

Display Replacement Process

Preliminary Requirements

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

Required Tools and Components

- All tools required for repair are listed under Service Tools and Jigs ([page 8](#))
- All parts required for this repair will be provided in the CRU kit being purchased. CRU kits are listed on the Illustrated Parts List ([page 15](#)).

 **IMPORTANT:** Feet replacements must be ordered for each repair.

Prerequisite Steps

- **Prep Device** – Device must be set in **TDM Replacement Mode** prior to removing a **faulty** Display. This is not required if the original Display will be reinstalled.
 1. **Connect software tools USB drive** with SDT to USB connector on device under repair.
 2. Connect power supply to device.
 3. **Power on device** – Depress the power button on the side of the device.
 4. **Run software tool** – At the device OS, use Windows Explorer, navigate to USB drive and run:
 5. **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** Display.

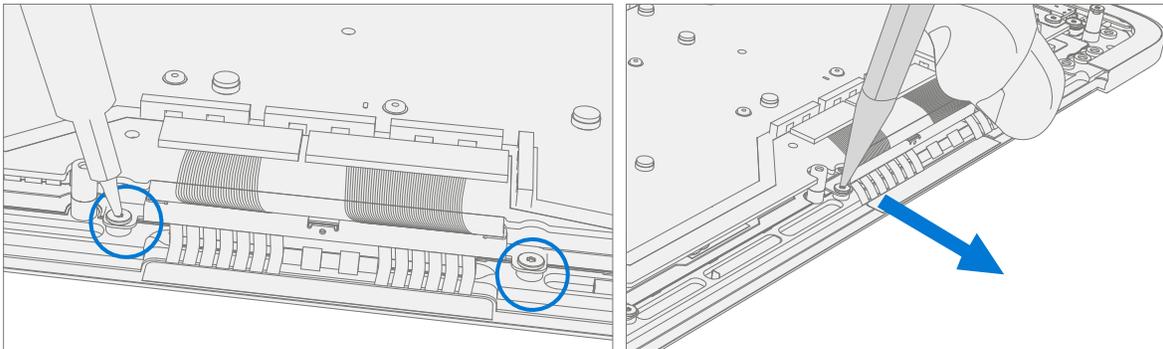
- **Power off device** – Ensure device is powered off by fully discharging the battery. Refer to Repair-Specific Precautions and Warnings section ([page 10](#)) for details. Ensure device is disconnected from a power supply and all cables and drives are removed.
- **ESD Prevention** – Check to make sure that general guidelines and ESD Prevention steps are followed prior to opening device. Refer to ESD Prevention section ([page 14](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Procedure – Removal (Feet) on ([page 19](#)).
- **Remove Chassis + Battery** – Refer to Procedure – Removal (Chassis + Battery) on ([page 22](#)).



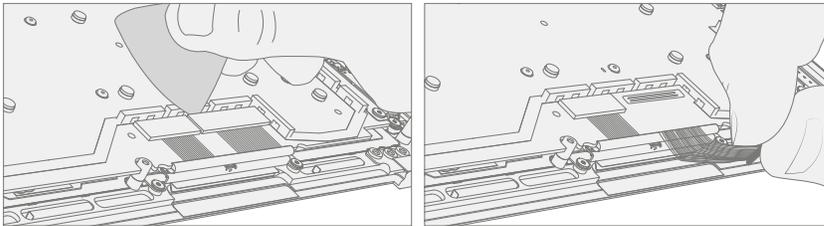
Procedure – Removal (Display)

1. Remove 2 Cable Tensioners

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

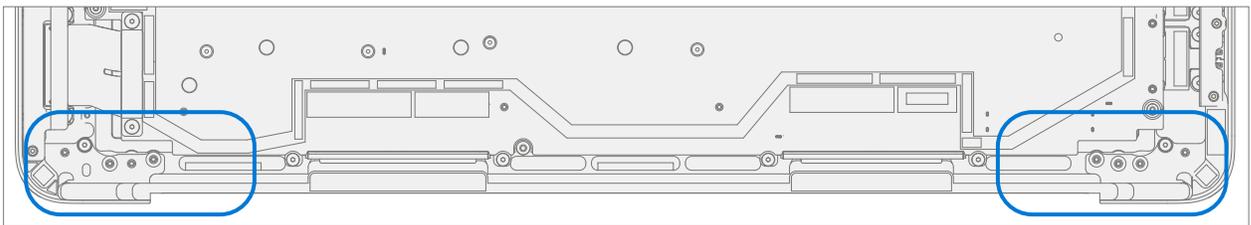


2. Disconnect 4 Display Cables – Use plastic tool to unlatch the connectors on the 4 display cables and carefully remove the cables from the PCBA connectors.

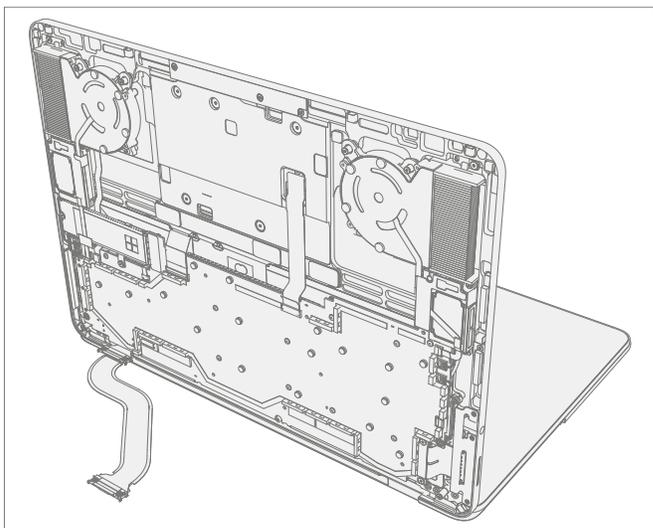


 **IMPORTANT:** The nearby foams are very delicate. Take care not to damage or remove them.

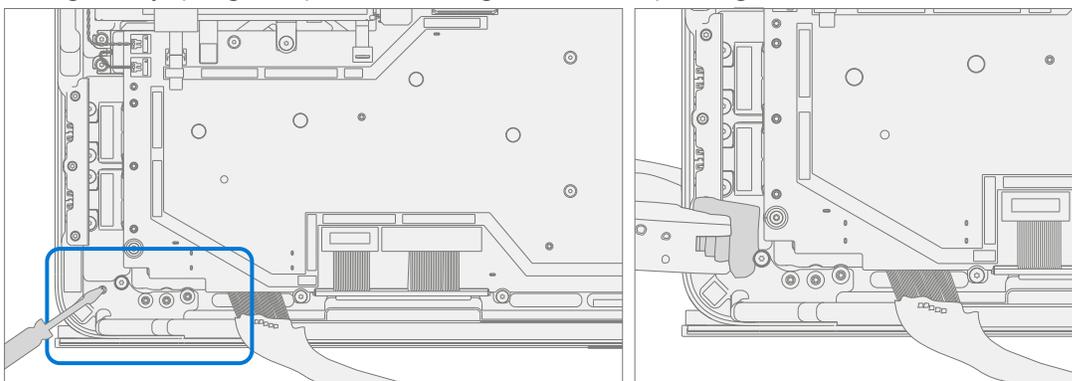
3. Loosen Display hinge screws – Using a 6IP (Torx-Plus) driver loosen the 8 hinge screws by (1/8 turn) of a turn.



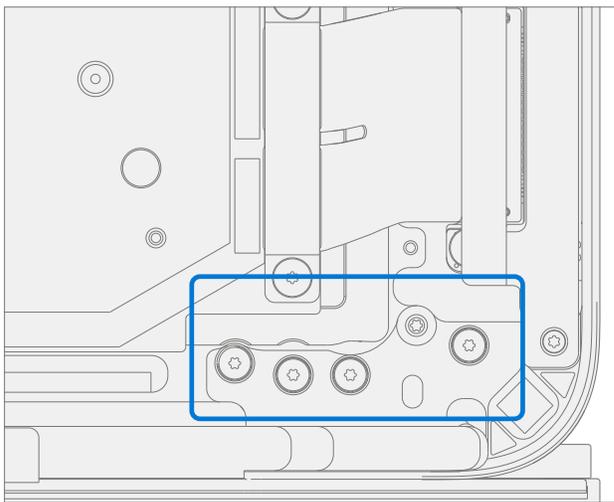
4. **Position Display** – Open the display to 90°. Place the backside of the display module on the ESD safe workbench with the keyboard facing up.



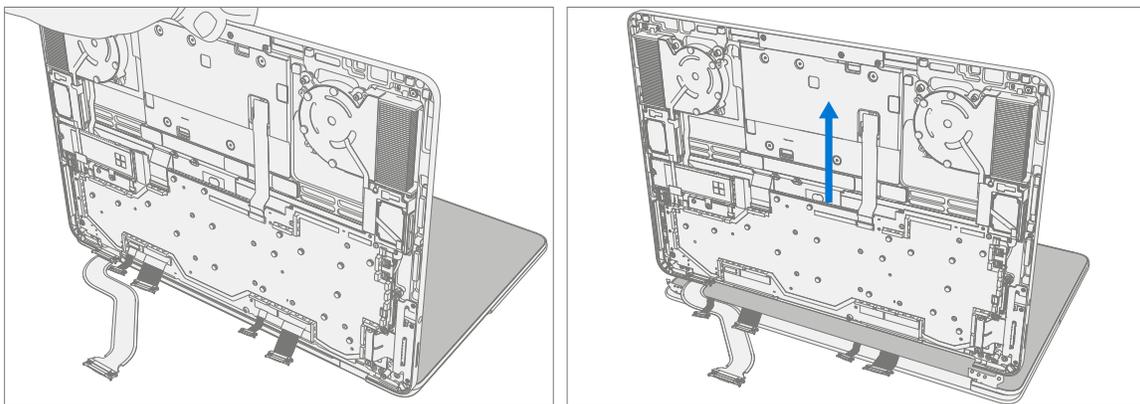
5. **Remove Left Hinge Screws** – Using a 6IP (Torx-Plus) driver remove the 4 screws on the left hinge. Apply a 1 inch light duty spring clamp to the left hinge to hold it in place against the C-Cover.



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

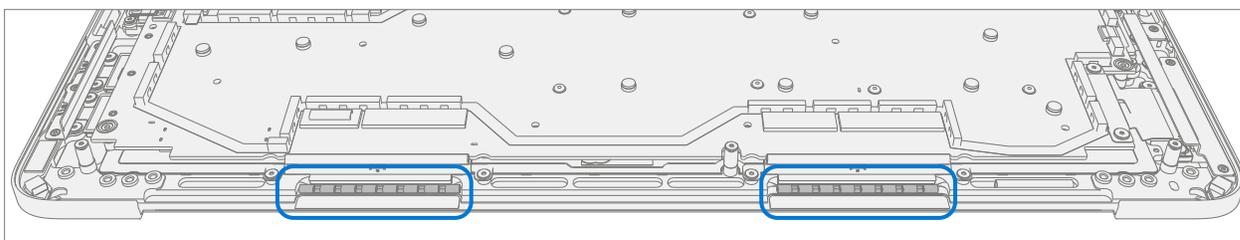


7. **Remove display module from Keyboard** – While holding the Keyboard with one hand carefully lift the keyboard from the display assembly.

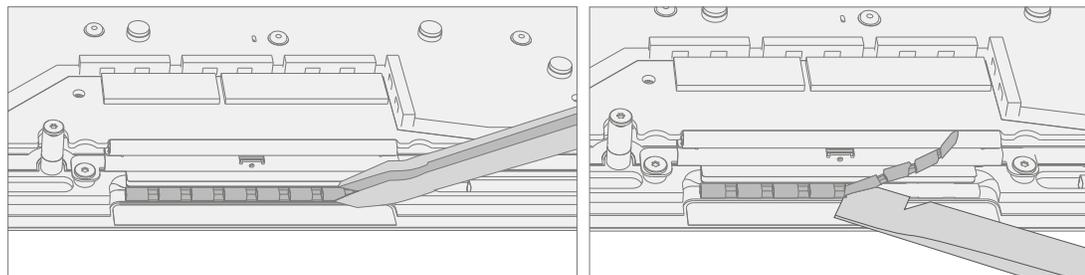


Procedure – Installation (Display)

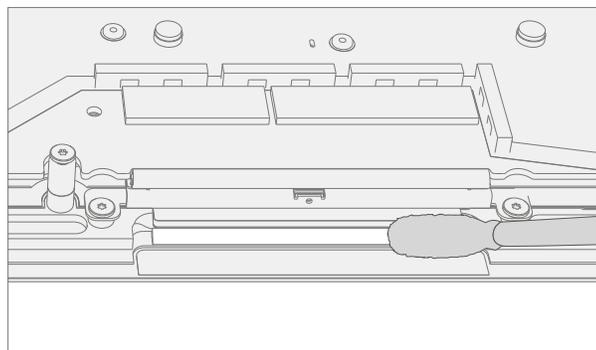
8. **Remove Old Display Cable Foam** – Display cable foam strips on the Keyboard are replaced prior to installation of the Display.



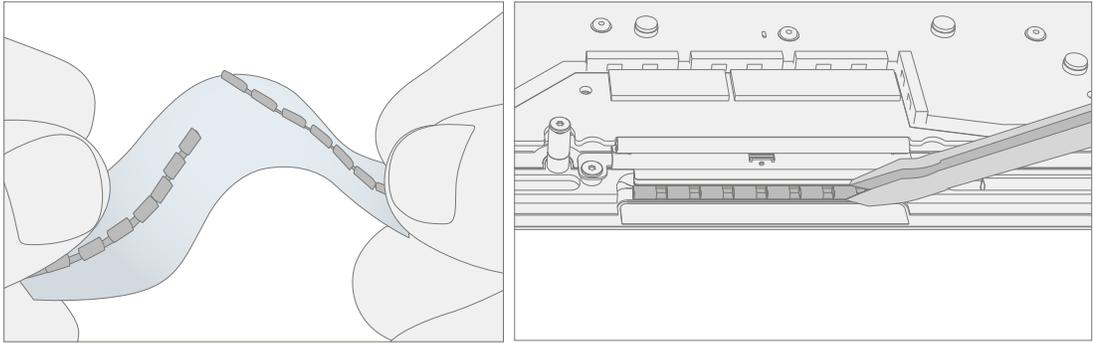
- a. **Remove left and right foam** – Using a plastic tool remove the display cable foam from the left and right sides of the Keyboard.



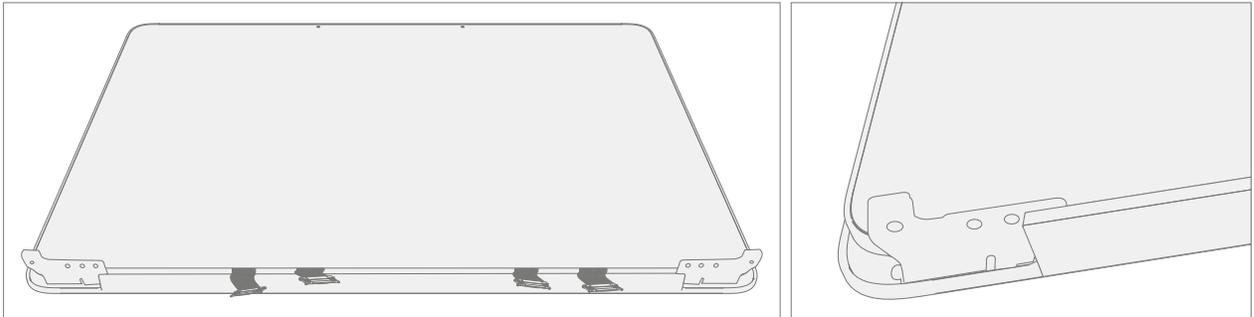
- b. **Cleaning** – Remove any adhesive tape remnants from the Keyboard and clean off any glue residue with 70% or greater Isopropyl Alcohol.



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

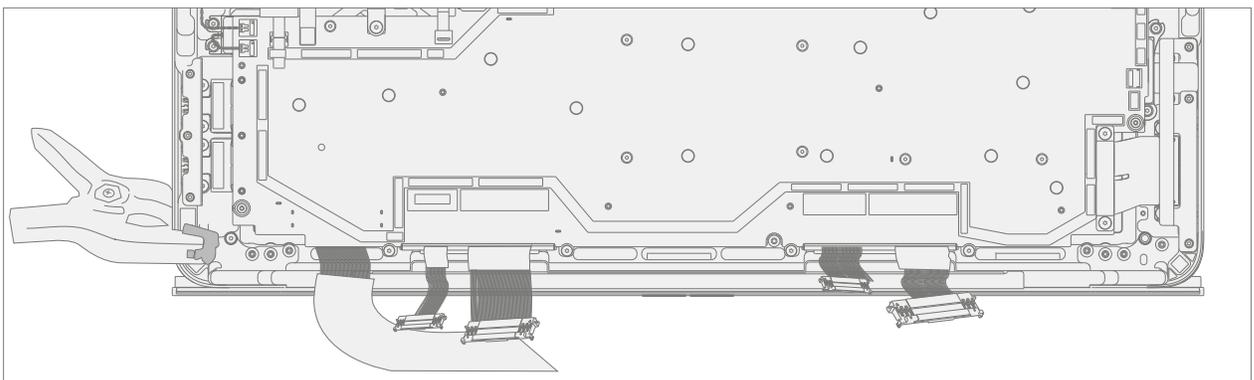


9. **Position Keyboard** – Place the backside of the display on the ESD safe workbench with the hinges set at 90 degrees. Apply a 1-inch light duty spring clamp to the left hinge.

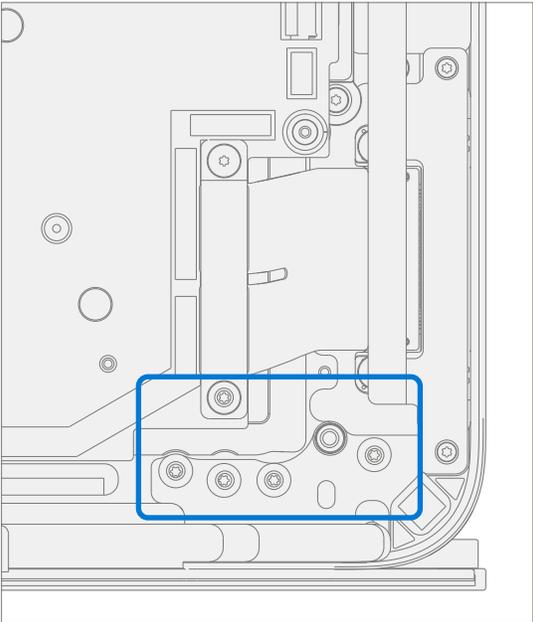


10. **Install display module onto Keyboard** – While holding the Keyboard with one hand. Carefully align the hinges into the pockets on the Keyboard.

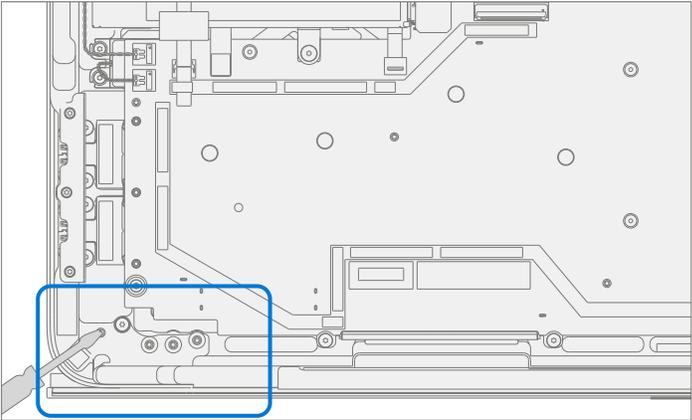
 **IMPORTANT:** Ensure the Keyboard does not impact the display and that all display cables are not pinched under the motherboard or display.



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

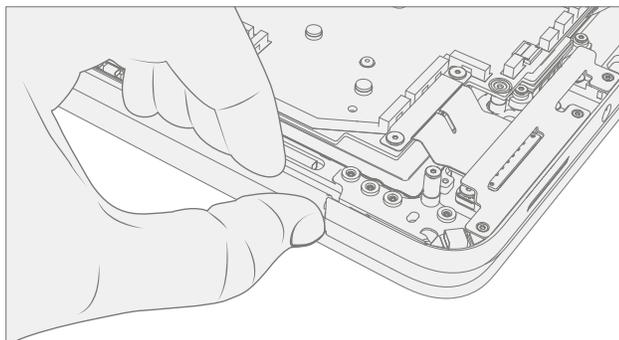


- 12. **Pre-fasten left hinge screws** – Remove the 1-inch light duty clamp from the left hinge. Assemble 4 new Hing Screws (M1150078) in the left side hinge and tighten until just snug.

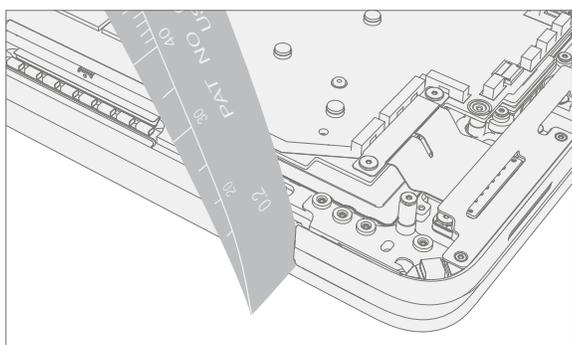


13. Hinge alignment

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



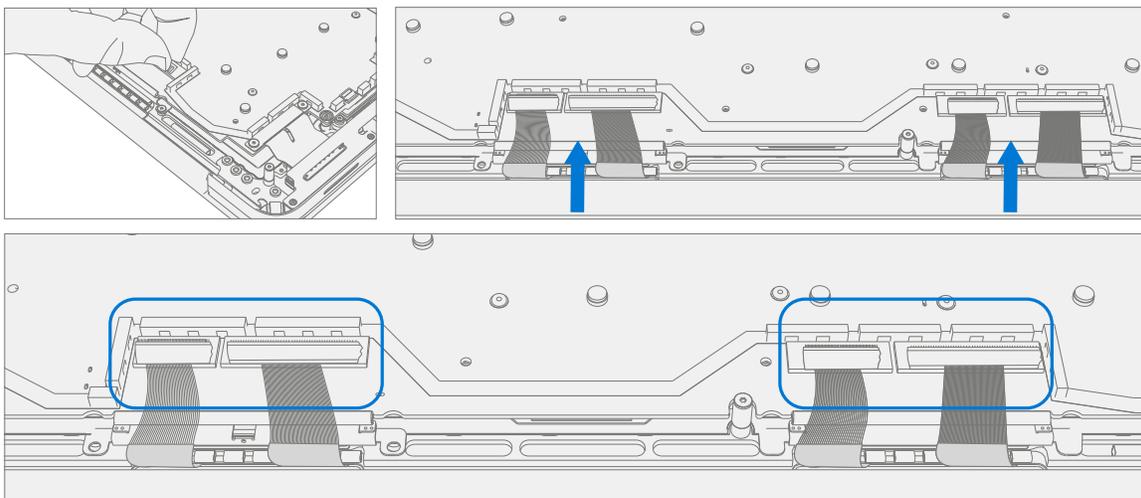
- d. Verify a 0.2 mm plastic thickness gauge can slide easily in the hinge gap.



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

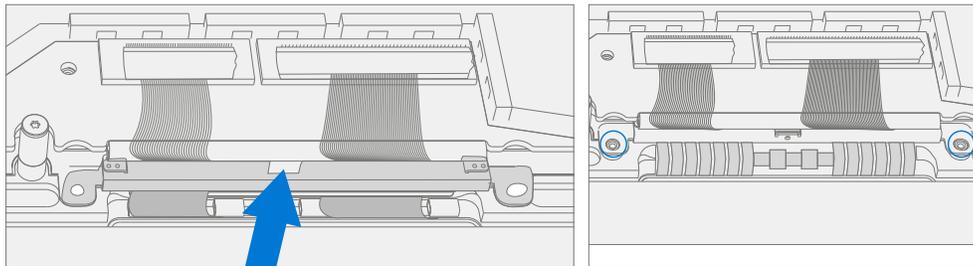
 **IMPORTANT:** Placing a 0.25 mm plastic thickness gauge in the smaller of the 2 hinge gaps during step “e.” will aid in achieving a 0.2 mm gap after tightening.

14. **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.

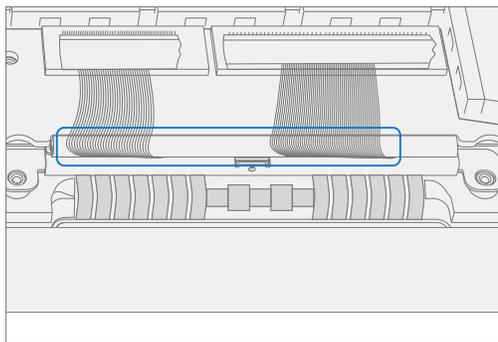


15. Install 2 Cable Tensioners

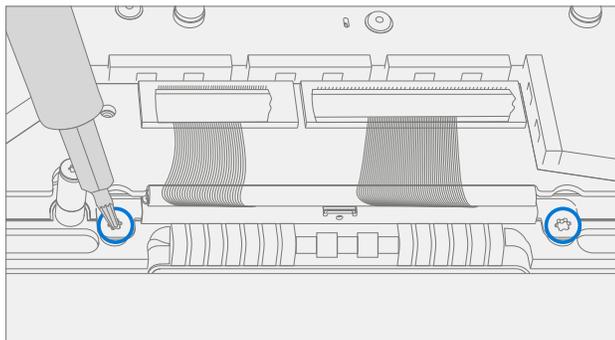
- a. Use the cable tensioners to gently push all 4 display cables so that they loop under the motherboard. Slide the cable tensioners in horizontally until the holes fit over the posts with the screw holes.



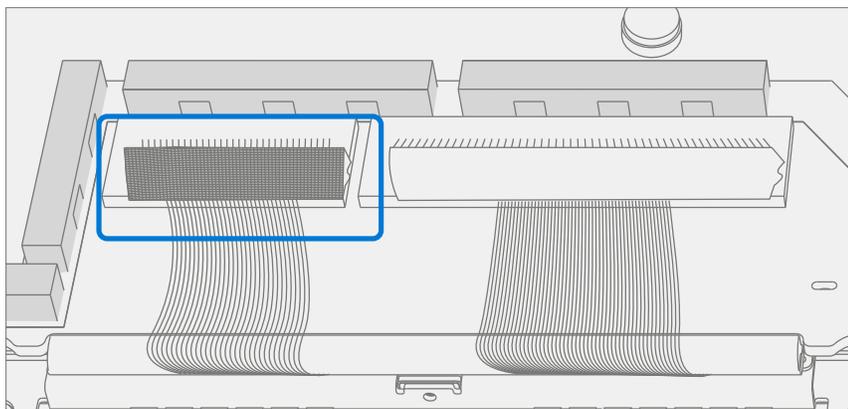
- b. Ensure that the cables route over the plastic guide along the edge of the motherboard.



- c. Using a 3IP (Torx-Plus) driver install the 2 new Tensioner Screws (M1177566) 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.



- d. Using a pair of tweezers apply foam to the connector cable in area shown.



16. **Install Battery** – Follow steps for Procedure – Installation (Chassis + Battery) steps 4 through 8 on [\(page 28\)](#).

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

17. **Power On Device** – Carefully place device top side up. Connect device to power supply, open display, and power on.

18. **New Display TDM Calibration** – On installation of a **new Display TDM** device final calibration relies on the successful completion of the TDM Replacement Mode. TDM calibration is not required when installing the originally removed Display.

a. **Connect software tools USB drive** with SDT to USB connector on device under repair.

19. **Run software tool** – At the device OS, use Windows Explorer, navigate to USB drive and run:

SDT – Select Repair setup and validation. Run the Touch Display Calibration. Accept the restart prompt at the end of the tool process.

 **IMPORTANT:** This step must be carried out on the device successfully on installation of a [new Display](#).

20. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.

21. **Install Chassis** – Follow steps for Procedure – Installation (Chassis + Battery) on [\(page 27\)](#).

22. **Install Cosmetic Plate (Optional)** – If cosmetic plate was damaged during repair it must be replaced. Follow steps for Procedure – Installation (Cosmetic Plate) on [\(page 93\)](#).

23. **Install Feet** – Follow steps for Procedure – Installation (Feet) on [\(page 20\)](#).



Surflink Port Replacement Process

Preliminary Requirements

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

Required Tools and Components

- All tools required for repair are listed under Service Tools and Jigs ([page 8](#))
- All parts required for this repair will be provided in the CRU kit being purchased. CRU kits are listed on the Illustrated Parts List ([page 15](#)).

 **IMPORTANT:** Feet replacements must be ordered for each repair.

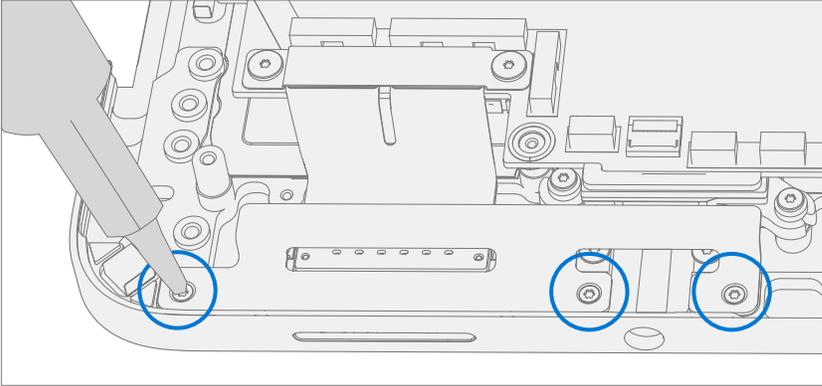
Prerequisite Steps

- **Power off device** – Ensure device is powered off by fully discharging the battery. Refer to Repair-Specific Precautions and Warnings section ([page 10](#)) for details. Ensure device is disconnected from a power supply and all cables and drives are removed.
- **ESD Prevention** – Check to make sure that general guidelines and ESD Prevention steps are followed prior to opening device. Refer to ESD Prevention section ([page 14](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Procedure – Removal (Feet) on ([page 19](#)).
- **Remove Chassis + Battery** – Refer to Procedure – Removal (Chassis + Battery) on ([page 22](#)).

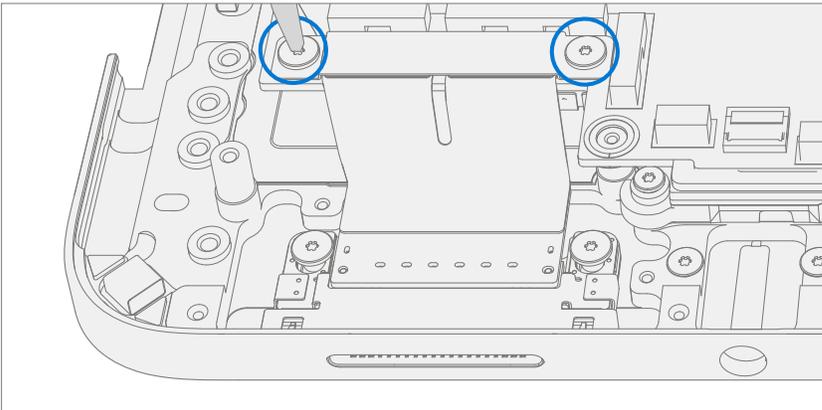


Procedure – Removal (Surflink Port)

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

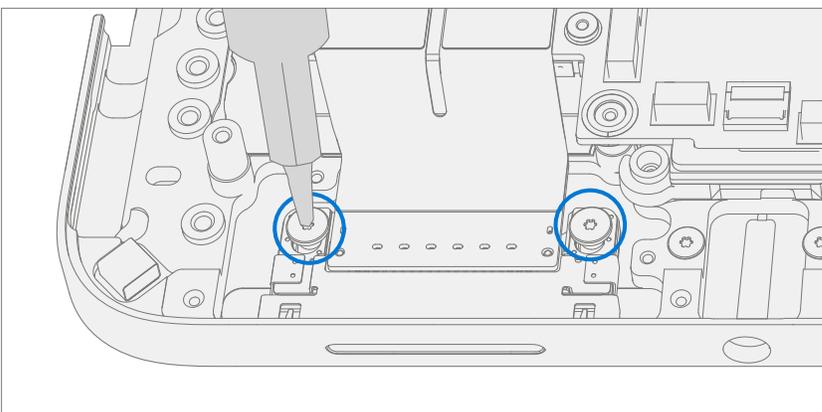


2. **Remove Surflink Bracket** – Using a 3IP (Torx-Plus) driver remove the 2 screws securing the Surflink Bracket to the PCBA. Remove the cable retainer.

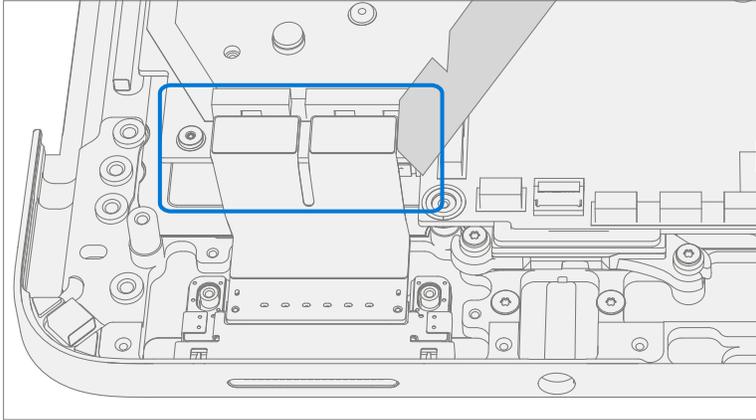


3. **Remove Surflink Port Screws** – Using a 3IP (Torx-Plus) driver remove the 2 screws securing the Surflink Port to the Keyboard.

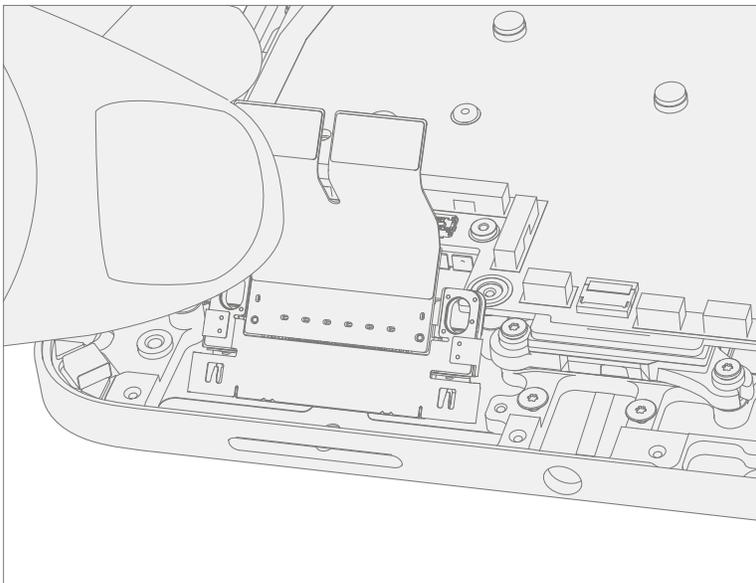
 **IMPORTANT:** Take care not to touch Surflink FPC's with driver. FPC's are delicate and can be easily damaged during removal / installation.



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



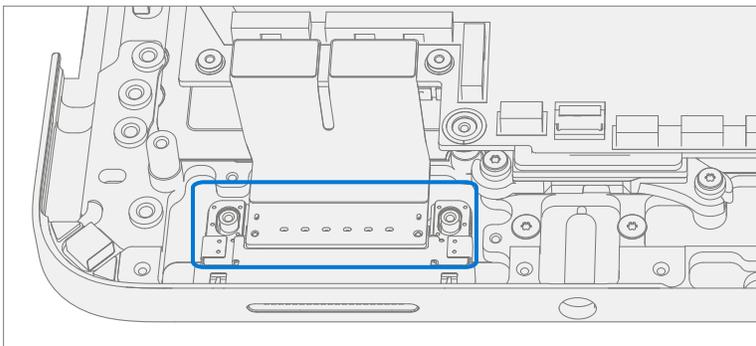
5. **Remove Surflink Port** – Remove the Surflink Port from the Keyboard.



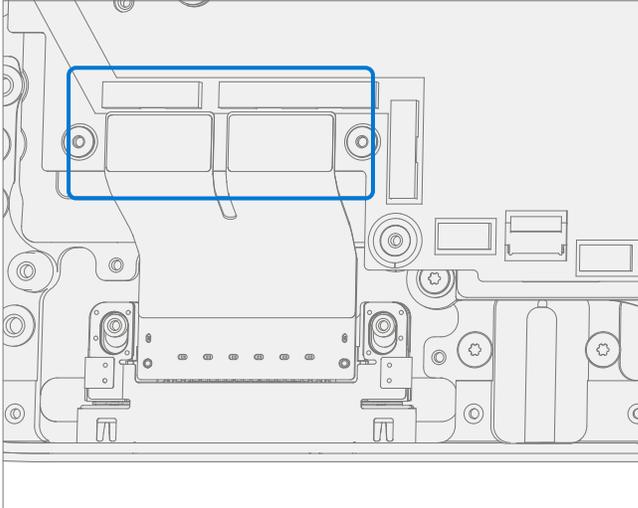
Procedure – Installation (Surflink Port)

1. **Install Surflink Port** – Place the Surflink Port into the Keyboard. Ensure the Keyboard posts nest into the Surflink Port slots.

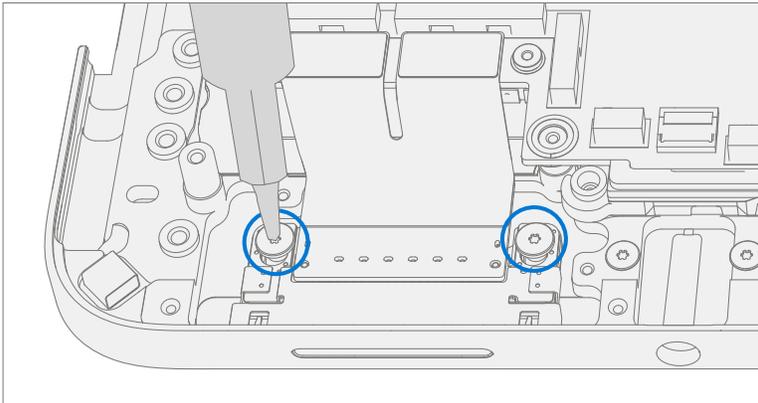
 **IMPORTANT:** Take care not to touch Surflink FPC's with driver. FPC's are delicate and can be easily damaged during removal / installation.



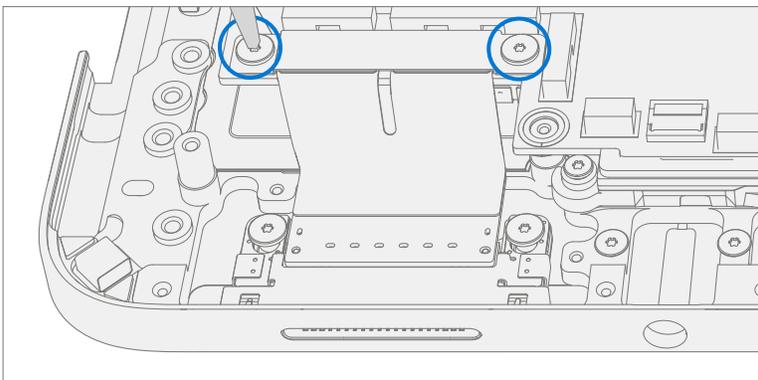
2. **Connect Surfink FPCs** – Align the FPC’s connectors to the PCBA and press down.



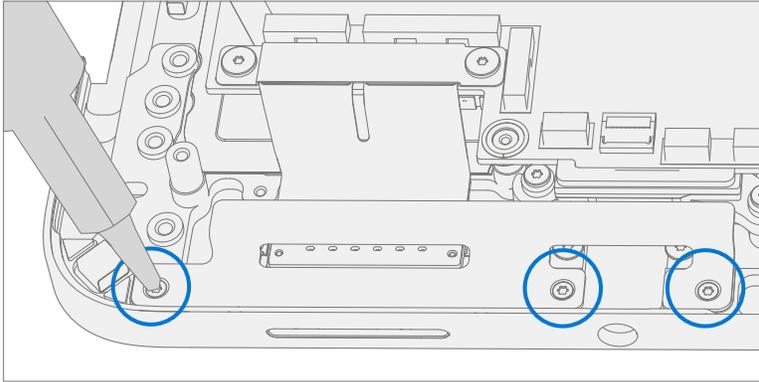
3. **Install new Surfink Port screws** – Using a 3IP (Torx-Plus) driver install 2 new Surfink Screws (M1149393). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



4. **Install Surfink Bracket** – Place the bracket over the Surfink FPCs. Using a 3IP (Torx-Plus) driver install 2 new Surfink Screws (M1149393). 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 Keyboard. Using a 3IP (Torx-Plus) driver install 3 new Left I/O Bracket Screws (M1109237). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



6. **Install Battery** – Follow steps for Procedure – Installation (Chassis + Battery) steps 4 through 8 on [\(page 27\)](#).

 **IMPORTANT:** During this installation only install rSSD and Chassis. Do not install Chassis 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 Chassis** – Follow steps for Procedure – Installation (Chassis + Battery) on [\(page 27\)](#).
10. **Install Cosmetic Plate (Optional)** – If cosmetic plate was damaged during repair it must be replaced. Follow steps for Procedure – Installation (Cosmetic Plate) on [\(page 93\)](#).
11. **Install Feet** – Follow steps for Procedure – Installation (Feet) on [\(page 20\)](#).



Audio Jack Replacement Process

Preliminary Requirements

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

Required Tools and Components

- All tools required for repair are listed under Service Tools and Jigs ([page 8](#))
- All parts required for this repair will be provided in the CRU kit being purchased. CRU kits are listed on the Illustrated Parts List ([page 15](#)).

 **IMPORTANT:** Feet replacements must be ordered for each repair.

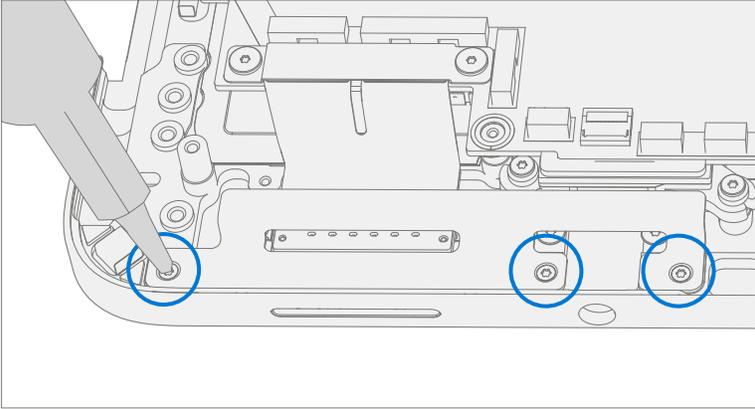
Prerequisite Steps

- **Power off device** – Ensure device is powered off by fully discharging the battery. Refer to Repair-Specific Precautions and Warnings section ([page 10](#)) for details. Ensure device is disconnected from a power supply and all cables and drives are removed.
- **ESD Prevention** – Check to make sure that general guidelines and ESD Prevention steps are followed prior to opening device. Refer to ESD Prevention section ([page 14](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Procedure – Removal (Feet) on ([page 19](#)).
- **Remove Chassis + Battery** – Refer to Procedure – Removal (Chassis + Battery) on ([page 22](#)).

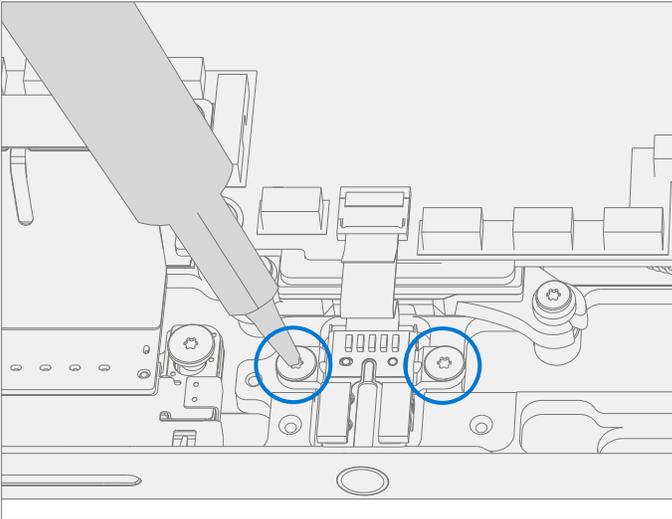


Procedure – Removal (Audio Jack)

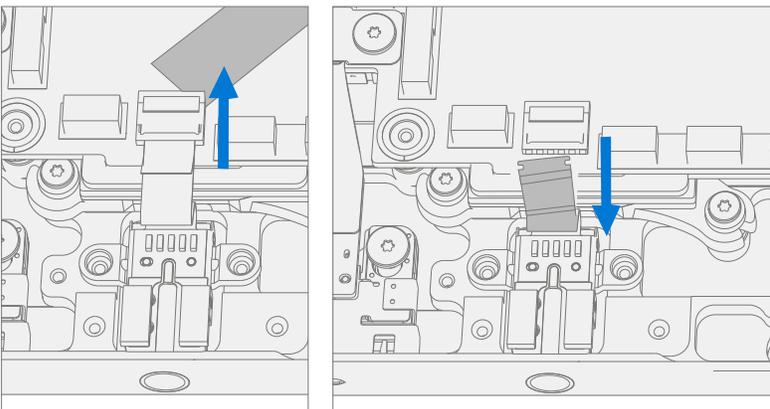
1. **Remove Left I/O Bracket** – Using a 3IP (Torx-Plus) driver remove the 3 screws securing the left I/O Bracket to the Keyboard. Remove the Left I/O Bracket.



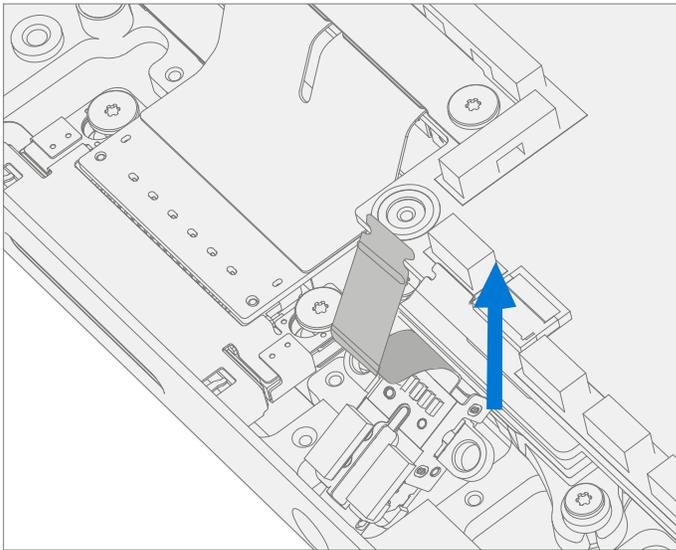
2. **Remove Audio Jack Screws** – Using a 3IP (Torx-Plus) driver remove the 2 screws securing the audio jack to the Keyboard.



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

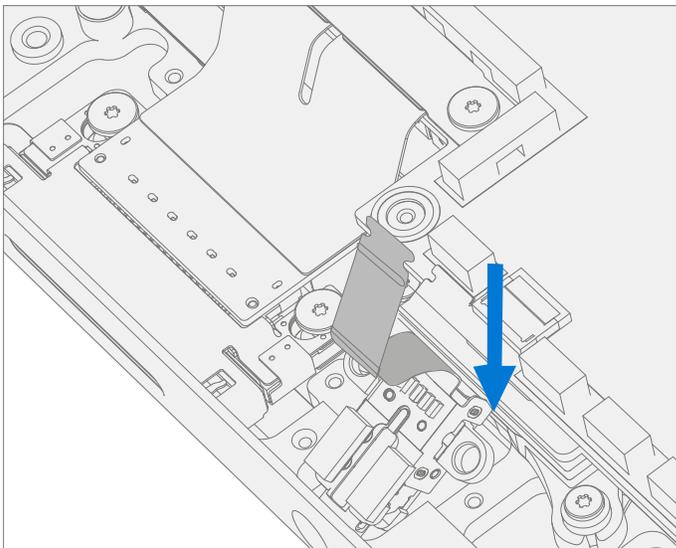


4. **Remove Audio Jack** – Remove the audio jack from the Keyboard by pulling up on the side with the FPC. Carefully move the Audio Jack from side to side during removal.

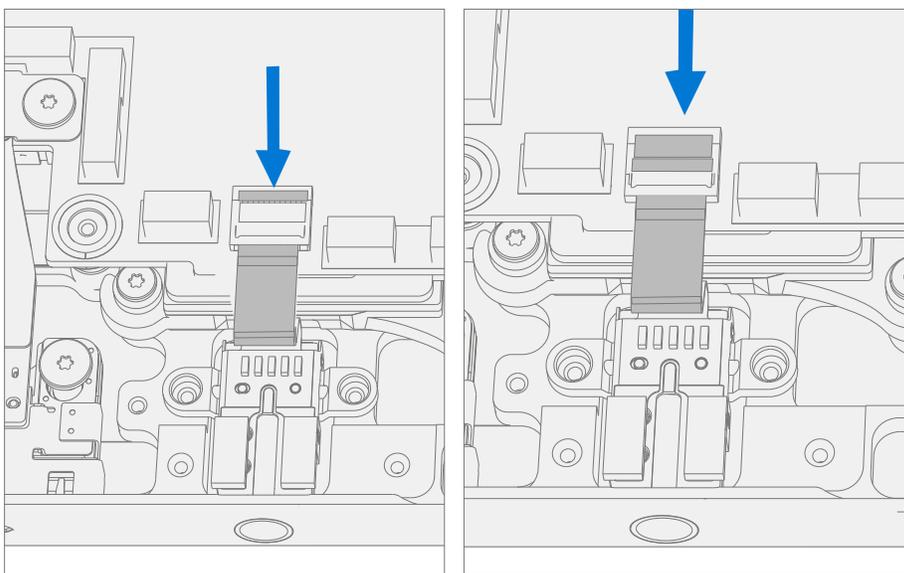


Procedure – Installation (Audio Jack)

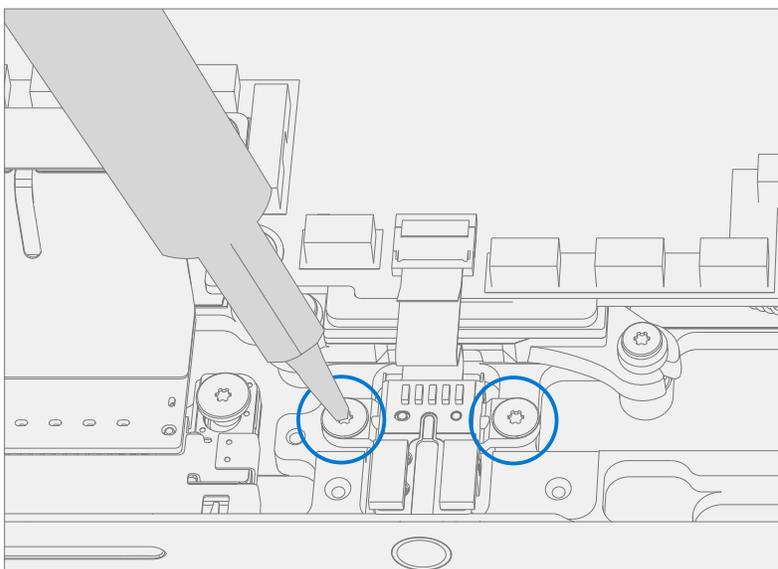
1. **Install Audio Jack** – Place the open end of the audio jack into the hole in the Keyboard. Carefully move the Audio Jack from side to side during installation.



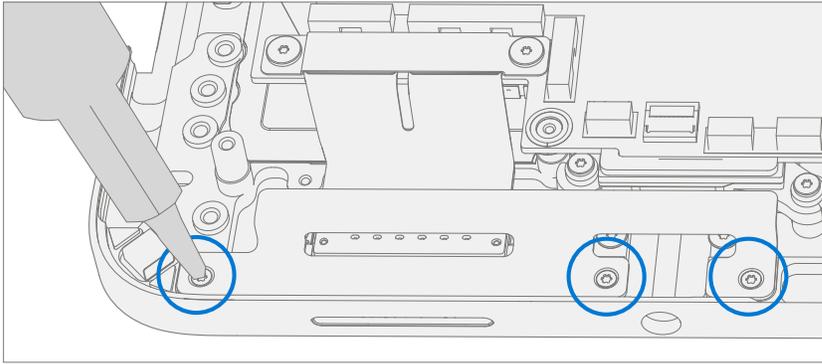
2. **Connect Audio Jack FPC** – Ensure the lock is released on the Audio Jack FPC connector. Install the Audio Jack FPC into the PCBA connector. Secure the connector lock.



3. **Install New Audio Jack Screws** – Using a 3IP (Torx-Plus) driver install 2 new Audio Jack Screws (M1168360). 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 Keyboard. Using a 3IP (Torx-Plus) driver install 3 new Left I/O Bracket Screws (M1109237). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



5. **Install Battery** – Follow steps for Procedure – Installation (Chassis + Battery) steps 4 through 8 on [\(page 27\)](#).

 **IMPORTANT:** During this installation only install rSSD and Chassis. Do not install Chassis 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 Chassis** – Follow steps for Procedure – Installation (Chassis + Battery) on [\(page 27\)](#).
9. **Install Cosmetic Plate (Optional)** – If cosmetic plate was damaged during repair it must be replaced. Follow steps for Procedure – Installation (Cosmetic Plate) on [\(page 93\)](#).
10. **Install Feet** – Follow steps for Procedure – Installation (Feet) on [\(page 20\)](#).



USB-A + C Replacement Process

Preliminary Requirements

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

Required Tools and Components

- All tools required for repair are listed under Service Tools and Jigs ([page 8](#))
- All parts required for this repair will be provided in the CRU kit being purchased. CRU kits are listed on the Illustrated Parts List ([page 15](#)).

 **IMPORTANT:** Feet replacements must be ordered for each repair.

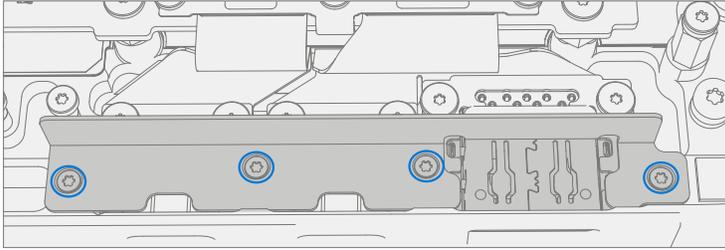
Prerequisite Steps

- **Power off device** – Ensure device is powered off by fully discharging the battery. Refer to Repair-Specific Precautions and Warnings section ([page 10](#)) for details. Ensure device is disconnected from a power supply and all cables and drives are removed.
- **ESD Prevention** – Check to make sure that general guidelines and ESD Prevention steps are followed prior to opening device. Refer to ESD Prevention section ([page 14](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Procedure – Removal (Feet) on ([page 19](#)).
- **Remove Chassis + Battery** – Refer to Procedure – Removal (Chassis + Battery) on ([page 22](#)).

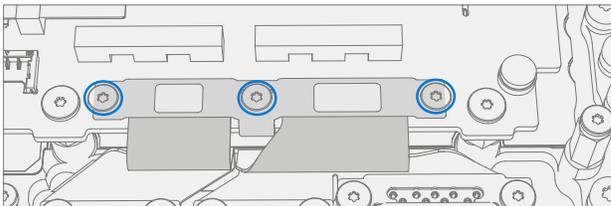


Procedure – Removal (USB-A + C)

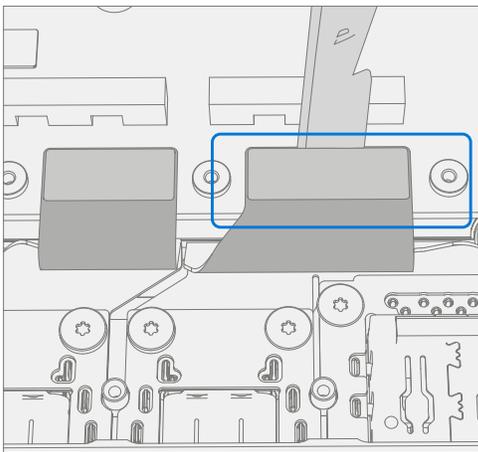
1. **Remove Right I/O Bracket** – Using a 3IP (Torx-Plus) driver remove the 4 screws securing the Right I/O Bracket to the chassis. Remove the Right I/O Bracket.



2. **Remove USB Bracket** – Using a 3IP (Torx-Plus) driver remove the 3 screws securing the USB Bracket to the motherboard.

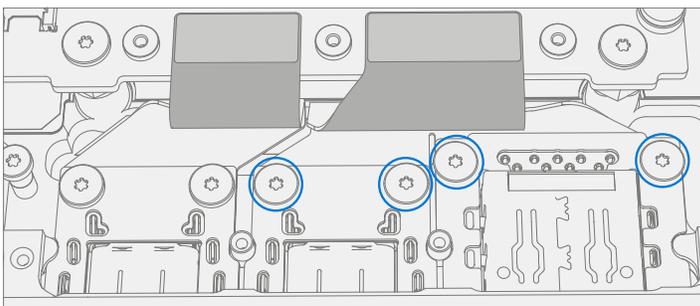


3. **Remove Right USB FPC** – Using a plastic spudger disconnect the right USB FPC from the motherboard.



4. **Remove USB-A + C Connector** – Using a 3IP (Torx-Plus) driver remove the right 4 screws securing the USB-A + C Ports to the chassis and remove

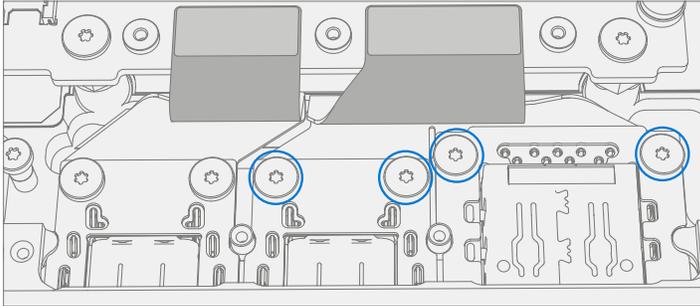
 **IMPORTANT:** Take care not to touch USB FPC's with driver. FPC's are delicate and can be easily damaged during removal / installation.



Procedure – Installation (USB-A + C)

1. **Install USB-A +C Connector** – Place the USB port into the chassis, aligning holes with posts on the chassis. Using a 3IP (Torx-Plus) driver install the 4 USB Port Screws (M1149389). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.

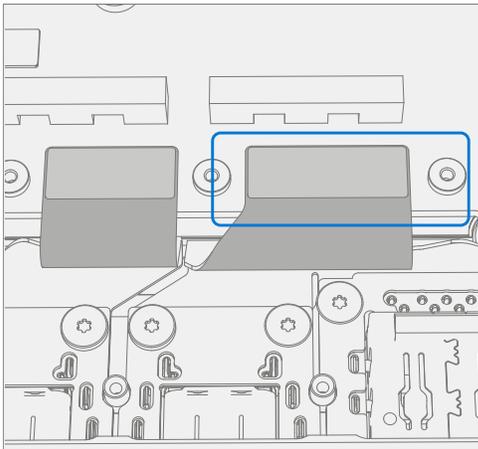
 **IMPORTANT:** Take care not to touch USB FPC's with driver. FPC's are delicate and can be easily damaged during removal / installation.



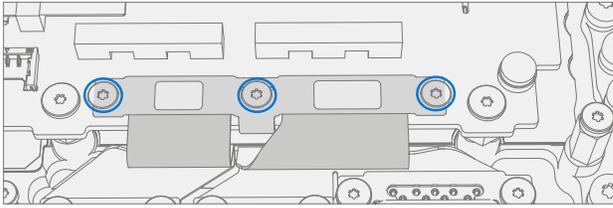
2. **Install Right USB FPC** – Align the right USB FPC to the motherboard and press down firmly. A small click may be heard.

 **IMPORTANT:** The connectors on the motherboard are fragile. Ensure proper alignment before pressing down connectors. Damage to the connectors on the motherboard requires a motherboard replacement.

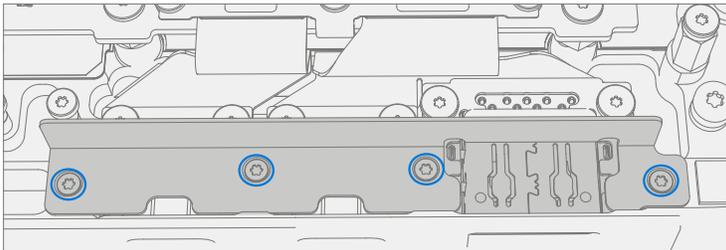
 **IMPORTANT:** The connector edge should be aligned with the mark line on the motherboard.



3. **Install USB Bracket** – Install the USB bracket using 3IP (Torx-Plus) driver and 3 USB Bracket Screws (M1167780). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



4. **Install Right I/O Bracket** – Install Right I/O bracket using a 3IP (Torx-Plus) driver and 4 Right I/O Bracket Screws (M1109237). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



5. **Install Battery** – Follow steps for Procedure – Installation (Chassis + Battery) steps 4 through 8 on [\(page 27\)](#).

 **IMPORTANT:** During this installation only install rSSD and Chassis. Do not install Chassis 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 Chassis** – Follow steps for Procedure – Installation (Chassis + Battery) on [\(page 27\)](#).
9. **Install Cosmetic Plate (Optional)** – If cosmetic plate was damaged during repair it must be replaced. Follow steps for Procedure – Installation (Cosmetic Plate) on [\(page 93\)](#).
10. **Install Feet** – Follow steps for Procedure – Installation (Feet) on [\(page 20\)](#).



USB-C Replacement Process

Preliminary Requirements

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

Required Tools and Components

- All tools required for repair are listed under Service Tools and Jigs ([page 8](#))
- All parts required for this repair will be provided in the CRU kit being purchased. CRU kits are listed on the Illustrated Parts List ([page 15](#)).

 **IMPORTANT:** Feet replacements must be ordered for each repair.

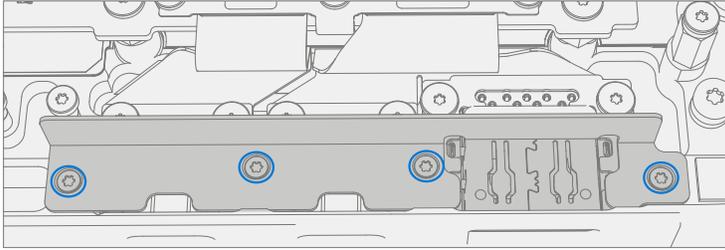
Prerequisite Steps

- **Power off device** – Ensure device is powered off by fully discharging the battery. Refer to Repair-Specific Precautions and Warnings section ([page 10](#)) for details. Ensure device is disconnected from a power supply and all cables and drives are removed.
- **ESD Prevention** – Check to make sure that general guidelines and ESD Prevention steps are followed prior to opening device. Refer to ESD Prevention section ([page 14](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Procedure – Removal (Feet) on ([page 19](#)).
- **Remove Chassis + Battery** – Refer to Procedure – Removal (Chassis + Battery) on ([page 22](#)).

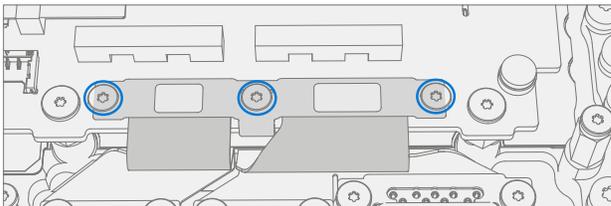


Procedure – Removal (USB-C)

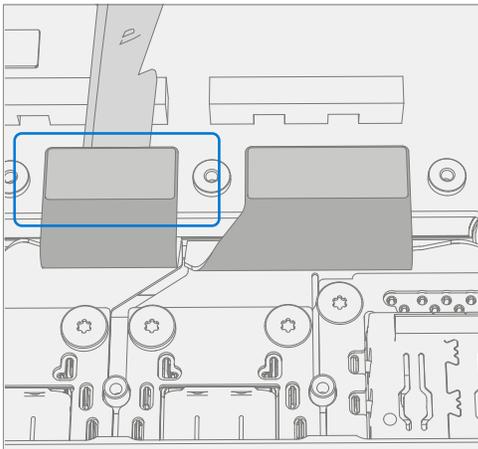
11. **Remove Right I/O Bracket** – Using a 3IP (Torx-Plus) driver remove the 4 screws securing the Right I/O Bracket to the chassis. Remove the Right I/O Bracket.



12. **Remove USB Bracket** – Using a 3IP (Torx-Plus) driver remove the 3 screws securing the USB Bracket to the motherboard.

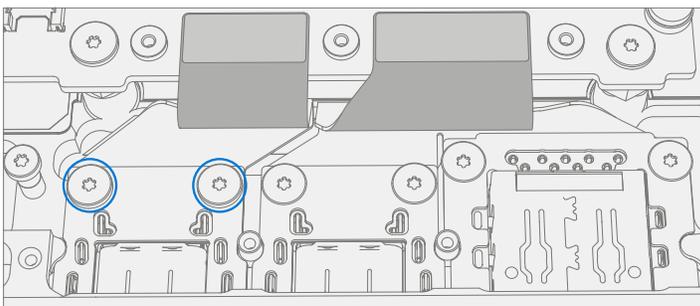


13. **Remove Left USB FPC** – Using a plastic spudger disconnect the left USB FPC from the motherboard.



14. **Remove USB Connectors** – Using a 3IP (Torx-Plus) driver remove the 2 screws securing the USB-C Port to the chassis and remove.

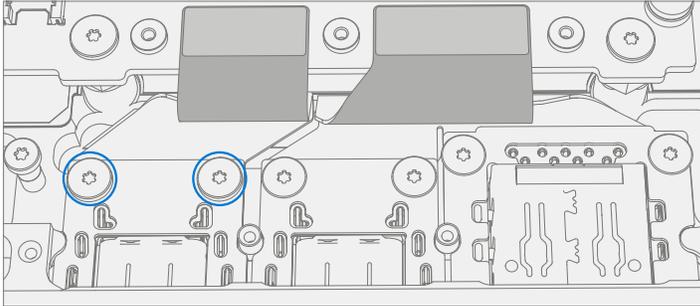
 **IMPORTANT:** Take care not to touch USB FPC's with driver. FPC's are delicate and can be easily damaged during removal / installation.



Procedure – Installation (USB-C)

1. **Install USB-C Connector** – Place USB-C port into the chassis, aligning holes with posts on the chassis. Using a 3IP (Torx-Plus) driver install the 2 USB Port Screws (M1149389). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.

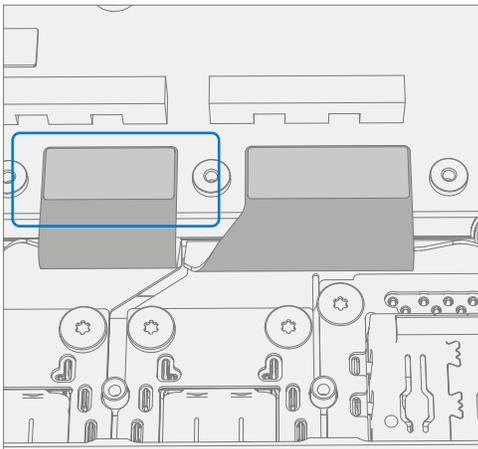
 **IMPORTANT:** Take care not to touch USB FPC's with driver. FPC's are delicate and can be easily damaged during removal / installation.



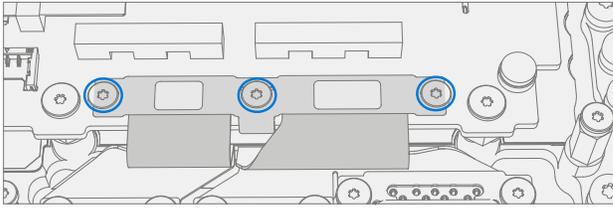
2. **Install Left USB FPC** – Connect the USB FPC's to the motherboard.

 **IMPORTANT:** The connectors on the motherboard are fragile. Ensure proper alignment before pressing down connectors. Damage to the connectors on the motherboard requires a motherboard replacement.

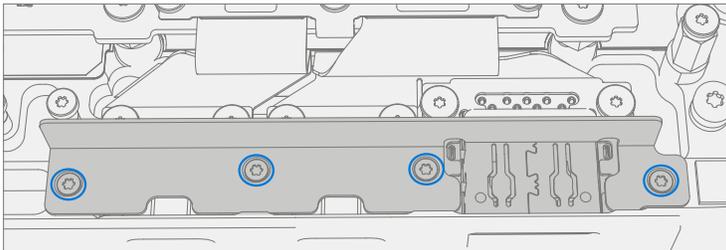
 **IMPORTANT:** The connector edge should be aligned with the mark line on the motherboard.



3. **Install USB Bracket** – Install the USB bracket using 3IP (Torx-Plus) driver and 3 USB Bracket Screws (M1167780). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



4. **Install Right I/O Bracket** – Install Right I/O bracket using a 3IP (Torx-Plus) driver and 4 Right I/O Bracket Screws (M1109237). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



5. **Install Battery** – Follow steps for Procedure – Installation (Chassis + Battery) steps 4 through 8 on [\(page 27\)](#).

 **IMPORTANT:** During this installation only install rSSD and Chassis. Do not install Chassis 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 Chassis** – Follow steps for Procedure – Installation (Chassis + Battery) on [\(page 27\)](#).
9. **Install Cosmetic Plate (Optional)** – If cosmetic plate was damaged during repair it must be replaced. Follow steps for Procedure – Installation (Cosmetic Plate) on [\(page 93\)](#).
10. **Install Feet** – Follow steps for Procedure – Installation (Feet) on [\(page 20\)](#).



Micro SD Slot Replacement Process

Preliminary Requirements

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

Required Tools and Components

- All tools required for repair are listed under Service Tools and Jigs ([page 8](#))
- All parts required for this repair will be provided in the CRU kit being purchased. CRU kits are listed on the Illustrated Parts List ([page 15](#)).

 **IMPORTANT:** Feet replacements must be ordered for each repair.

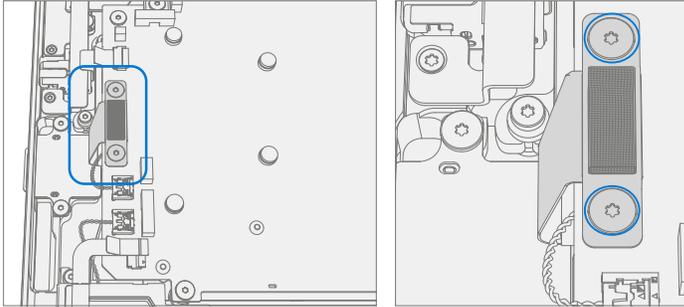
Prerequisite Steps

- **Power off device** – Ensure device is powered off by fully discharging the battery. Refer to Repair-Specific Precautions and Warnings section ([page 10](#)) for details. Ensure device is disconnected from a power supply and all cables and drives are removed.
- **ESD Prevention** – Check to make sure that general guidelines and ESD Prevention steps are followed prior to opening device. Refer to ESD Prevention section ([page 14](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Procedure – Removal (Feet) on ([page 19](#)).
- **Remove Chassis + Battery** – Refer to Procedure – Removal (Chassis + Battery) on ([page 22](#)).



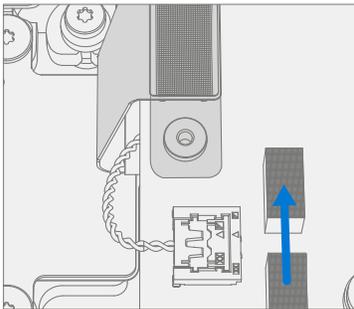
Procedure – Removal (Micro SD Slot)

1. **Remove Bracket** – Use a 3IP (Torx-Plus) driver to remove the 2 Micro SD Bracket Screws and remove the bracket.

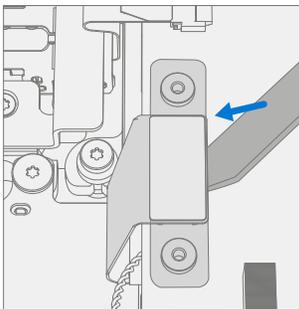


2. **Disconnect Left Tweeter** – Disconnect the left tweeter from the motherboard by lifting straight up. Move connector to the side.

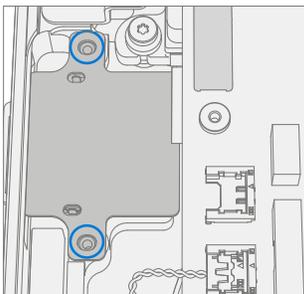
 **IMPORTANT:** Tweeter cables are fragile. Take care not to damage them.



3. **Disconnect Micro SD FPC** – Use a plastic spudger to disconnect the Micro SD FPC from the motherboard.



4. **Remove Micro SD Slot** – Using a 3IP (Torx-Plus) driver remove the 2 SD Slot Screws from the chassis. Lift Micro SD Slot to remove.



Procedure – Installation (Micro SD Slot)

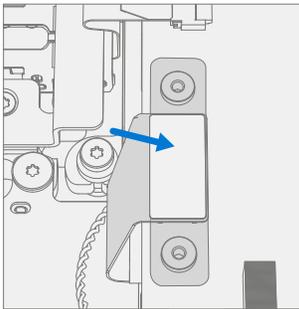
1. **Install Micro SD Slot** – Place the Micro SD Slot into the Keyboard Assembly. Using a 3IP (Torx-Plus) driver install the 2 SD Slot Screws (M1149393). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.

 **IMPORTANT:** Pull tweeter cable away from Micro SD Slot before installation. Tweeter cable should not be routed behind the Micro SD FPC.

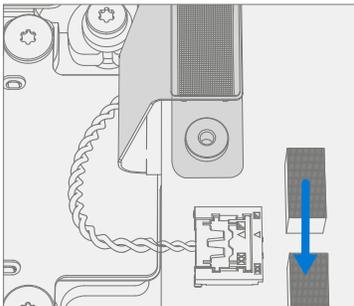


2. **Connect Micro SD FPC** – Making sure tweeter connector is out of the way, align the Micro SD Slot connector with the motherboard and press in firmly. A small click may be heard.

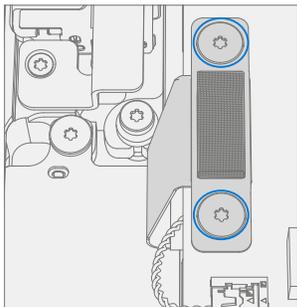
 **IMPORTANT:** The connectors on the motherboard are fragile. Ensure proper alignment before pressing down connectors. Damage to the connectors on the motherboard requires a motherboard replacement.



3. **Connect Left Tweeter** – Connect the left tweeter to the motherboard by aligning with connector and pressing down firmly.



4. **Install Bracket** – Place the Micro SD Bracket over the FPC. Using a 3IP (Torx-Plus) driver, install the 2 Micro SD Bracket Screws (M1156309). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



5. **Install Battery** – Follow steps for Procedure – Installation (Chassis + Battery) steps 4 through 8 on [\(page 27\)](#).

 **IMPORTANT:** During this installation only install rSSD and Chassis. Do not install Chassis 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 Chassis** – Follow steps for Procedure – Installation (Chassis + Battery) on [\(page 27\)](#).
9. **Install Cosmetic Plate (Optional)** – If cosmetic plate was damaged during repair it must be replaced. Follow steps for Procedure – Installation (Cosmetic Plate) on [\(page 93\)](#).
10. **Install Feet** – Follow steps for Procedure – Installation (Feet) on [\(page 20\)](#).



Motherboard Replacement Process

Preliminary Requirements

-
- ✎ **IMPORTANT:** Be sure to follow all special (**bolded**) notes of caution within each process section.
 - ✎ **IMPORTANT:** If replacing both the Motherboard and Display, complete the Motherboard repair first and ensure functionality before beginning the Display replacement procedure. Failure to do so may result in Display functionality being impacted.
-

Required Tools and Components

- All tools required for repair are listed under Service Tools and Jigs ([page 8](#))
- All parts required for this repair will be provided in the CRU kit being purchased. CRU kits are listed on the Illustrated Parts List ([page 15](#)).

-
- ✎ **IMPORTANT:** Feet replacements must be ordered for each repair.
-

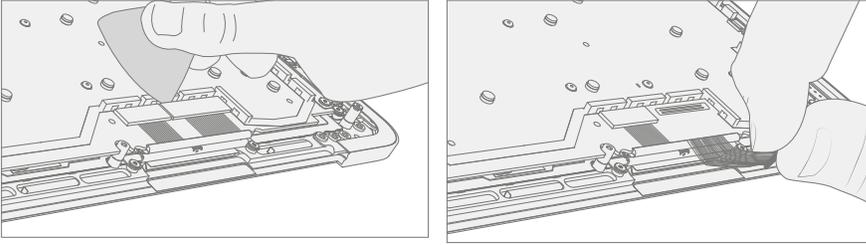
Prerequisite Steps

- **Power off device** – Ensure device is powered off by fully discharging the battery. Refer to Repair-Specific Precautions and Warnings section ([page 10](#)) for details. Ensure device is disconnected from a power supply and all cables and drives are removed.
- **ESD Prevention** – Check to make sure that general guidelines and ESD Prevention steps are followed prior to opening device. Refer to ESD Prevention section ([page 14](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Procedure – Removal (Feet) on ([page 19](#)).
- **Remove Chassis + Battery** – Refer to Procedure – Removal (Chassis + Battery) on ([page 22](#)).



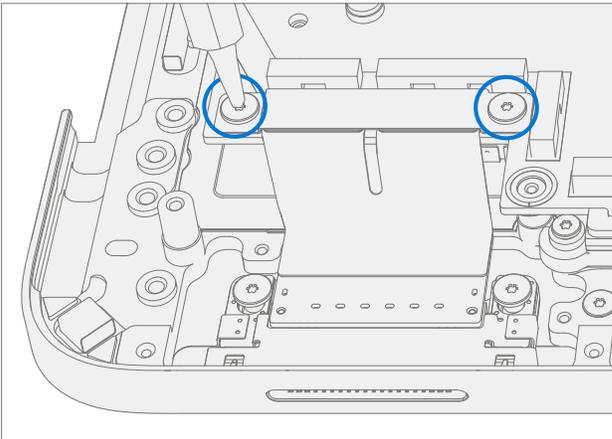
Procedure – Removal (Motherboard)

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.

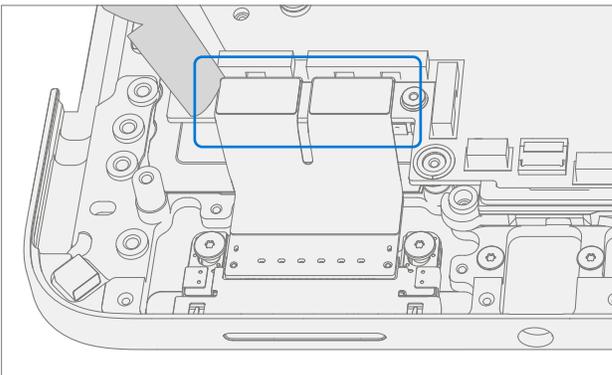


 **IMPORTANT:** The nearby foams are very delicate. Take care to not damage or remove them.

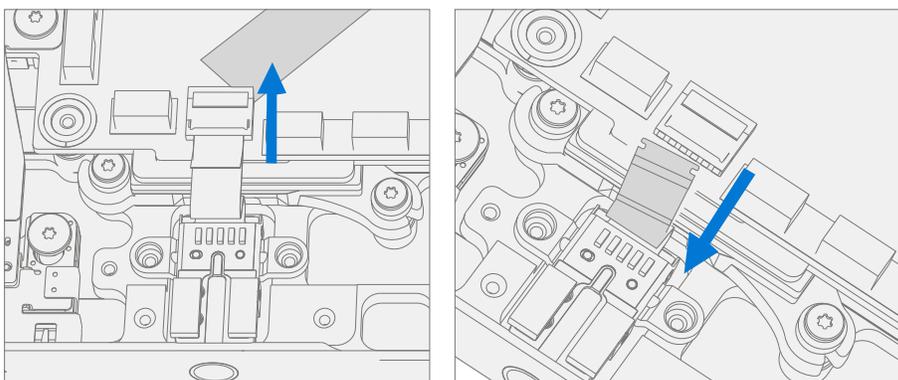
2. **Remove Surflink Bracket** – Using a 3IP (Torx-Plus) driver remove the 2 screws securing the Surflink Bracket to the PCBA. Remove the bracket.



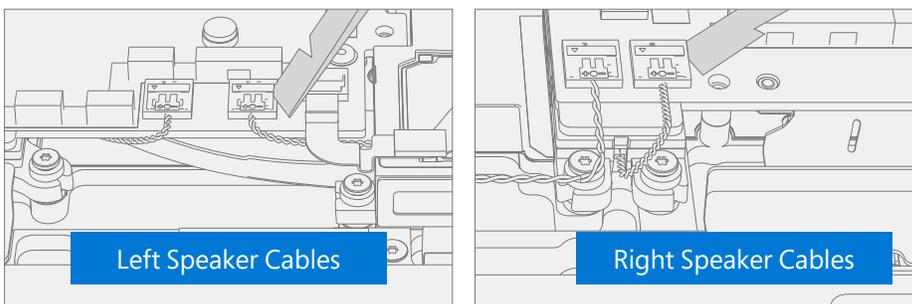
3. **Disconnect Surflink FPCs** – Using a plastic tool disconnect the Surflink FPCs from the PCBA.



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



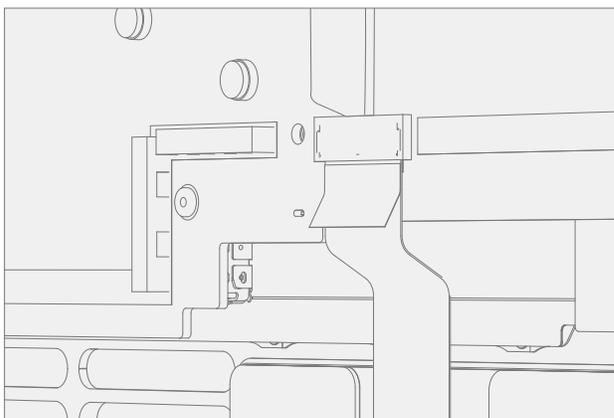
5. **Disconnect 4 Speaker Cables** – Using a plastic tool carefully release the 4 speaker connectors from the PCBA.



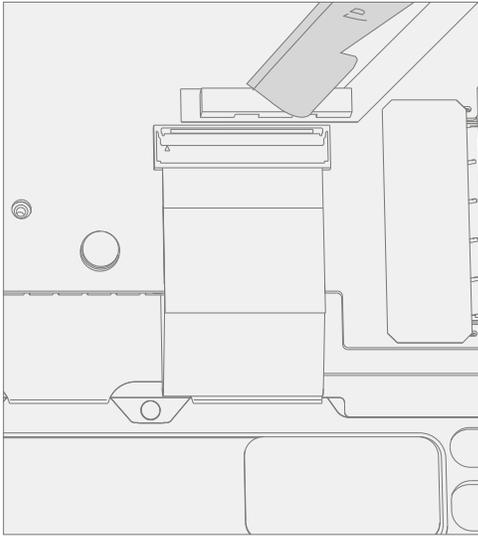
6. **Disconnect Fan FPCs** – Release the locks on the left and right Fan FPC connectors. Remove the left and right Fan FPCs from the PCBA connectors.



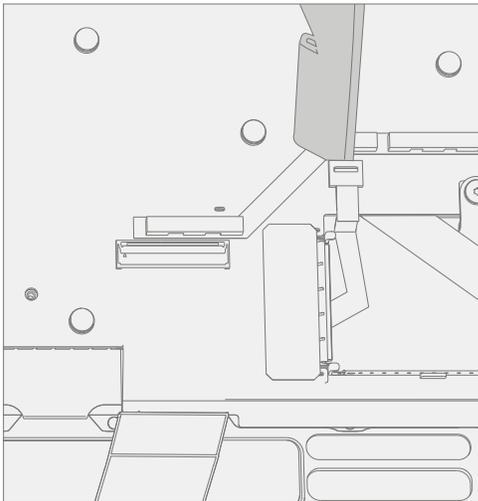
7. **Disconnect Trackpad FPC** – Release the lock on the Trackpad FPC connector. Remove the Trackpad FPC from the PCBA connector.



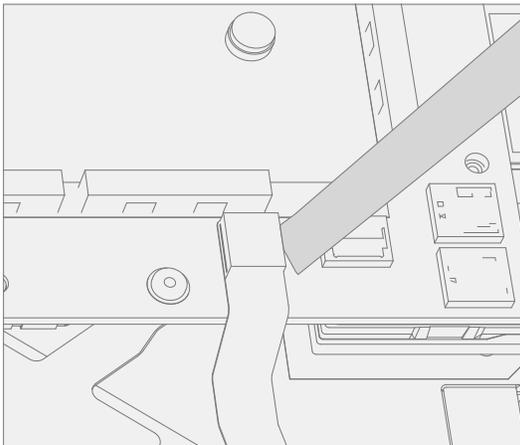
8. **Disconnect Keypad FPC** – Release the lock on the Keypad FPC connector. Remove the Keypad FPC from the PCBA connector.



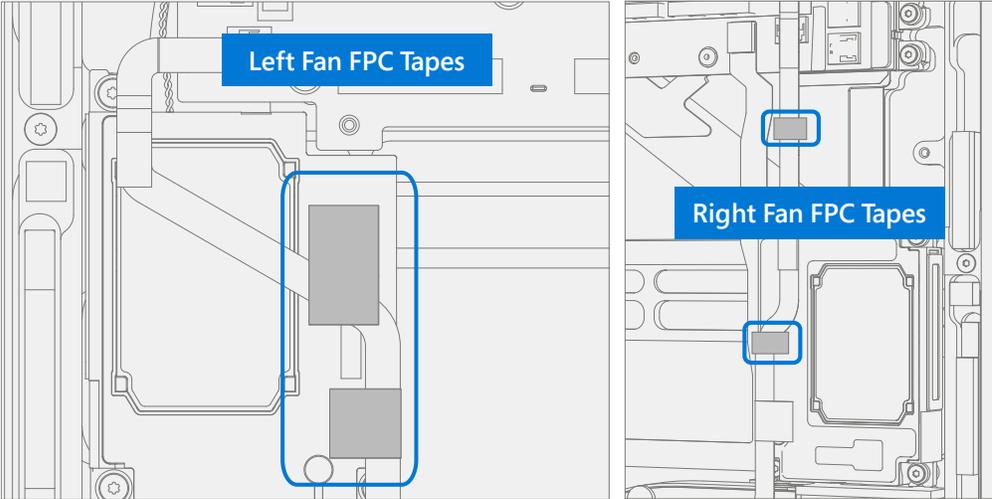
9. **Disconnect Keypad Backlight FPC** – Release the lock on the Keypad Backlight FPC connector. Remove the Keypad Backlight FPC from the PCBA connector.



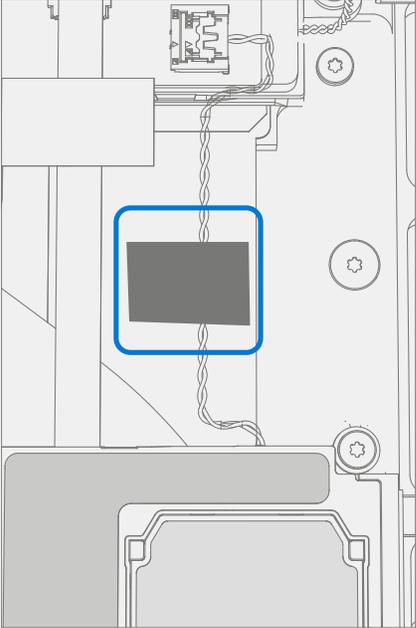
10. **Disconnect Wireless Pen Charger FPC** – Using a plastic tool carefully release the Wireless Pen Charger from the PCBA connector.



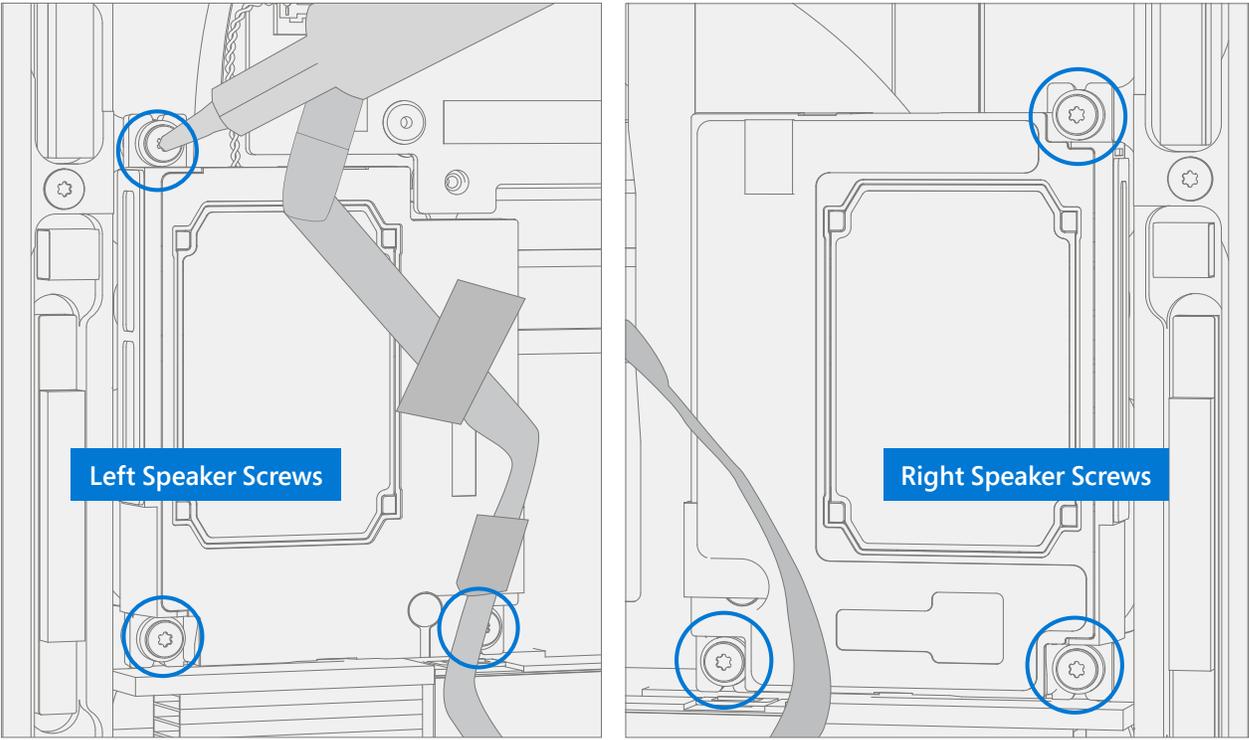
11. **Remove Fan FPC Tapes** – Carefully remove the 4 black tapes securing the fan FPCs. And 1 black tape securing the subwoofer.



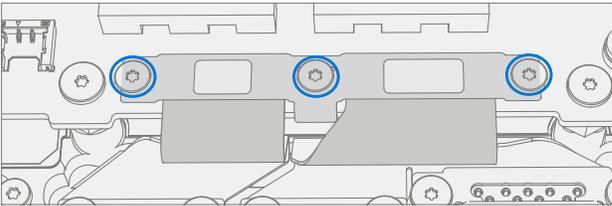
12. **Remove Speaker Tape** – Remove the tape holding the subwoofer wire.



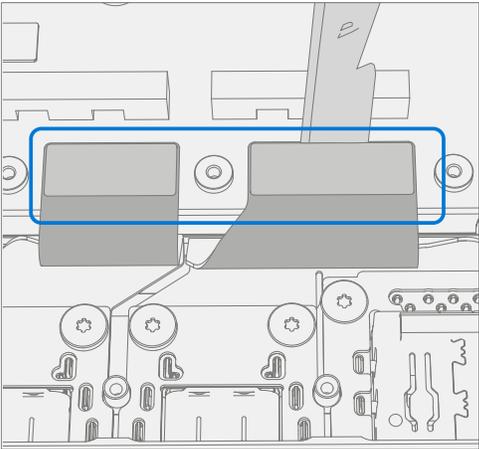
13. **Remove Left and Right Speakers** – Using a 3IP (Torx-Plus) driver remove the 3 screws securing the left speaker, and 3 screws securing the right speaker to the Keyboard. Remove the speakers.



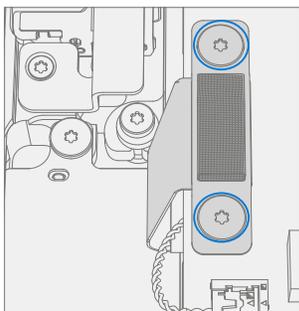
14. **Remove USB Bracket**– Using a 3IP (Torx-Plus) driver remove the 3 screws securing the USB Bracket to the motherboard.



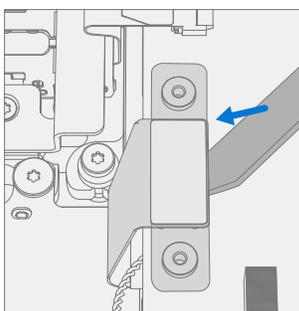
15. **Remove USB FPC's** – Using a plastic spudger disconnect the two USB FPC's from the motherboard.



16. **Remove Micro SD Slot Bracket** – Use a 3IP (Torx-Plus) driver to remove the 2 Micro SD Bracket Screws and remove the bracket.

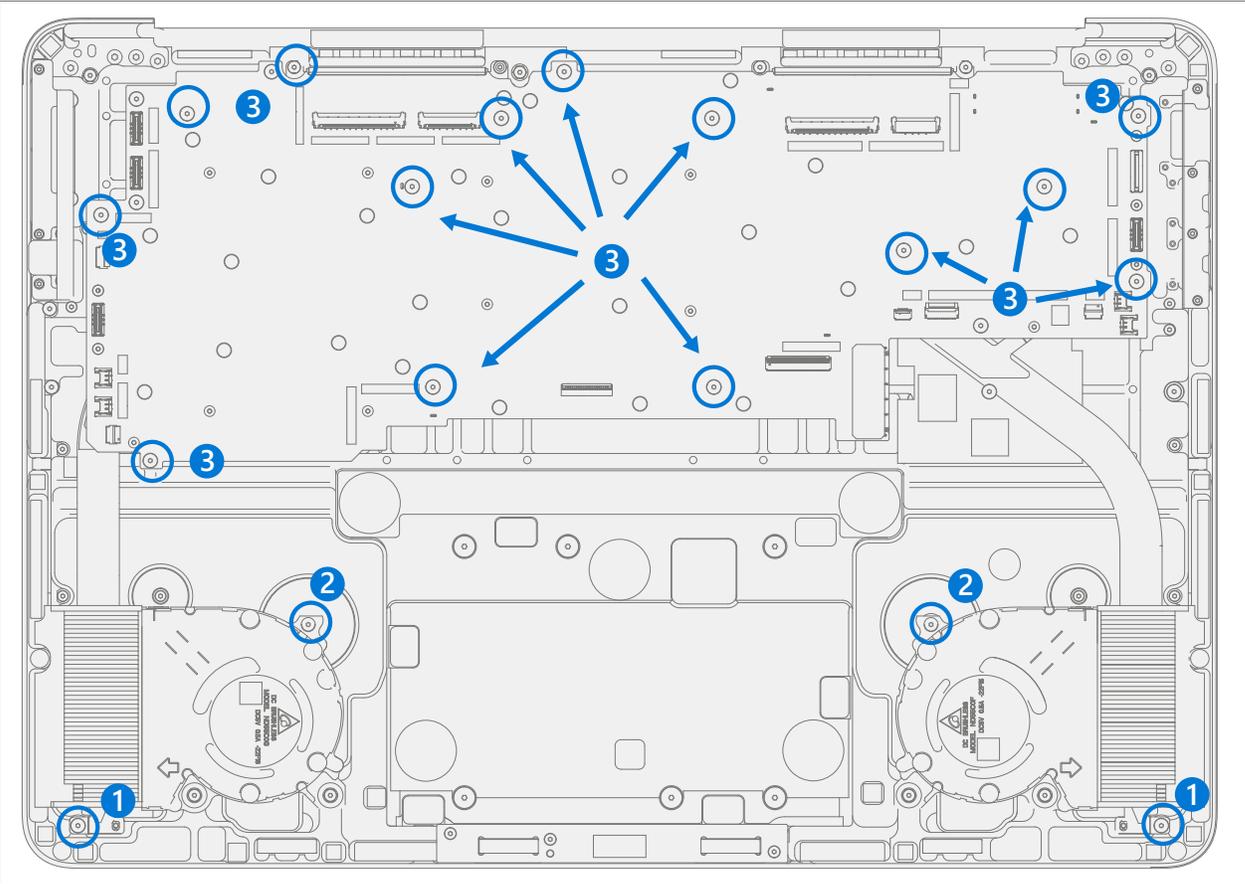


17. **Disconnect Micro SD FPC** – Use a plastic spudger to disconnect the Micro SD FPC from the motherboard.

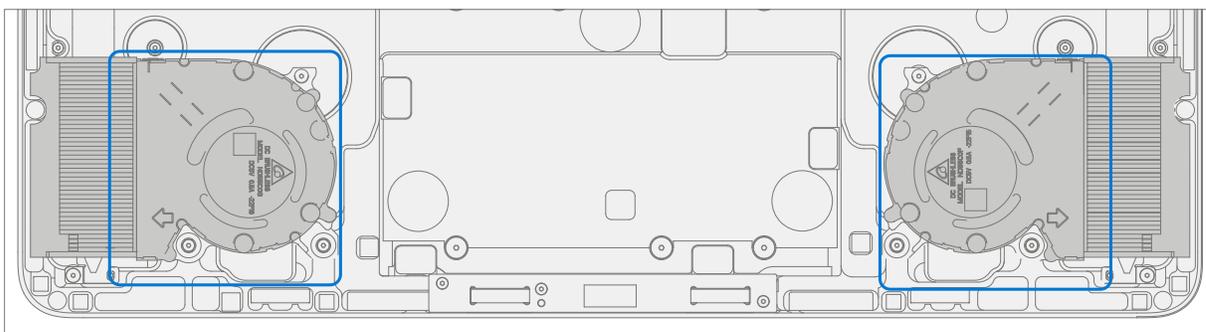


18. Remove Screws

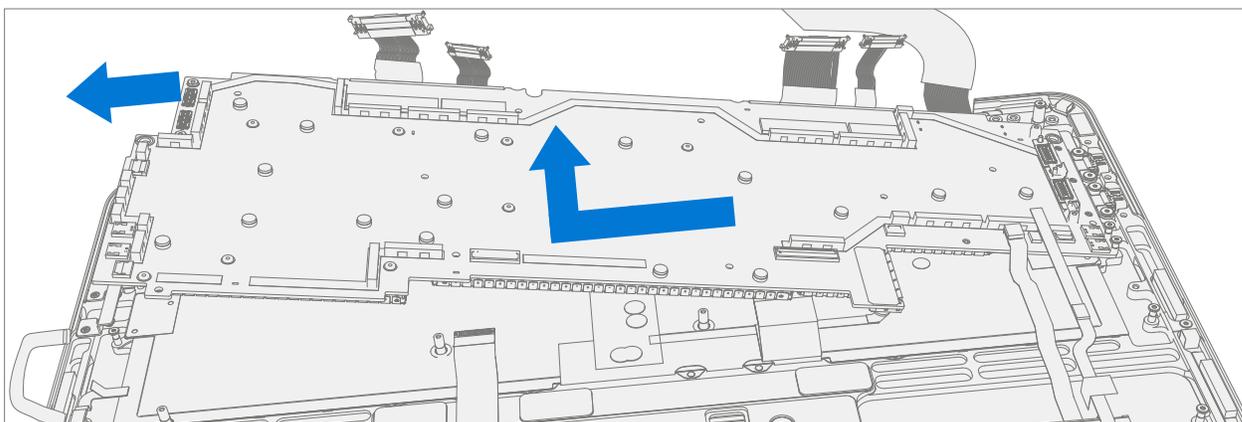
- a. Using a 3IP (Torx-Plus) driver remove the 2 screws, marked 1, securing the thermal module to the Keyboard.
- b. Using a 3IP (Torx-Plus) driver remove the 2 screws, marked 2, securing the fans to the Keyboard.
- c. Using a 3IP (Torx-Plus) driver remove the 14 screws, marked 3, securing the motherboard to the Keyboard.



19. **Remove Fans** – Remove the left and right fans from the chassis. Reserve the grommets under the fans for future installation.

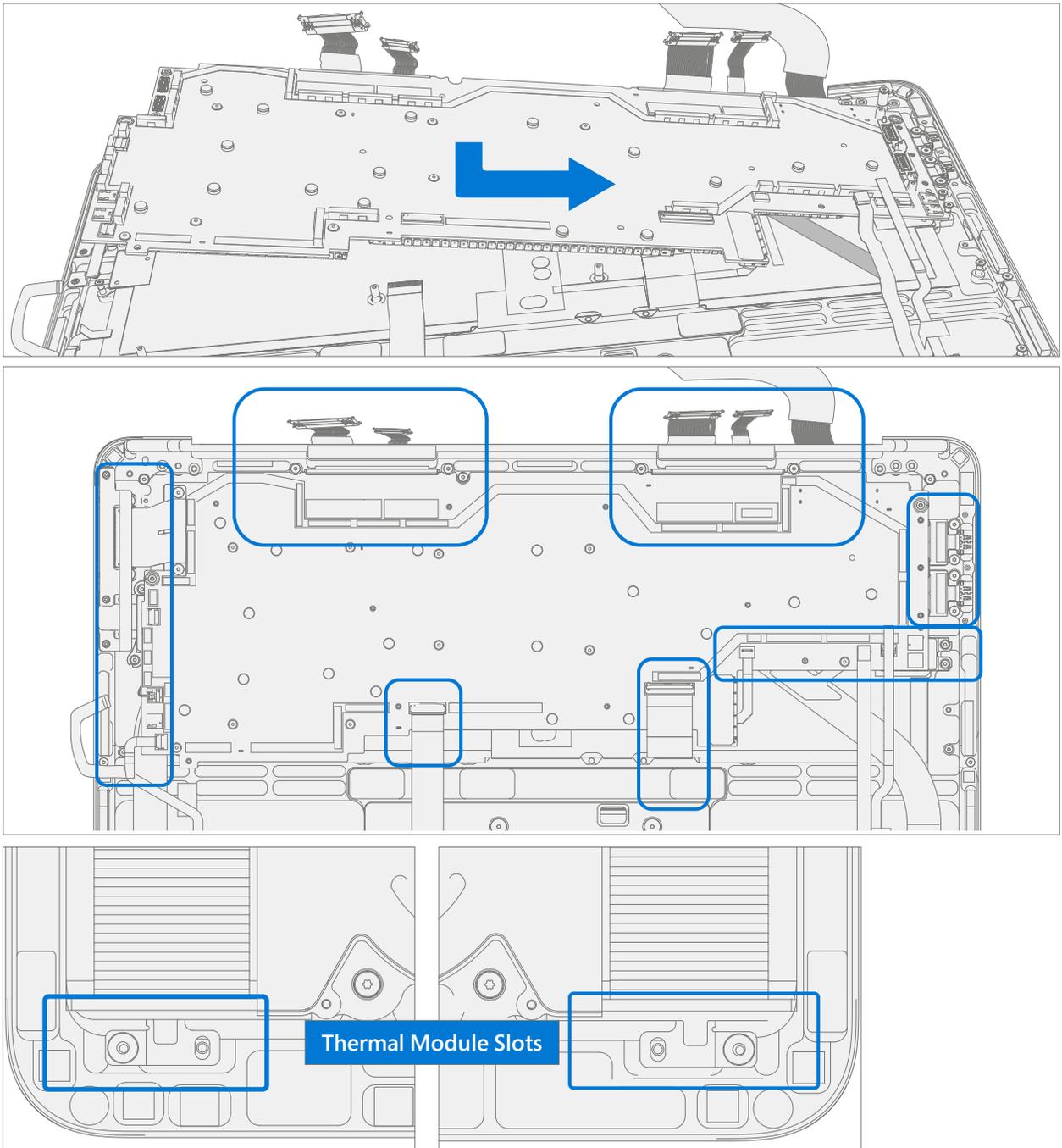


20. **Remove PCBA** – Start by holding the Surflink and Micro SD Slot FPC's out of the way and slightly pick up the left side of the PCBA. Rotate the PCBA up and out. Ensure no FPC's or connectors catch on the motherboard.



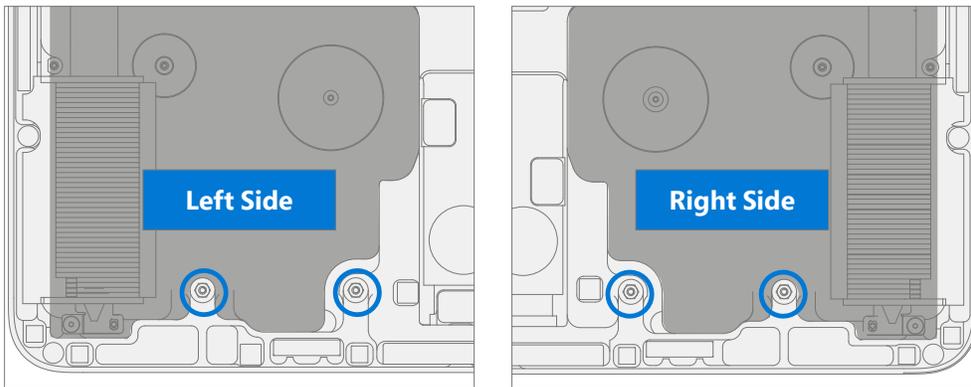
Procedure – Installation (Motherboard)

1. **Install PCBA** – Install the right side of the PCBA down and into the Keyboard. Ensure no connectors or FPC's catch on the motherboard or get pinched underneath. Lower the left side of the PCBA into the Keyboard while holding the Surflink and Micro SD Slot FPC's out of the way.



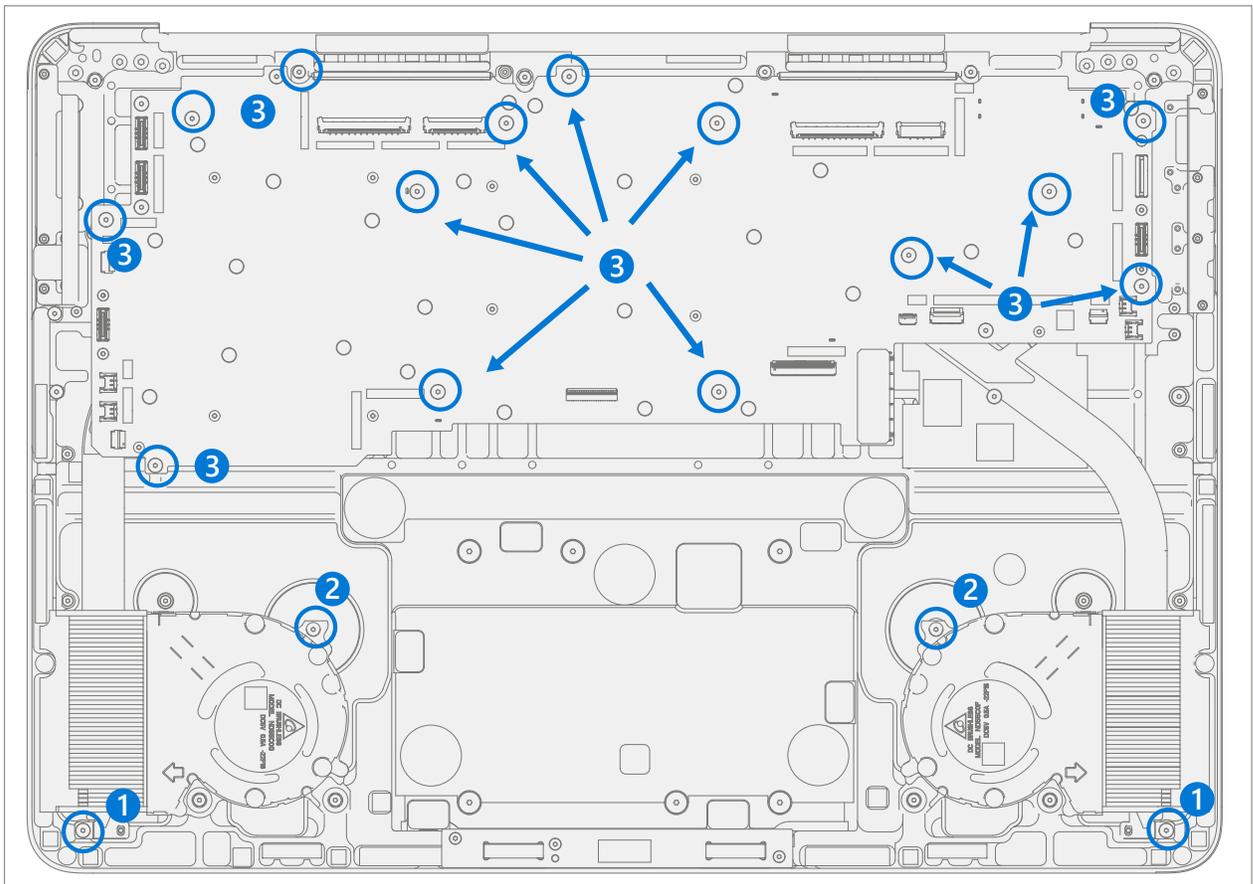
-
- IMPORTANT:** Verify the 15 cables and FPC's are not captured under the PCBA. The Fan and Wireless Pen Charger FPC's route over the thermal heat pipe. Ensure the thermal module slots align over the posts in the Keyboard.
-

2. **Install Fans** – Place 2 grommets on each post for the left and right-side fans as shown below. Install fans, aligning holes with posts.



3. **Install 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 Thermal Module Screws (M1149393), marked 1.
 - b. Using a 3IP (Torx-Plus) driver install 2 new Fan Screws (M1007493), marked 2.
 - c. Using a 3IP (Torx-Plus) driver install 14 new Motherboard Screws (M1184901), marked 3.

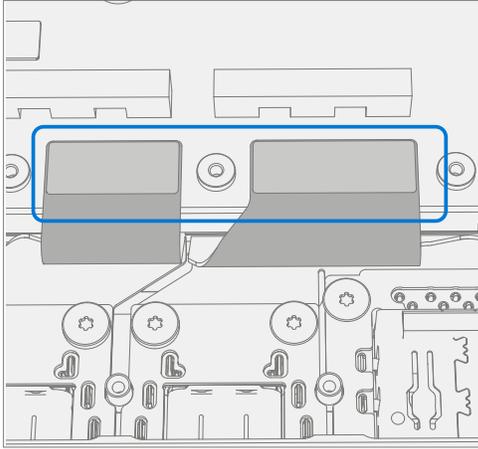
IMPORTANT: Screws are different lengths. Failure to install screws correctly could result in screws coming undone over time and causing internal damage.



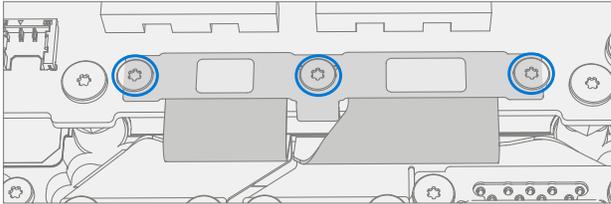
4. **Install USB FPC's** – Connect the USB FPC's to the motherboard.

✎ **IMPORTANT:** The connectors on the motherboard are fragile. Ensure proper alignment before pressing down connectors. Damage to the connectors on the motherboard requires a motherboard replacement.

✎ **IMPORTANT:** The connector edge should be aligned with the mark line on the motherboard.

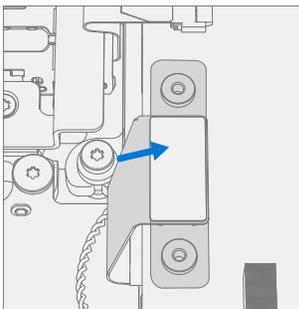


5. **Install USB Bracket**– Install the USB bracket using 3IP (Torx-Plus) driver and 3 USB Bracket Screws (M1167780). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.

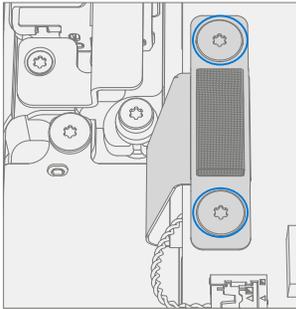


6. **Connect Micro SD FPC** – Making sure tweeter connector is out of the way, align the Micro SD Slot connector with the motherboard and press in firmly. A small click may be heard.

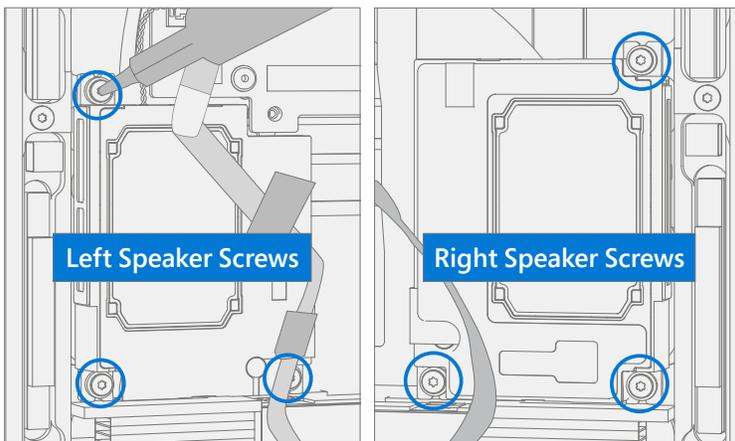
✎ **IMPORTANT:** The connectors on the motherboard are fragile. Ensure proper alignment before pressing down connectors. Damage to the connectors on the motherboard requires a motherboard replacement.



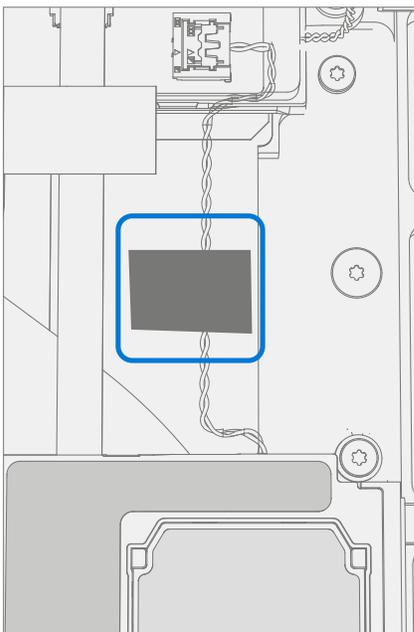
7. **Install Micro SD Slot Bracket** – Place the Micro SD Bracket over the FPC. Using a 3IP (Torx-Plus) driver, install the 2 Micro SD Bracket Screws (M1156309). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



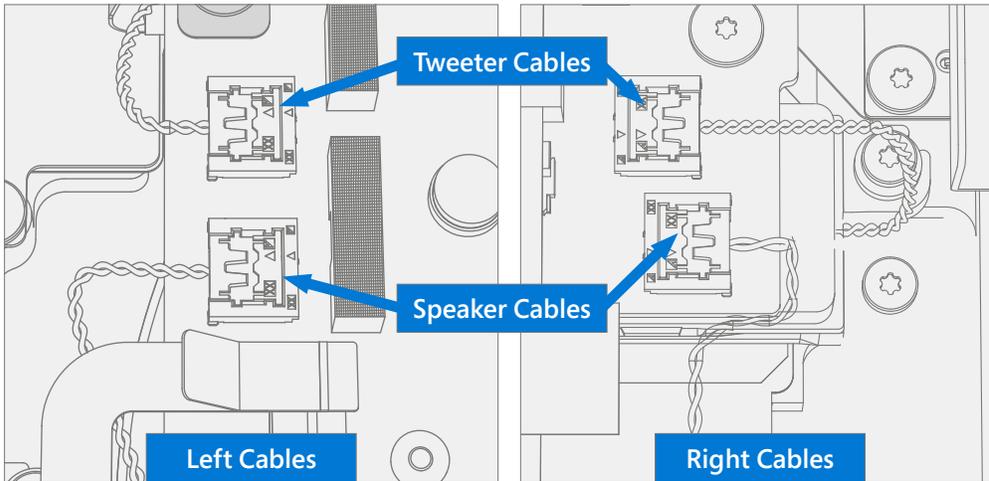
8. **Install Left and Right Speakers** – Place the left and right speakers into the Keyboard. Using a 3IP (Torx-Plus) driver install 3 new Speaker Screws (M1202147) in the left speaker, and 3 new Speaker Screws (M1202147) in the right speaker. Turn all screws until just snug and seated, and then turn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



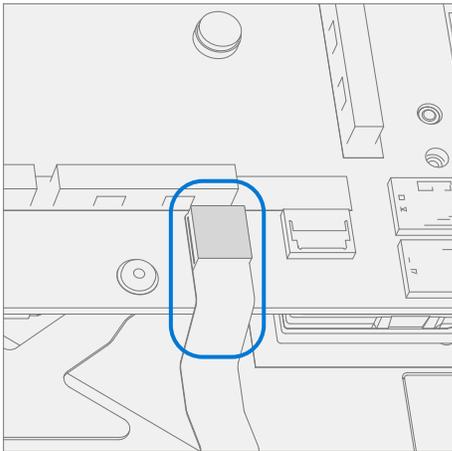
9. **Install Speaker Tape** – Install the tape holding the subwoofer wire in area shown.



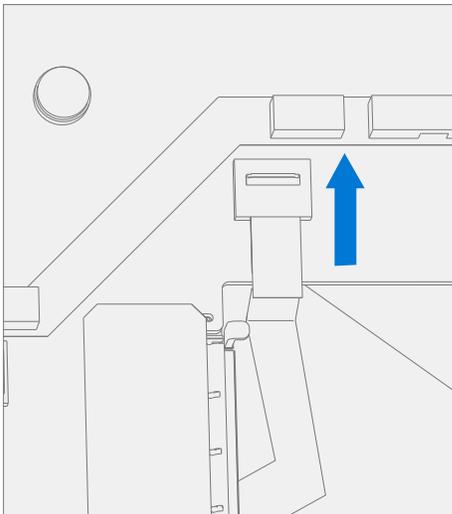
10. **Connect 4 Speaker Cables** – Align the left and right Speaker Cable connectors to the PCBA and press down. Ensure the cables do not overlap and are routed as pictured below.



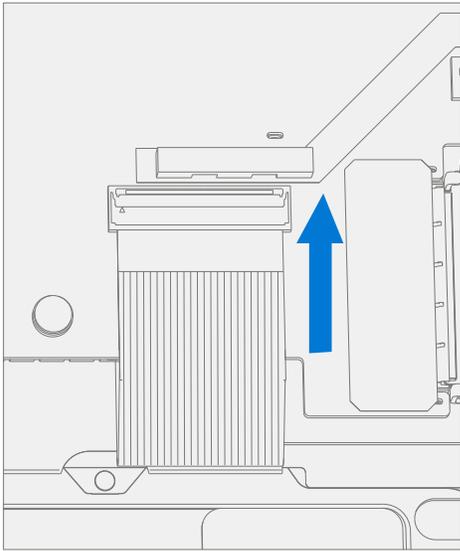
11. **Connect Wireless Pen Charger FPC** – Align the FPC's connector to the PCBA and press down.



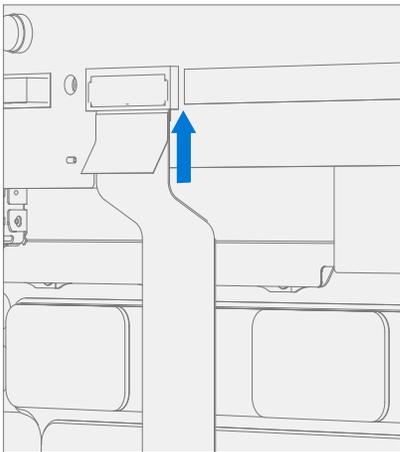
12. **Connect Keyset Backlight FPC** – Ensure the lock is released on the Keyset Backlight FPC connector. Install the Keyset Backlight FPC into the PCBA connector. Secure the connector lock.



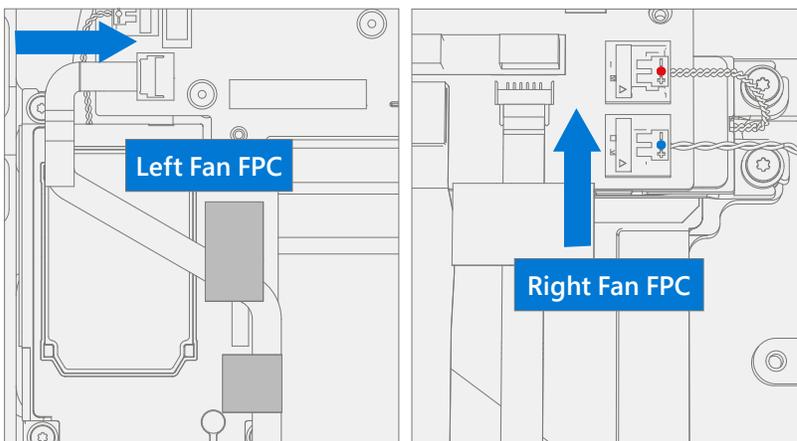
13. **Connect Keypad FPC** – Ensure the lock is released on the Keypad FPC connector. Install the Keypad FPC into the PCBA connector. Secure the connector lock.



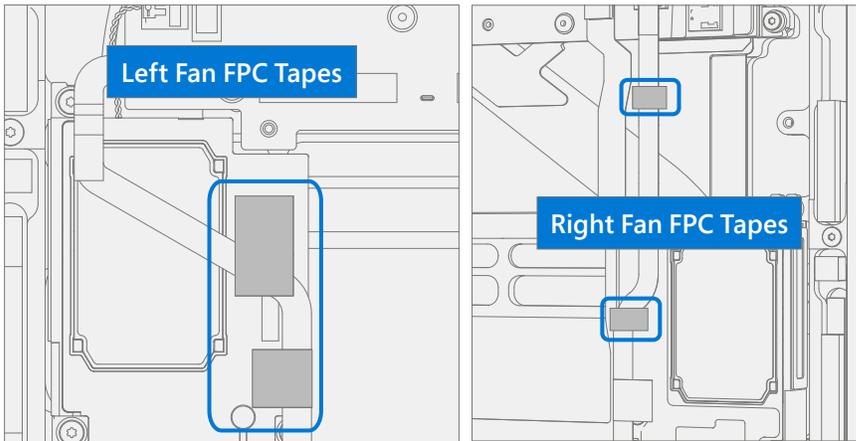
14. **Connect Trackpad FPC** – Ensure the lock is released on the Trackpad FPC connector. Install the Trackpad FPC into the PCBA connector. Secure the connector lock.



15. **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.

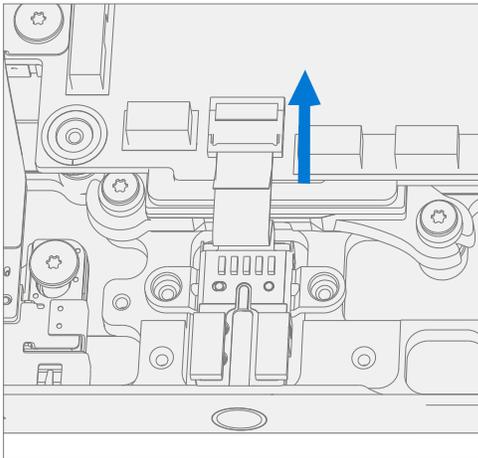


16. **Install New Fan FPC Tapes** – Refer to the picture below for tape locations. Apply 2 black tapes to the left Fan FPC securing it to the left speaker. Apply 1 black tape on the right Fan FPC securing it to the right speaker. Apply 1 black tape on the right Fan FPC securing it to the Keyboard.

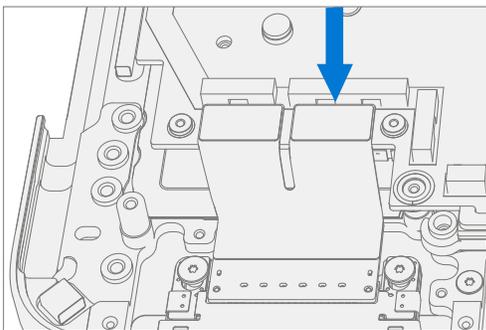


 **IMPORTANT:** Do not place tapes on the silver metallic areas of the speaker housings.

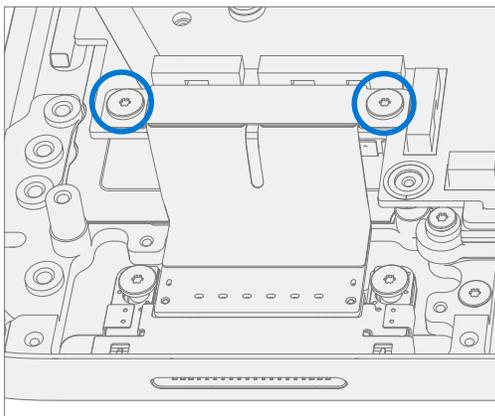
17. **Connect Audio Jack FPC** – Ensure the lock is released on the Audio Jack FPC connector. Install the Audio Jack FPC into the PCBA connector. Secure the connector lock.



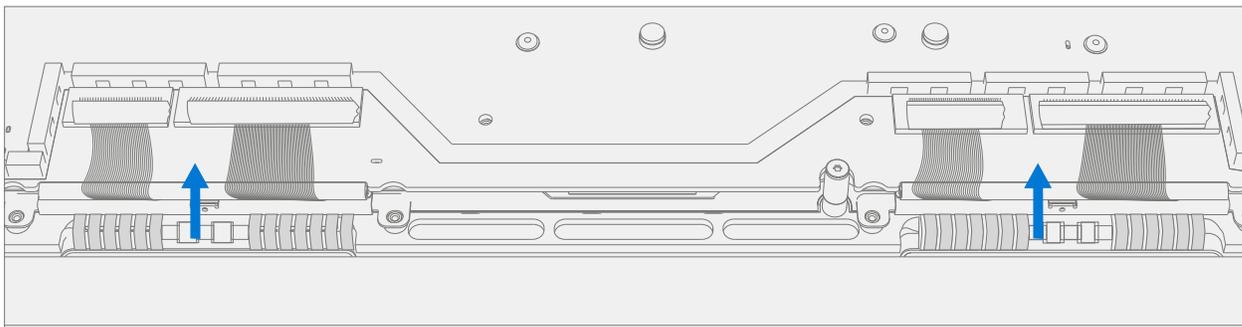
18. **Connect Surfink FPCs** – Align the FPC's connectors to the PCBA and press down.



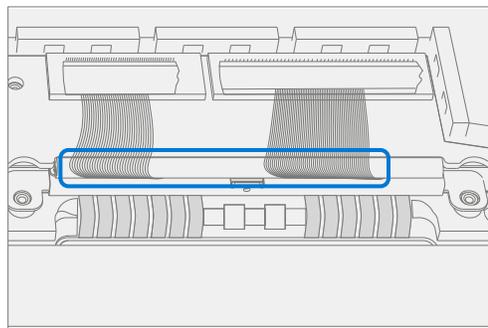
19. **Install Surfink Bracket** – Place the bracket over the Surfink FPCs. Using a 3IP (Torx-Plus) driver install 2 new Surfink Bracket Screws (M1149393). Turn all screws until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



20. **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 motherboard.



21. **Install Battery** – Follow steps for Procedure – Installation (Chassis + Battery) steps 4 through 7 on (page 27).

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

22. **Power On Device** – Carefully place device top side up. Connect device to power supply, open display, and power on.

23. **Complete Display Calibration**

- a. Connect software tools USB drive with SDT to USB connector on device under repair.
- b. Run software tool – At the device OS, use Windows Explorer, navigate to USB drive, and run:
SDT – Select Repair setup and validation. Run the Touch Display Calibration. Accept the restart prompt at the end of the tool process.

 **IMPORTANT:** This step must be conducted on the device successfully on installation of a new motherboard to ensure proper display functionality.

24. **New Battery Authentication** – Ensure the battery reads as authenticated in the Battery Repair (Validation) workflow in SDT. If the battery shows as inauthentic run the SDT Battery Repair (Validation) workflow in its entirety.

- Connect the SDT Configuration USB drive.
- Run the SDT Battery Repair (Validation) to ensure the battery is properly authenticated and all features and functions operate as expected.

 **IMPORTANT:** Battery authentication requires a stable internet connection. If any battery steps fail retry with a new internet connection. If failures continue reach out to Microsoft Support.

25. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.

26. **Install Chassis** – Follow steps for Procedure – Installation (Chassis + Battery) on (page 27).

27. **Install Cosmetic Plate (Optional)** – If cosmetic plate was damaged during repair it must be replaced. Follow steps for Procedure – Installation (Cosmetic Plate) on (page 93).

28. **Install Feet** – Follow steps for Procedure – Installation (Feet) on (page 20).



Keyboard Assembly Replacement Process

Preliminary Requirements

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

Required Tools and Components

- All tools required for repair are listed under Service Tools and Jigs ([page 8](#))
- All parts required for this repair will be provided in the CRU kit being purchased. CRU kits are listed on the Illustrated Parts List ([page 15](#)).

 **IMPORTANT:** Feet replacements must be ordered for each repair.

Prerequisite Steps

- **Power off device** – Ensure device is powered off by fully discharging the battery. Refer to Repair-Specific Precautions and Warnings section ([page 10](#)) for details. Ensure device is disconnected from a power supply and all cables and drives are removed.
- **ESD Prevention** – Check to make sure that general guidelines and ESD Prevention steps are followed prior to opening device. Refer to ESD Prevention section ([page 14](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.
- **Remove Feet** – Refer to Procedure – Removal (Feet) on ([page 19](#)).
- **Remove Chassis + Battery** – Refer to Procedure – Removal (Chassis + Battery) on ([page 22](#)).
- **Remove Display** – Refer to Procedure – Removal (Display) on ([page 39](#)).

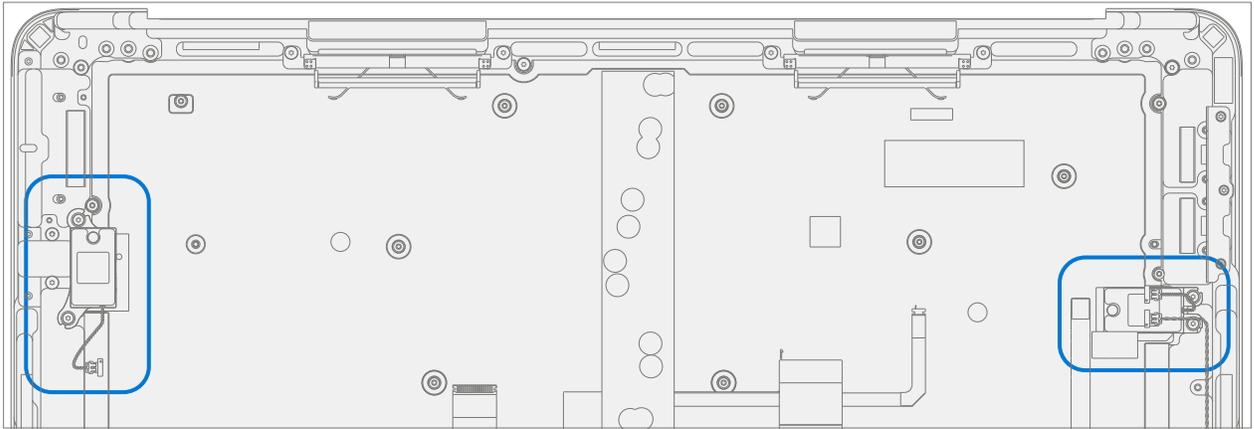
 **IMPORTANT:** The use of SDT TDM Replacement Mode is only required during Display replacements.

- **Remove Surfink Port** – Refer to Procedure – Removal (Surfink) on ([page 48](#)).
- **Remove Audio Jack** – Refer to Procedure – Removal (Audio Jack) on ([page 53](#)).
- **Remove USB-A+C Ports** – Refer to Procedure – Removal (USB-A+C) on ([page 58](#)).
- **Remove USB-C Port** – Refer to Procedure – Removal (USB-C) on ([page 62](#)).
- **Remove Micro SD Slot** – Refer to Procedure – Removal (Micro SD Slot) on ([page 66](#)).
- **Remove Motherboard** – Refer to Procedure – Removal (Motherboard) on ([page 70](#)).



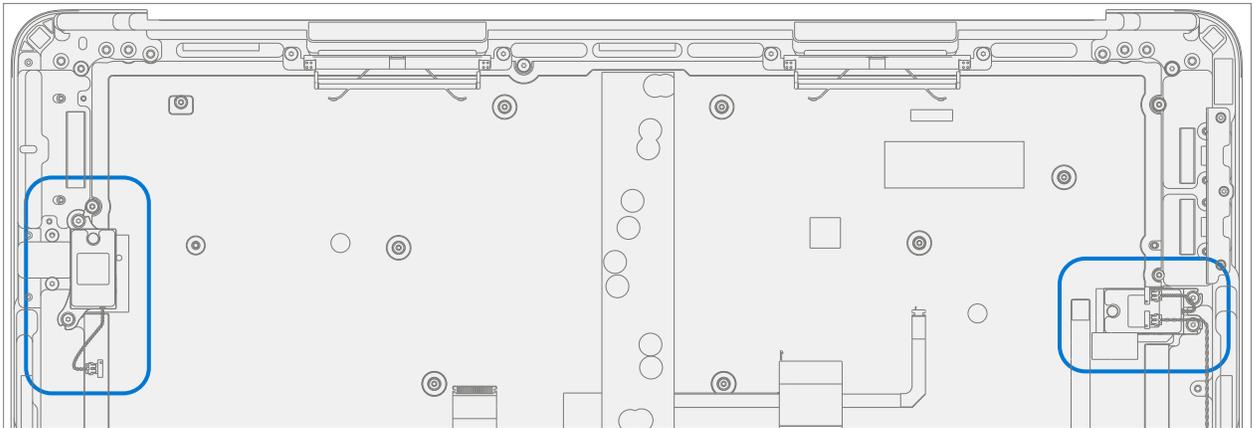
Procedure – Removal (Keyboard Assembly)

1. **Remove Tweeters** – Use a 3IP (Torx-Plus) driver to remove the 2 screws from each of the left and right tweeters. Remove the tweeters.



Procedure – Installation (Keyboard Assembly)

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



2. **Install Motherboard** – Follow steps for Procedure – Installation (Motherboard) on (page 78).
3. **Install Micro SD Slot** – Follow steps for Procedure – Installation (Micro SD Slot) on (page 67).
4. **Install USB-A + C** – Follow steps for Procedure – Installation (USB-A + C) on (page 59).
5. **Install USB-C** – Follow steps for Procedure – Installation (USB-C) on (page 63).
6. **Install Audio Jack** – Follow steps for Procedure – Installation (Audio Jack) on (page 54).
7. **Install SurfLink Port** – Follow steps for Procedure – Installation (SurfLink) on (page 49).
8. **Install Display** – Follow steps for Procedure – Installation (Display) on (page 41).
9. **Install Battery** – Follow steps for Procedure – Installation (Chassis + Battery) steps 4 through 8 on (page 27).

 **IMPORTANT:** During this installation only install rSSD and Chassis. Do not install Chassis 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. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.
12. **Install Chassis** – Follow steps for Procedure – Installation (Chassis + Battery) on (page 27).
13. **Install Cosmetic Plate (Optional)** – If cosmetic plate was damaged during repair it must be replaced. Follow steps for Procedure – Installation (Cosmetic Plate) on (page 93).
14. **Install Feet** – Follow steps for Procedure – Installation (Feet) on (page 20).

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

- All tools required for repair are listed under Service Tools and Jigs ([page 8](#))
- All parts required for this repair will be provided in the CRU kit being purchased. CRU kits are listed on the Illustrated Parts List ([page 15](#)).

 **IMPORTANT:** Feet replacements must be ordered for each repair.

Prerequisite Steps

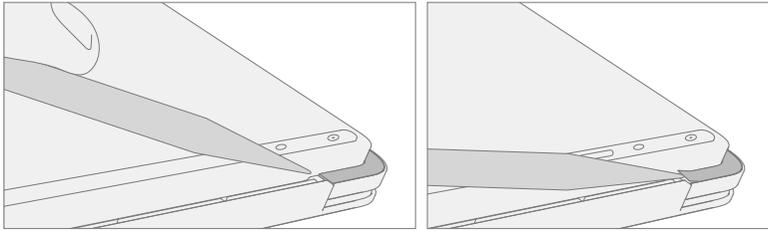
- **Power off device** – Ensure device is powered off by fully discharging the battery. Refer to Repair-Specific Precautions and Warnings section ([page 10](#)) for details. Ensure device is disconnected from a power supply and all cables and drives are removed.
- **ESD Prevention** – Check to make sure that general guidelines and ESD Prevention steps are followed prior to opening device. Refer to ESD Prevention section ([page 14](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the bottom facing up.



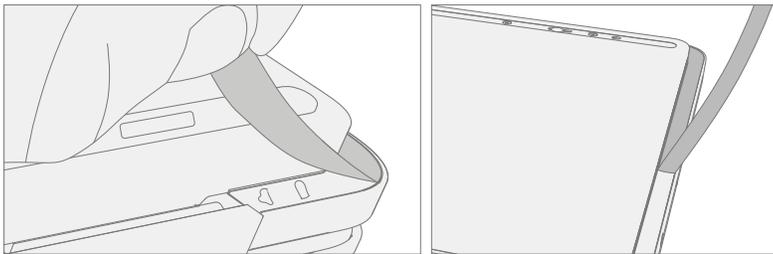
Procedure – Removal (Cosmetic Plate)

1. Remove Cosmetic Plate

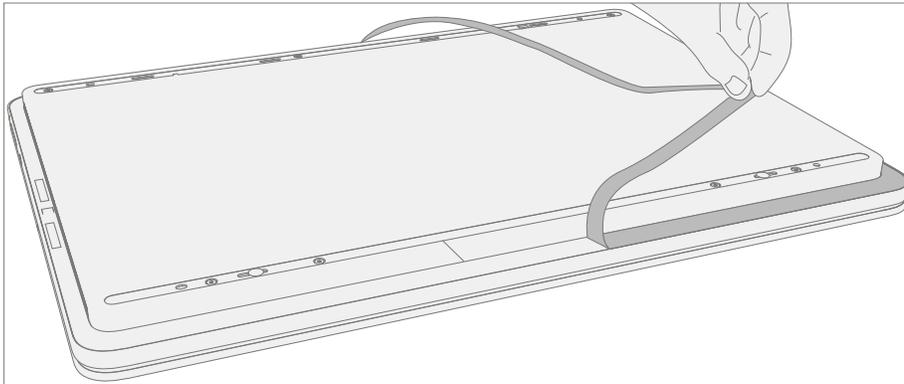
- a. Starting at the rear hinge use a spudger or plastic tweezers to lift up the end of the cosmetic plate.



- b. Peel off the cosmetic plate.



-
-  **IMPORTANT:** Pull the cosmetic plate away from the device at an angle to prevent scratching the Chassis.
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-  **IMPORTANT:** Along the front edge pull the cosmetic plate in a tight 'U' shape to prevent the pen shim from lifting with the cosmetic plate. A replacement pen shim is included with the new Cosmetic Plate in situations where it is removed.
-



2. **Cleaning**

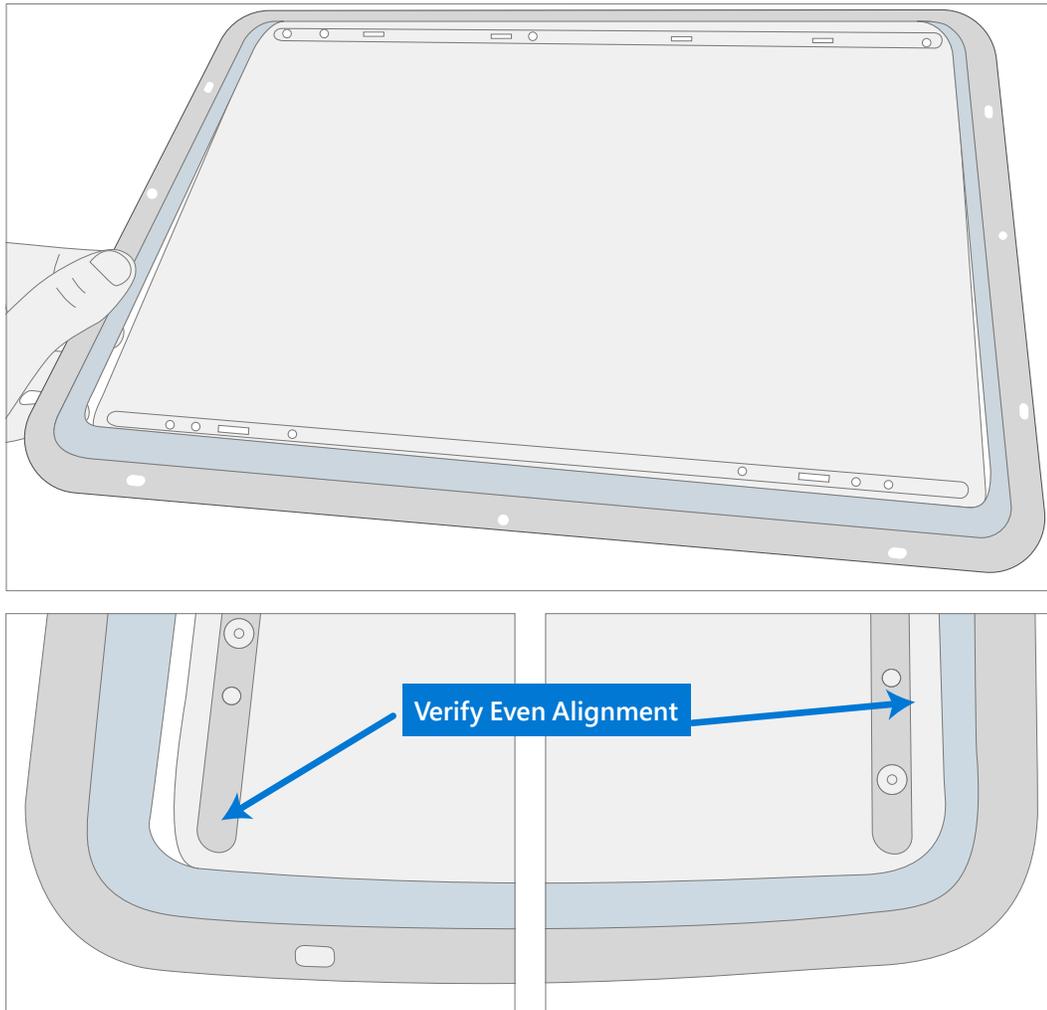
- a. Remove any adhesive tape remnants from the Chassis.
- b. Clean the bonding surfaces of the pen charger cover, the hinges on the Keyboard, and the Chassis with 70% Isopropyl Alcohol.
 - i. Apply Citrus IPA cleaner (example Goo Gone) to the cosmetic plate residue and let it sit for 5 minutes.
 - ii. Scrub the surface to remove as much of the PSA residue as possible.
 - iii. Clean off any oil and glue residue with 70% Isopropyl Alcohol.
 - iv. Repeat steps '1' through '3' as necessary until there is no residue remaining.
 - v. 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 Chassis** – Follow steps for Procedure – Installation (Chassis + Battery) on (page 27).
2. **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.

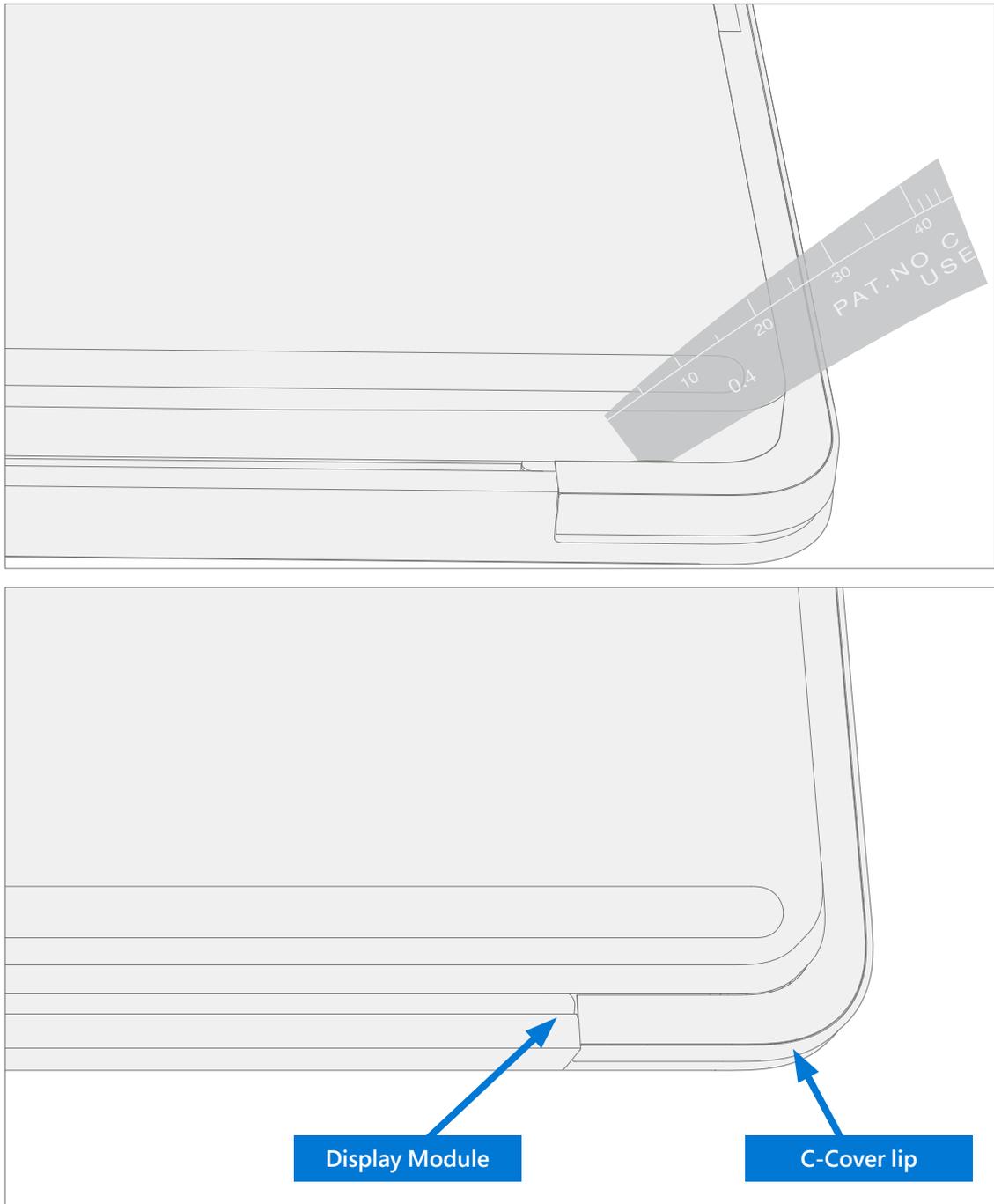
- e. Press lightly ensuring the entire cosmetic plate is fully down on the device.
- f. Firmly press the cosmetic plate with your finger, going all the way around.
- g. Remove the blue liner and run your finger over the cosmetic plate again to make sure that it is securely adhered.



3. 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 Keyboard lip or display module and has equal gap concentricity around the corners.

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



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

